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1.0 Purpose

This plan presents the standard operating procedures covering the selection and use of respiratory protection in work areas or job assignments where it is not feasible to control exposures to airborne contaminants or oxygen-deficient atmospheres to acceptable levels through the use of engineering controls and work practices. It is intended to address the requirements of the OSHA Respiratory Protection Standard 29 CFR 1910.134 and relevant company guidelines.

2.0 Scope

This practice applies to all MPC personnel and contractors who routinely use a respirator for work inside the refinery or may encounter a need for respiratory protection during the course of their work or who may need respiratory protection during the course of an emergency response. This standard does not apply to third party ambulatory members who are responding to an onsite emergency.

3.0 Procedure

3.1 General Requirements

Respiratory protection will be used only after feasible engineering or administrative controls have been considered and cannot reduce potential exposures to acceptable levels.

- 3.1.1 To wear a respirator, an employee must be medically qualified, fit tested annually, and be clean-shaven.
- 3.1.2 All respiratory protection equipment intended for MPC personnel must be approved by the Safety Department. See Attachment A for Safety Department approved respiratory protective equipment.
- 3.1.3 The designated Program Administrator is the Safety Supervisor.

3.2 Respirator Selection and Use

- 3.2.1 Respirators will be selected based on potential hazards that the worker may be exposed to during work activities.
- 3.2.2 A respirator selection matrix (Attachment B) has been developed to assist in the selection of appropriate respiratory protection within the Galveston Bay Refinery (GBR).
- 3.2.3 Manufacturer's guidelines on respirator fitting (**Hanson HK Stainless Steel**) and usage shall be followed. Only respirators that have been certified by the National Institute for Occupational Safety and Health (NIOSH) are approved for use. **Breathing Airline fittings used on breathing air hoses, breathing air manifolds, breathing air pack regulators, and breathing air suits shall be of the Hanson HK style and made of Stainless Steel.**
- 3.2.4 Regardless of the respirator selected, each time a respirator is donned, the employee must inspect it for any defects and perform a positive and negative pressure test (fit check) to ensure a proper seal has been achieved.
- 3.2.5 Employees trained in respirator selection and their limitations will identify the proper respirator by referring to Attachment B. **Refer to PPE-1 Personal Protective Equipment section 4.7.1 and MPC Exposure Control Matrix (or through Marathon Safety App) to determine PPE and associated controls for applicable tasks.**
- 3.2.6 Factors that must be considered when selecting a respirator include chemical state, physical form, duration of wear, expected physical work, temperature, humidity and a reasonable estimate of exposure based on actual, historical, or objective data.
- 3.2.7 Engineering Controls must always be considered prior to selecting respiratory protection.
- 3.2.8 When hazards are encountered that are not covered by Attachment B or if an employee has any question regarding respirator selection for a specific application, they should contact the Safety Department.
- 3.2.9 GBR employees are required to use respirators in accordance with manufacturer

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instructions and training provided.

- 3.2.10 Only personnel who have received a fit-test wallet card that indicates which respirator(s) they have been quantitatively fit tested on are approved to wear a respirator. Personnel are only approved to wear the respirators they have been quantitatively fit tested on.
- 3.2.11 Personal protective equipment (e.g. safety glasses) shall not be worn in a manner that will interfere with the respirator face piece-to-face seal. Employees who need prescription safety glasses and use supplied air respirators will be provided clear prescription lenses, frames (excluding temple pieces) and a lens holder assembly. Contact lenses may be worn instead of the assembly kit.
- 3.2.12 The purpose of any respirator is to isolate the wearer from the surrounding contaminated atmosphere by providing a leak-tight seal between the mask and the face.
- 3.2.13 Facial hair of MPC employees and contractors included in the Respiratory Protection Program shall not exceed the limits depicted in Attachment K. Even a few days' growth of stubble in the clean-shaven area is not permitted. Facial piercings that interfere with the facepiece-to-face seal are also prohibited.
- 3.2.14 Air Purifying Respirators (APR's)
 - 3.2.14.1 APR's are respirators that purify inhaled air through the use of a filter/cartridge. Atmospheric monitoring or knowledge of the process conditions will be utilized to determine the contaminant(s), approximate concentrations, and appropriate cartridges/filters to be used. APRs will be cleaned and stored appropriately after each use. APR cartridges will be expoused/discarded when use has exceeded time limits outlined in Attachment C, or if warning properties are noted (chemical odor breakthrough or limited airflow due to particulate buildup.)
 - 3.2.14.2 APR's are not appropriate in areas that are Immediately Dangerous to Life and Health (IDLH) or in areas with less than 19.5% oxygen. These situations require the use of supplied-air respirators. For H₂S situations, APR's (half-face or full-face) are permitted for specific task of known H₂S concentrations if approved through the Safety Department. APR's may also be worn to prevent H₂S exposure in situation where breathing air is not normally required but H₂S is identified as a potential hazard (i.e., RAM Level 2 or 3). APR's cannot be used for H₂S concentrations above 100 ppm (see SM-5 Exposure Control Policy).
- 3.2.15 Supplied-Air Respirators
 - 3.2.15.1 See section 3.5 for IDLH Work requirements and section 3.6 for Fresh Air Work Planning requirements.
 - 3.2.15.2 Within the Refinery, supplied-air respirators are either the self-contained breathing apparatus (SCBA) or the airline respirator. Both shall be the "positive-pressure" type with an emergency egress air supply and a low-pressure alarm, with the exception of specialty respirator (i.e., abrasive blasting).
 - 3.2.15.3 Airline hoses from air supplying cylinders or breathing air compressors shall be NIOSH certified and protected from damage, including cutting, kinking, crushing, or burning.
 - 3.2.15.4 Hose couplings shall be protected against inadvertent disconnection.
 - 3.2.15.5 Modification or repair of the airline hoses is prohibited. Trailing airline hoses will be arranged to minimize tripping hazards and to permit escape. No individual hose line shall exceed 300 feet in length from point of attachment or three (3) couplings (whichever is less) downstream of low pressure

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regulator. If upstream hose used, it must be engineered and approved by manufacturer for use with breathing air.

- 3.2.15.6 Completed respirator assembly and their components must be NIOSH approved and be include on the NIOSH approval label.
- 3.2.15.7 When air is supplied from cylinders, the air cylinder regulator shall be set to maintain a normal operating pressure not to exceed 125 psi. All air cylinders will be set up per manufacturer specifications. Do not mix hose type or coupler assemblies. See Attachment F for an example setup. Any variance from this system must be approved by the Safety Department.
- 3.2.15.8 The Breathing Airline hose connection at the source or the point of connection leading to the source must be adequately tagged with a "Do Not Disconnect" tag with the user's full name and company included on the tag. (Only 1 tag needed per user)

Note: Tagging requirement does not apply to MPC personnel in emergency situations or when a bottle watch is not required per section 3.3.1.

3.2.16 Special Use Respirators

- 3.2.16.1 Special use respirators are respirators that are designed and used for specific work activities or for specific conditions (i.e. welding, sandblasting, etc.) Special use respirators shall only be used for their associated work activity.

3.2.17 Emergency Use Respirators

- 3.2.17.1 Emergency egress bottles provide short duration (~ 5 minutes) breathing air and are designed for escaping emergency situations. Examples within the Refinery include the, 5 & 10 minutes Survivair or Scott Escape Breathing Apparatus.
- 3.2.17.2 Emergency egress air supplies shall only be used in emergencies and their valves never opened unless an emergency situation exists.
- 3.2.17.3 Chemical, Biological, Radiological, and Nuclear (CBRN) escape respirators are in designated buildings as required by RSP-1314 PSM/RMP Building and Tent Siting standard. These respirators shall only be used for escape during emergencies.

3.3 Bottle Watch

- 3.3.1 For use of airline respirators, a bottle watch must be designated. In some cases, the bottle watch may be the user or monitored at a remote location; such cases may include SRU loading, Alky Truck unloading, Air Carts, or an airline bottle attached to mobile equipment.
- 3.3.2 The bottle watch must be trained in the requirements of airline respirator systems.
- 3.3.3 The bottle watch must monitor compressed breathing air cylinders at ALL times while equipment is in use.
- 3.3.4 Maximum 2 people will be allowed for each cylinder.
- 3.3.5 The bottle watch must maintain communication with workers at ALL times (e.g., hand signals, voice, radio, etc.).
- 3.3.6 The system must be equipped with an alarm that will sound when the cylinder pressure reaches 500 psi.
- 3.3.7 Employees must be alerted by the bottle watch at 600 psi and egress when cylinders reach 500 psi.

