

# Hanford Site Respiratory Protection Program (HSRPP)

Prepared for the U.S. Department of Energy  
Assistant Secretary for Environmental Management



U.S. DEPARTMENT OF  
**ENERGY**

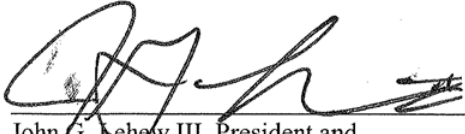
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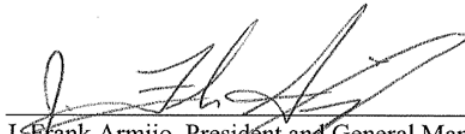
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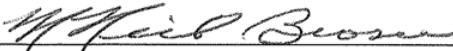
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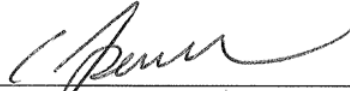
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**Hanford Site Respiratory Protection Program (HSRPP) List of Acronyms**

ACES	Access Control Entry System
ACGIH	American Conference of Governmental Industrial Hygienists
ANSI	American National Standards Institute
APF	Assigned Protection Factor
APR	Air Purifying Respirator
CFR	Code of Federal Regulations
CGA	Compressed Gas Association
DAC	Derived Air Concentration
DOE	Department of Energy
DOT	Department of Transportation
EJTA	Employee Job Task Analysis
EPA	Environmental Protection Agency
ESLI	End-of-Service Life Indicator
HAMTC	Hanford Atomic Metal Trades Council
HEPA	High-Efficiency Particulate Air
HFD	Hanford Fire Department
HID	Hanford Identification Number
HSRPP	Hanford Site Respiratory Protection Program
IDLH	Immediately Dangerous to Life and Health
IH	Industrial Hygiene
LOI	Lines of Inquiry
MSC	Mission Support Contract
MUC	Maximum Use Concentration
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Standards and Technology
OEL	Occupational Exposure Limit
OJE	On the Job Evaluation
OJT	On the Job Training
OSHA	Occupational Safety and Health Administration
PAPR	Powered Air-Purifying Respirator
PEL	Permissible Exposure Limit
PLHCP	Physician or Other Licensed Health Care Provider
PPE	Personal Protective Equipment
PRC	Plateau Remediation Contract
RAP	Radiological Assistance Program
RCCC	River Corridor Closure Contract
RPE	Respiratory Protection Equipment
RPPA	Respiratory Protection Program Administrator
SAR	Supplied Air Respirator
SCBA	Self-Contained Breathing Apparatus
SME	Subject Matter Expert
SOMC	Site Occupational Medical Contractor
SOMD	Site Occupational Medical Director
TLV	Threshold Limit Value
TOC	Tank Farms Operation Contract
WCH	Washington Closure Hanford

## 1.0 Purpose

This document establishes an integrated Hanford Site Respiratory Protection Program (HSRPP), herein called the Program.

The purpose of this Program is to provide information and requirements for consistent multi-contractor respiratory protection. These requirements are derived from Occupational Safety and Health Administration's (OSHA) 29 *Code of Federal Regulations* (CFR) 1910.134 (29 CFR 1910.134 incorporates 29 CFR 1926.103); Department of Energy (DOE) Respirator Acceptance Program for Supplied-air Suits (DOE-technical Standard-1167-2003 [10 CFR 851.A6]); and American National Standards Institute (ANSI) standard ANSI Z88.2-1992 (ANSI 1992). Portions of this Program implement requirements of 10 CFR 851 and 10 CFR 835.

## 2.0 Scope

This Program applies to all Hanford-Site Prime Contractors (see definition), herein called contractors, and all subcontractors who use respiratory protection.

This Program applies to activities where respiratory protection is required for hazards including radiological, chemical, particulate, and biological agents, and Immediately Dangerous to Life and Health (IDLH) or oxygen deficient atmospheres.

Special provisions for Hanford Safeguards & Security, Hanford Fire Department (HFD), and Radiological Assistance Program (RAP) are covered under their own internal policies and procedures.

The Mission Support Contract (MSC) shall be responsible for supporting the HSRPP Committee and for gathering relevant data and making it available to all contractors through the Mission Support Alliance Respiratory Protection Website (<http://www7.rl.gov/rapidweb/Respiratory/>).

Equivalencies to the Program are addressed in Section 5.0, *Subcontractor Equivalencies*.

## 3.0 Definitions

Definitions are derived from OSHA, ANSI, and relevant terms used at the Hanford Site.

**Air-Line Respirator**: An atmosphere-supplied respirator for which the source of breathing-air is not designed to be carried by the user.

**Air-Purifying Respirator (APR)**: A respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through an air-purifying element.

**Annual:** For training and mask fitting, annual refers to the exact date of training or mask fit (e.g. user training that occurred on April 1, 2008, would be due on or before April 1, 2009). For all other respiratory protection requirements annual refers to the date of activity completion until the end of the twelfth month following the date in which the activity originally occurred (e.g. user medical evaluation that occurred on October 5, 2008, would not be due until October 31, 2009).

**Assigned Protection Factors (APF):** The workplace level of respiratory protection that a respirator, or class of respirators, is expected to provide to employees when the contractor implements a continuing, effective respiratory protection program. See Appendix A: *Assigned Protection Factors Chart*

**Atmosphere-Supplying Respirator:** A respirator that supplies the user with breathing-air from a source independent of the ambient atmosphere; this includes supplied-air respirators and self-contained breathing apparatus.

**Breathing-air Distribution Systems:** Includes, but is not limited to, non-National Institute for Occupational Safety and Health (NIOSH) certified equipment (e.g. compressors, bottle carts, distribution boxes, distribution lines, gauges, and free-air pumps) used to supply breathing-air to NIOSH approved equipment.

**Canister or Cartridge:** A NIOSH approved air-purifying container/element with a filter, sorbent, and/or catalyst or combination of these items, which removes specific contaminants from the air.

**Clean Shaven:** The absence of facial hair in the area where the respirator rests against the face. Specifically, there must be no facial hair between the sealing periphery of the face piece and the face. No facial hair may interfere with the valve function. Facial hair such as moustaches and sideburns are permitted only if they do not extend into the sealing periphery or interfere with the valve function. Facial hair must not interfere, or have the potential to interfere, with the sealing surface and must not require manipulation (e.g. braiding, securing with rubber band/mouth) in order to use a respirator.

**End of Service Life Indicator (ESLI):** A system that warns the user of the approach of the end of adequate respiratory protection.

**Escape-Only Respirator:** A respirator intended only for use during emergency egress from a hazardous atmosphere.

**Exclusive Use:** Respiratory protection equipment (RPE) assigned to an individual who will maintain control, storage, and cleanliness for a specified period of time as approved by the RPPA.

**Filtering Facepiece (Dust Mask):** A NIOSH approved negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.



**Fit Test:** The protocol to quantitatively evaluate the fit of a respirator on an individual.

**Hanford-Site Prime Contractors:**

Mission Support Contractor (MSC): Mission Support Alliance LLC  
Plateau Remediation Contractor (PRC): CH2M HILL Plateau Remediation Company  
River Corridor Closure Contractor (RCCC): Washington Closure Hanford LLC  
Tank Operation Contractor (TOC): Washington River Protection Solutions LLC  
Site Occupational Medical Contractor (SOMC): AdvanceMed Hanford

**High-Efficiency Particulate Air (HEPA) Filter:** A filter that is at least 99.97% efficient in removing particles of 0.3 micrometers in diameter and includes NIOSH filters N100, R100, and P100.

**Hood:** A respirator (respiratory inlet covering) that completely covers the head and neck and may cover portions of the shoulders and torso.

**Immediately Dangerous to Life or Health (IDLH):** An atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

**Loose-Fitting Facepiece:** A respirator (respiratory inlet covering) that does not form a complete seal with the face.

**Maximum Use Concentration (MUC):** The maximum atmospheric concentration of a hazardous substance from which an employee can be expected to be protected when wearing a respirator, and is determined by the assigned protection factor of the respirator or class of respirators and the exposure limit of the hazardous substance. The MUC can usually be determined mathematically by multiplying the assigned protection factor specified for a respirator by the permissible exposure limit (PEL), short-term exposure limit, ceiling limit, peak limit, or any other exposure limit (e.g. Derived Air Concentration [DAC], Occupational Exposure Limit [OEL]) used for the hazardous substance.

The MUC for respirators is calculated by multiplying the APF for the respirator by the PEL. The MUC is the upper limit at which the class of respirator is expected to provide protection. Whenever the exposures approach the MUC, then the employer should select the next higher class of respirators for the employees.

Employers must not apply MUCs to conditions that are immediately dangerous to life or health (IDLH); instead, they must use respirators listed for IDLH conditions. When the calculated MUC exceeds the IDLH level for a hazardous substance, or the performance limits of the cartridge or canister, then employers must set the maximum MUC at that lower limit.

**Negative Pressure Respirator:** A respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.

**Occupational Exposure Limit (OEL):** A generic term used to represent: (1) the concentration or intensity of the agent that is allowable; (2) the time period over which workplace concentrations are averaged to compare with the allowable intensity; (3) the allowable level of a determinant in a biological sample. Some substances may have several OELs (e.g. one for 8 hours, one for 15 minutes, and a not-to-exceed ceiling). OELs include regulated limits (e.g. OSHA's Permissible Exposure Limits [PEL] and Threshold Limit Values [TLV] published by the American Conference of Governmental Industrial Hygienists [ACGIH]).

