

2018 ANNUAL REPORT

Medical Gas and Vacuum Systems Inspection/Testing

Evergreen Medical Services, Inc. in accordance with applicable NFPA & CMS codes and standards have evaluated the medical piping systems indicated in this report. These systems have been found to be within guidelines except as noted within this report. Information recorded on this report represent findings on the indicated evaluation date(s) only. Any action taken in response to recommendations included in this report should be recorded on the appropriate pages. This report should not be copied unless in entirety.

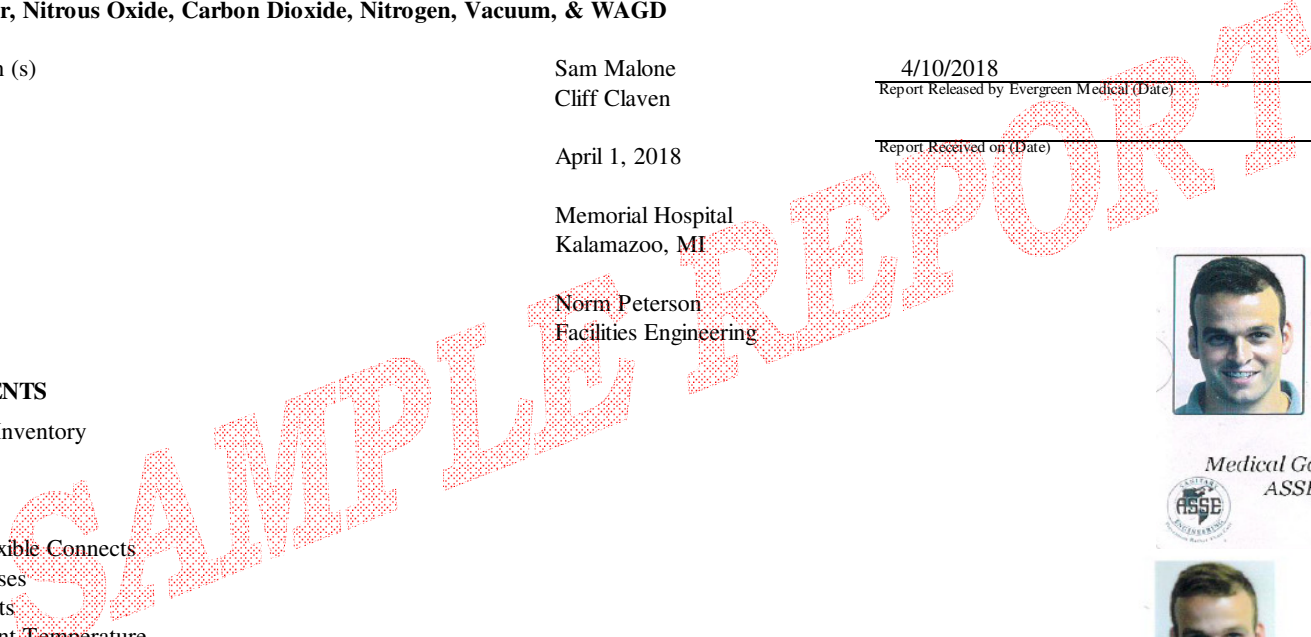
The following piped medical gas systems tested and inspected were as follows:


Oxygen, Medical Air, Nitrous Oxide, Carbon Dioxide, Nitrogen, Vacuum, & WAGD


Evergreen Technician (s)	Sam Malone Cliff Claven	4/10/2018 <small>Report Released by Evergreen Medical (Date)</small>
Inspection Date(s):	April 1, 2018	<small>Report Received on (Date)</small>
Medical Facility:	Memorial Hospital Kalamazoo, MI	
Contact:	Norm Peterson Facilities Engineering	

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Steve Bradshaw
Medical Gas and Environmental Consultant
ASSE 6030 Medical Gas Verifier



Stephen R. Bradshaw
Cert # 00035133

ASSE 6010 Installer N.F.P.A. 99-2015	Expires 04/14/2020
ASSE 6020 Inspector N.F.P.A. 99-2015	05/19/2020
ASSE 6050 Instructor N.F.P.A. 99-2015	05/19/2020
ASSE 6030 Verifier N.F.P.A. 99-2015	04/03/2020
ASME IX Brazer	02/24/2018
ASSE 6040 Maintenance N.F.P.A. 99-2015	06/06/2020