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- 3.3.8 Ensure Attachment H or Attachment I is completed and maintained at the jobsite.
- 3.3.9 The bottle watch is responsible for ensuring breathing airline hose connections are adequately tagged with "Do Not Disconnect" tag with user's full name and company at the source or the point of connection leading to the source, and for disconnecting breathing airline hoses.
- 3.4 Cascade System Cylinders
 - 3.4.1 When starting with a full cascade system, it is recommended to open appropriate number of cylinders needed for the job. Use Attachment J to calculate breathing air required for the job.
 - 3.4.2 "Hot Switching" (i.e., changing out cylinders, opening and closing cylinders while personnel are using the cascade system) is not allowed.
 - 3.4.3 Bottle Watch shall notify wearers of low levels, prior to sounding of low-pressure alarm.
 - 3.4.4 The switch of empty bottles to full bottles may be done when wearers have exited the potentially hazardous area. The bottle watch shall remove the cylinder tag stub labeled "IN USE" portion of the empty cylinder, to identify that the cylinder is empty. The full cylinder tag shall read "IN USE".
 - 3.4.5 The cascade to a full cylinder should be indicated by checking pressure gauge on systems regulator, pressure reading is dependent upon cylinder size and type.
- 3.5 Immediately Dangerous to Life and Health (IDLH) Work
 - 3.5.1 Back-up Person
 - 3.5.1.1 When using airline respirators in an IDLH situation, a backup person who is trained and equipped to provide emergency rescue (i.e. retrieval equipment or equivalent means) must be in the ready state outside the barricade.
 - 3.5.1.2 The backup person must don the respirator and be ready to hook up as needed.
 - 3.5.1.3 If the work is in an IDLH environment, the backup person must be on a separate breathing air system as the person doing fresh air job.
- 3.6 Back-up requirements for working in fresh air
 - 3.6.1.1 All permitted maintenance invasive activities utilize the RAM score. If the RAM scored is based on IDLH/potential IDLH; a back-up is needed.
 - 3.6.1.2 When Operations is searching for a leak, or unknown hazard, a back-up is needed.
 - 3.6.1.3 Operations performing work which can potentially create a hazardous atmosphere and if there is no egress or egress is limited, a back-up is needed.
 - 3.6.1.4 The minimum ratio of backup personnel to workers is 1:3.
 - 3.6.1.5 The backup person must don the respirator and be ready to hook up as needed.
- 3.7 Fresh Air Job Planning
 - 3.7.1 Provide adequate source of air. Calculate how much air you will need for the job by using Attachment J.
 - 3.7.2 Review access and egress.
 - 3.7.3 Red "DO NOT ENTER" barricade tape and signs must be placed on all sides around fresh air jobs, before the job begins. If fresh air work is performed from a platform, no one

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is allowed to enter the area immediately above and below the grade where the work is performed.

- 3.7.4 The Safe Work Permit and Job Safety Analysis shall address additional precautions such as size of barricade, including barricade below and above grade if work on platform, continuous or periodic gas testing extending the barricade, etc. This barricade may be larger dependent on the Safe Work Permit and Job Safety Analysis.
- 3.7.5 Plan hose lay out and routing. Trailing airline hoses will be arranged to minimize tripping hazards and to allow escape. No individual hose line shall exceed 300 feet in length from point of attachment or three (3) couplings (whichever is less).
- 3.7.6 A pre-use inspection of all breathing air components (including hoses) shall be completed for all fresh air work. See Attachment H.
- 3.7.7 Any hose not in acceptable condition per Attachment H or within annual inspection shall not be used and MPC owned hoses should be returned to Safety Repair.
- 3.7.8 Attachment H - Fresh Air Work Checklist must be completed by the Servicing Group Representative and the MPC Maintenance Coordinator/Supervisor (if contract work) for all fresh air work. The checklist will be attached to the SWP permit.
- 3.7.9 Employees must have face to face discussion with the Servicing Group Representative before task starts.
- 3.7.10 When fresh air is used for routine operations task, precaution should be reflected in Normal Operating Procedure (NOP).
- 3.7.11 For turnaround work, the breathing air service contractor will submit a written Safety Execution Plan to the Safety Turnaround Coordinator on scope of work inclusive of procedures to verify when safe to isolate breathing air.

3.8 Respirator Care

3.8.1 Inspection

- 3.8.1.1 All respirators shall be inspected by the user before and after each use (unless disposed). Worn or deteriorated parts on MPC air supplied respirators shall be noted and the respirator sent to the Safety Repair Shop.
- 3.8.1.2 Supplied-air respirators will be inspected monthly by the group controlling the respirator. Unit or Area respirator inspections shall be conducted in accordance to manufacturer's guidelines. Supplied-air respirator inspection dates with findings shall be recorded during monthly inspections. These monthly inspection records will be kept in a file maintained by the group controlling the respirator. These records must be maintained for one year and be retrievable on demand. See Attachment D for an example of an inspection record.
- 3.8.1.3 Emergency Egress CBRN Respirator totes will be inspected monthly by the Safety Repair via PRIDE. The respirator tote car seals shall be intact and unbroken. If one is found to be damaged or removed, contact Safety Repair (409-945-1530) to replace any missing or opened respirators with new respirators in kind.
- 3.8.1.4 If any defects are noted during the facility monthly inspection, the respirator shall be removed from service and sent to the Safety Repair Shop for repair and a replacement respirator shall be supplied. Damaged air-purifying respirators shall be discarded and replaced with new air-purifying respirators.
- 3.8.1.5 Emergency use supplied-air respirators will be inspected by the Safety Repair Shop after each use (exception: Fire Department will inspect their own equipment). Emergency Egress CBRN Respirators will be disposed of

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after each use.

- 3.8.1.6 All supplied air units and associated regulators will be sent to the Safety Repair Shop at least every year for a thorough inspection and cleaning.
- 3.8.1.7 SCBA cylinders will be hydrostatically tested every five (5) years and escape bottles will be tested every five (5) years.
- 3.8.1.8 The Safety Repair Shop will maintain records of respirator inspections, regulator inspections, hydrostatic tests, and maintenance/repair records.
- 3.8.2 Respirator Repair and Maintenance
 - 3.8.2.1 The Safety Repair Shop will be responsible for the repair and maintenance of all supplied air respiratory equipment.
 - 3.8.2.1.1 Repairs will be done only by qualified Safety Repair Shop personnel.
 - 3.8.2.1.2 A qualified person is one that is trained and certified by the manufacturer to repair the respirator.
 - 3.8.2.2 The air-purifying respirators at Galveston Bay Refinery shall be discarded if any part is missing or defective.
- 3.8.3 Cleaning and Disinfecting
 - 3.8.3.1 The air purifying respirator should be cleaned and disinfected by the individual as often as necessary to ensure the respirator is maintained in a clean condition. See Attachment E for guidance on respirator cleaning.
 - 3.8.3.2 Supplied-air respirators shall be cleaned and disinfected as frequently as necessary to ensure the respirator is maintained in a clean condition.
 - 3.8.3.2.1 Face pieces used by multiple individuals must be cleaned and disinfected after every use.
 - 3.8.3.2.2 Supplied-air respirators will be cleaned and disinfected per manufacturer's recommendations. Refer to Attachment E for guidance on cleaning/disinfecting respirators.
- 3.8.4 Storage
 - 3.8.4.1 After inspection, cleaning, and necessary repair, respirators shall be stored to protect against dust, sunlight, heat, extreme cold, excessive moisture, and damaging chemicals.
 - 3.8.4.2 Respirators will be packed or stored with the face piece and exhalation valve resting in a position that does not damage or impair the elastomer face piece. Respirators will NOT be stored in places such as lockers or tool boxes unless they are in a sealed carrying case, bag, or carton.
 - 3.8.4.3 SCBA, breathing air cylinders, regulators, airlines, etc. that are kept outdoors shall be protected against dust, dirt, chemicals, insects and other conditions that might render the equipment unsafe.
 - 3.8.4.4 SCBA and other supplied-air respirators placed at stations and work areas for emergency use shall be stored in compartments built for that purpose, be quickly accessible at all times, and clearly marked.
 - 3.8.4.5 Each operating unit will provide proper storage facilities for the respiratory equipment normally used on the unit. The Safety Repair Shop will provide proper storage facilities for respiratory equipment not normally stored on operating units.

