



High Desert Health System POLICY AND PROCEDURE

POLICY NUMBER: 1298
VERSION: 1

SUBJECT: Medical Gas System Alarms

PURPOSE: To provide a safe environment for patients by outlining procedures to be followed by High Desert Regional Health Center staff when there is a medical gas system alarm.

POLICY: The Medical Gas System is comprised of Manifold Medical Gas Systems (Oxygen O₂, Carbon Dioxide CO₂, Nitrogen N₂ and Nitrous Oxide N₂O), the Medical Compressed Air (Medical Air) system, and the Medical Vacuum system.

The following procedures will be followed when there is an alarm for any of these systems.

Communication regarding system alarms and/or system failure must be through direct-person-to-person contact (in person or by telephone). All alarm panels will be kept free of obstructions to ensure that staff can view visual alarms.

DEFINITIONS:

Direct Person-to-Person Contact: Communication directly between two people, either in-person or by telephone. This does not include the use of voice mail, e-mail, text, or fax.

Dew Point: The temperature at which the air can no longer "hold" all of the water vapor which is mixed with it, and some of the water vapor must condense into liquid water. Dew point is used to measure the humidity within the Medical Air system.

E-Cylinder: The standard size for small portable medical gas tanks. They are 4.3" in diameter, and 25.5" high.

K-Cylinder : The standard size for the medical gas tanks used for Manifold System Medical Gasses. They are 9.3" in diameter and 50 – 52" inches high without the valve.

In. hg. Inch Mercury (0 °C): It is defined as the pressure exerted by a column of mercury of 1 inch in height at 32 °F (0 °C) at the standard acceleration of gravity. This is the unit of measurement for medical vacuum pressure.

Facilities Department Operating Hours: The Facilities Department is staffed Monday – Friday from 7:00 a.m. – 3:30 p.m., excluding holidays.

Local Medical Gas Panels: Local medical gas panels are located throughout the facility and provide audible and visual alarms when a specific medical gas system reaches a high or low limit in the zone where the local panel is located.

Master Medical Gas Panels: Master medical gas panels are located in two locations: 1) In the Central Plant Engineer’s office and 2) at the Urgent Care Clinic Nurses Station. Master Medical Gas panels provide audible and visual alarms when a specific medical gas system reaches a high or low limit in any zone of the medical gas system.

psi: Pounds per Square Inch – the unit of measurement for medical gas pressure.

PROCEDURE:

1. Manifold Medical Gas Systems

Oxygen (O₂), Carbon Dioxide (CO₂), Nitrogen (N₂) and Nitrous Oxide (N₂O) are provided through manifold gas systems that deliver these medical gasses through banks of K-cylinders, connected by manifolds. For each of these medical gasses, there are two distinct banks of cylinders. Only one bank at a time is “active”, and the other bank is held in “reserve.” The systems automatically switch from the active bank to the reserve bank when the active bank reaches a specified depletion level.

A. Locations of Medical Gas Outlets for Manifold Medical Gas Systems

1) **Oxygen (O₂)** medical gas outlets are located in the following locations:

Floor 1:

- Urgent Care Clinic: Observation Bays, Private Observation Room and Procedure Rooms 16-11 and 16-12
- Pediatric Clinic: Observation Room
- Radiology Department: X-Ray 1, X-Ray 2, CT Scan, and Fluoroscopy

Floor 2:

- Ambulatory Surgical Center (ASC), Operating Room 1 (OR1), Operating Room 2 (OR2), Operating Room 3 (OR 3), Pre-Op bays, Recovery bas
- Respiratory Therapy/Electrodiagnostics: Pulmonary Function Testing, Stress Test
- Women’s Clinic: Procedure Room 22-06
- Specialty Clinics: Procedure Room 28-08
- Oncology/Hematology: Chemotherapy Bays and Private Rooms
- Infusion Clinic; Infusion Clinic Bays

2) **Carbon Dioxide (CO₂), Nitrogen (N₂) and Nitrous Oxide** medical gas outlets are only located in the ASC in OR1, OR2 and OR3.