COMPONENT INVENTORY

Medical Gas and Vacuum Systems Inspection/Testing

MANUFACTURER	40 MASTER ALARMS				206 AREA ALARMS				309 ZONE VALVES					2134 PATIENT OUTLETS/INLETS						
	Beacon				Beacon	Allied	Amico	Amico	Beacon	Allied	Oxequip	Amico	Tritech	Beacon	Beacon	Beacon	Allied	Allied	Allied	Amico
MODEL	Infinity				MEGA	Impact	A2A	A3A	Ball w/Gauge	Ball w/Gauge	Ball w/Gauge	Ball w/Gauge	Ball w/Gauge	Dia III	B-Dia	B-DISS	400	460	500	O-QD
DESCRIPTION	Touch Screen				Digital Module	Ivory Cover - Digital LEDs	Gray Cover with Digital Pressure	LCD Display	Ball valve with gauge port	Ball valve with gauge port	Ball Valve with out. gauge port	Ball valve with gauge port	Ball valve with gauge port	Plastic Poppet with "Y"	Diamond Latch	DISS Latch	Upper Center Pull Down Release ID Tab - 1976	400 but DISS with ID Tab	Chem Key w/ push button release	Diamond (Ohmeda) Quick Connect
Oxygen	12				10	4	10	2	10	2	2	13	3	150	50	12	23	45	27	120
Medical Air	12				10	4	10	2	10	2	2	13	3	120	0	0	20	45	20	60
Nitrous Oxide	6				0	0	2	0	0	0	0	0	0	0	50	0	0	0	0	30
Nitrogen	6				0	0	2	0	0	0	0	0	0			0		0		30
Carbon Dioxide	6				0	0	2	0	0	0		0				12				30
Vacuum	4				10	4	10	2	10	2	2	13	3	200	50	0	33	45	28	300
WAGD	4				0	0	2	0	0	0		0				12				20
Instrument Air	10				0	0	2	0	0	0		0				0				

Due to equipment companies' mergers & acquisitions many manufacturers have
 Allied = Chemetron & NCG
 Squire = SquireCogswell & Ohio
 Beacon = Air Products, Puritan Bennett, Ohio, Ohmeda, Medaes, Hill-Rom,
 Trittech = Powerex & Trittech

MASTER ALARMS

Medical Gas and Vacuum Systems Inspection/Testing

#	Location	System	Manufacturer	Model	Signal		Switch or Sensor							Panel				Label	Recommendation or Comment						
					Condition Monitored	Local Alarm or Signal Master Alarm Panel	Switch or Source Location	Set Point	Improper Location	Improper Set Point	No Switch In Place	Not Dedicated Wiring	Wiring Not Supervised or Protected	Visual Function Failed	Gauge Pressure (If applicable)	Audible Failed	No Responsive Surveillance			Power Supply Failure	No Signal In Place	No System	No Source Location	Pass	
1	Switchboard	O ₂	Beacon	Infinity	Liquid Level Low	✓	✓	O ₂ Bulk Enclosure	30" H ₂ O														✓		
2	Switchboard	O ₂	Beacon	Infinity	Reserve in Use	✓	✓	O ₂ Bulk Enclosure	90 psi															✓	
3	Switchboard	O ₂	Beacon	Infinity	Reserve Liquid Low	✓	✓	O ₂ Bulk Enclosure	25" H ₂ O															✓	
4	Switchboard	O ₂	Beacon	Infinity	Reserve Pressure Low	✓	✓	O ₂ Bulk Enclosure	90 psi															✓	
5	Switchboard	O ₂	Beacon	Infinity	High Line Pressure	✓		Inside Hospital	65 psi															✓	
6	Switchboard	O ₂	Beacon	Infinity	Low Line Pressure	✓		Inside Hospital	44 psi															✓	
7	Switchboard	Air	Beacon	Infinity	High Line Pressure	✓		Mech Room	62 psi															✓	
8	Switchboard	Air	Beacon	Infinity	Low Line Pressure	✓		Mech Room	42 psi															✓	
9	Switchboard	Air	Beacon	Infinity	High Dew Point Temp	✓	✓	Mech Room	35 °F															✓	
10	Switchboard	Air	Beacon	Infinity	High CO Level	✓	✓	Mech Room	10 ppm															✓	
11	Switchboard	Air	Beacon	Infinity	Lag Compressor Running	✓	✓	Mech Room	75 psi															✓	
12	Switchboard	Air	Beacon	Infinity	High Temperature	✓	✓	Mech Room	280 °F															✓	
13	Switchboard	N ₂ O	Beacon	Infinity	Secondary in Use	✓	✓	Manifold Room	100 psi															✓	