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3.8.4.6 The Fire Department will be responsible for their own respiratory equipment.

3.9 Breathing Air Quality

- 3.9.1 Breathing air must be certified at a minimum to Grade D as described in ANSI/Compressed Gas Association (CGA) Commodity Specification for Air (G-7-1-1989).
- 3.9.2 Breathing air cylinders will be charged with certified breathing air meeting requirements for "Grade D" air as defined by the CGA. Breathing air cylinders shall be clearly labeled as such.
- 3.9.3 Breathing air manufactured by blending oxygen and nitrogen is forbidden to be used. Only breathing air cylinders filled by compressing ambient air must be used.
- 3.9.4 Certificate of analysis must be obtained for every lot of cylinders documenting Grade D quality breathing air. Safety Repair Shop personnel will maintain the certificate of analysis for 5 years for bottles they fill.
- 3.9.5 When bottles are being filled by Safety Repair Shop, personnel will check the certificate of analysis against the specifications for Grade D breathing air and check that the certificate matches the lot number.
- 3.9.6 In cases where breathing air does not meet Grade D specifications and/or certificate does not match the lot number, the following actions will be taken:
 - 3.9.6.1 Tag cylinders with "Do Not Use" sign
 - 3.9.6.2 Contact vendor/supplier immediately
- 3.9.7 Airline couplings (CGA approved for breathing air) will be incompatible with outlets for other gas systems to prevent inadvertent servicing of airline respirators with non-respirable gases or oxygen.
- 3.9.8 Use of "Plant Air" for breathing is prohibited.

3.10 Breathing Air Compressors

- 3.10.1 The Safety Repair Shop may fill MPC SCBA cylinders using an MPC owned compressor, provided the compressor meets the following requirements:
 - 3.10.1.1 Only breathing-air type compressors shall be used.
 - 3.10.1.2 The breathing air supplied by the compressors must meet "Grade D" requirement listed above.
 - 3.10.1.3 Non-oil lubricated compressors for supplying air shall have alarms to indicate high temperature and compressor failure.
 - 3.10.1.4 Oil lubricated compressors for supplying air must be equipped with high temperature and carbon monoxide alarms.
 - 3.10.1.5 Breathing air compressors must have their air intakes placed in areas providing clean air.
 - 3.10.1.6 Airline couplings will be incompatible with outlets for other gas systems to prevent inadvertent servicing of airline respirators with non-respirable gases or oxygen.
 - 3.10.1.7 Maintenance and repair of compressor shall be done in accordance of manufacturer instruction.
- 3.10.2 In certain situations, compressors can be used to provide supplied air. In these situations, the following minimum requirements must be met:
 - 3.10.2.1 Air compressor breathing air systems must be set up, inspected and maintained by an individual with adequate training and experience to ensure

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the system is capable of delivering Grade D breathing air throughout its use and that all requirements of the NIOSH certification are being met.

- 3.10.2.2 The compressor must be capable of delivering a sufficient volume of air per minute to accommodate: (1) the maximum number of persons who will be breathing from the system at any given time, (2) the length of airline being used, (3) the use of vortex tubes for cooling, and (4) the specific type of respiratory equipment being used, as specified in the respirator's instructions.
- 3.10.2.3 The compressor must be located in an atmosphere suitable for breathing and away from process sewers, sample taps, process vents, and exhaust from internal combustion engines.
- 3.10.2.4 The area surrounding the compressor and high-pressure hoses must be barricaded.
- 3.10.2.5 All air supply connections shall be secured to eliminate the possibility of the connection parting.
- 3.10.2.6 All unattended valves supplying breathing air shall be secured to eliminate the possibility of breathing air being inadvertently shut off.
- 3.10.2.7 The compressor's fuel level must be adequate to ensure continuous operation while in use or must be monitored during the work day.
- 3.10.2.8 An after-cooler shall be located immediately downstream of the compressor to remove heat and water vapor from the air.
- 3.10.2.9 A properly inspected and maintained "Breather Box", supplied by the approved safety equipment supply contractor, must be connected downstream of the compressor and upstream of the airlines and NIOSH-approved supplied-air respirators.

Note: These breather boxes DO NOT remove carbon monoxide that can be introduced into the inlet of the compressor or that can be produced by the compressor due to overheating of the oil used in the compression chambers. A functioning carbon monoxide alarm is the only line of defense against carbon monoxide poisoning.

- 3.10.2.9.1 A tag containing the most recent date of sorbent bed replacement and the signature of the person performing the change shall be in the Breather Box.
- 3.10.2.9.2 The Breather Box must always be maintained in the upright position during use and close enough so that the Carbon Monoxide (CO) alarm can be heard by standby person positioned near the breather box. In addition, remote warning lights and alarm are available to connect to the Breather Box.
- 3.10.2.9.3 The use of the Breather Box must be in accordance with the manufacturer's instructions, including ensuring that:
 - 3.10.2.9.3.1 The CO alarm has been tested and the monitor turned on before each use.
 - 3.10.2.9.3.2 The inlet pressure to the box does not exceed the manufacturer's specifications.
 - 3.10.2.9.3.3 The regulator(s) on the breather box has been adjusted to the pressure specified in the respirator's instructions given the length of hose and cooling devices being used.

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3.10.2.9.3.4 Air flow through the CO monitor has been properly set after all workers and equipment are connected.

3.10.2.9.4 In the event of a CO alarm, workers must immediately be instructed to leave the work area and told to remove their respiratory protective equipment. Tampering with or disabling the function of the CO monitor or alarm is prohibited.

3.10.2.9.5 Breather boxes are to be returned to the approved safety equipment supply contractor for inspection and maintenance every 30 days and sooner if breathing air quality is suspect.

3.10.2.9.6 Airline couplings will be incompatible with outlets for other gas systems to prevent inadvertent servicing of airline respirators with non-respirable gases or oxygen.

3.10.2.9.7 Breathing air compressors are not permitted for entry into atmospheres considered Immediately Dangerous to Life or Health (IDLH).

3.10.2.9.8 Attachment I - Breathing Air Compressor Checklist must be completed by the Servicing Group Representative and the MPC Maintenance Supervisor (if contract work) for all work using breathing air compressor as air source. The checklist will be attached to the SWP permit.

3.10.3 Breathing air systems (i.e. Cobra) will be inspected by the provider using their own inspection documentation.

3.11 Training and Fit Testing

3.11.1 Each employee whose job may require respirator usage will be given initial classroom/hands-on training and a detailed annual WBT training on proper use, care, selection, inspection and limitations of respirators.

3.11.1.1 If work conditions change that render previous training obsolete, or if issues arise that indicate retraining is necessary for safer respirator use, more frequent training will be conducted.

3.11.1.2 Every respirator wearer will receive instructions and practice in how the respirator will be worn, adjusted, and how to determine if it fits properly.

3.11.1.3 The training will include the use of airline respirator, escape respirator, SCBA and half-mask air purifying respirator.

3.11.1.4 Training records will be retained by the Galveston Bay Refinery Learning and Development Department for the duration of employment.

3.11.2 Employees that are required to wear respirators will be given annual quantitative fit testing. Fit testing may be conducted more frequently if a respirator user has a change in facial structure which would invalidate previous fit testing (e.g. dramatic loss of weight, significant dental work, etc.) Fit testing records will be retained by the Galveston Bay Refinery Medical Department for one year or until the next fit testing is conducted.

3.11.3 Fit testing is not required for use of CBRN escape respirators provided in designated buildings as required by RSP-1314 PSM/RMP Building and Tent Siting standard.

3.11.4 Contractors must receive equivalent training and provide documentation upon request. Contractor will maintain a list of qualified bottle watches.

