CP3-RP-1104 FRev. 2	**TITLE**: Radiological Area Entry Control	Page 1 of 25

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REVISION/CHANGE LOG

Revision/Change Letter	Description of Changes	Pages Affected	Date of Revision/Change
FR0	Bluesheet	All	10/20/2017
FR1	Non-Intent Changes for Bluesheet Incorporation	All	11/6/2017
FR2	Complete rewrite to change RWP process, RWP form, RWP entry control forms, and RWP Pre-Job Briefing Attendance Log	All	7/31/2019

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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure implements compliance with Title 10, Code of Federal Regulations, Part 835, *Occupational Radiation Protection*, (10 CFR 835), Subpart F, for an entry control program. This procedure also provides instructions for initiating, approving, using, and terminating Radiological Work Permits (RWPs).

1.2 Scope

This procedure applies to personnel performing work and entry within radiological areas that are controlled by the D&R Contractor, including subcontracted work. Radiological areas as defined in 10 CFR 835 include the following: Contamination Areas (CAs), High Contamination Areas (HCAs), Airborne Radioactivity Areas (ARAs), Radiation Areas (RAs), High Radiation Areas (HRAs), Very High Radiation Areas (VHRAs). The requirements of this procedure are superseded by site emergency procedures during an emergency.

The Radiation Protection organization has organizational ownership and maintenance responsibility for this procedure. The approval authority for this document is the Radiation Protection Manager (RPM).

2.0 REFERENCES

2.1 Use References

- CP1-RP-0003, *Company Issued Clothing*
- CP2-HS-2003, *Respiratory Protection Program*
- CP2-RP-1008, *Air Monitoring Program Technical Basis Document*
- CP3-HS-2005, *Personal Protective Equipment*
- CP3-HS-2009, *Stop/Suspend Work*
- CP3-OP-0024, *Forms Control*
- CP3-RD-0010, *Records Management Process*
- CP3-RP-1106, *Selection and Use of Anti-Contamination Clothing*
- CP3-RP-1109, *Radioactive Contamination Control and Monitoring*
- CP3-RP-1114, *ALARA Program*
- CP3-RP-1403, *RADCON Records Management*
- CP4-RP-1107, *Workplace Air Monitoring for Radioactivity*
- CP4-RP-1116, *Radiological Routines*

2.2 Source References

- 10 CFR 835, *Occupational Radiation Protection*
- CP1-RP-0001, *Radiological Characterization Data*
- CP2-RP-0001, *Radiation Protection Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
- CP2-RP-0002, *Radiological Protection Glossary Paducah Deactivation and Remediation Project Paducah, Kentucky*
- CP3-HS-2004, *Job Hazard Analysis*
- CP3-OP-0207, *Use of Procedures*
- CP3-RP-1108, *Posting and Labeling*
- CP3-RP-1201, *Internal Dosimetry*
- CP3-RP-1202, *External Dosimetry*
- CP3-RP-1401, *Radiation Protection Program Records*
- CP3-RP-1601, *Radiation Safety Training*
- CP4-RP-1111, *Workplace Monitoring*
- DOE G 441.1-1C, *Radiation Protection Programs Guide for Use with Title 10, Code of Federal Regulations (CFR), Part 835, Occupational Radiation Protection*
- DOE-STD-1098-2017, *DOE Standard Radiological Control*

3.0 COMMIITMENTS

4.0 RESPONSIBILITIES

4.1 Radiological Workers (RW I & RW II)

4.1.1 Reads, understands, and is accountable for complying with all RWP requirements.

4.1.2 Maintains applicable radiological qualifications and has current respirator training (as needed) to perform assigned tasks.

4.1.3 Ensures dosimetry is worn properly and returned on schedule, if required.

4.1.4 Ensures that supplemental dosimetry is worn (where needed) and returned upon completion of job.

4.1.5 Submit bioassay samples when notified by the Radiological Control (RADCON) organization.

4.1.6 Makes legible and accurate entries on paper RWP sign-in-sheets.

4.1.7 Exercises stop/suspend work authority, in accordance with CP3-HS-2009, *Stop/Suspend Work* upon identification of radiological concerns such as inappropriate work controls or procedural deficiencies.

4.2 Facility Managers (FM)

4.2.1 Approves and/or appoints a designee to approve RWPs.

4.2.2 Ensures that work authorized within their facility is performed according to all applicable RWP and RADCON programmatic provisions.

4.3 Industrial Hygiene

Consults with Radiation Protection Project Manager (RPPM), Radiological Engineer (RE), or Radiological Control Supervisor (RCS) **when** combination hazards require non-radiological hazard controls to be included within the RWP (for example, respirator protection for silica inside the ARA).