AREA ALARMS

Medical Gas and Vacuum Systems Inspection/Testing

#	Location	System	Rooms or Area Served	Manufacturer	Model	Gauge		Switch or Sensor				Panel				Label		Pass	Recommendation or Comment
						Pressure (psi or "Hg) "X" = No Gauge	Inaccurate	High Pressure	Low Pressure	Incorrect Setting (+/- 20% of normal psi or 12 Check	No Gas Specific Demand except anesthetizing	Visual Function Failed Improper Location (patient side of zone valve	Audible Failed	Silence Failed	No Surveillance	Power Supply Failure	Missing System		
1	OR Control Desk	O ₂	O ₂	Amico	LCD													✓	
2	OR Control Desk	O ₂	Air	Amico	LCD													✓	
3	OR Control Desk	O ₂	N ₂ O	Amico	LCD													✓	
4	OR Control Desk	O ₂	CO ₂	Amico	LCD													✓	
5	OR Control Desk	O ₂	N ₂	Amico	LCD													✓	
6	OR Control Desk	O ₂	Vac	Amico	LCD													✓	
7	OR Control Desk	O ₂	WAGD	Amico	LCD													✓	
8	OR Control Desk	O ₂	InstAir	Amico	LCD													✓	
9	PACU Nurse's Station	O ₂	PACU 1-24	Beacon	MEGA													✓	
10	PACU Nurse's Station	Air	PACU 1-24	Beacon	MEGA													✓	
11	PACU Nurse's Station	Vac	PACU 1-24	Beacon	MEGA													✓	
12	PACU Nurse's Station	O ₂	Pre-Op 1-8	Amico	A2A													✓	
13	PACU Nurse's Station	Air	Pre-Op 1-8	Amico	A2A													✓	
14	PACU Nurse's Station	Vac	Pre-Op 1-8	Amico	A2A													✓	
15	ICU Nurse's Station	O ₂	ICU 1-10	Allied	Digital I													✓	
16	ICU Nurse's Station	Air	ICU 1-10	Allied	Digital II													✓	
17	ICU Nurse's Station	Vac	ICU 1-10	Allied	Impact													✓	
18	ER Nurse's Satation	O ₂	ER Trauma 1	Oxequip	MedStar													✓	
19	ER Nurse's Satation	Air	ER Trauma 1	Oxequip	MedStar													✓	
20	ER Nurse's Satation	Vac	ER Trauma 1	Oxequip	MedStar													✓	

ZONE VALVES

Medical Gas and Vacuum Systems Inspection/Testing

#	Location (O/S = Outside & Opp = Opposite)	System	Rooms or Area Served	Manufacturer	Type		Gauge			Labeling			Leaks		General					Recommendation or Comment					
					Gate or Globe	Ball	Pressure (psi / inHg)	No Gauge	Source Side of Valve	Inaccurate	No/Inaccurate System	No/Inaccurate Rooms/Area	Missing "Do not close..."	Missing Non-Standard (psi)	External Valve Leak	Gas Leakage Past Valve	Gauge Connection	Not Visible or Accessible	Broken Frangible Window		No Intervening Wall/Door	1 st Valve in Series	2 nd Valve in Series	No Valve In Place	Pass
1	O/S 801	O ₂	801-830	Beacon	✓		54																✓		
2	O/S 801	Air	801-830	Beacon	✓		52																	✓	
3	O/S 801	Vac	801-830	Beacon	✓		21																	✓	
4	O/S 701	O ₂	701-730	Allied	✓		54																	✓	
5	O/S 701	Air	701-730	Allied	✓		52																	✓	
6	O/S 701	Vac	701-730	Allied	✓		21																	✓	
7	O/S 601	O ₂	601-630	Oxequip	✓		54																	✓	
8	O/S 601	Air	601-630	Oxequip	✓		52																	✓	
9	O/S 601	Vac	601-630	Oxequip	✓		21																	✓	
10	O/S ICU 1	O ₂	ICU 1-10	Tritech	✓		54																	✓	
11	O/S ICU 1	Air	ICU 1-10	Tritech	✓		52																	✓	
12	O/S ICU 1	Vac	ICU 1-10	Tritech	✓		21																	✓	
13	O/S ED Exam 10	O ₂	ED Exam 1-15	Amico	✓		54																	✓	
14	O/S ED Exam 10	Air	ED Exam 1-15	Amico	✓		52																	✓	
15	O/S ED Exam 10	Vac	ED Exam 1-15	Amico	✓		21																	✓	
16	O/S Nursery 1	O ₂	Nursery 1-10	Amico	✓		54																	✓	
17	O/S Nursery 1	Air	Nursery 1-10	Amico	✓		52																	✓	
18	O/S Nursery 1	Vac	Nursery 1-10	Amico	✓		21																	✓	
19	O/S NICU	O ₂	NICU 1-20	Amico	✓		54																	✓	
20	O/S NICU	Air	NICU 1-20	Amico	✓		52																	✓	

