


STANDARD OPERATING PROCEDURE				
	Ragon Alarm Instructions		SOP#	RIO-SOP-001
	Originated by:	Amruta Samant	Date:	04 July 17
	Reviewed by:	Amruta Samant	Pages:	1 of 5
	Approved by:	Alicja Trocha		

I. PURPOSE

The purpose of this procedure is to establish and outline the response to any equipment alarms at Ragon Institute.

II. SCOPE

This procedure applies to pager holders, listed contacts for equipments as well as any personnel working with equipments that trigger alarms at Ragon Institute laboratories.

III. RESPONSIBILITIES

- A. The Ragon Institute **lab managers** are responsible for the overall implementation of this procedure and ensuring compliance.
- B. **Lab managers** are responsible for periodically reviewing the application and maintenance of this procedure, and initiating any updates to this procedure.
- C. **All employees, students, contractors and visitors** are required to follow this procedure. Non-compliance with this procedure will result in the assignment of a corrective action plan.


IV. GENERAL GUIDELINES

You have either been chosen, or have voluntarily chosen, to be on one of the Ragon's alarm contact lists. These contact lists encompass four types of alarms which you now share responsibility for. These are our CO2 manifolds, our environmental rooms (4degree walk-ins, -20 walk-ins), all -80 freezers, and all LN freezers. These are some of the most important pieces of equipment our institute has; many house invaluable samples that are years old, and chances are, you have some of your research samples and reagents stored in equipment that are on alarm as well. By being part of this contact list, you're not only ensuring that your samples and your research remain intact and in perfect condition, but that of your fellow colleagues and predecessors as well. So thank you in advance for your help in maintaining our equipment!

Part A – The Alarm

The Ragon Institute utilizes the building alarm system which is monitored by JCI. This system sends out an email alert to anyone who is listed as a contact for that specific alarm point if something triggers the piece of equipment to go into alarm. In addition to an email, this system can be programmed to send a text message to your phone and pager as well.

We are now implementing an Alarm Pager system with a weekly duty rotation assigned to it, for all non-regular hours alarms. Regular hours consist of Monday through Friday, 7am to 7pm, not including MGH holidays. All alarm notifications will still be sent to the alarm contact list 24/7, but will also be sent to a pager. The person assigned to the Alarm Pager will have no required actions during regular hours. Outside of regular hours this person will be responsible for handling **all** Ragon alarms. Additionally, there will be a secondary person assigned to a back-up pager each week. This person will

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only have responsibilities should: a) the on-call pager person has an emergency in which they cannot handle the alarm b) the on-call pager person fails to notify the back-up pager that they are handling the alarm within 15 minutes of receiving the notification or c) the on-call pager requests assistance should the alarm event be more than they can handle safely and effectively as an individual (see additional Alarm Pager SOP for specifics)

Consult your floor manager to review which points you are on the contact list for.

- a. Chances are, there will be multiple points which you will be listed on. Become familiar with these points, and what each point is.
- b. If the alarm point is located in a TC room, be sure you have access to that room – see floor manager.
- c. Know who the other persons on that alarm contact list are. Ask for a copy of the contact list from your floor manager. These people may call on you to assist them in the event of an emergency, as you very well may ask them to assist you.
- d. Be aware of where the emergency -80 freezer is on your floor, as well as the emergency LN freezer on the 7th floor.
- e. Ask your floor manager to set you up for text alerts and ask to have a test alarm triggered.

Part B – Responding

1. If you receive an alarm notification during work hours, please check on it immediately and ‘reply all’ to the alarm email to let the others know you are taking care of it. The Alarm Pager Duty person(s) is not responsible for notifications during this time. If you will be away for an extended period of time, please let your floor manager know so there is adequate coverage. Respond to the alarm appropriately (see below)
2. If after hours (7pm-7am Monday through Friday and all weekends & holidays), follow these steps:
 - a. When you receive the pager notification, first notify the Back-up Pager person that you are handling the alarm
 - b. Log into your Partners email account and email the institute to see if anyone is on premise to check on the alarm – please be specific!! State the room where the alarm is, the type of equipment that is alarming, and the alarm point number!
 - c. If there is no response within 20 minutes or you have not received a ‘return to normal’ notification, **you must come to Ragon and respond to the alarm** (note: CO2 alarm will NOT send out a ‘return to normal notification’). Walk, drive, bike, public transportation – you can even take a cab if necessary. Ask for a receipt and you can be reimbursed. If driving in, you can be reimbursed for mileage, if noted, and for parking, if necessary.
 - d. If you send the email and someone is at the institute to check on the alarm, you are still responsible for the alarm if emergency action is necessary. Remain available by email and/or phone while the person at the institute check on the alarm until the all clear is given, or the request for assistance is given
 - e. If the alarm requires assistance (massive freezer failure, environmental room failure, etc), contact others on the alarm list and the floor manager.