4.4 Work Group Supervisor/RWP Requestor

NOTE:

RWP Requestor may include Facility Managers, Front Line Managers, Work Group Supervisors, Work Planners, or Contractor Technical Representatives (CTRs). Alternatively, RADCON personnel may initiate the request directly.

4.4.1 Considers work conditions and ensures an appropriate work control document and/or procedure is developed or available before radiological work activities occur.

NOTE:

RWP Requestor should provide a description of work of sufficient detail as to allow the RWP writer to create the RWP.

4.4.2 Initiates the RWP process by completing RP-F-0164, *Radiological Work Permit (RWP) Request*.

4.4.3 Allows RADCON a minimum of six to ten (6-10) working-days to complete an RWP. In some cases; depending on the level of As low as reasonably achievable (ALARA) review required and the complexity of the job, additional time may be required.

4.4.4 Approves RWPs.

4.5 RPPM/RE

4.5.1 Reviews the information provided by the RWP requestor and requests additional information, as necessary.

4.5.2 Participates in preparing the RWP and supporting documentation.

4.5.3 Approves RWPs.

4.6 RCS

4.6.1 Reviews the information provided by the RWP requestor and RPPM/RE.

4.6.2 Participates in preparing the RWP and supporting documentation.

4.6.3 Approves RWPs.

4.7 Dosimetry Specialist

4.7.1 Enters data from RWP documentation into electronic RWP data entry system.

4.7.2 Assists with RWP close out.

5.0 GENERAL INFORMATION

5.1 Personnel entry control shall be maintained for each radiological area [§835.501(a)]. The degree of control shall be commensurate with existing and potential radiological hazards within the area [§835.501(b)].

5.2 One or more of the following methods shall be used to ensure control [§835.501(c)]:

- Signs and barricades;
- Control devices on entrances;
- Conspicuous visual and/or audible alarms;
- Locked entrance ways; or
- Administrative controls.

NOTE:

Do **NOT** install controls at any radiological area exit that would prevent rapid evacuation of personnel under emergency conditions [§835.501(e) and §835.502(d)].

5.3 Permanent barricades shall be used to augment administrative controls, as appropriate.

5.4 Written authorizations shall be required to control entry into and perform work within radiological areas. These authorizations shall specify radiation protection measures commensurate with the existing and potential hazards [§835.501(d)].

5.5 The following measures shall be implemented for each entry into a high radiation area [§835.502(a)]:

- The area shall be monitored as necessary during access to determine the exposure rates to which the individuals are exposed; and [§835.502(a)(1)].

- Each individual shall be monitored by a supplemental dosimetry device, or other means capable of providing an immediate estimate of the individual's integrated equivalent dose to the whole body during the entry [§835.502(a)(2)].

5.6 One or more of the following features shall be used for each entrance or access point to a HRA, where radiation levels exist such that an individual could exceed an equivalent dose to the whole body of one (1) rem in any one hour at 30 centimeters from the source or from any surface that the radiation penetrates [§835.502(b)]:

- A control device that prevents entry to the area when high radiation levels exist or upon entry causes the radiation level to be reduced below that level defining a HRA [§835.502(b)(1)].
- A control device that functions automatically to prevent use or operation of the radiation source or field while individuals are in the area [§835.502(b)(2)].
- A control device that energizes a conspicuous visible or audible alarm signal so that the individual entering the HRA and the supervisor of the activity are made aware of the entry [§835.502(b)(3)].
- Entryways that are locked. During periods when access to the area is required, positive control over each entry is maintained [§835.502(b)(4)].
- Continuous direct or electronic surveillance that is capable of preventing unauthorized entry [§835.502(b)(5)].
- A control device that will automatically generate audible **and** visual alarm signals to alert personnel in the area before use or operation of the radiation source **and** in sufficient time to permit evacuation of the area or activation of a secondary device that will prevent use or operation of the source [§835.502(b)(6)].

5.7 Entry to VHRAs shall implement the requirements of **Step 5.5 and 5.6** and additional measures shall be implemented to ensure individuals are not able to gain unauthorized or inadvertent access to VHRAs [§835.502(c)].

5.8 RWPs are used to control the following activities:

- Entry into radiological areas.
- Handling of materials with removable contamination that exceeds the values of CP3-RP-1109, Appendix B.
- Work in localized benchtop areas, laboratory fume hoods, sample sinks and containment devices that have the potential to generate contamination in areas that are otherwise free of contamination.
- Work that disturbs the soil in soil contamination areas.
- Work that involves digging in "listed" underground radioactive material areas.
- Entry into an area where the radiological conditions are unknown.
- A radiography operation.

