

## CHPRC ADMINISTRATIVE DOCUMENT PROCESSING AND APPROVAL

<b>DOCUMENT TITLE:</b> CH2M HILL Plateau Remediation Company Radiation Protection Program	<b>OWNING ORGANIZATION/FACILITY:</b> SHS&Q/Radiation Protection
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<b>Document Number:</b> CHPRC-00072	<b>Revision/Change Number:</b> 7/0
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**DOCUMENT REVISION SUMMARY**

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# CH2M HILL Plateau Remediation Company Radiation Protection Program

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

Contractor for the U.S. Department of Energy  
under Contract DE-AC06-08RL14788



**P.O. Box 1600  
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# CH2M HILL Plateau Remediation Company Radiation Protection Program

Document Type: DD      Program/Project: Radiation Protection

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CH2M HILL Plateau Remediation Company

Date Published  
April 2017

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

Contractor for the U.S. Department of Energy  
under Contract DE-AC06-08RL14788

  
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**APPROVED**  
*By Julia Raymer at 7:58 am, Apr 13, 2017*

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Release Approval

Date

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## REVISION HISTORY

Revision	Change	Date	Reason for revision	Revision initiator
0	NA	June 2009	Initial issuance of CHPRC-00072	NA
1	NA	Jan 2010	Full revision to implement June 2007 amendment	PRC-0911-PIR-0032
1	1	June 2010	Change for minor editorial changes to correct identifiers.	PRC-1004-PIR-0051
2	NA	September 2010	Implementation of Exemption from 10 CFR 835 Appendix D – Surface Contamination Values	PRC-1006-PIR-0053
3	NA	January 2012	Adds Radiation Protection Director to RPP requirement #30	PRC-1111-PIR-0088
4	NA	June 2012	Modifies requirement #200 policy and commitment basis to clarify testing requirements	PRC-1204-PIR-0102
4	N/A	June 2012	Corrects over conservatism in requirement #169	PRC-1204-PIR-0100
5	N/A	January 2014	Implements exemption approval to control <sup>241</sup> Pu as a Beta-Gamma emitter and revises should to shall in Policy and Commitment Basis provisions for requirements 71, 72, and 168.	PRC-1310-PIR-0133
6	N/A	May 2015	Exception for MSA IBC work activities performed at CHPRC-managed facilities from following CHPRC RPP in non-radiological areas.	PRC-1504-PIR-0134
7	N/A	April 2017	Incorporate transition of RCCC projects to CHPRC work scope. Minor editorial corrections/clarifications	PRC-1703-PIR-0141

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## ACRONYMS

CFR	<i>Code of Federal Regulations</i>
CH	CH2M HILL
CHPRC	CH2M HILL Plateau Remediation Company
DOE	U.S. Department of Energy
D4	Deactivate, decontaminate, decommission and demolish
NRC	U.S. Nuclear Regulatory Commission
PRC	Plateau Remediation Contract
RCRA	<i>Resource Conservation and Recovery Act of 1976</i>
RCM	Radiological Control Manual
RPP	Radiation Protection Program

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## 1.0 SUMMARY

This document represents a complete revision of the *CH2M HILL Plateau Remediation Company Radiation Protection Program* (CHPRC RPP). The CHPRC RPP has been developed and revised to ensure compliance with the requirements of Title 10, *Code of Federal Regulations*, Part 835 (10 CFR 835), "Occupational Radiation Protection."

This document provides full implementation of amended 10 CFR 835 requirements as published on June 8, 2007 in the Federal Register, Vol. 72, 31904-31941 and the correcting amendments. The June 2007 amended rule became effective on July 9, 2007 and required full implementation no later than July 9, 2010. An exemption was implemented in revision 2 to the CHPRC RPP that approved alternate 10 CFR 835, Appendix D, Surface Contamination Values, for specific hard-to-detect (HTD) beta-gamma emitting radionuclides (C-14, Fe-55, Ni-59, Ni-63, Se-79, Tc-99, Pd-107, and Eu-155). Revision 5 implemented an exemption request to control <sup>241</sup>Pu as a Beta-Gamma emitter as described in letter 13-ESQ-0069 (see Section 11.0). Revision 6 provides an exception for Mission Support Alliance's (MSA) Integrated Biological Control (IBC) work activities performed in non-radiological areas at CHPRC-managed facilities from following CHPRC's RPP.

Appendix A of this RPP is a requirements matrix identifying CHPRC's commitments to 10 CFR 835 requirements. These commitments will become effective April 17, 2017. In the interim, compliance will be maintained with the currently approved CHPRC RPP. There are minor editorial corrections to Appendix A in Revision 7. This revision does not reduce program effectiveness from the currently approved RPP (Rev. 6).

## 2.0 GENERAL INFORMATION

### 2.1 PURPOSE

This document meets the requirements for a Radiation Protection Program (RPP) as specified in the DOE's Final Rule for "Occupational Radiation Protection," 10 CFR 835. This revision does not reduce program effectiveness from the currently approved RPP (Rev. 6).

### 2.2 SCOPE

#### Contractual Relationship

CHPRC is responsible for actions required of the Plateau Remediation Contract (PRC) as defined in the DOE Contract No. DE-AC06-08RL14788, *Plateau Remediation Contract*. The responsibilities include planning, managing, executing, and integrating a full range of programs and project activities included in the PRC at the Hanford Site.

CHPRC either performs or subcontracts the activities identified under Contract No. DE-AC06-08RL14788. CHPRC retains subcontractors with special technologies and capabilities on a project-by-project basis. CHPRC also uses subcontractors and service providers to supply dosimetry, instrumentation, training, laundry services, Integrated Biological Control (IBC) and health services as part of site services contracts. In the case of dosimetry, dosimeters, dosimetry records, and certain instrumentation calibrations, service is currently supplied by Radiological Site Services (RSS) provider and are performed in accordance with an approved Statement of Work (SOW) and the service provider's DOE approved Radiation Protection Program. The SOW will identify CHPRC requirements that are applicable to the service being provided. Records associated with the Site-Service Provider's supplied services shall be

maintained in accordance with the service provider's DOE approved Radiation Protection Program.

Except as noted above, CHPRC subcontractors and service providers are required to comply with the requirements of this RPP. Although many of the 10 CFR 835 requirements are implemented either in whole or in part through subcontractors and service providers, CHPRC retains responsibility to comply with those requirements of 10 CFR 835 that fall within the scope of the CHPRC RPP.

With the exception of MSA IBC work activities (e.g., noxious weed control, pest control, and tumbleweed cleanup) performed under Plateau Remediation Contract No. DE-AC06-08RL14788, Section J, Attachment J.3, at CHPRC-managed facilities and other work activities that are included in other DOE contractor's scope of work, this RPP will also be applicable to radiological work activities performed by other DOE contractors at CHPRC managed facilities or projects or otherwise performed under formal agreement to follow CHPRC's RPP, unless specific written direction is provided by DOE to require conduct of such work under a different contractor's RPP or Nuclear Regulatory Commission (NRC) license. MSA IBC work activities performed under MSA's RPP at CHPRC managed facilities or projects will be limited to areas that are not controlled as radiological areas, as defined in 10 CFR 835, at CHPRC managed facilities.

### **Included Activities**

The scope of applicability for this plan and the integrated RPP includes all radiological work activities carried out in accordance with Contract No. DE-AC06-08RL14788 on behalf of DOE by the CHPRC and/or its subcontractors and suppliers unless previously excepted. The PRC scope of work requires CHPRC to plan, execute, and integrate this contract scope at the Hanford Site.

Except as allowed by 10 CFR 835.101(h), CHPRC will not initiate any task outside the scope of the RPP until DOE approves an update to the RPP or revision to the Contract that incorporates this scope change.

CHPRC is responsible for managing and performing deactivation, decontamination, decommissioning, and demolition (D4), non-tank farm waste disposal, groundwater monitoring and remediation, facility and waste site characterization, surveillance and maintenance, and field remediation activities as defined by the CHPRC scope of work (PRC, Section C.1.3). The scope of work includes, but is not limited to, the following:

- Program activities
- Program and management support and reporting activities
- PFP Closure
- Waste Treatment and Disposal
- Groundwater/Vadose Zone Project
- Facility and Waste Site Minimum-Safe/Surveillance and Maintenance
- Fast Flux Test Facility
- Geographical Zone Remediation
- 100 K Area
- 618-10 and 618-11 Burial Grounds

- Deactivation, Decontamination, Decommissioning and Demolition (D4) Activities
- Environmental Restoration Disposal Facility (ERDF)
- 324 Building / 300-296 Waste Site

### **Excluded Activities**

Specific applicable exclusions include those listed in 10 CFR 835.1(b). Except as discussed in §835.1(c), specific applicability exclusions include those listed in §835.1(b):

- Activities that are regulated through a license by the U.S. Nuclear Regulatory Commission (NRC) or a State under an Agreement with the NRC, including activities certified by the NRC under Section 1701 of the Atomic Energy Act;
- Activities conducted under the authority of the Deputy Administrator for Naval Reactors, as described in Pub. L. 98-525 and 106-65;
- Activities conducted under the Nuclear Explosives and Weapons Surety Program relating to the prevention of accidental or unauthorized nuclear detonations;
- DOE activities conducted outside the United States on territory under the jurisdiction of a foreign government to the extent governed by occupational radiation protection requirements agreed to between the United States and the cognizant government;
- Background radiation, radiation doses received as a patient for the purposes of medical diagnosis or therapy, or radiation doses received from participation as a subject in medical research programs;
- Radioactive material on or within material, equipment, and real property which is approved for release when the radiological conditions of the material, equipment, and real property have been documented to comply with the criteria for release set forth in a DOE authorized limit which has been approved by a Secretarial Officer in consultation with the Chief Health, Safety and Security Officer; or
- Radioactive material transportation not performed by DOE or a DOE contractor.

Facilities managed and operated by other Hanford Site contractors are excluded from the scope of this RPP.

## **2.3 SUBMITTAL FORMAT AND CONTENT**

The CHPRC RPP is based on the regulatory requirements of 10 CFR 835 and is formatted, in part, to the guidance contained in DOE Radiation Protection Programs Guide, DOE G 441.1-1C, Chapter 3.0, Appendix 3.A (DOE 2008).

Appendix A of this RPP is a requirements matrix identifying CHPRC's commitments to 10 CFR 835 requirements. These commitments will become effective April 17, 2017. In the interim, compliance will be maintained with the currently approved CHPRC RPP (Rev. 6). There are minor editorial corrections to Appendix A in Revision 7. This revision does not reduce program effectiveness from the currently approved RPP (Rev.6).

## **3.0 APPLICABILITY OF RULE REQUIREMENTS**

The PRC defines the scope of applicability for the RPP and the *CHPRC Radiological Control Manual* (RCM) (CHPRC-00073) to include any existing and/or anticipated operational tasks

carried out in accordance with Contract No. DE-AC06-08RL14788, on behalf of DOE by CHPRC and/or its subcontractors and suppliers that have the potential to result in:

- Occupational dose to minors and general employees due to exposure to radiation and/or radioactive material from a DOE activity (as defined in §835.2);
- Dose to members of the public due to exposure to radiation and/or radioactive material during access to a (radiologically) controlled area (as defined in §835.2);
- Planned special exposures (as described in §835.204);
- Emergency exposures (as described in §835.1302); and
- Dose to the embryo/fetus of a declared pregnant worker due to occupational exposure to a declared pregnant worker (as defined in §835.2).

Section 7.0 of this RPP identifies sections of 10 CFR 835 where the graded approach and terminology clarifications will be applied.

#### **4.0 SAFETY AND IMPLEMENTATION GUIDES AND TECHNICAL STANDARDS**

CHPRC did not use any entire guides or technical standards to document compliance. Selected portions of guides and technical standards were used in the development of the *CHPRC Radiological Control Manual* (CHPRC-00073) and implementing procedures. When adopted as a means for meeting 10 CFR 835 requirements the guide or standard is identified in the Policy and Commitment Basis.

The Hanford Radiological Health and Safety Document (DOE/RL-2002-12; HSD) identifies supplemental radiological safety requirements that maintain consistency for the Hanford Site, optimize site radiological control programs to provide an overall benefit to the government, and supports DOE in the management of long-term risks relative to radiological health and safety. HSD requirements are contained the *CHPRC Radiological Control Manual* (CHPRC-00073) and implementing procedures.

#### **5.0 BASELINE**

The baseline assessment of 10 CFR 835 compliance is included in the RPP requirements matrix (Appendix A). The following compliance definition is used in the Appendix A matrix:

- Compliant: 10 CFR 835 (2007) indicates the 10 CFR 835 (July 2007) requirement is documented as a commitment in policy and implementing procedures, and the relevant documents are implemented through actual practice at working levels that can be verified by inspection.
- Compliant: 10 CFR 835 (2007)\* indicates the 10 CFR 835 (July 2007) requirement and Exemption for specific HTD radionuclides from Appendix D – Surface Contamination Values, authorized by DOE-RL in Letter 09-SED-0060 (see Section 11.0), is documented as a commitment in policy and implementing procedures, and the relevant documents are implemented through actual practice at working levels that can be verified by inspection.

Appendix A of this RPP is a requirements matrix identifying CHPRC's commitments to 10 CFR 835 requirements. These commitments will become effective April 17, 2017. In the interim,

compliance will be maintained with the currently approved CHPRC RPP (Rev. 6). There are minor editorial changes to Appendix A in Revision 7.

## 6.0 ADDITIONAL ACTIVITIES

Appendix A of this RPP is a requirements matrix identifying CHPRC's commitments to 10 CFR 835 requirements. These commitments will become effective April 17, 2017. In the interim, compliance will be maintained with the currently approved CHPRC RPP (Rev.6). There are minor editorial changes to Appendix A in Revision 7.

## 7.0 GRADED APPROACH

The requirements of 10 CFR 835 consist primarily of highly prescriptive worker safety requirements that constitute a comprehensive safety envelope for the conduct of radiological work activities. These very specific requirements are not subject to a graded approach. However, the rule also contains a small number of requirements that are either "performance-based" (i.e., specify an end result without prescribing what is necessary to achieve it) or require clarification to clearly establish the intent and scope of the requirement.

Upon evaluation, several of these requirements were determined to be subject to a graded approach. For the purposes of this RPP, a graded approach is achieved through the inclusion of narrative text that describes those CHPRC commitments considered appropriate to meet performance-based requirements. These additions are incorporated, where appropriate, into the 10 CFR 835 requirements matrix for CHPRC (Appendix A).

Those requirements determined to be suitable for a graded approach through a performance based approach (Table 1) or through the use of terminology clarifications (Table 2) are listed in the following tables.

### 7.1 GRADED APPROACH (14 TOTAL REQUIREMENTS)

Table 1 contains non-prescriptive, performance-based requirements that are subject to a graded approach through the incorporation of additional provisions including narrative text, references to controlling technical bases and program documents, or other Technical Standards deemed sufficient to establish the commitment bases mandated by the requirements. Appendix A (Requirements Matrix) contains these provisions. The graded approach is based on considerations of the magnitude of the hazard, the complexity of the situation, and the length of time the situation will exist.

**TABLE 1  
REQUIREMENTS SUBJECT TO A GRADED APPROACH**

<b>REQ NO.</b>	<b>10 CFR 835 SECTION</b>	<b>DISCUSSION</b>
29	102	CHPRC will apply the graded approach by identifying the functional elements to be assessed within the implementing procedure or assessment plan.
30	103	CHPRC will apply the graded approach in the identification of "individuals responsible for developing and implementing measures necessary for ensuring compliance".

REQ NO.	10 CFR 835 SECTION	DISCUSSION
31	104	CHPRC will apply the graded approach process described in DOE G 441.1-1C of May 2008, section 3.2.0, Paragraph 1, 3 <sup>rd</sup> bullet towards the implementation CHPRC Radiation Protection Program procedures for this functional area.
64	401(a)(1)	The requirements of Section 835.401 are subject to the graded approach through criteria established by CHPRC monitoring program. The program establishes administrative records for tracking and trending radiological conditions based on routine tasks (radiological survey reports). Task descriptions and work documents specify the frequency of radiological surveys. Workplace air sampling program defines criteria for use of continuous air monitors.
190-196	901(c)	CHPRC will apply the graded approach process described in DOE G 441.1-1C of May 2008, section 14.2 towards the implementation of CHPRC Radiation Protection Program procedures and training for this functional area. Note the application of section §835.901(c) graded approach applies to requirements 190 through 196.
199-200	901(e)	CHPRC will apply the graded approach described in DOE G 441.1-1C of May 2008, section 14.7 paragraphs 2, 3, and 4 towards the implementation of this requirement. Note the application of section §835.901(e) graded approach applies to requirements 199 and 200.
219	1102(a)	Establishment of "appropriate controls" to prevent inadvertent transfer of removable radioactive contamination to locations outside radiological areas under normal operating conditions is subject to a graded approach that balances the relevant factors such as environmental and biological vectors. CH2M HILL will maintain a contamination control program to monitor and control radioactive contamination. <sup>1</sup>

<sup>1</sup>Letter, J. D. Wagoner, RL, to Dr. A. L. Trego, WHC, REQUEST FOR EXEMPTION OF DOE NUCLEAR SAFETY RULE 10 CFR 835.404(b), dated August 23, 1995. [Note: Referenced in HNF-SP-1145, Rev. 2 and maintained for historical reference. 1998 amended rule moved requirement from 10 CFR 835.404(b) to 10 CFR 835.1102(b).]

## 7.2 TERMINOLOGY CLARIFICATIONS (20 TOTAL REQUIREMENTS)

Those requirements determined to be suitable for a graded approach through the incorporation of terminology clarifications include the following. Appendix A (Requirements Matrix) contain these clarifications as an integral part of establishing CHPRC commitment basis.

**TABLE 2**  
**REQUIREMENTS SUBJECT TO TERMINOLOGY CLARIFICATIONS**

REQMT NO.	10 CFR 835 SECTION	TERMINOLOGY CLARIFICATION
16	101(c)	"Commensurate with the nature of the activities performed" is the nature of those activities, described in Section 2.2, that are performed by CHPRC, its subcontractors and suppliers at CHPRC-managed facilities and activities as specified in contract DE-AC06-08RL14788.
26	101(h)	CHPRC will apply the guidelines of DOE G 441.1-1C, Section 3.1, May 2008, when making the determination of "Changes that decrease the effectiveness of the RPP".
58	206(b)	CHPRC will apply the guideline of DOE G 441.1-1C Section 8.3 paragraph 2, May 2008, to determine "substantial variation" unless a separate technical basis is prepared and approved for the activity.
74-79	402(a)(1) to (4)	"Are likely to receive" recognizes that professional judgment and experience will be used in making decisions in specific circumstances. [DOE G 441.1-1-C, Section 3.1., paragraph 5, May 2008.]
84-87	402(c)(1) to (4)	Workers who "are likely to receive" recognize that professional judgment and experience will be used in making decisions in specific circumstances. [DOE G 441.1-1C, Section 3.1., paragraph 5, May 2008.]
91	403(a)(1)	"An individual is likely to receive" recognizes that professional judgment and experience will be used in making decisions in specific circumstances. [DOE G 441.1-1C, Section 3.1, paragraph 5, May 2008.]
100	405(d)	A 'working day' is considered the interval of time within each 24 hour period during which the building or area is routinely occupied or available for operations other than emergency activities.
102	501(a)	CHPRC considers entry control to include posting, barricades, control devices on entryways, visual and audible alarms, administrative procedures, locked entryways, access control systems, and training. The CHPRC entry control programs are used to the degree commensurate with existing and potential radiological hazards within the area.
161	702(e)	"Reasonable efforts shall be made," means at least 3 attempts to obtain exposure information as recommended by Radiation Protection Programs Guide, DOE G 441.1-1C, Section 13.2.0.3, paragraph 1, May 2008.

REQMT NO.	10 CFR 835 SECTION	TERMINOLOGY CLARIFICATION
170	704(b)	"Actions taken to maintain..." means the seven elements of an occupational ALARA program, as specified in the Radiation Protection Programs Guide," DOE G 441.1-1C, Section 4.2.0, May 2008.
182	801(e)	"Departmental requirements" means CRD M 231.1-2.
239	1302(a)	"Risk...shall be minimized" means, if alternative actions are available to meet emergency needs, then adopting the action with the lowest assessed risk of significant personnel injury shall take precedence over property loss considerations.

## 8.0 RESOURCE ASSESSMENT

No resource assessment is required.

## 9.0 PRIORITIZATION

No prioritization is required.

## 10.0 MILESTONES AND SCHEDULES

Appendix A of this RPP is a requirements matrix identifying CHPRC's commitments to 10 CFR 835 requirements. These commitments will become effective April 17, 2017. In the interim, compliance will be maintained with the currently approved CHPRC RPP (Rev. 6). There are minor editorial corrections to Appendix A in Revision 7.

## 11.0 EXEMPTIONS

An exemption was implemented in revision 5 to the CHPRC RPP. CHPRC received approval from DOE-HQ and DOE-RL for an exemption from 10 CFR 835, Appendix D, Surface Contamination Values, that allows <sup>241</sup>Pu to be controlled as a Beta-Gamma emitter.

An exemption was implemented in revision 2 to the CHPRC RPP. CHPRC received approval from DOE-HQ and DOE-RL for an exemption from 10 CFR 835, Appendix D, Surface Contamination Values, for specific hard-to-detect (HTD) beta-gamma emitting radionuclides (C-14, Fe-55, Ni-59, Ni-63, Se-79, Tc-99, Pd-107, and Eu-155). Alternative surface contamination values were approved for these nuclides.

Implementation of these alternative surface contamination values was subject to two conditions:

1. CHPRC uses the approved alternative surface contamination values in all provisions and definitions of 10 CFR 835 where Appendix D is cited.
2. CHPRC updates its Radiation Protection Program to reflect the approved alternative surface contamination values.

As modified to incorporate the exemption, Appendix D to 10 CFR 835 reads:

**Appendix D to Part 835 – SURFACE CONTAMINATION VALUES**

The data presented in Appendix D are to be used in identifying the need for posting of contamination and high contamination areas in accordance with §835.603(e) and (f) and identifying the need for surface contamination monitoring and control in accordance with §835.1101 and §835.1102.

**Surface Contamination Values<sup>1</sup> in dpm/100 cm<sup>2</sup>**

Radionuclide	Removable <sup>2,4</sup>	Total (Fixed + Removable) <sup>2,3</sup>
U-nat, U-235, U-238, and associated decay products	7 1,000	7 5,000
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	20	500
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	200	1,000
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above and below <sup>5</sup>	1,000	5,000
Tritium and Special Tritium Compounds (STCs) <sup>6</sup>	10,000	See Footnote 6
C-14, Fe-55, Ni-59, Ni-63, Se-79, Tc-99, Pd-107, Eu-155	10,000	50,000

<sup>1</sup> The values in this appendix, with the exception noted in footnote 6, apply to radioactive contamination deposited on, but not incorporated into the interior or matrix, of the contaminated item. Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides apply independently.

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

<sup>3</sup> The levels may be averaged over one square meter provided the maximum surface activity in any area of 100 cm<sup>2</sup> is less than three times the value specified. For purposes of averaging, any square meter of surface shall be considered to be above the surface contamination limit if: (1) From measurements of a representative number of sections it is determined that the average contamination level exceeds the applicable value; or (2) it is determined that the sum of the activity of all isolated spots or particles in any 100 cm<sup>2</sup> area exceeds three times the applicable value.

<sup>4</sup> The amount of removable radioactive material per 100 cm<sup>2</sup> of surface area should be determined by swiping the area with dry filter or soft absorbent paper, applying moderate pressure, and then assessing the amount of radioactive material on the swipe with an appropriate instrument of known efficiency. (Note - The use of dry material may not be appropriate for tritium.) When removable contamination on objects of surface area less than 100 cm<sup>2</sup> is determined, the activity per unit area shall be based on the actual area and the entire surface shall be wiped. It is not necessary to use swiping techniques to measure removable contamination levels if the direct scan surveys indicate that the total residual contamination levels are within the limits for removable contamination.

<sup>5</sup> This category of radionuclides includes mixed fission products, including 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 is enriched.

<sup>6</sup> Tritium contamination may diffuse into the volume or matrix of materials. Evaluation of surface contamination shall consider the extent to which such contamination may migrate to the surface in order to ensure the surface contamination value provided in this appendix is not exceeded. Once this contamination migrates to the surface, it may be removable, not fixed; therefore, a "Total" value does not apply. In certain cases, a "Total" value of 10,000 dpm/100cm<sup>2</sup> may be applicable either to metals, of the types which form insoluble special tritium compounds that have been exposed to tritium; or to bulk materials to which insoluble special tritium compound are fixed to a surface.

<sup>7</sup> These limits only apply to the alpha emitters within the respective decay series.

**11.1 REQUIREMENTS IMPACTED BY THE EXEMPTION FROM 10 CFR 835, APPENDIX D**

Table 3 identifies the RPP requirements and corresponding 10 CFR 835 provisions impacted by the change in Appendix D Values.

**TABLE 3  
REQUIREMENTS IMPACTED BY THE CHANGE IN APPENDIX D VALUES**

REQMT NO.	10 CFR 835 SECTION	RESTATEMENT OF THE REQUIREMENT
5	835.2(a)	As used in this part: Contamination area means any area, accessible to individuals, where removable surface contamination values exceed or are likely to exceed the removable surface contamination values specified in appendix D of this part, but to not exceed 100 times those values.
5	835.2(a)	As used in this part: High contamination area means any area, accessible to individuals, where removable surface contamination levels exceed or are likely to exceed 100 times the removable surface contamination values specified in appendix D of this part.
113	835.601(a)	Except as otherwise provided in this subpart, postings and labels required by this subpart shall include the standard radiation warning trefoil in black or magenta imposed upon a yellow background.
114	835.601(b)	Signs required by this subpart shall be clearly and conspicuously posted and may include radiological protection instructions.
115	835.601(c).1	The postings and labeling requirements in this subpart may be modified to reflect the special considerations of DOE activities conducted at private residences or businesses.
116	835.601(c).2	Such modifications shall provide the same level of protection to individuals as the existing provisions in this subpart.
125	835.603(e)	Each access point to radiological areas and radioactive materials areas (as defined in §835.2) shall be posted with conspicuous signs bearing the wording provided in this section.  (e) Contamination Area. The words "Caution, Contamination Area" shall be posted at each contamination area.