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3.12 Medical Evaluation

- 3.12.1 The Galveston Bay Refinery Medical and Safety Departments in consultation with employee's supervisor will determine which MPC job assignments require or may require respiratory protection within the Refinery.
- 3.12.1.1 No one shall be assigned to a task requiring the use of respirators unless they are medically "qualified" to use respiratory protective equipment. Each employee included in the program will complete a medical questionnaire to be evaluated by the Galveston Bay Refinery Medical Department.
- 3.12.1.2 The Galveston Bay Refinery Medical Department shall make the decision as to the fitness of the individual to wear a respirator and if an additional medical examination is necessary.
- 3.12.1.3 The Galveston Bay Refinery Medical Department will issue a written recommendation on the employee's ability to wear a respirator. Re-evaluation will be based on Medical, IH, Safety, or supervisor recommendation, or if the employee reports signs or symptoms of difficulty wearing a respirator.
- 3.12.2 Personnel on the Fire Department, regardless of position, will be in the respirator program.
- 3.12.3 Personnel that go into a respirator required area must be in the respirator program.
- 3.12.4 Medical evaluation and inclusion in the respiratory protection program is not required for use of CBRN escape respirators provided in designated buildings as required by RSP-1314 PSM/RMP Building and Tent Siting standard.
- 3.12.5 Voluntary users of respirators in non-hazardous (non-required) situations must still meet the medical qualification requirements outlined above. This does not include exclusive nuisance dust (comfort) mask users that do not require fit tests.

3.13 Recordkeeping

- 3.13.1 The Safety Repair Shop will maintain records of their respirator inspections, regulator inspections, hydrostatic tests, maintenance/repair records, and certificate of analysis. Inspection records will be maintained for one year.
- 3.13.2 The Galveston Bay Refinery Medical Department will maintain respiratory protection program medical records (i.e. medical questionnaires). Records will be maintained for the duration of employment plus 30 years.
- 3.13.3 The HESS Department will maintain the fit testing records for one year or until the next fit test is conducted.
- 3.13.4 Unit or area supervision will maintain unit/area monthly inspection records for a period of one year.
- 3.13.5 The Galveston Bay Refinery's Learning and Development Department will maintain all respiratory protection related training records for the duration of employment.

3.14 Respiratory Protection Program Evaluation

- 3.14.1 Once every 3 years an evaluation to determine the continued effectiveness of this respirator program will be conducted by the Safety Department. The evaluation will include:
- 3.14.1.1 Assessment of workplace conditions to ensure that the approved respirators are still adequate for the contaminant and concentrations encountered.
- 3.14.1.2 Evaluation of actual respirator usage; including:
- 3.14.1.2.1 Visual inspection of employees on the job to see that respirators

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are worn properly and on the job(s) specified.

3.14.1.2.2 Examination of respirators in storage to check for proper maintenance.

3.14.1.2.3 Solicitation of wearer comments.

3.14.2 Any deficiencies will be recorded, assessed, and corrected. Additionally, the Respiratory Protection Policy will be modified if needed.

3.15 Contractors

3.15.1 For a list of contractors by work type that are required to have a respirator program, please reference Attachment G. Contractors whose work falls under the OSHA Respiratory Protection Standard (29 CFR 1910.134) must:

3.15.1.1 Maintain a written program that meets or exceeds the requirements of this practice and applicable standards.

3.15.1.2 Ensure employee compliance with their written program.

3.15.1.3 When requested, provide compliance documentation (i.e. fit test, medical qualification, training records, etc.) to MPC.

3.15.1.4 Supply their personnel with respiratory protection equipment (unless otherwise specified in the contract).

3.15.1.5 Compliance with the Facial Hair requirements of this practice.

4.0 **Definitions**

4.1 **Supplied Air Respirator (SAR)** – Respirators that provide a respirable atmosphere to the wearer, independent of the ambient air. They are either an airline respirator or SCBA.

4.2 **Airline (Hoseline) Respirator** – Respirable air is supplied through a small diameter airline from a compressor or compressed air cylinder(s). The airline is attached to the wearer by a belt and can be detached rapidly in an emergency. A regulator is provided to govern the rate of airflow to the wearer.

4.3 **Self-Contained Breathing Apparatus (SCBA)** – Supply of air, oxygen, or oxygen generating material is carried by the wearer and is normally equipped with a full facepiece respirator.

4.4 **Air-Purifying Respirator** – Any respirator equipped with air-purifying cartridges to remove gases, vapors, and particulate matter from the ambient air prior to its inhalation. Air-purifying respirators must not be used in oxygen deficient atmospheres as they do not provide oxygen.

4.5 **“Breather Box”** – The system filters inlet air to provide respirator users Grade-D quality air. The first stage filters bulk water and particulate, second stage coalescing filter eliminates atomized oils, mists, and ultra-fine particulates, third stage removes some organic vapors and odors. Filter change indicators are standard on all three stages. Filter efficiency is 99.99% @ 0.01 microns. It is equipped with a built-in carbon monoxide (CO) monitor with an external alarm and light to signal the worker of high CO content. Consult with HESS before using any breather box.

4.6 **Ceiling Value** – The ceiling value is a concentration that should never be exceeded at any time during the day. In the event that instantaneous monitoring is not feasible, then the ceiling value shall be assessed as a 15-minute exposure.

4.7 **Hazardous Atmosphere** – Any atmosphere which is either oxygen deficient (< 19.5% O₂) or which contains toxic or disease-producing contaminants exceeding the legally established permissible exposure limit (PEL) or, where applicable, the Threshold Limit Value (TLV).

4.8 **Hot Switching** - Opening and closing valves on manifold.

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- 4.9 **Immediately Dangerous to Life or Health (IDLH)** – Any atmosphere that poses an immediate hazard to life or produces immediate, irreversible, or debilitating effects on health (i.e. less than 19.5% oxygen, toxic atmosphere greater than listed IDLH value in Attachment B).
- 4.10 **PEL** – Permissible Exposure Limit as promulgated by OSHA. PEL's are the average airborne exposure to a substance in any 8-hour work shift of a 40-hour work week which shall not be exceeded.
- 4.11 **Demand and Pressure-Demand** – With a demand respirator, air is delivered to the facepiece only when the wearer inhales, thereby creating a slight negative pressure in the facepiece. With a pressure-demand respirator, air is delivered to the facepiece in a manner that maintains a positive pressure in the facepiece at all times, even during inhalation.
- 4.12 **Safety Repair Shop** – MPC Galveston Bay Refinery safety equipment shop located at the refinery main warehouse.
- 4.13 **STEL** – The short-term exposure limit is a 15-minute average exposure that an employee shall not exceed at any time during a workday.
- 4.14 **TLV** – Threshold Limit Value as developed by the American Conference of Governmental Industrial Hygienists. TLV's are the average airborne exposure to a substance in any 8-hour work shift of a 40-hour work week which shall not be exceeded.

5.0 References

- 5.1 29 CFR 1910.134, OSHA Respiratory Protection Standard
- 5.2 NIOSH Guide to Industrial Respiratory Protection, DHHS (NIOSH) Publication No. 87-116
- 5.3 ANSI Z88.2 - 1980, American National Standard Practices for Respiratory Protection
- 5.4 3M, Respirator Selection Guide
- 5.5 NIOSH, Pocket Guide to Chemical Hazards
- 5.6 ACGIH, Threshold Limit Values for Chemical Substances and Physical Agents - Biological Exposure Indices

6.0 Attachments

- 6.1 Attachment A: Galveston Bay Refinery HESS Department Approved Respiratory Protection
- 6.2 Attachment B: GBR Respirator Selection Matrix
- 6.3 Attachment C: Air Purifying Respirator Cartridge Change-out Schedule
- 6.4 Attachment D: Galveston Bay Refinery Monthly Respiratory Protection Inspection Checklist
- 6.5 Attachment E: Respirator Cleaning Requirements
- 6.6 Attachment F: Typical Air Cylinder System for Field Use of Supplied Air Respiratory Protective Equipment
- 6.7 Attachment G: Contractors Included & Required To Have a Respirator Program
- 6.8 Attachment H: Fresh Air Work Checklist
- 6.9 Attachment I: Breathing Air Compressor Checklist
- 6.10 Attachment J: Breathing Air Calculation Guideline
- 6.11 Attachment L: Information for Employees Using Respirators When Not Required Under the Standard

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6.12 Attachment M: Picture of Breathing Air Line Tag