5.9 FRNP uses two different types of RWPs: General RWPs (GRWPs) and Job-Specific RWPs (JSRWPs). RADCON personnel will determine the type of RWP that applies to the activity.

- GRWPs may be used to control routine or repetitive activities, such as tours and inspections or minor work activities, in areas with well-characterized **and** stable radiological conditions. Approved GRWPs remain in effect for no more than one calendar year with an expiration date no later than the last day of the calendar year in which the RWP was issued. GRWPs must be revised in the event expiration date changes are required.
- JSRWPs are used to control non-routine operations or work in areas with changing radiological conditions. JSRWPs are used for more complex work and for entry into higher-hazard areas. JSRWPs should remain in effect only for the duration of the job, **NOT** to exceed 12 months from the original effective date. Revisions to a JSRWP **CANNOT** extend beyond the original RWP expiration date.

NOTE:

DOE-STD-1098-2017, *DOE Standard Radiological Control*, Appendix 3F provides guidance on values selected as limiting conditions that may be used.

5.10 When establishing the RWP limiting conditions, consider the following:

- Regulatory limits,
- Administrative control levels,
- Type of work being performed,
- Anticipated/expected radiological conditions and postings versus actual conditions/postings,

- Airborne concentrations from previous comparable work activities/tasks,
- The frequency/timeliness of monitoring to meeting the limiting conditions,
- Contingency plans,
- PPE capabilities/limitations,
- Physical factors (for example, temperature and pressure, wind speed, liquid volume, adverse weather conditions, etc.)
- Engineering control capabilities/limitations,
- Assigned dosimetry, and
- Electronic personal dosimeter (EPD) alarm set points.

5.11 Treat RWP limiting conditions as absolute limits. One radiological survey reading in the defined work area, identified over the applicable limiting condition will result in the work being stopped or suspended until the RWP limiting conditions can be reevaluated or revised.

5.12 A RADCON Hold Point should be specified in the RWP, work package, or operating procedure, when a job task has the potential to significantly change the radiological conditions in the work area. Work may **NOT** proceed beyond the Hold Point until RADCON verifies the criteria that must be met or action that must be taken to satisfy the hold point is complete prior to continuing with subsequent steps in the planned activity. See Appendix B – *Guidance for Providing RADCON Coverage* for additional information pertaining to Hold Points.

NOTE: Electronic Personal Dosimeters (EPD) alarm sets points are related to limiting conditions.

5.13 EPDs shall be required on RWPs for any of the following:

- Entry/work in HRAs and VHRAs,
- Work in RAs where a person could exceed 50 mrem deep dose in one work day,
- Work in RAs where a person could exceed 5,000 mrem shallow dose in one work day, and/or
- A task in which significant increases in dose rate are expected.

5.14 Revisions to RWPs may be required for the following:

- Radiological condition changes, modifications to RWP limiting conditions, additional engineering controls, dosimetry and/or when PPE changes are required.
- Changes that adversely affect ALARA initiatives.
- Minor changes to work scope.
- Radiological controls are no longer adequate for continued work evolutions.

5.15 When making revisions to an RWP, the expiration date of the newly revised RWP will remain the same as the expiration date of the original RWP.

6.0 INSTRUCTIONS

6.1 RWP Initiation

RWP Requestor

6.1.1 Initiate the RWP request, during the work planning process, by completing page 1 of form RP-F-0164.

6.1.2 Consult with Industrial Hygiene (IH) for the need of additional industrial and chemical PPE as specified in the work packages.

6.1.3 Ensure page 1 of RP-F-0164 is filled out entirely and marked.

6.1.4 Submit completed RP-F-0164 and existing characterization data to RADCON.

RCS/RE/RPPM

6.1.5 Ensure page 1 of RP-F-0164 is filled out entirely. **If** page 1 is not filled out entirely, **then** notify the RWP Requestor **and** request additional information.

6.1.6 Review previous radiological surveys or characterization information (for example, logbook entries, process history, lessons learned, post-job ALARA reviews, etc.) of the immediate work area(s)/location(s) or similar associated work to identify types, levels, and extent of the anticipated radiological hazards and document in the RWP file.

6.1.7 **If** existing radiological characterization information cannot be used to adequately identify types, levels, and extent of the anticipated radiological hazards, **then** request RCS perform a survey, and/or assess the radiological conditions associated with the work activity by compiling information from sources such as historical survey data, pre-job survey data, and worker experience to determine pre-job radiological conditions.

6.1.8 Determine appropriate derived air concentration (DAC) values in accordance with CP2-RP-1008, *Air Monitoring Program Technical Basis Document*.

Support Group RPPM

6.1.9 Determine the bioassay requirements. **If** there is no pre-approved bioassay protocol for the planned work activity, **then** use radiological characterization data, planned work activities, and associated radiological controls to determine the bioassay requirements. Consult with the Support Group RPPM, as needed, to identify the appropriate bioassay requirements.