REQMT NO.	10 CFR 835 SECTION	RESTATEMENT OF THE REQUIREMENT
126	835.603(f)	<p>Each access point to radiological areas and radioactive materials areas (as defined in §835.2) shall be posted with conspicuous signs bearing the wording provided in this section.</p> <p>(f) High Contamination Area. The words “Caution, High Contamination Area” or “Danger, High Contamination Area” shall be posted at each high contamination area.</p>
214	835.1101(a)(1)	<p>Except as provided in paragraphs (b) and (c) of this section, material and equipment in contamination areas, high contamination areas, and airborne radioactivity areas shall not be released to a controlled area if:</p> <p>(1) Removable surface contamination levels on accessible surfaces exceed the removable surface contamination values specified in appendix D of this part; or</p>
215	835.1101(a)(2)	<p>Except as provided in paragraphs (b) and (c) of this section, material and equipment in contamination areas, high contamination areas, and airborne radioactivity areas shall not be released to a controlled area if:</p> <p>(2) Prior use suggests that the removable contamination levels on inaccessible surfaces are likely to exceed the removable surface contamination values specified in appendix D of this part.</p>
216	835.1101(b)	<p>Material and equipment exceeding the removable surface contamination values specified in appendix D of this part may be conditionally released for movement on-site for immediate placement in another radiological area only if appropriate monitoring is performed and appropriate controls for the movement are established and exercised.</p>
217	835.1101(c)(1)	<p>Material and equipment with fixed contamination levels that exceed the total contamination values specified in appendix D of this part may be released for use in controlled areas outside of radiological areas only under the following conditions:</p> <p>(1) Removable surface contamination levels are below the removable surface contamination values specified in appendix D of this part; and</p>
218	835.1101(c)(2)	<p>Material and equipment with fixed contamination levels that exceed the total contamination values specified in appendix D of this part may be released for use in controlled areas outside of radiological areas only under the following conditions:</p> <p>(2) The material or equipment is routinely monitored and clearly marked and labeled to alert personnel of the contaminated status.</p>

REQMT NO.	10 CFR 835 SECTION	RESTATEMENT OF THE REQUIREMENT
220	835.1102(b)	Any area in which contamination levels exceed the values specified in appendix D of this part shall be controlled in a manner commensurate with the physical and chemical characteristics of the contaminant, the radionuclide present, and the fixed and removable surface contamination values.
221	835.1102(c)	Areas accessible to individuals where the measured total surface contamination levels exceed, but the removable surface contamination levels are less than, corresponding surface contamination values specified in appendix D of this part, shall be controlled as follows when located outside of radiological areas:
222	835.1102(c)(1)	The area shall be routinely monitored to ensure the removable surface contamination levels remain below the removable surface contamination values specified in appendix D of this part; and
223	835.1102(c)(2)	The area shall be conspicuously marked to warn individuals of the contaminated status.
225	835.1102(e)	Protective clothing shall be required for entry to areas in which removable contamination exists at levels exceeding the removable surface contamination values specified in appendix D of this part.
270	835 Appendix D, D.1	The data in appendix D are to be used in identifying the need for posting of contamination and high contamination areas in accordance with §835.603(e) and (f) and identifying the need for surface contamination monitoring in accordance with §835.1101 and 835.1102.

## 12.0 COMPENSATORY ACTIONS

Appendix A of this RPP is a requirements matrix identifying CHPRC's commitments to 10 CFR 835 requirements. These commitments will become effective April 17, 2017. In the interim, compliance will be maintained with the currently approved CHPRC RPP (Rev. 6). There are minor editorial corrections to Appendix A in Revision 7.

## 13.0 TRACKING

No tracking is required.

## 14.0 REQUIREMENTS MATRIX DISCUSSION

Appendix A of this RPP is a requirements matrix identifying CHPRC's commitments to 10 CFR 835 requirements. The Appendix A matrix of this RPP provides the following:

- The 10 CFR 835 section, noting the numerical order of the requirements.

- A restatement of the 10 CFR 835 requirement implemented by CHPRC.
- CHPRC policy and commitment basis, as implemented in *CHPRC Radiological Control Manual* (CHPRC-00073), to ensure compliance.
- Compliance status relative to the respective revision of 10 CFR 835 [i.e., Compliant: 10 CFR 835 (2007)].
- Compliance status relative to the respective revision of 10 CFR 835 [i.e., Compliant: 10 CFR 835 (2007)\*]. An asterisk (\*) is used to denote compliance with the Exemption for specific HTD radionuclides from Appendix D – Surface Contamination Values, authorized by DOE-RL in Letter 09-SED-0060 (see Section 11.0).

The degree of detail provided for each requirement in the matrix is handled on a case-by-case basis. It should be noted that, in some instances, program/policy-level document references are either supplemented or replaced by narrative text. The combination of specific document references and narrative text contained in this matrix defines CHPRC's commitment to DOE regarding the requirements of 10 CFR 835.

## 15.0 REFERENCES

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

DOE, 2008, *Radiation Protection Programs Guide for Use with Title 10, Code of Federal Regulations, Part 835, Occupational Radiation Protection*, DOE G 441.1-1C, U.S. Department of Energy, Washington, D.C.

CHPRC-00073, *Radiological Control Manual*, CH2M HILL Plateau Remediation Company, Richland, Washington.

09-SED-0060, DOE-RL Letter to John G. Lehew III, CHPRC, from David A. Brockman and Jenise C. Connerly, "Request for Exemption from Title 10, Code of Federal Regulations (CFR), Part 835, Occupational Radiation Protection, Appendix D, Surface Contamination Values," dated February 6, 2009.

0900444, DOE-HQ Memorandum to John G. Lehew III, CHPRC, from Glenn S. Podonsky, dated January 22, 2009.

CHPRC-0800196, CHPRC Letter to Jenise C. Connerly, RL, from John G. Lehew III, "Request for Exemption from 10 CFR 835, Appendix D – Surface Contamination Values," dated December 4, 2008.

13-ESQ-0069, DOE-RL Letter to J.C. Fulton, CHPRC, from S.A. Sieracki, RL, "Exemption from 10 CFR 835 and Authorized Limits for Plutonium 241," dated September 24, 2013.

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**APPENDIX A**  
**REQUIREMENTS MATRIX**

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10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
<b>Subpart A - General Provisions</b>			
<b>§835.1 Scope</b>			
#1 §835.1(a)	<i>General.</i> The rules in this part establish radiation protection standards, limits, and program requirements for protecting individuals from ionizing radiation resulting from the conduct of DOE activities.	DOE Administrative - Not a requirement.	NA
#2 §835.1(b)	<p><i>Exclusion.</i> Except as provided in paragraph (c) of this section, the requirements in this part do not apply to:</p> <ol style="list-style-type: none"> <li>(1) Activities that are regulated through a license by the Nuclear Regulatory Commission or a State under an Agreement with the Nuclear Regulatory Commission, including activities certified by the Nuclear Regulatory Commission under section 1701 of the Atomic Energy Act;</li> <li>(2) Activities conducted under the authority of the Deputy Administrator for Naval Reactors, as described in Pub. L. 98-525 and 106.65;</li> <li>(3) Activities conducted under the Nuclear Explosives and Weapons Surety Program relating to the prevention of accidental or unauthorized nuclear detonations;</li> <li>(4) DOE activities conducted outside the United States on territory under the jurisdiction of a foreign government to the extent governed by occupational radiation protection requirements agreed to between the United States and the cognizant government;</li> <li>(5) Background radiation, radiation doses received as a patient for the purposes of medical diagnosis or therapy, or radiation doses received from participation as a subject in medical research programs; or</li> <li>(6) Radioactive material on or within material, equipment, and real property which is approved for release when the radiological conditions of the material, equipment, and real property have been documented to comply with the criteria for release set forth in a DOE authorized limit which has been approved by a Secretarial Officer in consultation with the Chief Health, Safety, and Security Officer.</li> <li>(7) Radioactive material transportation not performed by DOE or a DOE contractor.</li> </ol>	<p><b>Article 112.2 (excerpt and modified)</b> "Except as discussed in Article 213.1, the requirements of this Manual shall not apply to:</p> <ol style="list-style-type: none"> <li>a. Activities that are regulated through a license by the Nuclear Regulatory Commission or a State under an Agreement with the Nuclear Regulatory Commission, including activities certified by the Nuclear Regulatory Commission under section 1701 of the Atomic Energy Act;</li> <li>b. Activities conducted under the authority of the Deputy Administrator for Naval Reactors, as described in Pub. L. 98-525 and 106-65;</li> <li>c. Activities conducted under the Nuclear Explosives and Weapons Surety Program relating to the prevention of accidental or unauthorized nuclear detonations;</li> <li>d. DOE activities conducted outside the United States on territory under the jurisdiction of a foreign government to the extent governed by occupational radiation protection requirements agreed to between the United States and the cognizant government;</li> <li>e. Background radiation, radiation doses received as a patient for the purposes of medical diagnosis or therapy, or radiation doses received from participation as a subject in medical research programs;</li> <li>f. Radioactive material on or within material, equipment, and real property which is approved for release when the radiological conditions of the material, equipment, and real property have been documented to comply with the criteria for release set forth in a DOE authorized limit which has been approved by a Secretarial Officer in consultation with the Chief Health, Safety and Security Officer;</li> <li>g. Radioactive material transportation not performed by DOE or a DOE contractor." </li></ol>	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#3 §835.1(c)	Occupational doses received as a result of excluded activities and radioactive material transportation listed in paragraphs (b)(1) through (b)(4) and (b)(7) of this section, shall be included to the extent practicable when determining compliance with the occupational dose limits at §§835.202 and 835.207, and with the limits for the embryo/fetus at §835.206. Occupational doses resulting from authorized emergency exposures and planned special exposures shall not be considered when determining compliance with the dose limits at §§835.202 and 835.207.	<b>Article 213.1 (excerpt and modified)</b> a. "Occupational doses received as a result of excluded activities and radioactive material transportation, as listed in Article 112.2 (a-d and g), shall [835.1(c)] be included to the extent practicable when determining compliance with the occupational dose limits in Table 2-1 and Article 215."  b. "All occupational doses received during the current year, except doses resulting from planned special exposures conducted in compliance with Article 213.3 and emergency exposures authorized in accordance with Article 213.4, shall [835.1(c) & 835.202(b)] be included when demonstrating compliance with Table 2-1, occupational dose limits for general employees and minors."	Compliant: 10 CFR 835 (2007)
#4 §835.1(d)	The requirements in subparts F and G of this part do not apply to radioactive material transportation by DOE or a DOE contractor conducted:  (1) Under the continuous observation and control of an individual who is knowledgeable of and implements required exposure control measures, or  (2) In accordance with Department of Transportation regulations or DOE orders that govern such movements.	<b>Article 423.13 (excerpt)</b> "The requirements of 10 CFR 835 subparts F and G (refer to RPP requirements 102-141) do not apply to radioactive material transportation by DOE or a DOE contractor conducted [835.1(d)]: a. Under the continuous observation and control of an individual who is knowledgeable of and implements required exposure control measures, or b. In accordance with Department of Transportation regulations or DOE orders that govern such movements."	Compliant: 10 CFR 835 (2007)
<b>§835.2 Definitions</b>			
#5 §835.2(a)	As used in this part:  <i>Accountable sealed radioactive source</i> means a sealed radioactive source having a half-life equal to or greater than 30 days and an isotopic activity equal to or greater than the corresponding value provided in appendix E of this part.  <i>Activity Median Aerodynamic Diameter (AMAD)</i> means a particle size in an aerosol where fifty percent of the activity in the aerosol is associated with particles of aerodynamic diameter greater than the AMAD.  <i>Airborne radioactive material or airborne radioactivity</i> means radioactive material dispersed in the air in the form of dusts, fumes, particulates, mists, vapors, or gases.  <i>Airborne radioactivity area</i> means any area, accessible to individuals, where:  (1) The concentration of airborne radioactivity, above natural background, exceeds or is likely to exceed the derived air concentration (DAC) values listed in appendix A or appendix C of this part; or  (2) An individual present in the area without respiratory protection could receive an intake exceeding 12 DAC-hours in a week.	As reflected in the CHPRC RCM, Glossary:  <b>Accountable sealed radioactive source</b> means a sealed radioactive source having a half-life equal to or greater than 30 days and an isotopic activity equal to or greater than the corresponding value provided in 10 CFR 835 Appendix E.  <b>Activity Median Aerodynamic Diameter (AMAD)</b> means a particle size in an aerosol where fifty percent of the activity in the aerosol is associated with particles of aerodynamic diameter greater than the AMAD.  <b>Airborne radioactive material or airborne radioactivity</b> means radioactive material dispersed in the air in the form of dusts, fumes, particulates, mists, vapors, or gases.  <b>Airborne Radioactivity Area (ARA)</b> means any area, accessible to individuals, where:  (1) The concentration of airborne radioactivity, above natural background, exceeds or is likely to exceed the derived air concentration (DAC) values listed in Appendix A or Appendix C of 10 CFR 835; or  (2) An individual present in the area without respiratory protection could receive an intake exceeding 12 DAC-hours in a week.	Compliant: 10 CFR 835 (2007)  Compliant: 10 CFR 835 (2007)  Compliant: 10 CFR 835 (2007)  Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
	<p><i>ALARA</i> means "As Low As is Reasonably Achievable," which is the approach to radiation protection to manage and control exposures (both individual and collective) to the work force and to the general public to as low as is reasonable, taking into account social, technical, economic, practical, and public policy considerations. As used in this part, ALARA is not a dose limit but a process which has the objective of attaining doses as far below the applicable limits of this part as is reasonably achievable.</p>	<p><b>ALARA</b> means "As Low As is Reasonably Achievable" which is the approach to radiation protection to manage and control exposures (both individual and collective) to the work force and to the general public to as low as is reasonable, taking into account social, technical, economic, practical, and public policy considerations. As used in 10 CFR 835, ALARA is not a dose limit but a process which has the objective of attaining doses as far below the applicable limits of that Part as is reasonable achievable.</p>	Compliant: 10 CFR 835 (2007)
	<p><i>Annual limit on intake (ALI)</i> means the derived limit for the amount of radioactive material taken into the body of an adult worker by inhalation or ingestion in a year. ALI is the smaller value of intake of a given radionuclide in a year by the reference man (ICRP Publication 23) that would result in a committed effective dose of 5 rems (0.05 sieverts (Sv)) (1 rem = 0.01 Sv) or a committed equivalent dose of 50 rems (0.5 Sv) to any individual organ or tissue. ALI values for intake by ingestion and inhalation of selected radionuclides are based on International Commission on Radiological Protection Publication 68, <i>Dose Coefficients for Intakes of Radionuclides by Workers</i>, published July, 1994 (ISBN 0 08 042651 4). This document is available from Elsevier Science Inc., Tarrytown, NY.</p>	<p><b>Annual limit on intake (ALI)</b> means the derived limit for the amount of radioactive material taken into the body of an adult worker by inhalation or ingestion in a year. ALI is the smaller value of intake of a given radionuclide in a year by the reference man (ICRP Publication 23) that would result in a committed effective dose of 5 rems (0.05 sieverts (Sv)) (1 rem = 0.01 Sv) or a committed equivalent dose of 50 rems (0.5 Sv) to any individual organ or tissue. ALI values for intake by ingestion and inhalation of selected radionuclides are based on International Commission on Radiological Protection Publication 68, <i>Dose Coefficients for Intakes of Radionuclides by Workers</i>, published July, 1994 (ISBN 0 08 042651 4). This document is available from Elsevier Science Inc., Tarrytown, NY.</p>	Compliant: 10 CFR 835 (2007)
	<p><i>Authorized limit</i> means a limit on the concentration of residual radioactive material on the surfaces or within the property that has been derived consistent with DOE directives including the as low as is reasonably achievable (ALARA) process requirements, given the anticipated use of the property and has been authorized by DOE to permit the release of the property from DOE radiological control.</p>	<p><b>Authorized limit</b> means a limit on the concentration of residual radioactive material on the surfaces or within the property that has been derived consistent with DOE directives including the as low as is reasonably achievable (ALARA) process requirements, given the anticipated use of the property and has been authorized by DOE to permit the release of the property from DOE radiological control.</p>	Compliant: 10 CFR 835 (2007)
	<p><i>Background</i> means radiation from:</p> <ol style="list-style-type: none"> <li>(1) Naturally occurring radioactive materials which have not been technologically enhanced;</li> <li>(2) Cosmic sources;</li> <li>(3) Global fallout as it exists in the environment (such as from the testing of nuclear explosive devices);</li> <li>(4) Radon and its progeny in concentrations or levels existing in buildings or the environment which have not been elevated as a result of current or prior activities; and</li> <li>(5) Consumer products containing nominal amounts of radioactive material or producing nominal amounts of radiation.</li> </ol>	<p><b>Background</b> means radiation from:</p> <ol style="list-style-type: none"> <li>1. Naturally occurring radioactive materials which have not been technologically enhanced;</li> <li>2. Cosmic sources;</li> <li>3. Global fallout as it exists in the environment (such as from the testing of nuclear explosive devices);</li> <li>4. Radon and its progeny in concentrations or levels existing in buildings or the environment which have not been elevated as a result of current or prior activities; and</li> <li>5. Consumer products containing nominal amounts of radioactive material or producing nominal amounts of radiation.</li> </ol>	Compliant: 10 CFR 835 (2007)
	<p><i>Bioassay</i> means the determination of kinds, quantities, or concentrations, and, in some cases, locations of radioactive material in the human body, whether by direct measurement or by analysis and evaluation of radioactive materials excreted or removed from the human body.</p>	<p><b>Bioassay</b> means the determination of kinds, quantities, or concentrations, and, in some cases, locations of radioactive material in the human body, whether by direct measurement or by analysis and evaluation of radioactive materials excreted or removed from the human body.</p>	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
	<p><i>Calibration</i> means to adjust and/or determine either:</p> <ol style="list-style-type: none"> <li>(1) The response or reading of an instrument relative to a standard (e.g., primary, secondary, or tertiary) or to a series of conventionally true values; or</li> <li>(2) The strength of a radiation source relative to a standard (e.g., primary, secondary, or tertiary) or conventionally true value.</li> </ol>	<p><b>Calibration</b> means to adjust and/or determine either:</p> <ol style="list-style-type: none"> <li>1. The response or reading of an instrument relative to a standard (e.g., primary, secondary, or tertiary) or to a series of conventionally true values; or</li> <li>2. The strength of a radiation source relative to a standard (e.g., primary, secondary, tertiary) or conventionally true value.</li> </ol>	Compliant: 10 CFR 835 (2007)
	<p><i>Contamination area</i> means any area, accessible to individuals, where removable surface contamination levels exceed or are likely to exceed the removable surface contamination values specified in appendix D of this part, but do not exceed 100 times those values.</p>	<p><b>Contamination Area (CA)</b> means any area, accessible to individuals, where removable surface contamination levels exceed or are likely to exceed the removable surface contamination values specified in Appendix D of 10 CFR 835, but do not exceed 100 times those values.</p>	Compliant: 10 CFR 835 (2007)*
	<p><i>Controlled area</i> means any area to which access is managed by or for DOE to protect individuals from exposure to radiation and/or radioactive material.</p>	<p><b>Controlled Area:</b> means any area to which access is managed by or for DOE to protect individuals from exposure to radiation and/or radioactive material.  NOTE: For the Hanford Site, a Controlled Area by this definition is called a Radiologically Controlled Area to more precisely identify the reason for which control is established.</p>	Compliant: 10 CFR 835 (2007)
	<p><i>Declared pregnant worker</i> means a woman who has voluntarily declared to her employer, in writing, her pregnancy for the purpose of being subject to the occupational dose limits to the embryo/ fetus as provided in §835.206. This declaration may be revoked, in writing, at any time by the declared pregnant worker.</p>	<p><b>Declared pregnant worker</b> means a woman who has voluntarily declared to her employer, in writing, her pregnancy for the purpose of being subject to the occupational dose limits to the embryo/fetus as provided in Article 215. This declaration may be revoked, in writing, at any time by the declared pregnant worker.</p>	Compliant: 10 CFR 835 (2007)
	<p><i>Derived air concentration (DAC)</i> means, for the radionuclides listed in appendix A of this part, the airborne concentration that equals the ALI divided by the volume of air breathed by an average worker for a working year of 2000 hours (assuming a breathing volume of 2400 m<sup>3</sup>). For the radionuclides listed in appendix C of this part, the air immersion DACs were calculated for a continuous, non-shielded exposure via immersion in a semi-infinite cloud of radioactive material. Except as noted in the footnotes to appendix A of this part, the values are based on dose coefficients from International Commission on Radiological Protection Publication 68, <i>Dose Coefficients for Intakes of Radionuclides by Workers</i>, published July, 1994 (ISBN 0 08 042651 4) and the associated ICRP computer program, <i>The ICRP Database of Dose Coefficients: Workers and Members of the Public</i>, (ISBN 0 08 043 8768). These materials are available from Elsevier Science Inc., Tarrytown, NY.</p>	<p><b>Derived air concentration (DAC)</b> means, for the radionuclides listed in 10 CFR 835, Appendix A, the airborne concentration that equals the ALI divided by the volume of air breathed by an average worker for a working year of 2,000 hours (assuming a breathing volume of 2,400 m<sup>3</sup>). For the radionuclides listed in 10 CFR 835, Appendix C, the air immersion DACs were calculated for a continuous, non-shielded exposure via immersion in a semi-infinite cloud of radioactive material. Except as noted in the footnotes to 10 CFR 835, Appendix A, the values are based on dose coefficients from International Commission on Radiological Protection Publication 68, <i>Dose Coefficients for Intakes of Radionuclides by Workers</i>, published July, 1994 (ISBN 0 08 042651 4) and the associated ICRP computer program, <i>The ICRP Database of Dose Coefficients: Workers and Members of the Public</i>, (ISBN 0 08 043 8768). These materials are available from Elsevier Science Inc., Tarrytown, NY.</p>	Compliant: 10 CFR 835 (2007)
	<p><i>Derived air concentration-hour (DAC-hour)</i> means the product of the concentration of radioactive material in air (expressed as a fraction or multiple of the DAC for each radionuclide) and the time of exposure to that radionuclide, in hours.</p>	<p><b>Derived air concentration-hour (DAC-hour)</b> means the product of the concentration of radioactive material in air (expressed as a fraction or multiple of the DAC for each radionuclide) and the time of exposure to that radionuclide, in hours.</p>	Compliant: 10 CFR 835 (2007)
	<p><i>Deterministic effects</i> means effects due to radiation exposure for which the severity varies with the dose and for which a threshold normally exists (e.g., radiation induced opacities within the lens of the eye).</p>	<p><b>Deterministic effects</b> means effects due to radiation exposure for which the severity varies with the dose and for which a threshold normally exists (e.g., radiation induced opacities within the lens of the eye).</p>	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
	<i>DOE</i> means the United States Department of Energy.	<b>DOE</b> means the United States Department of Energy.	Compliant: 10 CFR 835 (2007)
	<i>DOE activity</i> means an activity taken for or by DOE in a DOE operation or facility that has the potential to result in the occupational exposure of an individual to radiation or radioactive material. The activity may be, but is not limited to, design, construction, operation, or decommissioning. To the extent appropriate, the activity may involve a single DOE facility or operation or a combination of facilities and operations, possibly including an entire site or multiple DOE sites.	<b>DOE activity</b> means an activity taken for or by the DOE in a DOE operation or facility that has the potential to result in the occupational exposure of an individual to radiation or radioactive material. The activity may be, but is not limited to, design, construction, operation, or decommissioning. To the extent appropriate, the activity may involve a single DOE facility or operation or a combination of facilities and operations, possibly including an entire site or multiple DOE sites.	Compliant: 10 CFR 835 (2007)
	<i>Entrance or access point</i> means any location through which an individual could gain access to areas controlled for the purpose of radiation protection. This includes entry or exit portals of sufficient size to permit human entry, irrespective of their intended use.	<b>Entrance or access point</b> means any location through which an individual could gain access to areas controlled for the purpose of radiation protection. This includes entry or exit portals of sufficient size to permit human entry, irrespective of their intended use.	Compliant: 10 CFR 835 (2007)
	<i>General employee</i> means an individual who is either a DOE or DOE contractor employee; an employee of a subcontractor to a DOE contractor; or an individual who performs work for or in conjunction with DOE or utilizes DOE facilities.	<b>General employee</b> means an individual who is either a DOE or DOE contractor employee; an employee of a subcontractor to a DOE contractor; or an individual who performs work for or in conjunction with DOE or utilizes DOE facilities.	Compliant: 10 CFR 835 (2007)
	<i>High contamination area</i> means any area, accessible to individuals, where removable surface contamination levels exceed or are likely to exceed 100 times the removable surface contamination values specified in appendix D of this part.	<b>High Contamination Area (HCA)</b> means any area, accessible to individuals, where removable surface contamination levels exceed or are likely to exceed 100 times the removable surface contamination values specified in Appendix D of 10 CFR 835.	Compliant: 10 CFR 835 (2007)*
	<i>High radiation area</i> means any area, accessible to individuals, in which radiation levels could result in an individual receiving an equivalent dose to the whole body in excess of 0.1 rems (0.001 Sv) in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.	<b>High Radiation Area (HRA)</b> means any area, accessible to individuals, in which radiation levels could result in an individual receiving an equivalent dose to the whole body in excess of 0.1 rems (0.001 Sv) in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.	Compliant: 10 CFR 835 (2007)
	<i>Individual</i> means any human being.	<b>Individual</b> means any human being.	Compliant: 10 CFR 835 (2007)
	<i>Member of the public</i> means 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.	<b>Member of the public</b> means 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.	Compliant: 10 CFR 835 (2007)
	<i>Minor</i> means an individual less than 18 years of age.	<b>Minor</b> means an individual less than 18 years of age.	Compliant: 10 CFR 835 (2007)
	<i>Monitoring</i> means the measurement of radiation levels, airborne radioactivity concentrations, radioactive contamination levels, quantities of radioactive material, or individual doses and the use of the results of these measurements to evaluate radiological hazards or potential and actual doses resulting from exposures to ionizing radiation.	<b>Monitoring</b> means the measurement of radiation levels, airborne radioactivity concentrations, radioactive contamination levels, quantities of radioactive material, or individual doses and the use of the results of these measurements to evaluate radiological hazards or potential and actual doses resulting from exposures to ionizing radiation.	Compliant: 10 CFR 835 (2007)
	<i>Occupational dose</i> means an individual's ionizing radiation dose (external and internal) as a result of that individual's work assignment. Occupational dose does not include doses received as a medical patient or doses resulting from background radiation or participation as a subject in medical research programs.	<b>Occupational dose</b> means an individual's ionizing radiation dose (external and internal) as a result of that individual's work assignment. Occupational dose does not include doses received as a medical patient or doses resulting from background radiation or participation as a subject in medical research programs.	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
	<i>Person</i> means any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, Government agency, any State or political subdivision of, or any political entity within a State, any foreign government or nation or other entity, and any legal successor, representative, agent or agency of the foregoing; provided that person does not include DOE or the United States Nuclear Regulatory Commission.	<b>Person</b> means any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, Government agency, any State or political subdivision of, or any political entity within a State, any foreign government or nation or other entity, and any legal successor, representative, agent or agency of the foregoing; provided that person does not include DOE or the United States Nuclear Regulatory Commission.	Compliant: 10 CFR 835 (2007)
	<i>Radiation</i> means ionizing radiation: alpha particles, beta particles, gamma rays, X-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions. Radiation as used in this part, does not include non-ionizing radiation, such as radio waves or microwaves, or visible, infrared, or ultraviolet light.	<b>Radiation</b> means ionizing radiation: alpha particles, beta particles, gamma rays, X-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions. Radiation, as used in 10 CFR 835, does not include non-ionizing radiation, such as radio waves or microwaves, or visible, infrared, or ultraviolet light.	Compliant: 10 CFR 835 (2007)
	<i>Radiation area</i> means any area, accessible to individuals, in which radiation levels could result in an individual receiving an equivalent dose to the whole body in excess of 0.005 rem (0.05 mSv) in 1 hour at 30 centimeters from the source or from any surface that the radiation penetrates.	<b>Radiation Area (RA)</b> means any area, accessible to individuals, in which radiation levels could result in an individual receiving an equivalent dose to the whole body in excess of 0.005 rem (0.05 mSv) in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.	Compliant: 10 CFR 835 (2007)
	<i>Radioactive material area</i> means any area within a controlled area, accessible to individuals, in which items or containers of radioactive material exist and the total activity of radioactive material exceeds the applicable values provided in appendix E of this part.	<b>Radioactive Material Area (RMA)</b> means any area within a Controlled Area, accessible to individuals, in which items or containers of radioactive material exist and the total activity of radioactive material exceeds the applicable values provided in Appendix E of 10 CFR 835.	Compliant: 10 CFR 835 (2007)
	<i>Radioactive material transportation</i> means the movement of radioactive material by aircraft, rail, vessel, or highway vehicle. Radioactive material transportation does not include preparation of material or packagings for transportation, storage of material awaiting transportation, or application of markings and labels required for transportation.	<b>Radioactive material transportation</b> means the movement of radioactive material by aircraft, rail, vessel, or highway vehicle. Radioactive material transportation does not include preparation of material or packagings for transportation, storage of material awaiting transportation, or application of markings and labels required for transportation.	Compliant: 10 CFR 835 (2007)
	<i>Radiological area</i> means any area within a controlled area defined in this section as a "radiation area," "high radiation area," "very high radiation area," "contamination area," "high contamination area," or "airborne radioactivity area."	<b>Radiological area</b> means any area, within a Controlled Area, defined in 10 CFR 835 as a "radiation area," "high radiation area," "very high radiation area," "contamination area," "high contamination area," or "airborne radioactivity area."	Compliant: 10 CFR 835 (2007)
	<i>Radiological worker</i> means a general employee whose job assignment involves operation of radiation producing devices or working with radioactive materials, or who is likely to be routinely occupationally exposed above 0.1 rem (0.001 Sv) per year total effective dose.	<b>Radiological worker</b> means a general employee whose job assignment involves operation of radiation producing devices or working with radioactive materials, or who is likely to be routinely occupationally exposed above 0.1 rem (0.001 Sv) per year total effective dose.	Compliant: 10 CFR 835 (2007)
	<i>Real property</i> means 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.	<b>Real property</b> means 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.	Compliant: 10 CFR 835 (2007)
	<i>Real-time air monitoring</i> means measurement of the concentrations or quantities of airborne radioactive materials on a continuous basis.	<b>Real-time air monitoring</b> means measurement of the concentrations or quantities of airborne radioactive materials on a continuous basis.	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
	<i>Respiratory protective device</i> means an apparatus, such as a respirator, worn by an individual for the purpose of reducing the individual's intake of airborne radioactive materials.	<b>Respiratory protective device</b> means an apparatus, such as a respirator, worn by an individual for the purpose of reducing the individual's intake of airborne radioactive materials.	Compliant: 10 CFR 835 (2007)
	<i>Sealed radioactive source</i> means a radioactive source manufactured, obtained, or retained for the purpose of utilizing the emitted radiation. The sealed radioactive source consists of a known or estimated quantity of radioactive material contained within a sealed capsule, sealed between layer(s) of non-radioactive material, or firmly fixed to a non-radioactive surface by electroplating or other means intended to prevent leakage or escape of the radioactive material. Sealed radioactive sources do not include reactor fuel elements, nuclear explosive devices, and radioisotope thermoelectric generators.	<b>Sealed radioactive source</b> means a radioactive source manufactured, obtained, or retained for the purpose of utilizing the emitted radiation. The sealed radioactive source consists of a known or estimated quantity of radioactive material contained within a sealed capsule, sealed between layer(s) of non-radioactive material, or firmly fixed to a non-radioactive surface by electroplating or other means intended to prevent leakage or escape of the radioactive material. Sealed radioactive sources do not include reactor fuel elements, nuclear explosive devices, and radioisotope thermoelectric generators.	Compliant: 10 CFR 835 (2007)
	<i>Source leak test</i> means a test to determine if a sealed radioactive source is leaking radioactive material.	<b>Source leak test</b> means a test to determine if a sealed radioactive source is leaking radioactive material.	Compliant: 10 CFR 835 (2007)
	<i>Special tritium compound (STC)</i> means any compound, except for H <sub>2</sub> O, that contains tritium, either intentionally (e.g., by synthesis) or inadvertently (e.g., by contamination mechanisms).	<b>Special tritium compound (STC)</b> means any compound, except for H <sub>2</sub> O, that contains tritium, either intentionally (e.g., by synthesis) or inadvertently (e.g., by contamination mechanisms).	Compliant: 10 CFR 835 (2007)
	<i>Stochastic effects</i> mean malignant and hereditary diseases for which the probability of an effect occurring, rather than its severity, is regarded as a function of dose without a threshold, for radiation protection purposes.	<b>Stochastic effects</b> mean malignant and hereditary diseases for which the probability of an effect occurring, rather than its severity, is regarded as a function of dose without a threshold, for radiation protection purposes.	Compliant: 10 CFR 835 (2007)
	<i>Transuranics:</i> As used in this radiation protection program, means any radionuclide with an atomic number greater than 92, excluding <sup>241</sup> Pu.	<b>Transuranics:</b> As used in this Manual, means any radionuclide with an atomic number greater than 92, excluding <sup>241</sup> Pu.	
	<i>Very high radiation area</i> means any area, accessible to individuals, in which radiation levels could result in an individual receiving an absorbed dose in excess of 500 rads (5 grays) in one hour at 1 meter from a radiation source or from any surface that the radiation penetrates.	<b>Very High Radiation Area (VHRA)</b> means any area, accessible to individuals, in which radiation levels could result in an individual receiving an absorbed dose in excess of 500 rads (5 grays) in one hour at 1 meter from a radiation source or from any surface that the radiation penetrates.	Compliant: 10 CFR 835 (2007)
	<i>Week</i> means a period of seven consecutive days.	<b>Week</b> means a period of seven consecutive days.	Compliant: 10 CFR 835 (2007)
	<i>Year</i> means the period of time beginning on or near January 1 and ending on or near December 31 of that same year used to determine compliance with the provisions of this part. The starting and ending date of the year used to determine compliance may be changed provided that the change is made at the beginning of the year and that no day is omitted or duplicated in consecutive years.	<b>Year</b> means the period of time beginning on or near January 1 and ending on or near December 31 of that same year used to determine compliance with the provisions of 10 CFR 835. The starting and ending date of the year used to determine compliance may be changed provided that the change is made at the beginning of the year and that no day is omitted or duplicated in consecutive years.	Compliant: 10 CFR 835 (2007)
#6 §835.2(b)	As used in this part to describe various aspects of radiation dose:  <i>Absorbed dose (D)</i> means the average energy imparted by ionizing radiation to the matter in a volume element per unit mass of irradiated material. The absorbed dose is expressed in units of rad (or gray) (1 rad = 0.01 grays).	As reflected in the CHPRC RCM Glossary to describe various aspects of radiation dose:  <b>Absorbed dose (D)</b> means the average energy imparted by ionizing radiation to the matter in a volume element per unit mass of irradiated material. The absorbed dose is expressed in units of rad (or gray) (1 rad = 0.01 grays).	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
	<p><i>Committed effective dose</i> (<math>E_{50}</math>) means the sum of the committed equivalent doses to various tissues or organs in the body (<math>H_{T,50}</math>), each multiplied by the appropriate tissue weighting factor (<math>w_T</math>)--that is, <math>E_{50} = \sum w_T H_{T,50} + w_{\text{Remainder}} H_{\text{Remainder},50}</math>. Where <math>w_{\text{Remainder}}</math> is the tissue weighting factor assigned to the remainder organs and tissues and <math>H_{\text{Remainder},50}</math> is the committed equivalent dose to the remainder organs and tissues. Committed effective dose is expressed in units of rem (or Sv).</p> <p><i>Committed equivalent dose</i> (<math>H_{T,50}</math>) means the equivalent dose calculated to be received by a tissue or organ over a 50-year period after the intake of a radionuclide into the body. It does not include contributions from radiation sources external to the body. Committed equivalent dose is expressed in units of rem (or Sv).</p> <p><i>Cumulative total effective dose</i> means the sum of all total effective dose values recorded for an individual plus, for occupational exposures received before the implementation date of this amendment, the cumulative total effective dose equivalent (as defined in the November 4, 1998 amendment to this rule) values recorded for an individual, where available, for each year occupational dose was received, beginning January 1, 1989.</p> <p><i>Dose</i> is a general term for absorbed dose, equivalent dose, effective dose, committed equivalent dose, committed effective dose, or total effective dose as defined in this part.</p> <p><i>Effective dose</i> (<math>E</math>) means the summation of the products of the equivalent dose received by specified tissues or organs of the body (<math>H_T</math>) and the appropriate tissue weighting factor (<math>w_T</math>)--that is, <math>E = \sum w_T H_T</math>. It includes the dose from radiation sources internal and/or external to the body. For purposes of compliance with this part, equivalent dose to the whole body may be used as effective dose for external exposures. The effective dose is expressed in units of rem (or Sv).</p> <p><i>Equivalent dose</i> (<math>H_T</math>) means the product of average absorbed dose (<math>D_{T,R}</math>) in rad (or gray) in a tissue or organ (T) and a radiation (R) weighting factor (<math>w_R</math>). For external dose, the equivalent dose to the whole body is assessed at a depth of 1 cm in tissue; the equivalent dose to the lens of the eye is assessed at a depth of 0.3 cm in tissue, and the equivalent dose to the extremity and skin is assessed at a depth of 0.007 cm in tissue. Equivalent dose is expressed in units of rem (or Sv).</p> <p><i>External dose or exposure</i> means that portion of the equivalent dose received from radiation sources outside the body (i.e., "external sources").</p> <p><i>Extremity</i> means hands and arms below the elbow or feet and legs below the knee.</p>	<p><b>Committed effective dose (<math>E_{50}</math>)</b> means the sum of the committed equivalent doses to various tissues or organs in the body (<math>H_{T,50}</math>), each multiplied by the appropriate tissue weighting factor (<math>w_T</math>)--that is, <math>E_{50} = \sum w_T H_{T,50} + w_{\text{Remainder}} H_{\text{Remainder},50}</math>. Where <math>w_{\text{Remainder}}</math> is the tissue weighting factor assigned to the remainder organs and tissues and <math>H_{\text{Remainder},50}</math> is the committed equivalent dose to the remainder organs and tissues. Committed effective dose is expressed in units of rem (or Sv).</p> <p><b>Committed equivalent dose (<math>H_{T,50}</math>)</b> means the equivalent dose calculated to be received by a tissue or organ over a 50-year period after the intake of a radionuclide into the body. It does not include contributions from radiation sources external to the body. Committed equivalent dose is expressed in units of rem (or Sv).</p> <p><b>Cumulative total effective dose</b> means the sum of all total effective dose values recorded for an individual plus, for occupational exposures received before the implementation date of this amendment, the cumulative total effective dose equivalent (as defined in the November 4, 1998 amendment to this rule) values recorded for an individual, where available, for each year occupational dose was received, beginning January 1, 1989.</p> <p><b>Dose</b> is a general term for absorbed dose, equivalent dose, effective dose, committed equivalent dose, committed effective dose, or total effective dose as defined in 10 CFR 835.</p> <p><b>Effective dose (E)</b> means the summation of the products of the equivalent dose received by specified tissues or organs of the body (<math>H_T</math>) and the appropriate tissue weighting factor (<math>w_T</math>)--that is, <math>E = \sum w_T H_T</math>. It includes the dose from radiation sources internal and/or external to the body. For purposes of compliance with this part, equivalent dose to the whole body may be used as effective dose for external exposures. The effective dose is expressed in units of rem (or Sv).</p> <p><b>Equivalent dose (<math>H_T</math>)</b> means the product of average absorbed dose (<math>D_{T,R}</math>) in rad (or gray) in a tissue or organ (T) and a radiation (R) weighting factor (<math>w_R</math>). For external dose, the equivalent dose to the whole body is assessed at a depth of 1 cm in tissue; the equivalent dose to the lens of the eye is assessed at a depth of 0.3 cm in tissue, and the equivalent dose to the extremity and skin is assessed at a depth of 0.007 cm in tissue. Equivalent dose is expressed in units of rem (or Sv).</p> <p><b>External dose or exposure</b> means that portion of the equivalent dose received from radiation sources outside the body (i.e., "external sources").</p> <p><b>Extremity</b> means hands and arms below the elbow or feet and legs below the knee.</p>	