7.0 Revision History

Revision Number	Description of Change	Written by	Approved by	Revision Date	Effective Date
0	Original issue. Consolidated procedure that replaces GBR-HESS-PPE-05 and RSW-0004-TC under MOC 51561 and adds full-face APR option for East/West Plant under M201710914-001.	S. P. Streacker	D. C. Staats	8/8/2018	3/11/2019
1	Adds Bay Plant Emergency Egress Mouth Bit Respirator cabinet inspection under MOC 63299.	C. T. Hart	V. J. Meeks	7/16/2019	7/16/2019
2	Adds new breathing airline hose tag and clarifies requirements when disconnecting breathing airline hoses under MOC 71182.	C. T. Hart	V. J. Meeks	3/11/2020	3/20/2020
3	Clarifies breathing air hose tag requirements.	C. T. Hart	E. R. Kaysen	4/15/2020	5/21/2020
4	Drops Mouthbit Escape and updates monthly inspection requirements for emergency egress respirator storage locations under MOC 65196.	C. T. Hart	E. R. Kaysen	12/23/2019	7/15/2020
5	Adds back-up requirements for working in fresh air under MOC 78886.	C. T. Hart	E. R. Kaysen	1/4/2021	2/11/2021
6	Updated to address applicability to third-party ambulatory personnel under MOC 85443.	C. T. Hart	E. R. Kaysen	2/23/2021	5/27/2021
7	Addresses when APR's can be used for H2S, and updated respirators for H2S in Attachment B.	J. Soape	H. Sheard	11/11/2022	1/6/2023
8	Updates service provider info, hydrostatic test frequency, list of approved air-purifying respirators, pictures of air cylinder system for field use, maintenance title for checklists, and various items on Att H checklist. Updated list of approved respirators in Att A and added manifold requirements in Att H under MOC 123633.	J. Soape C. T. Hart	H. F. Sheard	5/20/2023	9/22/2023
9	Updated to address Hanson HK stainless steel fittings for breathing air equipment at Bay Plant and Alky Units under MOC 106040 and 123633, align with MPC OELs under 152991 and Exposure Control Matrix under MOC 157725.	Tray Hart	H. F. Sheard	11/20/2025	11/202/2025

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Attachment A: Galveston Bay Refinery HESS Department Approved Respiratory Protection

Air Purifying		
Respirator Brand	Respirator Type	Plant
3M – 6000 Series	Half-Mask	East/West Plant
Survivair 2000 series	Full-face	East/West Plant
Scott AV-2000	Full-face	Bay Plant
Scott AV-3000	Full-face	Site-wide
Air Supplied		
Respirator Brand	Respirator Type	Plant
Scott AV-3000 AP75i SCBA	SCBA	Site-wide
Scott AV-3000 SKA-PAK Plus w/ 5-minute Escape	Airline	Site-wide
Scott AV-3000 SKA-PAK Plus w/ 15-minute Escape	Airline	Site-wide
Scott AV-3000 SKA-PAK Auto-Transfer (AT) w/ 5-minute Escape	Airline	Alky 3 /Bay Plant Alky Only
Survivair/Honeywell – Panther equipped with Classic, Classic Modified with Welding Attachment, or 2020 Plus Mask	SCBA	East/West Plant
Survivair/Honeywell – Panther Warbler High Pressure CBRN equipped with HUD and 2020 Plus Mask	SCBA	East/West Plant Alky 3 Only
Survivair/Honeywell – Panther Warbler High Pressure NSG equipped with HUD and 2020 Plus Mask	SCBA	East/West Plant Fire Department Only
Scott AV-2000	SCBA / Airline	Bay Plant
Survivair/Honeywell Panther Hippack w/ 5-minute Escape	SCBA / Airline	East/West Plant
Specialty		
Respirator Brand	Respirator Type	Plant
ELSA Escape 10 Minute	Escape	Site-wide
Survivair/Honeywell EBA 5 & 10 Minute	Escape	East/West Plant
Survivair/Honeywell Hippack 15 Minute with 2020 Plus Mask	Escape	East/West Plant Alky 3 Only
Scott Escape 5 & 10 Minute	Escape Pack	Bay Plant
Honeywell ER2000CBRN CBRN Escape Hood	Escape Hood	East/West and Bay Plant
Avon NH15 CBRN Escape Respirator	Escape Hood	East/West and Bay Plant
Bullard-88 Type C	Escape	East/West and Bay Plant
3M Disposable Dust Mask N95 (See Attachment L)	Dust Mask	East/West and Bay Plant

This table only applies to MPC personnel.

Attachment B: GBR Respirator Selection Matrix (1 of 3)

Contaminant	Exposure level	Respirator ¹	Cartridge (color) ²	PEL/TLV ^{3, 6}	STEL ^{4, 6}	IDLH ^{5, 6}	Notes
Ammonia	Less than 25 ppm	None Required	-	25 ppm	35 ppm	300 ppm	Half mask at 50 ppm or less with appropriate eye protection acceptable if eye irritation prevented
	25 – 50 ppm	Half Mask	Ammonia (green)				
	51 – 300 ppm	Full Face	Ammonia (green)				
	Greater than 300 ppm	Supplied Air	-				
Asbestos	Less than 0.1 f/cc	None Required	-	0.1 f/cc	1.0 f/cc	None Determined	
	0.1 – <1.0 f/cc	Half Mask	HEPA (purple)				
	1.1 f/cc – 10.0 f/cc	Full Face	HEPA (purple)				
	Greater than 10.0 f/cc	Supplied Air	-				
Benzene	Less than 0.2 ppm	None Required	-	0.2 ppm	1.0 ppm	500 ppm	
	0.2 - <10 ppm	Half Mask	OV (black or yellow)				
	10 – 50 ppm	Full Face	OV (black or yellow)				
	Greater than 50 ppm	Supplied Air	-				
Butadiene (1,3-)	Less than 1 ppm	None Required	-	1 ppm	5 ppm	2000 ppm	
	1 – 10 ppm	Half Mask	OV (black or yellow)				
	11 – 50 ppm	Full Face	OV (black or yellow)				
	Greater than 50 ppm	Supplied Air	-				
Carbon Dioxide	Greater than 5000 ppm	Supplied Air	-	5000 ppm	30,000 ppm	40,000 ppm	Air purifying respirator is not appropriate
Carbon Monoxide	Greater than 25 ppm	Supplied Air	-	25 ppm	NA	1200 ppm	
Chlorine	Less than 0.5 ppm	None Required	-	0.5 ppm	1 ppm	10 ppm	
	0.5 – 5 ppm	Full Face	AG (white or yellow)				
	Greater than 5 ppm	Supplied Air	-				
Chromium, Hexavalent	Less than .005 mg/m ³	None Required	-	.005 mg/m ³	None Determined	15 mg/m ³	
	.005 mg/m ³ – 0.050 mg/m ³	Half Mask	HEPA (purple)				
	.051 mg/m ³ – 0.25 mg/m ³	Full Face	HEPA (purple)				
	Greater than 0.25 mg/m ³	Supplied Air	-				

Attachment B: GBR Respirator Selection Matrix (2 of 3)

