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USE CATEGORY:	INFORMATION USE	Page 1 of 60
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Level 2 Administrative Procedure

CAUTION

This procedure implements the requirements of 10 CFR 835.401, 703 and 704 and is subject to Price Anderson Amendment Act (PAAA) remedies. Any modification to this procedure or issuance of a related short-term instruction that would impact the implementation of said requirement; requires the approval of the FBP Radiation Protection Manager to assure the embedded requirements are not usurped.

Revision	Record of Issue/Revision	Affected Pages
18	Revision: to clarify training or positional requirements and PPPO concurrence requirement for volumetric/bulk materials. Adding step to ensure forms are legible. Reformatting changes as needed. Updated Citation Tag.	4, 9, 10, 12, 25, 27

Previous Record of Issue/Revision information is available from the history files.

CONTENTS

1.0 PURPOSE

1.1 This procedure defines the process for the release of materials and equipment (M&E) from Fluor-BWXT Portsmouth LLC (FBP) and the Department of Energy (DOE) control, and ensures that the subsequent release of such M&E complies with the requirements of DOE Order 458.1, *Radiation Protection of the Public and the Environment,* and the DOE metals recycling suspension requirements.

1.2 To ensure compliance with 10 Code of Federal Regulations (CFR) 835, this procedure incorporates the guidance of DOE G 441.1-1C Admin Chg. 1, *Radiation Protection Programs Guide for Use with Title 10, Code of Federal Regulations, Part 835*, *Occupational Radiation Protection.*

1.3 This document implements applicable regulatory requirements. They are listed in Appendix A, *Regulatory Requirements Flow Down*.

FBP-PR-FY20-0063

2.0 SCOPE AND APPLICABILITY

2.1 This Level 2 procedure applies to FBP employees, contract labor resource personnel, and subcontractor/vendor personnel performing work or providing services for FBP who desire to remove M&E from the Portsmouth (PORTS) DOE Reservation and those who are involved with processing release requests.

2.2 This procedure applies to the release of M&E with the potential to contain residual radioactive material as defined by DOE O 458.1, including records that are transferred to the records vault for long term storage.

2.3 This procedure also applies to the release of M&E known to contain naturally occurring radioactive material (NORM) and Technologically Enhanced Naturally Occurring Radioactive Material (TENORM), construction material, or contain commercially produced radioactive material within its structure (such as radioactive sources) for restricted use.

2.4 This procedure does not apply to release of real property which is performed in accordance with the Environmental Radiation Protection Program.

2.5 This procedure does not apply to the clearance of M&E located inside a radiological area. Material or equipment that is inside a radiological area must be cleared from the radiological area before implementing this procedure. Items cleared from areas controlled for removable contamination and not labeled as radioactive material meet the surface contamination values specified in 10 CFR 835 Appendix D. Clearance from an area controlled for removable contamination does not authorize release from DOE control without specific evaluation as described in this procedure.

2.6 This procedure applies to evaluations governed by a Survey Release Plan (SRP), although SRPs may apply unique survey methodologies, data quality objectives and release limits other than those described in this procedure. If there are any conflicts, the provisions of an approved SRP takes precedence over this procedure.

3.0 GENERAL INFORMATION

3.1 All site personnel receive a general awareness of the basics of site M&E releases during General Employee Training.

3.2 Quarterly surveillances are performed to review the quality of the release program, including evaluating adherence to direction in this procedure.

3.3 The DOE establishes agreements with Community Reuse Organizations (CROs) for the purpose of coordinating economic planning and management efforts that address DOE-related impacts. The Southern Ohio Diversification Initiative (SODI) is the CRO associated with the PORTS Decontamination & Decommissioning (D&D) activities.

A. DOE-SODI Asset Transition Agreement for Economic Development establishes the working relationship between DOE and SODI including the release of material or equipment for community reuse.

B. The agreement specifies requirements related to the release process as follows:

- A "qualitative" As Low As Reasonable Achievable (ALARA) assessment should be performed. The process implemented by this procedure qualifies as a "qualitative" ALARA review.
- Documentation related to release of any items undergoing decontamination prior to release to SODI
- Public access to associated release documentation
- Documentation associated with the release of M&E to SODI shall be maintained by the PORTS D&D Contractor in accordance with applicable records control procedures. Members of the public may request access to this documentation through normal request mechanisms.

3.4 Each release action associated with an SRP is to be documented in accordance with this procedure, identifying the applicable SRP.

3.5 Surveys and/or samples are performed on impacted M&E to identify the presence of and to quantify levels of radioactivity.

3.6 Radiological monitoring or surveys performed in support of the release of material, equipment, or property from DOE control must:

[DOE O 458.1]

- Use methodologies sufficient to meet measurement objectives such as those in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) or other methodologies approved by DOE.
- Meet Measurement Quality Objectives.

- Use DOE-approved sampling and analysis techniques, if applicable.
- Include an evaluation of non-uniformly distributed residual radioactive material, if applicable.

3.7 M&E with surface or volumetric radioactive material may be approved for release when the radiological conditions of the material or equipment have been documented to comply with the criteria for release set forth in a DOE authorized limit. Pre-approved authorized limits may be used instead of developing specific authorized limits if their use is documented in the environmental radiation protection program and the specific application of the authorized limits is approved by the responsible Field Element Manager. All authorized limits must be submitted to the Field Element Manager to obtain DOE approval.

•[DOE O 458.1, Attachment 1, 2.k(6).(f).2, 2.k.(6)(b)6]

3.8 M&E which is suspected to contain NORM must be evaluated by Radiation Protection (RP) Engineering prior to release.

3.9 The release process requires upper management approval to release M&E with residual contamination above 80% of an applicable release limit. This requirement implements ALARA principles. Experience since 2011 indicates the majority of M&E released from DOE control either has no residual activity or residual activity is at a small fraction of the applicable release limits.

3.10 Release requests that have not yet been evaluated and that are one year or older will be rejected and sent back to the requestor to be re-assessed for the need for the request. Should the request still be needed, the requestor will re-submit a new request.

3.11 Requestor qualification may be suspended upon failure to comply with the direction of this procedure; qualification may be reinstated upon completion of satisfactory remediation (as determined by Radiation Protection).

3.12 For the purposes of this procedure, any functional process individual (e.g. requestor) may be subsequently re-assigned by the cognizant Functional Area Manager to another qualified individual upon the unavailability of the original individual (e.g. leave, termination).

3.13 On January 12, 2000, Secretary of Energy Bill Richardson issued a memorandum declaring a moratorium on the unrestricted release of volumetrically contaminated metals for recycling (those which have radioactive contaminants distributed throughout their mass) pending a decision by NRC to establish national standards. On July 13, 2000, a memorandum was issued which suspended the unrestricted release for recycling of all metals from radiation areas (later clarified to be radiological areas as defined by 10 CFR 835) within DOE facilities until improvements in release criteria and related information management have been implemented. DOE directives and associated guidance were to be revised, local public participation at each DOE site was required, and the responsible Program Secretarial Officer (PSO) was required to certify that the new DOE requirements were met before that site could resume the unrestricted release of scrap metals for recycling covered by the moratorium. To date, NRC has not issued standards, nor has DOE revised their directives and guidance and thus the moratorium is still in effect.

DOE: FBP-22-0019 #14586

3.14 The moratorium applies to release of all types of metals for the purpose of recycling into commerce (defined as the metal being melted and new products made from it). It does not apply to release of metals for reuse (for intended purpose or repurpose) or disposal, which may be performed by established procedural methods using approved authorized limits. The moratorium does not apply to release of metals for recycling within the DOE organization. Batteries, light bulbs, etc., that are routinely recycled may be released if they are protected by either glass, plastic, or other non-metallic material. Rebar within concrete may be released with the concrete as it is not subject to the suspension.

DOE: FBP-22-0019 #14586

3.15 In general, affected metals may not be cleared from a radiological area and subsequently released from DOE control for recycling into commerce. On a case-by-case basis, items deemed affected by the moratorium which can be reasonably determined to have little or no potential for residual radioactivity above background may be evaluated via a release request and subsequently released upon PPO concurrence.

DOE: FBP-22-0019 #14586

3.16 Each DOE site should be aware of how off-site disposal facilities manage waste (i.e., there should be reasonable assurance the metals sent for disposal will be dispositioned as waste; sites should not ship metals for disposal to sites which routinely recycle metal waste).

DOE: FBP-22-0019 #14586

3.17 On February 2, 2022, the Portsmouth/Paducah Project Office (PPPO) issued a memo approving the use of the volumetric pre-approved Authorized Limits by all PPPO prime contractors for the release of personal property for disposal. “The issuance of the pre-approved Authorized Limits does not change, and is not inconsistent with the January 2000 moratorium on the release of volumetrically contaminated metals, and the related July 2000 prohibition on unrestricted release of volumetrically contaminated metal into commerce. Any proposed use of the volumetric pre-approved authorized limits for releases other than disposal of personal property (i.e., offsite reuse or recycle) shall require concurrence from the (Acting) Assistant Secretary of Environmental Management prior to implementation of the authorized limits. Notification must be made to the PPPO Health Physicist prior to taking any actions regarding use of the volumetric pre-approved authorized limits for any purpose other than the disposal of personal property. The January 2000 moratorium on the release of volumetrically contaminated metals and the July 2000 memorandum suspending the release of metal from DOE radiological areas for recycling remain in effect and must be considered prior to releasing any metals from DOE control. Approval for volumetric release of materials is still subject to PPPO oversight requirements already established with each contractor. This approval for the volumetric release of personal property or disposal is in effect until the next revision of each contractor’s Environmental Radiation Protection Program (ERPP).”

DOE: FBP-22-0019 #14586

3.18 DOE-STD-1241-2023, *Implementing Release and Clearance of Property Requirement*s, was published to assist DOE Field Element Managers and DOE contractors in meeting release and clearance of property requirements provided in DOE O 458.1. This technical standard consolidates all previously published pre-approved Authorized Limits and includes newly approved volumetric pre-approved Authorized Limits.

4.0 USE REFERENCES

A. DOE-STD-1241-2023, *Implementing Release and Clearance of Property Requirement*s

B. FBP-BS-PRO-00062, *Records Management Process*

C. FBP-NSE-PRO-00139, *Differing Professional Opinions (DPO)*

D. FBP-RP-GD-00021, *UE5 Web General User's Guide*

E. FBP-RP-PRO-00022, *Posting and Labeling*

F. FBP-RP-PRO-00023, *Radiation Protection Program Records*

G. FBP-RP-PRO-00041, *Vehicle Radiological Control Program*

H. FBP-RP-PRO-00176, *Radiological Survey Performance*

5.0 RESPONSIBILITIES

5.1 Project Managers

5.1.1 Ensures cost/benefit considerations are applied when directing the release of M&E from DOE control.

5.1.2 Integrates the release process into project planning activities including Radiation Protection.

5.1.3 Provides resources to assist and allows sufficient lead time to process release requests (including evaluations and radiological surveys).

5.1.4 Provides appropriate work authorization charge numbers to support evaluations and approval of release requests.

5.1.5 Assists in ensuring that the M&E release process does not become compromised.

5.2 Requestors

5.2.1 Completes Classroom Training TA8378, *UE5 Requestor Training for Material and Equipment Release – Initial*, before initiating a request to release M&E from DOE control.

5.2.2 Completes Computer Based Training EC8379, *UE5 Requestor Training for Material and Equipment Release – Refresher*, before initiating a request to release M&E from DOE control.

5.2.3 Describes M&E to be released from DOE control including the disposition path and recipient(s).

5.2.4 Provides information related to the process use and history of M&E to be released from DOE control.

DOE: FBP-17-1080 #7707

5.2.5 Notifies Radiation Protection of safety concerns and identifies any unique hazards when handling or surveying the M&E not addressed by the site Job Hazard Analysis (JHA).

5.2.6 Ensures that M&E is not removed from staging area without having a hard copy of the approved UE5 request in hand.

DOE: FBP-22-0663 #15719

5.3 UE5 Coordinator

5.3.1 Completes and maintains module EC7846, UE5 Coordinator-Overview and Duties or is qualified as an RP Evaluator.

5.3.2 Conducts a preliminary review of UE5 request.

5.3.3 Verifies requestor has completed and is current on module TA8378, *UE5 Requestor Training for Material and Equipment Release – Initial.*

5.3.4 Verifies requestor has completed and is current on module EC8379, *UE5 Requestor Training for Material and Equipment Release – Refresher*.