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status																																																																				
	<p><i>Internal dose or exposure</i> means that portion of the equivalent dose received from radioactive material taken into the body (i.e., "internal sources").</p> <p><i>Radiation weighting factor</i> (<math>w_R</math>) means the modifying factor used to calculate the equivalent dose from the average tissue or organ absorbed dose; the absorbed dose (expressed in rad or gray) is multiplied by the appropriate radiation weighting factor. The radiation weighting factors to be used for determining equivalent dose in rem are as follows:</p> <p>RADIATION WEIGHTING FACTORS<sup>1</sup>, <math>w_R</math></p> <table border="1"> <thead> <tr> <th>Type and energy range</th> <th><math>w_R</math></th> </tr> </thead> <tbody> <tr> <td>Photons, electrons and muons, all energies</td> <td>1</td> </tr> <tr> <td>Neutrons, energy &lt; 10 keV<sup>2,3</sup></td> <td>5</td> </tr> <tr> <td>Neutrons, energy 10 keV to 100 keV<sup>2,3</sup></td> <td>10</td> </tr> <tr> <td>Neutrons, energy &gt; 100 keV to 2 MeV<sup>2,3</sup></td> <td>20</td> </tr> <tr> <td>Neutrons, energy &gt; 2 MeV to 20 MeV<sup>2,3</sup></td> <td>10</td> </tr> <tr> <td>Neutrons, energy &gt; 20 MeV<sup>2,3</sup></td> <td>5</td> </tr> <tr> <td>Protons, other than recoil protons, energy &gt; 2 MeV</td> <td>5</td> </tr> <tr> <td>Alpha particles, fission fragments, heavy nuclei</td> <td>20</td> </tr> </tbody> </table> <p><sup>1</sup> All values relate to the radiation incident on the body or, for internal sources, emitted from the source.</p> <p><sup>2</sup> When spectral data are insufficient to identify the energy of the neutrons, a radiation weighting factor of 20 shall be used.</p> <p><sup>3</sup> When spectral data are sufficient to identify the energy of the neutrons, the following equation may be used to determine a neutron radiation weighting factor value:</p> $w_R = 5 + 17 \exp[-(\ln(2E_n))^2 \div 6]$ <p>Where <math>E_n</math> is the neutron energy in MeV.</p> <p><i>Tissue weighting factor</i> (<math>w_T</math>) means the fraction of the overall health risk, resulting from uniform, whole body irradiation, attributable to specific tissue (T). The equivalent dose to tissue, (<math>H_T</math>), is multiplied by the appropriate tissue weighting factor to obtain the effective dose (E) contribution from that tissue. The tissue weighting factors are as follows:</p> <p>TISSUE WEIGHTING FACTORS FOR VARIOUS ORGANS AND TISSUES</p> <table border="1"> <thead> <tr> <th>Organs or tissues, T</th> <th>Tissue weighting factor, <math>w_T</math></th> </tr> </thead> <tbody> <tr> <td>Gonads</td> <td>0.20</td> </tr> <tr> <td>Red bone marrow</td> <td>0.12</td> </tr> <tr> <td>Colon</td> <td>0.12</td> </tr> <tr> <td>Lungs</td> <td>0.12</td> </tr> <tr> <td>Stomach</td> <td>0.12</td> </tr> <tr> <td>Bladder</td> <td>0.05</td> </tr> <tr> <td>Breast</td> <td>0.05</td> </tr> </tbody> </table>	Type and energy range	$w_R$	Photons, electrons and muons, all energies	1	Neutrons, energy < 10 keV <sup>2,3</sup>	5	Neutrons, energy 10 keV to 100 keV <sup>2,3</sup>	10	Neutrons, energy > 100 keV to 2 MeV <sup>2,3</sup>	20	Neutrons, energy > 2 MeV to 20 MeV <sup>2,3</sup>	10	Neutrons, energy > 20 MeV <sup>2,3</sup>	5	Protons, other than recoil protons, energy > 2 MeV	5	Alpha particles, fission fragments, heavy nuclei	20	Organs or tissues, T	Tissue weighting factor, $w_T$	Gonads	0.20	Red bone marrow	0.12	Colon	0.12	Lungs	0.12	Stomach	0.12	Bladder	0.05	Breast	0.05	<p><b>Internal dose or exposure</b> means that portion of the equivalent dose received from radioactive material taken into the body (i.e., "internal sources").</p> <p><b>Radiation weighting factor</b> (<math>w_R</math>) means the modifying factor used to calculate the equivalent dose from the average tissue or organ absorbed dose; the absorbed dose (expressed in rad or gray) is multiplied by the appropriate radiation weighting factor. The radiation weighting factors to be used for determining equivalent dose in rem are as follows:</p> <p>RADIATION WEIGHTING FACTORS, <math>w_R</math></p> <table border="1"> <thead> <tr> <th>Type and energy range</th> <th><math>w_R</math></th> </tr> </thead> <tbody> <tr> <td>Photons, electrons and muons, all energies</td> <td>1</td> </tr> <tr> <td>Neutrons, energy &lt; 10 keV<sup>2,3</sup></td> <td>5</td> </tr> <tr> <td>Neutrons, energy 10 keV to 100 keV<sup>2,3</sup></td> <td>10</td> </tr> <tr> <td>Neutrons, energy &gt; 100 keV to 2 MeV<sup>2,3</sup></td> <td>20</td> </tr> <tr> <td>Neutrons, energy &gt; 2 MeV to 20 MeV<sup>2,3</sup></td> <td>10</td> </tr> <tr> <td>Neutrons, energy &gt; 20 MeV<sup>2,3</sup></td> <td>5</td> </tr> <tr> <td>Protons, other than recoil protons, energy &gt; 2 MeV</td> <td>5</td> </tr> <tr> <td>Alpha particles, fission fragments, heavy nuclei</td> <td>20</td> </tr> </tbody> </table> <p><sup>1</sup> All values relate to the radiation incident on the body or, for internal sources, emitted from the source.</p> <p><sup>2</sup> When spectral data are insufficient to identify the energy of the neutrons, a radiation weighting factor of 20 shall be used.</p> <p><sup>3</sup> When spectral data are sufficient to identify the energy of the neutrons, the following equation may be used to determine a neutron radiation weighting factor value:</p> $w_R = 5 + 17 \exp[-(\ln(2E_n))^2 \div 6]$ <p>Where <math>E_n</math> is the neutron energy in MeV.</p> <p><b>Tissue weighting factor</b> (<math>w_T</math>) means the fraction of the overall health risk, resulting from uniform, whole body irradiation, attributable to specific tissue (T). The equivalent dose to tissue, (<math>H_T</math>), is multiplied by the appropriate tissue weighting factor to obtain the effective dose (E) contribution from that tissue. 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10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
	<p>Liver ..... 0.05                      Esophagus ..... 0.05                      Thyroid ..... 0.05                      Skin ..... 0.01                      Bone surfaces ..... 0.01                      Remainder<sup>1</sup> ..... 0.05                      Whole body<sup>2</sup> ..... 1.00</p> <p><sup>1</sup> "Remainder" means the following additional tissues and organs and their masses, in grams, following parenthetically: adrenals (14), brain (1400), extrathoracic airways (15), small intestine (640), kidneys (310), muscle (28,000), pancreas (100), spleen (180), thymus (20), and uterus (80). The equivalent dose to the remainder tissues (<math>H_{\text{remainder}}</math>), is normally calculated as the mass-weighted mean dose to the preceding ten organs and tissues. In those cases in which the most highly irradiated remainder tissue or organ receives the highest equivalent dose of all the organs, a weighting factor of 0.025 (half of remainder) is applied to that tissue or organ and 0.025 (half of remainder) to the mass-weighted equivalent dose in the rest of the remainder tissues and organs to give the remainder equivalent dose.</p> <p><sup>2</sup> For the case of uniform external irradiation of the whole body, a tissue weighting factor (<math>w_T</math>) equal to 1 may be used in determination of the effective dose.</p> <p><i>Total effective dose (TED)</i> means the sum of the effective dose (for external exposures) and the committed effective dose.</p> <p><i>Whole body</i> means, for the purposes of external exposure, head, trunk (including male gonads), arms above and including the elbow, or legs above and including the knee.</p>	<p>Liver ..... 0.05                      Esophagus ..... 0.05                      Thyroid ..... 0.05                      Skin ..... 0.01                      Bone surfaces ..... 0.01                      Remainder<sup>1</sup> ..... 0.05                      Whole body<sup>2</sup> ..... 1.00</p> <p><sup>1</sup> "Remainder" means the following additional tissues and organs and their masses, in grams, following parenthetically: adrenals (14), brain (1400), extrathoracic airways (15), small intestine (640), kidneys (310), muscle (28,000), pancreas (100), spleen (180), thymus (20), and uterus (80). The equivalent dose to the remainder tissues (<math>H_{\text{remainder}}</math>), is normally calculated as the mass-weighted mean dose to the preceding ten organs and tissues. In those cases in which the most highly irradiated remainder tissue or organ receives the highest equivalent dose of all the organs, a weighting factor of 0.025 (half of remainder) is applied to that tissue or organ and 0.025 (half of remainder) to the mass-weighted equivalent dose in the rest of the remainder tissues and organs to give the remainder equivalent dose.</p> <p><sup>2</sup> For the case of uniform external irradiation of the whole body, a tissue weighting factor (<math>w_T</math>) equal to 1 may be used in determination of the effective dose.</p> <p><b>Total effective dose (TED)</b> means the sum of the effective dose (for external exposures) and the committed effective dose.</p> <p><b>Whole body</b> means, for the purposes of external exposure, head, trunk (including male gonads), arms above and including the elbow, or legs above and including the knee.</p>	
#7 §835.2(c)	Terms defined in the Atomic Energy Act of 1954 or in 10 CFR part 820 and not defined in this part are used consistent with their meanings given in the Atomic Energy Act of 1954 or in 10 CFR 820.	As reflected in the CHPRC RCM, Glossary: Terms defined in the Atomic Energy Act of 1954 or in 10 CFR part 820 and not defined in this part are used consistent with their meanings given in the Atomic Energy Act of 1954 or in 10 CFR 820.	Compliant: 10 CFR 835 (2007)
<b>§835.3 General Rule</b>			
#8 §835.3(a)	No person or DOE personnel shall take or cause to be taken any action inconsistent with the requirements of: (1) This part; or (2) Any program, plan, schedule, or other process established by this part.	<b>Article 113.1 (excerpt)</b> "No person or DOE personnel shall [835.3(a)] take or cause to be taken any action inconsistent with the requirements of: (1) 10 CFR 835; or (2) Any program, plan, schedule, or other process established by 10 CFR 835."	Compliant: 10 CFR 835 (2007)
#9 §835.3(b)	With respect to a particular DOE activity, contractor management shall be responsible for compliance with the requirements of this part.	<b>Article 113.1 (excerpt)</b> "With respect to a particular DOE activity, CHPRC management shall [835.3(b)] be responsible for compliance with the requirements of 10 CFR 835."	Compliant: 10 CFR 835 (2007)
#10 §835.3(c)	Where there is no contractor for a DOE activity, DOE shall ensure implementation of and compliance with the requirements of this part.	The scope of this Radiation Protection Program is limited to contractor activities, Note: See Applicability, Section 3.0, of this RPP.	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#11 §835.3(d)	Nothing in this part shall be construed as limiting actions that may be necessary to protect health and safety.	<b>Article 113.1 (excerpt and modified)</b> "Nothing in this Manual shall [835.3(d)] be construed as limiting actions that may be necessary to protect health and safety."	Compliant: 10 CFR 835 (2007)
#12 §835.3(e)	For those activities that are required by §§835.102, 835.901(e), 835.1202(a), and 835.1202(b), the time interval to conduct these activities may be extended by a period not to exceed 30 days to accommodate scheduling needs.	<b>Article 113.1 (excerpt)</b> "For those activities that are required by Articles 131, 431.3, 431.4, and 613.8, the time interval to conduct these activities may be extended by a period not to exceed 30 days to accommodate scheduling needs [835.3(e)]."	Compliant: 10 CFR 835 (2007)
<b>§835.4 Radiological Units</b>			
#13 §835.4	Unless otherwise specified, the quantities used in the records required by this part shall be clearly indicated in special units of curie, rad, roentgen, or rem, including multiples and subdivisions of these units, or other conventional units, such as, dpm, dpm/100cm <sup>2</sup> or mass units. The SI units, becquerel (Bq), gray (Gy), and sievert (Sv), may be provided parenthetically for reference with scientific standards.	<b>Article 713.3 (excerpt)</b> "Unless otherwise specified, the quantities used in the records required by this Manual shall [835.4] be clearly indicated in special units of curie, rad, roentgen, or rem, including multiples and subdivisions of these units, or other conventional units, such as, dpm, dpm/100 cm <sup>2</sup> or mass units. The SI units, becquerel (Bq), gray (Gy), and sievert (Sv), may be provided parenthetically for reference with scientific standards."	Compliant: 10 CFR 835 (2007)
<b>Subpart B - Management and Administrative Requirements</b>			
<b>§835.101 Radiation Protection Programs</b>			
#14 §835.101(a)	A DOE activity shall be conducted in compliance with a documented radiation protection program (RPP) as approved by the DOE.	In accordance with Section 2.0, General Information, CHPRC's RPP establishes the documentation to implement §835.101(a). The CHPRC RPP will be managed and controlled through the CHPRC document control process.	Compliant: 10 CFR 835 (2007)
#15 §835.101(b)	The DOE may direct or make modifications to a RPP.	CHPRC accepts provision §835.101(b) as written.	Compliant: 10 CFR 835 (2007)
#16 §835.101(c).1	The content of each RPP shall be commensurate with the nature of the activities performed and...	CHPRC's approved RPP establishes the documentation to implement §835.101(c) as written. The RPP will be managed and controlled through the establishment of appropriate administrative measures.  Note: "Commensurate with the nature of the activities performed" is the nature of those activities performed by CHPRC, its subcontractors and suppliers at CHPRC managed facilities and activities as specified in contract DE-AC06-08RL14788.	Compliant: 10 CFR 835 (2007)
#17 §835.101(c).2	...shall include formal plans and measures for applying the as low as reasonably achievable (ALARA) process to occupational exposure.	This requirement is implemented through the CHPRC Occupational ALARA program, which addresses the seven essential elements of ALARA program as specified in Radiation Protection Programs Guide, DOE G 441.1-1C, Section 4.2.0, May 2008: <ul style="list-style-type: none"> <li>▪ Policy and Management Commitment;</li> <li>▪ ALARA Training;</li> <li>▪ Plans, and Procedures;</li> <li>▪ Internal Assessments/Audits;</li> <li>▪ ALARA Design Review</li> <li>▪ Radiological Work/Experiment Administration and Planning</li> <li>▪ Records.</li> </ul>	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#18 §835.101(d).1	The RPP shall specify the existing and/or anticipated operational tasks that are intended to be within the scope of the RPP.	See Applicability section of the CHPRC RPP (Section 3.0). The RPP will be managed through the establishment of appropriate administrative measures.	Compliant: 10 CFR 835 (2007)
#19 §835.101(d).2	Except as provided in §835.101(h), any task outside the scope of a RPP shall not be initiated until an update of the RPP is approved by DOE.	If any radiological activities are determined to be outside the scope of RPP (as defined in Section 3.0), except as provided in §835.101(h), CHPRC shall obtain DOE approval of revised RPP.	Compliant: 10 CFR 835 (2007)
#20 §835.101(e)	The content of the RPP shall address, but shall not necessarily be limited to, each requirement in this part.	Upon DOE approval, CHPRC's RPP implements §835.101(e) as written.	Compliant: 10 CFR 835 (2007)
#21 §835.101(f).1	The RPP shall include plans, schedules, and other measures for achieving compliance with regulations of this part.	Upon DOE approval, CHPRC's RPP establishes the documentation to implement §835.101(f) as written (See Section 10 and Appendix B of the CHPRC RPP).	Compliant: 10 CFR 835 (2007)
#22 §835.101(f).2	Unless otherwise specified in this part, compliance with amendments to this part published on June 8, 2007 shall be achieved no later than July 9, 2010.	Upon DOE approval, CHPRC's RPP establishes the documentation to implement §835.101(f) as written (See Section 10 and Appendix B of the CHPRC RPP).	Compliant: 10 CFR 835 (2007)
#23 §835.101(g)(1)	An update of the RPP shall be submitted to DOE: (1) Whenever a change or an addition to the RPP is made;	CHPRC accepts requirement §835.101(g)(1) as written. The RPP will be managed and controlled through the establishment of appropriate administrative measures.	Compliant: 10 CFR 835 (2007)
#24 §835.101(g)(2)	(2) Prior to the initiation of a task not within the scope of the RPP; or	CHPRC accepts requirement §835.101(g)(2) as written. The RPP will be managed and controlled through the establishment of appropriate administrative measures Note: See Applicability, Section 3.0 of the CHPRC RPP.	Compliant: 10 CFR 835 (2007)
#25 §835.101(g)(3)	(3) Within 180 days of the effective date of any modifications to this part.	CHPRC accepts requirement §835.101(g)(3) as written. The RPP will be managed and controlled through the establishment of appropriate administrative measures	Compliant: 10 CFR 835 (2007)
#26 §835.101(h).1	Changes, additions, or updates to the RPP may become effective without prior Department approval only if the changes do not decrease the effectiveness of the RPP and the RPP, as changed, continues to meet the requirements of this part.	CHPRC accepts the requirement as written. CHPRC will apply the guidelines of DOE G 441.1-1C, Section 3.1, May 2008, when making the determination of "Changes that decrease the effectiveness of the RPP"	Compliant: 10 CFR 835 (2007)
#27 §835.101(h).2	Proposed changes that decrease the effectiveness of the RPP shall not be implemented without submittal to and approval by the Department.	CHPRC accepts the requirement as written. The RPP will be managed and controlled through the establishment of appropriate administrative measures.	Compliant: 10 CFR 835 (2007)
#28 §835.101(i)	An initial RPP or an update shall be considered approved 180 days after its submission unless rejected by DOE at an earlier date.	CHPRC accepts requirement §835.101(i) as written. The RPP will be managed and controlled through the establishment of appropriate administrative measures.	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
<b>§835.102 Internal Audits</b>			
#29 §835.102	Internal audits of the radiation protection program, including examination of program content and implementation, shall be conducted through a process that ensures that all functional elements are reviewed no less frequently than every 36 months.	<p><b>Article 131.1 (excerpt)</b>                      "Internal audits of the Radiation Protection Program, including examination of program content and implementation, shall [835.102] be conducted through a process that ensures that all functional elements are reviewed no less frequently than every 36 months."                       Note: CHPRC will apply the graded approach by assessing each section of 10 CFR 835 (e.g.; §835.103, §835.202, §835.204, etc. totaling 44 functional elements) no less frequent than every 36 months. 10 CFR 835 Appendices will be assessed with the applicable implementing section.</p>	Compliant: 10 CFR 835 (2007)
<b>§835.103 Education, Training and Skills</b>			
#30 §835.103	Individuals responsible for developing and implementing measures necessary for ensuring compliance with the requirements of this part shall have the appropriate education, training, and skills to discharge these responsibilities.	<p><b>Article 141.4 (excerpt)</b>                      "CHPRC shall [835.103] identify positions that develop and implement measures necessary to comply with 10 CFR 835. At a minimum, this includes those individuals filling the following positions:  <ul style="list-style-type: none"> <li>• Rad Con Technicians,</li> <li>• First Line Rad Con managers,</li> <li>• Senior Rad Con technical staff,</li> <li>• Facility/Project Rad Con technical staff,</li> <li>• Facility/Project Rad Con Managers,</li> <li>• Radiation Protection Director</li> <li>• Radiation Protection Program Manager</li> <li>• RWP Preparers,</li> <li>• Lead Radiological Assessor,</li> <li>• Managers (including lead workers) with the authority and responsibility for radiological work and/or program oversight,</li> <li>• Selected individuals will be trained as source custodians, containment installers and/or inspectors."</li> </ul> <b>Article 611 (excerpt &amp; modified)</b>                      "Individuals responsible for developing and implementing measures necessary for ensuring compliance with the requirements of this Manual shall [835.103] have the appropriate education, training, and skills to discharge these responsibilities."                       Note: Application of this requirement utilizes a graded approach for implementation by identifying the positions in Article 141.4.</p>	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
<b>§835.104 Written Procedures</b>			
#31 §835.104	Written procedures shall be developed and implemented as necessary to ensure compliance with this part, commensurate with the radiological hazards created by the activity and consistent with the education, training, and skills of the individuals exposed to those hazards.	<p><b>Article 122.2 (excerpt)</b>                      "Written procedures shall [835.104] be developed and implemented as necessary to ensure compliance with 10 CFR 835, commensurate with the radiological hazards created by the activity and consistent with the education, training, and skills of the individuals exposed to those hazards."</p> <p>Note: CHPRC will apply the guidance identified in DOE G 441.1-1C of May 2008, section 3.2.0, Paragraph 1, 3<sup>rd</sup> bullet towards the implementation of CHPRC Radiation Protection Program procedures.</p>	Compliant: 10 CFR 835 (2007)
<b>Subpart C - Standards for Internal and External Exposure</b>			
<b>§835.202 Occupational Dose Limits for General Employees</b>			
#32 §835.202(a)(1)	Except for planned special exposures conducted consistent with §835.204 and emergency exposures authorized in accordance with §835.1302, the occupational dose received by general employees shall be controlled such that the following limits are not exceeded in a year: (1) A total effective dose of 5 rems (0.05 Sv);	<p><b>Article 213.1 (excerpt)</b>                      "Occupational dose limits are provided in Table 2-1 and shall [835.202(a), 835.206(a), 835.207] not be exceeded. Except for planned special exposures conducted consistent with Article 213.3 and emergency exposures authorized in accordance with Article 213.4, the occupational dose received by general employees shall [835.202(a)] be controlled such that the limits in Table 2-1 are not exceeded in a year."  <b>Table 2-1 (excerpt and modified)</b></p> <ul style="list-style-type: none"> <li>• General Employee: A total effective dose of 5 rems (0.05 Sv);</li> </ul>	Compliant: 10 CFR 835 (2007)
#33 §835.202(a)(2)	(2) The sum of equivalent dose to the whole body for external exposures and the committed equivalent dose to any organ or tissue other than the skin or the lens of the eye of 50 rems (0.5 Sv);	<p><b>Article 213.1 (excerpt)</b>                      "Occupational dose limits are provided in Table 2-1 and shall [835.202(a), 835.206(a), 835.207] not be exceeded. Except for planned special exposures conducted consistent with Article 213.3 and emergency exposures authorized in accordance with Article 213.4, the occupational dose received by general employees shall [835.202(a)] be controlled such that the limits in Table 2-1 are not exceeded in a year."  <b>Table 2-1 (excerpt and modified)</b></p> <ul style="list-style-type: none"> <li>• General Employee: The sum of equivalent dose to the whole body for external exposures and the committed equivalent dose to any organ or tissue other than the skin or the lens of the eye of 50 rems (0.5 Sv);</li> <li>• Note 2: The annual limit of dose to "any organ or tissue" is based on the committed equivalent dose to that organ or tissue resulting from internally deposited radionuclides over a 50-year period after intake plus any equivalent dose to that organ from external exposures during the year.</li> </ul>	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#34 §835.202(a)(3)	(3) An equivalent dose to the lens of the eye of 15 rems (0.15 Sv); and	<b>Article 213.1 (excerpt)</b> "Occupational dose limits are provided in Table 2-1 and shall [835.202(a), 835.206(a), 835.207] not be exceeded. Except for planned special exposures conducted consistent with Article 213.3 and emergency exposures authorized in accordance with Article 213.4, the occupational dose received by general employees shall [835.202(a)] be controlled such that the limits in Table 2-1 are not exceeded in a year." <b>Table 2-1 (excerpt and modified)</b> • An equivalent dose to the lens of the eye of 15 rems (0.15 Sv); and	Compliant: 10 CFR 835 (2007)
#35 §835.202(a)(4)	(4) The sum of the equivalent dose to the skin or to any extremity for external exposures and the committed equivalent dose to the skin or to any extremity of 50 rems (0.5 Sv).	<b>Article 213.1 (excerpt)</b> "Occupational dose limits are provided in Table 2-1 and shall [835.202(a), 835.206(a), 835.207] not be exceeded. Except for planned special exposures conducted consistent with Article 213.3 and emergency exposures authorized in accordance with Article 213.4, the occupational dose received by general employees shall [835.202(a)] be controlled such that the limits in Table 2-1 are not exceeded in a year." <b>Table 2-1 (excerpt and modified)</b> • The sum of the equivalent dose to the skin or to any extremity for external exposures and the committed equivalent dose to the skin or to any extremity of 50 rems (0.5 Sv).	Compliant: 10 CFR 835 (2007)
#36 §835.202(b)	All occupational doses received during the current year, except doses resulting from planned special exposures conducted in compliance with §835.204 and emergency exposures authorized in accordance with §835.1302, shall be included when demonstrating compliance with §835.202(a) and 835.207.	<b>Article 213.1 (excerpt)</b> "All Occupational doses received during the current year, except doses resulting from planned special exposures conducted in compliance Article 213.3 and emergency exposures authorized in accordance with Article 213.4 shall [835.1(c), 835.202(b)] be included when demonstrating compliance with Table 2-1, occupational dose limits for general employees and minors." <b>Table 2-1 (excerpt)</b> "Summary of Dose Limits"	Compliant: 10 CFR 835 (2007)
#37 §835.202(c)	Doses from background, therapeutic and diagnostic medical radiation, and participation as a subject in medical research programs shall not be included in dose records or in the assessment of compliance with the occupational dose limits.	<b>Table 2-1 Note 3 (excerpt)</b> "Doses from background, therapeutic and diagnostic medical radiation, and participation as a subject in medical research programs shall [835.202(c)] not be included in dose records or in the assessment of compliance with the occupational dose limits."	Compliant: 10 CFR 835 (2007)
<b>§835.203 Combining Internal and External Equivalent Doses</b>			
#38 §835.203(a)	The total effective dose during a year shall be determined by summing the effective dose from external exposures and the committed effective dose from intakes during the year.	<b>Table 2-1 Note 1 (excerpt)</b> "Internal dose to the whole body shall [835.203(a)] be calculated as committed effective dose. The committed effective dose is the resulting dose committed to the whole body from internally deposited radionuclides over a 50-year period after intake." <b>Table 2-1 Note 5</b> "The total effective dose during a year shall [835.203(a)] be determined by summing the effective dose from external exposures and the committed effective dose from intakes during the year."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#39 §835.203(b)	Determinations of the effective dose shall be made using the radiation and tissue weighting factor values provided in §835.2.	<b>Table 2-1 Note 1 (excerpt)</b> "Determinations of the effective dose shall [835.203(b)] be made using the radiation and tissue weighting factor values provided in the Glossary.	Compliant: 10 CFR 835 (2007)
<b>§835.204 Planned Special Exposures</b>			
#40 §835.204(a)(1)	A planned special exposure may be authorized for a radiological worker to receive doses in addition to and accounted for separately from the doses received under the limits specified in §835.202(a), provided that each of the following conditions is satisfied:  (1) The planned special exposure is considered only in an exceptional situation when alternatives that might prevent a radiological worker from exceeding the limits in §835.202(a) are unavailable or impractical;	<b>Note:</b> No Planned Special Exposures (PSE) are anticipated to occur. In the event of a PSE occurring, the provisions outlined in §835.204 will be followed.  <b>Article 213.3.a (excerpt)</b> "A planned special exposure may be authorized for a radiological worker to receive doses in addition to and accounted for separately from the doses received under the limits for general employees specified in Table 2-1, provided that each of the following conditions is satisfied: <ul style="list-style-type: none"> <li>▪ The planned special exposure is considered only in an exceptional situation when alternatives that might prevent a radiological worker from exceeding the limits in Table 2-1 are unavailable or impractical;"</li> </ul>	Compliant: 10 CFR 835 (2007)
#41 §835.204(a)(2)	(2) The contractor management (and employer, if the employer is not the contractor) specifically requests the planned special exposure, in writing; and	<b>Article 213.3.a (excerpt)</b> "A planned special exposure may be authorized for a radiological worker to receive doses in addition to and accounted for separately from the doses received under the limits for general employees specified in Table 2-1, provided that each of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• The contractor management (and employer, if the employer is not the contractor) specifically requests the planned special exposure, in writing; and</li> </ul>	Compliant: 10 CFR 835 (2007)
#42 §835.204(a)(3)	(3) Joint written approval is received from the appropriate DOE Headquarters program office and the Secretarial Officer responsible for environment, safety and health matters.	<b>Article 213.3.a (excerpt)</b> "A planned special exposure may be authorized for a radiological worker to receive doses in addition to and accounted for separately from the doses received under the limits for general employees specified in Table 2-1, provided that each of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• Joint written approval is received from the appropriate DOE Headquarters program office and the Secretarial Officer responsible for environment, safety and health matters.</li> </ul>	Compliant: 10 CFR 835 (2007)
#43 §835.204(b)	Prior to requesting an individual to participate in an authorized planned special exposure, the individual's dose from all previous planned special exposures and all doses in excess of the occupational dose limits shall be determined.	<b>Article 213.3.b</b> "Prior to requesting an individual to participate in an authorized planned special exposure, the individual's dose from all previous planned special exposures and all doses in excess of the occupational dose limits shall [835.204(b)] be determined."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#44 §835.204(c)(1)	An individual shall not receive a planned special exposure that, in addition to the doses determined in §835.204(b), would result in a dose exceeding the following: (1) In a year, the numerical values of the dose limits established at §835.202(a); and	<b>Article 213.3.c</b> "An individual shall [835.204(c)] not receive a planned special exposure that, in addition to the doses determined in Article 213.3.b, would result in a dose exceeding the following: • In a year, the numerical values of the dose limits established at Table 2-1 for general employees; and"	Compliant: 10 CFR 835 (2007)
#45 §835.204(c)(2)	(2) Over the individual's lifetime, five times the numerical values of the dose limits established at §835.202(a).	<b>Article 213.3.c (excerpt)</b> "An individual shall [835.204(c)] not receive a planned special exposure that, in addition to the doses determined in Article 213.3.b, would result in a dose exceeding the following: • "Over the individual's lifetime, five times the numerical values of the dose limits established at Table 2-1 for general employees."	Compliant: 10 CFR 835 (2007)
#46 §835.204(d)	Prior to a planned special exposure, written consent shall be obtained from each individual involved.	<b>Article 213.3.d (excerpt)</b> "Prior to a planned special exposure, written consent shall [835.204(d)] be obtained from each individual involved.	Compliant: 10 CFR 835 (2007)
#47 §835.204(d)(1)	Each such written consent shall include: (1) The purpose of the planned operations and procedures to be used;	<b>Article 213.3.d (excerpt)</b> Each such written consent shall [835.204(d)] include: • The purpose of the planned operations and procedures to be used;"	Compliant: 10 CFR 835 (2007)
#48 §835.204(d)(2)	(2) The estimated doses and associated potential risks and specific radiological conditions and other hazards which might be involved in performing the task; and	<b>Article 213.3.d (excerpt)</b> Each such written consent shall [835.204(d)] include: • The estimated doses and associated potential risks and specific radiological conditions and other hazards which might be involved in performing the task; and	Compliant: 10 CFR 835 (2007)
#49 §835.204(d)(3)	(3) Instructions on the measures to be taken to keep the dose ALARA considering other risks that may be present.	<b>Article 213.3.d (excerpt)</b> Each such written consent shall [835.204(d)] include: • Instructions on the measures to be taken to keep the dose ALARA considering other risks that may be present.	Compliant: 10 CFR 835 (2007)
#50 §835.204(e).1	Records of the conduct of a planned special exposure shall be maintained and	<b>Article 213.3.e (excerpt)</b> "Records of the conduct of a planned special exposure shall [835.204(e)] be maintained and "	Compliant: 10 CFR 835 (2007)
#51 §835.204(e).2	a written report submitted within 30 days after the planned special exposure to the approving organizations identified in §835.204(a)(3).	<b>Article 213.3.e (excerpt)</b> "a written report submitted within 30 days after the planned special exposure to the approving organizations identified in Article 213.3(a)."	Compliant: 10 CFR 835 (2007)
#52 §835.204(f)	The dose from planned special exposures is not to be considered in controlling future occupational dose of the individual under §835.202(a), but is to be included in records and reports required under this part.	<b>Article 213.3.f (excerpt and modified)</b> "The dose from planned special exposures is not to be considered in controlling future occupational dose of the individual under Table 2-1, but is to be included in records and reports required by 10 CFR 835." <b>Article 722.10 (excerpt)</b> "Authorized emergency exposures and planned special exposures shall [835.1301(b)] be accounted for separately, but maintained with the individual's occupational exposure records."	Compliant: 10 CFR 835 (2007)
<b>§835.205 Determination of Compliance for Non-Uniform Exposure of the Skin</b>			

