INDIANACTSI
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-2-4.09

SUPERSEDES SOP #: N/A

Issue Date: 11.13.14

Effective Date: 12.05.14

AUTHORED BY: Melissa Taylor DATE: 11.06.14
Indiana CTSI SSF Staff

MGMT APPROVAL: [signature] DATE: Nov 10 2014
Indiana CTSI SSF Director

QA APPROVAL: [signature] DATE: 11.13.14
Quality Compliance Specialist

1. REVISION
   1.1. Significant changes incorporated in this version include:
      1.1.1. Edited Scope to specify MRUs located in C135, Annex I, and Annex II only.
      1.1.2. Removed Section 6.2.1.5 that directs SSF staff to document verification of return to NORMAL status. Subsequently, added Section 6.2.3 to states that return to NORMAL status is acknowledged by staff via the alarm system printout and confirmation of this is provided by the daily Siemens graphics check.
      1.1.3. Added clarification to Sections 6.3.1 and 6.6.1 on what is displayed on the alarm printout when there is a BLN disconnect. Noted this in Appendix H.
      1.1.4. Added Section 6.4.7.3 for directives on daisy-chaining MRUs in Annex II.
      1.1.5. Added Section 6.4.9 for directives on deactivating an alarm point.
      1.1.6. Inserted a note in Section 6.5.1.3 and edited 6.4.8.31 to provide clarity on different terminology used for the rooms comprising Annex II on the alarm computer.
      1.1.7. Omitted Sections 6.5.5.2.1-6.5.5.2.4, which directs personnel to the location of a word document that is no longer there.
      1.1.8. Included Section 6.6.2 to provide requirements and directives for testing the local Field Panel (Field Panel #1) as part of the Annual Alarm Verification. Revised Appendix C accordingly.
      1.1.9. Inserted a comment in Section 6.6.3.3.1 to provide clarity on terminology used by the alarm system for field panels #2 and #3.
      1.1.10. Removed Section 6.6.5 for directives on testing a MRU in either UH5030 or UH5049, since these units are now maintained by the SSF and require annual testing anyway per SF-3-1. Revised Appendix C accordingly.
      1.1.11. Added Section 6.6.11 to state that the annual alarm verification is not applicable to the room temperatures of UH5030/UH5049.
      1.1.12. Revised Sections 6.7.3 and 6.8.3 to state that routine annual alarm testing is documented on SF-3-1, Appendix B and SF-3-2, Appendix B. Updated Appendix J to remove checkbox for annual alarm testing.

1.1.13. Specified in Appendix F that form has to be re-verified monthly at a minimum and whenever referenced SOPs are updated.

1.1.14. Appendices J and K were updated to include a reference to SF-1-4 Appendix J when ensuring storage maps have been revised.

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 an acknowledging system called APOGEE Go. 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, Annex I, and Annex II only
* Liquid Nitrogen Freezers
* Low Oxygen Alarm
* Room C135 and MS-B046 temperature
* Electronic LN2 "Stop" Activation
* 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
5.4. High Speed Trunk Interface
5.5. Computer and related equipment
5.6. UPS in rooms C158B and C135
5.7. Screw Driver
5.8. Sharpie

5.9. Tape, electrical
5.10. Labels for alarm lines
5.11. Wire, 18 gauge
5.12. Wire Cutters

6. PROCEDURE

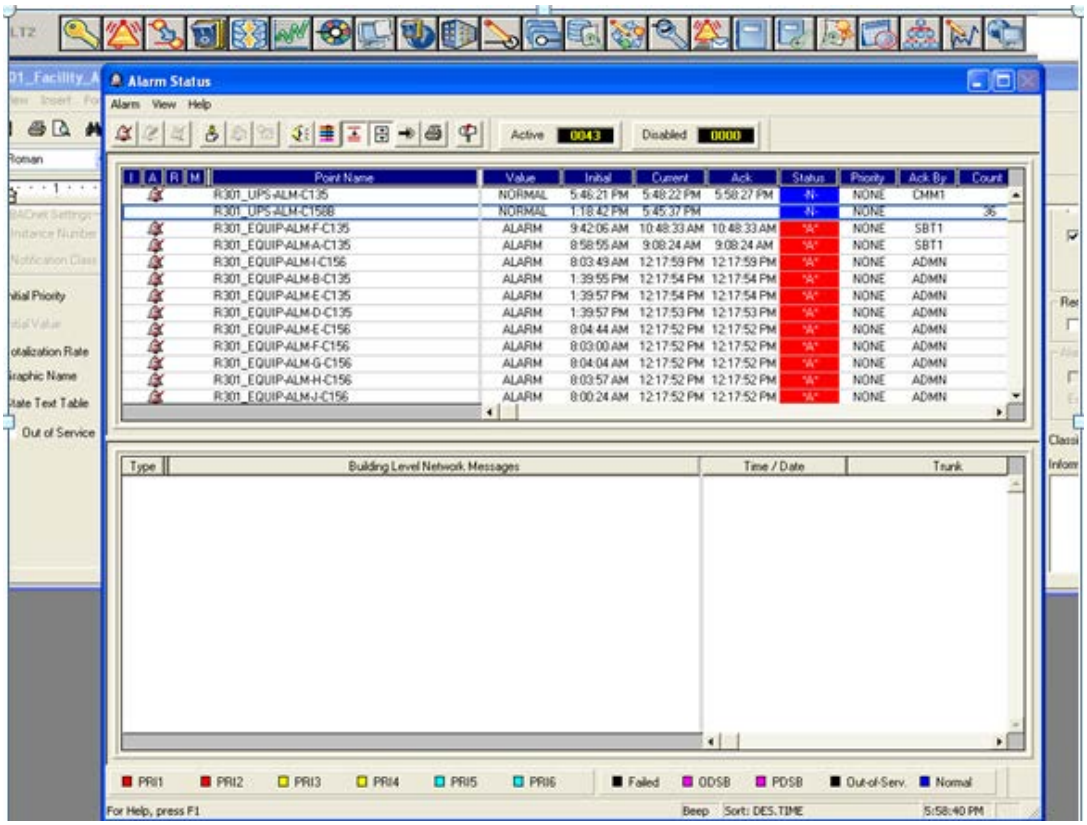
6.1. Management of SSF Personnel "on-call" status

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 (APOGEE GO for Insight) from the IUPUIR3BIO computer.**

6.2.1.1.1. Login per 6.4.2.

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 acknowledge alarms.

6.2.1.2.1. Dial (317) 274-2741.

6.2.1.2.2. Enter user id and password (Assigned in section 6.4.5.6).

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 IUPUIR3BIO computer directly (Section 6.2.1.1), remotely (Section 6.2.1.4), or by accessing the Apogee Go Web Interface (Section 6.2.1.3).

6.2.1.3. Access the Apogee Go Web Interface 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. Enter the intranet website at http://iupuir3bio/insightgo

6.2.1.3.3. Enter the domain name as iupuir3bio.

6.2.1.3.4. Follow steps 6.2.1.1.2 thru 6.2.1.1.7.

6.2.1.4. Access the IUPUIR3BIO computer via Remote Desktop Connection to acknowledge alarms.

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

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

6.2.1.4.3. Enter the complete name of the computer: **iupuir3bio.ads.iu.edu**

6.2.1.4.4. Log in to the computer per 6.4.2.

6.2.1.4.5. Acknowledge the alarm per 6.2.1.1.2 thru 6.2.1.1.7.

6.2.2. Access the alarm log remotely per the Apogee Go Web interface or the Remote Desktop Connection to **the IUPUIR3BIO 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. Once confirmed, acknowledge the condition returning to normal on the Siemens system. Documentation of this is provided via the daily review of the system graphics per Section 6.5.3.2.