5.3.5 Ensures UE5 number has been designated and UE5 has been assigned to RP personnel.

5.3.6 Tracks status of UE5 release requests.

5.4 RP Evaluator (Radiation Protection Supervisor, Engineer, Section Manager or Manager)

5.4.1 Completes training TA6551, *Processing DOE Release Requests,* prior to evaluating any UE5 requests.

5.4.2 Receives a briefing on the latest revision of FBP-RP-PRO-00004 prior to evaluating any UE5 requests.

5.4.3 Completes the training TA6991, *Evaluating DOE Release Requests,* prior to evaluating any UE5 requests.

5.4.4 Reviews information provided by the requestor to ensure completeness and appropriate level of detail.

5.4.5 Determines applicability of DOE's moratorium on release of metal M&E for recycling in accordance with Section 3.0, *General Information.*

5.4.6 Categorizes and classifies (if impacted) M&E to be released.

5.4.7 Documents evaluation of M&E to be released.

5.5 Peer Reviewer (Radiation Protection Engineer, Section Manager, or Manager)

5.5.1 Completes same level of training/qualification as RP Evaluator.

5.5.2 Reviews all documentation to ensure it is complete and accurate; documents peer review and forwards documentation to next functional individual, according to the requirements specified in this procedure

5.5.3 Obtains PPPO concurrence when required by this procedure.

5.6 Radiation Protection Supervisor

5.6.1 Provides Radiation Protection Technician a copy of UE5 request (when requested by RP Technician) with any additional information needed prior to performance of surveys.

5.6.2 Ensures radiological surveys are performed, as necessary, to support evaluation.

5.6.3 Ensures survey results demonstrate compliance with applicable action levels.

5.7 Radiation Protection Engineer

5.7.1 Evaluates positive results that may be due to statistical variations, construction material, or NORM.

5.7.2 Determines the basis for the appropriate scan coverage and number of fixed point measurements for M&E with a Class 2 classification.

5.7.3 Assists RP Evaluators in applying Volumetric Authorized Limits to releases.

5.7.4 Develops, revises and/or peer reviews Survey and Release Plans to implement the release of M&E from DOE control.

5.7.5 Develops or peer reviews Applications for Authorized Release Limits.

5.8 Radiation Protection Section Manager

5.8.1 Maintains oversight of M&E being released in cognizant area.

5.8.2 Develops, revises and/or peer reviews Survey and Release Plans.

5.9 Radiation Protection Manager

5.9.1 Ensures periodic surveillances for the release from DOE Control program are scheduled and completed.

5.9.2 Approves blanket release requests.

5.9.3 Reviews documentation to release M&E with residual surface activity above 80% of applicable release limits and uses discretion to authorize such releases.

5.9.4 Reviews and approves all volumetric (concrete, soils, liquids, etc.) release requests.

5.9.5 Approves Survey and Release Plans and ensures PPPO concurrence is obtained prior to use.

5.9.6 Approves Applications for Authorized Release Limits and submits to PPPO for approval.

5.10 Project Support Technician

5.10.1 Files records with Records Management and Document Control (RMDC).

5.10.2 Retrieves record if correction is required.

6.0 ACTIONS

6.1 General Requirements

NOTE

Appendix C, *Flow Charts*, provides a visual representation of the basic process for releasing from DOE control. Appendix D, *Release Standards and Expectations*, provides detailed information to ensure the highest quality for releases is achieved.

Requestors

6.1.1 **IF** the M&E does NOT meet one of the following scenarios, **THEN** initiate a release request:

- Release of the M&E is covered by a related procedural process (e.g., sanitary trash).
- The M&E consists of personally-owned or issued items (personal vehicles, personal clothing, rings, eyeglasses, etc.) controlled and/or worn by an individual.
- The M&E is a delivered package that:
  - Is being returned to the vendor **AND**
  - Has not left the custody of shipping/receiving or QA **AND**
  - Does not contain radioactive materials (sources, etc.).
- The M&E is associated with an area which has been categorized as non-impacted from a Historical Site Assessment (HSA) and documented PPPO concurrence has been obtained.

Requestors and Evaluators

6.1.2 **Ensure printed forms remain legible as follows:**

- Be as concise with information as possible, while still being complete.
- **IF** the amount of information is too much for a block, (i.e. making the text to small to effectively read), **THEN** attach the additional information and check the block on the form.

6.2 Request Initiation

Project Managers

6.2.1 Compare the cost of performing and approving radiological evaluations for release against the cost of the property, to develop cost/benefit efficiencies.

> **NOTE**
>
> Impacted M&E releases require DOE concurrence, which require an additional 3-4 days after it has been submitted to DOE.
>
> Non-impacted M&E releases require notification to DOE and a 3-day review period prior to final approval.

6.2.2 Integrate the release process into work planning activities including Radiation Protection.

A. Consider lead times necessary to perform required initial assessments (IA) and documentation review/approval when requesting the release of M&E from DOE control.

B. Ensure to account for weather conditions for M&E that is used or staged outside or subject to the elements.

C. Account for the fact that release requests may take several days or more to process, based on resource availability and prioritization, radiological survey/evaluation, and DOE concurrence.

D. Prior to initiating an expedited release request, interface with the cognizant Radiation Protection Section Manager for resource availability and prioritization determination.

Requestors

6.2.3 Prior to initiating a request to release M&E from DOE control, perform the following:

A. Ensure classroom training module TA8378, *UE5 Requestor Training for Material and Equipment Release – Initial,* has been completed.

B. Ensure computer-based training module EC8379, *UE5 Requestor Training for Material and Equipment Release – Refresher,* has been completed within the last 12 months.

C. Determine the appropriate work authorization charge number for release.

D. Be knowledgeable of the use of the subject property while at PORTS with respect to radioactive materials.

NOTE

M&E containing commercially produced radioactive material within its structure (i.e., sources) will be stored inside of a Radioactive Material Area (RMA) when not in use and staged outside of the RMA for evaluation/surveys. Following evaluation/surveys, the M&E must be stored in an RMA in such a way that cross-contamination with any other radioactive material in the RMA is precluded, until final disposition.

E. Ensure that the M&E:

- Is no longer in-use and there are no plans for reuse.
- Is not labeled or identified as Radioactive Material.
- Is staged in a location designated by project/facility management and/or Radiation Protection (outside of a radiological area or RMA) in such a way that the initial evaluation and radiological survey can be completed.
- Will be positively controlled to prevent inadvertent movement off-site prior to receiving authorization, using at least one of the following:

DOE: FBP-22-0663 #15549

  - Physical custody and possession is maintained by the requestor or designee (e.g., small items, samples).
  - Placing non-radiological signage/postings/tags on the M&E indicating that the M&E is in the release process (see Appendix E, *Example of Process Control Signage*).

NOTE

No item is allowed to leave the designated staging area or be authorized for release from DOE control until a copy of the approved UE5 is accompanying the requested item. This completed UE5 will remain with the M&E until returned to the owner. The requestor or cognizant facility manager of the staging area authorizes the removal of any items.

DOE: FBP-22-0663 #15719, 15722

  - Keeping M&E in a designated staging area once a release request has been initiated to make it easily identifiable and segregated.

F. Perform a visual inspection and ensure the property is free any of the following:

- Tools or other equipment not part of the release.

- Mud, soil, grease, debris.
- Personal Protective Equipment (PPE).
- Signs, decals, stickers, labels, markings, adhesive labels such as those used by waste management, or other materials related to radioactive material.

6.2.4 Request a release of M&E from DOE control by completing Part 1 of FBP-RP-PRO-00004-F01, *Request to Release Material/Equipment from Department of Energy Control.*

A. Provide a physical description of the M&E including serial number, M&E management number, number of pieces, and model.

B. Identify the applicable Project (e.g., Balance of Plant [BOP], Facility Stabilization and Deactivation [FS&D], Environmental Restoration [ER], and North Wind Dynamics [NWD]).

C. Provide the applicable work authorization document (WAD) number.

D. Identify safety concerns that may be encountered when handling or surveying the M&E and determine if the General Work JHA is sufficient.

E. **IF** the General Work JHA is not sufficient, **THEN** identify the applicable job-specific JHA, or mark other and add the applicable safety document.

F. **IF** the M&E is believed to have no reasonable potential for the presence of residual radioactive material above background, **THEN** provide a detailed description of historical and process-related information.

DOE: FBP-17-1080 #7707

1) Provide specific statements (i.e., check-box, vague answers alone are not sufficient).

2) Obtain information from knowledgeable personnel.

3) Interface with Radiation Protection to determine an appropriate level of detail to support documentation.

NOTE

M&E packaging (e.g. containers/liners, pallets) with a known history supporting non-impacted status is exempt from radiological surveys (including new, used, or dedicated use).

Failure to establish M&E packaging to be free of residual radioactive material above release limits may result in a rejection of the request for release.

G. Ensure a visual inspection is performed on any M&E packaging to:

1) Verify there are no indications of contamination (e.g., stains) or potential hold-up of material on the inside and outside of the M&E packaging.

2) Verify the absence of prohibited items (e.g., tools, PPE, postings, mud, soil, grease, and debris).

H. **IF** M&E packaging is potentially impacted **OR** has an unknown history, **THEN** ensure a radiological survey is performed that addresses both the exterior and interior surfaces including the bottom surfaces and any cover(s) prior to placing the M&E into or on the packaging (include survey with the release request).

I. Indicate whether the M&E packaging is non-impacted; include statement with supporting evidence.

J. Indicate whether or not the property handled or contained radioactive materials.

K. Indicate whether or not the property had been located in a radiological area or radioactive materials area.

L. Indicate whether or not the property had been decontaminated to support the release.

M. **IF** the M&E had been decontaminated to support release, **THEN:**

1) Provide documentation for pre and post decontamination radiological surveys.

2) Provide additional information to describe controls applied to ensure the M&E has been protected from re-contamination.

NOTE

M&E containing commercially produced radioactive material within its structure (i.e., sources) will be stored inside of an RMA when not in use and staged outside of the RMA for evaluation/surveys. Following evaluation/surveys, the M&E must be stored in an RMA in such a way that cross-contamination with any other radioactive material in the RMA is precluded, until final disposition.

N. Indicate that the M&E is no longer in use and is (or will be for material with sources) staged for an initial evaluation and completion of surveys outside of a radiological area and/or RMA.

NOTE

Changing the M&E's disposition after release authorization has been granted requires a new release request to be processed.

O. Identify the disposition of the M&E:

- Return to vendor
- Recycle
- Calibration / repair (& return)
- Other
- Re-use
- Disposal

NOTE

Multiple recipients may be used as long as the disposition remains the same. Subsequent categorization of the M&E may, however, require separate release requests.

P. Identify the intended recipient(s) to including the address(es).

Q. Describe the specific use history information and any additional remarks.

R. Identify the current location of the property, including facility or building identifier (X-720 Column G15, north of X-333, etc.)

S. Indicate what method of positive control is being used (e.g., Physical Custody/Possession of the M&E, Keys are with the requestor, M&E is in designated staging area, the use of a tag/sign is on the M&E).

T. **IF** additional information is necessary where the form's space is inadequate, **THEN** provide the additional information on a separate sheet and check the box to indicate additional information is attached.

NOTE

Discussions with Radiation Protection should be conducted prior to requesting blanket release authorizations to determine suitability which may include preliminary surveys of items and associated areas.

Blanket release authorizations can only be requested by a supervisor or manager who is:

- Responsible for the process and conditions associated with controlling the property
- Knowledgeable of radiological condition changes that may impact the property
- Responsible for notifying a Radiation Protection Section Manager if radiological conditions may have changed that may impact the radiological condition of the property

A blanket release request for the following calendar year may be submitted during the last calendar month of the current year to allow for sufficient processing time, the provided request must specifically state that it is for the following calendar year. (e.g., Calendar Year XXXX). Blanket release authorizations expire at the end of each calendar year.

6.2.5 Determine whether a blanket release authorization is appropriate, based on the following criteria:

- The history and process knowledge for the M&E must indicate there is no reasonable potential for the presence of contamination from DOE operations distinguishable from background.
- Radiological monitoring of the M&E is not required to support release, as determined by Radiation Protection management.
- The same M&E description (e.g., records from X-1000) is released at a routine frequency.
- The handling process for the property is well established (e.g., proceduralized).

6.2.6 **IF** a blanket release authorization is desired AND the M&E meets the criteria specified in Step 6.2.5, **THEN**:

A. Describe the processes in place that assure there is no reasonable potential for the presence of contamination, to include procedure citations, attach additional sheets as necessary.

B. Indicate on FBP-RP-PRO-00004-F01 that a blanket release is being requested.

6.2.7 Sign and date completed requests.

> **NOTE**
>
> Failure to email release requests to UE5@ports.pppo.gov will delay the processing and approval of the request.

6.2.8 Email completed release requests to Radiation Protection to UE5@ports.pppo.gov indicating any prioritization request and specific time constraints.