**Oxygen-Deficient Atmosphere:** An atmosphere that contains an oxygen content of less than 19.5% by volume.

**Positive Control:** Prevention of access or use by unauthorized personnel.

**Positive Pressure Respirator:** A respirator in which the pressure inside the facepiece or hood exceeds the ambient air pressure outside the respirator.

**Powered-Air Purifying Respirator (PAPR):** An air-purifying respirator that uses a blower to force the ambient air through an air-purifying filter, cartridge, or canister to the facepiece or hood.

**Quantitative Fit Test:** An assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

**Respirator:** A NIOSH or DOE approved configuration designed to protect the wearer from the inhalation of hazardous atmospheres.

**Respirator Cartridge Shelf Life:** The amount of time a respirator cartridge can be stored in its original factory packaging, as instructed by the manufacturer.

**Respiratory Protection Equipment (RPE):** Includes all components of respirator configurations and breathing-air distribution systems.

**Respiratory Protection Program Administrator (RPPA):** A qualified individual assigned by the contractor who has responsibility and authority for the management of the Program.

**Self-Contained Breathing Apparatus (SCBA):** An atmosphere-supplying respirator for which the breathing source is designed to be carried by the user.

**Site Occupational Medical Contractor (SOMC):** The Site Occupational Medical Contractor (SOMC), for purposes of this Program, is AdvanceMed Hanford (AMH).

**Site Occupational Medical Director (SOMD):** The physician or their designee responsible for the overall direction and operation of the site occupational medical program at Hanford. The SOMD is the site Physician or other Licensed Health Care Provider (PLHCP) and is employed by the SOMC.

**Supplied-Air Respirator:** An atmosphere-supplied respirator for which the source of breathing-air is not designed to be carried by the user.

**Tight-Fitting Facepiece (Mask):** A respiratory facepiece that forms a complete seal with the face; includes half-face and full-face respirators.

**User Seal Check:** An action conducted by the respirator user to determine if the respirator is properly seated to the face.

## 4.0 Roles and Responsibilities

### 4.1 Hanford Site Contractors

It is the responsibility of contractors to:

- Develop management systems necessary to implement the HSRPP
- Execute the requirements of the Program and flow down those requirements to all subcontractors
- Appoint a Respiratory Protection Program Administrator (RPPA) and:
  - Assign them the authority to ensure the Program's proper and effective implementation
  - Appoint them to the HSRPP Committee
  - Assign them to facilitate the Contractor Respiratory Protection Committee(s)
  - Ensure they maintain competency through professional development (e.g. training, American Industrial Hygiene Conference, DOE RPPA Conference, continuing education) on a minimum annual basis.
- Ensure that each line organization/project has:
  - An SME(s), as designated by management with RPPA concurrence
  - A management point of contact
  - A trained and qualified respiratory protection issuer
  - Established a controlled distribution point
  - Implemented respiratory protection equipment (RPE) issuance and control requirements as defined in Section 13.0, *Issuance*, and Section 14.0, *Positive Control of RPE*
- Establish a Contractor Respiratory Protection Committee(s) to discuss issues, concerns, or events that occur in the area of respiratory protection. Committees shall include representation of bargaining unit and non-bargaining unit employees and ensure good communication through each group's representative(s) on the HSRPP Committee.

### 4.2 Hanford Site Respiratory Protection Program (HSRPP) Committee

The HSRPP Committee shall be the collective interpretive authority for the HSRPP, as per the Charter (Attachment 1, *Hanford Site Respiratory Protection Program [HSRPP] Committee Charter*).

#### **4.3 Contractor Respiratory Protection Committee**

The minimum roles and responsibilities of the Contractor Respiratory Protection Committee(s) are as follows.

- Actively seek worker input in regards to the Program
- Meet regularly as necessary, but no less than quarterly, via scheduled meetings
- Design the committee to have representation from both bargaining and non-bargaining employees
- Assist in annual evaluations of the Program
- Assist line management with consistent implementation of the Program
- Review performance, trends, incidents, good practices, lessons learned, and assessments; communicate information and provide Program improvement suggestions to the responsible contractor organization
- Raise worker level issues/concerns to the HSRPP Committee, as deemed necessary, through the HSRPP Committee member(s)

#### **4.4 Respiratory Protection Program Administrator (RPPA)**

The RPPAs, within their designated contractor, shall:

- Administer and coordinate the Program
- Serve as the interpretive authority for respiratory protection issues
- Track any respiratory protection issues or concerns, maintain and evaluate proposed resolutions, and determine whether issues are submitted to the contractor's corrective action system
- Ensure the quality of compressed gas cylinder or compressor supplied breathing-air meets the air quality standards as listed in Section 12.0, *Breathing-air Quality and Use*
- Evaluate new types of RPE
- Approve procurement and use of RPE
- Maintain knowledge of RPE being used on the Hanford Site
- Keep abreast of current issues, advances, and regulations through interacting with other RPPAs, manufacturers, DOE RPPA Forum, etc
- Serve as the primary point of contact for the HSRPP Committee for contractor level issue resolution
- Participate in the HSRPP Committee or designate an alternate
- Report any issues or concerns, with wider application requiring further action for resolution, to the HSRPP Committee
- Evaluate applicable lessons learned and other sources of information and communicate the information to the HSRPP Committee, and others, as appropriate

#### **4.5 Management/Supervision**

Individuals with employees under their direct supervision who use RPE are responsible for ensuring:

- A hazard analysis and an exposure assessment are performed and documented prior to work assignments to protect workers against hazards including radiological, chemical, particulate, and biological agents, and Immediately Dangerous to Life and Health (IDLH) or oxygen deficient atmospheres
- Employees know the hazard that requires the use of RPE and any job specific limitations for the assigned equipment
- Employees are fully qualified, per the Program, to wear respiratory protection before being assigned to work
- Employees receive RPE that is clean and in good working order
- Assigned issuers are trained and qualified
- Adequate supplies are available for issuance of RPE
- Proper care and use of RPE is enforced
- Coordination between the facility/project and the RPPA to promptly implement corrective actions for inadequate RPE practices, equipment defects, or other RPE issues at the worksite
- They are trained annually on the same RPE as their workers
- They obtain RPPA concurrence and determination on whether issues are submitted to the contractor's corrective action system
- SME(s) are designated, with RPPA concurrence

#### **4.6 Subject Matter Expert (SME)**

The SME(s), as designated by management with RPPA concurrence, shall be responsible for helping the facility/project they are assigned to:

- Identify, resolve, and document respiratory protection issues
- Communicate with projects and management for changes in respiratory protection requirements
- Participate in field trials to determine suitability of RPE
- Participate in Program evaluations
- Perform Program responsibilities as delegated by the RPPA

#### **4.7 User**

The user shall be responsible to:

- Meet the qualifications requirements of the Program for the use of RPE (current medical, fit testing, and training)
- Be knowledgeable of RPE selected/prescribed by the Industrial Hygienist (IH) or Radiological Engineer for work activities and assure RPE requested and issued is correct
- Provide documentation of medical clearance, fit testing, and/or training as requested by issuer (if this information is not available electronically)

- Inspect and use RPE provided in accordance with the Program
- Perform positive and/or negative seal checks, as applicable, when donning a tight-fitting facepiece
- Notify supervisor(s) of physical changes that could affect fit or use of RPE
- Immediately report any issues encountered with RPE to the supervisor, IH, and issuer and participate in the issue resolution process
- Maintain positive control of RPE in accordance with the Program
- Be clean shaven for training, fit testing, and use of a tight-fitting facepiece
- Obtain respiratory protection medical clearance prior to using RPE and follow limitations/restrictions specified by the Site Occupation Medical Contractor (SOMC)
- Wear corrective lenses (contacts or mask spectacle kits) during the use of a respirator when needed to safely perform job duties
- Wear only approved manufacturer mask spectacle kits, specific to the brand of respirator, that can be mounted inside the respirator without interfering with the facial sealing surface

#### **4.8 Respiratory Protection Issuer**

Issuers shall be responsible to:

- Be trained and qualified
- Verify user qualifications
- Verify and issue required RPE
- Verify RPE maintenance/expiration dates
- Verify RPE configuration
- Ensure documentation for issuance and return is completed
- Perform RPE accountability checks, as required, and inform management of any issues
- Assist in processing issues and concerns
- Coordinate periodic maintenance
- Restock issuance station equipment and supplies
- Clean/sanitize RPE per manufacturer's recommendations or HSRPP Committee approved methods
- Maintain issuance station positive control when assigned

#### **4.9 Training and Fit Testing Provider(s)**

The training and fit testing provider(s) shall:

- Develop consistent training and fit testing procedures that meet contractor needs
- Comply with manufacturer and regulatory requirements
- Administer/deliver respiratory protection training, respiratory protection issuer training, and fit testing

- Review training materials, lesson plans, and course effectiveness at least annually

## **5.0 Subcontractor Equivalencies**

Subcontractors, and their workforce, brought on the Hanford Site for specialized/unique work for 30 working days or less annually and who require RPE not available through this Program may request an RPPA review for equivalency. RPPAs may grant equivalencies to the Program, provided those subcontractor programs have been reviewed and deemed by the RPPA as providing the same level of protection as the HSRPP. The RPPA shall inform the HSRPP Committee of requested and granted equivalencies. The HSRPP Committee shall maintain a list of granted equivalencies.