OUTLETS, INLETS & FLEX CONNECTS

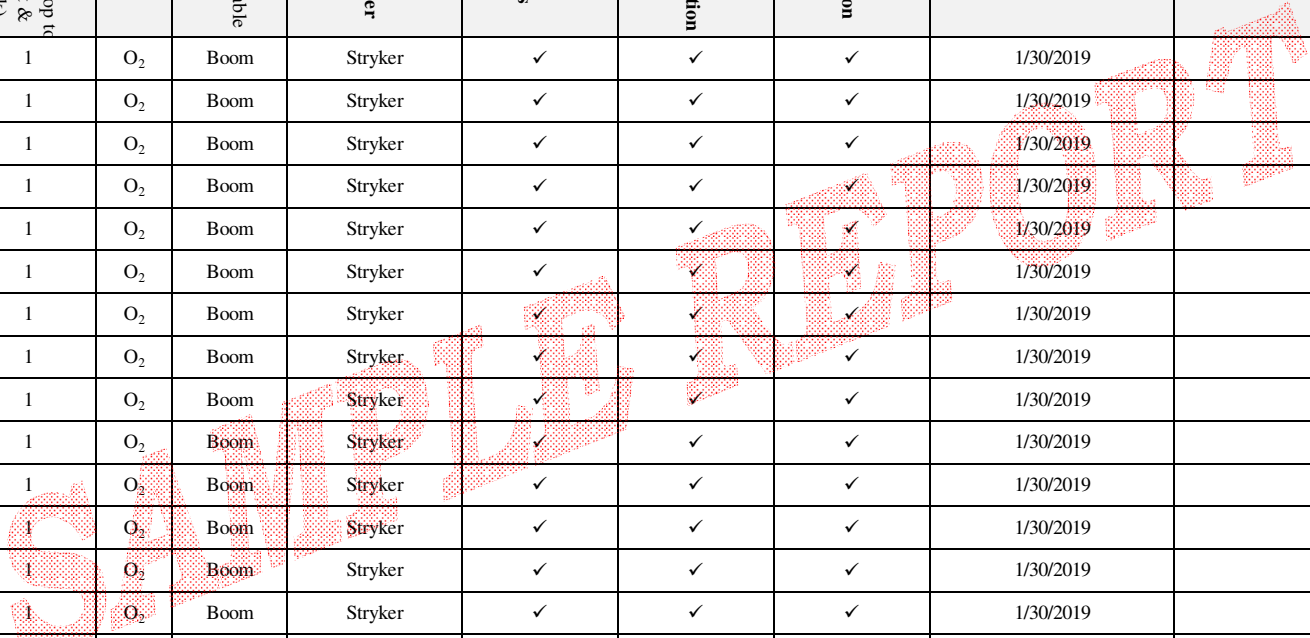
Medical Gas and Vacuum Systems Inspection/Testing

#	Area or Zone	Room or Bed # (Outlets Listed Top to Bottom & Left to Right)	System	Manufacturer	Model	Position	Flow	Pressure	O ₂ % - No Cross Connections	General Condition				Leaks	Labeling	Pass	Recommendation or Comment <i>*Note: All listed tests/inspections are included that are possible without the interruption of patient care</i>
										Sufficient Terminals/Bed	Adapter Connect & Releases	Faceplate & Screws	Flexible Hose Drop Connect (audible leak, flow, & function)	Boom or Retractable Column Hose Inspection	Gas Specific Connection		
1	ICU	1	O ₂	Beacon	Dia III	Console	✓	✓	✓	99						✓	
2	ICU	1	Air	Beacon	Dia III	Console	✓	✓	✓	21						✓	
3	ICU	1	Vac	Beacon	Dia III	Console	✓	✓	✓							✓	
4	ICU	1	Vac	Beacon	Dia III	Console	✓	✓	✓							✓	
5	ICU	1	O ₂	Beacon	Dia III	Console	✓	✓	✓	99						✓	
6	ICU	1	Vac	Beacon	Dia III	Console	✓	✓	✓							✓	
7	OR	3	O ₂	Beacon	B-Dia	Boom	✓	✓	✓	99						✓	Boom hose inspection - next section
8	OR	3	CO ₂	Beacon	B-Dia	Boom	✓	✓	✓	0						✓	Boom hose inspection - next section
9	OR	3	N ₂ O	Beacon	B-Dia	Boom	✓	✓	✓	0						✓	Boom hose inspection - next section
10	OR	3	WAGD	Beacon	B-Dia	Boom	✓	✓	✓							✓	Boom hose inspection - next section
11	OR	3	Vac	Beacon	B-Dia	Boom	✓	✓	✓							✓	Boom hose inspection - next section
12	OR	3	N ₂	Amico	Control Panel	Recessed	✓	✓	✓	0						✓	
13	OR	3	O ₂	Amico	O-QD	Fixed Column	✓	✓	✓	99						✓	
14	OR	3	Air	Amico	O-QD	Fixed Column	✓	✓	✓	21						✓	
15	OR	3	Vac	Amico	O-QD	Fixed Column	✓	✓	✓							✓	
16	PACU	21	O ₂	Allied	400	Recessed	✓	✓	✓	99						✓	
17	PACU	21	O ₂	Allied	400	Recessed	✓	✓	✓	99						✓	
18	PACU	21	Air	Allied	400	Recessed	✓	✓	✓	21						✓	
19	PACU	21	Vac	Allied	400	Recessed	✓	✓	✓							✓	
20	PACU	21	Vac	Allied	400	Recessed	✓	✓	✓							✓	