6.3 Administrative Actions

UE5 Coordinator

6.3.1 Frequently check the INBOX for the UE5 email account and review submitted release requests.

> **NOTE**
>
> NorthWind Dynamics (NWD) personnel qualifications are tracked manually, verified through NWD training personnel, and published on the RP Training web page.
>
> All other UE5 Requestor qualification is verified by reviewing a training status report generated from the SilkRoad Learning database.
>
> **DOE: FBP-23-0777 & 0914**

6.3.2 Verify the requestor has completed module TA8378, *UE5 Requestor Training for Material and Equipment Release – Initial*, and is current on module EC8379, *UE5 Requestor Training for Material and Equipment Release – Refresher*.

A. **IF** the requestor has completed all necessary requestor training, **THEN** enter the date in the box in Part 2 indicating training has been verified.

B. **IF** the requestor has not completed all necessary requestor training, **THEN** return to requestor.

6.3.3 Review submitted UE5 requests for level of detail and completeness; coordinate with cognizant RP personnel for technical questions.

6.3.4 **IF** the information on the release request is incomplete or insufficient, **THEN** either contact the requestor to resolve incomplete or insufficient information **OR** return request to requestor and update the UE5 status accordingly.

6.3.5 **IF** contacted by project personnel, **THEN** determine if a unique priority needs to be assigned to a release request.

> **NOTE**
>
> Detailed information on using the UE5 web-based application is contained in FBP-RP-GD-00021, *UE5 Web General User's Guide*.

6.3.6 Enter release requests into the UE5 tracking program as follows:

A. Ensure the release request is assigned a unique number.

B. Enter the associated request information.

6.3.7 Determine assignments for processing UE5 release requests.

A. Assign the UE5 release request to the appropriate Radiation Protection Section Manager, Radiation Protection Engineer or Radiation Protection Supervisor for completion of initial review.

B. Communicate any known prioritizations.

6.3.8 Track the status of open release requests as follows:

A. Interface with Radiation Protection Section Managers or designees on a routine basis (e.g., each working day).

B. Update status information in the UE5 tracking program.

C. Ensure the status of open release requests is communicated to the RP Operations Manager, RP Manager or designee.

> **NOTE**
>
> Rejected requests may be re-evaluated and resubmitted.

6.3.9 Reject release requests according to the following criteria:

- Greater than one year old and no evaluation performed
- As requested on a case-by-case basis

NOTE

The following are methods for communicating UE5 status:

- UE5 web-based application (when available)
- Posting on RP webpage
- Other communication methods, such as phone and email

6.3.10 Ensure the updated UE5 tracking program is available for DOE review on normal working days (i.e. Monday – Thursday).

- **IF** UE5 status updates cannot be made through any available means, **THEN** notify cognizant RPSMs to discount the affected date(s) for the 3-day review period required for non-impacted M&E as stated in Step 6.2.2 Note.

6.4 Initial Assessment & Categorization

Radiation Protection Evaluator

NOTE

The provisions of an approved SRP (e.g., survey methodologies, data quality objectives, release limits) take precedence over this procedure.

6.4.1 **IF** an approved SRP applies to the request, **THEN** perform the evaluation in accordance with the SRP and ensure compliance.

6.4.2 **IF** the request is for a blanket, **THEN** verify the following conditions are satisfied:

- The subject M&E requires release on a frequent basis (e.g., monthly) and does not require monitoring.
- A documented process exists for controlling the M&E in a manner to prevent contact with radioactive materials.
- The M&E is used and stored under the similar conditions throughout the year.

6.4.3 **IF** the release request does not have an approved SRP, **THEN** complete the initial assessment (IA) as follows

A. Ensure the request does not conflict with the DOE moratorium on release of metals for recycling for commerce (refer to Section 3.0 and Appendix C).

B. Review the results of the requestor's visual inspection.

NOTE

Surveys performed prior to the IA may be considered during the IA and used to complete the evaluation, if suitable.

Independent visual inspections may be performed by the evaluator or by a Radiological Control Technician (RCT).

Visual inspections documented via email or on survey records associated with the release of the M&E may be used to demonstrate performance of an independent visual inspection.

C. Ensure an independent visual inspection is performed by Radiation Protection to address the following:

- The presence of prohibited materials such as signs, labels, and markings related to radioactive materials, decals, stickers, or adhesive labels such as those used by waste management
- Stains or discolored surfaces may be an indication of potential residual contamination
- New coatings, paint, surface films, grease, dirt, or oil that may impact detection of residual contamination
- Surface condition uniform or roughened, shiny, rusty, or pitted
- Connection points for hoses, cables, or other attachments that may be locations for residual contamination
- Filters that prevent dust/particulates from entering an intake or inlet
- Tools or incidental equipment not identified on the release request
- Internal surfaces which are accessible to field personnel that may have potential for residual contamination (internal compartments, batteries, etc.)

D. **IF** there are indications of potential residual contamination, **THEN** ensure that affected areas are surveyed.

E. Review process and historical information provided by the requestor as well as applicable radiological survey records.

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F. **IF** radiological surveys were performed prior to the IA, **THEN** describe this condition as a remark in Part 2 of FBP-RP-PRO-00004-F01 or on attached documentation.

G. Determine if the visual inspection and existing historical and process knowledge documentation supports a non-impacted categorization.

NOTE

Non-impacted M&E does not require specific radiological monitoring; however, a sentinel survey may be performed to verify other assumptions made during the IA. For volumetric, dispersible, or bulk M&E, a volumetric analysis may be performed as the sentinel survey (e.g., transformer oil).

Sentinel surveys alone cannot be used to support a non-impacted conclusion.

H. **IF** a sentinel survey is desired, **THEN:**

1) **IF** the M&E has volumetric properties (e.g., concrete, soil, liquids, dispersible material), **THEN** consider sampling the M&E and/or performing surface sentinel surveys to support the non-impacted categorization; perform any volumetric analysis in accordance with Subsection 6.6.

2) For surface activity evaluations, interface with an RP Supervisor to have a sentinel survey performed, describing areas or surveys to be addressed.

- Ensure that any surface locations surveyed address areas or surfaces that have the highest likelihood for the presence of residual contamination, including inaccessible surfaces.

3) Review sentinel survey results.

NOTE

Positive sentinel measurement results may be reviewed by a Radiation Protection Engineer to determine if the result(s) can be attributed to natural radioactivity or construction materials.

A sentinel measurement result above minimal detectable activity (MDA) that was subsequently re-counted and found to be below MDA is not considered a positive sentinel measurement and does not require to be reviewed by a Radiation Protection Engineer.

4) **IF** positive sentinel measurement results (i.e., >MDA for surface activity or sum of fractions > 0.5 for volumetric) are determined to be due to natural radioactivity or construction materials, **THEN** document this determination as a remark in Part 2 of FBP-RP-PRO-00004-F01 (or attached pages).

I. **IF** inaccessible or internal surfaces are present, **THEN** describe in the remarks section of Part 2 of FBP-RP-PRO-00004-F01 (or attached pages) accessible surfaces suitable to evaluate inaccessible or internal surfaces, if any (for example, sample pump inlet can be used to assess internal surfaces of an Industrial Hygiene [IH] monitoring device).

NOTE

It is generally not the intention of FBP to release decontaminated equipment and materials to SODI. Should any such release be requested, documentation of decontamination actions and results must be provided to SODI. Any such release will require approval by the Radiation Protection Manager and DOE.

6.4.4 **IF** M&E to be released to SODI was decontaminated, **THEN** attach all related documentation (e.g., pre and post decontamination surveys).

6.4.5 Categorize the M&E (refer to Appendix D):

A. Categorize M&E as non-impacted only if:

- An evaluation of historical information and process knowledge concludes there is no reasonable potential for the M&E to contain residual radioactive material above background.

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AND

- There were no positive sentinel measurement results (if performed) due to residual radioactive material from PORTS operations/activities.

B. Categorize M&E as impacted based on **ANY** of the following conditions:

- Positive sentinel measurement results indicate the presence of residual radioactive material from PORTS operations/activities, **OR**

- There is no well-documented historical information or process knowledge suitable to support a defendable conclusion, even though the M&E may seem to have no reasonable potential for residual radioactive material above background, **OR**

- The M&E's history and use indicates there is a reasonable potential for the presence of residual radioactive material above background.

6.4.6 Determine if the release requires concurrence from the PPPO based on the following:

- PPPO concurrence is not required for releases performed under the implementation of an approved SRP that has PPPO concurrence, unless otherwise specified in the SRP.

- PPPO concurrence is required for all impacted and non-impacted dispersible materials and M&E with volumetric properties (such as liquids, bulk soils, vegetation, gravel, sand, and concrete).

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- PPPO concurrence may be requested at the discretion of the Radiation Protection Manager on a case-by-case basis.

- PPPO concurrence is required for all blanket releases.

DOE: FBP-23-0777 & FBP-23-0914 #17360

- PPPO concurrence is required for releases of M&E that may have been exposed to removable (or airborne) radioactive contamination.

- PPPO concurrence is required when approved release limits do not exist.

- PPPO concurrence is required when M&E released to SODI required decontamination.

6.4.7 **IF** the M&E is categorized as non-impacted, **THEN** ensure the evaluation contains clear evidence that specifically defends the non-impacted conclusion.

6.4.8 Ensure the checkboxes in Part 2 of FBP-RP-PRO-00004-F01 are accurately completed, supporting remarks are recorded, and additional information is attached, as applicable. Annotate each attached page with the applicable UE5 number.

- Ensure information related to any positive sentinel survey result is documented in the Non-Impacted M&E remarks block.

6.4.9 **IF** M&E is categorized as non-impacted **OR** the release cannot otherwise be authorized as impacted, **THEN** complete the release authorization in accordance with Subsection 6.7.

6.4.10 **IF** M&E is categorized as impacted, **THEN**:

A. Indicate that FBP-RP-PRO-00004-F03 is attached (checkbox).

B. Complete a radiological evaluation of the M&E in accordance with Subsection 6.5

6.4.11 Communicate with the UE5 Coordinator any changes with categorization information, including the individual who completed the initial evaluation, date of the evaluation and categorization/classification, so that the UE5 tracking program may be updated.

6.5 Evaluation of Impacted M&E

Radiation Protection Evaluator

6.5.1 Initiate FBP-RP-PRO-00004-F03 and record the associated UE5 number on the form.

6.5.2 Identify the document that contains the associated authorized release limits.

- **IF** pre-approved authorized limits do not exist, **THEN** develop and obtain approval for appropriate authorized release limits in accordance with Subsection 6.11, *Application for Authorized Release Limits.*

NOTE

Action levels are established to support decision making and ensure appropriate disposition actions are taken.

6.5.3 Refer to Table 1 for action levels concerning surface activity evaluations.

Table 1, Action Levels for Surface Contamination

Class 1 and Class 2	80% of the release limit
Class 3	50% of the release limit

6.5.4 **IF** the M&E is a complex single unit or group, **THEN** consider dividing into portions according to radiological impact (i.e., dual classification).

NOTE

In general, it is not efficient to collect preliminary survey data to support a Class 2 classification.

6.5.5 Classify impacted M&E according to the following criteria:

- **IF** there is little or no reasonable potential for the presence of residual radioactive material from DOE operations/activities, but insufficient evidence exists to support non-impacted categorization, **THEN** classify M&E as Class 3.

- **IF** there is a potential for the presence of (or the confirmed presence from measurement results) residual radioactive material above 50% of the surface contamination release limit, **THEN** classify the M&E as Class 2 or Class 1.

6.5.6 Prior to any classification as Class 2 impacted, interface with a Radiation Protection Engineer to determine the benefit of a Class 2 designation.

Radiation Protection Engineer

6.5.7 **IF** there is a considerable benefit for a Class 2 designation, **THEN**:

A. Evaluate preliminary survey data.

B. Perform a statistical analysis using MARSAME methodology to determine appropriate scan coverage and the number of measurement points required.

C. Document the details of the analysis and forward to evaluator for inclusion with the UE5 packet.

Radiation Protection Evaluator

6.5.8 Indicate the classification of the M&E on FBP-RP-PRO-00004-F03, including any supporting documentation, such as Class 2 analysis and details regarding dividing into portions.

- Mark N/A for M&E with only volumetric properties.

6.5.9 Interface with RCTs as necessary for the performance of release (i.e., disposition) surveys.

- Ensure the RCTs have all pertinent information (e.g., UE5 tracking number, special instructions pertaining to survey, classification, etc.) or a copy of UE5 request with the UE5 number prior to the performance of surveys.