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#53 §835.205(a)	Non-uniform exposures of the skin from X-rays, beta radiation, and/or radioactive material on the skin are to be assessed as specified in this section.	<b>Table 2-1 Note 4 (excerpt)</b> "Non-uniform exposures of the skin from X-rays, beta radiation, and/or radioactive material on the skin shall [835.205] be assessed as specified in Appendix 2C."	Compliant: 10 CFR 835 (2007)
#54 §835.205(b)(1)	For purposes of demonstrating compliance with §835.202(a)(4), assessments shall be conducted as follows: (1) <u>Area of skin irradiated is 100 cm<sup>2</sup> or more.</u> The non-uniform equivalent dose received during the year shall be averaged over the 100 cm <sup>2</sup> of the skin receiving the maximum dose, added to any uniform equivalent dose also received by the skin, and recorded as the equivalent dose to any extremity or skin for the year.	<b>Appendix 2C (excerpt)</b> "For the purposes of demonstrating compliance with §835.202(a)(4), assessments shall be conducted as follows: "Area of skin irradiated ≥ 100 cm <sup>2</sup> - The non-uniform equivalent dose received during the year shall [835.205(b)(1)] be averaged over the 100 cm <sup>2</sup> of the skin receiving the maximum dose, added to any uniform equivalent dose e also received by the skin, and recorded as the equivalent dose to any extremity or skin for the year."	Compliant: 10 CFR 835 (2007)
#55 §835.205(b)(2)	(2) <u>Area of skin irradiated is 10 cm<sup>2</sup> or more, but is less than 100 cm<sup>2</sup>.</u> The non-uniform equivalent dose (H) to the irradiated area received during the year shall be added to any uniform equivalent dose also received by the skin and recorded as the equivalent dose to any extremity or skin for the year. H is the equivalent dose averaged over the 1 cm <sup>2</sup> of skin receiving the maximum absorbed dose, D, reduced by the fraction f, which is the irradiated area in cm <sup>2</sup> divided by 100 cm <sup>2</sup> (i.e., H = fD). In no case shall a value of f less than 0.1 be used.	<b>Appendix 2C (excerpt)</b> "Area of skin irradiated ≥ 10 cm <sup>2</sup> and < 100 cm <sup>2</sup> - the non-uniform equivalent dose (H) to the irradiated area received during the year shall be added to any uniform equivalent dose also received by the skin and recorded as the equivalent dose to any extremity or skin for the year. H is the equivalent dose averaged over the 1 cm <sup>2</sup> of skin receiving the maximum absorbed dose, D, reduced by the fraction f, which is the irradiated area in cm <sup>2</sup> divided by 100 cm <sup>2</sup> (i.e., H = fD). In no case shall a value of f less than 0.1 be used."	Compliant: 10 CFR 835 (2007)
#56 §835.205(b)(3)	(3) <u>Area of skin irradiated is less than 10 cm<sup>2</sup>.</u> The non-uniform equivalent dose shall be averaged over the 1 cm <sup>2</sup> of skin receiving the maximum dose. This equivalent dose shall: (i) Be recorded in the individual's occupational exposure history as a special entry; and (ii) Not be added to any other equivalent dose to any extremity or skin for the year.	<b>Appendix 2C (excerpt)</b> "Area of skin irradiated < 10 cm <sup>2</sup> -, the non-uniform equivalent dose shall be averaged over the 1 cm <sup>2</sup> of skin receiving the maximum dose. This equivalent dose shall: a. Be recorded in the individual's occupational exposure history as a special entry; and b. Not be added to any other equivalent dose to any extremity or skin for the year."	Compliant: 10 CFR 835 (2007)
<b>§835.206 Limits for the Embryo/Fetus</b>			
#57 §835.206(a)	The equivalent dose limit for the embryo/fetus from the period of conception to birth, as a result of occupational exposure of a declared pregnant worker, is 0.5 rem (0.005 Sv).	<b>Article 213.1 (excerpt)</b> "Occupational dose limits are provided in Table 2-1 and shall [835.202(a), 835.206(a), and 835.207] not be exceeded." <b>Table 2-1 (excerpt and modified)</b> Declared pregnant worker: Embryo/Fetus 0.5 rem per gestation period." <b>Article 215.5 (excerpt)</b> "For a declared pregnant worker who chooses to continue working as a radiological worker: a) The equivalent dose limit for the embryo/fetus from the period of conception to birth, as a result of occupational exposure of a declared pregnant worker, is 0.5 rem (0.005 Sv)[835.206(a)]."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#58 §835.206(b)	Substantial variation above a uniform exposure rate that would satisfy the limits provided in §835.206(a) shall be avoided.	<b>Article 215.5.b (excerpt)</b> "Substantial variation above a uniform exposure rate that would satisfy the limits provided in Table 2-1 shall [835.206(b)] be avoided." <b>Article 215.5.c (excerpt)</b> Measures shall be taken to avoid substantial variation about the uniform exposure rate necessary to meet the 0.5 rem limit for the gestation period. Efforts shall be made to avoid exceeding 50 mrem per month to the declared pregnant worker." Note: CHPRC will apply the guideline of DOE G 441.1-1C Section 8.3 paragraph 2, May 2008, to determine "substantial variation" unless a separate technical basis is prepared and approved for the activity.	Compliant: 10 CFR 835 (2007)
#59 §835.206(c)	If the equivalent dose to the embryo/fetus is determined to have already exceeded 0.5 rem (0.005 Sv) by the time a worker declares her pregnancy, the declared pregnant worker shall not be assigned to tasks where additional occupational exposure is likely during the remaining gestation period.	<b>Article 215.6</b> "If the equivalent dose to the embryo/fetus is determined to have already exceeded 0.5 rem (0.005 Sv) by the time the worker declares her pregnancy, the declared pregnant worker shall [835.206(c)] not be assigned to tasks where additional occupational exposure is likely during the remaining gestation period."	Compliant: 10 CFR 835 (2007)
<b>§835.207 Occupational Dose Limits for Minors</b>			
#60 §835.207	The dose limits for minors occupationally exposed to radiation and/or radioactive materials at a DOE activity are 0.1 rem (0.001 Sv) total effective dose in a year and 10 percent of the occupational dose limits specified at § 835.202(a)(3) and (a)(4).	<b>Article 213.1 (excerpt)</b> "Occupational dose limits are provided in Table 2-1 and shall [835.202(a), 835.206(a), and 835.207] not be exceeded." <b>Table 2-1 (excerpt and modified)</b> "Minors occupationally exposed: total effective dose 0.1 rem." "Minors occupationally exposed: Lens of the eye, skin, and extremities (is) 10 percent of General Employee Limits."	Compliant: 10 CFR 835 (2007)
<b>§835.208 Limits for Members of the Public Entering a Controlled Area</b>			
#61 §835.208	The total effective dose limit for members of the public exposed to radiation and/or radioactive material during access to a controlled area is 0.1 rem (0.001 Sv) in a year.	<b>Article 214.1 (excerpt)</b> "The total effective dose limit for members of the public exposed to radiation and/or radioactive material during access to a controlled area is [835.208] 0.1 rem (0.001 Sv) in a year."	Compliant: 10 CFR 835 (2007)
<b>§835.209 Concentrations of Radioactive Material in Air</b>			
#62 §835.209(a)	The derived air concentration (DAC) values given in appendices A and C of this part shall be used in the control of occupational exposures to airborne radioactive material.	<b>Article 223.1</b> "The derived air concentration (DAC) values given in 10 CFR 835 Appendices A and C shall [835.209(a)] be used in the control of occupational exposures to airborne radioactive material."	Compliant: 10 CFR 835 (2007)
#63 §835.209(b)	The estimation of internal dose shall be based on bioassay data rather than air concentration values unless bioassay data are: (1) unavailable; (2) inadequate; or (3) internal dose estimates based on air concentration values are demonstrated to be as or more accurate.	<b>Article 521.2</b> "The estimation of internal dose shall [835.209(b)] be based on bioassay data rather than air concentration values unless bioassay data are: a. unavailable; b. inadequate; or c. internal dose estimates based on air concentration values are demonstrated to be as or more accurate."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
<b>Subpart E - Monitoring of Individuals and Areas</b>			
<b>§835.401 General Requirements</b>			
<b>#64</b> <b>§835.401(a)(1)</b>	Monitoring of individuals and areas shall be performed to: (1) Demonstrate compliance with the regulations in this part;	<b>Article 551.1 (excerpt &amp; modified)</b> "Monitoring of individuals and areas shall [835.401(a)] be performed to: a. Demonstrate compliance with the requirements of 10 CFR 835;..." <b>Article 551.10</b> "Survey frequencies shall [835.401(a) and 835.1102(a)] be established based on potential radiological conditions, probability of change in conditions, and area occupancy factors." Note: The requirements of Section 835.401 are subject to the graded approach through criteria established by CHPRC monitoring program. The program establishes administrative records for tracking and trending radiological conditions based on routine tasks (radiological survey reports). Task descriptions and work documents specify the frequency of radiological surveys. Workplace air sampling program defines criteria for use of continuous air monitors.	Compliant: 10 CFR 835 (2007)
<b>#65</b> <b>§835.401(a)(2)</b>	(2) Document radiological conditions;	<b>Article 551.1 (excerpt)</b> "Monitoring of individuals and areas shall [835.401(a)] be performed to: b. Document radiological conditions;" <b>Article 551.10</b> "Survey frequencies shall [835.401(a) and 835.1102(a)] be established based on potential radiological conditions, probability of change in conditions, and area occupancy factors."	Compliant: 10 CFR 835 (2007)
<b>#66</b> <b>§835.401(a)(3)</b>	(3) Detect changes in radiological conditions;	<b>Article 551.1 (excerpt)</b> "Monitoring of individuals and areas shall [835.401(a)] be performed to: c. Detect changes in radiological conditions;" <b>Article 551.10</b> "Survey frequencies shall [835.401(a) and 835.1102(a)] be established based on potential radiological conditions, probability of change in conditions, and area occupancy factors."	Compliant: 10 CFR 835 (2007)
<b>#67</b> <b>§835.401(a)(4)</b>	(4) Detect the gradual buildup of radioactive material;	<b>Article 551.1 (excerpt)</b> "Monitoring of individuals and areas shall [835.401(a)] be performed to: d. Detect the gradual buildup of radioactive material;" <b>Article 551.10</b> "Survey frequencies shall [835.401(a) and 835.1102(a)] be established based on potential radiological conditions, probability of change in conditions, and area occupancy factors."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#68 §835.401(a)(5)	(5) Verify the effectiveness of engineered and administrative controls in containing radioactive material and reducing radiation exposure; and	<p><b>Article 551.1 (excerpt)</b>                      "Monitoring of individuals and areas shall [835.401(a)] be performed to:                      e. Verify the effectiveness of engineered and administrative controls in containing radioactive material and reducing radiation exposure; and"</p> <p><b>Article 551.10</b>                      "Survey frequencies shall [835.401(a) and 835.1102(a)] be established based on potential radiological conditions, probability of change in conditions, and area occupancy factors."</p>	Compliant: 10 CFR 835 (2007)
#69 §835.401(a)(6)	(6) Identify and control potential sources of individual exposure to radiation and/or radioactive material.	<p><b>Article 551.1 (excerpt)</b>                      "Monitoring of individuals and areas shall [835.401(a)] be performed to:                      f. Identify and control potential sources of individual exposure to radiation and/or radioactive material."</p> <p><b>Article 551.10</b>                      "Survey frequencies shall [835.401(a) and 835.1102(a)] be established based on potential radiological conditions, probability of change in conditions, and area occupancy factors."</p>	Compliant: 10 CFR 835 (2007)
#70 §835.401(b)(1)	Instruments and equipment used for monitoring shall be: (1) Periodically maintained and calibrated on an established frequency;	<p><b>Article 551.5 (excerpt and modified)</b>                      "Instruments and equipment used for monitoring shall [CFR 835.401(b)] be:                      a. Periodically maintained and calibrated on an established frequency;"</p> <p><b>Article 561.1</b>                      "Radiological instruments and equipment shall [835.401(b)(1)] be periodically maintained and calibrated on an established frequency."</p> <p><b>Article 561.3</b>                      "All radiological monitoring instruments, including pocket and electronic dosimeters and area radiation monitoring shall [835.401(b)(1)] be maintained and calibrated on an established frequency."                      Note: For the purposes of the CHPRC RPP, this requirement applies to instruments used for occupational radiation protection monitoring and not for process controls.</p> <p><b>Article 562.3</b>                      "Radiological instruments shall [835.401(b)(1)] undergo calibration prior to use following any preventive or corrective maintenance or any adjustment that voids the previous calibration. A battery change is not normally considered maintenance."</p>	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#71 §835.401(b)(2)	(2) Appropriate for the type(s), levels, and energies of the radiation(s) encountered;	<p><b>Article 551.5 (excerpt)</b>                      "Instruments and equipment used for monitoring shall [835.401(b)] be:                      b. Appropriate for the type(s), levels and energies of the radiation(s) encountered."  <b>Article 561.1.a (excerpt)</b>                      "Radiological instruments and equipment shall [835.401(b)(2)] be used only to measure the radiation for which their calibrations are valid."  <b>Article 561.6</b>                      "In unusual and limited situations it may be necessary to use an instrument in an application other than that envisioned by the manufacturer. Special calibrations shall be performed for use of instrumentation outside manufacturer's specifications. The instrument shall be adjusted, calibrated and labeled to identify the special conditions and used only under the special conditions for which it was calibrated."</p>	Compliant: 10 CFR 835 (2007)
#72 §835.401(b)(3)	(3) Appropriate for existing environmental conditions; and	<p><b>Article 551.5 (excerpt)</b>                      "Instruments and equipment used for monitoring shall [835.401(b)] be:                      c. Appropriate for the existing environmental conditions; and..."  <b>Article 561.4</b>                      "The effects of environmental conditions, including interfering radiation, on an instrument shall [835.401(b)(3)] be known prior to use."  <b>Article 561.6</b>                      "In unusual and limited situations it may be necessary to use an instrument in an application other than that envisioned by the manufacturer. Special calibrations shall be performed for use of instrumentation outside manufacturer's specifications. The instrument shall be adjusted, calibrated and labeled to identify the special conditions and used only under the special conditions for which it was calibrated."</p>	Compliant: 10 CFR 835 (2007)
#73 §835.401(b)(4)	(4) Routinely tested for operability.	<p><b>Article 551.5. (excerpt)</b>                      Instruments and equipment used for monitoring shall [10 CFR 835.401(b)] be:                      "d. Routinely tested for operability."  <b>Article 555.7 (excerpt and modified)</b>                      "The proper operation of continuous air monitoring equipment shall [835.401(b)(4)] be routinely tested by performing an operational check."                      Note: For the purposes of this RPP, functional tests of alarm systems are those systems used for occupational radiation protection and not process controls.</p>	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
<b>§835.402 Individual Monitoring</b>			
#74 §835.402(a)(1)(i)	For the purpose of monitoring individual exposures to external radiation, personnel dosimeters shall be provided to and used by: (1) Radiological workers who, under typical conditions, are likely to receive one or more of the following: (i) An effective dose of 0.1 rem (0.001 Sv) or more in a year;	<b>Article 511.1.a (excerpt)</b> "1. For the purpose of monitoring individual exposures to external radiation, personnel dosimeters shall [835.402(a)] be provided to and used by: a. Radiological workers who, under typical conditions, are likely to receive one or more of the following; --An effective dose of 0.1 rem (0.001 Sv) or more in a year;..." Note: "Are likely to receive" recognizes that professional judgment and experience will be used in making decisions in specific circumstances. [DOE G 441.1-1-C, Section 3.1., paragraph 5, May 2008.] This Note applies to requirements 74-79.	Compliant: 10 CFR 835 (2007)
#75 §835.402(a)(1)(ii)	(ii) An equivalent dose to the skin or to any extremity of 5 rems (0.05 Sv) or more in a year;	<b>Article 511.1.a (excerpt)</b> "1. For the purpose of monitoring individual exposures to external radiation, personnel dosimeters shall [835.402(a)] be provided to and used by: a. Radiological workers who, under typical conditions, are likely to receive one or more of the following; -- an equivalent dose to the skin or to any extremity of 5 rems (0.05 Sv) or more in a year;..."	Compliant: 10 CFR 835 (2007)
#76 §835.402(a)(1)(iii)	(iii) An equivalent dose to the lens of the eye of 1.5 rems (0.015 Sv) or more in a year;	<b>Article 511.1.a (excerpt)</b> "1. For the purpose of monitoring individual exposures to external radiation, personnel dosimeters shall [835.402(a)] be provided to and used by: a. Radiological workers who, under typical conditions, are likely to receive one or more of the following; -- An equivalent dose to the lens of the eye of 1.5 rems (0.015 Sv) or more in a year;..."	Compliant: 10 CFR 835 (2007)
#77 §835.402(a)(2)	(2) Declared pregnant workers who are likely to receive from external sources an equivalent dose to the embryo/fetus in excess of 10 percent of the applicable limit at §835.206(a);	<b>Article 511.1.b (excerpt)</b> "1. For the purpose of monitoring individual exposures to external radiation, personnel dosimeters shall [835.402(a)] be provided to and used by: b. Declared pregnant workers who are likely to receive from external sources an equivalent dose to the embryo/fetus in excess of 10 percent of the applicable limit at Table 2-1;..."	Compliant: 10 CFR 835 (2007)
#78 §835.402(a)(3)	Occupationally exposed minors likely to receive a dose in excess of 50 percent of the applicable limits at §835.207 in a year from external sources;	<b>Article 511.1.c (excerpt)</b> "1. For the purpose of monitoring individual exposures to external radiation, personnel dosimeters shall [835.402(a)] be provided to and used by: c. Occupationally exposed minors likely to receive a dose in excess of 50 percent of the applicable limits at Table 2-1 in a year from external sources;..."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#79 §835.402(a)(4)	Members of the public entering a controlled area likely to receive a dose in excess of 50 percent of the limit at §835.208 in a year from external sources; and	<b>Article 511.1.d (excerpt)</b> "1. For the purpose of monitoring individual exposures to external radiation, personnel dosimeters shall [835.402(a)] be provided to and used by:  d. Members of the public entering a controlled area likely to receive a dose in excess of 50 percent of the limit at Article 214 in a year from external sources, and..."	Compliant: 10 CFR 835 (2007)
#80 §835.402(a)(5)	(1) Individuals entering a high or very high radiation area.	<b>Article 511.1.e (excerpt)</b> "1. For the purpose of monitoring individual exposures to external radiation, personnel dosimeters shall [835.402(a)] be provided to and used by:  e. Individuals entering a high or very high radiation area."	Compliant: 10 CFR 835 (2007)
#81 §835.402(b)	External dose monitoring programs implemented to demonstrate compliance with §835.402(a) shall be adequate to demonstrate compliance with the dose limits established in subpart C of this part	<b>Article 512.1 (excerpt)</b> "External dose monitoring programs implemented to demonstrate compliance with Article 511.1 shall [835.402(b)] be adequate to demonstrate compliance with the dose limits in Chapter 2."	Compliant: 10 CFR 835 (2007)
#82 §835.402(b)(1)	and shall be: (1) Accredited, or excepted from accreditation, in accordance with the DOE Laboratory Accreditation Program for Personnel Dosimetry; or	<b>Article 512.1 (excerpt)</b> "The external dose monitoring program shall [835.402(b)(1)] be accredited in accordance with the DOE Laboratory Accreditation Program for Personnel Dosimetry."	Compliant: 10 CFR 835 (2007)
#83 §835.402(b)(2)	(2) Determined by the Secretarial Officer responsible for environment, safety and health matters to have performance substantially equivalent to that of programs accredited under the DOE Laboratory Accreditation Program for Personnel Dosimetry.	The CHPRC dosimetry program and subcontracted dosimetry service implements a program compliant with Section §835.402(b)(1) consequently, §835.402(b)(2) is not applicable.	Compliant: 10 CFR 835 (2007)
#84 §835.402(c)(1)	For the purpose of monitoring individual exposures to internal radiation, internal dosimetry programs (including routine bioassay programs) shall be conducted for: (1) Radiological workers who, under typical conditions, are likely to receive a committed effective dose of 0.1 rem (0.001 Sv) or more from all occupational radionuclide intakes in a year;	<b>Article 521.1 (excerpt)</b> "For the purpose of monitoring individual exposures to internal radiation, internal dosimetry programs (including routine bioassay programs) shall [835.402(c)] be conducted for: a. Radiological workers who, under typical conditions, are likely to receive a committed effective dose of 0.1 rem (0.001 sievert) or more from all occupational radionuclide intakes in a year;..." <b>Article 522.7</b> "Bioassay analyses shall [835.402(c); Article 522.1] also be performed when any of the following occurs: a. Facial or nasal contamination is detected that indicates a potential for internal contamination; b. Airborne monitoring indicates the potential for intakes exceeding 100 mrem committed effective dose; or c. When directed by the Radiological Control Organization." <i>Note:</i> Workers who "are likely to receive" recognizes that professional judgment and experience will be used in making decisions in specific circumstances. [DOE G 441.1-1C, Section 3.1., paragraph 5, May 2008.] This Note applies to requirements 84-87.	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#85 §835.402(c)(2)	(2) Declared pregnant workers likely to receive an intake or intakes resulting in an equivalent dose to the embryo/fetus in excess of 10 percent of the limit stated at §835.206(a);	<b>Article 521.1 (excerpt)</b> "For the purpose of monitoring individual exposures to internal radiation, internal dosimetry programs (including routine bioassay programs) shall [835.402(c)] be conducted for: b. Declared pregnant workers likely to receive an intake or intakes resulting in an equivalent dose to the embryo/fetus in excess of 10 percent of the limit stated at Table 2-1;..."	Compliant: 10 CFR 835 (2007)
#86 §835.402(c)(3)	(3) Occupationally exposed minors who are likely to receive a dose in excess of 50 percent of the applicable limit stated at §835.207 from all radionuclide intakes in a year; or	<b>Article 521.1 (excerpt)</b> "For the purpose of monitoring individual exposures to internal radiation, internal dosimetry programs (including routine bioassay programs) shall [835.402(c)] be conducted for: c. Occupationally exposed minors who are likely to receive a dose in excess of 50 percent of the applicable limit stated at Table 2-1 from all radionuclide intakes in a year; or..."	Compliant: 10 CFR 835 (2007)
#87 §835.402(c)(4)	(4) Members of the public entering a controlled area likely to receive a dose in excess of 50 percent of the limit stated at §835.208 from all radionuclide intakes in a year.	<b>Article 521.1 (excerpt)</b> "For the purpose of monitoring individual exposures to internal radiation, internal dosimetry programs (including routine bioassay programs) shall [835.402(c)] be conducted for: d. Members of the public entering a controlled area likely to receive a dose in excess of 50 percent of the limit stated at Article 214 from all radionuclide intakes in a year."	Compliant: 10 CFR 835 (2007)
#88 §835.402(d)	Internal dose monitoring programs implemented to demonstrate compliance with §835.402(c) shall be adequate to demonstrate compliance with the dose limits established in subpart C of this part and shall be:	<b>Article 522.1 (excerpt and modified)</b> "Internal dose monitoring programs implemented to demonstrate compliance with Article 521.1 a, b, c, and d shall [835.402(d)] be adequate to demonstrate compliance with the dose limits established in Table 2-1 and Article 214.1."	Compliant: 10 CFR 835 (2007)
#89 §835.402(d)(1)	(1) Accredited, or excepted from accreditation, in accordance with the DOE Laboratory Accreditation Program for Radiobioassay; or	<b>Article 522.1 (excerpt and modified)</b> The internal dose monitoring programs shall [835.402(d)(1)] be accredited in accordance with DOE Laboratory Accreditation Program for Radiobioassay.	Compliant: 10 CFR 835 (2007)
#90 §835.402(d)(2)	(2) Determined by the Secretarial Officer responsible for environment, safety and health matters to have performance substantially equivalent to that of programs accredited under the DOE Laboratory Accreditation Program for Radiobioassay.	CHPRC is committed to using a laboratory that meets the DOE Laboratory Accreditation Program for Radiobioassay requirement as part of §835.402(d)(1) consequently, §835.402(d)(2) is not applicable.	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
<b>§835.403 Air Monitoring</b>			
#91 §835.403(a)(1)	Monitoring of airborne radioactivity shall be performed: (1) Where an individual is likely to receive an exposure of 40 or more DAC-hours in a year; or	<b>Article 555.2 (excerpt)</b> "Monitoring of airborne radioactivity shall [835.403(a)] be performed: a. Where an individual is likely to receive an exposure of 40 or more DAC-hours in a year; or"  Note: For the purposes of this RPP, the requirements of Section §835.403 are met through the workplace air sampling program, which defines criteria for air sampling, including continuous air monitoring, fixed head air sampling, and grab air samples.  Note: "...an individual is likely to receive" recognizes that professional judgment and experience will be used in making decisions in specific circumstances. [DOE G 441.1-1C, Section 3.1., paragraph 5, May 2008.]	Compliant: 10 CFR 835 (2007)
#92 §835.403(a)(2)	(2) As necessary to characterize the airborne radioactivity hazard where respiratory protective devices for protection against airborne radionuclides have been prescribed.	<b>Article 555.2 (excerpt)</b> "Monitoring of airborne radioactivity shall [835.403(a)] be performed: b. As necessary to characterize the airborne radioactivity hazard where respiratory protective devices for protection against airborne radionuclides have been prescribed."	Compliant: 10 CFR 835 (2007)
#93 §835.403(b)	Real-time air monitoring shall be performed as necessary to detect and provide warning of airborne radioactivity concentrations that warrant immediate action to terminate inhalation of airborne radioactive material.	<b>Article 555.3</b> "Real-time air monitoring shall [835.403(b)] be performed as necessary to detect and provide warning of airborne radioactivity concentrations that warrant immediate action to terminate inhalation of airborne radioactive material."	Compliant: 10 CFR 835 (2007)
<b>§835.405 Receipt of Packages Containing Radioactive Material</b>			
#94 §835.405(a)	If packages containing quantities of radioactive material in excess of a Type A quantity (as defined at 10 CFR 71.4) are expected to be received from radioactive material transportation, arrangements shall be made to either: (1) Take possession of the package when the carrier offers it for delivery; or (2) Receive notification as soon as practicable after arrival of the package at the carrier's terminal and to take possession of the package expeditiously after receiving such notification.	<b>Article 423.8 (excerpt)</b> "If packages containing quantities of radioactive material in excess of a Type A quantity (as defined at 10 CFR 71.4) are expected to be received from radioactive material transportation, arrangements shall [835.405(a)] be made to either: a. Take possession of the package when the carrier offers it for delivery; or b. Receive notification as soon as practicable after arrival of the package at the carrier's terminal and to take possession of the package expeditiously after receiving such notification."	Compliant: 10 CFR 835 (2007)
#95 §835.405(b)(1)	Upon receipt from radioactive material transportation, external surfaces of packages known to contain radioactive material shall be monitored if the package: (1) Is labeled with a Radioactive White I, Yellow II, or Yellow III label (as specified at 49 CFR 172.403 and 172.436-440); or	<b>Article 423.9 (excerpt)</b> "Upon receipt from radioactive material transportation, external surfaces of packages known to contain radioactive material shall [835.405(b)] be monitored if the package: a. Is labeled with a Radioactive White I, Yellow II, or Yellow III label (as specified at 49 CFR 172.403 and 172.436-440); or"	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#96 §835.405(b)(2)	(2) Has been transported as low specific activity material (as defined at 10 CFR 71.4) on an exclusive use vehicle (as defined at 10 CFR 71.4); or	<b>Article 423.9 (excerpt)</b> "Upon receipt from radioactive material transportation, external surfaces of packages known to contain radioactive material shall [835.405(b)] be monitored if the package: b. Has been transported as low specific activity material (as defined at 10 CFR 71.4) on an exclusive use vehicle (as defined at 10 CFR 71.4); or "	Compliant: 10 CFR 835 (2007)
#97 §835.405(b)(3)	(3) Has evidence of degradation, such as packages that are crushed, wet, or damaged.	<b>Article 423.9 (excerpt)</b> "Upon receipt from radioactive material transportation, external surfaces of packages known to contain radioactive material shall [835.405(b)] be monitored if the package: c. Has evidence of degradation, such as packages that are crushed, wet, or damaged."	Compliant: 10 CFR 835 (2007)
#98 §835.405(c)(1)	The monitoring required by paragraph (b) of this section shall include: (1) Measurements of removable contamination levels, unless the package contains only special form (as defined at 10 CFR 71.4) or gaseous radioactive material; and	<b>Article 423.10 (excerpt)</b> "The monitoring required by Article 423.9 shall [835.405(c)] include: a. Measurements of removable contamination levels, unless the package contains only special form (as defined at 10 CFR 71.4) or gaseous radioactive material; and"	Compliant: 10 CFR 835 (2007)
#99 §835.405(c)(2)	(2) Measurements of the radiation levels, if the package contains a Type B quantity (as defined at 10 CFR 71.4) of radioactive material.	<b>Article 423.10 (excerpt)</b> "The monitoring required by Article 423.9 of this manual shall [835.405(c)] include: b. Measurements of the radiation levels, if the package contains a Type B quantity (as defined at 10 CFR 71.4) of radioactive material."	Compliant: 10 CFR 835 (2007)
#100 §835.405(d)	The monitoring required by paragraph (b) of this section shall be completed as soon as practicable following receipt of the package, but not later than 8 hours after the beginning of the working day following receipt of the package.	<b>Article 423.11 (excerpt)</b> "The monitoring required by Article 423.9 shall [835.405(d)] be completed as soon as practicable following receipt of the package, but no later than 8 hours after the beginning of the working day following the receipt of the package." Note: A 'working day' is considered the interval of time within each 24 hour period during which the building or area is routinely occupied or available for operations other than emergency activities.	Compliant: 10 CFR 835 (2007)
#101 §835.405(e)	Monitoring pursuant to §835.405(b) is not required for packages transported on a DOE site which have remained under the continuous observation and control of a DOE employee or DOE contractor employee who is knowledgeable of and implements required exposure control measures.	<b>Article 423.12 (excerpt)</b> " The monitoring required by Article 423.9 is not required for packages transported on a DOE site which have remained under the continuous observation and control of a DOE employee or DOE contractor employee who is knowledgeable of and implements required exposure control measures [835.405(e)]."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
<b>Subpart F - Entry Control Program</b>			
<b>§835.501 Radiological Areas</b>			
#102 §835.501(a)	Personnel entry control shall be maintained for each radiological area.	<b>Article 330.1 (excerpt)</b> "Personnel entry control shall [835.501(a)] be maintained for each radiological area." Note: CHPRC considers entry control to include posting, barricades, control devices on entryways, visual and audible alarms, administrative procedures, locked entryways, access control systems, and/or training. The CHPRC entry control programs are used to the degree commensurate with existing and potential radiological hazards within the area.	Compliant: 10 CFR 835 (2007)
#103 §835.501(b)	The degree of control shall be commensurate with existing and potential radiological hazards within the area.	<b>Article 330.2 (excerpt)</b> "The degree of control shall [835.501(b)] be commensurate with existing and potential radiological hazards within the area."	Compliant: 10 CFR 835 (2007)
#104 §835.501(c)	One or more of the following methods shall be used to ensure control: (1) Signs and barricades; (2) Control devices on entrances; (3) Conspicuous visual and/or audible alarms; (4) Locked entrance ways; or (5) Administrative controls.	<b>Article 330.3 (excerpt)</b> 3. "One or more of the following methods shall [835.501(c)] be used to ensure control: a. Signs and barricades; b. Control devices on entrances; c. Conspicuous visual and/or audible alarms; d. Locked entrance ways; or e. Administrative controls.	Compliant: 10 CFR 835 (2007)
#105 §835.501(d).1	Written authorizations shall be required to control entry into and perform work within radiological areas.	<b>Article 321 (excerpt)</b> "Written authorizations shall [835.501(d)] be required to control entry into and perform work within radiological areas." <b>Article 341.1</b> "Radiological work activities shall [835.501(d)] be conducted as specified by the controlling technical work document and Radiological Work Permit."	Compliant: 10 CFR 835 (2007)
#106 §835.501(d).2	These authorizations shall specify radiation protection measures commensurate with the existing and potential hazards.	<b>Article 321 (excerpt)</b> "These authorizations shall [835.501(d)] specify radiation protection measures commensurate with the existing and potential hazards."	Compliant: 10 CFR 835 (2007)
#107 §835.501(e)	No control(s) shall be installed at any radiological area exit that would prevent rapid evacuation of personnel under emergency conditions.	<b>Article 231.7 (excerpt)</b> "These barriers shall [835.501(e)] be set up such that they do not impede the intended use of emergency exits or evacuation routes." <b>Article 330.4</b> No control(s) shall [835.501(e)] be installed at any radiological area exit that would prevent rapid evacuation of personnel under emergency conditions.	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
<b>§835.502 High and Very High Radiation Areas</b>			
#108 §835.502(a)(1)	The following measures shall be implemented for each entry into a high radiation area: (1) The area shall be monitored as necessary during access to determine the exposure rates to which the individuals are exposed; and	<b>Article 334.3.d (excerpt)</b> "The following measures shall [835.502(a)] be implemented for each entry into a High Radiation Area." 1) "The area shall [835.502(a)(1)] be monitored as necessary during access to determine the dose rates to which the individuals are exposed; and" Note: CHPRC implements additional administrative controls (i.e.; ALARA Management Worksheets and enhanced radiological work planning) for work activities performed in High Radiation Areas.	Compliant: 10 CFR 835 (2007)
#109 §835.502(a)(2)	(2) Each individual shall be monitored by a supplemental dosimetry device or other means capable of providing an immediate estimate of the individual's integrated equivalent dose to the whole body during the entry.	<b>Article 334.3.d (excerpt)</b> "Minimum requirements for each entry into High Radiation Areas shall [835.502(a)] include the following:" 2) "Each individual shall [835.502(a)(2)] be monitored by a supplemental dosimetry device or other means capable of providing an immediate estimate of the individual's integrated equivalent dose to the whole body during the entry."	Compliant: 10 CFR 835 (2007)
#110 §835.502(b)	<u>Physical controls.</u> One or more of the following features shall be used for each entrance or access point to a high radiation area where radiation levels exist such that an individual could exceed an equivalent dose to the whole body of 1 rem (0.01 Sv) in any one hour at 30 centimeters from the source or from any surface that the radiation penetrates: (1) A control device that prevents entry to the area when high radiation levels exist or upon entry causes the radiation level to be reduced below that level defining a high radiation area; (2) A device that functions automatically to prevent use or operation of the radiation source or field while individuals are in the area; (3) A control device that energizes a conspicuous visible or audible alarm signal so that the individual entering the high radiation area and the supervisor of the activity are made aware of the entry; (4) Entryways that are locked. During periods when access to the area is required, positive control over each entry is maintained; (5) Continuous direct or electronic surveillance that is capable of preventing unauthorized entry; (6) A control device that will automatically generate audible and visual alarm signals to alert personnel in the area before use or operation of the radiation source and in sufficient time to permit evacuation of the area or activation of a secondary control device that will prevent use or operation of the source.	<b>Appendix 3A.1 (excerpt)</b> One or more of the following features shall [835.502(b)] be used for each entrance or access point to an HRA where radiation levels exist such that an individual could exceed an equivalent dose to the whole body of 1 rem (0.01 Sv) in any one hour at 30 centimeters from the source or from any surface the radiation penetrates. a. A control device that prevents entry to the area when high radiation levels exist or upon entry causes the radiation level to be reduced below that level defining a HRA; b. A device that functions automatically to prevent use or operation of the radiation source or field while individuals are in the area; c. A control device that energizes a conspicuous visible or audible alarm signal so that the individual entering the HRA and the supervisor of the activity are made aware of the entry; d. Entryways that are locked. During periods when access to the area is required, positive control over each entry is maintained; e. Continuous direct or electronic surveillance that is capable of preventing unauthorized entry; f. A control device that will automatically generate audible and visual alarm signals to alert personnel in the area before use or operation of the radiation source and in sufficient time to permit evacuation of the area or activation of a secondary control device that will prevent use or operation of the source.	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#111 §835.502(c)	<u>Very high radiation areas.</u> In addition to the above requirements, additional measures shall be implemented to ensure individuals are not able to gain unauthorized or inadvertent access to very high radiation areas.	<b>Article 334.5 (excerpted)</b> "Minimum requirements for entry into Very High Radiation Areas shall [835.502(c)] include the controls specified in Articles 334.3. Radiological instrumentation/equipment shall [835.502(c)] be used to verify the very high radiation field has been terminated prior to the first entry into a Very High Radiation Area after the source has been deenergized, secured or shielded." <b>Appendix 3A.2</b> In addition to the above requirements, additional measures shall [835.502(c)] be implemented to ensure individuals are not able to gain unauthorized or inadvertent access to Very High Radiation Areas.	Compliant: 10 CFR 835 (2007)
#112 §835.502(d)	No control(s) shall be established in a high or very high radiation area that would prevent rapid evacuation of personnel.	<b>Appendix 3A.3</b> "No control(s) shall [835.502(d)] be established in a High or Very High Radiation Area that would prevent rapid evacuation of personnel."	Compliant: 10 CFR 835 (2007)
<b>Subpart G - Posting and Labeling</b>			
<b>§835.601 General Requirements</b>			
#113 §835.601(a)	Except as otherwise provided in this subpart, postings and labels required by this subpart shall include the standard radiation warning trefoil in black or magenta imposed upon a yellow background.	<b>Article 231.2 (excerpt)</b> "Except as otherwise provided in Articles 231.8 and 232.2, signs shall [835.601(a)] contain the standard radiation symbol colored magenta or black imposed upon a yellow background." <b>Article 412.3 (excerpt)</b> "Except for otherwise provided in Article 412.6, labels shall [835.601(a)] include the standard radiation warning trefoil in black or magenta imposed upon a yellow background. Lettering should be magenta or black. Magenta is the preferred color. Radioactive material labels applied to sealed radioactive sources may be excepted from these color specifications."	Compliant: 10 CFR 835 (2007)*
#114 §835.601(b)	Signs required by this subpart shall be clearly and conspicuously posted and may include radiological protection instructions.	<b>Article 231.3 (excerpt)</b> "Signs shall [835.601(b)] be clearly and conspicuously posted and may include radiological control instructions."	Compliant: 10 CFR 835 (2007)*
#115 §835.601(c).1	The posting and labeling requirements in this subpart may be modified to reflect the special considerations of DOE activities conducted at private residences or businesses.	<b>Article 231.8 (excerpt &amp; modified)</b> "The posting requirements in this Manual may be modified to reflect the special considerations of DOE activities conducted at private residences or businesses [835.601(c)]." <b>Article 412.6 (excerpt and modified)</b> "The labeling requirements in this Manual may be modified to reflect the special considerations of DOE activities conducted at private residences or businesses [835.601(c)]."	Compliant: 10 CFR 835 (2007)*
#116 §835.601(c).2	Such modifications shall provide the same level of protection to individuals as the existing provisions in this subpart.	<b>Article 231.8 (excerpt and modified)</b> "Such modifications shall [835.601(c)] provide the same level of protection to individuals as the existing provisions in this Manual." <b>Article 412.6 (excerpt)</b> "Such modifications shall [835.601(c)] provide the same level of protection to individuals as the existing provisions in this Manual."	Compliant: 10 CFR 835 (2007)*