BOOM AND COLUMN HOSES

Medical Gas and Vacuum Systems Inspection/Testing

#	Area or Zone	Room# (Outlets Listed Top to Bottom & Left to Right & Front of Room to Back)	System	Position	Assembly Manufacturer	Joint/DISS Leak Detection & Safe Working Condition			Test/Inspection Date	Recommendation(s) or Comments
				Boom or Retractable Column		Ceiling Connections	Outlet Connection	Hose Condition		
1	OR	1	O ₂	Boom	Stryker	✓	✓	✓	1/30/2019	
2	OR	1	O ₂	Boom	Stryker	✓	✓	✓	1/30/2019	
3	OR	1	O ₂	Boom	Stryker	✓	✓	✓	1/30/2019	
4	OR	1	O ₂	Boom	Stryker	✓	✓	✓	1/30/2019	
5	OR	1	O ₂	Boom	Stryker	✓	✓	✓	1/30/2019	
6	OR	1	O ₂	Boom	Stryker	✓	✓	✓	1/30/2019	
7	OR	1	O ₂	Boom	Stryker	✓	✓	✓	1/30/2019	
8	OR	1	O ₂	Boom	Stryker	✓	✓	✓	1/30/2019	
9	OR	1	O ₂	Boom	Stryker	✓	✓	✓	1/30/2019	
10	OR	1	O ₂	Boom	Stryker	✓	✓	✓	1/30/2019	
11	OR	1	O ₂	Boom	Stryker	✓	✓	✓	1/30/2019	
12	OR	1	O ₂	Boom	Stryker	✓	✓	✓	1/30/2019	
13	OR	1	O ₂	Boom	Stryker	✓	✓	✓	1/30/2019	
14	OR	1	O ₂	Boom	Stryker	✓	✓	✓	1/30/2019	
15	OR	2	O ₂	Boom	Stryker	✓	✓	✓	1/30/2019	
16	OR	2	O ₂	Boom	Stryker	✓	✓	✓	1/30/2019	
17	OR	2	O ₂	Boom	Stryker	✓	✓	✓	1/30/2019	
18	OR	2	O ₂	Boom	Stryker	✓	✓	✓	1/30/2019	
19	OR	2	O ₂	Boom	Stryker	✓	✓	✓	1/30/2019	
20	OR	2	O ₂	Boom	Stryker	✓	✓	✓	1/30/2019	



GASEOUS CONTAMINANTS

Medical Gas and Vacuum Systems Inspection/Testing

Breathing Gas System	Source Location (If Multiple Source Supplies)	Sample Location	Gaseous Contaminants														Pass	Recommendation or Comment	Correction Made Verified & Tested By / Date	
			Carbon Dioxide	Carbon Monoxide	Acetylene (Cross Sensitivity)	Petrol (Cross Sensitivity)	Benzene (Cross Sensitivity)	Halogenated Hydrocarbon (e.g. Tri-Chloroethylene) (Cross Sensitivity)	Oil	Other Organic Compound (Cross Sensitivity)	Nitrogen Dioxide	Nitric Oxide	Chlorine (Cross Sensitivity)	Ozone (Cross Sensitivity)	Sulphur Dioxide	Hydrogen Sulphide				Odor
Oxygen	Bulk Supply		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	✓		
Medical Air	LL Mech Room		350	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	✓		
	Penthouse Mech Rm 910		250	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	✓		
Nitrous Oxide	Manifold Room		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	✓		

National Fire Protection Association (NFPA) sets standards for new installations of piped medical gas systems
 Compressed Gas Association (CGA) sets standards for maximum allowable levels in compressed gas systems. The FDA standards require that medical gases must maintain quality though delivery and over time. The CGA standards are adopted by United States
 Occupational Safety and Health Administration (OSHA) sets guidelines for allowable levels of airborne chemicals breathed by employees. (safe levels of these chemicals for employees may not necessarily be safe for patients - particularly those at risk)

MEDICAL AIR DEWPOINT

Medical Gas and Vacuum Systems Inspection/Testing

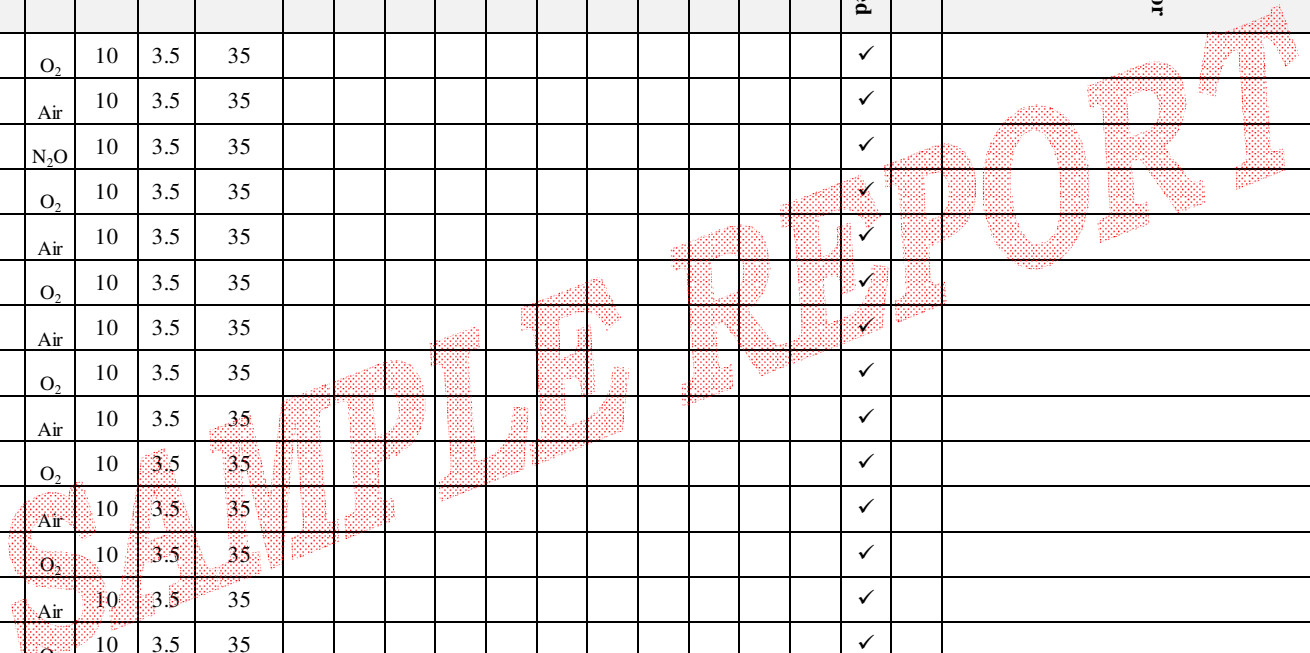
#	Location	Dew Point Temperature (Max =32°F)		Water Present (Yes/No)	Recommendation or Comment	Correction Made Verified & Tested By / Date
		(°F)	(°C)			
1	OR 1	-23.1	-30.6	No		
2	PACU 20	-23.0	-30.6	No		
3	811	-23.0	-30.6	No		
4	730	-23.1	-30.6	No		
5	628	-23.1	-30.6	No		
6	502	-22.9	-30.5	No		
7	411	-23.0	-30.6	No		
8	L&D 2	-23.1	-30.6	No		
9	NICU 6	-21.1	-29.5	No		
10	Nursery 3	-22.9	-30.5	No		
11	Endoscopy 3	-23.1	-30.6	No		
12	CT Scan	-22.9	-30.5	No		
13	ED 5	-22.9	-30.5	No		

