

RADIOLOGICAL WORK REQUIREMENTS

Operations and activities at the West Valley Demonstration Project (WVDP) frequently involve the use of radioactive and radioactively contaminated materials. Strict compliance with radiological controls is required to eliminate or minimize personnel exposure to radiation and contamination and to control the undesirable spread of radioactive contamination. Therefore, the following requirements are imposed on all work activities involving radiological conditions.

1.0 GENERAL

- 1.1 The radiation protection standards and controls as set forth in the WVDP Radiological Controls Manual (WVDP-010) are made part of this specification and adherence to these controls is the responsibility of the Subcontractor and all personnel. Requirements from Title 10, Code of Federal Regulations, Part 835 (10 CFR 835), *Occupational Radiation Protection*, have been implemented by CH2M HILL BWXT West Valley, LLC (CHBWV) in WVDP-010. The CHBWV Radiation Safety Manager is the Technical Point of Contact for all radiological and radiation safety-related issues.

The requirements of 10 CFR 835 are DOE nuclear safety requirements that are enforceable under the Price-Anderson Amendments Act (PAAA) which DOE has promulgated in 10 CFR 820. The *Procedural Rule for DOE Nuclear Activities*, 10 CFR 820, sets forth the procedures to implement provisions of the PAAA which subjects DOE contractors and subcontractors to potential civil and criminal penalties for violations of DOE rules, regulations, and orders relating to nuclear activities (i.e., those activities that may cause radiological harm). Additional information may be found in CHBWV form WV-19012(b), *Special Safety, Health and Security Rules for Subcontractor On-Site Services*.

- 1.2 Subcontractors shall obtain a Radiological Work Permit (RWP) (CHBWV form WV-4515) for activities described in WVDP-010 Article 322, such as, working in radiological areas, opening or contact with process piping or equipment and associated systems, work above the seven foot level, excavation within the WVDP (no matter where it occurs), and when required to perform the scope of work. Job-specific RWPs are issued for non-routine activities or work in changing radiological conditions and only remain in effect for the duration of the job. General RWPs, which are valid for a period of up to one year, are allowed under circumstances where the radiological conditions are stable and well characterized.

- 1.3 CHBWV reserves the right to stop work when CHBWV personnel consider an unsafe condition to exist and/or when Subcontractor work is not being performed in accordance with CHBWV requirements and procedures. Work will continue when the unsafe situation or noncompliance is resolved by CHBWV and the Subcontractor pursuant to the applicable stop work authority. Stop Radiological Work Authority is defined in Article 345 of WVDP-010. Stop Work authorities are discussed further in WV-935.

CHBWV also reserves the right to withhold from radiological work any person who has not satisfied radiological training requirements, has demonstrated unsatisfactory knowledge of radiological controls during work, or has committed violations of WVDP-010 and/or an RWP. Such a person shall not be allowed to return to work until the person's radiation safety & radiological controls knowledge has been upgraded to a satisfactory level as approved by the CHBWV Radiation Safety Manager who provides or withholds consent at his/her absolute discretion.

Work stoppage caused by any of the above, and discretion exercised by the CHBWV Radiation Safety Manager will not result in any claim against CHBWV.

- 1.4 CHBWV will provide radiological surveillance as required for all work in radiologically posted areas. The Subcontractor is required to provide a minimum of twenty-four hours notice for CHBWV Radiation Safety Department coverage.
- 1.5 All equipment in the radiologically contaminated area shall be monitored by Radiation Safety personnel for radioactive contamination before it can be released for uncontrolled use. CHBWV Radiation Safety should be contacted at least one (1) hour in advance to allow for this monitoring for one or two items. For numerous items or in support of demobilization effort, the CHBWV Radiation Safety Department should be notified twenty-four hours in advance to arrange for survey.