## **6.0 Medical Evaluation**

The employer shall provide a medical evaluation to determine the employee's ability to use RPE. The medical evaluation and qualification shall occur before the employee is fit tested, trained, or required to use RPE in the workplace. The Physician or Other Licensed Health Care Professional (PLHCP) shall conduct a medical evaluation, including any follow-up examination, in accordance with OSHA 29 CFR 1910.134, Section E, Appendix C, and ANSI Z88.6-1984. For the purposes of this Program, the PLHCP is the Site Occupational Medical Director (SOMD).

### **6.1 Medical Evaluation Process**

The contractor shall ensure employees that are required to use RPE are identified and an Employee Job Task Analysis (EJTA) is completed or revised to indicate respirator use. Once the EJTA has been submitted to the SOMC a respiratory medical evaluation shall be scheduled.

The HSRPP Committee shall communicate the type and weight of RPE worn to the SOMC so an accurate assessment of the employees' ability to perform duties can be made.

The contractor, through the EJTA system, shall communicate the following information to the SOMC so an accurate assessment of the employees' ability to perform duties is made:

- The anticipated duration and frequency of RPE use
- The expected physical work effort
- Additional protective clothing and equipment
- Temperature and humidity extremes that may be encountered

Upon receipt of the completed EJTA the SOMC shall conduct a medical evaluation that includes a medical questionnaire and examination. The SOMD may require medical tests, consultations, or diagnostic procedures as deemed necessary to make a final determination. Spirometry shall be available in the evaluation of the employees' respiratory protection medical examination.

The medical questionnaire and examinations shall be administered confidentially during the employees' normal working hours or at a time and place convenient to the employee. The SOMD shall administer the medical questionnaire in a manner that ensures that the employee understands its content. The contractor shall provide the employee with an opportunity to discuss the questionnaire and examination results with the SOMD.

The SOMC is responsible for providing the employee and contractor with a written recommendation (*Medical Examination Report and Opinion Letter*) regarding the employees' ability to use RPE and any limitations, including any requirements for corrective lenses.

The contractor shall rely on the SOMCs recommendation in determining if the employee is medically qualified to use RPE.

## **6.2 Additional Medical Evaluation**

Additional medical evaluations shall be required when changes occur that may negatively impact safe RPE use. For example:

- An employee reports medical signs or symptoms to their supervisor that are related to their ability to use RPE
- The SOMD, supervisor, or RPPA informs the contractor that an employee needs to be reevaluated
- Information from the Program, including observations made during fit testing and Program evaluation, indicates a need for employee reevaluation
- A change occurs in workplace conditions (e.g. physical work effort, protective clothing, or temperature) that may result in a substantial increase in the physiological burden placed on an employee

If a negative pressure respirator is to be used, and the SOMD finds a medical condition that may place the employee's health at increased risk, the contractor shall provide a powered air purifying respirator (PAPR), if the SOMD's medical evaluation finds that the employee can use such a respirator. This shall be documented as a medical work restriction. If a subsequent medical evaluation finds that the employee is medically able to use a negative pressure respirator, then the contractor is no longer required to provide a PAPR.

## **7.0 Training**

RPE training shall be provided in accordance with ANSI Z88.2-1992 and 29 CFR 1910.134(k), including the elements of user inspection required in 29 CFR 1910.134(h)(3)(ii). Consistent training is critical to successful implementation of the Program; therefore, training shall be provided by the Volpentest HAMMER Training and Education Center (HAMMER).

**NOTE:** *It is preferred that the River Corridor Closure Contract participants participate in central training through HAMMER, however, they may provide equivalent training identified within*



*the Program with RPPA oversight and approval. The HSRPP Committee shall review training for equivalency and consistency with the training provided by HAMMER and provide input to the RPPA. The RPPA shall communicate the approved training activities to the SOMC.*

HAMMER shall provide the SOMC with course numbers and descriptions to review training activities that involve the use of RPE to establish parameters for medical clearance limited to these training activities. Any change in activities shall be reviewed by the SOMC prior to training to maintain consistency with the medical clearance.

RPE used or designated for respiratory training and mask fit purposes is exempt from issuance requirements.

Employees being trained on RPE that requires the use of a tight-fitting facepiece must be clean shaven prior to the start of training.

It is recommended that employees wear their mask spectacle kits during training or use a frame provided by HAMMER.

In addition to OSHA and ANSI requirements HAMMER RPE training shall include, at a minimum, the following.

- Utilization of the HAMMER/HAMTC (Hanford Atomic Metal Trades Council) Worker Trainer Program
- RPE use (hands-on use for initial training)
- Completion of a one-on-one practical evaluation on RPE during initial and refresher training with the Worker Trainers
- Refresher training focused on global issues, such as lessons learned, feedback from the field, etc
- Training on RPE that employees are required to operate or attend (e.g. bottle carts, compressors)

Contractors shall ensure that individuals providing direct supervision of RPE users are trained and qualified annually to the same level as the workers they are supervising. Supervisors shall maintain RPE training on the equipment being used at their site. This training is optional for managers who do not exercise direct supervision of the work site activities where RPE is used.

Contractors shall ensure that RPE issuers receive and maintain training and qualifications on the equipment they are issuing. (For additional issuer training needs see Section 13.0, *Issuance*)

**NOTE:** *If a supervisor or issuer has an accommodated restriction that precludes them from donning the equipment, their training shall include all other aspects of the equipment.*

Contractors shall ensure employees receive appropriate initial and annual refresher training on all RPE the employee is approved and qualified to use.

Retraining shall be administered if there are significant changes to the type of RPE used at the work site or when a trained employee exhibits a lack of understanding of the proper use of RPE.

Employees who do not use RPE on a regular basis may request equipment reviews and assistance.

Where escape-only respirators are provided, employees assigned to the area shall be trained in their use.

## **8.0 Fit Testing**

Consistent application of the mask fitting process is critical to successful implementation of the Program; therefore, fit testing shall be provided by HAMMER.

**NOTE:** *It is preferred that the River Corridor Closure Contract participate in central mask fitting through HAMMER, however, they may provide equivalent fit testing with RPPA oversight and approval. The HSRPP Committee shall review the fit testing for equivalency to the fit testing provided by HAMMER and provide input to the RPPA.*

Fit testing shall be conducted in accordance with 29 CFR 1910.134, Appendix A (Part 1A and 1C), ANSI Z88.2 Section 9, and current HAMMER Fit Test Station procedures. Fit testing personnel shall be qualified in accordance with ANSI Z88.10-2001.

RPE used or designated for respiratory training and mask fit purposes is exempt from issuance requirements.

The Program requires a fit factor of at least 1000 for a full-face facepiece and at least 100 for a half-face facepiece or filtering facepiece.

Quantitative fit testing is required for all employees using a tight-fitting facepiece and shall be conducted at least annually. It may be more frequently required if any of the following factors apply.

- Facial surgery/scarring
- Obvious weight gain or loss
- Significant dental changes (e.g. dentures, braces)
- Facial piercing
- Any other conditions that may affect facepiece seal

Prior to fit testing employees shall be medically qualified, clean shaven, and trained on the make and model of the facepiece for which they will be fit tested.

If the respirator becomes unacceptable (e.g. causes irritation or pain) to the employee, the employee shall be given the opportunity to select a different respirator facepiece and be retested.

If a filtering facepiece respirator is required by the contractor, then the entire Program applies, including fit testing.

If a filtering facepiece is not required, it may be used without a fit test or other respirator use requirements.

The employee shall be issued a quantitative fit test card that indicates the make, model, and size of the facepiece fitted.

It is recommended that employees wear their mask spectacle kits during fit tests or use a frame provided at the HAMMER mask fit station.

## **9.0 Exposure Assessment**

Contractors shall develop and implement qualitative and/or quantitative exposure assessments. The exposure assessment identifies and evaluates potential respiratory hazards in the workplace, including a reasonable estimate of employee exposures to respiratory hazard(s) and an identification of the contaminants chemical state and physical form. The following shall be included in the exposure assessment, as appropriate.

- Estimate and/or measurement of the airborne concentrations of chemical or particulate contaminants before selection RPE
- Evaluation of the potential need for bioassay monitoring
- Implementation of monitoring required by applicable OSHA specific standards (e.g. asbestos, lead) and maintaining or modifying RPE, as appropriate, based on results
- Use of appropriate work control documents to document the hazard(s) and establish job-based exposure monitoring to be conducted

After the exposure assessment is completed and implemented contractors shall periodically validate RPE adequacy, as appropriate.

## **10.0 Selection of Respiratory Protection Equipment (RPE)**

RPE shall only be selected after a documented evaluation of engineering and administrative controls. When effective engineering and administrative controls are not feasible, or while they are being instituted, appropriate RPE shall be used pursuant to this Program. RPE selection shall be based on the documented exposure assessment. Where the employer cannot identify or reasonably estimate the employee exposure, the employer shall choose a supplied air respirator (SAR) with pressure demand regulators and escape provisions.

Only respirators approved by NIOSH or DOE (per 10 CFR 851.A6) shall be used.