SAMPLE REPORT

SOLID PARTICULATE CONTAMINANTS

Medical Gas and Vacuum Systems Inspection/Testing

#	Location	System	Time	Flow	Volume	Color					Size					Amount	Saturated	Recommendation or Comment	Correction Made
			Minutes	CFM	Cubic Ft	Black	Brown	Blue/Green	White	Red	Shavings	Coarse	Fine	Heavy	Medium				
1	OR 10	O ₂	10	3.5	35												✓		
2	OR 10	Air	10	3.5	35												✓		
3	OR 10	N ₂ O	10	3.5	35												✓		
4	811	O ₂	10	3.5	35												✓		
5	811	Air	10	3.5	35												✓		
6	730	O ₂	10	3.5	35												✓		
7	730	Air	10	3.5	35												✓		
8	629	O ₂	10	3.5	35												✓		
9	629	Air	10	3.5	35												✓		
10	519	O ₂	10	3.5	35												✓		
11	519	Air	10	3.5	35												✓		
12	428	O ₂	10	3.5	35												✓		
13	428	Air	10	3.5	35												✓		
14	L&D 12	O ₂	10	3.5	35												✓		
15	L&D 12	Air	10	3.5	35												✓		
16	NICU 20	O ₂	10	3.5	35												✓		
17	NICU 20	Air	10	3.5	35												✓		
18	ER Trauma 3	O ₂	10	3.5	35												✓		
19	ER Trauma 3	Air	10	3.5	35												✓		
20	X-Ray 4	O ₂	10	3.5	35												✓		