6.5.10 Interface with the sampling group for any volumetric, dispersible, or bulk M&E evaluations.

- **IF** unsure about the specific isotopic analysis required, **THEN** consult with a Radiation Protection Engineer.

- Provide the specific isotopes for analysis to the sampling group.

6.5.11 For surface activity evaluations, review disposition survey records and measurement results.

A. Record applicable survey numbers on FBP-RP-PRO-00004-F03.

B. Verify survey records are complete and instrumentation calibration dates have not expired.

C. Verify visual inspection results support release from DOE control.

D. Verify scan survey documentation reflects the correct coverage as follows:

- Scan surveys of Class 3 M&E need to address approximately 10% of the accessible surface area.
- Scan surveys of Class 2 M&E need to address between 10-100% of the accessible surface area (coverage is based on preliminary survey results, as evaluated by a Radiation Protection Engineer).
- Scan surveys of Class 1 M&E covers 100% of the accessible surface area.

NOTE

Approximately 1 fixed point measurement per scanned square meter would correlate to a 5% false positive instrument response when residual radioactive material is at background levels. For example, surveying M&E with about 3 square meters may have 2-3 timed count results from observations of elevated activity made while scanning.

The actual number of fixed point measurements on a single piece of M&E is based on practicality, professional judgement, and on the size and complexity of the M&E.

E. Verify a suitable number of timed counts measurements and smear samples were performed; refer to FBP-RP-PRO-00176, *Radiological Survey Performance*, for additional guidance.

F. Verify that reported MDA values for timed counts timed measurements were less than 50% of applicable release limits.

NOTE

Survey results must provide sufficient evidence that any measured surface contamination is below the applicable action level.

G. Review survey documentation results.

H. **IF** swabs/smears were taken to characterize inaccessible areas, **THEN** verify associated results do not exceed MDA.

I. **IF** problems with survey documentation or coverage are identified, **THEN** ensure corrections are made to survey documentation and/or request performance of a more detailed survey of selected areas/items.

NOTE

Elevated measurement results may be evaluated by a Radiation Protection Engineer for background influences from construction materials, NORM, or statistical variability.

J. **IF** measurement results exceed an applicable action level, **THEN** re-classify and request an additional survey of the M&E as follows:

1) **IF** Class 3 measurement results exceed 50% release limit after accounting for construction material, NORM, or counting statistics (as practical), **THEN** either:

A. Reclassify the M&E as Class 2 or Class 1 and have the M&E re-surveyed accordingly, **OR**

B. Do not release the M&E for unrestricted use.

2) **IF** any Class 1 or 2 measurement result exceeds the action level after accounting for construction materials (as practical), **THEN**:

A. Notify a Radiation Protection Section Manager.

B. Identify the request that requires the Radiation Protection Manager approval.

3) **IF** any Class 1 or Class 2 measurement result exceeds the release limit, **THEN**:

A. Do not release the M&E for unrestricted use.

B. Notify a Radiation Protection Section Manager.

6.5.12 For bulk or dispersible M&E, **OR** for any volumetric evaluation, perform Subsection 6.6.

6.5.13 **WHEN** the radiological evaluation is completed, **THEN**:

A. Ensure FBP-RP-PRO-00004-F03 and any additional supporting information is complete and accurate including classification description(s), checkboxes, survey numbers, and supporting remarks.

B. Describe the evaluation's conclusion.

C. Sign and date FBP-RP-PRO-00004-F03 and attach to FBP-RP-PRO-00004-F01.

D. Complete FBP-RP-PRO-00004-F01 in accordance with Subsection 6.8.

6.6 Analysis of Volumetric, Dispersible or Bulk M&E

DOE: FBP-17-1080 #7921

Radiation Protection Evaluator

6.6.1 For any bulk material, coordinate with RP Engineering to determine the need for an SRP.

6.6.2 Perform volumetric and dispersible material analysis as follows:

Radiation Protection Engineer

A. Review sample results for radionuclide activity concentrations.

B. For each sample or group of samples, compute the sum of the fractions of each radionuclide (highest activity) to its respective activity concentration limit listed in Table 2 of Appendix B, *Release Limits* (refer to the example template for desired output).

C. Provide results of the calculation to the RP Evaluator.

Radiation Protection Evaluator

D. **IF** the sum of the radionuclide fractions, evaluated for each sample, is > 1.0 for any sample (i.e., above the release limit), **THEN** do not release.

E. **IF** the sum of the radionuclide fractions for any sample is > 0.5, **THEN** perform the following:

1) Ensure the M&E is categorized as impacted.

2) Consult with Radiation Protection Engineer regarding feasibility of obtaining additional samples and reevaluating.

NOTE

The expected standard is for actions in Sections 6.7 and 6.8 to occur in a reasonable timeframe after actions in Sections 6.4 and 6.5.

6.7 Evaluation Completion

Radiation Protection Evaluator

6.7.1 Ensure that the results of the processes performed in Sections 6.4 and 6.5 (if performed for impacted M&E) are still valid.

NOTE

Finalize page numbers once concurrence is received.

6.7.2 Ensure pages are numbered (including attachments) to reflect the total number of pages and the UE5 number.

6.7.3 Indicate the evaluation's conclusion by completing the appropriate checkboxes in Part 3 of FBP-RP-PRO-00004-F01.

A. **IF** the M&E may be released without restrictions, **THEN** indicate this conclusion.

B. **IF** the M&E may be released but restrictions apply, **THEN** indicate this conclusion and describe the applicable restrictions.

C. **IF** the request for release is rejected, **THEN** indicate this conclusion and describe the reason(s) for the rejection then submit to the requestor and the UE5 Coordinator.

NOTE

M&E contaminated at levels distinguishable from background where approved release limits do not exist may be dispositioned as radioactive waste.

D. **IF** the M&E should be dispositioned as radioactive waste, **THEN** indicate this conclusion.

6.7.4 **IF** the Radiation Protection Manager approval is not required, **THEN** mark the appropriate checkbox.

6.7.5 **IF** PPPO concurrence is not required, **THEN** mark the appropriate checkbox.

6.7.6 **WHEN** the release request documentation is determined to be sufficient to support the evaluation's conclusion, **THEN** sign and date Part 3 of FBP-RP-PRO-00004-F01 as the Radiation Protection Evaluator and submit to Peer Reviewer.

6.8 Peer Review/Final Approval

NOTE

Peer reviews may be completed via email or phone communication and documented as such (e.g., ok per phone communication with John Smith 1/20 @ 1730) and signed by person authorizing via email or phone communication at a later date/time.

Peer Reviewer

6.8.1 **IF** the M&E is categorized as non-impacted, **THEN** verify the documentation contains sufficient justification to defend this conclusion.

6.8.2 **IF** the M&E is categorized as impacted and a surficial analysis was performed, **THEN** verify the survey coverage is appropriate for classification level and measurement results are below applicable release limits.

6.8.3 **WHEN** documentation is determined to be complete, correct, and sufficient to support the release disposition, **THEN** sign and date Part 3 of FBP-RP-PRO-00004-F01 as the Peer Reviewer.

6.8.4 **IF** not the cognizant Radiation Protection Section Manager, **THEN** notify the cognizant Radiation Protection Section Manager that peer review is complete.

6.8.5 Submit FBP-RP-PRO-00004-F01 and all attachments to the Radiation Protection Manager for approval consideration when:

- Survey results exceed 80% of a release limit
- The material has been analyzed volumetrically
- The request is for a blanket

Radiation Protection Manager

6.8.6 **IF** monitoring results exceed any of the following, **THEN** determine if the release is consistent with the principles of ALARA:

- 80% of a release limit for surface activity evaluations
- 80% of the release limit for volumetric activity analysis (i.e., sum of radionuclide fraction result > 0.8)

NOTE

Blanket release requests for the upcoming calendar year may be approved up to one week prior to the end of the current calendar year, provided the release request specifically states that it is for the following calendar year.

6.8.7 **IF** the release request is a blanket, **THEN** consider the appropriateness and potential risks associated with the request.

6.8.8 **IF** it is determined that the release is appropriate, **THEN** review FBP-RP-PRO-00004-F01 and all attachments**.**

6.8.9 Sign and date Part 3 of FBP-RP-PRO-00004-F01 and indicate whether the release is approved or rejected.

6.8.10 **IF** the release is rejected, **THEN** edit (line-out & initial) the approval status in Part 3 and document the reason for rejection.

6.8.11 Return FBP-RP-PRO-00004-F01 to the Peer Reviewer.

Peer Reviewer

NOTE

Records of release for non-impacted M&E are considered authenticated upon the Peer Reviewer's signature.

Records of release for impacted M&E are considered authenticated when signed with respect to attachment of PPPO concurrence.

6.8.12 **IF** PPPO concurrence is **NOT** required, **THEN** return FBP-RP-PRO-00004-F01 to the Radiation Protection Evaluator and the UE5 Coordinator.

NOTE

The cognizant Radiation Protection Section Manager (if not the peer reviewer) shall be notified prior to submitting a release request to DOE for PPPO concurrence.

6.8.13 **IF** PPPO concurrence is required, **THEN**:

A. Forward a copy of the completely signed FBP-RP-PRO-00004-F01 to a PPPO representative.

B. Work with PPPO to achieve concurrence.

6.8.14 **IF** PPPO concurrence is required but cannot be obtained, **THEN** reject the release request and document the reason for the rejection and return to the RP evaluator, UE5 email, and requestor.

Radiation Protection Evaluator/Peer Reviewer

6.8.15 **WHEN** PPPO concurrence is obtained, **THEN**:

A. Verify the PPPO concurrence correspondence cites the correct UE5 number.

B. Attach a copy of PPPO's concurrence correspondence to the release request.

C. Update page numbering.

D. Sign and date FBP-RP-PRO-00004-F01 to indicate PPPO's concurrence correspondence is attached.

NOTE

A UE5 packet consists of the FBP-RP-PRO-00004-F01, FBP-RP-PRO-00004-F03 (if generated) and any supporting attachments such as emails, maps and additional writeups or histories.

All email communication associated with a UE5 packet must be forwarded to the UE5 email address, ensuring that the UE5 number is identified in the subject area of those emails. This includes any PPPO concurrence emails. By doing this, RMDC requirements for documentation will be satisfied.

Copies of the approved UE5 packet may be distributed to additional individuals, such as Vendor or Contractor Technical Representatives.

6.8.16 Forward a copy of the completed UE5 packet to the requestor.

6.8.17 Submit a copy of the completed UE5 packet and any attachments to the UE5 email.

6.8.18 Submit the completed UE5 packet to the Project Support Technician assigned to support the Radiation Protection department.

Requestor

6.8.19 Use the physical copy of the completed UE5 packet to accompany the M&E.

DOE: FBP-22-0663 #15719

6.9 Controls During and Following Release Authorization

Project Managers and/or Requestors

6.9.1 Protect the following from becoming radiologically contaminated:

- M&E staged for release from DOE control—before final approval obtained.

- M&E approved for release from DOE control—before leaving site.

6.9.2 **IF** M&E from Step 6.9.1 may have become radiologically contaminated, **THEN** notify the cognizant Radiation Protection Section Manager.

6.9.3 Apply positive controls to ensure the M&E is not inadvertently moved off-site prior to receiving authorization according to Step 6.2.3E.

DOE: FBP-22-0663 #15549

6.9.4 Notify Radiation Protection for any change in disposition.

6.9.5 Notify Radiation Protection if radiological conditions change.

Requestor

6.9.6 Before allowing M&E to be released, ensure that a physical copy of the completed UE5 Packet is in hand or accompanying the M&E.

DOE: FBP-22-0663 #15719 & 15722

6.9.7 Send all approved UE5 requests to the intended recipient within one year of the approval date.

NOTE

Refer to Appendix F, *Survey and Release Plan Development*, for this section.

6.10 Survey and Release Plans:

Radiation Protection Engineering Manager

6.10.1 **WHEN** a request to create or revise a Survey and Release Plan (SRP) has been received, **THEN** determine the applicability and suitability of the request.

A. Ensure that the new or revised scope does not conflict with the DOE moratorium on release of metals for recycling for commerce (refer to Section 3.0 and Appendix C).

B. Consult with cognizant personnel as required to obtain relevant information regarding the associated M&E, including its intended disposition.

Radiation Protection Engineer/Radiation Protection Section Manager

6.10.2 **WHEN** assigned, **THEN** create a new SRP as follows:

A. Obtain a unique identification number from the UE5 Coordinator.

B. Review associated process and historical information as well as any previous radiological survey or sampling information.