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
<b>§835.602 Controlled Areas</b>			
#117 §835.602(a).1	Each access point to a controlled area (as defined at §835.2) shall be posted whenever radiological areas or radioactive material areas exist in the area.	<b>Article 232.1 (excerpt)</b> "Each access point to a controlled area shall [835.602(a)] be posted whenever radiological areas or radioactive material areas exist in the area."	Compliant: 10 CFR 835 (2007)
#118 §835.602(a).2	Individuals who enter only controlled areas without entering radiological areas or radioactive material areas are not expected to receive a total effective dose of more than 0.1 rem (0.001 sievert) in a year.	<b>Article 232.1.a (excerpt)</b> "Individuals who enter only RCA s without entering radiological areas or RMAs are not expected to receive a total effective dose of more than 0.1 rem (0.001 sievert) in a year [835.602(a)]."	Compliant: 10 CFR 835 (2007)
#119 §835.602(b)	Signs used for this purpose may be selected by the contractor to avoid conflict with local security requirements.	<b>Article 232.2 (excerpt)</b> "Signs used for Controlled Areas may be selected by CHPRC to avoid conflict with local security requirements."	Compliant: 10 CFR 835 (2007)
<b>§835.603 Radiological Areas and Radioactive Material Areas</b>			
#120 §835.603	Each access point to radiological areas and radioactive material areas (as defined at §835.2) shall be posted with conspicuous signs bearing the wording provided in this section.	<b>Article 231 (excerpt and modified)</b> "Each access point to radiological areas and radioactive material areas (as defined in the Glossary of this manual) shall [835.603] be posted with conspicuous signs bearing the wording provided in this Chapter."	Compliant: 10 CFR 835 (2007)
#121 §835.603(a)	<u>Radiation Area</u> . The words "Caution, Radiation Area" shall be posted at each radiation area.	<b>Article 234.1 (excerpt)</b> "Areas shall [835.603] be posted to alert personnel to the presence of external radiation in accordance with Table 2-3 and Article 231." <b>Table 2-3 (excerpt)</b> Criteria for Posting Radiation Areas "Radiation Area: Dose Rate Criteria - > 0.005 rem/hr and ≤ 0.1 rem/hr at 30 cm: Posting - "CAUTION, RADIATION AREA"."	Compliant: 10 CFR 835 (2007)
#122 §835.603(b)	<u>High Radiation Area</u> . The words "Caution, High Radiation Area" or "Danger, High Radiation Area" shall be posted at each high radiation area.	<b>Article 234.1 (excerpt)</b> "Areas shall [835.603] be posted to alert personnel to the presence of external radiation in accordance with Table 2-3 and Article 231." <b>Table 2-3 (excerpt)</b> Criteria for Posting Radiation Areas "High Radiation Area: Dose Rate Criteria - > 0.1 rem/hr at 30 cm and ≤ 500 rad/hr at 1 m: Posting - "DANGER, HIGH RADIATION AREA"	Compliant: 10 CFR 835 (2007)
#123 §835.603(c)	<u>Very High Radiation Area</u> . The words "Grave Danger, Very High Radiation Area" shall be posted at each very high radiation area.	<b>Article 234.1 (excerpt)</b> "Areas shall [835.603] be posted to alert personnel to the presence of external radiation in accordance with Table 2-3 and Article 231." <b>Table 2-3 (excerpt)</b> Criteria for Posting Radiation Areas "Very High Radiation Areas: Dose Rate Criteria - > 500 rad/hr at 1 m: Posting - "GRAVE DANGER, VERY HIGH RADIATION AREA"."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#124 §835.603(d)	<u>Airborne Radioactivity Area</u> . The words "Caution, Airborne Radioactivity Area" or "Danger, Airborne Radioactivity Area" shall be posted at each airborne radioactivity area.	<b>Article 235.1 (excerpt)</b> "Areas shall [835.603(d-f)] be posted to alert personnel to contamination in accordance with Table 2-4 and Article 231." <b>Article 223.3 (excerpt)</b> "Any area, accessible to individuals, where: 1) the concentration of airborne radioactivity, above natural background, exceeds or is likely to exceed the derived air concentration (DAC) values listed in appendix A or appendix C of 10 CFR 835; or 2) an individual present in the area without respiratory protection could receive an intake exceeding 12 DAC-hours in a week shall [835.2] be posted as an Airborne Radioactivity Area." <b>Table 2-4 (excerpt)</b> Criteria for Posting Contamination, High Contamination and Airborne Radioactivity Areas "Airborne Radioactivity: Criteria - Concentrations 1 DAC or 12 DAC-hours/week: Posting - "CAUTION, AIRBORNE RADIOACTIVITY AREA"."	Compliant: 10 CFR 835 (2007)
#125 §835.603(e)	<u>Contamination Area</u> . The words "Caution, Contamination Area" shall be posted at each contamination area.	<b>Article 222.1 (excerpt)</b> "A contaminated area shall [835.603(e) and 835.603(f)] be posted as specified in Article 235 or controlled in accordance with Article 231.9." <b>Article 235.1 (excerpt)</b> "Areas shall [835.603(d-f)] be posted to alert personnel to contamination in accordance with Table 2-4 and Article 231." <b>Table 2-4 (excerpt)</b> "Criteria for Posting Contamination, High Contamination and Airborne Radioactivity Areas Contamination: Criteria - Removable Contamination levels (dpm/100 cm <sup>2</sup> ) > 1 time but ≤100 times Table 2-2 values: Posting - "CAUTION, CONTAMINATION AREA"."	Compliant: 10 CFR 835 (2007)*
#126 §835.603(f)	<u>High Contamination Area</u> . The words "Caution, High Contamination Area" or "Danger, High Contamination Area" shall be posted at each high contamination area.	<b>Article 235.1 (excerpt)</b> "Areas shall [835.603(d-f)] be posted to alert personnel to contamination in accordance with Table 2-4 and Article 231." <b>Table 2-4 (excerpt)</b> "Criteria for Posting Contamination, High Contamination and Airborne Radioactivity Areas High Contamination: Criteria - Removable contamination levels (dpm/100 cm <sup>2</sup> ) > 100 times Table 2-2 values: Posting - "DANGER, HIGH CONTAMINATION AREA"."	Compliant: 10 CFR 835 (2007)*
#127 §835.603(g)	<u>Radioactive Material Area</u> . The words "Caution, Radioactive Material(s)" shall be posted at each radioactive material area.	<b>Article 236.1 (excerpt)</b> "The words "Caution, Radioactive Material(s)" shall [835.603(g)] be posted at each radioactive material area."	Compliant: 10 CFR 835 (2007)
<b>§835.604 Exceptions to Posting Requirements</b>			
#128 §835.604(a)	Areas may be excepted from the posting requirements of §835.603 for periods of less than 8 continuous hours when placed under continuous observation and control of an individual knowledgeable of, and empowered to implement, required access and exposure control measures.	<b>Article 231.9 (excerpt and modified)</b> "Areas may be excepted from the posting requirements of 10 CFR 835 for periods of less than 8 continuous hours when placed under continuous observation and control of an individual knowledgeable of, and empowered to implement, required access and exposure control measures [835.604(a)]."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#129 §835.604(b)(1)	Areas may be excepted from the radioactive material area posting requirements of §835.603(g) when: (1) Posted in accordance with §835.603(a) through (f); or	<b>Article 236.3 (excerpt)</b> "Areas may be excepted from the radioactive material area posting when [835.604(b)]: a. Posted as a radiological area; or"	Compliant: 10 CFR 835 (2007)
#130 §835.604(b)(2)	(2) Each item or container of radioactive material is labeled in accordance with this subpart such that individuals entering the area are made aware of the hazard; or	<b>Article 236.3 (excerpt and modified)</b> "Areas may be excepted from the radioactive material area posting when [835.604(b)]: b. Each item or container of radioactive material is labeled in accordance with this Manual such that individuals entering the area are made aware of the hazard; or"	Compliant: 10 CFR 835 (2007)
#131 §835.604(b)(3)	(3) The radioactive material of concern consists solely of structures or installed components which have been activated (i.e. such as by being exposed to neutron radiation or particles produced by an accelerator).	<b>Article 236.3 (excerpt)</b> "Areas may be excepted from the radioactive material area posting when [835.604(b)]: c. The radioactive material of concern consists solely of structures or installed components which have been activated (i.e. such as being exposed to neutron radiation or particles produced by an accelerator)."	Compliant: 10 CFR 835 (2007)
#132 §835.604(c)	Areas containing only packages received from radioactive material transportation labeled and in non-degraded condition need not be posted in accordance with §835.603 until the packages are monitored in accordance with §835.405.	<b>Article 231.10 (excerpt)</b> "Areas containing only packages received from radioactive material transportation labeled and in non-degraded condition need not be posted in accordance with Articles 234, 235, and 236 until the packages are monitored in accordance with Article 423 [835.604(c)]."	Compliant: 10 CFR 835 (2007)
<b>§835.605 Labeling Items and Containers</b>			
#133 §835.605.1	Except as provided at §835.606, each item or container of radioactive material shall bear a durable, clearly visible label bearing the standard radiation warning trefoil and the words "Caution, Radioactive Material" or "Danger, Radioactive Material."	<b>Article 412.1 (excerpt)</b> "Except as provided in Articles 411.2 and 412.2, each item or container of radioactive material shall [835.605] bear a durable, clearly visible label bearing the standard radiation warning trefoil and the words "Caution, Radioactive Material" or "Danger, Radioactive Material". <b>Article 431.10 (excerpt)</b> Accountable sealed sources and all other sealed sources having activities exceeding one tenth of the values listed in Appendix 4A, or their storage containers, shall [835.605] be labeled with the radiation symbol and "Caution, Radioactive Material" or "Danger, Radioactive Material".	Compliant: 10 CFR 835 (2007)
#134 §835.605.2	The label shall also provide sufficient information to permit individuals handling, using, or working in the vicinity of the items or containers to take precautions to avoid or control exposures.	<b>Article 412.1 (excerpt)</b> "The label shall [835.605] also provide sufficient information to permit individuals handling, using, or working in the vicinity of the items or containers to take precautions to avoid or control exposures."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
<b>§835.606 Exceptions to Labeling Requirements</b>			
#135 §835.606(a)(1)	Items and containers may be excepted from the radioactive material labeling requirements of §835.605 when: (1) Used, handled, or stored in areas posted and controlled in accordance with this subpart and sufficient information is provided to permit individuals to take precautions to avoid or control exposures; or	<b>Article 411.2 (excerpt)</b> "Items and containers of radioactive material that are used, handled, or stored within Radioactive Material, Radiation, High Radiation, Very High Radiation, Contamination, High Contamination or Airborne Radioactivity Areas do not require specific labeling (so long as sufficient information is provided to permit individuals to take precautions to avoid or control exposures)."	Compliant: 10 CFR 835 (2007)
#136 §835.606(a)(2)	(2) The quantity of radioactive material is less than one tenth of the values specified in appendix E of this part and less than 0.1 Ci; or	<b>Article 412.2 (Modified)</b> "Items and containers may be excepted from the radioactive material labeling requirements of Article 412.1 when [835.606(a)]:" a. The quantity of radioactive material is less than one-tenth of the values specified in appendix 4A and less than 0.1 Ci; or..."	Compliant: 10 CFR 835 (2007)
#137 §835.606(a)(3)	(3) Packaged, labeled, and marked in accordance with the regulations of the Department of Transportation or DOE Orders governing radioactive material transportation; or	<b>Article 412.2 (excerpt)</b> "Items and containers may be excepted from the radioactive material labeling requirements of Article 412.1 when [835.606(a)]:" b. Packaged, labeled, and marked in accordance with the regulations of the Department of Transportation or DOE Orders governing radioactive material transportation; or"	Compliant: 10 CFR 835 (2007)
#138 §835.606(a)(4)	(4) Inaccessible, or accessible only to individuals authorized to handle or use them, or to work in the vicinity; or	<b>Article 412.2 (excerpt)</b> "Items and containers may be excepted from the radioactive material labeling requirements of Article 412.1 when [835.606(a)]:" c. Inaccessible, or accessible only to individuals authorized to handle or use them, or to work in the vicinity; or"	Compliant: 10 CFR 835 (2007)
#139 §835.606(a)(5)	(5) Installed in manufacturing, process, or other equipment, such as reactor components, piping, and tanks; or	<b>Article 412.2 (excerpt)</b> "Items and containers may be excepted from the radioactive material labeling requirements of Article 412.1 when: d. Installed in manufacturing, process, or other equipment, such as reactor components, piping, and tanks, or"	Compliant: 10 CFR 835 (2007)
#140 §835.606(a)(6)	(6) The radioactive material consists solely of nuclear weapons or their components.	<b>Article 412.2 (excerpt)</b> "Items and containers may be excepted from the radioactive material labeling requirements of Article 412.1 when [835.606(a)]:" e. The radioactive material consists solely of nuclear weapons or their components."	Compliant: 10 CFR 835 (2007)
#141 §835.606(b)	Radioactive material labels applied to sealed radioactive sources may be excepted from the color specifications of §835.601(a).	<b>Article 412.3 (excerpt)</b> "Radioactive material labels applied to sealed radioactive sources may be excepted from these color specifications [835.606(b)]."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
<b>Subpart H - Records</b>			
<b>§835.701 General Provisions</b>			
#142 §835.701(a)	Records shall be maintained to document compliance with this part and with radiation protection programs required by §835.101.	<p><b>Article 711.1 (excerpt)</b>                      "Radiological control records shall [835.701(a) and 835.702(c)(1)] be maintained to document compliance with the requirements of 10 CFR 835 and with radiation protection programs required by §835.101."  <b>Article 712.4</b>                      "Where radiological services (for example, dosimetry and laboratory analyses) are purchased, there shall [835.701(a)] be a clear agreement regarding records responsibility during performance of the service. Records of results should reside in the custody of the originating contract organization."</p>	Compliant: 10 CFR 835 (2007)
#143 §835.701(b)	Unless otherwise specified in this subpart, records shall be retained until final disposition is authorized by DOE.	<p><b>Article 771.1 (excerpt and modified)</b>                      "Unless otherwise specified in 10 CFR 835, records shall [835.701(b)] be retained until final disposition is authorized by DOE."</p>	Compliant: 10 CFR 835 (2007)
<b>§835.702 Individual Monitoring Records</b>			
#144 §835.702(a)	Except as authorized by §835.702(b), records shall be maintained to document doses received by all individuals for whom monitoring was conducted and to document doses received during planned special exposures, unplanned doses exceeding the monitoring thresholds of §835.402, and authorized emergency exposures.	<p><b>Article 722.1 (excerpt)</b>                      "Records shall [835.702(a)] be maintained to document doses received by all individuals for whom monitoring was required by Articles 511 and 521 and to document doses received during planned special exposures, unplanned doses exceeding the monitoring thresholds of Articles 511 and 521, and authorized emergency exposures."  <b>Article 722.3 (excerpt)</b>                      "Routine and special records related to radiation doses shall [835.702(a-b)] be retained for each person monitored."  <b>Article 722.10 (excerpt)</b>                      "Authorized emergency exposures and planned special exposures shall [835.702(a), 835.702(c)(2), and 835.1301(b)] be accounted for separately, but maintained with the individual's occupational exposure records."  <b>Article 723.1 (excerpt)</b>                      "The complete records of radiological incidents and occurrences involving personnel dose shall [835.702(a), 835.702(c)(2), and 835.1301(b)] be retained."  <b>Article 731.1 (excerpt)</b>                      "Records of doses, including zero dose, received by all members of the public for whom monitoring was performed shall [835.702(a)] be maintained."</p>	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
<p><b>#145</b>  <b>§835.702(b)</b></p>	<p>Recording of the non-uniform equivalent dose to the skin is not required if the dose is less than 2 percent of the limit specified for the skin at §835.202(a)(4). Recording of internal dose (committed effective dose or committed equivalent dose) is not required for any monitoring result estimated to correspond to an individual receiving less than 0.01 rem (0.1 mSv) committed effective dose. The bioassay or air monitoring result used to make the estimate shall be maintained in accordance with §835.703(b) and the unrecorded internal dose estimated for an individual in a year shall not exceed the applicable monitoring threshold at §835.402(c).</p>	<p><b>Article 722.1.a (excerpt)</b>                      The results of individual external and internal dose monitoring that is performed, but not required by Articles 511 and 521, shall [835.702(b)] be recorded."  <b>Article 722.3 (excerpt)</b>                      "Routine and special records related to radiation doses shall [835.702(a-b)] be retained for each person monitored."  <b>Article 722.11 (excerpt)</b>                      "Recording of the non-uniform equivalent dose to the skin is not required if the dose is less than 2 percent of the limit specified for the skin at Table 2-1 [835.702(b)]."  <b>Article 722.12(excerpt)</b>                      Recording of internal dose (committed effective dose or committed equivalent dose) is not required for any monitoring result estimated to correspond to an individual receiving less than 0.01 rem (0.1 mSv) committed effective dose. The bioassay or air monitoring result used to make the estimate shall be maintained in accordance with § 835.703(b) and the unrecorded internal dose estimated for any individual in a year shall not exceed the applicable monitoring threshold at § 835.402(c).  <b>Table 2-1 (excerpt and modified)</b>                      General Employee: skin and extremities : 50 rem"</p>	<p>Compliant: 10                      CFR 835 (2007)</p>
<p><b>#146</b>  <b>§835.702(c)(1)</b></p>	<p>The records required by this section shall:                      (1) Be sufficient to evaluate compliance with subpart C of this part;</p>	<p><b>Article 711.1 (excerpt)</b>                      "Radiological control records shall [835.701(a) and 835.702(c)(1)] be maintained to document compliance with the requirements of 10 CFR 835,..."  <b>Article 722.2.a (excerpt)</b>                      "Individual monitoring records required by Article 722 shall [835.702(c)]: a. Be sufficient to evaluate compliance with Articles 213, 214, and 215."</p>	<p>Compliant: 10                      CFR 835 (2007)</p>