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2.0 RADIOLOGICAL WORKER TRAINING

- 2.1 General Employee Radiological Training (GERT) is a portion of the overall General Employee Training (GET) that is received for unescorted access to the WVDP site. Work of short duration (less than 80 hours per year) may be performed by individuals for which an RWP is required if they successfully complete GET and are continuously escorted by a qualified radiological worker while working under the RWP or in a radiologically posted area.
- 2.2 Entry into radiological areas to perform work requires that subcontractor personnel receive radiological worker qualification training. Two levels of training are offered by CHBWV. The level of training (Radiological Worker I or II) is dependent on the work that is expected to be performed, with the Level II Radiological Worker training for those who require a suit up in anti-contamination clothing or handling of radioactive material. It is recommended that personnel attend GERT (GET) prior to receiving RW I or II training. The training consists of classroom lectures, practical demonstration of work skills, and a written examination. Level I training requires 8 hours of classroom, while Level II training requires an additional 4 hours of training (i.e., total of 12 hours). An additional hour for practical factors (only one practical) is required to complete RW I or II. RW I and II training is conducted over a two-day period plus a scheduled hour for the practical in the following days.
- 2.3 CHBWV conducts radiological worker training as scheduled based on demands by the Project. A five working-day notice is required to schedule class attendance. Maximum class size is 25. **TRAINEE REGISTRATION IS TO BE CONDUCTED THROUGH THE DESIGNATED CHBWV SUBCONTRACT TECHNICAL REPRESENTATIVE (STR)**. Special classes can be conducted on a one-time basis. This requires a ten day notice to CHBWV.
- 2.4 Subcontractors who fail to perform satisfactorily on the examinations will be tested no more than one additional time. All retraining time and cost shall be at the Subcontractor's expense. Failure of the second exam results in the retaking of the entire course.

Radiological Worker qualification training (Level I and II) is valid for up to two years, or less at the discretion of the CHBWV Radiation Safety Manager (see Section 1.3). Requalification involves approximately four hours of computer-based training (CBT), and for Radiological Worker Level II requires a practical demonstration. Each year personnel are required to complete a briefing on the changes to the site safety standards. This briefing must be read and the attached attendance sheet signed and returned to the CHBWV Records Management Department.

3.0 RESPIRATORY PROTECTION REQUIREMENT

- 3.1 Subcontractor personnel who will be in potential airborne radioactivity areas shall qualify for the use of respiratory protection equipment. This qualification includes respiratory protection training, respiratory fit test, and medical examination for respirator wearers, as described below.
- 3.2 A medical assessment certifying that the individual is capable of using respiratory protection equipment is necessary prior to qualification as a respirator wearer. The medical requirements are presented in detail in "Special Safety, Health, and Security Rules for Subcontractor On-Site Services," (Form WV-19012(b)).
- 3.3 CHBWV respiratory protection training is required initially and annually for all respirator wearers. The training consists of approximately four hours of classroom instruction, practical and written examination. CHBWV conducts this training per specific request or arrangement.
- 3.4 A successful respirator fit test is required prior to qualification as a respirator wearer. The fit test is performed at the WVDP by CHBWV personnel and will require approximately 30 minutes per individual. Scheduling of tests should be coordinated through the STR with a least twenty-four hour notification.
- 3.5 All respirator wearers shall be clean shaven.
- 3.6 Respirator wearers will be allowed to wear contact lenses while wearing the respirator and will not be allowed to wear corrective lenses that break the seal of the respirator when it is being worn. If corrective lenses are needed by a respirator wearer, they shall be furnished by CHBWV.

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4.0 **MEDICAL REQUIREMENTS**

- 4.1 All applicable medical requirements, as detailed in Special Safety, Health, and Security Rules for Subcontractor On-Site Services (Form WV-19012(b)), shall be met prior to qualification as a qualified worker.