C. **IF** approved authorized release limits do not exist, **THEN** perform Section 6.11

D. Develop the document, using the guidance in Appendix F, including the following sections (wording of section titles may be modified):

- Cover page with title and plan number
- Signature and date page for preparer, peer reviewer(s), approval and PPPO concurrence receipt (may be combined with cover page)
- Executive Summary (optional)
- Contents (optional)
- Objective/Scope
- Background (description of process, including property/material description and intended disposition, process knowledge and historical information)

NOTE

M&E packaging (e.g. containers/liners, pallets, boxes) survey requirements need to be included in Survey Design, according to direction in Step 6.2.4, unless packaging has a known history supporting non-impacted status (i.e., exempt from surveys). Indicate any packaging that is designated for dedicated use applications.

- Radiological Survey Design, including MARSAME categorization/classification(s), basis, approach, methodology, coverage, prerequisites, instrumentation used, documentation requirements, laboratory analyses, and procedure references.
- Data Quality Objectives (DQO)/Measurement Quality Objectives (MQO) and associated limits that will be used in evaluating for releases (Action Levels/Release Decision Limits and Authorized Limits); if specific MQOs are not developed, the general ones specified in Appendix E may be referenced. DQOs are typically specified when statistical analysis is performed to ensure sampling/measurements are representative within a specified confidence level.
- Survey Instructions/Implementation (including data analysis assessment and associated action paths)

E. Submit SRP for peer review.

6.10.3 **WHEN** assigned, **THEN** revise an SRP as follows:

A. Obtain a draft copy of the currently approved SRP.

B. Perform required edits.

C. Ensure all information is current, relevant and correct (including references)

D. Submit for peer review.

6.10.4 **WHEN** assigned, **THEN** peer review an SRP as follows:

A. Review all content for accuracy, completeness and adequacy for its intended purpose.

B. Avoid critiquing writing style (differentiate between principles and preferences)

C. Ensure that the SRP satisfies the requirements of DOE O 458.1 for releasing property from DOE control or dispositioning the property through an alternative pathway.

D. Resolve any issues in the draft SRP with the SRP preparer; refer to FBP-NSE-PRO-00139, *Differing Professional Opinions (DPO),* if issues cannot be resolved.

E. Upon successful peer review, submit SRP for approval.

6.10.5 Obtain approvals as follows:

> **NOTE**
>
> SRPs may optionally be sent to DOE PPPO and/or contracts prior to authenticating as an informational draft to resolve any concerns prior to signatures.

A. Route SRP for signatures as follows:

- Preparer
- Peer Reviewer(s)
- Approval Authority (Radiation Protection Manager)

Radiation Protection Engineer/Radiation Protection Section Manager

B. **IF** SRP is new, **THEN** ensure SRP has been submitted to contracts for review.

C. Submit SRP to DOE PPPO oversight for concurrence.

Radiation Protection Engineer/Radiation Protection Section Manager

D. **WHEN** DOE PPPO concurrence has been obtained, **THEN** indicate such on the SRP cover page (or alternatively, signature page) with a signature.

NOTE

An application for new Authorized Release Limits is a time consuming effort, requiring collaboration between various entities, including Department of Energy.

6.11 Application for Authorized Release Limits

Radiation Protection Engineer

6.11.1 Prepare application including the following elements:

- Cover/title page
- Signature/date page for preparer, reviewer(s) and Radiation Protection Manager
- Introduction stating the purpose and scope of the request/application
- Description (physical and radiological) and expected end-use of the property
- Specific limits proposed for each radionuclide or group of radionuclides in order to minimize public exposure in accordance with DOE 0 458.1 requirements OR limits for external radiation exposure as expressed in surrogate metrics or conditions used to limit radionuclides

NOTE

RESRAD modeling software is one of a number of software programs useful in determining human and biota exposures from RESidual RADioactive Materials. Data input values must be determined from information supplied by cognizant individuals (e.g., field personnel, environmental protection personnel, etc.).

- Potential collective dose to the exposed population and the potential dose to a member of the public most likely to receive the highest dose (Maximally Exposed Individual or MEI) for both the actual or likely future use and the most plausible future use of the property.
- ALARA assessments for the proposed clearance action to include at a minimum the effects of:
    - Implementing the proposed authorized limits

- Implementing alternative levels of residual radioactive material instead of the proposed authorized limits
- Not implementing the proposed authorized limits (i.e., not proceeding with the proposed clearance action)

- A description of the procedures and radiological monitoring or surveys to be used to demonstrate compliance with the proposed limits
- Identification of any restrictions or conditions on the future use of the property upon which the proposed limits are based, and the means by which the restrictions or conditions will be implemented and maintained
- Evidence of notification of applicable federal, state, or local regulatory agencies and tribal governments

NOTE

Release date information is needed to support the DOE expectation (stated at Federal Register, Volume 72, Number 110, page 31906) that the material, equipment or real property to which the 10CFR835.1 (b)(6) exclusion is applied will be released from DOE control according to a specified time interval.

- An estimated date for when the property will be released from DOE control
- References

6.11.2 Forward draft for peer review (include Radiation Protection Engineering Manager as a reviewer).

Peer Reviewer(s)

6.11.3 Review draft for accuracy and adequacy; resolve any issues with preparer.

Preparer

6.11.4 Forward draft to Radiation Protection Manager, resolving any issues.

Radiation Protection Manager

6.11.5 **WHEN** draft is acceptable, **THEN** ensure draft is fully authenticated before submitting to the DOE Portsmouth PPPO for review and approval.

7.0 RECORDS

7.1 Records Generated

A. FBP-RP-PRO-00004-F01, *Request to Release Material/Equipment from Department of Energy Control*, and attached pages or documents

> **NOTE**
>
> FBP-RP-PRO-00004-F03 is not a stand-alone record but an attachment to FBP-RP-PRO-00004-F01. FBP-RP-PRO-00004-F01 should not be considered authenticated until all required signatures are obtained.

B. FBP-RP-PRO-00004-F03, *Radiation Protection Evaluation to Release Material/Equipment from Department of Energy (DOE) Control*, and attached pages or documents

C. *Application for Authorized Release Limits*

D. *Survey and Release Plan*

7.2 Requirements

A. Records generated or received as a result of performing this procedure shall be managed according to FBP-BS-PRO-00062, *Records Management Process.*

B. Maintain and process records generated by this procedure in accordance with FBP-RP-PRO-00023, *Radiation Protection Program Records.*

8.0 DEFINITIONS/ACRONYMS

8.1 Definitions

A. **Action Level –** Threshold activity levels, typically less than applicable release limits, used to support a decision process.

B. **Authorized Release Limit –** A DOE authorized limit on the concentration of residual radioactive material on the surfaces of or within the volumetric matrix of M&E, which has been derived consistent with DOE regulations and directives, including the ALARA process requirements given the anticipated use of the M&E, to permit the release of M&E from DOE control. This term is synonymous with "Release Limit" and "pre-approved authorized limit".

C. **Background Radiation** − Radiation from: (1) NORM that have not been technologically enhanced (i.e., background radiation does not include TENORM), (2) cosmic sources, (3) global fallout as it exists in the environment (such as from the testing of nuclear explosive devices), (4) radon and its decay products in concentrations or levels existing in buildings or the environment that have not been elevated as a result of current or prior activities, and (5) consumer products containing nominal amounts of radioactive material or producing nominal amounts of radiation.

D. **Blanket Release** – A release authorization to address repetitive releases of non-impacted M&E within a limited scope.

E. **Bulk Material** – M&E such as trash, rubble, concrete, roofing materials, and sludge with a volume greater than 30 cubic yards.

F. **Characterization Survey** – An inbound or baseline survey performed before first use to establish background of M&E.

G. **Class 1 M&E –** Impacted M&E that has a high potential for the presence of residual radioactive material above release limits.

H. **Class 2 M&E** – Impacted M&E that has a low potential for the presence of residual radioactive material above release limits.

I. **Class 3 M&E –** Impacted M&E that has little or no potential for the presence of surficial residual radioactive material above background but insufficient evidence exists to support categorization as non-impacted.

J. **Controlled Area** – Any area to which access is managed by or for DOE to protect individuals from exposure to radiation and/or radioactive materials.

K. **Data Quality Objectives (DQO) –** An established set of qualitative and quantitative statements derived from the DQO process that clarify technical and quality objectives, define the appropriate type of data, and specify tolerable levels of potential decision errors that will be used as the basis for establishing the quality and quantity of data needed to support decisions.

L. **Data Quality Objectives Process –** A systematic strategic planning tool based on the scientific method that identifies and defines the type, quality and quantity of data needed to satisfy a specified use.

M. **Dispersible Material –** Material that is or could become a loose powder or fine particulate capable of causing a large contamination spread or potential for inhalation in the event of a container rupture. (i.e., ground materials, oxide-like materials, and loose powdery salts).

N. **Graded Approach –** The process of ensuring that the levels of analyses, documentation, and actions used to comply with requirements is commensurate with:

- The relative importance to safety, safeguards and security
- The magnitude of any hazard involved
- The life-cycle stage of M&E
- The programmatic mission of a facility or project
- The particular characteristics of M&E
- The relative importance to radiological and non-radiological hazards
- Any other relevant factors

O. **Impacted** – M&E with a reasonable potential to contain residual radioactive material above background (surficial or volumetric) OR with little or no potential for the presence of surficial residual radioactive material above background but insufficient evidence exists to support categorization as non-impacted.

P. **Materials & Equipment (M&E)** − M&E of any kind, except for real property. For the purposes of this procedure, the debris from the demolition of real property is a special case of M&E that is addressed separately and differently due to its inherent hazards.

Q. **Measurement Quality Objectives**− An established set of statements for a given measurement method necessary to meet the established DQOs for a given release action.

R. **Member of the Public –** An individual who is not a general employee. An individual is not a member of the public during any period in which the individual receives an occupational dose.

S. **Non-impacted** – M&E which has no reasonable potential to contain residual radioactive material above background.

T. **Process Knowledge** − The use of operational understanding to evaluate whether material or equipment has been located or used in a way that could have caused activation or radiological contamination.

U. **Public Dose –** The dose received by members of the public from exposure to radiation and to radioactive material released by a DOE radiological activity, whether the exposure occurred within a DOE site boundary or offsite.

V. **Radiological Activity –** Any activity taken for, or by, DOE that has the potential to result in releases or radioactive material to the environment or exposures to members of the public, potentially resulting in public doses both present and future.

W. **Radiological Clearance** - The removal of M&E from a radiological area to the general facility areas and not to the public in accordance with 10 CFR 835 requirements. DOE still maintains control of the M&E.

X. **Radiological Release** - The removal of M&E from DOE control for the purpose of off-site service, re-use, recycling, or disposal. DOE control includes all activities performed in conjunction with or in support of the DOE prime contract, as well as any M&E that arrives to the PORTS reservation boundary that is not specifically exempted.

DOE: FBP-22-0663 #15773

Y. **Real Property** − Land and anything permanently affixed to the land such as buildings, fences, and those things attached to the buildings such as light fixtures, plumbing and heating fixtures, or other such items that would be M&E if not attached.

Z. **Residual Radioactive Material** − Any radioactive material that is in or on soil, air, water, equipment, or structures as a consequence of past operations or activities of DOE or its predecessors.

AA. **Restricted Use** – For the purposes of this procedure, use by a licensed and/or authorized entity, who will maintain control of the M&E such that any federal/state/local regulations are not violated and the public and environment are protected from undue risks of radiation exposure.

BB. **Reuse** − To release material or equipment in its original form for its intended original use.

CC. **Sentinel Survey** – A biased survey performed in support of a non-impacted characterization at key locations with the highest potential to exhibit surface contamination.

DD. **Site** − Land or M&E upon which DOE facilities or activities are located and access to which is subject to DOE or DOE contractor control.

EE. **Surface Radioactivity** − Residual radioactive material residing on or near the surface of M&E that can be adequately quantified in units of activity per unit area. For the purpose of this procedure, surface radioactivity applies to both accessible and inaccessible areas for survey/measurement.

FF. **Survey –** An evaluation of radiological conditions which may or may not include the physical performance of radiological measurements (i.e., monitoring).

GG. **Survey Unit –** A single surface, area, or piece of M&E on which specific protocols or measurements are made to support a disposition decision.

HH. **Technologically Enhanced Naturally Occurring Radioactive Material (TENORM) –** Any naturally occurring radioactive materials whose radionuclide concentrations or potential for human exposure has been increased by human activities above levels encountered in the natural state.

II. **Volumetric Contamination** − Residual radioactive material that is distributed throughout the volume or matrix of the material or equipment.