RPE shall be selected from the *Hanford Site Respiratory Protection Program (HSRPP) Approved RPE List*. The list shall be approved and maintained by the HSRPP Committee and located on the Mission Support Alliance Respiratory Protection website (<http://www7.rl.gov/rapidweb/Respiratory/>). The contractor's RPPA shall approve equipment from the *Hanford Site Respiratory Protection Program (HSRPP) Approved RPE List* for procurement and use. Any addition to or removal from the list shall follow Appendix

*B: Addition and Removal Process for the Hanford Site Respiratory Protection Program (HSRPP) Approved RPE List.*

RPE shall be selected by the Project IH/RPPA and Radiological Engineer. Selection of RPE shall include:

- Knowledge of conditions expected in the work area, including estimates of potential exposures, using models and current or historical exposure assessment data
- The assigned protection factor (APF) of the respirator that meets or exceeds the required level of employee protection. (See Appendix A: *Assigned Protection Factors Chart*)
- Capabilities and/or limitations of RPE available for use
- The ability to integrate with other Personal Protective Equipment (PPE)
- Identification of IDLH and/or oxygen deficient atmospheres

**NOTE:** *Consider the need for protection of the skin and eyes, comfort, stress, visibility, hearing ability, temperature, and safety factors when selecting the type of respirator.*

**NOTE:** *The NIOSH Respirator Decision Logic may be used for guidance. Link maintained on the Mission Support Alliance Respiratory Protection website (<http://www7.rl.gov/rapidweb/Respiratory/>).*

RPE for chemical or other non-radiological purposes shall be selected by the Project IH/RPPA and reviewed for concurrence by the Radiological Engineer.

RPE used for radiological purposes shall be selected by the Radiological Engineer and reviewed for concurrence by the Project IH/RPPA.

When chemical or other non-radiological hazards are present along with radiological hazards the Project IH and Radiological Engineer shall collaborate to select and approve RPE appropriate for the combination of hazards.

The Project IH/RPPA and Radiological Engineer shall specify the required respiratory protection on the Respiratory Protection Form (A-6005-593), including the type of respiratory protection (e.g. PAPR, airline with escape bottle, APR [full-face or half-face]) and the type of canister/cartridge and change out schedule to be used. A downgrade of respiratory protection shall be included in the work control documents and on the Respiratory Protection Form (A-6005-593). The user may request an upgrade of RPE, if the upgrade does not produce additional safety hazards. If available and allowed, the option to upgrade shall be included in the work control documents and on the Respiratory Protection Form (A-6005-593). Management, or a designee, shall provide the Respiratory Protection Form (A-6005-593) to the issuance station and communicate the requirements to the affected workers.

The maximum use concentration (MUC) is used to select air-purifying respirators (APR) with the appropriate level of respiratory protection. The MUC shall not exceed the capabilities of the cartridge or the IDLH concentrations.

The contractor shall ensure the APF is appropriate to the mode of operation in the RPE is being used.

An APR shall only be used where the hazard has been identified and an exposure assessment has been completed and documented.

A self-contained breathing apparatus (SCBA) or airline respirator with escape bottle shall be used when the identity of a potential airborne hazard has not been determined by a completed exposure assessment or the known airborne hazard requires this level of protection. If sufficient information on the airborne hazard is determined, a lower level of respiratory protection may be selected.

The respiratory protection requirements for emergency response, such as entry for rescue, shall be established in the emergency response plan, where one is required.

#### **11.0 Change-Out Schedules for Canisters/Cartridges and Filters**

A change-out schedule for chemical canisters/cartridges shall be established based upon an identified gas or vapor hazard. The IH shall develop the change-out schedule based on the results of an exposure assessment for conditions found in the work place. Use of warning properties as the sole basis for determining change-out schedules is prohibited. At a minimum, the following influencing factors shall be considered.

- Temperature
- Humidity
- Atmospheric pressure
- Work rate
- Specific contaminants
- Concentration

Information used to establish the change-out schedule may include breakthrough test data, recommendations from respirator manufacturers, or substance-specific change-out schedules developed by OSHA. The change-out schedules shall be developed by the IH using the manufacturers' canister/cartridge service life calculation program or Math Model per OSHA "Respirator Change Schedule" found at: <http://osha.gov/SLTC/etools/respiratory/index.html>.

Chemical canisters/cartridges with an ESLI shall be changed out based on the change-out schedule or the ESLI, whichever comes first (ESLI canister/cartridges require monitoring by a co-worker when used).

When establishing cartridge change-out schedules for specific gases or vapors, verify that OSHA has not already established a change-out schedule for that chemical.

The IH shall provide the change-out schedule for the type of canister/cartridge selected by documenting the schedule in the appropriate work control documents and on the Respiratory Protection Form (A-6005-593). Management shall ensure the change-out schedule is communicated to the assigned workers.

There is no requirement for a calculated change-out schedule for particulate filter canisters/cartridges. Particulate filters shall be changed out after a maximum of two consecutive shifts or whenever the wearer notices a change in breathing-air resistance.

## 12.0 Breathing-air Quality and Use

### 12.1 Quality

Employees using atmosphere-supplying respirators (SAR and SCBA) shall be provided breathing-air which meets at least Grade D quality, as specified by OSHA 1910.134(i) *Breathing-air Quality and Use*, ANSI Compressed Gas Association (CGA) Commodity Specification for Air (G-7.1-1989), and ANSI Z88.2-1992.

**Table 1. Grade D Breathing-air Criteria**

Oxygen	19.5-23.5% by volume
Hydrocarbon/Oil	<5mg/cubic meter
Carbon Monoxide	<10 ppm
Odor	lack of noticeable odor
Carbon Dioxide	<1000 ppm

Breathing-air analysis shall be performed by the MSC or Project IH, per MSC-25698, *Breathing-air Analysis*, or an equivalent process approved by the Hanford Site Contractor's RPPA. The results shall be made available to the Hanford-Site Contractor's RPPA(s) for review.

Compressed air from cylinders used for air line respirators shall have a dew point that does not exceed -45.6°C (-50°F) at 1 atmosphere pressure.

Compressed air used for SCBA/escape cylinders shall have a dew point of -53.9°C (-65°F) or less.

Compressors used to supply breathing-air shall be designed to prevent the entry of contaminated air into the air-supply system with a maximum dew point of 5.5°C or 10°F below the ambient temperature at 1 atmosphere pressure.

### 12.2 Breathing-air Distribution Systems

Breathing-air distribution systems shall not be compatible with outlets for non-breathing-air systems (e.g. instruments, air horns, pneumatic equipment). Fixed breathing-air outlets shall be identified "Breathing-air."

No asphyxiating substances shall be introduced into breathing-air lines.

Free air pumps shall be located to prevent the entry of contaminated air into the air supply.

Breathing-air distribution systems shall be maintained and operated in accordance with manufacturer instructions.

### **12.2.1 Compressors**

Compressors used to supply breathing-air shall be designed and positioned to prevent the entry of contaminated air into the air-supply system and shall have suitable air purifying sorbent beds and in-line filters to further ensure breathing-air quality. Sorbent beds and filters shall be maintained and replaced or refurbished periodically following the manufacturer's instructions.

Compressors shall have a tag containing the most recent change date and the signature of the person authorized by the contractor to perform the change. The tag shall be maintained at the compressor.

Contractors shall ensure periodic maintenance and replacement or refurbishment of compressor, associated air purifying filter media, pressure regulators, and gauges are performed by trained personnel according to manufacturer recommendations.

Breathing-air provided by compressors shall be tested prior to use and at an interval of every month, if in continuous use. Compressors shall also be tested any time that there is a question of breathing-air quality or when modifications/repairs are conducted. The RPPA shall determine which modifications/repairs will require breathing-air quality testing.

For oil lubricated compressors a high-temperature or carbon monoxide alarm, or both, shall be used. If only high temperature alarms are used, the air supply shall be monitored at intervals sufficient to prevent carbon monoxide in breathing-air from exceeding 10ppm.

The IH shall perform representative sampling of the compressor air output to ensure air quality meets the applicable requirements as part of acceptance testing prior to use.

The IH shall ensure a continued high quality air supply and, to account for any distribution system contamination, take a representative sample at distribution supply points.

The RPPA shall periodically verify use, operation, and testing of compressor systems.

### **12.2.2 Cylinders for Bottle Carts, Cascade Systems, and Manifolds**

Purchased bottled breathing-air shall be analyzed upon receipt including verification that the certificate of analysis documents that the air meets Grade D specifications (see Table 1 above). Bottles are identified by lot number and sampling shall be performed by the MSC or Project IH, per MSC-25698, *Breathing-air Analysis*, or an equivalent process approved by the Hanford Site Contractor's RPPA, on at least 10% of each lot.

Pressurized cylinders shall be tested, maintained, and transported in accordance with the Shipping Container Specification Regulations of the Department of Transportation (DOT) (49 CFR part 173 and part 178), and be within hydrostatic test limits.

Cylinders shall be tagged appropriately as FULL, IN USE, or EMPTY.

Breathing-air containers shall be permanently and legibly marked “Breathing-air.”

### **12.3 Self-Contained Breathing Apparatus (SCBA) and Escape Bottles**

Pressurized cylinders, including SCBA and escape bottles, shall be tested and maintained in accordance with the Shipping Container Specification Regulations of the DOT (49 CFR part 173 and part 178), and be within hydrostatic test limits. (The HFD maintains the SCBA and escape bottles.)