B. Medical Gas Alarm Panels

There are two types of medical gas alarm panels:

1) **Local Medical Gas Alarm Panels** provide audible and visual alarms when the high or low pressure of a specific medical gas exceeds a set limit in the specific zone where the local panel is located. Local Medical Gas Alarm Panels are located in:

- Urgent Care Clinic: Next to Observation Bay A
- Pediatric Clinic: Nurses Station
- ASC: PACU, Pre-Operative Holding Area (POHA)
- Electrodiagnostics/Respiratory Therapy: Office 2A10
- Specialty Clinics: Charting Area Opposite Procedure Room 22-06
- Oncology/Hematology: Oncology Nurses Station

2) **Master Medical Gas Alarm Panels** provide audible and visual alarms when the high or low pressure of a specific medical gas exceeds a set limit in any zone of the medical gas system.

Master Medical Gas Alarm Panels are located in:

- Central Plant: Engineer’s office
- Urgent Care Clinic: Nurses Station

C. Types of Alarms and Alarm Limits

The medical gas system is programmed to alarm according to specific criteria for each medical gas. The table below shows the alarm limit for each manifold system medical gas:

| Medical Gas | Line Pressure High Limit | Line Pressure Low Limit | Reserve in Use |
|----------------------|---------------------------------|--------------------------------|-----------------------|
| Oxygen (O2) | 60 PSI | 40 PSI | 100 PSI |
| Nitrous Oxide (N2O) | 60 PSI | 40 PSI | 100 PSI |
| Carbon Dioxide (CO2) | 60 PSI | 40 PSI | 100 PSI |
| Nitrogen (N2) | 195 PSI | 140 PSI | 250 PSI |

- 1) A Line Pressure High alarm will activate when the line pressure for a medical gas reaches or exceeds the High Pressure limit.
- 2) A Low Pressure alarm will activate when the line pressure for a medical gas reaches or drops below the Low Pressure limit.
- 3) The Reserve in Use alarm will activate when the active bank of cylinders for a medical gas is depleted below the specified limit and the system automatically switches to the reserve bank of cylinders.

D. Back-Up K-Cylinders

Each manifold medical gas system has two banks of K -Cylinders. At any time, one bank will be active and the other bank will be in reserve. In addition to the active and reserve banks of tanks, for each medical gas, a specific number of back-up tanks will be maintained in the medical gas storage area. The table below shows the number of K -Cylinders connected to the manifold for each medical gas and the number of back-up tanks. At any time that the back-up tanks are used to replace a depleted bank of tanks, exchange of the depleted tanks will be ordered by the Facilities Department, through the Warehouse, from the medical gas supplier.

| Medical Gas | Bank 1 | Bank 2 | Back Up Tanks |
|----------------------|----------------|----------------|----------------------|
| Oxygen (O2) | 7 K -Cylinders | 7 K -Cylinders | 14 K -Cylinders |
| Nitrous Oxide (N2O) | 3 K -Cylinders | 3 K -Cylinders | 3 K -Cylinders |
| Carbon Dioxide (CO2) | 3 K -Cylinders | 3 K -Cylinders | 3 K -Cylinders |
| Nitrogen (N2) | 4 K-Cylinders | 4 K -Cylinders | 4 K -Cylinders |

E. Alarms at Local Medical Gas Panels

- 1) Written directions will be posted at each local Medical Gas Panel instructing staff of the actions to take when there is an alarm.
- 2) **Alarms During Regular Facilities Department Operating Hours:** When an alarm activates at a local medical gas panel during Facilities Department operating hours, nursing or ancillary staff will immediately call extension 14955 and notify the Facilities Department of the alarm. The alarm should only be silenced after direct person-to-person contact is made with a Facilities staff member. After notifying the Facilities Department, the nursing or ancillary staff member will notify the clinic or department supervisor.
- 3) **Alarms Outside of Facilities Department Operating Hours:** When an alarm activates at a local medical gas panel outside of Facilities Department operating hours, nursing or ancillary staff will immediately contact the Administrator on Duty (AOD) through the facility operator or answering service, and request call back of the Facilities on-call staff member. The alarm can be silenced after requesting that the AOD be contacted. The alarm will repeat after 30 minutes if the issue is not resolved. After authorizing the call-back, the AOD will contact the requesting clinic and let the clinic know that the call back has been authorized.