5.0 **DOSIMETRY REQUIREMENTS**

5.1 In Vivo Counting

- 5.1.1 An in vivo (whole body) count is required prior to the issuance of a dosimetry badge.
- 5.1.2 In vivo counts shall be performed by CHBWV and require approximately 20 minutes per individual.
- 5.1.3 In vivo counts are performed weekdays (except holidays) between the hours of 8:00 and 4:30 p.m.
- 5.1.4 Scheduling is on a first come, first served basis. Only one in vivo count can be performed at a time.
- 5.1.5 Upon termination, a final in vivo count shall be performed by CHBWV. Subcontractor shall ensure that all Subcontractor personnel and lower tier personnel receive the final in vivo count. All time and costs incurred by the Subcontractor to have all personnel properly terminated shall be borne by the Subcontractor.

5.2 In Vitro Sampling

If respiratory protection qualification is required (Paragraph 5.0), a 24-hour, or as specified by CHBWV Radiation Safety Department staff, urine collection sample must be submitted by the individual prior to the issuance of a dosimetry badge. A urine sample will also be required periodically (e.g., annually), and upon termination. The terms of Paragraph 5.1.5 shall also apply to the final urine sample. Urine samples may also be required based upon work assignment, regardless of respiratory protection qualification (RPQ) status.

5.3 Dosimetry Issuance and Usage

- 5.3.1 CHBWV shall provide dosimetry services, both internal and external for subcontractor personnel as necessary
- 5.3.2 External dosimetry, if issued, shall be worn at all times while inside the protection perimeter of the WVDP, or as directed by the CHBWV Radiation Safety Manager.
- 5.4 Dosimetry shall be used in accordance with posted signs, and RWPs. Dosimetry Record-Keeping and Reports
- 5.4.1 CHBWV will provide dosimetry reports for the Subcontractor on an annual basis.

6.0 **PROTECTIVE EQUIPMENT**

- 6.1 The Radiation Safety Department will specify the necessary radiological protective equipment on the RWP.
- 6.2 CHBWV will supply all radiological personal protective equipment unless stated otherwise. This equipment includes both anti-contamination clothing and respiratory protection equipment. Wearing anti-contamination clothing may require the removal of personal outer clothing, appropriate Amodesty@ garments (shorts, T-shirt, etc.) should be worn by personnel anticipating entry into radiological areas.
- 6.3 Laundered radiological personal protective equipment is readily available.

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7.0 **CHBWV RESPONSIBILITY**

- 7.1 CHBWV is responsible to review and approve work designs of equipment and structures and grant appropriate work permits for all work performed. CHBWV will provide radiological coverage for Subcontractor personnel doing work in contaminated areas. The CHBWV Radiation Safety Department is to be notified twenty-four hours in advance for radiological coverage.
- 7.2 Radiological control monitoring, surveys, and technicians in support of this contract will be provided by CHBWV. CHBWV shall provide appropriate training and radiation dosimetry devices to Subcontractor personnel while they work at the WVDP.
- 7.3 CHBWV will provide and maintain the following items:
 - 7.3.1 Thermoluminescent Dosimeters (TLDs)
 - 7.3.2 Supplemental Dosimeters, such as Electronic Dosimeters
 - 7.3.3 Continuous Air Monitors (CAMs)
 - 7.3.4 "Friskers"
 - 7.3.5 Radiological Work Permit Forms (RWPs)