Contaminant	Exposure level	Respirator ¹	Cartridge (color) ²	PEL/TLV ^{3,6}	STEL ^{4,6}	IDLH ^{5,6}	Notes
Inhalable Dust (not otherwise classified)	Less than 10 mg/m ³	None Required	-	10 mg/m ³	None Determined	None Determined	Some dusts may contain metals requiring more stringent respiratory protection.
	10 – 100 mg/m ³	Half Mask	HEPA (purple)				
	101 – 500 mg/m ³	Full Face	HEPA (purple)				
	Greater than 500 mg/m ³	Supplied Air	-				
Respirable Dust (not otherwise classified)	Less than 3 mg/m ³	None required	-	3 mg/m ³	None Determined	None Determined	Some dusts may contain metals requiring more stringent respiratory protection.
	3 mg/m ³ – 30 mg/m ³	Half Mask	HEPA (purple)				
	31 mg/m ³ – 150 mg/m ³	Full Face	HEPA (purple)				
	Greater than 150 mg/m ³	Supplied Air	-				
Ethyl Benzene	Less than 20 ppm	None Required	-	20 ppm	125 ppm	800 ppm	Half mask at 500 ppm or less with appropriate eye protection acceptable if eye irritation prevented
	21 – 200 ppm	Half Mask	OV (black or yellow)				
	201 – 800 ppm	Full Face	OV (black or yellow)				
	Greater than 800 ppm	Supplied Air	-				
Hexane (n-)	Less than 50 ppm	None Required	-	50 ppm	75 ppm	1100 ppm	Half mask at 500 ppm or less with appropriate eye protection acceptable if eye irritation prevented
	50 – 500 ppm	Half Mask	OV (black or yellow)				
	501 – 1100 ppm	Full Face	OV (black or yellow)				
	Greater than 1100 ppm	Supplied Air	-				
Hydrochloric Acid	Less than 2 ppm	None Required	-	None Determined	(c) 2 ppm	50 ppm	
	2 – 20 ppm	Half Mask	AG (white or yellow)				
	21 – 50 ppm	Full Face	AG (white or yellow)				
	Greater than 50 ppm	Supplied Air	-				
Hydrofluoric Acid	Less than 0.5 ppm	None Required	-	0.5 ppm	(c) 2 ppm	30 ppm	
	Equal/Greater than 0.5 ppm	Supplied Air	-				
Hydrogen Sulfide	Less than 10 ppm	None Required	-	10 ppm	15 ppm	100 ppm	See Hydrogen Sulfide policy to see protocol for approving APRs for H2S use
	Equal/Greater than 10 ppm	Supplied Air or Approved APR (half-face or full-face)	AG (white or yellow)				
	Greater than 100 ppm	Supplied Air	-				
Lead	Less than 0.05 mg/m ³	None Required	-	0.05 mg/m ³	None Determined	100 mg/m ³	
	0.05 – 0.50 mg/m ³	Half Mask	HEPA (purple)				
	0.51 – 5.0 mg/m ³	Full Face	HEPA (purple)				
	Greater than 5.0 mg/m ³	Supplied Air	-				
Methanol	Less than 200 ppm	None Required	-	200 ppm	250 ppm	6000 ppm	
	Equal/Greater than 200	Supplied Air	-				
Nickel Carbonyl	Less than 0.001 ppm	None Required	-	0.001 ppm	(c) 0.05 ppm	2 ppm	See PR-5 Inert Confined Space Entry for prevention of nickel carbonyl formation
	Greater than 0.001 ppm	Supplied Air	-				
Nitrogen Dioxide	Less than 3 ppm	None Required	-	0.2 ppm	5 ppm	13 ppm	
	Equal/Greater than 3 ppm	Supplied Air	-				

Attachment B: GBR Respirator Selection Matrix (3 of 3)

Contaminant	Exposure level	Respirator ¹	Cartridge (color) ²	PEL/TLV ^{3,6}	STEL ^{4,6}	IDLH ^{5,6}	Notes
Sodium Hydroxide	Less than 2 mg/m ³	None Required	-	(c) 2 mg/m ³	(c) 2 mg/m ³	10 mg/m ³	Half mask at 20 mg/m ³ or less with appropriate eye protection acceptable if eye irritation prevented
	2 – 20 mg/m ³	Half Mask	HEPA (purple)				
	21 – 200 mg/m ³	Full Face	HEPA (purple)				
	Greater than 200 mg/m ³	Supplied Air	-				
Styrene	Less than 20 ppm	None Required	-	20 ppm	40ppm	700 ppm	Half mask at 200 ppm or less with appropriate eye protection acceptable if eye irritation prevented
	20 – 200 ppm	Half Mask	OV (black or yellow)				
	201 – 700 ppm	Full Face	OV (black or yellow)				
	Greater than 700 ppm	Supplied Air	-				
Sulfur Dioxide	Less than 2 ppm	None Required	-	0.5 ppm	1 ppm	100 ppm	Half mask at 20 ppm or less with appropriate eye protection acceptable if eye irritation prevented
	2 – 20 ppm	Half Mask	AG (white or yellow)				
	21 – 100 ppm	Full Face	AG (white or yellow)				
	Greater than 100 ppm	Supplied Air	-				
Sulfuric Acid	Less than 0.2 mg/m ³	None Required	-	0.2 mg/m ³	N/A	15 mg/m ³	Half mask at 2 mg/m ³ or less with appropriate eye protection acceptable if eye irritation prevented
	0.2 – 2 mg/m ³	Half Mask	HEPA & Acid Gas				
	2 – 10 mg/m ³	Full Face	HEPA & Acid Gas				
	Greater than 10 mg/m ³	Supplied Air	-				
Toluene	Less than 20 ppm	None Required	-	20 ppm	150 ppm (c) 300 ppm	500 ppm	Half mask at 300 ppm or less with appropriate eye protection acceptable if eye irritation prevented
	20 – 300 ppm	Half Mask	OV (black or yellow)				
	301 – 500 ppm	Full Face	OV (black or yellow)				
	Greater than 500 ppm	Supplied Air	-				
Volatile Organic Compounds / VOC's (Total Hydrocarbons)	Less than 100 ppm	None Required	-	100 ppm	150 ppm	None Determined	Respiratory protection required for certain hydrocarbon types may be more stringent (i.e., benzene, hexane, butadiene, toluene, xylenes, etc.) 10,000 ppm represents Ultra RAE detection limit which may exceed % LEL safety limits
	100 to 1000 ppm	Half Mask	OV (black or yellow)				
	1001 – 5000 ppm	Full Face	OV (black or yellow)				
	Greater than 5000 ppm	Supplied Air	-				
Xylenes	Less than 100 ppm	None Required	-	100 ppm	150 ppm	900 ppm	Half mask at 500 ppm or less with appropriate eye protection acceptable if eye irritation prevented
	100 to 500 ppm	Half Mask	OV (black or yellow)				
	501 – 900 ppm	Full Face	OV (black or yellow)				
	Greater than 900 ppm	Supplied Air	-				

¹ If the TCS location does not utilize full face air purifying respirators, then supplied air respirators shall be used within the designated full face respirator exposure concentration range

² OV = organic vapor (black), AG = acid gas (white), OV/AG = organic vapor/acid gas (yellow), HEPA = high efficiency particulate air (purple)

³ PEL/TLV = average exposure allowed over an 8-hour period, 40 hour work week as established by the Occupational Safety and Health Administration (PEL = Permissible Exposure Limit) or American Conference of Governmental Industrial Hygienists (TLV = Threshold Limit Value). The lower of the two exposure limits are followed by MPC in most cases and shown in the table above.

⁴ STEL = Short Term Exposure Limit. The average exposure allowed over a 15-minute period as established by OSHA or ACGIH

⁵ IDLH = Immediately Dangerous To Life and Health. IDLH concentrations presented were set to ensure the worker can escape in the event of respiratory protection equipment failure.

⁶ c = ceiling value, f/cc = fibers per cubic centimeter, mg/m³ = milligrams per meter cubed, ppm = parts per million

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Attachment C: Air Purifying Respirator Cartridge Change-out Schedule

When no specific cartridge /canister change schedule is available, respirator cartridges / canisters are to be discarded after each day's use / at the end of shift. Cartridges / canisters are to be replaced during the shift if breakthrough is perceived (e.g. irritation, odor, symptoms, etc.) or if breathing through the filter media becomes difficult.

The basis for the above cartridge / canister change schedule is 3M's Service Life Software utilized with conservative assumptions and expected worst-case maximum concentrations for the contaminants of concern at this site.

Specific cartridge / canister change schedules can be developed if needed and upon request.

For the details of this assessment, or to have a specific change schedule developed contact the Safety Department.

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Attachment D: Galveston Bay Refinery Monthly Respiratory Protection Inspection Checklist

Unit/Area: _____ Date: _____ Inspected By: _____

To complete form, place a check (√) if item is OK or an (X) if it needs repair.
 Contact the warehouse at ext. 1631 if repairs are needed.

Fixed System (bottles and tubing manifold system)	Yes	No
Are all bottles open?		
Is the block valve from the air cylinders open?		
Is the bottle manifold pressure gauge showing at least 2000 psig?		
Does the warning bell work?		
Did the regulator(s) on the low pressure side hold pressure?		
Are the fitting connections (Hanson HK Stainless Steel) tight?		

Supplied Air Respirator (SAR) Masks and Hose Line Assembly	AIR PAK #	AIR PAK#	AIR PAK#	AIR PAK#	AIR PAK#	AIR PAK#	AIR PAK#	AIR PAK#
Is the egress cylinder full?								
Are hose line connections tight and not leaking?								
Is the condition of the mask OK?								
Are the mask straps extended?								
Are the harness straps extended?								
Is the lens in good condition?								
Is the bypass valve closed?								
Is the regulator and warning device working?								
Is the regulator shut off valve open?								
Is the exhalation valve sticking closed?								
Is the mask stored in a plastic bag?								
Is the egress cylinder hydrostatic test date in compliance?								
Remarks								

Inspection records shall be kept at each operating unit for one year.