The HFD maintains the documentation for the Hanford Site on air quality analysis for SCBA/escape cylinders. Sampling shall be performed by the MSC, per MSC-25698, *Breathing-air Analysis*. The results shall be made available to the Hanford-Site Contractor’s RPPA(s) for review.

## **13.0 Issuance**

Common issuance and positive control practices shall be established for RPE.

### **13.1 Trained and Qualified Issuers**

Contractors shall ensure that respiratory protection issuers are trained, qualified, and proficient prior to being assigned issuer duties. Issuers shall be designated by management with RPPA or IH/SME/delegate concurrences. Issuers shall receive training on the same RPE that is being issued at their station. Training and qualifications shall be renewed annually and shall utilize issuer involvement during development and delivery.

Issuers shall receive HAMMER Site-wide Issuer Training and Site-specific Issuer Training.

HAMMER Site-wide Issuer Training course content shall include, at a minimum, specific requirements of this Program, manufacturer requirements, DOE complex lessons learned, equipment specific configuration requirements, and blood borne pathogen hazards and controls.

Site-specific Issuer Qualifications shall be provided and documented through On the Job Training (OJT) and On the Job Evaluations (OJE). Management shall designate a knowledgeable and qualified issuer(s) and/or SME to provide OJT and OJE. The site-specific issuer qualifications shall include, at a minimum, all applicable elements of Section 13.0, *Issuance*, Section 14.0, *Positive Control of RPE*, and Section 16.0, *Maintenance and Care of RPE*.



If an issuer is no longer proficient or exhibits a lack of understanding on the issuance of RPE, one of the following shall be performed.

- They shall work with a trained and qualified issuer for one day for reorientation
- The SME/Management, with RPPA concurrence, shall perform an evaluation to determine the additional training that is required

### **13.2 User Responsibility for Issuance**

The respiratory user is responsible for requesting the appropriate RPE as stated on the Respiratory Protection Form (A-6005-593).

### **13.3 Issuance Station**

Issuance stations shall be designated by management (using the *Respiratory Protection Equipment (RPE) Issuance Station Identification Form* [<http://www7.rl.gov/rapidweb/Respiratory/>]), approved by the RPPA(s), and maintained in accordance with Section 16.4, *Storage*.

Management shall ensure that each issuing station has:

- Assigned only trained and qualified issuers to issue RPE, maintain positive control of the area, and ensure that it is not open to unauthorized personnel
- Made issuers aware of additional needs for future projects
- Sufficient RPE available for work being performed
- Developed appropriate documents/procedures for issuance requirements
- Assigned a unique identification number or barcode for RPE that requires maintenance and/or calibration (or any equipment designated by the RPPA) that is available for use. Equipment shall be tracked on a monthly basis and documented using the unique identification number or barcode.
  - RPE removed from service shall be documented using the unique identifier. The responsible manager or RPPA shall be notified when an item is removed from inventory.

### **13.4 Pre-Issuance Verification**

Issuers shall verify and issue required RPE per the Respiratory Protection Form (A-6005-593).

The following respiratory user qualifications shall be verified and current prior to issuance.

- Medical clearance
- Training for the type of RPE requested
- Successful mask fit on make, model, and size of facepiece to be issued
- No facial hair or other physical condition that interferes with
  - The proper seal on a tight fitting mask
  - The neck band on a single bib hood per manufacturer's instructions

#### **13.4.1 Sources of Verification**

The respiratory user's training, medical, and mask fit qualifications shall be verified by using any of the following sources:

- Hanford Site Mask Fit card (preferred) or RPPA approved mask fit card
- Crystal Reports database (preferred)
- ACES station database
- Original documentation
  - Training Completion Record (TCR)
  - SOMC (*Medical Examination Report and Opinion Letter*)
    - Conditional half-sheet approval for fit-testing and training is NOT clearance for RPE use in the workplace
- Washington Closure Hanford (WCH) Training Database
- WCH Qualification card

#### **13.4.2 Tight-Fitting Facepiece Issuing Requirements**

Issuers shall use the mask fit card picture to aid in verifying that the user is clean shaven and has no:

- Additional facial hair
- New facial surgery/scarring
- Obvious weight gain or loss
- Significant dental changes
- Facial piercings in the seal surface area
- Other condition that may affect facepiece seal

#### **13.5 Respiratory Protection Equipment (RPE) Issuance Log**

A log shall be maintained by the issuer for the purpose of tracking issuance and as a method of accountability for return or status of RPE that is issued. At a minimum, the form shall require the following.

- User name
- Applicable unique equipment identifier
- Date issued
- Date of return or status
- Location used
- Canister/cartridge type
- Issuer's initials
- User's initials or signature
- Size of mask
- Make and model of RPE

The log may also include, but is not limited to, the following:

- Time issued
- Hanford Identification (HID) Number
- Applicable work control document number

- Mask issuance station location/identification number
- Mask fit expiration date
- Training expiration date
- Medical/physical expiration date

### **13.6 Length of Issuance**

RPE shall be issued for the entry or shift, but shall not exceed a maximum of two (2) consecutive (back-to-back) shifts.

Exclusive use RPE is assigned to an individual for a period of time exceeding two (2) consecutive (back-to-back) shifts and shall be approved by the RPPA. An alternate return cycle shall be established, documented, and approved by the RPPA. All requirements for storage, cleaning, and change-out schedules are applicable.

### **13.7 Issues and Concerns**

The issuance station and SME shall serve as focal points to receive feedback regarding RPE and assist management in reporting issues. Each contractor shall use the *Respiratory Protection Issue and Concern Form* to report issues; forms shall be forwarded to the RPPA. The RPPA shall use the form for the purposes of identification, resolution, and trending. Trends shall be discussed and passed along to the appropriate organizations (e.g. training, medical) via the HSRPP Committee. Appropriate information shall be posted on the Mission Support Alliance Respiratory Protection Website (<http://www7.rl.gov/rapidweb/Respiratory/>).

If there is an urgent issue involving RPE the HSRPP Committee Chair shall be notified immediately. This is in addition to, and does not replace, any required notifications under DOE orders and/or company policy.

### **14.0 Positive Control of Respiratory Protection Equipment (RPE)**

The purpose of the positive control of RPE is to limit access and use only to authorized personnel, which is necessary to prevent loss, damage, and/or contamination of RPE.

Issuance stations and issuance storage areas shall maintain positive control by:

- Preventing non-designated personnel from obtaining or issuing RPE
- Being locked or attended by trained and/or designated personnel at all times

Respiratory users are responsible for maintaining:

- Positive control of RPE during the period it is issued to them. During breaks in use (e.g. multiple shifts or lunch) the RPE shall remain under the control of the user or an attendant, or in a temporary storage area (see Section 16.4, *Storage*)
- RPE in a sanitary manner and readily identifiable so as to prevent loss, damage, cross contamination, and/or inadvertent use by another user

## **15.0 Use of Respiratory Protection Equipment (RPE)**

RPE shall be used in accordance with manufacturer and NIOSH approved configurations and shall not be modified or altered. Manufacturer labeling and identifying marks shall not be removed and must remain legible.

Respiratory users shall wear tight-fitting facepieces in the same manner they were fit tested (e.g. dentures, facial hair, braces, additional scarring).

RPE shall be inspected by the user prior to its use to ensure that it is in proper working condition. RPE Job Aids shall be made available to the user for assistance with inspections, donning, doffing, and use (as applicable). RPE Job Aids shall be maintained by the HSRPP Committee and located on the Mission Support Alliance Respiratory Protection Website (<http://www7.rl.gov/rapidweb/Respiratory/>).

Nose-cups shall be worn in respirators when specified by the manufacturer.

The requirement for corrective lenses can be met by the use of contact lenses or approved mask spectacle kits, specific to the brand of respirator used, that can be mounted inside the respirator without interfering with the facial sealing surface.

Anti-fog wipes or solutions approved by the respirator manufacturer may be used to reduce fogging as needed.

If upon entry or during work evolution an employee has difficulty breathing, becomes faint, has nausea, becomes dizzy, or shows other signs of becoming ill, the employee shall be immediately removed from the area and shall doff respiratory protection.

Appropriate surveillance of work area conditions and degree of employee exposure or stress shall be maintained. When there is a change in work area conditions or degree of employee exposure or stress that may affect RPE effectiveness, the employer shall reevaluate the continued effectiveness of the RPE.

### **15.1 Air-Purifying Respirators (APR)**

APRs (tight-fitting facepieces, filtering facepieces, PAPRs) shall be used to minimize personnel exposure to airborne radiological and/or chemical hazards when engineering and administrative controls are not feasible or adequate.

APRs do not protect against oxygen-deficient atmospheres or skin irritants and shall not be used in oxygen-deficient or IDLH atmospheres.

Half-face respirators and filtering facepieces are not applicable for radiation protection use.

Filtering facepieces used to control a regulatory identified contaminant (e.g. Environmental Protection Agency [EPA] or blood borne pathogen) shall be approved

by the RPPA. When filtering facepieces are prescribed all medical, fit testing, and training requirements apply.

PAPR hood use shall be evaluated for:

- Physical hazards that could damage or dislodge the hood, such as protruding objects, rapid air movement, or rotating equipment
- Personnel hazards such as space and visibility limitations
- Integration with fall protection (double bibbed hoods shall not be used)

PAPR blowers shall not be worn underneath clothing.