6.1.10 Ensure the bioassay requirements are provided to the RWP writer to be incorporated into the RWP.

RPPM

6.1.11 Consult with the Support Group RPPM to identify external dosimetry required.

6.1.12 Ensure the dosimetry requirements are provided to the RWP writer to be incorporated into the RWP.

6.1.13 Ensure page 2 of RP-F-0164 is filled out entirely, signed, and marked according to CP3-OP-0024 after adding any relevant comments to the form.

RCS/RE/RPPM

6.1.14 Ensure completed RP-F-0164 is filed in the RWP file.

RE/RPPM

6.1.15 Perform an ALARA review as required by CP3-RP-1114, *ALARA Program*.

6.1.16 Document the RWP number and revision number at the top of RP-F-0110, *Level 1 Pre-Job ALARA Review Checklist*.

6.1.17 **If** trigger levels specified in CP3-RP-1114 are exceeded, **then** document and/or perform required reviews, using RP-F-0110, **and** place in the RWP record file.

6.1.18 **If** a Level 2 Pre-Job ALARA review is required for the RWP, **then** prepare the Level 2 Pre-Job ALARA Review in accordance with CP3-RP-1114 **and** place in the RWP record file.

6.2 Preparing New RWP

RCS/RE/RPPM

6.2.1 **If** an electronic RWP system is unavailable, **then** document the RWP on RP-F-0060, *Radiological Work Permit.*

6.2.2 Determine and list the job location and job description/scope of work, as identified on RP-F-0164, and the isotopes involved.

6.2.3 Determine the expected work area posting(s) and work area radiological conditions by reviewing current radiological surveys, historical data, logbook entries, process history, lessons learned, post-job ALARA reviews, or other pertinent data **and** document in RWP file.

6.2.4 Determine whether the RWP will be a GRWP **or** JSRWP.

6.2.5 Obtain RWP number **and** revision number from the appropriate RADCON RWP log sheet.

6.2.6 Complete the RADCON RWP log sheet.

6.2.7 Determine **and** list limiting conditions based on expected radiological conditions derived from current and historical radiological information, previous process work history from comparable tasks, lessons-learned, ALARA Reviews, and professional judgement to establish meaningful levels that control the hazards. File supporting calculations and documentation, if any, in the RWP record file.

6.2.8 Provide special dose or contamination reduction controls, radiological hold points, and limiting conditions to be included in the work package to the Work Planner/Facility Manager/Project Manager, as necessary.

NOTE:

All workers must be given an initial brief prior to performing work using RWPs; however, when a Level 2 Pre-Job ALARA review has been required, a formal pre-job briefing must be documented on RP-F-0051, *RWP Pre-Job Briefing Attendance Log*.

6.2.9 **If** a Level 2 Pre-Job ALARA Review is required for the RWP, **then** check the appropriate box on the RWP requiring the use of RP-F-0051.

6.2.10 Identify external dosimetry, bioassay type, training requirements, isotopes of concern, and DAC values on the RWP by completing the appropriate block(s).

6.2.11 Determine **and** identify RADCON coverage requirements according to the guidance provided in Appendix B, *Guidance for Providing RADCON Coverage*.

6.2.12 Determine the need for company issued clothing in accordance with CP1-RP-0003, *Company Issued Clothing*.

IH

6.2.13 Work with RADCON to identify appropriate PPE.

RCS/RE/RPPM

6.2.14 Determine **and** identify personal protective clothing in accordance with the applicable project Job Hazard Analysis (JHA), CP3-RP-1106, *Selection and Use of Anti-Contamination Clothing*, and/or consult with Industrial Hygiene (IH), Industrial Safety (IS) to identify required personal protective equipment (PPE), as necessary.

6.2.15 **If** the RWP is written for spark-producing or hot work operations, **then** use appropriate flame resistant clothing as required by CP3-HS-2005, *Personal Protective Equipment*, Job Hazard Analysis (JHA), or Welding/Burning/Hotwork Permit, as applicable.

6.2.16 Consider the use of an impermeable layer of protective clothing **when** the potential for contaminated liquid is present or there are competing hazards.

6.2.17 Identify respiratory protection requirements, specifying cartridge type, as applicable after referring to CP2-HS-2003, *Respirator Protection Program*. Consult with IH/IS, as necessary.

6.2.18 **If** required by CP4-RP-1107, *Workplace Air Monitoring for Radioactivity*, **then** determine the air sampling requirements for the covered work.