8.2 Acronyms

A. **ALARA** – As Low As Reasonable Achievable

B. **CRO -** Community Reuse Organizations

C. **D&D** – Deconstruction and Decommissioning

D. **HSA –** Historical Site Assessment

E. **IA –** Initial Assessment

F. **JHA** – Job Hazard Analysis

G. **MDA –** Minimal Detectible Activity

H. **NORM –** Naturally Occurring Radioactive Materials

I. **NWD –** North Wind Dynamics

J. **PPE –** Personal Protective Equipment

K. **QA –** Quality Assurance

L. **RCT –** Radiological Control Technician

M. **RMA –** Radioactive Material Area

N. **SODI -** Southern Ohio Diversification Initiative

O. **SRP -** Survey and Release Plan

9.0 SOURCE REFERENCES

A. ANL-EAD-TM-92, *Protocol for Development of Authorized Release Limits for Concrete at U.S. Department of Energy Sites*

B. ANL/EVS-21/17, User's Manual for RESRAD-BUILD (current revision)

C. ANL/EVS/TM-18/1, User's Manual for RESRAD-ONSITE (current revision)

D. ANL/EVS/TM-19/2 (NUREG/CR-7268), User's Manual for RESRAD-OFFSITE (current revision)

E. ANSI/HPS N13.12-2013, *Surface and Volume Radioactivity Standards for Clearance*

F. ANSI/HPS N13.59-2008, *Characterization in Support of Decommissioning Using the Data Quality Objectives Process*

G. *Clearance for Recycle of Scrap Metal and Materials from Radiological Areas*, Memorandum from Arunava Majumdar, Senior Advisor to the Secretary, August 25, 2011, U.S. Department of Energy, Washington, D.C.

H. DOE Correspondence PPPO-03-2208941-14, dated January 28, 2014, from J Bradburne to D Carr and D Detillion

I. DOE/EH-0697, *Control and Release of M&E. A Guide to Good Practices for the Control and Release of M&E,* July 2006, U.S. Department of Energy, Washington, D.C.

J. DOE G 441.1-1C Admin Chg. 2, *Radiation Protection Programs Guide for Use with Title 10, Code of Federal Regulations,* Part 835, *Occupational Radiation Protection*

K. DOE M 441.1-1 Chg. 1 (Admin Chg.), *Nuclear Material Packaging Manual*

L. DOE O 458.1, *Radiation Protection of the Public and the Environment*

M. DOE/HS-0624, *Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)*

N. DOE-STD-1196-2021, *Derived Concentration Technical Standard*

O. Energy.gov website, *Moratorium and Suspension of the Release of Metals from DOE Sites | Department of Energy*

P. Energy.gov website, *Radiation Protection of the Public and the Environment | Department of Energy*

Q. Energy.gov website, *Radiological Release And Clearance Of Real And Personal Property And The Moratorium And Suspension Of The Release Of Metal From DOE Sites | Department of Energy*

R. Energy.gov website, *Surface Contamination Guidelines/Radiological Clearance of Property | Department of Energy*

S. EPA QA/G-4, *Guidance on Systematic Planning Using the Data Quality Objectives Process*

T. FACT SHEET, "*Frequently Asked Questions on the Suspension on Release for Recycling of Metal from Radiation Areas*", Office of Public Radiation Protection, AU-22, Reprinted November 2021 (Contact Mike Stewart – mike.stewart@hq.doe.gov)

U. FBP-BS-PRO-00020, *Property Management*

V. FBP-EP-PL-00015, *Environmental Radiation Protection Program*

W. FBP-RP-PL-00002, *Radiation Protection Plan Portsmouth Gaseous Diffusion Plant Piketon, Ohio*

X. FBP-RP-TBD-00005, *Contamination Monitoring Technical Basis Document*

Y. FBP-RP-TBD-00017, *Technical Basis Document for Releasing M&E from DOE Control*

Z. Federal Register, Volume 72, Number 110, page 31906

AA. *Implementation of Pre-Approved Authorized Limits for Release and Clearance of Volumetric Radioactivity of Personal Property at DOE Field Elements,* OE-3: 2021-01, March 2021, Office of Environment, Health, Safety and Security, Josh Silverman, Director

BB. *Managing the Release of Surplus and Scrap Materials,* Memorandum from Bill Richardson, January 19, 2001, U.S. Department of Energy, Washington, D.C.

CC. *Multi-Agency Radiation Survey and Assessment of Materials and Equipment (MARSAME),* DOE/HS-0004, January 2009, U.S. Department of Energy, Washington, D.C.

DD. PPPO-01-4817418-18B, *Authorized Limits Request for the Department of Energy-Owned Project for Industrial Landuse Area Outside the Limited Area at the Portsmouth Gaseous Diffusion Plant, Piketon OH, Rev. 1 January 2018*

EE. PPPO-03-10018577-22, DE-AC30-10CC40017: *Final Report For The Independent Assessment Of Fluor-BWXT Portsmouth LLC Environmental Radiation Protection Program, DOE PPPO Independent Assessment*, PORT-21-IA-101786, December 13, 2021, U.S. Department of Energy PPPO, Lexington, Kentucky

FF. PPPO-03-10020098-22, *Pre-Approved Authorized Limits For Release And Clearance Of Volumetric Radioactivity Of Personal Property*, February 2, 2022, U.S. Department of Energy PPPO, Lexington, Kentucky

GG. *Release of Materials for Re-use and Recycle,* Memorandum from Bill Richardson, February 14, 2000, U.S. Department of Energy, Washington, D.C.

HH. *Release of Surplus and Scrap Materials,* Memorandum from Bill Richardson, July 13, 2000, U.S. Department of Energy, Washington, D.C.

Appendix A
REGULATORY REQUIREMENTS FLOW DOWN

1. 10 CFR 835, *Occupational Radiation Protection*
2. DOE O 458.1, Change 4, *Radiation Protection of the Public and the Environment*, U.S. Department of Energy, Washington, D.C.

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DOE: FBP-23-0777 & 0914

Pre-Approved Authorized Limits for surface activity are derived from DOE O 458.1 and MARSAME. Approved Authorized Limits for oil and waste materials are addressed in FBP-EP-PL-00015, *Environmental Radiation Protection Program.*

Pre-approved (volumetric) release limits for radium in soil are provided in DOE O 458.1 as follows:

> *For radium-226 and radium-228 in soil: 5 pCi/g (0.2 Bq/g) in excess of background levels, averaged over 100 m^2, in the first 15 cm depth of the surface layer of soil; and 15 pCi/g (0.56 Bq/g) in excess of background levels, averaged over any subsequent 15 cm subsurface layer of soil plus an ALARA assessment. If both thorium-230 and radium-226 or both thorium-232 and radium-228 are present and not in secular equilibrium, the appropriate pre-approved limit is applied to the radionuclide with the higher concentration.*

The public dose limits under any plausible use of the property must be met before any property is released in accordance with DOE O 458.1. The Total effective dose constraint is 100 mrem in a year from all sources of ionizing radiation and exposure pathways that could contribute significantly to the total dose, excepting dose from [DOE O 458.1, paragraph 4.b.(1)(a)]:

- Radon and its decay products in air
- Dose received by patients from medical sources or radiation
- Dose from background radiation
- Dose from occupational exposure under Nuclear Regulatory Commission or Agreement State license or to general employees regulated under 10 CFR835.

In addition, compliance with the ALARA requirements of DOE O 458.1 is also required (i.e. 25 mrem in a year from DOE-related exposure). The public dose limit applies to members of the public located off DOE sites and on DOE sites outside of controlled areas, and to those exposed to residual radioactive material subsequent to any release of property. If the projected DOE-related exposure to the representative person or Maximally Exposed Individual (MEI) exceeds 25 mrem in a year, the total dose limit must include both DOE-related exposure and major non-DOE sources of exposure specified in the bullets above.

A more stringent dose constraint for annual dose from the release and clearance of personal property is 1 mrem. These dose constraints represent an upper bound or “cap” for ALARA based Authorized Limits for release and clearance of property containing residual radioactive material. Additionally, depending on circumstances, DOE O 458.1 either permits or requires the use of concentration-based constraints as well to demonstrate compliance with the dose constraints.

Survey methodologies and acceptance criteria should be developed based on approved, authorized release limits. The following should be addressed:

- The design and implementation of radiological surveys.
- The decision process to either allow release or not (i.e., how the survey data will be analyzed/evaluated in terms of the acceptance criteria or standards for release)
- Any alternative disposition options.

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RELEASE LIMITS
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Release and clearance of personal property consistent with surface pre-approved Authorized Limits will provide reasonable assurance that doses are well below the personal property dose constraint.

Table 1 from DOE-STD-1241-2023 – DOE Total Residual Surface Activity Guidelines: Allowable Total Residual Surface Activity (dpm/100 cm^2)[1, 2]

Radionuclides[3]	Average[4,5]	Maximum[4,5]	Removable[6]
Group 1 - Transuranics, I-125, I-129, Ac-227, Ra -226, Ra-228, Th-228, Th-230, Pa-231	100	300	20
Group 2 - Th-natural, Sr-90, I-126, I-131, I-133, Ra-223, Ra-224, U-232, Th-232	1,000	3,000	200
Group 3 - U-natural, U-235, U-238, and associated decay products, alpha emitters	5,000	15,000	1,000
Group 4 - Beta-gamma emitters (radionuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above[7]	5,000	15,000	1,000
Tritium (applicable to surface and subsurface)[8]	N/A	N/A	10,000

[1] The values in this table (except for tritium) apply to radioactive material deposited on but not incorporated into the interior or matrix of the material. Authorized Limits for residual radioactive material in volume must be approved separately or meet DOE Total Residual Volumetric Activity Guidelines: Allowable Total Residual Volumetric Activity.

[2] As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by counts per minute measured by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

[3] Where surface contamination by both alpha- and beta-gamma-emitting radionuclides exists, the limits established for alpha- and beta-gamma-emitting radionuclides should apply independently.

[4] Measurements of average contamination should not be averaged over an area of more than 1 m^2. Where scanning surveys are not sufficient to detect levels in the table, static counting must be used to measure surface activity. Representative sampling (static counts on the area) may be used to demonstrate by analyses of the static counting data. The maximum contamination level applies to an area of not more than 100 cm^2.

[5] The average and maximum dose rates associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/h and 1.0 mrad/h, respectively, at 1 cm.

[6] The amount of removable material per 100 cm^2 of surface area should be determined by wiping an area of that size with dry filter or soft absorbent paper, applying moderate pressure, and measuring the amount of radioactive material on the wiping with an appropriate instrument of known efficiency. When removable contamination on objects of surface area less than 100 cm^2 is determined, the activity per unit area should be based on the actual area and the entire surface should be wiped. It is not necessary to use wiping techniques to measure removable contamination levels if direct scan surveys indicate that the total residual surface contamination levels are within the limits for removable contamination.

[7] This category of radionuclides includes mixed fission products, including the Sr-90 which is present in them. It does not apply to Sr-90 which has been separated from the other fission products or mixtures where the Sr-90 has been enriched.

[8] Measurement should be conducted by a standard smear measurement but using a damp swipe or material that will readily absorb tritium, such as polystyrene foam. Property recently exposed or decontaminated should have measurements (smears) at regular time intervals to prevent a build-up of contamination over time. Because tritium typically penetrates material it contacts, the surface guidelines in group 4 do not apply to tritium. Measurements demonstrating compliance of the removable fraction of tritium on surfaces with this guideline are acceptable to ensure nonremovable fractions and residual tritium in mass will not cause exposures that exceed DOE dose limits and constraints.

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When more than one radionuclide is present, the unity rule (sum of fractions) presented in MARSSIM should be used to determine release and clearance criteria. The volumetric activity guidelines are based upon screening levels published in the national consensus standard, ANSI/HPS N13.12-2013. Table 2 values are conservative and may be too restrictive or inappropriate for certain radionuclides in certain situations; site specific Authorized Limits may always be approved in lieu of using the pre-approved Authorized Limits.