## **15.2 Air-Line Respirators**

Bottle cart operators shall follow the *Breathing-air Cart and Cascade System Checklist* (Form A-6004-341) for the Air Systems™ Breathing-air Cart while operating the cart; a current instruction sheet shall be provided with the bottle cart. The operator shall use the instruction sheet as a reference or shall obtain a copy to use for “checking off” each item as it is completed.

When air-line equipment is in use at least one trained attendant shall be located outside the respiratory use area to operate the air source and continuously monitor the equipment. The assigned air-line attendant shall not be used to provide emergency rescue support required for IDLH atmospheres or assigned to other duties.

For all IDLH atmospheres, employers shall ensure that:

- HFD provides trained and equipped standby support for effective emergency rescue capability outside the IDLH
- Support personnel located outside the IDLH atmosphere are equipped with appropriate RPE for assisting HFD
- One employee, at a minimum, is located outside the IDLH atmosphere and has no other duties assigned to them
  - Visual, voice, or signal line communication shall be maintained between the employee(s) in the IDLH atmosphere and the employee located outside the IDLH atmosphere
- The employer or employer-authorized designee, once notified, provides necessary assistance appropriate to the situation

The air-line hose shall be the same brand as the respirator being used and have Foster Schrader fittings. Hansen fittings may be used with approval from the contractor’s RPPA and review from the HSRPP Committee. When Hansen fittings are used, the hip disconnect shall be a Foster Schrader. Airline hoses shall not be used for non-breathing-air use and the fitting chosen shall not be compatible with fittings on non-breathing-air gas systems used at the work site.

Cylinders used for bottle carts (typically blue) shall be verified as Grade D breathing-air.

When breathing-air hoses have been staged at a worksite for an extended period of time they shall be inspected prior to use to determine if they are still in proper working condition.

The maximum hose length for airline respirators from the point of connection (at the air source or connection box) to the respirator connection is 300 feet, or the manufacturer's specification, whichever is less.

SARs are for use in adequately ventilated areas, not IDLH or oxygen deficient atmospheres, unless equipped with escape bottle provisions.

The use of purge/bypass valves is limited to emergency use. Use of purge/bypass air to supply continuous air flow into the mask while performing work is prohibited.

Never use compressed oxygen with supplied-air respirators.

Breathing-air shall not be used for purposes other than personal health and safety via an SAR and shall not be used to drive tools, equipment, or instruments. Conversely, air for pneumatic tools shall not be used for breathing-air.

An IH or Radiological Engineer shall make the determination if an escape cylinder is required.

### **15.3 Portable Air Systems**

A portable air system, such as the Scott Carri-Air™, utilizes an SCBA cylinder to supply air to a respirator.

When using a portable air system with hose lengths greater than 25 feet, or to supply air to a worker in an IDLH environment, an attendant must monitor the air supply and maintain visual and/or audio contact with the worker to notify when the alarm sounds.

### **15.4 Self-Contained Breathing Apparatus (SCBA)**

SCBAs with tight-fitting facepieces are used in pressure demand or positive pressure mode for the following reasons.

- IDLH atmospheres
- Entry into unventilated or confined area where exposure conditions are not characterized
- The nature and levels of hazardous agents are unknown
- Protection factors are required that cannot be met by APRs, PAPRs, or SARs
- A change-out schedule cannot be established and the cartridge/canister has no end-of-service-life indicator (ESLI)

### **15.5 Escape-Only and Emergency Use Respirators**

Escape-only respirators are intended only to be used for exit from an emergency situation such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of airborne contaminants.

When staged for emergency use, SCBAs shall be kept easily accessible to the work area, stored in compartments or covered, and clearly marked as containing emergency RPE.

Escape-only respirators and emergency use SCBAs shall not be considered staged until they have been fully assembled and properly inspected on a monthly basis. (Refer to the Mission Support Alliance Respiratory Protection Website [<http://www7.rl.gov/rapidweb/Respiratory/>] for the *Monthly Inspections of Escape-Only Respirators* and *Monthly Inspections of Self-Contained Breathing Apparatus*.)

### **15.6 Voluntary Use**

RPE may be provided to an employee upon request, when respiratory protection is not required, if the use does not produce additional safety hazards. Such use shall be approved by the Project IH/RPPA and the Radiological Engineer.

Voluntary use is only allowed for employees who are medically qualified, trained, and fit tested for the RPE requested. (See Appendix C, *Information for Employees Using Respirators When Not Required Under the Standard*) All other requirements of the Program, such as use, storage, and cleaning, apply to voluntary use.

When filtering facepieces (dust masks) are not prescribed, as required by this Program/regulation, they are considered comfort use only (e.g. non-hazardous nuisance dusts, odors, allergies) and do not require medical qualification, training, or fit testing.

## **16.0 Maintenance and Care of Respiratory Protection Equipment (RPE)**

OSHA regulations and NIOSH certification require that a maintenance and care program be established for RPE. The maintenance and care program shall include:

- Cleaning and Sanitizing
- Inspection
- Maintenance and Repair
- Storage
- Removing RPE from service

### **16.1 Cleaning and Sanitizing**

Respiratory users shall be provided with RPE that is cleaned and/or sanitized as approved by the manufacturer. Only manufacturer approved cleaning and sanitizing products shall be used.

Cleaning and sanitizing methods shall be approved and documented by the HSRPP Committee and followed by persons involved with cleaning and sanitizing for issuance. Changes to cleaning and sanitizing methods shall be reviewed by the HSRPP Committee. Methods shall be located on the Mission Support Alliance Respiratory Protection Website (<http://www7.rl.gov/rapidweb/Respiratory/>).

Cleaned RPE and the parts that require sanitizing (e.g. facepieces, PAPRs, regulators, hoods) shall be packaged and/or sealed to prevent intrusion of contaminants, dust, and/or insects.

Respirator facepieces, PAPRs, hoods, and regulators shall be cleaned and sanitized before being worn by different individuals.

RPE shall be inspected during cleaning to determine if it is in proper working condition, needs replacement of parts, repaired, or discarded.

RPE maintained for emergency use shall be cleaned and sanitized after each use, including any donning/doffing that may be required for monthly inspections.

RPE used in fit testing and training shall be cleaned and the parts that require sanitization shall be sanitized after each use.

RPE that is contaminated (e.g. radiological, beryllium, asbestos, blood, vomit) shall be controlled according to established procedures for handling and disposal.

Tight-fitting facepieces shall be cleaned and sanitized by an approved vendor using the procedures in OSHA 1910.134, Appendix B-2, or procedures recommended by the respirator manufacturer, provided that such procedures prevent damage to the respirator and do not cause harm to the user.

Where RPE is assigned to individuals for exclusive use, the facility/project SME shall establish and communicate cleaning and sanitizing instructions/schedules to the respiratory user to ensure the RPE is maintained in a sanitary condition.

## **16.2 Inspection**

Contractors shall ensure all RPE used in routine situations is inspected before each use and during cleaning.

The contractor shall ensure that RPE inspections include the following.

- A check of function, tightness of connections, and the condition of the various parts including, but not limited to, the facepieces, head straps, valves, connecting tube, and cartridges, canisters or filters
- A check of elastomeric parts for pliability and signs of deterioration

In addition to the requirements above, SCBAs shall be inspected monthly. SCBA cylinders shall be maintained in a fully charged state and shall be replaced or refilled when the pressure falls to 90% of the manufacturer's recommended pressure level. The contractor shall determine that the regulator and warning devices function



properly. Monthly inspections shall be performed in accordance with the *Monthly Inspections of Self-Contained Breathing Apparatus*, located on the Mission Support Alliance Respiratory Protection Website (<http://www7.rl.gov/rapidweb/Respiratory/>).

For RPE maintained for emergency use the contractor shall:

- Certify the RPE by documenting the date the inspection was performed, the name (or signature) of the person who made the inspection, the findings requiring remedial action, and a serial number or other means of identifying the inspected RPE
- Provide this information on a tag or label that is attached to the storage compartment for the RPE, is kept with the RPE, or is included in inspection reports stored as paper or electronic files. This information shall be maintained until replaced following a subsequent certification.

All RPE staged for emergency situations shall be inspected at least monthly in accordance with the manufacturer's recommendations and shall be checked for proper function before and after each use.

Emergency escape only respirators shall be inspected before being carried into the workplace for use.

### **16.3 Maintenance and Repair**

The RPE maintenance program shall be implemented according to the schedules and procedures established and maintained by the HSRPP Committee. Procedures shall be located on the Mission Support Alliance Respiratory Protection website (<http://www7.rl.gov/rapidweb/Respiratory/>). These schedules and procedures are developed to ensure that RPE is maintained, at a minimum, in accordance with manufacturer's instructions.

SCBAs, breathing-air regulators, bottle carts, and portable breathing-air manifolds shall be maintained following the established HFD maintenance procedures.

Maintenance to RPE shall only be performed by appropriately trained personnel and shall use only the respirator manufacturers' NIOSH-approved parts.

Reducing and admission valves, regulators, and alarms shall be adjusted or repaired only by the manufacturer or personnel trained by the manufacturer.

Instrumentation for valve, regulator, and alarm adjustments and flow tests shall be calibrated to a standard traceable to the National Institute of Standards and Technology (NIST).

RPE that fails an inspection during maintenance, or is otherwise found to be defective, shall be immediately removed from service and replaced, repaired, or discarded.