F. Alarms at Master Medical Gas Panels

- 1) Alarms will activate simultaneously at both the Master Medical Gas Panels in the Central Plant Engineer’s office and the Urgent Care Nurses Station. However, the Central Plant Engineer’s office is not continuously staffed during Facilities operating hours.

- 2) Written instructions detailing actions to be taken for each alarm type will be posted at each master panel.
- 3) If a medical gas alarm in the Central Plant Engineer's Office and is observed by Facilities staff, immediate action will be taken to investigate and resolve the cause of the alarm. Facilities staff should only silence the alarm after direct person-to-person communication with the staff responsible for the Medical Gas System.
- 4) **Alarms During Regular Facilities Department Operating Hours:** During regular Facilities operating hours, Urgent Care nursing staff will immediately call extension 14955 and notify the Facilities Department of the alarm. The alarm should only be silenced after direct person-to-person contact is made with a Facilities staff member.
- 5) **Alarms Outside of Facilities Department Operating Hours:** Outside of regular Facilities Department operating hours, Urgent Care nursing staff will immediately contact the Administrator on Duty (AOD) through the facility operator or answering service, and request call back the Facilities on-call staff member. The alarm can be silenced after requesting that the AOD be contacted. The alarm will repeat after 30 minutes if the issue is not resolved.

G. Responsibilities of Facilities Staff

- 1) Refer to Facilities Department Policy and Procedures "Medical Gas System – Preventive Maintenance" and "Medical Gas System Failure".
- 2) On each regular workday, at 7:00 a.m., a Facilities staff member will be assigned to do a walk-through of the Central Plant Engineer's office to check the medical gas system status on the Master Alarm panel and to complete a visual inspection of the Medical Gas manifold system. These checks will be documented in a log book maintained in the Medical Gas Cage.
- 3) **During Facilities Department Operating Hours:** Upon notification of an alarm, a Facilities staff member will immediately assess the system and take the necessary steps to resolve the alarm.
- 4) **Outside of Facilities Department operating Hours:** Upon notification of the call-back, the Facilities staff member on-call will report to the facility, and take the necessary steps to resolve the alarm.
- 5) Possible steps to resolve the alarm may include replacing a depleted bank of K -cylinders and/or investigating system leakage if usage rate is determined to be unusually high.
- 6) At any time that any manifold medical gas system is determined to be in Reserve status, the depleted bank of K -cylinders will be immediately replaced by Facilities personnel. A call-back will be authorized for this outside of Facilities operating hours. Prior to changing out a depleted bank of

K -cylinders, Facilities personnel will contact the Urgent Care Nursing Station and advise them of the change-out and that the alarm will activate.

H. Manifold Medical Gas System Depletion or Failure

- 1) For patient safety, if the active and reserve tanks both become depleted or a manifold medical gas system fails and stops working for any reason, the Facilities Department will immediately contact all affected clinics and ancillary departments and notify them that the oxygen system is off-line, starting with the ASC and Urgent Care clinics.
- 2) Contact with these departments must be through direct person-to-person contact. This notification will be made immediately, even if the system will be off-line for a short period for tank replacement.
- 3) Outside of ASC operating hours, if a manifold medical gas system cannot be restored to working status prior to the next scheduled ASC work day, Facilities staff will post a written notice on the locker room vestibule entrance advising staff that the system is off-line and no procedures should be started.
- 4) Outside of regular operating hours for a clinic or ancillary department with oxygen outlets, if the oxygen service cannot be restored prior to the next regular work shift, Facilities staff will post a written notice at the nurse station and/or reception area, advising staff that the oxygen system is off-line and cannot be used.
- 5) At any time that a manifold medical gas system is off-line, Facilities staff will notify all affected departments once the system has been returned to working status.
- 6) Following the resolution of any significant manifold medical gas system problem, including all instances where the system is off-line, the Facilities Department will increase active monitoring of the system until it is determined to be stable.