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. SSF Personnel Response to a Building Level Network (BLN) disconnection or a field panel data transmission failure notification (In response to an immediate page to both the primary and secondary pagers that is received displaying the call-back number of "6666666666") and an e-mail to all SSF Staff.

6.3.1. NOTE: A BLN disconnection/field panel transmission failure notification WILL NOT trigger an actual alarm; it will only send a system message that is included on the alarm printout. Thus, when personnel are alerted, the acknowledgement of an alarm and/or the stopping of RENO, as described in Section 6.2.1, are not applicable.
CLARIFICATION: The alarm printout for a BLN disconnection will NOT display a loss of internet connectivity directly. It will only display the resulting field panel data transmission failures for both remote field panels, Field Panel #2 and #3 (i.e., R3-PXCM-02-CELL and R3-PXCC-03-CELL, respectively, on the alarm printout).

6.3.2. When notification is received, wait approximately 5 to 10 minutes for a possible reconnection. A reconnection is apparent if another page is received displaying the call-back number of "1111111111."

6.3.3. If the there is a reconnection within approximately 10 minutes, no action is necessary.

6.3.4. **If there is no reconnection in approximately 10 minutes, REPORT TO SSF TO INVESTIGATE.**

6.3.4.1. Refer to Appendix F for necessary actions.

6.3.5. Document response on the alarm log per 6.2.4-6.2.5.

6.4. Modifying the Alarm System:

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

6.4.1.1. Enter the date the change request is initiated.

6.4.1.2. Enter the type and details of change requested

6.4.1.3. Justify the request

6.4.1.4. Submit for Approval

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

6.4.1.5.1. 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):

6.4.1.5.2. Approval from the Associate Director

6.4.1.5.3. Approval from Quality Assurance personnel

6.4.1.5.4. Approval from the Chair of the SSF Oversight Committee

6.4.1.5.5. 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 in the space provided.

Complete the change per the applicable section below.

6.4.1.6. **RESTART RENO per Section 6.4.4.**

6.4.1.7. Have **a different SSF staff member** verify that the change was made appropriately.

6.4.2. **Logging into the system.**

6.4.2.1. As an administrator:

6.4.2.1.1. Enter your IU username, defined passphrase established when you were provided administrator privileges and log on to IUPUIR3BIO.

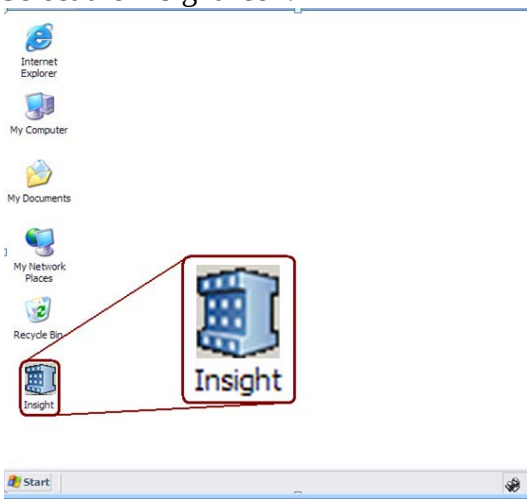
6.4.2.1.2. The defined passphrase is neither automatically updated with your standard IU log-in credentials nor can it be reset.

6.4.2.2. As an user:

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

6.4.2.2.2. The passphrase updates as your IU login credentials update.

6.4.2.3. Select the Insight Icon.



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

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

6.4.3. **Setting up or deactivating a user.**

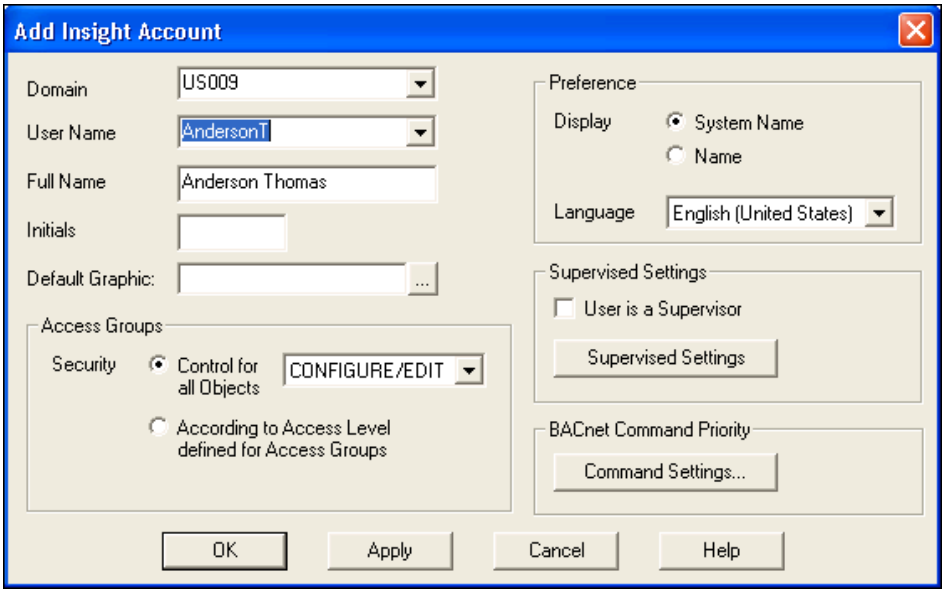
6.4.3.1. Log in as an administrator.

6.4.3.1.1. Select the user account icon. 

6.4.3.1.2. Select Account.

6.4.3.1.3. Select New.

6.4.3.1.4. Select Insight Account and a pop up screen appears.



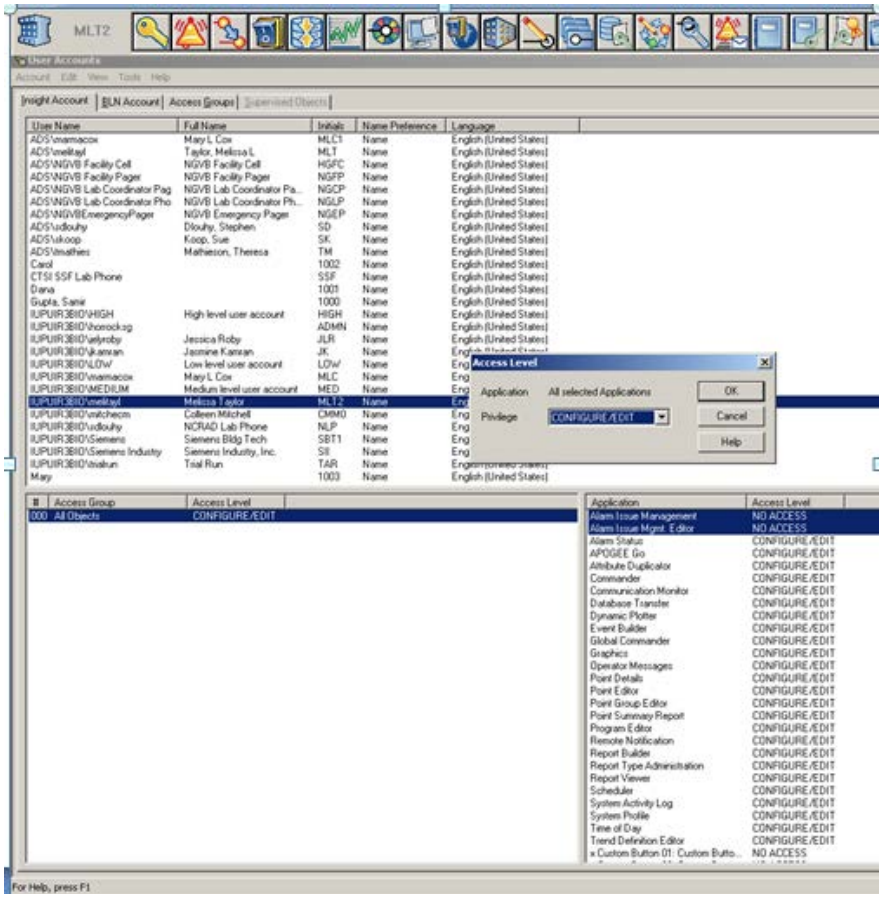
6.4.3.1.5. Enter the following in the pop up screen:
- 6.4.3.1.5.1. User name, same as the login for Outlook.
- 6.4.3.1.5.2. Full Name.
- 6.4.3.1.5.3. Initials.