SCBA and Egress Cylinders:

- SCBA cylinders (60 and 30 minute) and SKA-PAK egress cylinders (10 and 5 minute) shall be maintained, inspected, and serviced by the HFD
- Cylinders shall be hydrostatic tested and maintained through the HFD in accordance with applicable DOT specifications for shipping containers (Title 49, CFR, Part 173, and Part 178)

#### **16.4 Storage**

RPE (excluding K-cylinders, SCBA cylinders, and egress cylinders) shall be stored in a climate controlled (40° to 110° F) area. All RPE shall be stored in a clean and sanitary manner that shall protect against loss or damage from vibrations, shocks, sunlight, excessive moisture, damaging chemicals, dust, or pests.

Facepieces, hoods, and other components, shall be stored to prevent deformation and shall be packaged and/or sealed to prevent intrusion of contaminants, dust, or insects.

Users are responsible for the proper storage of RPE and to maintain it in a clean and functional state during the period that it is issued to them.

For projects where temporary RPE storage during field use is necessary, adequate, identifiable packaging (e.g. re-sealable bag, respirator bag) and/or storage areas (e.g. attended location, locked office) shall be provided by management.

##### **16.4.1 Breathing-air Sources Staged for Work**

Staged breathing-air sources (bottle carts, breathing-air cylinders, compressors, air pumps, manifolds) and hoses shall be protected in such a manner to prevent intrusion of dust, dirt, debris, insects or other contaminants, damage, or inclement weather.

##### **16.4.2 Cylinder Storage**

The storage requirements for purchased breathing-air cylinders are as follows.

- Breathing-air cylinders shall be stored in designated areas
- Do not store in direct sunlight or ambient temperatures above 125°F
- Valve protection caps or valve outlet caps and/or plugs shall be in place and hand tight, except when cylinders are secured, in use, or connected for use
- Cylinders shall be secured to prevent falling or rolling
- Storage areas shall be dry, well ventilated, and made with non-combustible material
- Prolonged exposure to the ground or to damp environments shall be avoided; avoid sub surface storage locations
- Cylinders shall be stored in a location that will protect them from objects that may strike or fall on them
- Empty cylinders shall be stored separately from full ones

The storage requirements for SCBA/SKA-PAK are as follows.

- Shelves shall be able to support cylinders
- Do not store in direct sunlight or ambient temperatures above 125°F
- Cylinders shall be secured, whether in service or storage, to prevent falling or rolling
- Store cylinders in a location that will protect them from objects that may strike or fall on them
- Empty cylinders shall be stored separately from full ones

#### **16.5 Respiratory Protection Equipment (RPE) Removed From Service**

RPE which does not pass inspection or which is determined to no longer be suitable for its intended use shall be removed from inventory and destroyed to prevent re-use. Items which are no longer needed, but are suitable for use or salvage, shall be reported to the RPPA to determine whether the materials may be stored, managed as excess property, or discarded.

#### **17.0 Program Evaluation**

The Hanford-Site Contractor, in coordination with their designated RPPA, shall conduct ongoing evaluations and surveillances of the workplace as necessary to ensure that the Program is effective.

The Hanford-Site Contractor shall perform both an annual and an independent 36 month assessment to ensure that they are meeting the intent and purpose of the Program. The annual assessment shall verify that the Program reflects current applicable regulations and that best practices are considered.

An initial independent assessment shall occur within 36 months of Program implementation; subsequent independent assessments shall occur within 36 months of the previous independent assessment. To aid objectivity the independent assessments shall be conducted by an individual(s) with an in-depth understanding of respiratory programs and the associated equipment. The intent is this internal assessment is not to be performed by the company RPPA or the individual associated within that particular audit subset.

The contractor may utilize sources of information from third parties or other contractors to supplement their own assessments.

The assessments shall be conducted using the Lines of Inquiry (LOI) that are developed by the HSRPP Committee. The LOI shall include, at a minimum, all elements of the Program.

The RPPA shall regularly consult employees required to use RPE to obtain employee views on program effectiveness and to identify any issues. Communication/feedback shall include, but is not limited to:

- Respirator fit (including the ability to use the respirator without interfering with effective workplace performance)
- Appropriate RPE selection for the hazards to which the employee is exposed
- Proper RPE use in workplace conditions the employee encounters

- Proper RPE maintenance
- Communication effectiveness
- Issue resolution

Based on the SOMC medical surveillance program individuals or groups of employees that exhibit signs or symptoms of exposure shall be assessed by the SOMC and the results forwarded to the contractor(s) to determine if controls, to include respiratory protection, are effective. Results of the contractor's determination shall be reported to the HSRPP Committee.

When a bioassay measurement is positive (radiological and non-radiological), the controlling organization shall perform an evaluation (excluding non-occupational and non-Hanford exposure). If the controlling organization's evaluation determines that respiratory protection was ineffective or inadequate, the determination and evaluation shall be reported to the HSRPP Committee.

Actions shall be taken to correct deficiencies or findings from any of the above Program Evaluation activities. Deficiencies and findings shall be documented in accordance with the contractors' corrective action system.

## **18.0 Recordkeeping**

All records and documentation generated by the Program shall be processed and maintained in accordance with appropriate contractor policies.

At a minimum, the following documentations shall be maintained and kept.

- Emergency response/escape only respirator and RPE inspections
- Program evaluations and assessments
- Issuance logs
- Training documents
- Medical evaluations
- Fit testing records
- RPE maintenance and testing logs
- Issues and concerns involving RPE
- Current copy of the Program
- Exposure assessment, radiological sampling, and monitoring data records
- Breathing-air quality analytical data

## **19.0 References**

29 CFR 1910.134, "Respiratory Protection," Subpart I "Personal Protective Equipment,"  
*Code of Federal Regulations.*

DOE-STD-1167-2003, "The Department of Energy Respirator Acceptance Program for Supplied-air Suits," 10 CFR 851.A6, United States Department of Energy, Washington D.C.

DOE-0352, *Hanford Site Respiratory Protection Program (HSRPP)*

ANSI Z88.2-1992, "Respiratory Protection," American National Standards Institute, New York, New York.

10 CFR 851, "Worker Safety and Health Program," *Code of Federal Regulations*.

10 CFR 835, "Occupational Radiation Protection," *Code of Federal Regulations*.

**Appendix A: Assigned Protection Factors Chart**

<b>Assigned Protection Factors<sup>5</sup></b>					
<b>Type of Respirator<sup>1,2</sup></b>	<b>Quarter Mask</b>	<b>Half Mask</b>	<b>Full Facepiece</b>	<b>Helmet/Hood</b>	<b>Loose-fitting Facepiece</b>
1. Air-purifying Respirator	5	10 <sup>3</sup>	50	--	--
2. Powered Air-Purifying Respirator (PAPR)	--	50	1,000	25/1,000 <sup>4</sup>	25
3. Supplied-Air Respirator (SAR)					
• Demand Mode	--	10	50	--	--
• Continuous Flow Mode	--	50	1,000	25/1,000 <sup>4</sup>	25
• Pressure-demand or other positive-pressure mode	--	50	1,000 <sup>6</sup>	--	--
4. Self-Contained Breathing Apparatus (SCBA)					
• Demand mode	--	10	50	50	--
• Pressure-demand or other positive-pressure mode (e.g., open/closed circuit)	--	--	10,000	10,000	--

**Notes:**

<sup>1</sup>Employers may select respirators assigned for use in higher workplace concentrations of a hazardous substance for use at lower concentrations of that substance, or when required respirator use is independent of concentration.

<sup>2</sup>The assigned protection factors in Table 1 are only effective when the employer implements a continuing, effective respirator program as required by 29CFR 1910.134, including training, fit testing, maintenance, and use requirements.

<sup>3</sup>This APF category includes filtering facepieces and half masks with elastomeric facepieces.

<sup>4</sup>The employer must have evidence provided by the respirator manufacturer that testing of these respirators demonstrates performance at a level of protection of 1,000 or greater to receive an APF of 1,000. This level of performance can be demonstrated by performing a Workplace Protection Factor (WPF) or Simulated Workplace Protection Factor (SWPF) study or equivalent testing. Absent such testing, all other PAPRs and SARs with helmets/hoods are to be related as loose-fitting facepiece respirators, and receive an APF of 25.

<sup>5</sup>These APFs do not apply to respirators used solely for escape. For escape respirators used in association with specific substances covered by 20 CFR 1910 subpart Z, employers must refer to the appropriate substance-specific standards in that subpart. Escape respirators for other IDLH atmospheres are specified by 29 CFR 1910.134 (d)(2)(ii).

<sup>6</sup>An airline with an escape bottle has an APF of 10,000 per the OSHA *Assigned Protection Factors for the Revised Respiratory Protection Standard* (OSHA 3352-02 2009).

**Appendix B: Addition and Removal Process for the Hanford Site Respiratory Protection Program (HSRPP) Approved Respiratory Protection Equipment (RPE) List**

All equipment added to or removed from the *Hanford Site Respiratory Protection Program (HSRPP) Approved Respiratory Protection Equipment (RPE) List* shall be determined by review and consensus of the HSRPP Committee.

For RPE to be considered for addition to the *HSRPP Approved RPE List* the following process shall be used.