6.2.19 Determine the need for additional worker special instructions/controls.

NOTE:

RADCON Management approval authorizes radiological work to be performed under strict adherence with the radiological controls and worker protection monitoring provisions contained in the RWP. Compliance with all applicable RADCON procedures and policies is also required. The RWP is then submitted to the Facility Manager (FM) and Work Group Supervisor or other requestors for their review and approval. The FM and other requestors are responsible for ensuring that work authorized within their facility is performed according to all applicable RWP and RADCON programmatic provisions.

6.2.20 Review **and** approve the RWP, either electronically or in writing, by signing the appropriate section of the RWP.

6.2.21 Submit to the Work Group Supervisor/RWP Requestor and the Facility Manager for review and concurrence.

RWP Requestors/Work Group Supervisor/Facility Managers

6.2.22 Review **and** sign the RWP indicating concurrence, either electronically or in writing, in the appropriate section of the RWP.

6.3 Using an RWP

Radiological Control Technician (RCT)/RCS

NOTE:

Workers should be briefed on the RWP requirements prior to each entry when radiological conditions are continually changing. A briefing at the beginning of the work day is sufficient when radiological conditions are stable. Use of RP-F-0051, in accordance with the steps above, is only required a single time for each employee performing work under the RWP or at the discretion of RADCON.

6.3.1 **Prior** to the initial use of the RWP **and before** use after any field change/revision, perform a pre-job RWP briefing for each individual who will use the RWP.

6.3.2 **If** the “Pre-job Briefing Required” box is checked “Yes” on the RWP, **then** ensure all workers using the RWP have been given a formal briefing **and** have signed RP-F-0051.

6.3.3 Brief workers on the covered work scope, area radiological conditions, PPE required for entry, limiting conditions, and worker special instructions of the RWP prior to each day’s first entry.

RWP User/RWI/RWII

6.3.4 Prior to entering the work area, ensure the proper notifications are made **and** attend the pre-job RWP briefing, as applicable.

NOTE:

All information entered on RWP entry control forms must be legible.

6.3.5 Fill-in entry control forms completely and in accordance with CP3-OP-0024.

6.3.6 **If** working under a JSRWP, **then** sign-in on the RWP indicating that the RWP has been read, understood, and the RWP requirements will be followed **and** document the following information on RP-F-0036, *Radiological Work Permit – Entry Control Form* **or** RP-F-0038, *Radiological Work Permit – Entry Control Form for Self-Reading Dosimeter*, as applicable:

- Date
- Printed name/signature
- Badge identification number
- Dosimeter serial number, as applicable
- Initial dosimeter reading, as applicable
- Exit dosimeter reading, as applicable
- Total dose reading, as applicable
- Entry time into the area
- Exit time from the area

6.3.7 **If** working under a GRWP, **then** sign-in on the GRWP at a minimum of annually, unless otherwise instructed, indicating that the RWP has been read, understood, and the RWP requirements will be followed and document the following information on RP-F-0037, *Radiological Work Permit – General Entry Control Form*:

- Date
- Printed name/signature
- Badge number (or last four digits of social security number where the employee does **NOT** have a badge number)

6.3.8 Comply with all applicable requirements of the RWP.

RCT

6.3.9 Provide RADCON coverage as identified on the RWP.

RCT/RWP User

NOTE:

The exercise of Stop/Suspend Work authority may be for a specific work area or for the entire RWP, but immediately applies to the current work area. RADCON Management will determine if the Stop/Suspend Work should extend to all activities being performed under the RWP and will make all required notifications.

6.3.10 **STOP or SUSPEND** work immediately, in accordance with CP3-HS-2009, if any of the following occur:

- There is an unanticipated change in radiological conditions,
- Radiological controls are inadequate or are not being implemented,
- Limiting conditions have been or may have been exceeded,
- Work activities occur which are outside the scope of the RWP,
- The scope of work changes,
- There is a deviation from any control prescribed in the RWP, or
- A radiological hold point or action step has NOT been satisfied.

RCT

6.3.11 Document the details of the Stop/Suspend Work on RP-F-0050, *Radiological Work Permit Job Coverage Log*.

RWP User

6.3.12 **If** additional entries are to be made into the area at a later time, **then** time-out on the RWP ensuring all blocks are filled appropriately **and** re-sign the RWP prior to making the next entry.

RCT

6.3.13 Ensure RWP users are properly entering required information and correcting deficiencies, as needed.

RCS

6.3.14 **If** workers sign-in on RWPs and hard copy forms are used, **then** perform a review, approximately weekly, of the RWP sign-in/sign-out entries to verify that individual workers are properly entering required information and correcting deficiencies, as needed.

6.3.15 Compile all reviewed hard copy entry control forms **and** deliver to the Dosimetry Specialist.

Dosimetry Specialist

6.3.16 Ensure that all the information from the RWP sign-in sheet is manually entered into the electronic RWP log sheet data entry system.