6.4.3.1.6. Leave default graphics blank.

6.4.3.1.7. Under Access Groups, assign the access level for all objects as one of the following:
- 6.4.3.1.7.1. Read-Only (for non-SSF staff personnel who wish to be involved for remote notification purposes only).
- 6.4.3.1.7.2. Command (non-SSF staff approved by management).
- 6.4.3.1.7.3. Configure/Edit (for SSF employees).

6.4.3.1.8. Under Preference:
- 6.4.3.1.8.1. Select Name.
- 6.4.3.1.8.2. Select the APPLY button.

6.4.3.1.9. For new SSF employees only, change access levels for all Insight applications to “Configure/Edit”:
- 6.4.3.1.9.1. 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.



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

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

6.4.3.1.9.4. Click "edit" in the toolbar at the top of the screen and select "access levels." Change privilege to "Configure/Edit" and then click "OK."

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

6.4.3.1.10. 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.

6.4.3.2. To Set up an administrator on the IUPUIR3BIO computer:

6.4.3.2.1. Current administrators may perform this function by logging in using administrator credentials. Current administrators are listed on Appendix I.

6.4.3.2.2. From the start button, select control panel, system, advanced, user profiles and settings.

6.4.3.2.3. Select the "click here" hyperlink.

6.4.3.2.4. Select the "Users" folder.

6.4.3.2.5. Click on "Action" in the toolbar at the top of the screen, then select "New User."

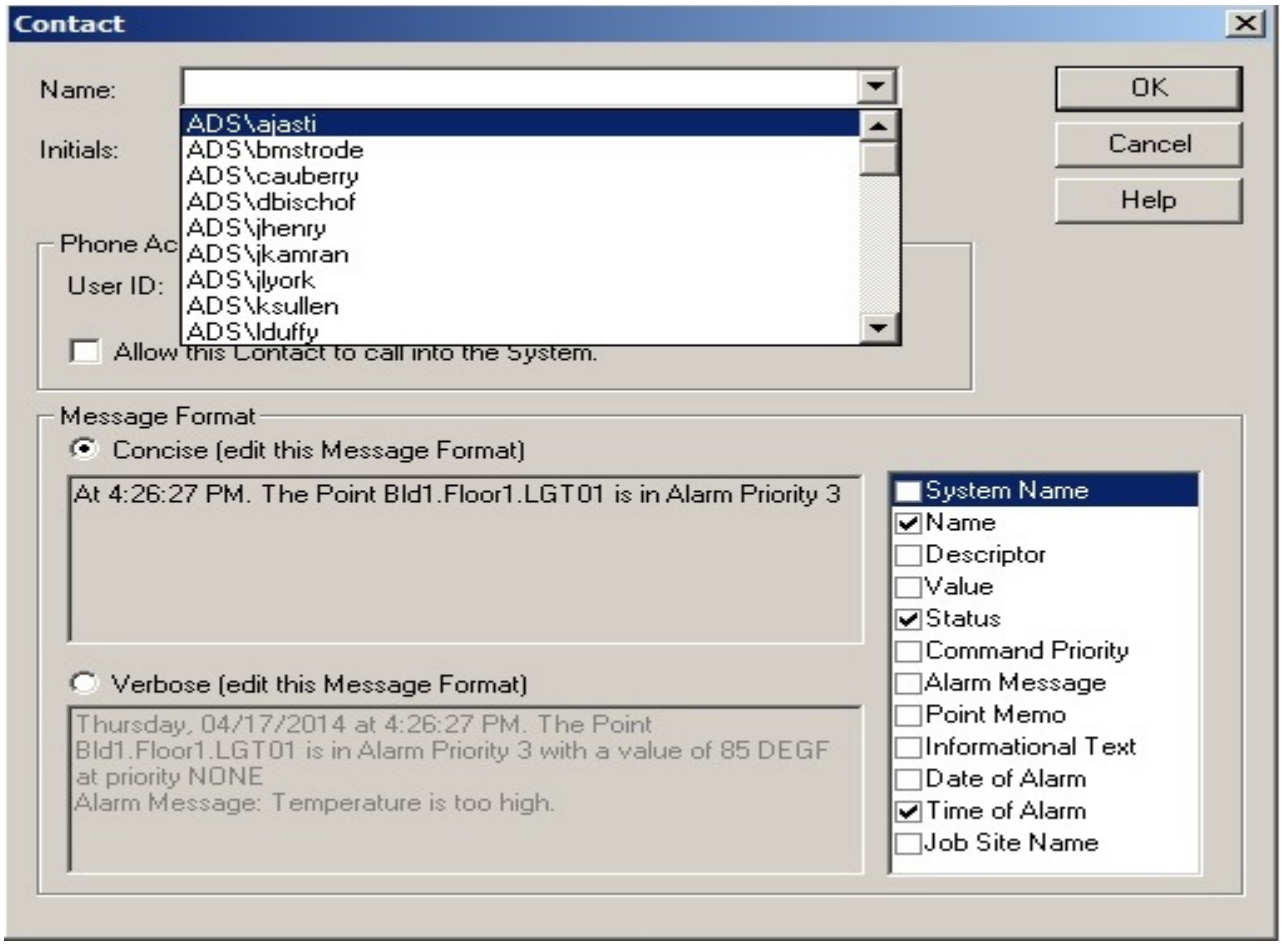
6.4.3.2.6. Fill out username, full name, and leave description blank.
6.4.3.2.7. Assign password and confirm.
6.4.3.2.8. Uncheck the box "User must change password at next login" and check the box "Password never expires."
6.4.3.2.9. Click "Create"
6.4.3.2.10. Double click on the newly created member's name and select the "Member of" tab.
6.4.3.2.11. Select "Add." Add the following profiles: Administrators, Apogee Users, Distributed COM Users, Remote Desktop Users, and Users.
6.4.3.2.11.1. To select these profiles, select "advanced" and then "find now."
6.4.3.2.12. Select OK, and then "apply."
6.4.3.2.13. Remove password protect setting from account:
6.4.3.2.13.1. From the start button, select control panel, display, screen saver.
6.4.3.2.13.2. Uncheck the box that states, "On resume, password protect".
6.4.3.2.13.3. Click "Apply" and then "OK."

6.4.3.3. Deactivating a User
6.4.3.3.1. Log in as an administrator or user.
6.4.3.3.2. Right click on user account name.
6.4.3.3.3. Select delete account.
6.4.3.3.4. Select OK.

6.4.3.4. To Remove an administrator from the IUPUIR3BIO computer:
6.4.3.4.1. Current administrators may perform this function by logging in using administrator credentials. Current administrators are listed on Appendix I.
6.4.3.4.2. From the start button, select control panel, system, advanced, user profiles and settings.
6.4.3.4.3. Select the "click here" hyperlink.
6.4.3.4.4. Select the "Users" folder.
6.4.3.4.5. Right click on the user that is to be removed.
6.4.3.4.6. Click on delete and confirm deletion.