8.0 **SUBCONTRACTOR RESPONSIBILITY**

- 8.1 The Subcontractor is responsible to adhere to CHBWV policy and procedures in the area of radiation protection that are established in or referenced in WVDP-010. The Subcontractor shall provide CHBWV the results of medical examinations and work restrictions for personnel working at the WVDP. The Subcontractor is responsible to maintain personnel exposure as low as reasonably achievable (ALARA) and to comply with all aspects of the "WVDP Radiological Controls Manual" (WVDP-010).
- 8.2 The Subcontractor shall provide CHBWV with an estimated or official radiation exposure record (see CHBWV Form WV-1101) of the current annual exposure status for each individual being hired to work at the site prior to beginning work.
- 8.3 The Subcontractor shall provide additional certified radiation exposure records each time an employee is used at a different site and then returns to the WVDP before restart of work. In the absence of formal records of previous occupational exposure during the year, a written estimate signed by the individual may be accepted.
- 8.4 Maximum exposure at the time workers arrive on site should be less than 500 mrem Total Effective Dose (TED) for the exposure year, including previous employment. Exemptions are approved on a case-by-case basis, such as, for those individuals receiving radiation dose from other DOE facilities not exceeding 1,500 mrem TED for the calendar year. While on the WVDP site, radiation dose from WVDP activities may not exceed 500 mrem TED for the calendar year, unless assigned to projects where the authorization for 1,000 mrem TED has been granted.
- 8.5 It will be the Subcontractor's responsibility to protect equipment and tools from radiological contamination. If any tools or equipment of the Subcontractor do become radiologically contaminated, the Subcontractor shall, at his own expense, decontaminate the tools or equipment. If acceptable levels cannot be obtained, CHBWV will purchase the tools or equipment (provided CHBWV procedures were not violated) at a price which represents the fair value thereof and such tools or equipment shall become the property of CHBWV. The fair value of such tools or equipment shall be based on the replacement cost, age, and condition of the item without regard to levels of contamination.
- 8.6 Subcontractors planning to use, at the WVDP, equipment, protective clothing, and/or miscellaneous tools or items that have been previously utilized at another nuclear or radiological facility shall notify the CHBWV Radiation Safety Department prior to arrival at the WVDP. Such items must be surveyed by CHBWV for radiological contamination. CHBWV will determine if the surveyed items may be brought on the WVDP site.

Additionally, individuals who have previously worked at another nuclear or radiological facility must notify the CHBWV Radiation Safety Department prior to their arrival at the WVDP. These individuals must be surveyed for radiological contamination prior to entering the WVDP.

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- 8.7 The Subcontractor is to request CHBWV Radiation Safety Department support 24 hours in advance of the work.
- 8.8 The subcontractor must ensure that when using moisture-density gauges at the WVDP, the authorized operator must not leave the gauge unattended at any time (10 CFR 20.207(b)). When personnel are finished using the device, they must properly secure the moisture-density gauge (10 CFR 20.207(a)) to prevent damage, loss, or theft. Properly securing moisture-density gauges will prevent damage to gauges at the WVDP.
- 8.9 The WVDP Radiological Controls Manual (WVDP-010) requires that for work activities that exceed the following trigger levels, a formal radiological review of the activity be conducted and a pre-job briefing (see CHBWV form WV-3745) be held. The trigger levels are as follows:
- 8.9.1 Estimated 500 person-mrem of collective dose or 100 person-mrem individual dose;
 - 8.9.2 Predicted airborne radioactivity concentrations in excess of one Derived Air Concentration (DAC) to a worker taking into account assigned respiratory protection factors;
 - 8.9.3 General work area removable contamination greater than 100 times the contamination levels in Table 2-2 of WVDP-010;
 - 8.9.4 Entry into areas where dose rates exceed 1 rem/hour;
 - 8.9.5 Potential radioactive releases to the environment of radioactive liquids or airborne releases \geq one Derived Concentration Standard (DCS) for an individual radionuclide or \geq one as the sum of the fractions of the DCS for a mixture of radionuclides, per DOE Order 458.1 and DOE-STD 1196-2011; and
 - 8.9.6 As determined by the CHBWV Radiation Safety Manager.

ALARA pre-job briefings are to be held prior to the conduct of work anticipated to exceed the trigger levels and are to be conducted by the cognizant work supervisor. Policy and Procedure WV-984, "ALARA Program," discusses requirements and appropriate documentation for ALARA pre-job briefings (see CHBWV form WV-3745).