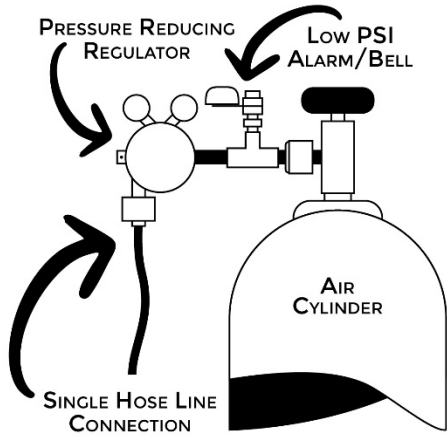
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Attachment E: Respirator Cleaning Requirements

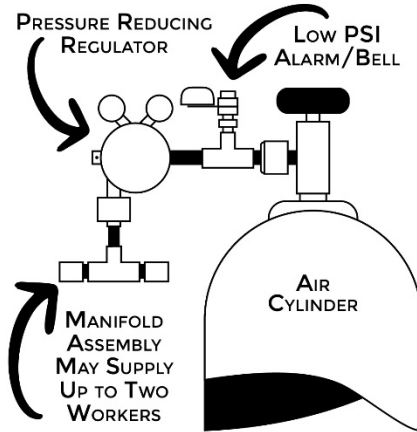
- A. Remove filters, cartridges, or canisters. Disassemble facepieces by removing speaking diaphragms, demand and pressure- demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.
- B. Wash components in warm (43 deg. C [110 deg. F] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.
- C. Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain.
- D. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:
 - 1. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43 deg. C (110 deg. F); or,
 - 2. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at 43 deg. C (110 deg. F); or,
 - 3. Other commercially available cleansers of equivalent disinfectant quality (i.e. respirator wipes) when used as directed, if their use is recommended or approved by the respirator manufacturer.
- E. Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on facepieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.
- F. Components should be hand-dried with a clean lint-free cloth or air-dried.
- G. Reassemble facepiece, replacing filters, cartridges, and canisters where necessary.
- H. Test the respirator to ensure that all components work properly.

Attachment F: Typical Air Cylinder System for Field Use of Supplied Air Respiratory Protective Equipment

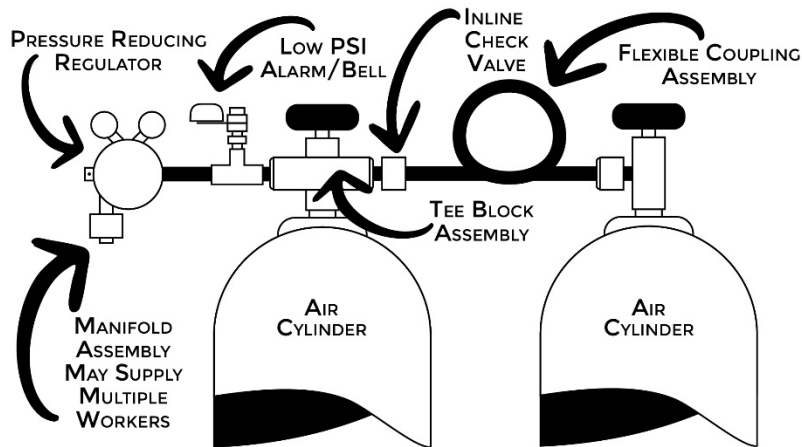
TYPICAL SINGLE CYLINDER



TYPICAL SINGLE CYLINDER SYSTEM FOR MULTIPLE USERS



TYPICAL CASCADE BREATHING AIR SYSTEM



**NIOSH Approved Breathing Air Regulator Working Pressures
for Honeywell / Sperian / Survivair / Scott Supplied Air Respirators (SAR):
80 – 125 psig**

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Attachment G: Contractors Required To Have a Respirator Program

TAR*	Civil work (concrete, sewer)	HVAC repair
Routine Process* Maintenance*	Cooling tower	Insulation work (refractory, fire brick, insulation)
Boiler Repair	Flare	Pest control (weed, insects)
Demolition	Precipitator	Inspection work (tanks, NDT, etc)
Dock Repair	Industrial Cleaning	Vacuum trucks
Drilling	Pipeline construction	Spill Cleanup
Tube Repair	Machining	Fire protection
Heat Tracing	Leak Detection and/ or Repair	Emergency response
Exchanger	Compressor repair	Bulk Chemical Delivery Drivers
Painting	Valve repair	*If required by scope of work
Abrasive blasting	Laborers (attendants & firewatches)	
Tank work	Pump & Blower repair	
Hydroblasting	I&E: transmitter work	

Contractors Not Included & Not Required To Have A Respirator Program

Rail repair	Elevator repair	Crane repair
Rail switching	Fence repair	IT/DCS work
Re-railing	Scale work	Truck/delivery (except bulk chemical delivery drivers)
Electrical (switchgear, transformers, polelines)	Plumbing	
Janitorial	Consultants	
	Rental companies	

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Attachment H: Fresh Air Work Checklist

Date received: _____ Supervisor Accepting Bottles: _____ Permit #: _____

Wind Direction: _____ Location: _____

Bottle Watch Name: _____ Bottle Watch Company: _____

Breathing Air Equipment Issued By (Company): _____

Back-Up Person Name (if IDLH): _____

Servicing Group Rep: _____
Name Signature Date

MPC Maintenance Coordinator/Supervisor: _____
(if contract work) Name Signature Date

Keep this form with SWP
Employees MUST have face to face discussion with Servicing Group Representative before task starts
If Escape Pack cylinder is opened Operations Supervisor MUST be notified

Cylinders and Associated Equipment

Bottles/Rack Number: _____

Yes	No		Yes	No	
		Bottles on level surface and secured			Bottles placed upwind of job
		≥ 5ft. radius barricaded in place before job begins			Gauges working properly
		All connections working properly			When used, manifold attached at source with pressure label (~30 psi for half-mask with Y-line, ~120 psi for full-face) and locked
		Work does not endanger others in immediate area or downwind			When used, manifold fittings (Hanson HK Stainless Steel) inspected
		Certificate of breathing air quality available.			Permits completed and displayed at the job prior to beginning work
		Breathing air hoses are in good repair and have been inspected (within 1 year).			Ensure cylinders have adequate air for the job (see Attachment J).
		"Do Not Disconnect" tags secured to the air hoses			Ensure there is not any plumber's (Teflon/ PTFE) tape on the manifold-to-air bottle connection

Escape Pack

Yes	No		Yes	No	
		Escape bottle is full			Gauge working properly
		Valve closed			Hose in good condition
		Harness is in good condition			Quick disconnects locked
		Snaps, buckles, clips in good condition			

Bottle Watch/ and Back-Up Personnel

Yes	No	N/A		Yes	No	N/A	
			Bottle Watch is qualified to do the job.				Regulator-coupling secured
			Bottle Watch knows to maintain operating pressure not to exceed 125 psi				Bottle Watch knows unit alarm signals and evacuation route in unit
			Bottle Watch tags any damaged equipment out of service				Bottle Watch has proper vest and air horn before job begins
			Hose lines run in route of escape				Alarm set at 500 psi and tested
			Honeywell air hoses do not exceed 300ft per employee with no more than 3 sections of hose connected. Scott air hoses do not exceed 150ft per employee with no more than 3 sections of hose connected. If using a different air hose manufacturer, the manufacturer guidelines on air hose connections and maximum length are being followed.				Bottle Watch knows to alert personnel at 600 psi
			Connected sections of air hose are all from the same manufacturer.				
			Back-up personnel are wearing fresh air equipment and ready to hook up as needed (if IDLH)				Bottle Watch has clear view of employees or a way of communication with entry employee(s)
							Communication plan established (radio, signal)

Respirator

Yes	No		Yes	No	
		Mask type and size matches training/fit test card			Fit check done before work begins
		Lens is clean			Mask seal is in good condition
		Head straps adjust properly			Adequate air flow
					Purge valve closed

IF ANY STATEMENT IS "NO" – "STOP WORK" Re-assess job task.