6.4.4. **Restart RENO**
6.4.4.1. This section must be performed by a user logged in with administrator privileges.
6.4.4.2. On the Siemens Alarm Console, right click on My Computer.
6.4.4.3. From the options that appear select "Manage."
6.4.4.4. Select the "+" next to Configuration
6.4.4.5. Left click on "Services" to view the drop down list.
6.4.4.6. Left click on "Insight RENOServer."
6.4.4.7. Left click on restart.
6.4.4.8. Wait until information box is completed.

6.4.5. **Creating New Staff in RENO.**
6.4.5.1. Log in as administrator or user.
6.4.5.2. Click on the RENO icon. 
6.4.5.3. Right click on contacts.



6.4.5.4. Select New Contact.
6.4.5.5. Select name from drop down list by clicking the arrow to the right of the box. The initials will automatically appear.
6.4.5.6. **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 6.4.5.10
6.4.5.7. Check the box next to Allow this Contact to call into the system.
6.4.5.8. Select the items that should be heard when the user calls in to the system.
6.4.5.9. Select OK.
6.4.5.10. Right click on the contact's name.
6.4.5.11. **Set up each device** that needs to be utilized as a notification device.
6.4.5.12. Select OK once completed.
6.4.5.13. Repeat for each additional device (cell phone, pager, email, etc.)
6.4.5.14. To **edit a device** right click on the device.
6.4.5.15. Select properties.
6.4.5.16. Make changes and select OK.
6.4.5.17. Add new user to any groups that are applicable.
6.4.5.17.1. Right click on group name.
6.4.5.17.2. Select Add Member.
6.4.5.17.3. Enter a * in the Name field.
6.4.5.17.4. Select Find Now.
6.4.5.17.5. Left click on the device name that needs to be added.
6.4.5.17.6. Select OK.

6.4.5.18. Repeat to add as many devices as needed.
6.4.5.19. Restart Reno to activate modifications.
6.4.5.20. 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.

6.4.6. **Escalation List Management**

6.4.6.1. Creating a New List – Refer to Appendix G.
6.4.6.1.1. Log in as administrator or user.
6.4.6.1.2. Click on the RENO icon on the toolbar 
6.4.6.1.3. Right click on Escalation List.
6.4.6.1.4. Select New Escalation List.
6.4.6.1.5. Enter a name for this escalation list in the name field.
6.4.6.1.6. Complete the Emergency box by selecting the  button.
6.4.6.1.7. Enter a * in the Name field.
6.4.6.1.8. Select Find Now.
6.4.6.1.9. Left click on the device name that needs to be added.
6.4.6.1.10. Select OK.
6.4.6.1.11. Select OK.
6.4.6.1.12. Right click on new escalation list name.
6.4.6.1.13. Select insert stage.
6.4.6.1.14. Change field Type to Contact Group.
6.4.6.1.15. Enter a * in the Name field.
6.4.6.1.16. Select Find Now.
6.4.6.1.17. Left click on the group name that needs to be added.
6.4.6.1.18. Select OK.
6.4.6.1.19. Repeat until escalation list is complete.
6.4.6.1.20. Restart Reno per 6.4.4. to activate modifications.

6.4.6.2. Adding or Removing Contacts from Escalation List
6.4.6.2.1. Add contact
6.4.6.2.1.1. Expand the escalation list to be modified by clicking on the + symbol next to its name.
6.4.6.2.1.2. Note which groups are utilized for each stage of the escalation list
6.4.6.2.1.3. Expand the group list by clicking on the + symbol next to “Groups”.
6.4.6.2.1.4. Right click on the name of each group (noted from the escalation list) to which the contact will be added.
6.4.6.2.1.5. Select Add Member
6.4.6.2.1.6. Enter “*” in the Name field
6.4.6.2.1.7. Select Find Now
6.4.6.2.1.8. Left click on the contact(or device) name that needs to be added
6.4.6.2.1.9. Select OK.
6.4.6.2.1.10. Repeat until additions are complete
6.4.6.2.1.11. Restart Reno per 6.4.4.to activate modifications.

6.4.6.2.2. Remove contact

6.4.6.2.2.1. Expand the escalation list to be modified by clicking on the + symbol next to its name.
6.4.6.2.2.2. Note which groups are utilized for each stage of the escalation list
6.4.6.2.2.3. Expand the group list by clicking on the + symbol next to “Group”
6.4.6.2.2.4. Expand each group (noted from the escalation list) by clicking on the + symbol next to the group name.
6.4.6.2.2.5. Right click on contact/device to be removed.
6.4.6.2.2.6. Select Remove Member
6.4.6.2.2.7. Select OK.
6.4.6.2.2.8. Repeat for each group in which the contact is to be removed.
6.4.6.2.2.9. Restart Reno to activate modifications.

6.4.7. **Installation of alarm wires**

6.4.7.1. One Unit (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.**

6.4.7.1.1. 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.
6.4.7.1.2. For both cut ends of wire, perform the following:
6.4.7.1.2.1. Cut off about an inch in length of the white plastic using wire cutters, exposing the inner wires wrapped in foil.
6.4.7.1.2.1.1. Do not cut through the inner wires.
6.4.7.1.2.2. Remove the foil wrap. The four inner wires wrapped in colored plastic are now visible.
6.4.7.1.2.3. GENTLY remove about ½ inch in length of both the red and black plastic using wire cutters, exposing the bare wires inside.
6.4.7.1.2.3.1. Do not cut through the inner wires.
6.4.7.1.3. Insert one end of the red wire into the red connector point on the banana clip.
6.4.7.1.4. Insert the black wire of the same end into the black connector point on the banana clip.
6.4.7.1.5. Insert the other end of the red wire into the Normally Open (NO) contact point on the unit.
6.4.7.1.5.1. If the unit has an adapter (usually green), unscrew and disconnect prior to installing the wires.
6.4.7.1.6. Insert the other end of the black wire into the Common (C) contact point of the unit.
6.4.7.1.6.1. If the unit has an adapter (usually green), screw back into unit after installing the wires.

6.4.7.2. Multiple Units, a.k.a. Daisy Chaining (for units located in C135 andC156 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.

6.4.7.2.1. 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.

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

6.4.7.2.2.1. Cut off about an inch in length of the white plastic using wire cutters, exposing the inner wires wrapped in foil.

6.4.7.2.2.1.1. Do not cut through the inner wires.

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

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

6.4.7.2.2.3.1. Do not cut through the inner wires.

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

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

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

6.4.7.2.5. 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.

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

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

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

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

6.4.7.2.8. Repeat steps 6.4.7.2.5 thru 6.4.7.2.7 (using additional white wires) as necessary until all units are alarmed. Then proceed to next step.

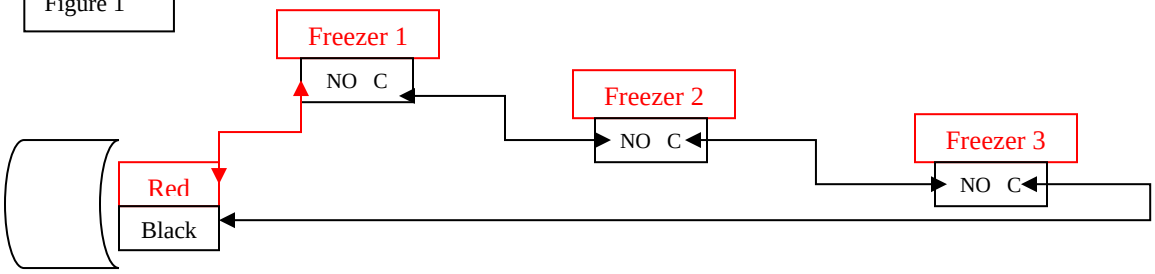
6.4.7.2.9. When there are no more units to add to the daisy chain, cut a final strip of wire encased in white plastic long enough to reach in between the contact points of the final unit and the banana clip in the wall, stripping only the black wires on both ends.