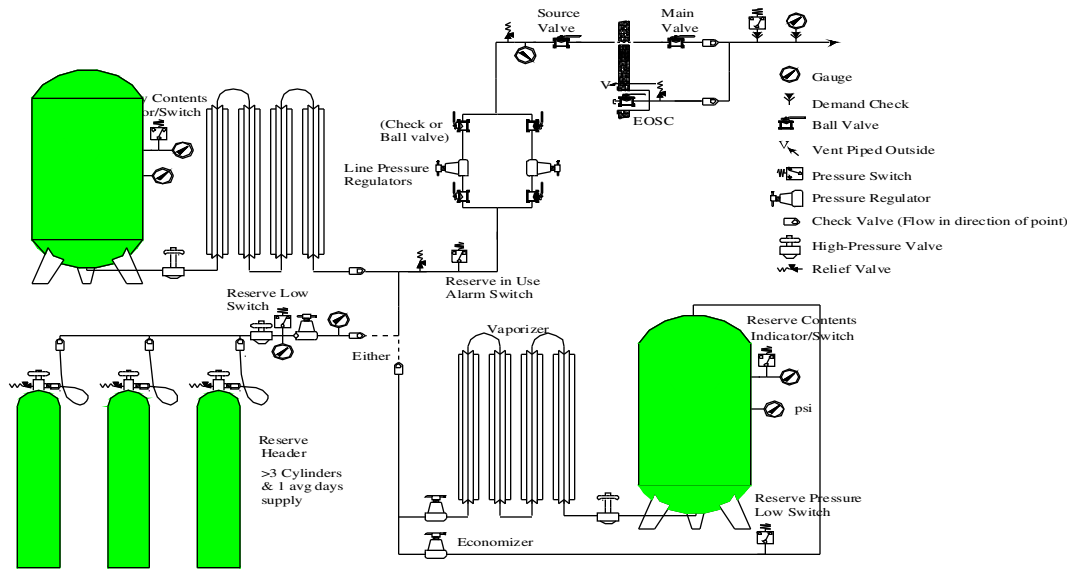


OXYGEN BULK SUPPLY SYSTEM

Medical Gas and Vacuum Systems Inspection/Testing

SCHEMATIC PER CURRENT NFPA 99

HOSPITAL'S GAS SUPPLY SOURCE



SYSTEM INFORMATION

Location	SW Parking Lot
Facility area(s) served	Entire Facility
Bulk Supplier/Equipment Owner	BOC
National Board Number (Primary)	RV210984
National Board Number (Reserve)	WE4208953
Primary Liquid Level	82 °H ₂ O
Primary Pressure	150 psi
Intermediate Regulator Pressure	N/A psi
Reserve Liquid Level	56 °H ₂ O
Reserve Pressure	182 psi
Reserve Regulator Pressure	80 psi
Final Line Pressure (1)	54 psi
Final Line Pressure (2)	54 psi
Source Valve Pressure	54 psi
Main Valve Pressure	54 psi

INSPECTION CHECK LIST

System complies with above schematic per NFPA 99	Pass
Enclosure non-combustible w/ proper ventilation & 2 Lockable Entries/Exists	Pass
Containers permanently anchored & cylinders adequately secured	Pass
Noncombustible pad w/3' maintenance clearance, accessible for delivery & not adequately sized for vehicles	Pass
Top & bottom fill, hose purge, & vent valves present	Pass
Proper fill circuit (inlet, strainer, check valve, purge valve, supports)	Pass
Gas specific connects, header valves & pigtails w/checks @ header	Pass
2 reliefs & 2 rupture disks w/ 3 direction valves each container	Pass
Piped w/brazed copper, brass, or stainless & no flex connects/fittings wear & Reserve automatically feeds if primary cannot feed w/ reserve & primary	Pass
Reserve economizer which feeds upstream final regulators	Pass
Drainage prevented towards (buildings, drains, etc.) & from hazards	Pass
Labeling: pipeline, source/main valves & "Oxygen-No Smoking, No Open Flare"	Pass
Vaporizer adequately sized & isolation valves for service w/o supply interruption	Pass
Emergency Supply (3' clearance) or (IBER) w/2 checks, secured, & labeled	Pass
	Pass