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- f. Once here. if the alarm is ends up being ‘false alarm’, or you/person at the institute, responded to the alarm and corrected the issue, please send an additional email reply to the alarm notification email stating that the alarm is taken care of

Specific details concerning the On-Call and Back-Up Pager duties are outlined in the Pager Duty SOP

Part C – How to Respond to Specific Alarms

1. CO2 manifold

The manifold will alarm when a bank of CO2 cylinders runs dry. At this point, the manifold will automatically switch to the other bank


- a. There will be an audible alarm. This must be silenced in person. CO2 manifold does not send out a ‘return to normal’ notification until a new bank is delivered and hooked up. If there is a CO2 alarm, do not wait for a ‘return to normal’ page
- b. Check to be sure there is one bank of CO2 cylinders that is in use. There should be a lit green light on the side of the manifold that has the full bank. The pressure should read approximately 800-1000psi
- c. If everything is in working order, send an email to your floor manager to alert them to the depleted bank and that replacement cylinders must be ordered
- d. If both banks are depleted, send an email to your entire floor to instruct all users to keep incubators shut. There should be a full bank of back-up cylinders on the other 2 floors. If possible, have someone assist you in bringing at least 1 full cylinder to your floor – please remember to close the valve on the cylinder, remove the hose connecting it to the manifold, then reconnect it to your manifold and open the valve once reconnected. **These cylinders are extremely heavy. There is a cart on the 8th floor to assist in transporting cylinders. If this is not possible, or you do not feel safe in moving the cylinder, come back as early as possible and contact ARE to assist in moving a cylinder.**

2. Environmental Rooms

- a. Look at the circular chart underneath the control panel to determine if the temperature has been out of range and for how long.
- b. If the temperature does not appear to be returning to the appropriate temperature (4 °C, -20 °C, or 37 °C), **the contents must be moved.** As noted, there are two 4degree rooms on every floor, and there is a -20 C walk-in on both the 7th and 8th floors.
 - i. If samples/reagents must be moved to another room, **please call for assistance.** Use empty cardboard and Styrofoam boxes, keeping items that were originally stored together in the same box – if possible. Please label these boxes with the floor of origin and group/researcher name if possible.
 - ii. Contact your floor manager, then building management as a first resource in handling the issue. Minus-11[(the company that handles maintenance of our environmental room - [781-335-5557]) may be contacted if the building team cannot correct the issue. They may require you to stay on-site until they can arrive.

3. -80 Freezers

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- c. If the alarm is for a new unit (those with the blue loop handles), check the display for the temperature trend. If it appears to be returning to normal range, please remain with the freezer for approximately 30-60 minutes to ensure the temperature is becoming stable.
- d. If the temperature has been in alarm range for quite some time and is either continuing further out of range, or is remaining stable, but not in optimal range – **you must transfer contents to an emergency -80**
- e. Prior to transferring, check if the emergency -80 on your floor is empty. If not, check the other 2 floors.
- f. Call others on the contact list for assistance if necessary!
- g. Use a cart for transferring entire racks. If the racks are the type that is only accessible from the side, please lay on the cart with this side facing up to prevent contents from spilling.
- h. If possible, keep contents being transferred in the same location in the emergency freezer (if you took racks from the top shelf of the failing -80, place them in the top shelf of the emergency -80, in the same left-to-right order if possible).
- i. Once all transferred, place a note on the emergency -80 stating that it is in use, with your name and date, and the lab/room/owners of the failed freezer
- j. Contact your floor manager to report the failure and begin the process of scheduling a repair
- k. Contact the owner(s) of the failed freezer so they are aware where their items are now stored

4. Liquid Nitrogen Freezers

- a. Check the status of the alarm on the LN freezer’s display. The three most common are: “Source/fill error” “High/Low Temp” & “High/Low Level”
- b. Level Alarms
 - a. If high level AND a liquid immersion tank (older, box style freezer), open the freezer extremely carefully.
 - b. Leave the lid open for 30-60 seconds in an effort to let the fog settle in an attempt to see exactly how high the level is. If not possible, insert a stick from the LN racks slowly into the freezer and remove after a few seconds. The level of frost on the stick will tell you how much LN is in the freezer
 - c. Alert your floor manager of the situation, mentioning the level
 - d. Place a note on the freezer alerting users to the high level
 - e. If LOW level – attempt to fill the freezer
 - f. Hit “Fill Start” button on the control panel.
 - g. Wait 5-10 minutes – if the level does not begin to rise and/or a “Source/Fill Error” is triggered, follow instructions below
- c. Source/Fill Alarm
 - a. If alarm reads “Source/Fill” and hitting the “Fill Start” button does not work, check the LN tanks in the closet
 - b. Empty tanks are easy to move in comparison to ones that are full – if you can move the tanks that are connected to the LN tubing relatively easily, then the tanks are low/empty and you must change the tanks!
 - c. To change tanks:
 - i. Turn off ALL valves where tubing is connected (clockwise if a circular valve or turn perpendicular to the nozzle if it is a handle). Each tank should have a tube connected to both the liquid nozzle and the vent nozzle. Turn off the liquid first, then the vent
 - ii. Remove the tubing from both nozzles. There should be a wrench inside the LN closet or LN freezer room.

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- iii. Move the empty tanks out of the closet and line up along the doors of the CO2 closet
 - iv. Move an equal number of full tanks into position
 - v. Attach the tubes to the appropriate nozzles. The smaller diameter tubes attach to the vent nozzle, whereas the larger diameter tubing connects to the liquid nozzle. There will be tags and/or stickers that designate which nozzle is which.
 - vi. Only after all tubing is attached can the valves be opened. Open all liquid valves then open all vents (turn counter-clockwise or move handle parallel with the valve)
 - vii. Liquid nitrogen should begin flowing immediately and any freezer(s) that were alarming with “source/fill” should begin filling automatically. If they do not, hit “fill start” manually and wait for the freezer to begin filling. It will take 5-10 minutes for liquid to reach the freezers. Please wait to ensure the level begins to rise on the freezer
 - viii. If the level does not rise, contact your floor manager.
- d. Temperature Alarms**
- a. If low (cold) temp, just alert your floor manager to the issue – service may be needed on the freezer
 - b. If high (warm) temp, check to see if the freezer level is low and follow the steps above. **If this does not remedy the issue, contact your floor manager immediately!!!**