Table 2 from DOE-STD-1241-2023 – DOE Total Residual Volumetric Activity Guidelines: Allowable Total Residual Volumetric Activity [a] (From: ANSI/HPS N13.12-2013)

Radionuclide Groups[b]	SI units Volume (Bq/g)	Conventional units Volume (pCi/g)
Group 0 Special Case: ^{129}I[c]	0.01	0.3
Group 1 High-energy gamma, radium, thorium, transuranics, and mobile beta-gamma emitters: ^{22}Na, ^{46}Sc, ^{54}Mn, ^{56}Co, ^{60}Co, ^{65}Zn, ^{94}Nb, ^{106}Ru, ^{110m}Ag, ^{125}Sb, ^{134}Cs, ^{137}Cs, ^{152}Eu, ^{154}Eu, ^{182}Ta, ^{207}Bi, ^{210}Po, ^{210}Pb, ^{226}Ra, ^{228}Ra, ^{228}Th, ^{229}Th, ^{230}Th, ^{232}Th, ^{232}U, ^{238}Pu, ^{239}Pu, ^{240}Pu, ^{242}Pu, ^{244}Pu, ^{241}Am, ^{243}Am, ^{245}Cm, ^{246}Cm, ^{247}Cm, ^{248}Cm, ^{249}Cf, ^{251}Cf, ^{254}Es, and associated decay chains[d], and others[b]	0.1	3
Group 2 Uranium and selected beta-gamma emitters: ^{14}C, ^{36}Cl, ^{59}Fe, ^{57}Co, ^{58}Co, ^{75}Se, ^{85}Sr, ^{90}Sr, ^{95}Zr, ^{99}Tc, ^{105}Ag, ^{109}Cd, ^{113}Sn, ^{124}Sb, ^{123m}Te, ^{139}Ce, ^{140}Ba, ^{155}Eu, ^{160}Tb, ^{181}Hf, ^{185}Os, ^{190}Ir, ^{192}Ir, ^{204}Tl, ^{206}Bi, ^{233}U, ^{234}U, ^{235}U, ^{238}U, natural uranium[e], ^{237}Np, ^{236}Pu, ^{243}Cm, ^{244}Cm, ^{248}Cf, ^{250}Cf, ^{252}Cf, ^{254}Cf, and associated decay chains[d], and others[b]	1	30
Group 3 General beta-gamma emitters: ^{7}Be, ^{74}As, ^{93m}Nb, ^{93}Mo, ^{93}Zr, ^{97}Tc, ^{103}Ru, ^{114m}In, ^{125}Sn, ^{127m}Te, ^{129m}Te, ^{131}I, ^{131}Ba, ^{144}Ce, ^{153}Gd, ^{181}W, ^{203}Hg, ^{202}Tl, ^{225}Ra, ^{230}Pa, ^{233}Pa, ^{236}U, ^{241}Pu, ^{242}Cm, and others[b]	10	300
Group 4 Low-energy beta-gamma emitters: ^{3}H, ^{35}S, ^{45}Ca, ^{51}Cr, ^{53}Mn, ^{59}Ni, ^{63}Ni, ^{86}Rb, ^{91}Y, ^{97m}Tc, ^{115m}Cd, ^{115m}In, ^{125}I, ^{135}Cs, ^{141}Ce, ^{147}Nd, ^{170}Tm, ^{191}Os, ^{237}Pu, ^{249}Bk, ^{253}Cf, and others[b]	100	3,000
Group 5 Low-energy beta emitters: ^{55}Fe, ^{73}As, ^{89}Sr, ^{125m}Te, ^{147}Pm, ^{151}Sm, ^{171}Tm, ^{185}W, and others[b]	1,000	30,000

[a]The screening levels for clearance have been rounded to one significant figure and are assigned for volume radioactivity.

[b]To determine the specific group for radionuclides not shown, a comparison of the screening factors, by exposure scenario, listed in Tables B. 1, C.1, and D.1 of NCRP Report No. 123I (NCRP 1996) for the radionuclides in question and the radionuclides in the general groups above will be performed and a determination of the proper group made, as described in ANSI/HPS N13.12-2013, Annex A.

[c]Because of potential ground-water concerns, the volume radioactivity values for ^{129}I when disposal to landfills or direct disposal to soil is anticipated is assigned to Group 0.

[d]For decay chains, the screening levels represent the total activity (i.e., the activity of the parent plus the activity of all progeny) present.

[e]The natural uranium screening levels for clearance *shall* be lowered from Group 2 to Group 1 if decay-chain progeny are present (i.e., uranium ore versus process or separated uranium, for example, in the form of yellowcake). The natural uranium activity equals the activity from uranium isotopes (48.9% from ^{238}U, plus 48.9% from ^{234}U, plus 2.2% from ^{235}U). This approach is consistent with summing radionuclide fractions discussed in ANSI/HPS N13.12-2013, Section 4.4.

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Example Template for Computing Sum of Fractions

Radionuclide	Sample Concentration (pCi/g)		Screening Level (pCi/g)		Sample/Screening Level Fraction
Am-241	0.03934	÷	3	=	0.01311333
Np-237	0.01542	÷	30	=	0.00051400
Pu-238	0.01483	÷	3	=	0.00494333
Pu-239/240	0.008325	÷	3	=	0.00277500
Th-228	0.2788	÷	3	=	0.09293333
Th-230	0.4802	÷	3	=	0.16006667
Th-232	0.2358	÷	3	=	0.07860000
Tc-99	0.327	÷	30	=	0.01090000
U-233/234	0.545	÷	30	=	0.01816667
U-235	0.0206	÷	30	=	0.00068667
U-238	0.434	÷	30	=	0.01446667
Sum of Fractions →					**0.39716567**

If Sum of Fractions ≤ 1.0, Then Volumetric Release is Allowed

Appendix C
FLOW CHARTS
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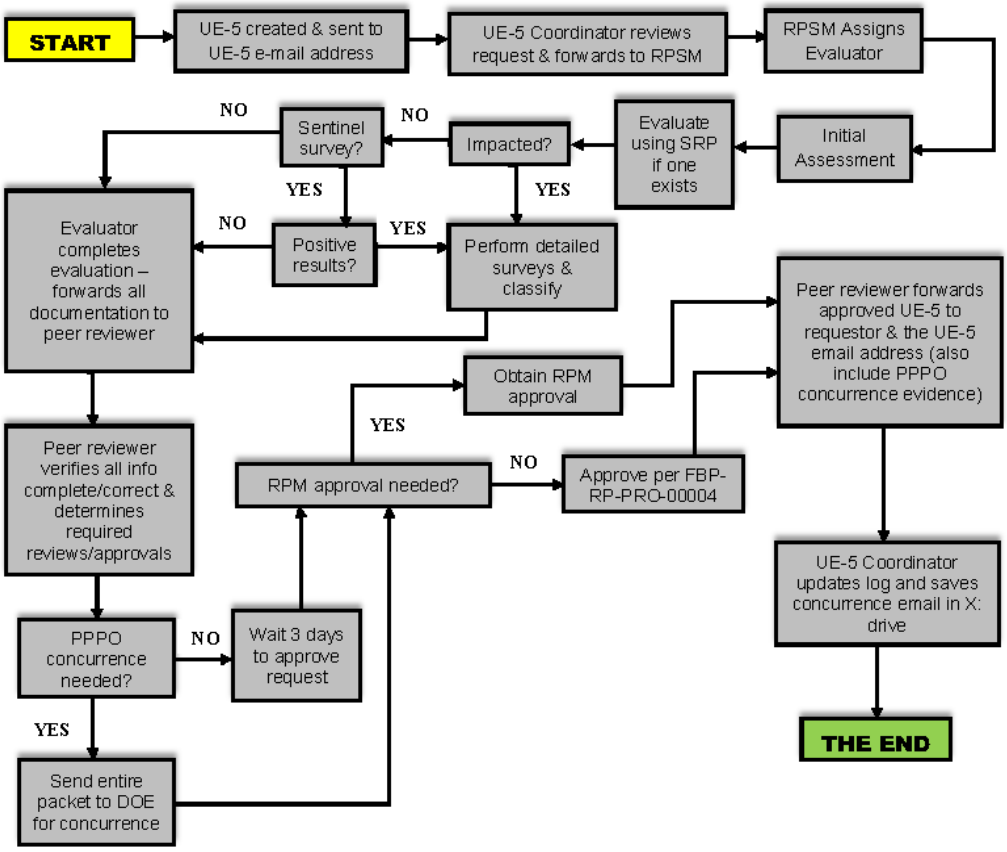
BASIC UE-5 PROCESS



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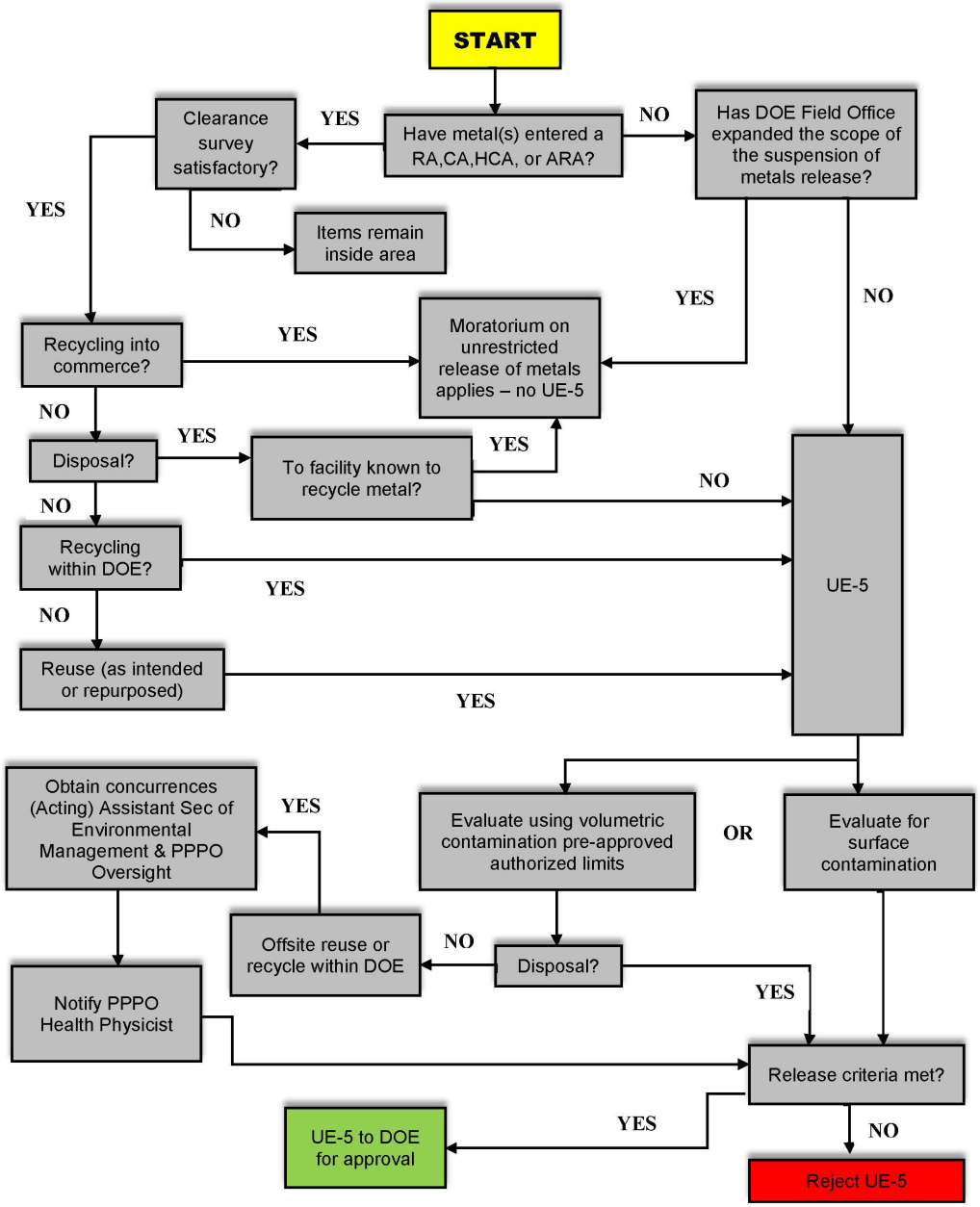
Evaluation Process for Metals



Appendix D
RELEASE STANDARDS AND EXPECTATIONS
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General Information

M&E potentially containing residual radioactive material will not be released from DOE control unless:

- The M&E is evaluated and determined to have no reasonable potential for residual radioactive material above background (i.e., non-impacted) and this is well documented

  OR

- The M&E is appropriately monitored radiologically to determine the types and quantities of residual radioactive material on or within the M&E (including on and under any coating), and the results of the radiological monitoring have been documented and shown to be below approved authorized release limits

M&E with the potential for residual radioactive material to be located within inaccessible surfaces must be sufficiently evaluated to demonstrate that potential radioactivity at those locations is expected to be below associated approved authorized release limits.

M&E associated with an area that has been evaluated using the Historical Site Assessment (HSA) process described in DOE HS-0624, *Multi-Agency Radiation Survey and Site Investigation Manuel (MARSSIM),* should be categorized similarly to the HSA categorization.

Categorizing M&E:

A single statement that particular M&E is non-impacted is not sufficient to support a non-impacted decision because no consideration of the historical or process is provided.