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
<p>#147 §835.702(c)(2)</p>	<p>(2) Be sufficient to provide dose information necessary to complete reports required by subpart I of this part;</p>	<p><b>Article 722.2.b (excerpt and modified)</b> "Individual monitoring records required by Article 722 shall [835.702(c)]: b. Be sufficient to provide dose information necessary to complete reports required by Article 781..." <b>Article 722.9</b> "Records of lifetime occupational dose, including cumulative total effective dose equivalent since January 1, 1989, shall [835.702(c)(2) and 835.702(c)(5)] be maintained with the individual's occupational exposure records." <b>Article 722.10</b> "Authorized emergency exposures and planned special exposures shall [835.702(a), 835.702(c)(2), and 835.1301(b)] be accounted for separately, but maintained with the individual's occupational exposure records." <b>Article 723.1</b> "The complete records of radiological incidents and occurrences involving personnel dose shall [835.702(a), 835.702(c)(2), and 835.1301(b)] be retained." <b>Article 731.1</b> "Records of doses, including zero dose, received by all members of the public for whom monitoring was performed shall [835.702(a)] be maintained. These records shall [835.702(c)(2)] be sufficient to evaluate compliance with all applicable dose limits and monitoring and reporting requirements."</p>	<p>Compliant: 10 CFR 835 (2007)</p>
<p>#148 §835.702(c)(3)(i)</p>	<p>(3) Include the results of monitoring used to assess the following quantities for external dose received during the year: (i) The effective dose from external sources of radiation (equivalent dose to the whole body may be used as effective dose for external exposure);</p>	<p><b>Article 722.4.b (excerpt)</b> "External dose records shall [835.702(c)(3)] include the following: Quantities for external dose received during the year * The effective dose from external sources of radiation (equivalent dose to the whole body may be used as effective dose for external exposure)"</p>	<p>Compliant: 10 CFR 835 (2007)</p>
<p>#149 §835.702(c)(3)(ii)</p>	<p>(ii) The equivalent dose to the lens of the eye;</p>	<p><b>Article 512.2 (excerpt and modified)</b> "Personnel exposures to the lens of the eye shall [835.702(c)(3)] be reported separately when monitored." <b>Article 722.4.b (excerpt)</b> "External dose records shall [835.702(c)(3)] include the following: Quantities for external dose received during the year; * The equivalent dose to the lens of the eye;..."</p>	<p>Compliant: 10 CFR 835 (2007)</p>
<p>#150 §835.702(c)(3)(iii)</p>	<p>(iii) The equivalent dose to the skin; and</p>	<p><b>Article 512.2 (excerpt and modified)</b> "Personnel exposures to the skin shall [835.702(c)(3)] be reported separately when monitored." <b>Article 722.4.b (excerpt)</b> "External dose records shall include the following: Quantities for external dose received during the year [835.703(c)(3)]: * The equivalent dose to the skin; and..."</p>	<p>Compliant: 10 CFR 835 (2007)</p>

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#151 §835.702 (c)(3)(iv)	(iv) The equivalent dose to the extremities.	<b>Article 512.2 (excerpt and modified)</b> "Personnel exposures to the extremities shall [835.702(c)(3)] be reported separately when monitored." <b>Article 722.4.b (excerpt)</b> "External dose records shall include the following: Quantities for external dose received during the year [835.703(c)(3)]:: * The equivalent dose to the extremities..."	Compliant: 10 CFR 835 (2007)
#152 §835.702 (c)(4)(i)	(4) Include the following information for internal dose resulting from intakes received during the year: (i) Committed effective dose;	<b>Article 722.5 .b (excerpt)</b> "Internal dose records shall [835.702(c)(4)] include the following: Information for internal dose resulting from intakes received during the year: * Committed effective dose;..."	Compliant: 10 CFR 835 (2007)
#153 §835.702 (c)(4)(ii)	(ii) Committed equivalent dose to any organ or tissue of concern; and	<b>Article 722.5 .b (excerpt)</b> "Internal dose records shall [835.702(c)(4)(ii)] include the following: Information for internal dose resulting from intakes received during the year: * Committed equivalent dose to any organ or tissue of concern;..."	Compliant: 10 CFR 835 (2007)
#154 §835.702 (c)(4)(iii)	(iii) Identity of radionuclides.	<b>Article 722.5.b (excerpt)</b> "Internal dose records shall [835.702(c)(4)] include the following: Information for internal dose resulting from intakes received during the year: ▪ Identity of radionuclides."	Compliant: 10 CFR 835 (2007)
#155 §835.702 (c)(5)(i)	(5) Include the following quantities for the summation of the external and internal dose: (i) Total effective dose in a year;	<b>Article 722.7.a (excerpt)</b> "Include the following quantities for the summation of the external and internal dose: a. Total effective dose in a year;..."	Compliant: 10 CFR 835 (2007)
#156 §835.702 (c)(5)(ii)	(ii) For any organ or tissue assigned an internal dose during the year, the sum of the equivalent dose to the whole body from external exposures and the committed equivalent dose to that organ or tissue; and	<b>Article 722.7.b (excerpt)</b> "Include the following quantities for the summation of the external and internal dose: b. For any organ or tissue assigned an internal dose during the year, the sum of the equivalent dose to the whole body from external exposures and the committed equivalent dose to that organ or tissue; and..."	Compliant: 10 CFR 835 (2007)
#157 §835.702 (c)(5)(iii)	(iii) Cumulative total effective dose.	<b>Article 722.8 (excerpt)</b> "The equivalent dose to the embryo/fetus of a declared pregnant worker shall [835.702(c)(6)] be maintained with the occupational exposure records for that worker."	Compliant: 10 CFR 835 (2007)
#158 §835.702(c)(6)	(6) Include the dose equivalent to the embryo/fetus of a declared pregnant worker.	<b>Article 722.8 (excerpt)</b> "The dose equivalent to the embryo/fetus of a declared pregnant worker shall [835.702(c)(6)] be maintained with the occupational exposure records for that worker."	Compliant: 10 CFR 835 (2007)

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#159 §835.702(d).1	Documentation of all occupational doses received during the current year, except for doses resulting from planned special exposures conducted in compliance with §835.204 and emergency exposures authorized in accordance with §835.1302(d), shall be obtained to demonstrate compliance with §835.202(a).	<b>Article 722.1.c (excerpt and modified)</b> "Documentation of all occupational doses received during the current year, except for doses resulting from planned special exposures conducted in compliance with Article 213.3 and emergency exposures authorized in accordance with Article 213.4, shall [835.702(d)] be obtained to demonstrate compliance with dose limits in Table 2-1 for general employees."	Compliant: 10 CFR 835 (2007)
#160 §835.702(d).2	If complete records documenting previous occupational dose during the year cannot be obtained, a written estimate signed by the individual may be accepted to demonstrate compliance.	<b>Article 722.1.c (excerpt and modified)</b> "If complete records documenting previous occupational dose during the year cannot be obtained, a written estimate signed by the individual may be accepted to demonstrate compliance [835.702(d)]."	Compliant: 10 CFR 835 (2007)
#161 §835.702(e)	For radiological workers whose occupational dose is monitored in accordance with §835.402, reasonable efforts shall be made to obtain complete records of prior years occupational internal and external doses.	<b>Article 721.1 (excerpt)</b> "For radiological workers whose occupational dose is monitored in accordance with Articles 511 and 521, reasonable efforts shall [835.702(e)] be made to obtain complete records of prior years occupational internal and external doses." Note: CHPRC will apply the guidance identified in DOE G 441.1-1C of May 2008, section 13.2.0.3 paragraph 1, to identify "reasonable efforts shall be made". At least 3 attempts will be made to obtain exposure information.	Compliant: 10 CFR 835 (2007)
#162 §835.702(f)	The records specified in this section that are identified with a specific individual shall be readily available to that individual.	<b>Article 722.2.c (excerpt)</b> "Radiation dose records shall [835.702(f)] contain information sufficient to identify each person, including social security, employee number, or other unique identification number." <b>Article 781.5 (excerpt)</b> "The records specified in Articles 721 and 722 that are identified with a specific individual shall [835.702(f)] be readily available to that individual."	Compliant: 10 CFR 835 (2007)
#163 §835.702(g)	Data necessary to allow future verification or reassessment of the recorded doses shall be recorded.	<b>Article 722.3 (excerpt)</b> "Procedures, data, and supporting information necessary for future verification or reassessment of the recorded doses shall [835.702(g); 835.704(e)] be recorded."	Compliant: 10 CFR 835 (2007)
#164 §835.702(h)	All records required by this section shall be transferred to the DOE upon cessation of activities at the site that could cause exposure to individuals.	<b>Article 771.1 (excerpt)</b> "All individual monitoring records required by Articles 721, 722, and 731.1, shall [835.702(h)] be transferred to DOE upon cessation of activities that could cause exposure to individuals."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
<b>§835.703 Other Monitoring Records</b>			
#165 §835.703(a)	The following information shall be documented and maintained: Results of monitoring for radiation and radioactive material as required by subparts E and L of this part, except for monitoring required by §835.1102(d);	<p><b>Article 751.1 (excerpt)</b>                      Results of monitoring for radiation and radioactive material as required by Articles 421 and 423, and Chapter 5, Part 5, shall [835.703(a)] be documented and maintained.</p> <p><b>Article 752.1 (excerpt)</b>                      "In addition to the elements provided in Article 751, records of radiation surveys shall [835.703(a)] include, at a minimum, the following information:                      a. Instrument model and serial number                      b. Results of the measurements of area dose rates"</p> <p><b>Article 753.1 (excerpt)</b>                      "In addition to the elements provided in Article 751, records of airborne radioactivity shall [835.703(a)] include, at a minimum, the following information:                      a. Model and serial numbers of the sampler and laboratory counting instrument when available or unique identifier of each sampler and instrument.                      b. Location of fixed air samplers                      c. Location of portable air samplers used for a survey                      d. Air concentrations in general airborne areas and breathing zones                      e. Supporting parameters, including collection efficiency, flow rate, duration of sampling, correction factors and filter medium."</p> <p><b>Article 754.1 (excerpt)</b>                      "In addition to the elements required by Article 751, records of contamination surveys shall [835.703(a)] include, at a minimum, the following information:                      a. Model and serial number of counting equipment.                      b. Contamination levels (using appropriate units) and appropriate supporting parameters including counting efficiency, counting time, correction factors, type of radiation and whether the contamination was fixed or removable.                      c. Location of areas found to contain hot particles or high concentrations of localized contamination.                      d. Follow-up survey results for decontamination processes cross-referenced to the original survey."</p>	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
<p>#166 §835.703(b)</p>	<p>Results of monitoring used to determine individual occupational dose from external and internal sources;</p>	<p><b>Article 722.4.a</b> "External dose records shall include the following: Results of monitoring used to determine individual occupational dose from external sources shall [835.703(b)] be documented and maintained and include applicable extremity, skin, eye and whole body dose results measured with personnel dosimeters, including all multiple dosimeter badging results and area monitoring records; " <b>Article 722.4.c (excerpt)</b> "External dose records shall include the following: Evaluations resulting from anomalous dose results such as unexpected high or low doses;" <b>Article 722.4.d (excerpt)</b> "External dose records shall include the following: Dose reconstructions from lost or damaged dosimeters, or for unbadged workers; and" <b>Article 722.4.e (excerpt)</b> "External dose records shall include the following: "Evaluations of non-uniform radiation doses." <b>Article 722.5.a (excerpt)</b> "Internal dose records shall [835.702(c)(4)] include the following: Results of monitoring used to determine individual occupational dose from internal sources shall [835.703(b)] be documented and maintained." <b>Article 723.3 (excerpt)</b> "Area monitoring dosimetry results used for dose reconstruction shall [835.703(b)] be maintained."</p>	<p>Compliant: 10 CFR 835 (2007)</p>