6.3.17 Retain the RWP sign-in/sign out sheets in the RWP file.

6.4 Field Changes to an RWP

NOTE:

Field changes are time-critical changes to correct error(s) to an RWP in order to support continued operations or work.

A field change must **NOT** change the scope of work or introduce new hazards or diminish the effectiveness of radiological controls that were determined to be necessary based on the original hazards analysis. Field changes are legible, hand-written text and/or strike-through of printed text on the original RWP. **Only** the RPPMs, RE, RCSs, or designees are authorized to make field changes to RWPs. Approvals to field changes are granted by the same approver levels as on the original RWP and are documented in the form of initials and dates next to each RWP change. The field change is only valid for up to a maximum of five (5) working days. Field changes are **NOT** permitted for General RWPs.

RCS/RPPM/RE

6.4.1 Confirm that no work is actively being performed under the RWP.

6.4.2 Add **or** delete text, as necessary, with a single line through the text to be deleted.

6.4.3 Initial/date any text added or deleted.

6.4.4 Circulate the RWP with the field changes to individuals representing each approval and concurrence level as was listed on the RWP prior to the change.

Work Group Supervisor/Facility Manager/RPPM/RE/RCS

6.4.5 Review, initial, **and** date the field-changed RWP next to each change.

RCS/RCT

6.4.6 Brief affected employees on the changes to the RWP.

RCS/RE/RPPM

6.4.7 **If** five (5) working days have elapsed from the approval date of the field change, **then** the RWP must be revised in accordance with **Section 6.5**.

6.5 Revising an RWP

RCT/RWP User/RCS/RPM/RE/RPPM

6.5.1 As applicable, Stop or Suspend Work and inform personnel of the need for an RWP revision.

> NOTE:
>
> A significant change in the scope of work or job description may require termination of the RWP number. The requestor shall submit an updated request and a new RWP will be written and approved.
>
> Revisions to an RWP require the same approval process as the original version of the RWP.
>
> A revised RWP **cannot** be extended beyond the original RWP expiration date.

RWP Requestor

6.5.2 **If** a new RWP is required, **then** follow the applicable steps listed in **Section 6.1** above.

RCS/RE/RPPM

6.5.3 Follow the appropriate steps listed in **Section 6.2** above to revise the RWP.

6.5.4 Ensure all field copies of the previous revision of the RWP are removed from use prior to issuing the revised RWP.

6.5.5 File all previous revisions of the RWP in the RWP record file.

RCT/RCS

6.5.6 Ensure workers are briefed on the revised RWP in accordance with **Section 6.3**.

6.6 RWP Termination

RADCON Management/Work Group Supervisor/FM

6.6.1 Request RADCON terminate an RWP **when any** one of the following conditions occurs:

- The job is complete.
- The job is discontinued.
- The RWP expiration date is reached.

RCT/RCS

6.6.2 Prior to terminating the RWP, perform post-job monitoring or other functions as necessary, to satisfy the RWP requirements.

RPPM/RCS

6.6.3 Ensure area is posted appropriately for radiation and/or contamination levels present prior to terminating the RWP. If applicable, establish any required routines in accordance with CP4-RP-1116, *Radiological Routines*.

6.6.4 Remove all RWP copies from field/work areas.

RPPM/RE/RCS/Dosimetry Specialist

6.6.5 Compile all original and field copies of the RWP documentation (RWP entry control forms and other supporting documents) **and** ensure they contain all required information and signatures.

6.6.6 Maintain all RWP documentation as records in accordance with CP3-RD-0010, *Records Management Process* and CP3-RP-1403, *RADCON Records Management*.

RPPM/RE

6.6.7 **If** required, **then** perform a post-job ALARA review according to CP3-RP-1114.

6.6.8 Compile all RWP documentation for RWP close out.

6.6.9 Close out RWP within ninety (90) days of RWP termination in accordance with **Section 6.7**.

6.7 RWP Close Out

Dosimetry Specialist/RCS/RE/RPPM

6.7.1 Review the RWP record file to determine if the following documents are enclosed **and** insert, as applicable:

- RWP Request Form.
- Level 1 Pre-Job ALARA Review Checklist.
- Level 2 Pre-Job ALARA Review.
- RWP and supporting documentation (for example, calculations).
- Post-job ALARA Review Checklist.
- Copies of pre and post job surveys.
- Completed pre-job briefing sheets (RP-F-0051).
- RWP Entry Report, including DAC-Hr. Report from RWP system that lists all air sample results and logins associated with the RWP.
- Copy of the Survey Log listing surveys applicable to the RWP, obtained from electronic RADCON database.