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Attachment I: Breathing Air Compressor/Breather Box Checklist

Date: _____ Location: _____ Company: _____

Servicing Group Rep: _____
Name Signature Date

MPC Maintenance Coordinator/Supervisor: _____
(if contract work) Name Signature Date

Breathing Air Compressor	Yes	No	Breather Box	Yes	No
Breathing air compressor and airline system has been set up and use is being supervised by an individual with adequate training and experience to ensure the system is capable of reliably delivering Grade D breathing air throughout its use and that all conditions of the NIOSH certification are being met as found in the respirator manufacturer's instruction manual.			A "Breather Box" from the approved safety equipment supply contractor has been properly connected, a tag containing the most recent date of sorbent bed replacement and the signature of the person performing the change is in the Breather Box, and all filter change indicators are indicating Green.		
Compressor is an oil-lubricated rotary screw type equipped with a receiving tank and a high temperature shut-off, or a written exception has been issued.			The Breather Box is in the upright position during use and either the box or remote alarm has been positioned near enough to a designated person who will be able to hear / see the Carbon Monoxide (CO) alarm and who will take immediate action to ensure the workers leave the area and remove their respirators in the event the CO alarm activates.		
The type of oil used in the "air side" of the compressor is as recommended by the manufacturer.			The "Breather Box" CO alarm has been tested, the CO monitor has been turned to the "On" position, and the alarm indicator light displays the Green "Normal" condition.		
Compressor is positioned in clean air, away from process sewers, vents, and equipment exhaust.			Respiratory equipment to be connected to the "Breather Box" is NIOSH certified.		
The area surrounding the compressor and high-pressure hoses has been barricaded.			Airlines connected to the "Breather Box" are NIOSH certified and have connectors dedicated for breathing air systems.		
The air supply connection to the breather box has been properly secured to prevent the connection from parting.			Once workers have been connected to the system and air is flowing, the regulator on the Breather Box has been adjusted to the pressure specified in the respirator's instructions given the length of hose and cooling devices being used. In addition, air flow through the CO monitor has been adjusted to within the Green bar area on the flow meter.		
An "after-cooler" has been located downstream of the compressor to remove heat and water vapor from the air.			"Plant Air" shall not be used for breathing air under any circumstance.		

IF ANY STATEMENT IS "NO" – "STOP WORK" Re-assess job task.

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Attachment J: Breathing Air Calculation Guideline

- Complete the following information to determine the volume of breathing air required for the job when using breathing air cylinders as air source.

Number of people per shift requiring breathing air (A): _____

Number of hours working under air per shift (B): _____

Estimated job length (shifts) (C): _____

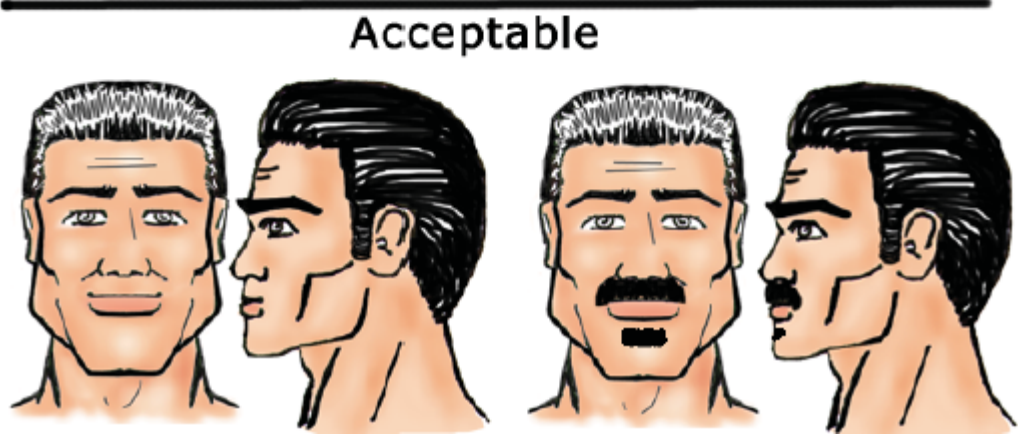
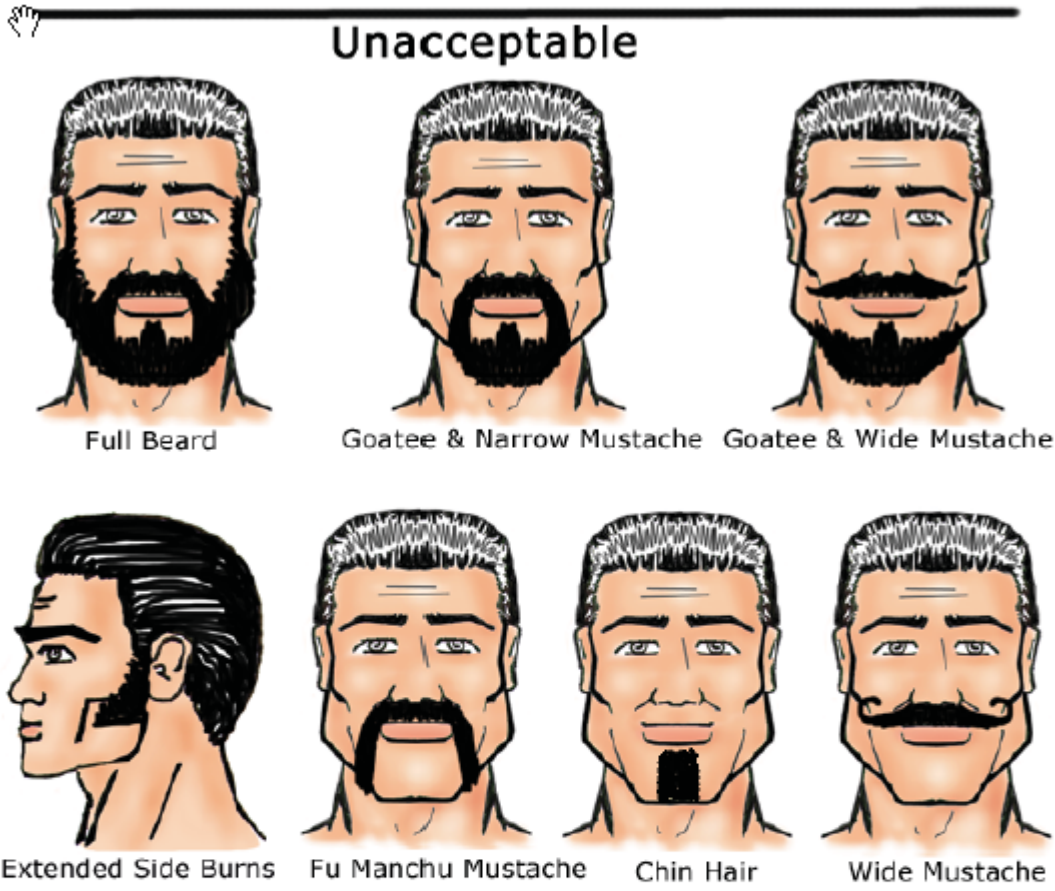
Air volume required = 240 cubic feet/hour* x (A) x (B) x (C)

- Select the air source below that will provide the least number of cascades to complete the job:

Air Source Volumes	Number of Cascade	Total Air (cubic feet)
Single cylinder (307 cubic feet)		
2-cylinder cascade (614 cubic feet)		
4-cylinder cascade (1228 cubic feet)		
6-cylinder cascade (1842 cubic feet)		
8-cylinder cascade (2456 cubic feet)		
12-cylinder cascade (3684 cubic feet)		
24-cylinder cascade (7368 cubic feet)		
Small tube trailer (59,000 cubic feet)		
Jumbo tube trailer (159,000 cubic feet)		

* Reference: NIOSH Guide to Industrial Respiratory Protection, DHHS (NIOSH) Publication No. 87-116

Attachment K: GBR Facial Hair Requirements



Mustache ends at the corner of the mouth and/or hair below the lower lip must not be more than one half inch in length.

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Attachment L: Information for Employees Using Respirators When Not Required Under the Standard

29 C.F.R. 1910.134 Attachment D

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirator's limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

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Attachment M: Picture of Breathing Air Line Tag



Breathing Air Line Tags are stocked in the E/W Plant Warehouse, Bay Plant Warehouse, and can also be obtained from Total Safety at the E/W Plant Craft Building.