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

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

6.4.7.2.12. Test Freezer Alarm Functionality for all units on the alarm point per section 6.7 (LN2 Freezers) or 6.8 (Mechanical Freezers).

Figure 1



6.4.7.3. Multiple Units, a.k.a. Daisy Chaining (for units located in UH 5030 and UH 5049) **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.**

6.4.7.3.1. 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.

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

6.4.7.3.2.1. 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).

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

6.4.7.3.2.3. GENTLY remove about 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).

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

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

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

6.4.7.3.4.2. GENTLY remove about 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).

6.4.7.3.4.3. 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).

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

6.4.7.3.4.5. 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.

6.4.7.3.4.6. 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.

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

6.4.7.3.4.8. 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).

6.4.7.3.4.9. Repeat steps 6.4.7.3.4.3. through 6.4.7.3.4.8. (using additional white cords) as necessary until all units are alarmed. Then proceed to next step.

6.4.7.3.4.10. 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 blue cord in the wall, stripping only the black wires on both ends.

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

6.4.7.3.4.12. 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).

6.4.7.3.4.13. Test Freezer Alarm Functionality for all units on the alarm point per section 6.8 (Mechanical Freezers).

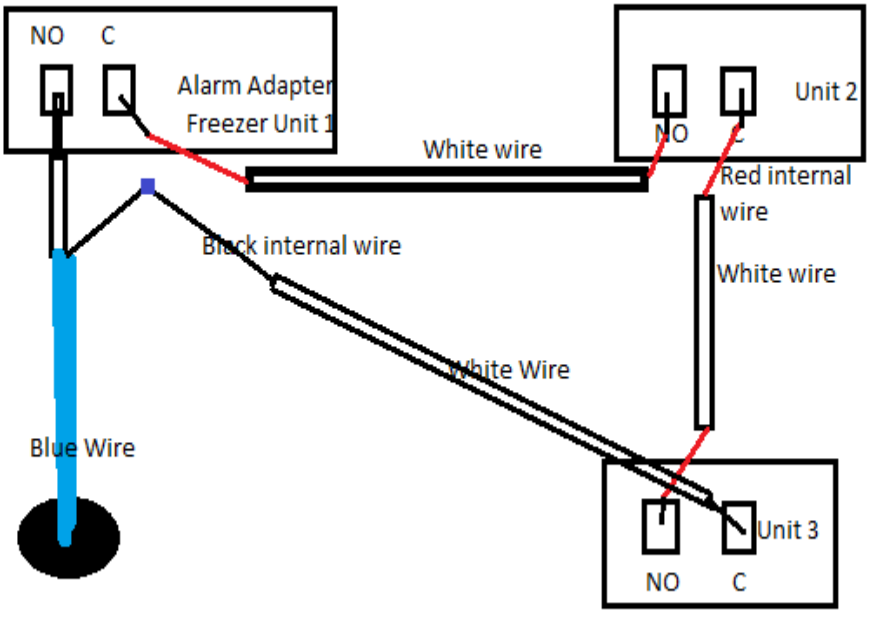


Figure 2

6.4.7.4. One unit (for units located in MS B-46, UH5030, and UH5049) **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.**

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

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

6.4.7.4.2.1. Strip off the blue, white, and black colored casings of the end of the wire per 6.4.7.3.4.6.

6.4.7.4.2.2. 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.

6.4.7.4.3. The method of "Daisy Chaining" units is not necessary in MS B-46 due to the fact that there were enough alarm points/wires installed for the maximum number of units that the room can hold.

6.4.7.5. Labeling the wires

6.4.7.5.1. 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.

6.4.7.5.2. 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.

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

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

6.4.7.5.4. Identify the wires on all units.

6.4.7.6. Disconnecting the Freezer Alarm

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

6.4.7.6.1.1. On the respective freezer unit, verify that each wire is labeled legibly with the wire slot location using labels and a sharpie. Label any wires that are not already legibly labeled using the black sharpie and labels.

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

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

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

6.4.7.6.4. 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.

6.4.7.6.5. 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 6.5.1.
6.4.7.6.5.1. The value of the alarm point should read "NORMAL."
6.4.7.6.6. Document that freezer was disconnected on freezer maintenance log and/or Out of Specification Form, as applicable.

6.4.7.7. Reconnect to Freezer Alarm
6.4.7.7.1. Remove wire nut, separate wires and straighten each wire.
6.4.7.7.2. Reinsert the numbered wires to corresponding wire slots and tighten the screw to secure the wires.
6.4.7.7.3. Reinsert alarm adapter (if applicable) and tighten the screws to secure.
6.4.7.7.4. 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 6.5.1.
6.4.7.7.4.1. The value of the alarm point should read "NORMAL."
6.4.7.7.5. Document that freezer was reconnected on freezer maintenance log and/or Out of Specification Form, as applicable.
6.4.7.7.6. Test Freezer Alarm Functionality per section 6.7 (LN2 Freezers) or section 6.8 (Mechanical Freezers).

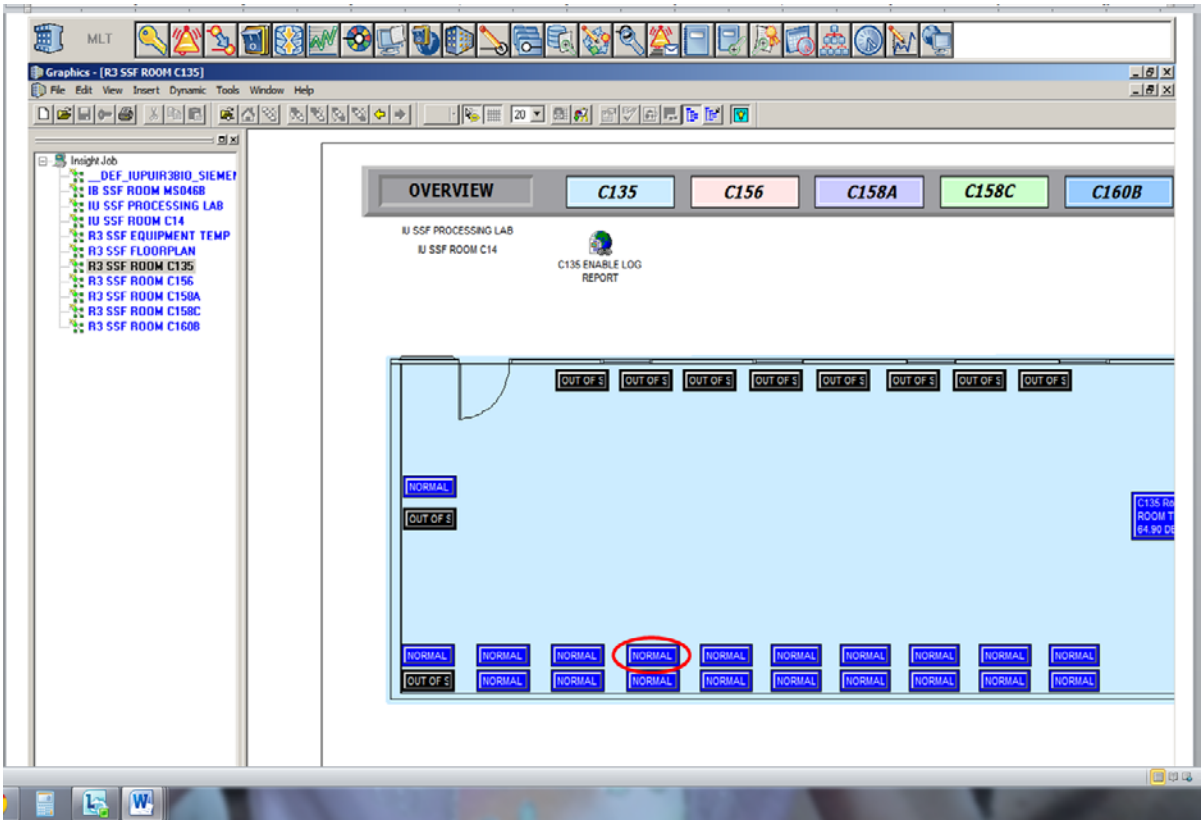
6.4.8. **Activating an alarm point**
6.4.8.1. Log in as an administrator or a user per 6.4.2.
6.4.8.2. Select the graphics icon.
6.4.8.3. Double click on the room number in the tree where the point is located.
6.4.8.4. Left click on the alarm point selected for activation.
6.4.8.5. Drag to the point editor icon and type new name (if desired).
6.4.8.6. In the Alarm Type section, select enhanced alarms.
6.4.8.7. In the Remote Notification section, select the Enabled box.
6.4.8.8. Select properties.
6.4.8.9. Verify that BA Alarm Pri1 is selected
6.4.8.10. Click button on the right of the Notification type box
6.4.8.11. In order to make changes in the type box, click the arrow
6.4.8.12. Select Escalation
6.4.8.13. Select which escalation group list you want notified
6.4.8.14. Confirm that the Numeric Message includes ten digits (3172742741).
6.4.8.15. Select Ok.
6.4.8.16. Select Ok again.
6.4.8.17. Close box by clicking the x in the upper right corner
6.4.8.18. A confirmation box will appear. Select "Yes" to save changes.
6.4.8.19. On the point editor screen for the alarm point, uncheck the out of service box.
6.4.8.20. In the Alarm Type section, select alarm properties.
6.4.8.21. Change alarm destinations to "001) SSF ALARMS"
6.4.8.22. Select the correct Mode Point which will always look like the following example: R301_EQUIP-ALM-A-C135-ENA.
6.4.8.23. Type the number "1" into mode delay.
6.4.8.24. Type the number "840" into the Level Delay.
6.4.8.25. Check to make sure that Acknowledge Return to Normal is selected
6.4.8.26. Check to make sure that Alarm Mode Enabled is selected
6.4.8.27. Change priority to PRI1