I. Responsibilities of ASC Staff:

- 1) At the beginning of each shift, an ASC nursing staff member will be assigned to check the status of the two local medical gas panels, located in POHA and PACU to ensure that there is no alarm activity and the gauges at the medical gas shut-off valves for each Operating Room to ensure there is adequate pressure for each gas. This check will be documented in a log book to be kept at the PACU Nurses Station.
- 2) If the Oxygen or Nitrous Oxide systems are in alarm status or off-line, ASC staff will not start any procedures until notification by Facilities staff that the alarm has been resolved.

- 3) If the Carbon Dioxide system is in alarm status or off-line, ASC staff will not start any laparoscopic procedures until notification by Facilities staff that the alarm has been resolved.
- 4) If the Nitrogen system is in alarm status or off-line, the ASC staff will not start any procedures requiring nitrogen-powered equipment (orthopedic or podiatry cases) until notification by Facilities staff that the alarm has been resolved.
- 5) If the Oxygen or Nitrus Oxide system becomes depleted or stops working for any reason during a procedure, staff will utilize back-up E-cylinder tanks to complete the procedure. One Oxygen E-cylinder and one Nitrus Oxide E-cylinder are located on the anesthesia machines in each operating room. In addition, one oxygen tank is located on each adult and each pediatric crash cart. Adult and pediatric crash carts are located in the Operating room Crash Cart area and in the PACU Crash Cart area. An additional Oxygen tank is located on a portable cart in the PACU Crash Cart area.
- 6) Prior to the close of each shift, an ASC nursing staff member will be assigned to re-check the status of the two local medical gas panels, located in POHA and Recovery, to ensure that there is no alarm activity and the gauges at the medical gas shut-off valves for each Operating Room to ensure there is adequate pressure for each gas. In addition, an ASC nursing staff member will be assigned to check all medical gas flow meters at each POHA and PACU headwall and in each operating room to verify the flow meters are in a closed position and there is no audible leakage. These checks will be documented in a log book to be kept at the PACU Nurses Station.

J. Responsibilities of Clinic Nursing Staff

- 1) E-Cylinder oxygen tanks are stored in specific locations in various clinics and in the medical gas storage area. A list of E-cylinder locations is provided in Attachment 1.
- 2) If the Oxygen system is off-line, staff will utilize E-cylinder tanks until the system is restored to working status. Additional E-cylinders can be ordered from Facilities, as need.
- 3) Prior to the close of each shift, in each clinic with oxygen outlets, a Nursing staff member will be assigned to check all oxygen flow meters connected to wall outlets to ensure the flow meters are in a closed position and there is no audible leakage.

K. Responsibilities of Ancillary Department Staff

- 1) Prior to the close of each shift, in each ancillary department with oxygen outlets, a department staff member will be assigned to check all oxygen flow meters connected to wall outlets to ensure the flow meters are in a closed position and there is no audible leakage.

II. Medical Compressed Air

Medical compressed air is provided by two medical air compressors located in the Medical Gas Room in the Central Plant to specific medical air outlets located throughout the facility. The two compressors run on a LAG system. After one compressor runs for a sufficient time to pressurize the system at the specified pressure, the other compressor will cycle on the next time increased compressed air is needed.

A. Medical Air Outlets are located in the following locations:

Floor 1:

- Urgent Care Clinic: Observation Bays, Private Observation Room and Procedure Rooms 16-11 and 16-12
- Pediatric Clinic: Observation Room

Floor 2:

- ASC, OR1, OR2, OR3, POHA Bays, PACU Bays
- Respiratory Therapy/Electrodiagnostics: Pulmonary Function Testing, Stress Test
- Specialty Clinics: Procedure Room 28-08
- Women’s Clinic: Procedure Room 22-06
- Oncology/Hematology: Chemotherapy Bays and Private Rooms
- Infusion Clinic; Infusion Clinic Bays

B. Medical Air Alarm Panels

The same Medical Gas System Alarm panels that alarm for manifold medical gas systems, alarm for Medical Air.