- RWP Entry Control Forms.
- Copies of work instructions, JHAs, drawings, diagrams, photographs, etc. as provided by the customer, RWP requestor, or project.
- Copies of any correspondence to include memorandums, e-mails, and other pertinent information related to the RWP.

6.7.2 Document RWP close out on RP-F-0099, *RWP File Close Out Checklist*.

6.7.3 Compile additional RWP documentation, as needed.

6.7.4 Sign RP-F-0099 indicating the RWP has been closed.

Dosimetry Specialist/RCS/RE/RPPM

6.7.5 Perform a final, independent review of the RWP file indicating all actions have been completed and all document types have been accounted for **and** sign appropriately.

6.7.6 Provide completed RWP close out package to RADCON Project Support Technician.

RADCON Project Support Technician

6.7.7 Upon receipt of RWP close out package, verify that all documents identified on RP-F-0099 are contained in the package and maintain in accordance with CP3-RD-0010 and CP3-RP-1403.

7.0 RECORDS

7.1 Records Generated

The following records may be generated by this procedure:

- RP-F-0036, *Radiological Work Permit – Entry Control Form*
- RP-F-0037, *Radiological Work Permit – General Entry Control Form*
- RP-F-0038, *Radiological Work Permit - Entry Control Form for Self-Reading Dosimeter*
- RP-F-0050, *Radiological Work Permit Job Coverage Log*
- RP-F-0051, *RWP Pre-Job Briefing Attendance Log*
- RP-F-0060, *Radiological Work Permit*
- RP-F-0099, *RWP File Close Out Checklist*
- RP-F-0164, *Radiological Work Permit (RWP)Request*

7.2 Records Disposition

The records are to be maintained in accordance with CP3-RP-1401, *Radiation Protection Program Records*, CP3-RD-0010, *Records Management Process.*

Appendix A – Acronyms/Definitions

ACRONYMS

ALARA – As low as reasonably achievable

ARA – Airborne Radioactivity Area

CA – Contamination Area

CFR – Code of Federal Regulations

CTR – Contractor Technical Representative

D&R – deactivation and remediation

DAC – Derived Air Concentration

DOE – U.S. Department of Energy

EPD – Electronic Personal Dosimeter

FM – Facility Manager

GRWP – General Radiological Work Permit

HCA – High Contamination Area

HRA – High Radiation Area

IH – Industrial Hygiene

JHA – Job Hazard Analysis

JSRWP – Job-Specific Radiological Work Permit

PPE – Personal Protective Equipment

RA – Radiation Area

RADCON – Radiological Control

RE – Radiological Engineer

RMA – Radioactive Material Area

Appendix A – Acronyms/Definitions (Continued)

RPM – Radiation Protection Manager

RPPM – Radiation Protection Project Manager

RCS – Radiological Control Supervisor

RCT – Radiological Control Technician

RWI – Radiological Worker I

RWII – Radiological Worker II

RWP – Radiological Work Permit

VHRA – Very High Radiation Area

DEFINITIONS

Limiting radiological condition – The limiting conditions are those bounding radiological conditions which may void the RWP. They are usually expressed as a dose rate, contamination level, or airborne radioactivity level.

Radiological worker – A general employee whose job assignment involves operation of radiation producing devices or working with radioactive materials, or who is likely to be routinely occupationally exposed above 0.1 rem (0.001 Sv) per year total effective dose.

Radiological work permit (RWP) – Permit that identifies radiological conditions, establishes worker protection and monitoring requirements, and contains specific approvals for radiological work activities. The radiological work permit serves as an administrative process for planning and controlling radiological work and informing the worker of radiological conditions.

Work group supervisor – The manager designated for each specific work group(s) performing the overall job.

Appendix B – Guidance for Providing RADCON Coverage

An RWP will typically identify surveys to be performed and RCT coverage to be provided. Requirements for the surveys and/or coverage may appear in various sections of the RWP or work documents, such as Hold Points, Limiting Conditions, RADCON Coverage Requirements, Special Worker Instructions/Controls, or RCT Special Instructions. The following guidance is for interpreting the standard section headings and terminology used on an RWP; they are listed in the order in which they typically appear on an RWP.

Hold Point – A RADCON hold point is typically established in the RWP, work package, or operating procedure and requires some type of action by RADCON to assess existing radiological conditions or prevent significant adverse radiological consequences prior to the continuation of work. The following activities should be considered for inclusion in the requirements for RADCON hold points:

- RADCON action needed to assess changing radiological conditions and ensure implementation of required controls
- Potential for radiation doses in excess of the applicable site-specific administrative control level
- Potential for elevated airborne radioactivity levels (for example, levels exceeding 10 times the DAC values provided in Appendices A and C of 10 CFR 835)
- Potential for elevated removable surface contamination levels on accessible surfaces (for example, levels exceeding 100 times the CP3-RP-1109 Appendix B values)
- Potential for unplanned or uncontrolled release of radioactive material to the environment
- Unexpectedly encountering a damaged package(s) or container(s) with radioactive material

The RADCON hold point should include the criteria that must be met or action that must be taken to satisfy the hold point prior to continuing with subsequent steps in the planned activity.