6.4.8.28. Click Ok.
6.4.8.29. This activation of a new alarm will print on the daily alarm print out.
6.4.8.30. Close the point editor screen by clicking the x in the upper right corner.
6.4.8.31. On the room map, click enable log report
Clarification: Room maps for MS B46, IU SSF Room C14 (i.e., UH 5049), and IU SSF Processing Lab (i.e., UH 5030) do not include the enable log report link and therefore steps 6.4.8.31 through 6.4.8.36 can be omitted for these room maps.
6.4.8.32. Double click on alarm that was activated
6.4.8.33. Select the enabled circle
6.4.8.34. Click command
6.4.8.35. Click refresh
6.4.8.36. Restart RENO per Section 6.4.4.

6.4.9. **Deactivating/Placing Out of Service an Alarm Point**
6.4.9.1. Log in as an administrator or user per 6.4.2.
6.4.9.2. Select the graphics icon.
6.4.9.3. Double click on the room number where the point is located.
6.4.9.4. Left click on the alarm point selected for putting out of service.
6.4.9.5. Drag to the point editor icon. The point editor window will appear.
6.4.9.6. At the bottom left of the window click the "Out of Service" box.
6.4.9.7. In the Remote Notification box to the right in the window uncheck the "Enabled" box.
6.4.9.8. Close the point editor screen by clicking the x in the upper right corner. A confirmation box will appear to save the changes made.
6.4.9.9. Click yes.
6.4.9.10. Restart RENO per section 6.4.4.

6.4.10. SSF Siemens Alarm Notification Schema: Escalation Groups are defined in Appendix G.
6.4.11. 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)

6.5. Monitoring
6.5.1. To view alarm points for monitoring.
6.5.1.1. Log in as an administrator or a user per 6.4.2.
6.5.1.2. Select the graphics icon. 
6.5.1.3. Double click on the room number in the tree where the point is located.
6.5.1.3.1. NOTE: The display on the graphics tree for rooms UH 5030 and UH 5049 reads "IU SSF Processing Lab" and "IU SSF Room C14," respectively.
6.5.1.4. Read value on graphics display.



6.5.2. Daily, monitor the alarm system for any alarm activity.

6.5.2.1. Each workday, check alarm printout report to ensure there was no record of any alarm condition notifications the previous day(s).

6.5.2.2. 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.

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

6.5.2.4. If it is discovered that an alarm printout was missed for a given date, an activity report may be run per Section 6.5.3 to determine if there were alarms during that time. Document the result of this on the subsequent day Alarm Print-out.

6.5.2.5. File alarm activity printout in the Alarms binder.

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

6.5.3.1. 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:

6.5.3.1.1. Unplug the UPS connecting the Siemens Alarm Server to the building electrical supply.

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

6.5.4. Daily, review the Siemens graphic to ensure that there are not any unresolved alarm conditions. Document review of Siemens graphic on the alarm printout described in section 6.5.2.

6.5.5. Running a report for a specific alarm point:
6.5.5.1. Select the System Activity Log icon.
6.5.5.2. Select Query.
6.5.5.3. Select Query again, then Add.
6.5.5.4. Under the Find Now section, in the Type dropdown, select object.
6.5.5.5. Another screen appears and then select the alarm point(s) (select all points if in response to running a report for a missed daily alarm printout).
6.5.5.6. Enter the date range (maximum range is 30 days).
6.5.5.7. Run report.

6.6. Verification – Annual or as otherwise indicated.
6.6.1. BLN (internet connectivity) disconnection notification.
6.6.1.1. Unplug the internet cable from the back of the alarm computer located in C158B.
6.6.1.2. Record time.
6.6.1.3. Monitor for Notification. Record time. Acceptable if delay is <10 minutes.
6.6.1.3.1. Alarm printout will NOT display a loss of internet connectivity directly. It will only display the resulting field panel data transmission failures for both remote field panels, Field Panel #2 and #3 (i.e., R3-PXCM-02-CELL and R3-PXCC-03-CELL, respectively, on the alarm printout).
6.6.1.4. Plug the internet cable back into the alarm computer.
6.6.1.4.1. Alarm printout will only display the resulting field panel data transmission reconnection for both remote field panels, Field Panel #2 and #3 (i.e., R3-PXCM-02-CELL and R3-PXCC-03-CELL, respectively, on the alarm printout).
6.6.1.5. Acknowledging the alarm is not applicable.
6.6.2. Field panel data transmission failure notification for C135/C156 (Field Panel #1)
6.6.2.1. Access the field panel, labeled “MEC-1 BIOREPOSITORY” on the east wall of C135, and disconnect the cable labeled “BLN MEC-1” from the field panel.
6.6.2.2. Record time.
6.6.2.3. Monitor for Notification. Record time. Acceptable if delay is <10 minutes.
6.6.2.4. Reconnect the cable to the field panel.
6.6.2.5. Acknowledging the alarm is not applicable.

6.6.3. Field panel data transmission failure notification for both the SSF Annex (Field Panel #2) and SSF Annex II (Field Panel #3).
6.6.3.1. Access the field panel, located in the SSF Annex (MS B-46), and disconnect the cable labeled “Network Cable Field Panel #2” from the field panel or turn off the field panel using the On/Off switch.
6.6.3.2. Record time.
6.6.3.3. Monitor for Notification. Record time. Acceptable if delay is <10 minutes.
6.6.3.3.1. CLARIFICATION: Field Panel #2 is designated as R3-PXCM-02-CELL on the alarm printout. Field Panel #3 is designated as R3-PXCC-03-CELL on the alarm printout.
6.6.3.4. Reconnect the cable to the field panel or turn the switch to on position.
6.6.3.5. Acknowledging the alarm is not applicable.
6.6.3.6. Repeat Steps 6.6.3.1-6.6.3.5 for the field panel of SSF Annex II , located in the AOC of University Hospital (UH5033), disconnecting the cable labeled

"Network Cable Field Panel #3" or turning off the field panel using the On/Off switch.