- 1) **Local Medical Gas Alarm Panels** only provide audible and visual alarms for High and Low pressure Medical Air.
- 2) **Master Medical Gas Alarm Panels** provide the following audible and visual alarms for Medical Air.
 - Carbon Monoxide High
 - Medical Air Line Pressure High
 - Medical Air Line Pressure Low
 - Medical Air LAG Operating
 - Dew Point High

C. Types of Alarms and Alarm Limits

The Medical Air system is programmed to alarm according to specific criteria. The table below shows the alarm indication for each type of Medical Air alarm:

| Alarm Type | Limit |
|--------------------------------|--------|
| Local Alarm Panels | |
| Medical Air Pressure High | 60 psi |
| Medical Air Pressure Low | 40 psi |
| Master Alarm Panels | |
| Carbon Monoxide High | 10 ppm |
| Medical Air Line Pressure High | 60 psi |
| Medical Air Line Pressure Low | 40 psi |
| Medical Air LAG Operating | 70 psi |
| Dew Point High | +39 F |

- 1) At a Local Alarm Panel, the Medical Air Pressure High alarm will activate when the pressure for Medical Air reaches or exceeds the High Pressure limit in the local zone.
- 2) At a Local Alarm Panel, the Medical Air Pressure Low alarm will activate when the pressure for Medical Air reaches or drops below the Low Pressure limit in the local zone.
- 3) At a Master Alarm Panel only, the Carbon Monoxide alarm will activate if the Carbon Monoxide level in the Medical Air reaches or exceeds the limit.
- 4) At a Master Alarm Panel, the Medical Air Line Pressure High alarm will activate when the line pressure for the Medical Air system exceeds the high limit anywhere in the system downstream of the manifold regulator.
- 5) At a Master Alarm Panel, the Medical Air Line Pressure Low alarm will activate when the line pressure for the Medical Air system reaches or drops below the low limit anywhere in the system downstream of the manifold regulator.
- 6) At a Master Alarm Panel only, the Medical Air LAG Operating alarm will activate when one of the two compressors is operating and the pressure at the compressor (before the manifold regulator) reaches or drops below the limit.
- 7) At a Master Alarm Panel only the Dew Point High alarm will activate if the Dew Point (a humidity measurement) is + 39F.

D. Alarms at Local Medical Gas Panels

- 1) Written directions will be posted at each local Medical Gas Panel instructing staff of the actions to take when there is an alarm.

- 2) **Alarms During Regular Facilities Department Operating Hours:** When a Medical Air alarm activates at a local medical gas panel (high or low pressure alarm) during Facilities Department operating hours, nursing or ancillary staff will immediately call extension 14955 and notify the Facilities Department of the alarm. The alarm should only be silenced after direct person-to-person contact is made with a Facilities staff member. After notifying the Facilities Department, the nursing or ancillary staff member will notify the clinic or department supervisor.
- 3) **Alarms Outside of Facilities Department Operating Hours:** When a Medical Air alarm activates at a local medical gas panel outside of Facilities Department operating hours, nursing or ancillary staff will immediately contact the Administrator on Duty (AOD) through the facility operator or answering service, and request call back of the Facilities on-call staff member. The alarm can be silenced after requesting that the AOD be contacted. The alarm will repeat after 30 minutes if the issue is not resolved. After authorizing the call-back, the AOD will contact the requesting clinic and let the clinic know that the call back has been authorized.
- 4) When the Medical Air system is in alarm mode, staff will discontinue use of the system until notified by the Facilities Department that the cause of the alarm has been resolved.