- Identify the need (e.g. update inventory, future need)
- Discuss needs with the Respiratory Protection Program Administrator (RPPA)
- Identify affected parties
- Review of industry to see what's available
- Establish list of primary choices
- Define parameters for evaluations and conduct field trials
- Develop criteria for input from affected parties and solicit feedback for review by the HSRPP Committee
- RPPA presents the HSRPP Committee with data to determine path forward
- Review inventory to determine if the RPE is added or if it replaces a current piece of RPE

If RPE does not exist on site for specialized/unique work, and there is an immediate need, one shall be chosen by the RPPA and presented to the HSRPP Committee for inclusion consideration on the *HSRPP Approved RPE List*.

Consideration for RPE removal from the list may be initiated by annual review, inventory review, contractor request, labor request, or a request from other affected parties.

For RPE to be considered for removal from the list the following process shall be used.

- Identify the piece of equipment for proposed removal
- Identify the reason for removal and discuss with the RPPA
- Assess the impact of removal
- Identify affected parties and solicit feedback for review by the HSRPP Committee
- HSRPP Committee reviews data to determine path forward

## **Appendix C: Information for Employees Using Respirators When Not Required Under the Standard**

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 of hazards, even if the amount of hazardous substance does not exceed the limits set by Occupational Safety and Health Administration (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 respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, that 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.



## **Attachment 1: Hanford Site Respiratory Protection Program (HSRPP) Committee Charter**

The Hanford Site Respiratory Protection Program (HSRPP) Committee is established to serve as the advisory group providing consensus direction for the consistent administration and implementation of the HSRPP, herein called the Program. The participating contractors and organizations are responsible for appointing representatives to the committee.

The Department of Energy (DOE) Richland Operations Office (RL), DOE Office of River Protection (ORP), and affected Contractors acknowledge that a joint committee provides the best approach for implementing a consistent, effective, and compliant interpretation of requirements for the Program. The parties agree to cooperate in a teambuilding manner to ensure that the full intent of the Program is met and will be responsibly carried out by their respective organizations.

### **1.0 Mission**

The mission of the HSRPP Committee is to ensure consistent and standard application of the Program to promote and maintain a safe work environment. The Committee will achieve this consistent approach through sharing best practices, lessons learned, and matters that affect multiple contractors to foster continuous improvement.

### **2.0 Committee Structure/Membership/Qualification**

The Committee shall be comprised of two primary representatives each from the following prime contract to the DOE at Hanford.

- Mission Support Contract (MSC)
- Plateau Remediation Contract (PRC)
- River Corridor Closure Contract (RCCC)
- Tank Operations Contract (TOC)

One representative shall be the contractor's Technical Representative for the HSRPP Program as determined by their contractor; the second representative shall be a Hanford Atomic Metal Trades Council (HAMTC) representative (as appointed by the HAMTC President or delegate).

In addition, one representative each from the following organizations shall be appointed to serve on the Committee:

- Central Washington Building and Construction Trades Council (CWB&CTC) (as approved by the Union President or delegate)
- HAMTC

These representatives comprise the voting membership. An alternate member shall be identified to serve during any absence of a primary representative. The alternate shall have the same authority as the primary representative.

Representatives from Volpentest HAMMER Training and Education Center, Training Department (HAMMER) and AdvanceMed Hanford (AMH) shall attend meetings as non-voting members to address matters pertaining to their respective areas of responsibility. An alternate member shall be identified to serve during any absence of a primary representative.

A Committee member's length of duty may be indeterminate, but rotation of representative assignments is encouraged by all parties.

A chair and co-chair shall be elected by a simple majority of the voting membership of the Committee every two years. The chair and co-chair may be reelected to their respective positions.

Meetings shall be open to others to observe and to give their organizations' impact, perspectives, and technical advice for consideration of the voting body, however, participation in consensus decisions resides solely with the Committee members described herein. The Committee has the authority to develop sub-committees and invite ad hoc participants as needed.

Representatives of RL and ORP shall be invited to participate at each meeting as non-voting attendees.

The MSC shall provide a recording secretary for the Committee. The recording secretary is a non-voting position that provides administrative support to the chairperson. A facilitator shall be provided by the MSC as requested by the Committee.

### **3.0 Functions of the HSRPP Committee**

The functions of the Committee shall be:

- Assist the MSC with the maintenance of the written Program
- Communicate and submit Program changes to RL and ORP through the MSC
- Maintain the Committee charter and review annually
- Review and verify that training is consistent and appropriately covers the content of the Program
- Evaluate trends in performance and recommend actions for improvement
- Review respiratory protection related events, issues, and lessons learned as appropriate
- Ensure distribution of lessons learned as necessary
- Maintain communication with the Contractor Respiratory Protection Committees and collaborate to resolve worker level issues, concerns, or events in a way that maintains site-wide consistency
  - Since the core function of a Site-wide Safety Program is “worker protection,” it is imperative to have a structure that fosters and encourages input and feedback from the working level. Affected contractors will convene a working level committee (also referred to as a lower tier committee) to discuss issues, concerns, or events that occur in the area of respiratory protection within their organizations. These working level committees shall include equal

representation of bargaining unit (as appointed by the bargaining unit president or delegate) and non-bargaining unit employees and ensure good communication up through each group's representative(s) on the HSRPP Committee.

- Evaluate and recommend resolution for issues/disputes pertaining to the Program
  - Issues shall not include any actions regarding applicable Collective Bargaining Agreements
- Recommend topics/information for communication to the workforce
- Provide Program status to the Senior Management Team (SMT) and DOE management when requested

#### **4.0 Roles and Responsibilities**

##### **4.1. Chair Roles and Responsibilities**

- Schedule meetings
- Facilitate meetings in an orderly fashion
- Limit disruptions
- Ensure meeting agendas are prepared
- Ensure meeting minutes are taken and comments are documented
- Function as a point of contact and spokesperson for the Committee
- Interface with other site-wide safety program committees as necessary
- Ensure action item list is maintained and members complete their assignments in a timely manner
- Coordinate assignments of sub-committee(s)

##### **4.2. Co-Chair Roles and Responsibilities**

- Act as the Chair when the Chair is absent
- Perform roles and responsibilities as delegated by the Chair

##### **4.3. Member Roles and Responsibilities**

- Provide the chairperson with the identity of an alternate Committee member who is designated as the organizational representative
- Attend and participate in meetings when scheduled or notify their alternate when unable to attend
  - Alternates are responsible to attend and participate in meetings when the primary cannot attend
  - If the primary and alternate are both unable to attend, the Chair shall be notified
- Foster communication between the Committee and affected organizations relative to issue identification, interpretations, and consensus resolution
- Work in good faith toward consensus on issues without compromising safety or Program compliance
- Maintain a safety and requirements focus when addressing issues; avoid facility, craft, job function, or contractor biases when participating in discussions or voting
- Maintain current knowledge of the requirements of the Program

- Participate in issue discussions representing respective organization
- Bring up issues or speak in discussions only after being recognized by the chairperson
- Listen respectfully and refrain from interrupting others
- Refrain from disruptive side conversations

### **5.0 Meetings**

- Meet regularly as necessary, but no less than quarterly, via scheduled meetings
- Hold special meetings to address urgent or emerging issues
- Record and retain meeting minutes and action items, and distribute to the membership, alternates, and DOE
- Document and maintain record copies of voting decisions

### **6.0 Meeting Agenda**

- The chairperson shall ensure an agenda is prepared for each meeting, using input from the membership, and forward a copy to all members, alternates, and DOE in advance of the meeting time and date
- Action items shall be assigned and tracked

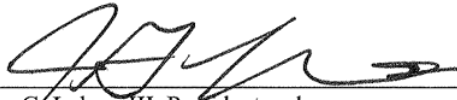
### **7.0 Quorum and Voting**

The Committee shall be considered to have a quorum when all Committee members who are eligible to vote (or their designated alternates) are present. One or more dissenting votes from the voting membership will be cause for an issue to elevate into a secondary phase of discussion and comment.

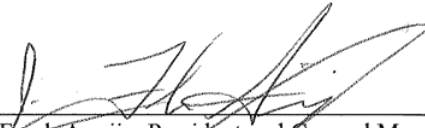
### **8.0 Secondary Phase of Discussion and Issue Resolution**

Matters not agreed upon by the Committee through the initial voting process shall be elevated to the secondary phase of discussion. This phase may include up to two additional meetings. Further discussion/investigation beyond the two additional meetings may be conducted if there is unanimous agreement by the Committee.

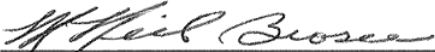
If consensus cannot be reached by the Committee, the issue may be elevated to the SMT and/or DOE. The SMT shall provide a status of their resolution process to the Committee at scheduled meetings.



John G. Lehew III, President and  
Chief Executive Officer  
CH2M HILL Plateau Remediation Company



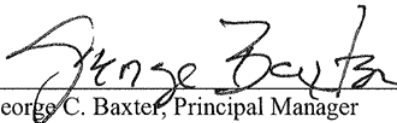
J. Frank Armijo, President and General Manager  
Mission Support Alliance LLC



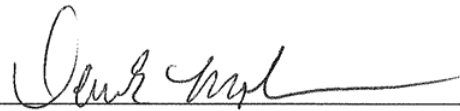
M.N. Brosee, President  
Washington Closure Hanford LLC



C.G. Spencer, President  
Washington River Protection Solutions LLC



George C. Baxter, Principal Manager  
AdvanceMed Hanford



David E. Molnaa, President  
Hanford Atomic Metal Trades Council



Dave Davis, President  
Central Washington Building and  
Construction Trades Council