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#167 §835.703(c)	Results of monitoring for the release and control of material and equipment as required by §835.1101; and	<b>Article 421.5 (excerpt)</b> "The results of monitoring for the release and control of material and equipment shall [835.703(c)] be documented and maintained;..."	Compliant: 10 CFR 835 (2007)
#168 §835.703(d)	Results of maintenance and calibration performed on instruments and equipment as required by §835.401(b).	<b>Article 563.1 (excerpt)</b> "Calibration facilities shall [835.703(d)] take the following actions: Generate records of calibration, functional tests and maintenance in accordance with the referenced standards." <b>Article 761.1 (excerpt and modified)</b> "Results of calibrations performed on instruments and equipment used for monitoring individuals, materials, and areas as required by this Manual shall [835.703(d)] be documented and maintained..." <b>Article 761.3 (excerpt)</b> "Documentation of instrument operational checks shall [835.703(d)] be maintained for a period not less than the calibration period of the instrument or equipment." <b>Article 761.4 (excerpt)</b> "Maintenance histories, including the nature of any defects and corrective actions taken, and calibration results for each instrument or equipment shall [835.703(d)] be created and retained." <b>Article 762 (excerpt)</b> "Records of additional tests and checks of instrumentation or equipment used in conjunction with a suspected overexposure, questionable indication or unusual occurrence shall be retained. In addition, records of special instrument calibrations and modifications made in accordance with Article 562.6 shall [835.703(d)] be retained." <b>Note:</b> Calibration records are only maintained for 835.703(d) compliance when instruments are used for occupational radiation protection per 10 CFR 835	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
<b>§835.704 Administrative Records</b>			
<p>#169 §835.704(a)</p>	<p>Training records shall be maintained, as necessary, to demonstrate compliance with §835.901.</p>	<p><b>Article 612.3 (excerpt)</b>                      "Documentation of previous training shall [835.704] include the individual's name, date of training, topics covered, and name of the certifying official."  <b>Article 724.1, 2, 3, 5, 6 (3-6 are excerpts)</b>                      1. "Records of training and qualification in radiological control shall [835.704(a)] be maintained to demonstrate that a person received appropriate information to perform the work assignment in a safe manner. Qualification standard records shall [835.704(a)] be retained for on-the-job and practical factor training as well as for formal classroom training.                      2. Personnel training records shall [835.704(a)] be controlled and retained. At a minimum, these records shall include the following:                      a. Course title                      b. Attendance sheets with instructor's name                      c. Employee's name, identification number, and signature                      d. Date of training                      e. Identification of the examination or evaluation form, including sufficient data to identify which test each person completed                      f. Verification document or record confirming satisfaction of the training requirement                      g. Documentation related to exceptions for training requirements and extensions of qualification                      h. Quizzes, tests, responses and acknowledgements of training, with the date and signature of the person trained                      i. Special instructions to individuals concerning prenatal radiation dose, acknowledged by the individual's signature."                      3. Records shall [835.704(a)] be retained for the following types of radiation safety training:  <ul style="list-style-type: none"> <li>▪ General employee radiological training</li> <li>▪ Radiological worker training</li> <li>• Periodic retraining</li> <li>• Training of radiological control technicians</li> <li>• Members of the public training</li> <li>• Instructor training for those providing radiation safety training</li> <li>• Training of other radiological control personnel</li> <li>• Training of RGD operators</li> </ul> </p>	<p>Compliant: 10 CFR 835 (2007)</p>

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#169 §835.704(a) (Continued)	Training records shall be maintained, as necessary, to demonstrate compliance with §835.901. <b>(Continued)</b>	5. The following instructional material shall [835.704(a)] be maintained: a. Course name, with revision and approval date b. Instructor's manuals, course content, or lesson plans containing topical outlines. c. Video and audio instructional materials including the dates and lessons for which they were used. d. Handouts or other materials retained with the master copy of the course e. Job-specific training documents, such as instrument use, radiological procedures, Radiological Work Permit special training requirements, pre-job briefings and mock-up training. 6. Documentation of training and qualification received at another DOE location need not be duplicated."	
#170 §835.704(b)	Actions taken to maintain occupational exposures as low as reasonably achievable, including the actions required for this purpose by §835.101, as well as facility design and control actions required by §§835.1001, 835.1002 and 835.1003, shall be documented.	<b>Article 742 (excerpt)</b> "Actions taken to maintain occupational exposures as low as reasonably achievable, including actions required for this purpose in the radiation protection program (RPP), as well as facility design and control actions required by Articles 125 and 311, shall [835.704(b)] be documented." Note: "Actions taken to maintain..." means the seven elements of an occupational ALARA program, as specified in the Radiation Protection Programs Guide," DOE G 441.1-1C, Section 4.2.0, May 2008.	Compliant: 10 CFR 835 (2007)
#171 §835.704(c)	Records shall be maintained to document the results of internal audits and other reviews of program content and implementation.	<b>Article 743 (excerpt)</b> "Records shall [835.704(c)] be maintained to document the results of internal audits and other reviews of radiation protection program content and implementation."	Compliant: 10 CFR 835 (2007)
#172 §835.704(d)	Written declarations of pregnancy, including the estimated date of conception, and revocations of declarations of pregnancy shall be maintained.	<b>Article 215.1 (excerpt)</b> "After a female worker voluntarily notifies her employer in writing that she is pregnant, for the purpose of fetal/embryo dose protection, she is considered a declared pregnant worker." <b>Article 215.3 (excerpt)</b> "This declaration may be revoked, in writing, at any time by the declared pregnant worker." <b>Article 723.2 (excerpt)</b> "Written declarations of pregnancy, including the estimated date of conception, and revocations of declarations of pregnancy shall [835.704(d)] be maintained."	Compliant: 10 CFR 835 (2007)
#173 §835.704(e)	Changes in equipment, techniques, and procedures used for monitoring shall be documented.	<b>Article 712.5</b> "Changes in equipment, techniques, and procedures used for monitoring shall [835.704(e)] be documented."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
<b>#174</b> <b>§835.704(f)</b>	Records shall be maintained as necessary to demonstrate compliance with the requirements of §§835.1201 and 835.1202 for sealed radioactive source control, inventory, and source leak tests.	<b>Article 755.1 (excerpt)</b> "Records shall [835.704(f)] be maintained as necessary to demonstrate compliance with the requirements of Article 431 for sealed radioactive source control, inventory, and source leak tests." <b>Article 755.2</b> "In addition to the elements provided in Article 751, records of sealed radioactive source leak tests shall [835.704(f); 835.1201] include, at a minimum, the following information: a. Model and serial number of counting equipment b. Contamination levels (using appropriate units) and appropriate supporting parameters including counting efficiency, counting time, correction factors, and type of radiation c. Corrective actions for leaking sources." <b>Article 755.3</b> "Records of sealed radioactive source inventories shall [835.704(f); 835.1201] include, at a minimum, the following information: a. The physical location of each accountable sealed radioactive source b. Verification of the presence and adequacy of associated postings and labels c. Verification of the adequacy of storage locations, containers, and devices."	Compliant: 10 CFR 835 (2007)
<b>Subpart I - Reports to Individuals</b>			
<b>§835.801 Reports to Individuals</b>			
<b>#175</b> <b>§835.801(a).1</b>	Radiation exposure data for individuals monitored in accordance with §835.402 shall be reported as specified in this section.	<b>Article 781.1</b> "The information shall [835.801(a)] include the data required under Article 722.2, 722.4.e, 722.5.e, 722.7, and 722.8"	Compliant: 10 CFR 835 (2007)
<b>#176</b> <b>§835.801(a).2</b>	The information shall include the data required under §835.702(c).	<b>Article 781.1</b> "The information shall [835.801(a)] include the data required under Article 722.2, 722.4.e, 722.5.e, 722.7, and 722.8"	Compliant: 10 CFR 835 (2007)
<b>#177</b> <b>§835.801(a).3</b>	Each notification and report shall be in writing and include: the DOE site or facility name, the name of the individual, and the individual's social security number, employee number, or other unique identification number.	<b>Article 781.1 (excerpt)</b> "Each notification and report shall [835.801(a)] be in writing and include: the DOE site or facility name, the name of the individual, and the individual's social security number, employee number, or other unique identification number."	Compliant: 10 CFR 835 (2007)
<b>#178</b> <b>§835.801(b).1</b>	Upon the request from an individual terminating employment, records of exposure shall be provided to that individual as soon as the data are available, but not later than 90 days after termination.	<b>Article 781.2 (excerpt)</b> "Upon the request from an individual terminating employment, records of exposure shall [835.801(b)] be provided to that individual as soon as the data are available, but not later than 90 days after termination."	Compliant: 10 CFR 835 (2007)
<b>#179</b> <b>§835.801(b).2</b>	A written estimate of the radiation dose received by that employee based on available information shall be provided at the time of termination, if requested.	<b>Article 781.3 (excerpt)</b> "A written estimate of the radiation dose received by that employee based on available information shall [835.801(b)] be provided at the time of termination, if requested."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#180 §835.801(c)	Each DOE- or DOE-contractor-operated site or facility shall, on an annual basis, provide a radiation dose report to each individual monitored during the year at that site or facility in accordance with §835.402.	<b>Article 781.4</b> "Each DOE- or DOE-contractor-operated site or facility shall [835.801(c)], on an annual basis, provide a radiation dose report to each individual monitored during the year at that site or facility in accordance with Articles 511 and 521."	Compliant: 10 CFR 835 (2007)
#181 §835.801(d)	Detailed information concerning any individual's exposure shall be made available to the individual upon request of that individual, consistent with the provisions of the Privacy Act (5 U.S.C. 552a).	<b>Article 781.5 (excerpt)</b> "Detailed information concerning any individual's exposure shall [835.801(d)] be made available to the individual upon request of that individual, consistent with the provisions of the Privacy Act (5 U.S.C. 552a)."	Compliant: 10 CFR 835 (2007)
#182 §835.801(e).1	When a DOE contractor is required to report to the Department, pursuant to Departmental requirements for occurrence reporting and processing, any exposure of an individual to radiation and/or radioactive material, or planned special exposure in accordance with §835.204(e), the contractor shall also provide that individual with a report on his or her exposure data included therein.	<b>Article 781.6 (excerpt)</b> "When a DOE contractor is required to report to the Department, pursuant to Department requirements for occurrence reporting and processing, any exposure of an individual to radiation and/or radioactive material, or planned special exposure in accordance with Article 213.3, the contractor shall [835.801(e)] also provide that individual with a report on his or her exposure data included therein." Note: "Departmental requirements" means DOE M 231.1-2.	Compliant: 10 CFR 835 (2007)
#183 §835.801(e).2	Such report shall be transmitted at a time not later than the transmittal to the Department.	<b>Article 781.6 (excerpt)</b> "Such report shall [835.801(e)] be transmitted at a time not later than the transmittal to the Department."	Compliant: 10 CFR 835 (2007)
<b>Subpart J - Radiation Safety Training</b>			
<b>§835.901 Radiation Safety Training</b>			
#184 §835.901(a)	Each individual shall complete radiation safety training on the topics established at §835.901(c) commensurate with the hazards in the area and the required controls:	<b>Article 613.4 (modified)</b> "General Employee Radiological Training: Each individual shall [835.901(a)] complete radiation safety training on the topics established in Article 613.1 commensurate with the hazards in the area and the required controls:" <b>Article 621.1</b> "Individuals shall [835.901(a)] complete General Employee Radiological Training in accordance with requirements of Article 613.4." <b>Article 621.2</b> "Individuals who maintain qualifications as Radiological Worker I, Radiological Worker II, or Radiological Control Technician, satisfy the requirements for GERT [835.901(a)]." <b>Article 622.1 (excerpt)</b> "Members of the public shall [835.901(a)] receive radiation safety training prior to being permitted unescorted access to Controlled Areas. a. This training shall [835.901(c)] address the radiation safety topics in Article 613.1 to the extent appropriate for the degree of exposure to radiological hazards that may be encountered."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#185 §835.901(a)(1)	(1) Before being permitted unescorted access to controlled areas; and	<b>Article 331.1 (excerpt)</b> "Successful completion of General Employee Radiological Training is required for unescorted entry into Controlled Areas." <b>Article 613.4.a (excerpt)</b> "General Employee Radiological Training: Each individual shall [835.901(a)] complete radiation safety training on the topics established in Article 613.1 commensurate with the hazards in the area and the required controls: a. Before being permitted unescorted access to controlled areas; and"	Compliant: 10 CFR 835 (2007)
#186 §835.901(a)(2)	(2) Before receiving occupational dose during access to controlled areas at a DOE site or facility.	<b>Article 613.4.b (excerpt)</b> "General Employee Radiological Training: Each individual shall [835.901(a)] complete radiation safety training on the topics established in Article 613.1 commensurate with the hazards in the area and the required controls: b. Before receiving occupational dose during access to controlled areas at a DOE site or facility."	Compliant: 10 CFR 835 (2007)
#187 §835.901(b)	Each individual shall demonstrate knowledge of the radiation safety training topics established at §835.901(c), commensurate with the hazards in the area and required controls, by successful completion of an examination and performance demonstrations:	<b>Article 613.6 (excerpt)</b> "Each individual shall [835.901(b)] demonstrate knowledge of the radiation safety training topics established in Article 613.1, commensurate with the hazards in the area and required controls, by successful completion of an examination and performance demonstrations." <b>Article 613.10 (excerpt)</b> "Examinations for Radiological Worker I and II training and Radiological Control Technician qualification shall [835.901(b)] be used to demonstrate satisfactory completion of theoretical and classroom material."	Compliant: 10 CFR 835 (2007)
#188 §835.901(b)(1)	(1) Before being permitted unescorted access to radiological areas; and	<b>Article 613.6.a (excerpt)</b> "a. Before being permitted unescorted access to radiological areas; and"	Compliant: 10 CFR 835 (2007)
#189 §835.901(b)(2)	(2) Before performing unescorted assignments as a radiological worker.	<b>Article 613.6.b (excerpt)</b> "b. Before performing unescorted assignments as a radiological worker."	Compliant: 10 CFR 835 (2007)
#190 §835.901(c)	Radiation safety training shall include the following topics, to the extent appropriate to each individual's prior training, work assignments, and degree of exposure to potential radiological hazards:	<b>Article 613.1 (excerpt)</b> "Radiation safety training shall [835.901(c)] include the following topics, to the extent appropriate to each individual's prior training, work assignments, and degree of exposure to potential radiological hazards:"  Note: CHPRC will apply the guidance identified in DOE G 441.1-1C of May 2008, section 14.2, towards the implementation of CHPRC Radiation Protection Program procedures and training. Application of this approach applies to requirements 190 through 196.	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#191 §835.901(c)(1)	(1) Risks of exposure to radiation and radioactive materials, including prenatal radiation exposure;	<b>Article 613.1.a (excerpt)</b> "Radiation safety training shall [835.901(c)] include the following topics, to the extent appropriate to each individual's prior training, work assignments, and degree of exposure to potential radiological hazards:" a. Risks of exposure to radiation and radioactive materials, including prenatal radiation exposure;..."	Compliant: 10 CFR 835 (2007)
#192 §835.901(c)(2)	(2) Basic radiological fundamentals and radiation protection concepts;	<b>Article 613.1.b (excerpt)</b> "Radiation safety training shall [835.901(c)] include the following topics, to the extent appropriate to each individual's prior training, work assignments, and degree of exposure to potential radiological hazards:" b. Basic radiological fundamentals and radiation protection concepts;..."	Compliant: 10 CFR 835 (2007)
#193 §835.901(c)(3)	(3) Physical design features, administrative controls, limits, policies, procedures, alarms, and other measures implemented at the facility to manage doses and maintain doses ALARA, including both routine and emergency actions;	<b>Article 613.1.c (excerpt)</b> "Radiation safety training shall [835.901(c)] include the following topics, to the extent appropriate to each individual's prior training, work assignments, and degree of exposure to potential radiological hazards:" c. Physical design features, administrative controls, limits, policies, procedures, alarms, and other measures implemented at the facility to manage doses and maintain doses ALARA, including both routine and emergency actions;..."	Compliant: 10 CFR 835 (2007)
#194 §835.901(c)(4)	(4) Individual rights and responsibilities as related to implementation of the facility radiation protection program;	<b>Article 613.1.d (excerpt)</b> "Radiation safety training shall [835.901(c)] include the following topics, to the extent appropriate to each individual's prior training, work assignments, and degree of exposure to potential radiological hazards:" d. Individual rights and responsibilities as related to implementation of the facility radiation protection program;..."	Compliant: 10 CFR 835 (2007)
#195 §835.901(c)(5)	(5) Individual responsibilities for implementing ALARA measures required by §835.101; and	<b>Article 613.1.e (excerpt)</b> "Radiation safety training shall [835.901(c)] include the following topics, to the extent appropriate to each individual's prior training, work assignments, and degree of exposure to potential radiological hazards:" e. Individual responsibilities for implementing ALARA measures; and..."	Compliant: 10 CFR 835 (2007)
#196 §835.901(c)(6)	(6) Individual exposure reports that may be requested in accordance with §835.801.	<b>Article 613.1.f (excerpt)</b> "Radiation safety training shall [835.901(c)] include the following topics, to the extent appropriate to each individual's prior training, work assignments, and degree of exposure to potential radiological hazards:" f. Individual exposure reports that may be requested in accordance with Article 781.1 - 781.6."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#197 §835.901(d)(1)	When an escort is used in lieu of training in accordance with paragraph (a) or (b) of this section, the escort shall: (1) Have completed radiation safety training, examinations, and performance demonstrations required for entry to the area and performance of the work; and	<b>Article 635.1 (excerpt)</b> "When an escort is used in lieu of training in accordance with Article 613.4 and 613.6, the escort shall [835.901(d)]: a. Have completed radiation safety training, examinations, and performance demonstrations required for entry to the area and performance of the work; and..."	Compliant: 10 CFR 835 (2007)
#198 §835.901(d)(2)	(2) Ensure that all escorted individuals comply with the documented radiation protection program.	<b>Article 635.1 (excerpt)</b> "When an escort is used in lieu of training in accordance with Article 613.4 and 613.6, the escort shall [835.901(d)]: b. Ensure that all escorted individuals comply with the documented radiation protection program."	Compliant: 10 CFR 835 (2007)
#199 §835.901(e).1	Radiation safety training shall be provided to individuals when there is a significant change to radiation protection policies and procedures that may affect the individual and at intervals not to exceed 24 months.	<b>Article 613.8 (excerpt)</b> "Radiation safety training shall [835.901(e)] be provided to individuals when there is a significant change to radiation protection policies and procedures that may affect the individual and at intervals not to exceed 24 months." Note: CHPRC will apply the guidance identified in DOE G 441.1-1C of May 2008, section 14.7 paragraphs 2, 3, and 4 towards the implementation of this requirement. Application of this approach applies to requirements 199 - 200.	Compliant: 10 CFR 835 (2007)
#200 §835.901(e).2	Such training provided for individuals subject to the requirements of §835.901(b)(1) and (b)(2) shall include successful completion of an examination.	<b>Article 613.8 (excerpt)</b> "Such training provided for individuals subject to the requirements of Articles 613.6.a and 613.6.b shall [835.901(e)] include successful completion of an examination."	Compliant: 10 CFR 835 (2007)
<b>Subpart K - Design and Control</b>			
<b>§835.1001 Design and Control</b>			
#201 §835.1001(a).1	Measures shall be taken to maintain radiation exposure in controlled areas ALARA through engineered and administrative controls.	<b>Article 311.1 (excerpt)</b> "Measures shall [835.1001(a)] be taken to maintain radiation exposure in controlled areas ALARA through engineered and administrative controls."	Compliant: 10 CFR 835 (2007)
#202 §835.1001(a).2	The primary methods used shall be physical design features (e.g., confinement, ventilation, remote handling, and shielding).	<b>Article 311.1.a (excerpt and modified)</b> "The primary methods used shall [835.1001(a)] be physical design features (e.g. confinement, ventilation, remote handling, and shielding)."	Compliant: 10 CFR 835 (2007)
#203 §835.1001(a).3	Administrative controls shall be employed only as supplemental methods to control radiation exposure.	<b>Article 311.1.b (modified)</b> "Administrative controls shall [835.1001(a)] be employed only as supplemental methods to control radiation exposure."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#204 §835.1001(b)	For specific activities where use of engineered controls is demonstrated to be impractical, administrative controls shall be used to maintain radiation exposures ALARA.	<p><b>Article 313.1.b (excerpt)</b>                      "The minimization and control of internal exposure should be conducted in accordance with the following hierarchy of controls:                      b. For specific activities where use of engineered controls is demonstrated to be impractical, administrative controls shall [835.1001(b)] be used to maintain radiation exposures ALARA."  <b>Article 313.2 (excerpt)</b>                      "External Exposures - for specific activities where use of engineered controls is demonstrated to be impractical, administrative controls shall [835.1001(b)] be used to maintain radiation exposures ALARA."</p>	Compliant: 10 CFR 835 (2007)
<b>§835.1002 Facility and Design Modifications</b>			
#205 §835.1002(a)	During the design of new facilities or modification of existing facilities, the following objectives shall be adopted: Optimization methods shall be used to assure that occupational exposure is maintained ALARA in developing and justifying facility design and physical controls.	<p><b>Article 125.1.a (excerpt)</b>                      "The following radiological control design criteria are provided for new facilities and modification to existing facilities:                      a. Optimization methods shall [835.1002(a)] be used to assure that occupational exposure is maintained ALARA in developing and justifying facility design and physical controls."</p>	Compliant: 10 CFR 835 (2007)
#206 §835.1002(b).1	The design objective for controlling personnel exposure from external sources of radiation in areas of continuous occupational occupancy (2000 hours per year) shall be to maintain exposure levels below an average of 0.5 millirem (5 µSv) per hour	<p><b>Article 125.1.b (excerpt and modified)</b>                      "The following radiological control design criteria are provided for new facilities and modification to existing facilities:                      The design objective for controlling personnel exposure from external sources of radiation in areas of continuous occupational occupancy (2000 hours per year) shall [835.1002(b)] be to maintain exposure levels below an average of 0.5 millirem (5 µSv) per hour..."</p>	Compliant: 10 CFR 835 (2007)
#207 §835.1002(b).2	and as far below this average as is reasonably achievable.	<p><b>Article 125.1.b (excerpt and modified)</b>                      "The following radiological control design criteria are provided for new facilities and modification to existing facilities:                      ...and as far below this average as is reasonably achievable."</p>	Compliant: 10 CFR 835 (2007)
#208 §835.1002(b).3	The design objectives for exposure rates for potential exposure to a radiological worker where occupancy differs from the above shall be ALARA and shall not exceed 20 percent of the applicable standards in §835.202.	<p><b>Article 125.1.b (excerpt and modified)</b>                      "The following radiological control design criteria are provided for new facilities and modification to existing facilities:                      The design objectives for exposure rates for potential exposure to a radiological worker where occupancy differs from the above shall [835.1002(b)] be ALARA and shall [835.1002(b)] not exceed 20 percent of the applicable standards in Table 2-1."</p>	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#209 §835.1002(c).1	Regarding the control of airborne radioactive material, the design objective shall be, under normal conditions, to avoid releases to the workplace atmosphere	<p><b>Article 125.1.c (excerpt)</b>                      "The following radiological control design criteria are provided for new facilities and modification to existing facilities:                      "Regarding the control of airborne radioactive material, the design objective shall [835.1002(c)] be, under normal conditions, to avoid releases to the workplace atmosphere and..."</p> <p><b>Article 313.1.a (excerpt)</b>                      "Engineered controls, including containment of radioactive material at the source wherever practicable, shall [835.1002(c)] be the primary method of minimizing airborne radioactivity and internal exposure to workers."</p>	Compliant: 10 CFR 835 (2007)
#210 §835.1002(c).2	and in any situation, to control the inhalation of such material by workers to levels that are ALARA; confinement and ventilation shall normally be used.	<p><b>Article 125.1.c (excerpt)</b>                      "The following radiological control design criteria are provided for new facilities and modification to existing facilities:                      ... in any situation, to control the inhalation of such material by workers to levels that are ALARA; confinement and ventilation shall [835.1002(c)] normally be used."</p> <p><b>Article 313.1.a (excerpt)</b>                      "Engineered controls, including containment of radioactive material at the source wherever practicable, shall [835.1001(a) and 835.1002(c)] be the primary method of minimizing airborne radioactivity and internal exposure to workers."</p>	Compliant: 10 CFR 835 (2007)
#211 §835.1002(d)	The design or modification of a facility and the selection of materials shall include features that facilitate operations, maintenance, decontamination, and decommissioning.	<p><b>Article 125.1.d (excerpt)</b>                      "The following radiological control design criteria are provided for new facilities and modification to existing facilities:                      The design or modification of a facility and the selection of materials shall [835.1002(d)] include features that facilitate operations, maintenance, decontamination, and decommissioning."</p>	Compliant: 10 CFR 835 (2007)
<b>§835.1003 Workplace Controls</b>			
#212 §835.1003(a)	During routine operations, the combination of engineered and administrative controls shall provide that: The anticipated occupational dose to general employees shall not exceed the limits established at §835.202; and	<p><b>Article 311.2 (excerpt)</b>                      "During routine operations, the combination of engineered and administrative controls shall [835.1003(a-b)] provide that: 1) the anticipated occupational dose to general employees shall [835.1003(a)] not exceed the limits established in Table 2-1, and;..."</p>	Compliant: 10 CFR 835 (2007)
#213 §835.1003(b)	The ALARA process is utilized for personnel exposures to ionizing radiation.	<p><b>Article 311.2 (excerpt)</b>                      "During routine operations, the combination of engineered and administrative controls shall [835.1003(a-b)] provide that: 2) the ALARA process is utilized for personnel exposures to ionizing radiation [835.1003(b)]."</p>	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
<b>Subpart L - Radioactive Contamination Control</b>			
<b>§835.1101 Control of Material and Equipment</b>			
#214 §835.1101(a)(1)	<p>Except as provided in paragraphs (b) and (c) of this section, material and equipment in contamination areas, high contamination areas, and airborne radioactivity areas shall not be released to a controlled area if:</p> <p>(1) Removable surface contamination levels on accessible surfaces exceed the removable surface contamination values specified in appendix D of this part; or</p>	<p><b>Article 421.1 (excerpt)</b>                      "Except as provided in 421.2 and 421.3, material and equipment in Contamination Areas, High Contamination Areas, and Airborne Radioactivity Areas shall [835.1101(a)] not be released to a controlled area if:                      a. Removable surface contamination levels on accessible surfaces exceed the removable surface contamination values specified in Table 2-2; or..."</p>	Compliant: 10 CFR 835 (2007)*
#215 §835.1101(a)(2)	<p>(2) Prior use suggests that the removable surface contamination levels on inaccessible surfaces are likely to exceed the removable surface contamination values specified in appendix D of this part.</p>	<p><b>Article 421.1 (excerpt)</b>                      "Except as provided in 421.2 and 421.3, material and equipment in Contamination Areas, High Contamination Areas, and Airborne Radioactivity Areas shall [835.1101(a)] not be released to a controlled area if:                      b. Prior use suggests that the removable surface contamination levels on inaccessible surfaces are likely to exceed the removable surface contamination values specified in Table 2-2."</p>	Compliant: 10 CFR 835 (2007)*
#216 §835.1101(b)	<p>Material and equipment exceeding the removable surface contamination values specified in appendix D of this part may be conditionally released for movement on-site from one radiological area for immediate placement in another radiological area only if appropriate monitoring is performed and appropriate controls for the movement are established and exercised.</p>	<p><b>Article 421.3 (excerpt)</b>                      "Material and equipment exceeding the removable surface contamination values specified in Table 2-2 may be conditionally released for movement on-site from one radiological area or radioactive material area for immediate placement in another radiological area or radioactive material area only if appropriate monitoring is performed and appropriate controls for the movement are established and exercised."</p>	Compliant: 10 CFR 835 (2007)*
#217 §835.1101(c)(1)	<p>Material and equipment with fixed contamination levels that exceed the total contamination values specified in appendix D of this part may be released for use in controlled areas outside of radiological areas only under the following conditions:</p> <p>(1) Removable surface contamination levels are below the removable surface contamination values specified in appendix D of this part; and</p>	<p><b>Article 421.2 (excerpt)</b>                      "Material and equipment with fixed contamination levels that exceed the total surface contamination values specified in Table 2-2 may be released for use in controlled areas outside of radiological areas only under the following conditions:                      a. Removable surface contamination levels are below the removable surface contamination values specified in Table 2-2; and..."</p>	Compliant: 10 CFR 835 (2007)*
#218 §835.1101(c)(2)	<p>(2) The material or equipment is routinely monitored and clearly marked or labeled to alert personnel of the contaminated status.</p>	<p><b>Article 421.2 (excerpt)</b>                      "Material and equipment with fixed contamination levels that exceed the total surface contamination values specified in Table 2-2 may be released for use in controlled areas outside of radiological areas only under the following conditions:                      b. The material or equipment is routinely monitored and clearly marked or labeled to alert personnel of the contaminated status."</p>	Compliant: 10 CFR 835 (2007)*