Considering survey records from a process building as an example, the UE5 documentation should contain statements approaching the following level of detail:

> *In [building name], survey records are generated & printed from a computer in office areas that are not in a posted radiological area or radioactive materials area. Supervisory reviews and filing occur in these same areas. The results of applicable routine surveys & problem reports for the time period indicate areas where these records were handled had not been contaminated. Also, there is no known reason or instance where an original authenticated survey record would be removed from the office area and taken into a Contamination Area. When survey records are removed from the building they are stored in an air-conditioned Conex box pending* transfer to *RMDC. The Conex box is situated outside of a Controlled Area. Based on this process and history, there is no reasonable potential for any original/authenticated survey record generated in [building name] to contain residual radioactivity above background.*

A complex single unit or group of M&E may be divided into portions that are impacted and portions that are non-impacted (dual categorization). Complexity refers to the number and types of components that make up the M&E as well as the ability to segregate or combine M&E into similar groups. Be aware that disassembling may render the M&E unusable or may expose component materials that are inherently radioactive or hazardous. Disassembly of certain items could also result in the release of radioactivity to non-impacted areas and may require engineering controls to prevent such releases. It is acceptable practice to categorize a portion of a survey unit or item under consideration for release as Non-Impacted and categorize the remainder as Impacted (for example, the bed of a pick-up truck used to transport radioactive material may require a Class 1 designation while the cab and the rest of the vehicle may be Class 3). Impacted M&E may also be sub-divided into survey units to account for differing classifications over a single piece of M&E (dual classification).

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RELEASE STANDARDS AND EXPECTATIONS
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M&E Screening Evaluation:

Surface screening levels should be used when the size or shape of the item/material reasonably allows direct radiological surveys for surface radioactivity. Volume measurements should be used when volume radioactivity is known or potentially present. Volume measurements may be used in lieu of surface levels provided that all of the following are true:

- The size, shape or composition of the item/material makes it unreasonable to perform radiological surveys representative of the radioactivity on all surfaces.
- The item or material can be representatively sampled for laboratory analysis.
- It can be demonstrated that the use of volume measurements is at least as protective as using surface measurements (e.g., volume sampling is not used to dilute excessive surface activity to meet screening levels).

Process knowledge may be used to support the determination that the surface or volume activity concentrations are homogeneously distributed on or throughout the material. For non-homogeneous activity concentration distributions, surface or volume activity averaging may be useful.

Appendix E
EXAMPLE OF PROCESS CONTROL SIGNAGE

DO NOT USE

UE5 IN PROCESS

UE5 Requestor/Phone _____

Appendix F
SURVEY AND RELEASE PLAN DEVELOPMENT
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Survey and Release Plans (SRP) are controlled documents which evaluate and specify certain elements associated with release requests, using a graded approach. The evaluation process in an SRP applies process and historical knowledge as well as real-time observation and data acquisition techniques (e.g., visual inspections, surveys and/or sampling) to assist in categorizing and classifying M&E. The SRP may apply unique survey methodologies, data quality objectives, and acceptance criteria based on approved, authorized release limits.

The following is addressed in FBP-RP-TBD-00005, *Contamination Monitoring Technical Basis Document:*

> *Data quality indicators (DQIs) are qualitative and quantitative descriptors used in interpreting the degree of acceptability or utility of data. The principal DQIs are precision, bias, representativeness, comparability, and completeness. Of the five DQIs, precision and bias are crucial when evaluating the performance of an instrument or measurement method. Establishing acceptance criteria for precision and bias sets quantitative goals for the quality of the data generated by a measurement instrument. DQIs are established during the planning phase of the DQO process. More information on DQIs is located in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). Comparability is also important, in that it can establish the validity of a measurement technique, calibration method, or instrument.*
>
> *Release survey approaches are determined by the DQO process, giving due consideration to two major requirements:*
>
> 1) *The survey result must be able to demonstrate that release criteria have been met within predetermined confidence levels*
> 2) *The survey unit size must be sufficiently evaluated to develop a technically defensible approach for area or volume averaging.*
>
> *The DQO process is a planning tool that promotes the effective use of resources and increases the likelihood of efficiently collecting appropriate and useful survey data. DQOs are qualitative and quantitative statements derived from the outputs of the DQO process that 1) clarify the objective; 2) define the most appropriate types of data to collect; 3) determine the most appropriate conditions from which to collect the data; and 4) specify tolerable limits on decision errors which will be used as the basis for establishing the quantity and quality of data needed to support the decision. DQOs assure that the type, quantity, and quality of the survey data used in decision making is appropriate for its intended use, at the same time promoting efficient use of resources by eliminating unnecessary, duplicative, or overly precise survey data.*

EPA QA/G4, *Guidance of Systematic Planning Using the Data Quality Objectives Pro*cess, ANSI/HPS N13.59-2008, *Characterization in Support of Decommissioning Using the Data Quality Objectives Process*, or other similar guidance documents should be used to develop DQOs. General DQOs are specified in FBP-RP-PRO-00176, *Radiological Survey Performance*, for releases based on surface activity.

Appendix F
SURVEY AND RELEASE PLAN DEVELOPMENT
Page 2 of 2

The following general MQOs may be used when specific ones are not developed for releases based on surface activity measurements:

General Measurement Quality Objectives for Surface and/or Volumetric Activity:

1. RCTs performing release surveys are adequately trained and qualified.
2. Instruments are calibrated in accordance with RP procedures.
3. Instruments are function checked and operated in accordance with RP procedures.
4. Instruments are selected and operated to achieve an MDC close to 50% of the limit, at 95% confidence.
5. Radiological surveys are performed according to RP procedures and any additional instruction in the SRP.
6. Thorium or transuranic radionuclides are not evaluated because specific monitoring protocols exist for any material exposed to thorium or transuranic contamination, which will have been performed prior to an evaluation for release from DOE control. These monitoring protocols are sufficient to ensure that the previously listed MQOs are satisfied and therefore further evaluation for thorium or transuranic radionuclides is not necessary.
7. Pre-Approved Authorized Limits for surface and volumetric radioactivity, as addressed in Appendix B of this procedure, are used.
8. Action levels, as defined in FBP-RP-TBD-00017, *Technical Basis Document for Releasing M&E from DOE Control*, are established to support decision making and ensure appropriate disposition actions are taken.
9. Class 3 impacted action levels are 50% of the authorized limits; class 1 impacted action levels are 80% of the authorized limits. Authorization from Radiation Protection Manager (RPM) is required when any measurement result exceeds 80% of the authorized limit. No measurement result may exceed the authorized limit to be releasable.
10. M&E screening justification (i.e., surface and/or volumetric) should be included in the SRP.

Attachment A
RADIATION PROTECTION EVALUATION TO RELEASE MATERIAL/EQUIPMENT FROM DEPARTMENT OF ENERGY (DOE) CONTROL

Fluor-BWXT | Portsmouth

RADIATION PROTECTION EVALUATION TO RELEASE MATERIAL/EQUIPMENT FROM DEPARTMENT OF ENERGY (DOE) CONTROL

NOTE: This form is not a stand-alone record but an attachment to FBP-RP-PRO-00004-F01. This form is not authenticated until all required signatures on FBP-RP-PRO-00004-F01 are completed.

LOG #: FBP-UE5-

AUTHORIZED RELEASE LIMITS REFERENCE: ☐ FBP-RP-PRO-00004 (Appendix B) ☐ OTHER:

CLASSIFICATION

Class 3 – **Little to no reasonable potential** for contamination **above 50% of the release limit** and insufficient evidence to be non-impacted
☐ Entirety ☐ Specific surfaces or areas as follows:

Class 2 – Low potential for contamination above release limits
☐ Entirety ☐ Specific surfaces or areas as follows:

Class 1 – High potential for contamination above release limits
☐ Entirety ☐ Specific surfaces or areas as follows:

☐ **N/A** – M&E is volumetric only

ADDITIONAL CONSIDERATIONS & SURVEY REVIEW

YES	NO		
☐	☐	Was the property decontaminated to support the release? (If "YES", attach documentation)	☐ Documents attached
☐	☐	Do any MDA values exceed 50% of an applicable release limit?	
☐	☐	Are inaccessible surfaces present?	
☐	☐	Were survey measurements performed to characterize inaccessible areas?	
☐	☐	Did any results (including swabs) exceed MDA?	
☐	☐	Do any measurement results exceed 50% of the release limit?	
☐	☐	Do any measurement results exceed the release limit?	

INACCESSIBLE SURFACE EVALUATION

REMARKS

☐ See attached additional information.

DISPOSITION SURVEY NUMBERS

EVALUATION CONCLUSION

☐ The provided M&E description, history, process knowledge and existing radiological measurement results are sufficient to demonstrate the M&E does not contain residual radioactive material above applicable release limits.

☐ Measurement results exceed 80% of applicable release limits (RPM approval required).

☐ Current measurement results exceed applicable release limits – unrestricted release cannot be authorized.

RP EVALUATOR: _____ SIGNATURE DATE PHONE #

PAGE ____ OF ____

Attachment B
REQUEST TO RELEASE MATERIAL/EQUIPMENT FROM DEPARTMENT OF ENERGY

CONTROL

Fluor-BWXT Portsmouth

REQUEST TO RELEASE MATERIAL/EQUIPMENT FROM DEPARTMENT OF ENERGY CONTROL

LOG #: FBP-UE5-

PART 1 - REQUEST INITIATION (COMPLETED BY REQUESTOR)

PROPERTY DESCRIPTION | **PROJECT:** | **WAD:**

☐ General Work JHA
☐ See job-specific JHA
☐ Other:

HISTORICAL AND PROCESS-RELATED INFORMATION

	N/A	YES	NO	UNK
M&E packaging history is known?	☐	☐	☐	
Inspection verified the absence of prohibited items (tools, PPE, posting, mud, etc.)?	☐	☐		
Has the property handled or contained radioactive materials?		☐	☐	☐
Has the property been located in a radiological area or radioactive material area?		☐	☐	☐
Was the property decontaminated to support the release?		☐	☐	☐
Is the M&E no longer in use and staged for evaluation / surveys?		☐		

DISPOSITION OF PROPERTY
☐ Return to vendor ☐ Re-use
☐ Recycle ☐ Disposal
☐ Calibration / repair (& return)
☐ Other:

SPECIFIC USE HISTORY INFORMATION / REMARKS

RECIPIENT(S) (NAME & ADDRESS)

WHERE IS THE M&E CURRENTLY LOCATED?

Method of Control:

☐ See attached additional information

☐ Blanket release authorization requested (signed by supervision or management)

Signature indicates that requestor is familiar with the use history of the M&E while at PORTS. The information provided is accurate and I have positive control of this M&E.

PRINTED NAME | SIGNATURE | DATE | PHONE #

PART 2 – INITIAL ASSESSMENT & CATEGORIZATION (COMPLETED BY COORDINATOR AND RADIATION PROTECTION)

Date Requestor Training Verified ____

	YES	NO
Inspection results were satisfactory?	☐	☐
Does the M&E contain a source?	☐	☐
Is material dispersible or volumetric?	☐	☐
Sentinel Surveys performed?	☐	☐

Sentinel Survey Information
☐ N/A
☐ No positive results
☐ Positive result(s)
☐ Activity not attributed to contamination from DOE operations/activities
Sentinel Survey Number(s) if performed:

The property is:
☐ NON- IMPACTED
☐ IMPACTED

Moratorium applies
☐ YES ☐ NO

PPPO concurrence req'd
☐ YES ☐ NO

For non-impacted M&E, does the documented evaluation provide clear evidence indicating the M&E has **NO** potential for residual radioactive material above background?

N/A	YES	NO
☐	☐	☐

	YES	NO	
Is a Survey Release Plan (SRP) applicable?	☐	☐	SRP #:

EVALUATION REMARKS / RATIONALE ☐ FBP-RP-PRO-00004-F03 attached ☐ See attached evaluation remarks (other than F03)

NON-IMPACTED M&E REMARKS:

PART 3 – APPROVAL STATUS (COMPLETED BY RADIATION PROTECTION)

☐ The property may be dispositioned for unrestricted release as requested.
☐ The property may be released with the following restriction(s):

☐ Unrestricted release of subject property is rejected.
Basis for rejection:
☐ The property must be disposed as radioactive waste.

RP EVALUATOR: ____ PRINTED NAME | SIGNATURE | DATE | PHONE #

RP PEER REVIEWER: ____ PRINTED NAME | SIGNATURE | DATE | PHONE #

RPM: ____ REJECT ☐ APPROVED ☐ N/A ☐ PRINTED NAME | SIGNATURE | DATE | PHONE #

PPPO CONCURRENCE ATTACHED ☐

PPPO CONCURRENCE N/A ☐ PRINTED NAME | SIGNATURE | DATE | PHONE #

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