ALARA post-job reviews (see CHBWV form WV-3118) for radiological work activities are to be performed for jobs that were estimated or that actually exceeded the trigger levels. Formal post-job reviews may be performed in the form of a critique and are meetings of the personnel knowledgeable about an event (either a success or an abnormal event) to document a chronological listing of the facts. The purpose of the post-job review or critique is not to assign blame, but to establish and record the facts. CHBWV Project Document WVDP-242, Event Investigation and Reporting Manual, discusses requirements and appropriate documentation for critiques.

9.0 CONTAMINATED WASTE DISPOSAL

Any material (i.e., solids, semisolids or liquids) generated by the activities of the subcontractor which are determined by CHBWV to be radiologically contaminated shall be disposed of in accordance with the directions in the specification or technical document and in accordance with CHBWV waste management procedures (CHBWV SOP 9-series and 300-series).

10.0 EXCAVATION

- 10.1 All excavation within WVDP, no matter where it occurs, requires the issuance of a RWP. NYSERDA shall be informed whenever any excavation work is to be completed in areas under their direct control (this excludes the area currently under DOE control). The Subcontractor should be aware that he may unearth soils which are low-level radioactively contaminated in the course of excavation and may be delayed while CHBWV monitors the area. All excavation is subject to monitoring by CHBWV and a Radiological Control Technician will be present at all times, or with approval, intermittently during excavation operations to monitor soil for radiological contamination.
- 10.2 If the excavation is being performed in an area where background radiation interferes with the monitoring efforts, the Radiological Control Technician may have to take "grab" samples from the bucket or shovel and remove them to an area where the background radiation is acceptable. In areas of spotty contamination, the equipment operator may be requested to take only partial buckets to allow for an accurate survey.

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- 10.3 In the event radiologically contaminated soil is discovered, Subcontractor shall follow CHBWV policies and procedures for handling such materials. If the specification or technical documents require the Subcontractor to remove contaminated soil, the Subcontractor personnel involved in the excavation will be required to be Radiological Worker II qualified. CHBWV will rope off area and place step off pads, laundry container, and CHBWV approved waste container (with lid) at exit of radiologically contaminated area. All Subcontractor personnel and equipment shall be monitored when leaving the radiologically contaminated area. It will take approximately 3 minutes for personnel and 25 minutes for hand-carried items to be monitored. Larger items will require more monitoring time depending on size. Materials such as rope, step off pads, waste and laundry containers, etc., shall be furnished by CHBWV.
- 10.4 Contaminated soil to be excavated shall be placed in 4' x 4' x 6' disposal boxes or 55-gallon drums provided by CHBWV. All transport, sealing, and survey of boxes will be done by CHBWV. Subcontractor shall ensure that any filled or partially filled boxes are covered at the end of each work day.
- 10.5 Excavation equipment may be surveyed by the CHBWV Radiation Safety Department prior to its use on site to establish that it is radiologically clean. If equipment becomes contaminated to the extent that it cannot be decontaminated, CHBWV will purchase said equipment for fair market price as agreed between the Subcontractor and CHBWV Purchasing.

11.0 **RADIOGRAPHY REQUIREMENTS**

The following radiological requirements apply to radiography subcontractors performing radiography at the WVDP. All requirements must be satisfied before radiography can commence. These requirements are in addition to any other radiography requirements that may appear elsewhere in subcontract documents. Subcontractors shall comply with the requirements established by the CHBWV Radiation Safety Department per WVDP site radiography procedures.

11.1 **Submittals**

The radiography subcontractor shall submit copies of the following information for CHBWV review and approval prior to the start of radiography operations:

- 11.1.1 Current state or federal license to perform radiography.
- 11.1.2 Certificate of calibration of radiographic survey devices. This calibration shall be performed no more than 30 days prior to the submittal.
- 11.1.3 Current records of leak test inspection reports (performed within the last six months) for exposure devices (cameras) and radioactive sources to be used and any updates.
- 11.1.4 Certification by the subcontractor's Radiation Safety Officer (RSO) that the cameras have been inspected and maintained in accordance with the subcontractor's radioactive materials license and the manufacturers requirements and any updates.
- 11.1.5 Procedure to inspect for obvious defects in exposure devices, storage containers, mechanical devices and any cables prior to use each day including provisions to supply CHBWV with completed copies of daily inspections on a daily basis.
- 11.1.6 Personnel exposure records as required by paragraph 8.2 through 8.4.
- 11.1.7 The subcontractor's plan or procedure that ensures that the exposure of a radiographer, working at the WVDP as well as other facilities during the period of the contract, does not exceed the CHBWV Administrative Control Level of 0.5 rem TED in the calendar year, including previous employment unless specifically granted authorization for a higher Administrative Control Level.
- 11.1.8 Personnel qualifications or resumes detailing recent radiography job experience, radiation safety training in accordance with 10 CFR 34.31, and radiography qualifications for the personnel performing the radiography. As a minimum, resumes shall be submitted for the following individuals:
 - A. Radiation Safety Officer
 - B. Radiographer
 - C. Assistant Radiographer
 - D. Radiography Trainee

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- 11.1.9 Procedures detailing radiography operation and emergency actions.
- 11.1.10 Make, model, and manufacturer of the camera and radioactive source being used including the radioactive source information, the radioisotope, curie content, decay curve, and the date the curie content was assayed or measured.
- 11.1.11 A map of the affected area showing barrier locations to controlled access at 5.0 and 100 mrem/hr at 30 cm, including supporting calculations and technical basis (i.e., dimensions, shielding, source position). Area maps, type and thickness of walls should be coordinated with the cognizant engineer.
- 11.2 Mechanical Connection Demonstration
- The subcontractor shall perform a test of the mechanical device which connects the control cable and the radiographic source. This test shall demonstrate the integrity of the device under all anticipated positions, forces, and angular deflections to which the device may be subjected during radiography operations. This test must be repeated for each cable/source combination that will be used on the subcontract.
- 11.3 Dosimetry Qualified Worker
- All radiographic operations require CHBWV Radiological Worker Level II qualification.
- 11.4 Notification
- The CHBWV Radiation Safety Department must be notified at least 24 hours in advance of any arrival of a radiography source and at least 24 hours prior to each actual radiographic operation.
- The CHBWV Security Department must be notified of the location and planned duration of all radiography operations.
- 11.5 Radiological Controls
- 11.5.1 The contractor shall, upon arrival at the gatehouse, identify himself as possessing radioactive material. The CHBWV Radiation Safety Department will survey the equipment and ensure that CHBWV source controls for incoming sources are met.
- 11.5.2 An RWP is required for all radiographic operations at the WVDP.
- 11.5.3 Radiography Emergency Instructions: All subcontract personnel are required to review CHBWV site radiography procedures. The subcontract personnel will document by signature that they understand and will comply with these instructions. This review will be completed at least annually.
- 11.5.4 Radioactive Source Control: The camera shall be marked with the exposure rate at contact, and the source isotope and curie content as of the date of calibration.
- Radiography sources shall be secured or locked in the radiographic exposure device after each source retraction by use of a key lock or other mechanical device providing a positive indication that the source has been fully retracted. The radiographer shall demonstrate to the Radiological Control technician the method used.
- Areas in which sources that are "on" or exposed shall not be left unattended by either the radiographer or the Radiological Control Technician. Sources within secured and locked cameras may be left unattended within the posted area for short periods of time (e.g., breaks, lunch) provided the key is removed and the camera is chained to a permanently installed fixture. Cameras shall not be left unattended outside the posted area under any circumstance. When not in use for extended periods (e.g., a few hours), the source shall be secured within the camera, locked with the key removed, and the camera, with Radiological Controls Supervisor approval, stored in a posted, locked or guarded area.
- The radiography source shall not be moved within the radiographic equipment unless the radiographer is in the immediate vicinity to operate or directly supervise the operation of the radiographic equipment.
- 11.6 Dosimetry: Additional dosimetry, beyond that provided by the radiography subcontractor for his own use, will be specified and provided by CHBWV. These will include but not be limited to CHBWV TLDs and electronic audible/alarming dosimeters.