6.6.3.6.1. Contact IU Health Security at 317-944-8000 for access to UH5033. Include the following clarifications in the request:

6.6.3.6.1.1. The need for access is limited to SSF personnel executing alarm testing for our Siemens equipment and does not require assistance (other than for access) from any IU Health personnel.

6.6.3.6.1.2. Alarm testing may continue to subsequent steps in this SOP while awaiting access.

6.6.4. UPS: Test UPS Alarm for both C158B and C135.

6.6.4.1. Unplug the UPS in C158B from the electrical outlet. Record time.

6.6.4.2. Monitor for Notification. Record Time. Acceptable if delay is <3 minutes.

6.6.4.3. Reconnect to main power.

6.6.4.4. Acknowledge the alarm in the alarm system per Section 6.2.

6.6.4.5. Repeat Steps 6.6.4.1-6.6.4.4 for the UPS located in C135.

6.6.5. Emergency LN2 Stop (E-Stop)

6.6.5.1. Activate E-stop.

6.6.5.2. Record time.

6.6.5.3. Monitor for Notification. Record Time. Acceptable if delay is <3 minutes.

6.6.5.4. 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.

6.6.5.5. Acknowledge the alarm in the alarm system per Section 6.2.

6.6.6. Low Oxygen Alarm

6.6.6.1. Reset alarm set points A1-Adj and A2-Adj both to 20.9% on the unit (Refer to PointGard II Operating Manual located in the Operations Manager's Office for instructions on how to do this).

6.6.6.2. Record time when unit goes into alarm.

6.6.6.3. Monitor for Notification. Record Time. Acceptable if delay is <3 minutes.

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

6.6.6.5. Acknowledge the alarm in the alarm system per Section 6.2.

6.6.7. LN2 Freezer Alarm: Not Applicable

6.6.8. Refrigerator and standard mechanical freezer: Not Applicable

6.6.9. Room C135 Temperature: Not Applicable

6.6.10. Room MS B-46 Temperature: Not Applicable

6.6.11. UH 5030/5049 Temperature: Not Applicable

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

6.7. Alarm Testing the LN2 freezers (applicable if the unit has been repaired, moved to/from another location, is new to the facility, requires alarm functionality verification, or for any other approved reason).

6.7.1. Login per 6.4.2.

6.7.2. View alarm points per 6.5.1.

6.7.3. Record information on LN2 Alarm Testing Worksheet, Appendix J. Routine annual

alarm testing being performed per SF-3-2 directives is documented on Appendix B of SF-3-2.

6.7.3.1. Unit ID defines the specific info for a freezer/controlled environment storage unit which is the first freezer to be tested.

6.7.3.1.1. Place labels denoting the SN (serial number) (or record the SN) for each unit that is connected to the alarm point that is being tested (DO NOT include the first freezer tested) on sheet. **Clarification: Alarm printout for other units tested is not required. Look for change in Alarm Value on the commander window (view window by double clicking alarm point on Siemens system) from NORMAL to ALARM.**

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

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

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

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

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

6.7.3.5.2. Once screen appears, select alarm properties

6.7.3.5.3. Record Mode and Level Delay

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

6.7.3.5.5. Select Ok.

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

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

6.7.3.5.8. Restart RENO per Section 6.4.4.

6.7.3.6. The remaining steps listed on Appendix J are to be followed as written and do not require further instructions.

6.7.3.7. 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.

6.7.3.8. File completed form.

6.8. 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, or for any other approved reason).

6.8.1. Login per 6.4.2.

6.8.2. View alarm points per 6.5.1.

6.8.3. 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.

6.8.3.1. Unit ID defines the specific info for a freezer/controlled environment storage unit which is the first freezer to be tested.

6.8.3.1.1. Place labels including the SN (serial number) (or record the SN) for each unit that is connected to the alarm point that is being

tested (DO NOT include the first freezer tested) on sheet. **Clarification: Alarm printout for other units tested is not required. Look for change in Alarm Value on the commander window (view window by double clicking alarm point on Siemens system) from NORMAL to ALARM.**

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

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

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

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

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

6.8.3.5.2. Once screen appears, select alarm properties

6.8.3.5.3. Record Mode and Level Delay

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

6.8.3.5.5. Select Ok.

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

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

6.8.3.5.8. Restart RENO per Section 6.4.4.

6.8.3.6. Record the SN (serial number) for each unit that is connected to the alarm point that is being tested (DO NOT include the first freezer tested). **Clarification: Alarm printout for other units tested is not required. Look for change in Alarm Value on the commander window (view window by double clicking alarm point on Siemens system) from NORMAL to ALARM.**

6.8.3.7. The remaining steps listed on Appendix K are to be followed as written and do not require further instructions.

6.8.3.8. 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.

6.8.3.9. File completed form.

6.9. Freezer Intake

6.9.1. Upon receipt of a new freezer, place sign on front that reads “freezer alarm disconnected: do not use for sample storage.”

6.9.2. Refer to 6.4.7 for installation of alarm wires.

6.9.3. Perform Alarm Testing for new freezer per section 6.7 (LN2 Freezers) or per section 6.8 (Mechanical Refrigeration Units).

6.9.4. Complete all necessary paperwork related to addition of freezer. Refer to SOP SF 1-4 and Appendices J and K of this SOP.

6.9.5. 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.

6.9.6. 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.

7. NON-ROUTINE MAINTENANCE
   7.1. In the event that repairs are needed to the Siemens alarm system, contact SSF Management.
   7.2. SSF Management contacts the Siemens representative to initiate the repair.
   7.3. 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.
   7.4. 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.

8. REFERENCES
   8.1. ISBER Best Practices (current version)
   8.2. Siemens Insight Rev 3.11 or 3.12 DVD

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

10. APPENDICES

The current version of each of the following appendices is used to guide and/or implement this SOP:

APPENDIX A: Components of the Insight 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: LN2 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)

Components of the Insight Alarm System Software Systems:

1.1. Insight Advanced Workstation

1.1.1. Graphical approach to manage and control a building from an easy to use interface.

1.1.1.1. Collect, view, analyze trend information.

1.1.1.2. Store and retrieve long term information.

1.1.2. RENO (Remote Notification Option)

1.1.2.1. Permits user to configure level of detail in the alarm messages sent to each contact person.

1.1.2.2. Permits user to define group notifications.

1.1.2.3. Permits user to define escalation lists for notification.

1.1.3. APOGEE GO (Remote Acknowledging Option)

1.1.3.1. Allows users control and access to Insight information via the internet.

1.1.3.2. Permits users to configure who can view notification points.

1.1.4. High Speed Trunk Interface

1.1.4.1. Interfaces the serial data line to the APOGEE GO Automation System.

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*				≤ 10	□ Yes □ No		
Field Panel #1 data transmission failure*				≤ 10	□ Yes □ No		
Field Panel #2 data transmission failure*				≤ 10	□ Yes □ No		
Field Panel #3 data transmission failure*				≤ 10	□ Yes □ No		
UPS - Room C158B				≤ 3	□ Yes □ No		
UPS - Room C135				≤ 3	□ Yes □ No		
E-Stop				≤ 3	□ Yes □ No		
Low Oxygen Alarm – R3 – C156 East wall				≤ 3	□ Yes □ No		
Reviewed By /Date:							

*Not an actual alarm point. This is a notification that is sent to the alarm printer, e-mail and pagers and does not require the halting of RENO, nor the acknowledgment of the notification on the Siemens console.