E. Alarms at Master Medical Gas Panels

- 1) Alarms will activate simultaneously at **both** the Master Medical Gas Panels in the Central Plant Engineer's office and the Urgent Care Nurses Station. However, the Central Plant Engineer's office is not continuously staffed during Facilities operating hours.
- 2) Written instructions detailing actions to be taken for each alarm type will be posted at each master panel.
- 3) If a Medical Air alarm in the Central Plant Engineer's Office and is observed by Facilities staff, immediate action will be taken to investigate and resolve the cause of the alarm. Facilities staff should only silence the alarm after direct person-to-person communication with the staff responsible for the Medical Air system.
- 4) **Alarms During Regular Facilities Department Operating Hours:** During regular Facilities operating hours, Urgent Care nursing staff will immediately call extension 14955 and notify the Facilities Department of the alarm. The alarm should only be silenced after direct person-to-person contact is made with a Facilities staff member.
- 5) **Alarms Outside of Facilities Department Operating Hours:** Outside of regular Facilities Department operating hours, Urgent Care nursing staff will immediately contact the Administrator on Duty (AOD) through the facility operator or answering service, and request call back the Facilities on-call staff

member. The alarm can be silenced after requesting that the AOD be contacted. The alarm will repeat after 30 minutes if the issue is not resolved.

- 6) When the Medical Air system is in alarm mode, staff will discontinue use of the system until notified by the Facilities Department that the cause of the alarm has been resolved.
- 7) For patient safety, use of the Medical Air system will be discontinued and taken out of service immediately if it is in alarm mode for a high Carbon Monoxide level or high Dew Point.

F. Responsibilities of Facilities Staff

- 1) Refer to Facilities Department Policy and Procedures “Medical Gas System – Preventive Maintenance” and “Medical Gas System Failure”.
- 2) On each regular workday, at 7:00 a.m., a Facilities staff member will be assigned to do a walk-through of the Central Plant Engineer’s office to check the medical gas system status on the Master Alarm panel and to complete a visual inspection of the Medical Air system. These checks will be documented in a log book maintained in the Medical Air Room.
- 3) **During Facilities Department Operating Hours:** Upon notification of an alarm, a Facilities staff member will immediately assess the system and take the necessary steps to resolve the alarm.
- 4) **Outside of Facilities Department operating Hours:** Upon notification of the call-back, the Facilities staff member on-call will report to the facility, and take the necessary steps to resolve the alarm.
- 5) Possible steps to resolve the alarm may include re-setting the system and checking belts.

G. Medical Air System Out of Service

- 1) For patient safety, the Medical Air system will be taken out of service immediately if it is in alarm mode for a high Carbon Monoxide level or high Dew Point.
- 2) If any of the alarm indications cannot be resolved, or if the system needs to be shut-down for repair, the Facilities Department will immediately contact the ASC, and all affected clinics and ancillary departments and notify them that that the oxygen system is off-line.
- 3) Contact with these departments must be through direct person-to-person contact. This notification will be made immediately, even if the system will be off-line for a short period for re-set.

- 4) Outside of ASC operating hours, if the Medical Air system cannot be restored to working status prior to the next scheduled ASC work day, Facilities staff will post a written notice on the locker room vestibule entrance advising staff that the system is off-line.
- 5) Outside of regular operating hours, if the Medical Air system cannot be restored to working status, Facilities will post a written notice at nurse station and/or reception area for all clinics/services with Medical Air outlets advising staff that the Medical Air system is off-line and cannot be used.
- 6) At any time that the Medical Air system is off-line, Facilities staff will notify all affected departments once the system has been returned to working status.
- 7) Following the resolution of any significant Medical Air system problem, including all instances where the system is off-line, the Facilities Department will increase active monitoring of the system until it is determined to be stable.

H. Responsibilities of ASC Staff:

- 1) If the Medical Air system is in alarm status or off-line, the ASC will remain in operation and procedures will proceed, as usual. However, the Medical Air system will not be utilized.

I. Responsibilities of Clinic Nursing Staff

- 1) If the Medical Air system is in alarm mode or off-line, clinic and ancillary staff will cease utilizing the system until notification by Facilities that the system is back on-line.
- 2) Prior to the close of each shift, a Nursing staff member will be assigned to check all Medical Air flow meters connected to wall outlets to ensure the flow meters are in a closed position and there is no audible leakage.