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11.7 Radiation Survey Instruments: The radiographer shall maintain at least one calibrated, source checked, and operable radiation survey instrument with each camera at each job site. The survey instruments shall be source checked daily. The radiography operation shall be discontinued if in the opinion of either the radiographer or Radiological Control Technician the survey meter malfunctions or appears to malfunction.

11.8 Postings

11.8.1 The radiographic subcontractor shall provide a map of the affected area showing barrier locations to controlled access at 5.0 and 100 mrem/hr at 30 cm including supporting calculations and technical basis (i.e., dimensions, shielding, source position). Area maps, type and thickness of walls should be coordinated with the cognizant engineer.

11.8.2 The radiographer subcontractor shall erect barriers with warning rope or ribbon and signs as indicated below: CHBWV Radiation Safety Department shall provide oversight of the barrier erection.

Post conspicuously and highly visible from any avenue of approach or access any area which will increase to 5.0 mrem/hr (at 30 cm) or greater with a warning rope or ribbon and signs bearing the radiation caution symbol and words similar to those shown below:

CAUTION

RADIATION AREA

Post conspicuously and highly visible from any avenue of approach or access any area which will increase to 100 mrem/hr (at 30 cm) or more (based on calculated dose rates) with a sign bearing the radiation caution symbol and words similar to those shown below:

CAUTION

HIGH RADIATION AREA

11.9 The radiography subcontractor shall perform a thorough search of the posted area to ensure that only those personnel necessary for radiographic work (as determined by the Radiographer) remain, and shall announce verbally the commencement of radiography.

The radiographer shall maintain visual surveillance of the posted High Radiation Area during the radiography operation to ensure that no inadvertent entries or exposures occur. The radiographer shall also perform a radiation survey during radiography operations to assure proper placement of boundaries. The WVDP Radiological Control Technician shall also conduct surveys to verify boundary limits.

The radiographer shall survey (with a gamma survey instrument) the camera and source guide tube after each exposure. The source shall also be secured within the camera and locked after each exposure. Appropriate log entries for these requirements for each survey will be made as per the CHBWV site radiography procedures. The camera shall be surveyed at the completion of the job to ensure that the sealed source has been retracted to the shielded position. The Radiological Control Technician shall conduct radiation surveys as necessary to verify survey results. These actions are completed by verifying that the post-exposure reading is the same as the pre-exposure readings within the accuracy of the survey meter. In addition to any permanent instrumentation that may be installed, initial entry into a radiographic enclosure or cell also requires the use of a hand held radiation detection instrument provided by the radiography subcontractor.

11.10 CHBWV Radiation Safety Department Coverage: All radiography operations shall require that a WVDP Radiological Control Technician be physically present at all times.

The Radiological Control Technician shall verify that the radiographer has completed the search of the surrounding area and that no unnecessary personnel are present.

The Radiological Control Technician shall personally verify, by performing back-up surveys, all radiological surveys performed by the radiography subcontractor including surveys of the radiography exposure device and guide tube to assure that the source is properly housed.

The Radiological Control Technician shall be the first individual to approach the camera after source exposure to assure that the source is properly stowed. The Radiological Control Technician shall verify that the source is properly housed in accordance with CHBWV site radiography procedures. Radiography operations may not proceed until the Radiological Control Technician verification is complete. The Radiological Control Technician (or other CHBWV representative) may terminate radiographic operations at any time.

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11.11 Defective Equipment

Should any part of the radiographic equipment become defective, all radiographic operations will be terminated immediately. All personnel will exit the exposure area, prohibit entrance into the area, and notify CHBWV Radiation Safety Manager. No repairs of any radiographic equipment will be made at the WVDP without prior written authorization of the CHBWV Radiation Safety Manager.