Name	Email	Page #	Cell Number	Other

Effective Date: _____

Obsolete Date: _____

Year_____ Page ____of ____

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

SOP Verification (to be re-verified monthly at minimum and when referenced SOPs are updated:																			
	YEAR: _____																		
SF-2-1 Mechanical Refrigeration Unit Storage Room version																			
SF-2-2 LN2 System and Freezer Room Operations version																			
SF-3-1 Mechanical Refrigeration Units version																			
SF-3-2 LN2 Freezers version																			
Verified By (initials and date)																			

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 and 1-10 Appendix D.
Room Temperature – C135 and MS-B046	ALARM	Contact CFS Report to SSF if not resolved Refer to SOP SF-2-1
Low Oxygen Monitor	ALARM	Report to SSF, manually close the main LN2 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*	Disconnected: >~10 minutes have passed without a notification that the BLN has been reconnected (Notification per Section 6.3 of this SOP).	Report to SSF. Confirm all equipment is within normal parameters. Restart Siemens Alarm Computer. If this is ineffective in re-establishing a connection, contact the Siemens tech on call (1-800-832-6569)
Field panel data transmission failure*	Field Panel Failure: >~10 minutes have passed without a notification that the BLN has been reconnected (Notification per Section 6.3 of this SOP).	Report to SSF. Confirm all equipment is within normal parameters. Restart Siemens Alarm Computer. If this is ineffective in re-establishing a connection, contact the Siemens tech on call (1-800-832-6569)

Reviewed by:

*Not an actual alarm point. This is a notification that is sent to the alarm printer, e-mail and pagers and does not require the halting of RENO, nor the acknowledgment of the notification on the Siemens console.

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.

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 and MS B-46	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*	No delay	No escalation. Notification of resulting field panel #2 and #3 transmission failures sent to alarm printer, e-mail and on-call pagers only. Notification of reconnection is sent when connection is re-established.
Field panel data transmission failure*	No delay	No escalation. Notification sent to alarm printer, e-mail and on-call pagers only. Notification of reconnection is sent when connection is re-established.

* Not an actual alarm point. Escalation and acknowledgement are not applicable. The alarm printer and e-mail describe the alarm. The pager notification code for a failure or disconnect is 6666666 and code 1111111 upon reconnection/return to normal

** 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:

LN2 Alarm Testing Worksheet

Unit ID_____	Physical Location:
Alarm Line ID _____	Room # _____ Location _____

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

Step #	Description	Performed By / Date	Observation / Measurement
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 SN for each unit connected through the alarm point being tested	_____	Unit SN _____ _____ _____ _____ _____ _____ _____
2	Serial numbers verified to be correctly recorded		**Completed**

Comments

_____

_____

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

LN2 Alarm Testing Worksheet Unit ID _____

Step #	Description	Performed By / Date	Observation / Measurement
3	• On the Siemens Alarm Console, right click on My Computer • From the options that appear, select "Manage" and then 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
4	Trigger alarm on unit as follows: Activate the alarm test function (instructions follow) • On the LN2 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. • After alarm test is complete the temperature will return to actual temperature of LN2 freezer and the alarm test function will automatically return to no. Record time of audible/visible freezer alarm.		Time: _____AM/PM
5	Record time of alarm notification on the Siemens Console.		Time: _____AM/PM
6	• Confirm that for alarm point _____, the Siemens system recognizes the alarm status ≤ 6 minutes of when the audible freezer alarm was activated. • Return the delay set point to "as found" value in step 1. Click "Save" before closing the window.		Completed Yes No

Comments

_____

_____

_____

_____

_____

_____

[1] Data recorded by _____ on _____.

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

LN2 Alarm Testing Worksheet Unit ID _____

Step #	Description	Performed By / Date	Observation / Measurement
7	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.) Unit SN _____	_____	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 2 - Yes No
8	Serial numbers verified to be correctly recorded		**Completed**

Comments

_____

_____

[1] Data recorded by _____ on _____.

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

LN2 Alarm Testing Worksheet Unit ID _____			
Step #	Description	Performed By / Date	Observation / Measurement
13	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, F, I, or J). • SF-2-4 Appendix E (Siemens Alarm System Change approval log).		Document has been revised/completed, signed and filed: ❑ Yes ❑ No ❑ No changes ❑ Yes ❑ No ❑ No changes ❑ Yes ❑ No ❑ No changes
All Units Demonstrate Expected Alarm Notifications: ❑ Yes ❑ No All Documentation is complete and legible. Tech Signature/Date:_____ Tech Signature/Date:_____			
Comments			

Approved by: SSF Director_____ Date _____

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

Mechanical Refrigeration Unit Alarm Testing Worksheet

Unit ID_____ Alarm Line ID _____	Physical Location: Room # _____ Location _____
❑ New Unit Alarm Qualification ❑ Repair/Re-connect	❑ Move/Re-connect ❑ Other: _____

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

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

Mechanical Refrigeration Unit Alarm Testing Worksheet Unit ID _____			
Step #	Description	Performed By / Date	Observation / Measurement
3	• From the options that appear, select "Manage" and then the "+" next to Configurations 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
4	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 freezer alarm.		Time: _____AM/PM
5	Observe for time of Alarm notification on the Siemens Console.		Time: _____AM/PM
6	• Confirm that for alarm point _____, the Siemens system recognizes the alarm status ≤ 6 minutes from when the audible freezer alarm was activated. • Return the delay set point to "as found" value in step 1. Click "Save" before closing the window.		Completed Yes No

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

Mechanical Refrigeration Unit Alarm Testing Worksheet Unit ID _____			
Step #	Description	Performed By / Date	Observation / Measurement
7	For each unit listed in Step 1 above, test the alarm connection by (1) activating the test alarm feature, (2) unplugging the unit or (3) warm towel method (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.) Unit SN _____ _____ _____ _____ _____ _____ _____		Test Method (1, 2, or 3) Alarm Successfully Activated (Yes or No) 1 2 3 - Yes No 1 2 3 - Yes No 1 2 3 - Yes No 1 2 3 - Yes No 1 2 3 - Yes No 1 2 3 - Yes No 1 2 3 - Yes No

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

Mechanical Refrigeration Unit Alarm Testing Worksheet Unit ID _____			
Step #	Description	Performed By / Date	Observation / Measurement
8	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, F, I, or J). • SF-2-4 Appendix E (Siemens Alarm System Change approval log).		Document has been revised/completed, signed and filed: ❑ Yes ❑ No ❑ No changes ❑ Yes ❑ No ❑ No changes ❑ Yes ❑ No ❑ No changes
All Units Demonstrate Expected Alarm Notifications: ❑ Yes ❑ No Tech Signature/Date:_____ Tech Signature/Date:_____			
Comments			

Approved by: SSF Director_____ Date _____

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

SIEMENS

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____)

SIEMENS

Additional Information/Comments

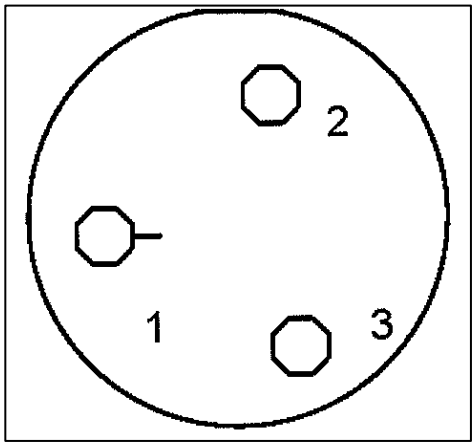
List of attached documentation
1 2 3 4 5 6

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