III. Medical Vacuum

Medical Vacuum is provided by two medical vacuum pumps located in the Central Plant. The pumps alternate in use to maintain the necessary medical vacuum suction pressure.

A. Medical Vacuum Outlets are located in the following locations:

Floor 1:

- Urgent Care Clinic: Observation Bays, Private Observation Room and Procedure Rooms 16-11 and 16-12
- Pediatric Clinic: Observation Room
- Radiology: X-Ray 1, X-Ray 2, CT Scan, Fluoroscopy

Floor 2

- ASC, OR1, OR2, OR3, POHA Bays, Recovery Bays
- Respiratory Therapy/Electrodiagnostics: Pulmonary Function Testing, Stress Test
- Specialty Clinics: Procedure Room 28-08
- Women’s Clinic: Procedure Room 22-06
- Oncology/Hematology: Chemotherapy Bays and Private Rooms
- Infusion Clinic; Infusion Clinic Bays

B. Medical Vacuum Alarm Panels

The same Medical Gas Alarm panels that alarm for manifold medical gas systems and Medical Air, alarm for Medical Vacuum.

- 1) **Local Medical Gas Alarm Panels** only provide audible and visual alarms for Low Medical Vacuum.
- 2) **Master Medical Gas Alarm Panels only provide** audible and visual alarms for Low Medical Vacuum.

C. Types of Alarms and Alarm Limits

The Medical Vacuum system is programmed to alarm according to specific criteria. The table below shows the alarm indication for each type of Medical Air alarm:

| Alarm Type | Limit |
|---------------------------------|------------|
| Local Alarm Panel – Vacuum Low | 12 in. hg. |
| Master Alarm Panel – Vacuum Low | 13 in. hg |

Note: in. hg. is Inch Mercury (0 °C): It is defined as the pressure exerted by a column of mercury of 1 inch in height at 32 °F (0 °C) at the standard acceleration of gravity.

- 1) A Local Alarm Panel Medical Vacuum Low alarm will activate when the line pressure for the medical vacuum reaches or drops below the low pressure limit in a local zone.
- 2) A Master Alarm Panel Medical Vacuum Low alarm will activate when the line pressure for the medical vacuum reaches or drops below the Low Pressure limit anywhere in the medical vacuum system.

D. Alarms at Local Medical Gas Panels

- 1) Written directions will be posted at each local Medical Gas Panel instructing staff of the actions to take when there is an alarm.
- 2) **Alarms During Regular Facilities Department Operating Hours:** When a Medical Vacuum alarm activates at a local medical gas panel **during**

Facilities Department operating hours, nursing or ancillary staff will immediately call extension 14955 and notify the Facilities Department of the alarm. The alarm should only be silenced after direct person-to-person contact is made with a Facilities staff member. After notifying the Facilities Department, the nursing or ancillary staff member will notify the clinic or department supervisor.

- 3) **Alarms Outside of Facilities Department Operating Hours:** When a Medical Vacuum alarm activates at a local medical gas panel outside of Facilities Department operating hours, nursing or ancillary staff will immediately contact the Administrator on Duty (AOD) through the facility operator or answering service, and request call back of the Facilities on-call staff member. The alarm can be silenced after requesting that the AOD be contacted. The alarm will repeat after 30 minutes if the issue is not resolved. After authorizing the call-back, the AOD will contact the requesting clinic and let the clinic know that the call back has been authorized.
- 4) When the Medical Vacuum system is in alarm mode, staff will discontinue use of the system until notified by the Facilities Department that the cause of the alarm has been resolved.