Limiting Radiological Condition – The bounding radiological conditions determined by the RPPM/RE typically established by characterization data and/or calculations based on the method(s) that will be used to perform activities under a given scope of work. Limiting radiological conditions should be established at levels that will help identify a departure from the radiological controls established for the scope of work. If a limiting radiological condition is exceeded, work that caused the limiting condition to be exceeded is stopped and an evaluation is performed to determine if any changes are needed in the radiological controls for the scope of work. Examples of radiological control limiting conditions would be encountering unanticipated levels for: dose, dose rate, removable surface contamination, airborne radioactivity concentrations, etc. (See DOE-STD-1098-2017, Appendix 3F, *Radiological Control Limiting Conditions*.

Appendix B – Guidance for Providing RADCON Coverage (Continued)

RADCON Coverage – The level of RCT support is based on the radiological risk for the task. Specific details of RCT support and job coverage are developed and prescribed by the RPPM, RE, and RCS. RADCON Coverage Levels are listed below:

- Level 1 Continuous Coverage: The RCT remains aware of work progress and the radiological safety impacts of present and upcoming steps in the work process or document (e.g. TI, SI, SOW, etc.). An RCT assigned to provide this level of support should remain in continuous line of sight of the work crew and maintain verbal communication with the crew. The RCT functions as a member of the work team and is given **NO** conflicting assignments.

- Level 2 Intermittent Coverage: The RCT is aware of the progress of work and provides support as needed to ensure workers' radiological safety. Level 2 is generally prescribed for lower risk radiological work than Level 1; therefore, the RCT is allowed to support more than one RWP and/or work group at the discretion of RADCON management.

- Level 3 Coverage: The RCT is at the job site during the performance of specific tasks, at pre-determined times, or as otherwise determined by the cognizant RCS.

Worker Special Instructions/Additional Controls/Comments – The special instructions on the RWP are usually written for the work group and typically provide instructions or controls that would **NOT** fit into other sections of the RWP, such as special frisking or doffing instructions.

RCT Special Instructions – This section provides a place to reference special RADCON coverage requirements that may **NOT** be captured in other sections of the RWP, such as boundary air monitoring requirements or the labeling of hoses and cords.

Appendix C – Guidance for Completing Radiological Work Permits

1. **If** a job involves disturbing loose contamination or will result in fixed contamination becoming loose, **then** the potential airborne activity should be estimated. **If** the job was performed previously, **then** previous air sample data may be used for this estimate. **If** the job has not been performed previously, **then** the estimate should be based on the work task and the activity of contamination disturbed.

2. **If** the estimated airborne radioactivity, from previous data or current calculations, is greater than 0.02 DAC, **then** engineering or administrative controls of some type should be specified on the RWP.

   Examples of engineering or administrative controls that may be used include, but are not limited to:

   - Capture ventilation (for example, point source such as a HEPA-equipped vacuum positioned near the disturbed surface to capture the airborne activity as it is generated). To obtain the necessary capture velocity the hose end needs to be relatively close to the disturbed surface. This distance is based on the size of the hose, flow rate, and any end effector used (such as a funnel or scoop). The minimum required distance should be specified on the RWP.
   - Confinement ventilation (such as an air mover to direct the contaminated airflow away from the worker and away from areas of lower contamination). An analysis should be performed to determine the minimum air flow rate required and this minimum flow should be specified on the RWP.
   - Wet methods to keep contamination damp to minimize airborne generation, where applicable and allowed.
   - Decontamination.
   - Use of fixatives to lock down contamination.
   - Covering contamination with plastic or other suitable material.
   - Proper handling of material.

3. **If** the dose rates (beta and/or gamma) are known to be or anticipated to be elevated, **then** pre-job dose rate surveys are required. **If** a worker is going to touch a surface with elevated radioactivity, **then** contact dose rates should be performed.

   If material surfaces are not going to be touched, **then** dose rates should be performed representative of where the worker's body (usually performed at 30 cm) or extremity will be located. This should be specified on the RWP. For example, an item in the bottom of a drum is going to be analyzed by x-ray fluorescence and not touched by the analyst. The RCT should perform dose rate surveys of the item(s) in the drum at the approximate position the hand will be in during the analysis.