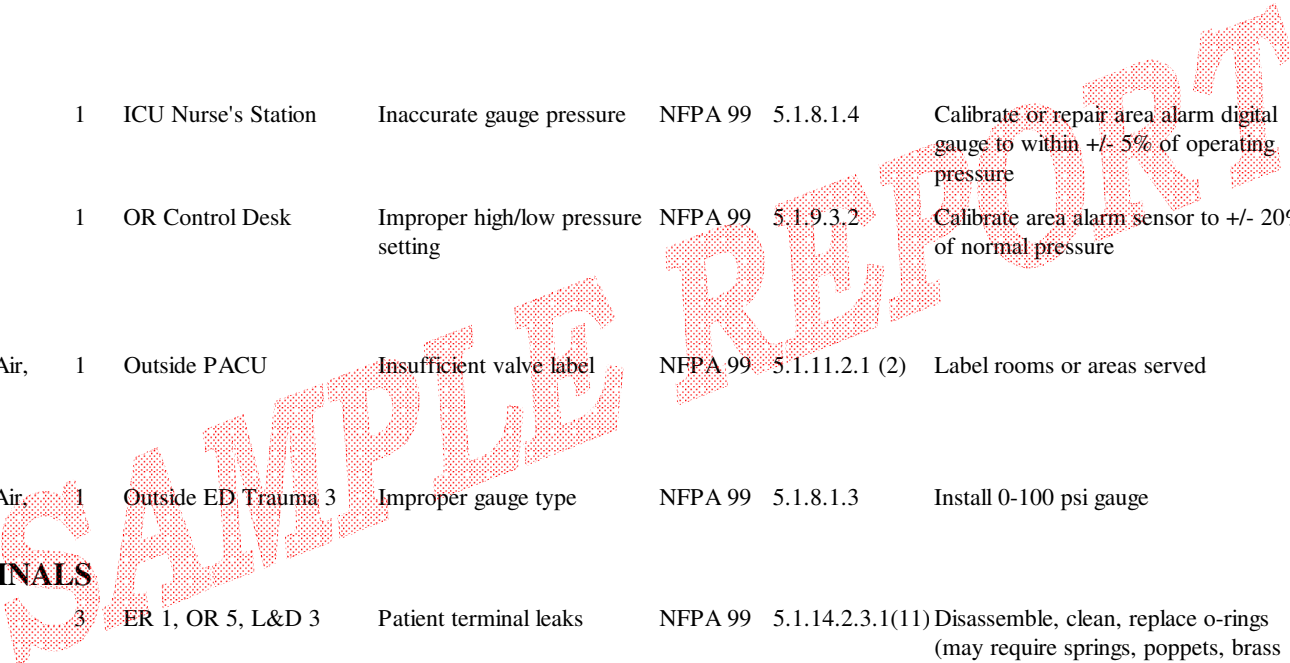
Pass/Fail

1' - all structures (Type I & II), * 50' - wood framed Type III, IV, or V building types, * 50' - Public assembly or nearest non-ambulatory patient, * 5' - Property lines & overhead electrical wiring, 10' building openings, * 10' - public sidewalks & parked vehicles, * 15' - Hazardous piping materials & below ground flammable liquid tanks, * 25' - 0-1000 gal flammable liquids/liqefied gas, below ground flammable liquid fill or vent, 0-25,000 scf flammable gases, or slow burning solids, * 50' - >1000 gal flammable liquids/liqefied gas, >25,000 scf flammable gases, or rapidly burning solids, 3' - combustible surfaces (asphalt & expansion joint filler) where liquid oxygen may fall, 8' - Sewer or drain openings to delivery connects, reliefs, mobile supply equipment & liquid withdrawal connects. Walls may not form a 3-d sided court
Distances with "*" do not apply if a 2 hr fire rated wall interrupts the line of sight between un-insulated portions of the bulk & the exposure

SUMMARY OF DEFICIENCIES

Medical Gas and Vacuum Systems Inspection/Testing

ITEM #	SYSTEM(S)	# OF OCCURRENCES	LOCATION(S)	DEFICIENCY	REFERENCE	CODE #	ACTION NEEDED	CORRECTIVE ACTION <i>(Please Date, Describe Action Taken, & Refer to Work Order if Applicable)</i>
MASTER ALARMS								
<i>No Deficiencies Found</i>								
AREA ALARMS								
1	Vacuum	1	ICU Nurse's Station	Inaccurate gauge pressure	NFPA 99	5.1.8.1.4	Calibrate or repair area alarm digital gauge to within +/- 5% of operating pressure	Evergreen replaced sensor on 2-6-18
2	Nitrous Oxide	1	OR Control Desk	Improper high/low pressure setting	NFPA 99	5.1.9.3.2	Calibrate area alarm sensor to +/- 20% of normal pressure	Evergreen calibrated alarm while on-site during annual testing - 1-30-18
ZONE VALVES								
1	Oxygen, Medical Air, & Vacuum	1	Outside PACU	Insufficient valve label	NFPA 99	5.1.11.2.1 (2)	Label rooms or areas served	Evergreen verified and re-labeled zone valve during annual testing visit - 1-31-18
2	Oxygen, Medical Air, & Vacuum	1	Outside ED Trauma 3	Improper gauge type	NFPA 99	5.1.8.1.3	Install 0-100 psi gauge	Evergreen replaced gauge on 2-6-18
PATIENT TERMINALS								
1	Oxygen	3	ER 1, OR 5, L&D 3	Patient terminal leaks	NFPA 99	5.1.14.2.3.1(11)	Disassemble, clean, replace o-rings (may require springs, poppets, brass fittings, etc.) <i>*back check leaks require a temporary zone shut down to repair</i>	Evergreen repaired outlets while on-site during annual testing - 1-30-18
2	Vacuum	3	ER 21, 603, OR 4	Terminal gas specific keying disk is damaged	NFPA 99	5.1.14.2.3.1(11)	Replace Hill-Rom keying disk	Evergreen repaired outlets while on-site during annual



ADDITIONAL RECOMMENDATIONS

Medical Gas and Vacuum Systems Inspection/Testing

References: NFPA 99, 2018

- 1.3.2.3 An existing system that is not in strict compliance with the provisions of this code shall be permitted to be continued in use, unless the authority having jurisdiction has determined that such use constitutes a distinct hazard to life.
- 1.4.2 Alternative systems, methods, or devices approved as equivalent by the authority having jurisdiction shall be recognized as being in compliance with this code.
- 1.4.3 The authority having jurisdiction shall be permitted to grant exceptions to this code.

Evergreen Medical is not the authority having jurisdiction (AHJ). The medical gas systems discrepancies listed below should be evaluated by the medical facility's risk assessment committee to determine potential patient, visitor, and employee risks. The AHJ (e.g. fire inspector, department of health) should also be consulted to make this determination. Many of these discrepancies were not required by the applicable code at the time that the medical gas or vacuum installation was planned and funded.

#	Locations	Descriptions	Installation Requirement First Appeared in the NFPA 99 Standard/Code	Code Reference #
1	Zone Valves	No gauges installed on the patient side of zone valves	1987	4-4.1.2.2 (Pressure) & 4-3.2.2.10(b) (Vacuum)
2	Zone Valves	No zone valves installed for medical air or vacuum	1987	4-6.4.1.4
3	Local Alarms	No lag pump running alarm installed for medical air or vacuum system		
4	Medical Air Source	No Medical Air Carbon Monoxide Sensor, Local Alarm, and Master Alarm	1993	4-3.1.9.8
5	Outlets	Medical Gas Outlet had less than 3.5 SCFM flow		
6	Inlets	Medical Vacuum Inlets had less than 3.0 SCFM flow.	1990	4-9.1.2.1
7	WAGD Inlets	Dedicated Waste Anesthetic Gas Inlets are not installed in areas where general anesthesia is administered.	1996	4-3.3.2.3