E. Alarms at Master Medical Gas Panels

- 1) Alarms will activate simultaneously at **both** the Master Medical Gas Panels in the Central Plant Engineer's office and the Urgent Care Nurses Station. However, the Central Plant Engineer's office is not continuously staffed during Facilities operating hours.
- 2) Written instructions detailing actions to be taken for each alarm type will be posted at each master panel.
- 3) If a Medical Vacuum alarm in the Central Plant Engineer's Office and is observed by Facilities staff, immediate action will be taken to investigate and resolve the cause of the alarm. Facilities staff should only silence the alarm after direct person-to-person communication with the staff responsible for the Medical Air system.
- 4) **Alarms During Regular Facilities Department Operating Hours:** During regular Facilities operating hours, Urgent Care nursing staff will immediately call extension 14955 and notify the Facilities Department of the alarm. The alarm should only be silenced after direct person-to-person contact is made with a Facilities staff member.
- 5) **Alarms Outside of Facilities Department Operating Hours:** Outside of regular Facilities Department operating hours, Urgent Care nursing staff will immediately contact the Administrator on Duty (AOD) through the facility operator or answering service, and request call back the Facilities on-call staff member. The alarm can be silenced after requesting that the AOD be contacted. The alarm will repeat after 30 minutes if the issue is not resolved.

- 6) When the Medical Air system is in alarm mode, staff will discontinue use of the system until notified by the Facilities Department that the cause of the alarm has been resolved.

F. Responsibilities of Facilities Staff

- 1) Refer to Facilities Department Policy and Procedures “Medical Gas System – Preventive Maintenance” and “Medical Gas System Failure”.
- 2) On each regular workday, at 7:00 a.m., a Facilities staff member will be assigned to do a walk-through of the Central Plant Engineer’s office to check the medical gas system status on the Master Alarm panel and to complete a visual inspection of the Medical Vacuum system. These checks will be documented in a log book maintained on the Medical Vacuum unit, in the Boiler Room.
- 3) **During Facilities Department Operating Hours:** Upon notification of an alarm, a Facilities staff member will immediately assess the system and take the necessary steps to resolve the alarm.
- 4) **Outside of Facilities Department operating Hours:** Upon notification of the call-back, the Facilities staff member on-call will report to the facility, and take the necessary steps to resolve the alarm.
- 5) Possible steps to resolve the alarm may include re-setting the system and checking belts.

G. Medical Vacuum System Out of Service

- 1) If an alarm indication cannot be resolved, or if the system needs to be shut-down for repair, the Facilities Department will immediately contact the ASC, and all affected clinics and ancillary departments and notify them that the Medical Vacuum system is off-line.
- 2) Contact with these departments must be through direct person-to-person contact. This notification will be made immediately, even if the system will be off-line for a short period for re-set.
- 3) Outside of ASC operating hours, if the Medical Vacuum system cannot be restored to working status prior to the next scheduled ASC work day, Facilities staff will post a written notice on the locker room vestibule entrance advising staff that the system is off-line.
- 4) Outside of regular operating hours, if the Medical Vacuum system cannot be restored to working status, Facilities will post a written notice at nurse station and/or reception area for all clinics/services with Medical Vacuum outlets advising staff that the Medical Vacuum system is off-line and cannot be used.

- 5) At any time that the Medical Vacuum system is off-line, Facilities staff will notify all affected departments once the system has been returned to working status.
- 6) Following the resolution of any significant Medical Vacuum system problem, including all instances where the system is off-line, the Facilities Department will increase active monitoring of the system until it is determined to be stable.

H. Responsibilities of ASC Staff:

- 1) If the Medical Vacuum system is in alarm status or off-line, the ASC will not start any procedures until notification by Facilities that the system has been returned to working status.
- 2) If the Medical Vacuum system stops working for any reason during a procedure, staff will utilize the back-up portable medical vacuum system located in the ASC equipment storage room.

I. Responsibilities of Clinic Nursing Staff

- 1) If the Medical Vacuum system is in alarm mode or off-line, clinic and ancillary staff will cease utilizing the system until notification by Facilities that the system is back on-line.
- 2) If medical vacuum is needed for an emergent or urgent situation, the suction unit on the closes crash cart will be utilized.
- 3) Crash carts are located on Floor 1 in Urgent care, Pediatric Clinic and Radiology – CT. Crash carts are located on Floor 2 in Electrodiagnostics/Respiratory Therapy and Oncology/Hematology.

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