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
<b>§835.1102 Control of Areas</b>			
#219 §835.1102(a)	Appropriate controls shall be maintained and verified which prevent the inadvertent transfer of removable contamination to locations outside of radiological areas under normal operating conditions.	<p><b>Article 330.5 (excerpt)</b>                      "Appropriate controls shall [835.1102(a)] be maintained and verified which prevent the inadvertent transfer of removable contamination to locations outside radiological areas under normal operating conditions."  <b>Article 335.4 (excerpt)</b>                      "Exit points from Contamination, High Contamination, or Airborne Radioactivity Areas shall [835.1102(a)] include the following:                      a. Step off pad located outside the exit point, contiguous with the area boundary;                      b. Step off pads maintained free of radioactive contamination;                      c. Contamination monitoring equipment located as close to the step off pad as background radiation levels permit."  <b>Article 335.6 (excerpt and modified)</b>                      "Tools or equipment being removed from areas posted for surface or airborne radioactivity control shall [835.1102(a)] be monitored for release in accordance with Article 421..."  <b>Article 551.10</b>                      "Survey frequencies shall [835.401(a) and 835.1102(a)] be established based on potential radiological conditions, probability of change in conditions, and area occupancy factors."</p>	Compliant: 10 CFR 835 (2007)
#220 §835.1102(b)	Any area in which contamination levels exceed the values specified in appendix D of this part shall be controlled in a manner commensurate with the physical and chemical characteristics of the contaminant, the radionuclides present, and the fixed and removable surface contamination levels.	<p><b>Article 222.1 (excerpt)</b>                      "Any area in which contamination levels exceed the values specified in Table 2-2 shall [835.1102(b)] be controlled in a manner commensurate with the physical and chemical characteristics of the contaminant, the radionuclides present, and the fixed and removable surface contamination levels."</p>	Compliant: 10 CFR 835 (2007)*
#221 §835.1102(c)	Areas accessible to individuals where the measured total surface contamination levels exceed, but the removable surface contamination levels are less than, corresponding surface contamination values specified in appendix D of this part, shall be controlled as follows when located outside of radiological areas.	<p><b>Article 222.4</b>                      "Areas accessible to individuals where the measured total surface contamination levels exceed, but the removable surface contamination levels are less than, corresponding surface contamination values specified in Table 2-2, shall [835.1102(c)] be controlled as follows when located outside Contamination Areas, High Contamination Areas, and Airborne Radioactivity Areas."  <b>Glossary (excerpt) soil contamination area (SCA):</b>                      An area in which radioactive material exists within the top 15 centimeters of soil such that [835.1102(c)]:                      1. A direct contamination reading of the soil surface exceeds the appropriate "total" contamination levels in Appendix D, 10 CFR 835, and                      2. The transferable contamination from the area does not exceed the appropriate "removable" levels in Appendix D, 10 CFR 835.</p>	Compliant: 10 CFR 835 (2007)*
#222 §835.1102(c)(1)	(1) The area shall be routinely monitored to ensure the removable surface contamination level remains below the removable surface contamination values specified in appendix D of this part; and	<p><b>Article 222.4.a (excerpt)</b>                      "The area shall [835.1102 (c)(1)] be routinely monitored to ensure the removable surface contamination level remains below the removable surface contamination values specified in Table 2-2."</p>	Compliant: 10 CFR 835 (2007)*

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#223 §835.1102(c)(2)	(2) The area shall be conspicuously marked to warn individuals of the contaminated status.	<b>Article 222.4.c</b> "The area shall [835.1102 (c)(2)] be conspicuously marked to warn individuals of the contamination status."	Compliant: 10 CFR 835 (2007)*
#224 §835.1102(d)	Individuals exiting contamination, high contamination, or airborne radioactivity areas shall be monitored, as appropriate, for the presence of surface contamination.	<b>Article 221.1 (excerpt and modified)</b> "Individuals exiting Contamination Areas, High Contamination Areas, or Airborne Radioactivity Areas shall [835.1102(d)] be monitored, as appropriate, for the presence of surface contamination. This does not apply to personnel exiting areas containing only radionuclides, such as tritium, that cannot be detected using hand-held or automatic frisking equipment. <b>Article 221.2 (excerpt and modified)</b> "Monitoring for contamination shall [835.401(a)(1) & 835.1102(d)] be performed using frisking equipment that can detect total contamination of at least the values specified in Table 2-2." <b>Article 337.1 (excerpt and modified)</b> "For activities where tritium, in oxide or elemental form, may be present additional emphasis shall be placed on worker bioassay programs and routine contamination monitoring and air sampling programs."	Compliant: 10 CFR 835 (2007)
#225 §835.1102(e)	Protective clothing shall be required for entry to areas in which removable contamination exists at levels exceeding the removable surface contamination values specified in appendix D of this part.	<b>Article 316.1 (excerpt)</b> "Individuals shall [835.1102(e)] wear protective clothing during the following activities: a. Handling of contaminated materials with removable contamination in excess of Table 2-2 levels b. Entry to areas in which removable contamination exists at levels exceeding the removable surface contamination values specified in Table 2-2."	Compliant: 10 CFR 835 (2007)*
<b>Subpart M - Sealed Radioactive Source Control</b>			
<b>§835.1201 Sealed Radioactive Source Control</b>			
#226 §835.1201	Sealed radioactive sources shall be used, handled, and stored in a manner commensurate with the hazards associated with operations involving the sources.	<b>Article 431.1 (excerpt)</b> "Sealed radioactive sources shall [835.1201] be used, handled, and stored in a manner commensurate with the hazards associated with the operations involving the sources."	Compliant: 10 CFR 835 (2007)
<b>§835.1202 Accountable Sealed Radioactive Sources</b>			
#227 §835.1202(a)	Each accountable sealed radioactive source shall be inventoried at intervals not to exceed six months. This inventory shall: (1) Establish the physical location of each accountable sealed radioactive source; (2) Verify the presence and adequacy of associated postings and labels; and (3) Establish the adequacy of storage locations, containers, and devices.	<b>Article 431.3 (excerpt)</b> "Each accountable sealed radioactive source shall [835.1202(a)] be inventoried at intervals not to exceed six months. This inventory shall [835.1202(a)]: a. Establish the physical location of each accountable sealed radioactive source, b. Verify the presence and adequacy of associated postings and labels, and c. Establish the adequacy of storage locations, containers, and devices."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#228 §835.1202(b)	Except for sealed radioactive sources consisting solely of gaseous radioactive material or tritium, each accountable sealed radioactive source shall be subject to a source leak test upon receipt, when damage is suspected, and at intervals not to exceed six months. Source leak tests shall be capable of detecting radioactive material leakage equal to or exceeding 0.005 µCi.	<b>Article 431.4 (excerpt)</b> "Except for sealed radioactive sources consisting solely of gaseous radioactive material or tritium, each accountable sealed radioactive source shall [835.1202(b)] be subject to a source leak test upon receipt, when damage is suspected and at intervals not to exceed six months. Source leak tests shall [835.1202(b)] be capable of detecting radioactive material leakage equal to or exceeding 0.005 µCi "	Compliant: 10 CFR 835 (2007)
#229 §835.1202(c).1	Notwithstanding the requirements of paragraph (b) of this section, an accountable sealed radioactive source is not subject to periodic source leak testing if that source has been removed from service.	<b>Article 431.5 (excerpt)</b> "Notwithstanding the requirements of Article 431.4, an accountable sealed radioactive source is not subject to periodic source leak testing if that source has been removed from service [835.1202(c)]."	Compliant: 10 CFR 835 (2007)
#230 §835.1202(c).2	Such sources shall be stored in a controlled location, subject to periodic inventory as required by paragraph (a) of this section, and subject to source leak testing prior to being returned to service.	<b>Article 431.5 (excerpt)</b> "Such sources shall [835.1202(c)] be stored in a controlled location and subject to periodic inventory in accordance with Article 431.3 and subject to leak testing prior to being returned to service."	Compliant: 10 CFR 835 (2007)
#231 §835.1202(d)	Notwithstanding the requirements of paragraphs (a) and (b) of this section, an accountable sealed radioactive source is not subject to periodic inventory and source leak testing if that source is located in an area that is unsafe for human entry or otherwise inaccessible.	<b>Article 431.6</b> "Notwithstanding the requirements of Articles 431.3 and 431.4, an accountable sealed radioactive source is not subject to periodic inventory and source leak testing if that source is located in an area that is unsafe for human entry or otherwise inaccessible [835.1202(d)]."	Compliant: 10 CFR 835 (2007)
#232 §835.1202(e)	An accountable sealed radioactive source found to be leaking radioactive material shall be controlled in a manner that minimizes the spread of radioactive contamination.	<b>Article 431.7 (excerpt)</b> "An accountable sealed radioactive source found to be leaking radioactive material shall [835.1202(e)] be controlled in a manner that minimizes the spread of radioactive contamination. "	Compliant: 10 CFR 835 (2007)
<b>Subpart N - Emergency Exposure Situations</b>			
<b>§835.1301 General Provisions</b>			
#233 §835.1301(a)(1)	A general employee whose occupational dose has exceeded the numerical value of any of the limits specified in §835.202 as a result of an authorized emergency exposure may be permitted to return to work in radiological areas during the current year providing that all of the following conditions are met:  (1) Approval is first obtained from the contractor management and the Head of the responsible DOE field organization;	<b>Article 213.4.a (excerpt)</b> "A general employee whose occupational dose has exceeded the numerical value of any of the limits specified in Table 2-1 as a result of an authorized emergency exposure may be permitted to return to work in radiological areas during the current year providing that all of the following conditions are met [835.1301(a)]:  • Approval is first obtained from CHPRC Radiation Protection Program Manager and the Head of the responsible DOE field organization (DOE-RL Manager);"	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#234 §835.1301(a)(2)	(2) The individual receives counseling from radiological protection and medical personnel regarding the consequences of receiving additional occupational exposure during the year; and	<b>Article 213.4.a (excerpt)</b> "A general employee whose occupational dose has exceeded the numerical value of any of the limits specified in Table 2-1 as a result of an authorized emergency exposure may be permitted to return to work in radiological areas during the current year providing that all of the following conditions are met [835.1301(a)]: <ul style="list-style-type: none"> <li>The individual receives counseling from radiological protection and medical personnel regarding the consequences of receiving additional occupational exposure during the year; and...</li> </ul>	Compliant: 10 CFR 835 (2007)
#235 §835.1301(a)(3)	(3) The affected employee agrees to return to radiological work.	<b>Article 213.4.a (excerpt)</b> "A general employee whose occupational dose has exceeded the numerical value of any of the limits specified in Table 2-1 as a result of an authorized emergency exposure may be permitted to return to work in radiological areas during the current year providing that all of the following conditions are met [835.1301(a)]: <ul style="list-style-type: none"> <li>The affected employee agrees to return to radiological work.</li> </ul>	Compliant: 10 CFR 835 (2007)
#236 §835.1301(b)	All doses exceeding the limits specified in §835.202 shall be recorded in the affected individual's occupational dose record.	<b>Article 722.10 (excerpt and modified)</b> "Authorized emergency exposures and planned special exposures shall [835.702(a), 835.702(c)(2), and 835.1301(b)] be accounted for separately, but maintained with the individual's occupational exposure records." <b>Article 723.1 (excerpt)</b> "The complete records of radiological incidents and occurrences involving personnel dose shall [835.702(a), 835.702(c)(2), and 835.1301(b)] be retained." <b>Article 213.4.b (excerpt)</b> "All doses exceeding the General Employee occupational dose limits specified in Table 2-1 shall [835.1301(b)] be recorded in the affected individual's occupational dose record."	Compliant: 10 CFR 835 (2007)
#237 §835.1301(c)	When the conditions under which a dose was received in excess of the limits specified in §835.202, except those received in accordance with §835.204, have been eliminated, operating management shall notify the Head of the responsible DOE field organization.	<b>Article 213.4.c (excerpt)</b> "When the conditions under which a dose was received in excess of the General Employee occupational dose limits specified in Table 2-1, except those received in accordance with the planned special exposure provisions in Article 213.3, have been eliminated, operating management shall [835.1301(c)] notify the Head of the responsible DOE field organization (DOE-RL Manager)."	Compliant: 10 CFR 835 (2007)
#238 §835.1301(d)	Operations which have been suspended as a result of a dose in excess of the limits specified in §835.202, except those received in accordance with §835.204, may be resumed only with the approval of DOE.	<b>Article 213.4.d (excerpt)</b> "Operations which have been suspended as a result of a dose in excess of the General Employee occupational dose limits specified in Table 2-1, except those received in accordance with the planned special exposure provisions in Article 213.3, may [835.1301(d)] be resumed only with the approval of DOE."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
<b>§835.1302 Emergency Exposure Situations</b>			
#239 §835.1302(a)	The risk of injury to those individuals involved in rescue and recovery operations shall be minimized.	<b>Article 213.4.e (excerpt)</b> "The risk of injury to those individuals involved in rescue and recovery operations shall [835.1302(a)] be minimized."  Note: "Risk...shall be minimized" means, if alternative actions are available to meet emergency needs, then adopting the action with the lowest assessed risk of significant personnel injury shall take precedence over property loss considerations.	Compliant: 10 CFR 835 (2007)
#240 §835.1302(b)	Operating management shall weigh actual and potential risks against the benefits to be gained.	<b>Article 213.4.e (excerpt)</b> "Operating management shall [835.1302(b)] weigh actual and potential risks against the benefits to be gained."	Compliant: 10 CFR 835 (2007)
#241 §835.1302(c)	No individual shall be required to perform a rescue action that might involve substantial personal risk.	<b>Article 213.4.e (excerpt)</b> "No individual shall [835.1302(c)] be required to perform a rescue action that might involve substantial personal risk."	Compliant: 10 CFR 835 (2007)
#242 §835.1302(d)	Each individual authorized to perform emergency actions likely to result in occupational doses exceeding the values of the limits provided at §835.202(a) shall be trained in accordance with §835.901(b) and briefed beforehand on the known or anticipated hazards to which the individual will be subjected.	<b>Appendix 2A (excerpt)</b> "Emergency exposure shall [835.1302(d)] be authorized in accordance with the provisions contained in Article 213.4." <b>Article 213.4.e (excerpt)</b> "Each individual authorized to perform emergency actions likely to result in occupational doses exceeding the values of the General Employee occupational dose limits provided in Table 2-1 shall [835.1302(d)] be trained in accordance with Article 613.6 and briefed beforehand on the known or anticipated hazards to which the individual will be subjected."	Compliant: 10 CFR 835 (2007)
<b>§835.1304 Nuclear Accident Dosimetry</b>			
#243 §835.1304(a)	Installations possessing sufficient quantities of fissile material to potentially constitute a critical mass, such that the excessive exposure of individuals to radiation from a nuclear accident is possible, shall provide nuclear accident dosimetry for those individuals.	<b>Article 515.1 (excerpt)</b> "Installations possessing sufficient quantities of fissile material to potentially constitute a critical mass, such that the excessive exposure of individuals to radiation from a nuclear accident is possible, shall [835.1304(a)] provide nuclear accident dosimetry for those individuals."	Compliant: 10 CFR 835 (2007)
#244 §835.1304(b)(1)	Nuclear accident dosimetry shall include the following: (1) A method to conduct initial screening of individuals involved in a nuclear accident to determine whether significant exposures to radiation occurred;	<b>Article 515.2 (excerpt)</b> "Nuclear accident dosimetry shall [835.1304(b)] include the following: a. A method to conduct initial screening of individuals involved in a nuclear accident to determine whether significant exposures to radiation occurred;..."	Compliant: 10 CFR 835 (2007)
#245 §835.1304(b)(2)	(2) Methods and equipment for analysis of biological materials;	<b>Article 515.2 (excerpt)</b> "Nuclear accident dosimetry shall [835.1304(b)] include the following: b. Methods and equipment for analysis of biological materials;..."	Compliant: 10 CFR 835 (2007)
#246 §835.1304(b)(3)	(3) A system of fixed nuclear accident dosimeter units; and	<b>Article 515.2 (excerpt)</b> "Nuclear accident dosimetry shall [835.1304(b)] include the following: c. A system of fixed nuclear accident dosimeter units; and..."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#247 §835.1304(b)(4)	(4) Personal nuclear accident dosimeters.	<b>Article 515.2 (excerpt)</b> "Nuclear accident dosimetry shall [835.1304(b)] include the following: d. Personal nuclear accident dosimeters."	Compliant: 10 CFR 835 (2007)
<b>Appendices</b>			
#248 §835 Appendix A.1	The data presented in appendix A are to be used for controlling individual internal doses in accordance with §835.209, identifying the need for air monitoring in accordance with §835.403, and identifying and posting airborne radioactivity areas in accordance with §835.603(d).	<b>Article 223.3 (excerpt)</b> "CHPRC and its subcontractors shall [835 App. A and C] comply with the contents of 10 CFR 835 Appendices A and C [835 App. A and C]."	Compliant: 10 CFR 835 (2007)
#249 §835 Appendix A.2	The DAC values are given for individual radionuclides. For known mixtures of radionuclides, determine the sum of the ratio of the observed concentration of a particular radionuclide and its corresponding DAC for all radionuclides in the mixture. If this sum exceeds unity (1), then the DAC has been exceeded. For unknown radionuclides, the most restrictive DAC (lowest value) for those isotopes not known to be absent shall be used. For any single radionuclide not listed in appendix A with decay mode other than alpha emission or spontaneous fission and with radioactive half-life greater than two hours, the DAC value shall be 4 E-11 µCi/mL (1 Bq/m3). For any single radionuclide not listed in appendix A that decays by alpha emission or spontaneous fission the DAC value shall be 2 E-13 µCi/mL (8 E-03 Bq/m3).	<b>Article 223.3 (excerpt)</b> "CHPRC and its subcontractors shall [835 App. A and C] comply with the contents of 10 CFR 835 Appendices A and C [835 App. A and C]."	Compliant: 10 CFR 835 (2007)
#250 §835 Appendix A.3	The DACs for limiting radiation exposures through inhalation of radionuclides by workers are listed in this appendix. The values are based on either a stochastic (committed effective dose) dose limit of 5 rems (0.05 Sv) or a deterministic (organ or tissue) dose limit of 50 rems (0.5 Sv) per year, whichever is more limiting.	<b>Article 223.3 (excerpt)</b> "CHPRC and its subcontractors shall [835 App. A and C] comply with the contents of 10 CFR 835 Appendices A and C [835 App. A and C]."	Compliant: 10 CFR 835 (2007)
#251 §835 Appendix A Note	<b>Note:</b> the 15 rems (0.15 Sv) dose limit for the lens of the eye does not appear as a critical organ dose limit.	<b>Article 223.3 (excerpt)</b> "CHPRC and its subcontractors shall [835 App. A and C] comply with the contents of 10 CFR 835 Appendices A and C [835 App. A and C]."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#252 §835 Appendix A.4	The columns in this appendix contain the following information: (1) Radionuclide; (2) inhaled air DAC for type F (fast), type M (moderate), and type S (slow) materials in units of $\mu\text{Ci}/\text{mL}$ ; (3) inhaled air DAC for type F (fast), type M (moderate), and type S (slow) materials in units of $\text{Bq}/\text{m}^3$ ; (4) an indication of whether or not the DAC for each class is controlled by the stochastic (effective dose) or deterministic (organ or tissue) dose. The absorption types (F, M, and S) have been established to describe the absorption type of the materials from the respiratory tract into the blood. The range of half-times for the absorption types correspond to: Type F, 100% at 10 minutes; Type M, 10% at 10 minutes and 90% at 140 days; and Type S 0.1% at 10 minutes and 99.9% at 7000 days. The DACs are listed by radionuclide, in order of increasing atomic mass, and are based on the assumption that the particle size distribution of 5 micrometers AMAD is used. For situations where the particle size distribution is known to differ significantly from 5 micrometers AMAD, appropriate corrections may be made to both the estimated dose to workers and the DACs.	<b>Article 223.3 (excerpt)</b> “CHPRC and its subcontractors shall [835 App. A and C] comply with the contents of 10 CFR 835 Appendices A and C [835 App. A and C].”	Compliant: 10 CFR 835 (2007)
#253 §835 Appendix A, Footnote 1	A determination of whether the DACs are controlled by stochastic (St) or deterministic (organ or tissue) dose, or if they both give the same result (E), for each absorption type, is given in this column. The key to the organ notation for deterministic dose is: BS = Bone surface, ET = Extrathoracic, K = Kidney, L = Liver, and T = Thyroid. A blank indicates that no calculations were performed for the absorption type shown.	<b>Article 223.3 (excerpt)</b> “CHPRC and its subcontractors shall [835 App. A and C] comply with the contents of 10 CFR 835 Appendices A and C [835 App. A and C].”	Compliant: 10 CFR 835 (2007)
#254 Appendix A, Footnote 2	The ICRP identifies these materials as soluble or reactive gases and vapors or highly soluble or reactive gases and vapors. For tritiated water, the inhalation DAC values allow for an additional 50% absorption through the skin, as described in ICRP Publication No. 68, Dose Coefficients for Intakes of Radionuclides by Workers. For elemental tritium, the DAC values include a factor that irradiation from gas within the lungs might increase the dose by 20%.	Not a requirement. <b>Article 223.3 (excerpt)</b> “CHPRC and its subcontractors shall [835 App. A and C] comply with the contents of 10 CFR 835 Appendices A and C [835 App. A and C].”	Compliant: 10 CFR 835 (2007)
#255 Appendix A, Footnote 3	A dash indicates no values given for this data category.	Not a requirement. <b>Article 223.3 (excerpt)</b> “CHPRC and its subcontractors shall [835 App. A and C] comply with the contents of 10 CFR 835 Appendices A and C [835 App. A and C].”	Compliant: 10 CFR 835 (2007)
#256 Appendix A, Footnote 4	DAC values derived using hafnium tritide particle and are based on “observed activity” (i.e., only radiation emitted from the particle is considered). DAC values derived using methodology found in Radiological Control Programs for Special Tritium Compounds, DOE-HDBK-1184-2004.	Not a requirement. <b>Article 223.3 (excerpt)</b> “CHPRC and its subcontractors shall [835 App. A and C] comply with the contents of 10 CFR 835 Appendices A and C [835 App. A and C].”	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#257 §835 Appendix A, Footnote 5.1	These values are appropriate for protection from radon combined with its short-lived decay products and are based on information given in ICRP Publication 65: Protection Against Radon-222 at Home and at Work and in DOE–STD–1121–98: Internal Dosimetry. The values given are for 100% equilibrium concentration conditions of the short-lived radon decay products with the parent.	<b>Article 223.3 (excerpt)</b> “CHPRC and its subcontractors shall [835 App. A and C] comply with the contents of 10 CFR 835 Appendices A and C [835 App. A and C].”	Compliant: 10 CFR 835 (2007)
#258 §835 Appendix A, Footnote 5.2	To allow for an actual measured equilibrium concentration or a demonstrated equilibrium concentration, the values given in this table should be multiplied by the ratio (100%/actual %) or (100%/demonstrated %), respectively.	<b>Article 223.3 (excerpt)</b> “CHPRC and its subcontractors shall [835 App. A and C] comply with the contents of 10 CFR 835 Appendices A and C [835 App. A and C].”	Compliant: 10 CFR 835 (2007)
#259 §835 Appendix A, Footnote 5.3	Alternatively, the DAC values for Rn-220 and Rn-222 may be replaced by 2.5 working level (WL) and 0.83 WL, respectively, for appropriate limiting of decay product concentrations. A WL is any combination of short-lived radon decay products, in one liter of air without regard to the degree of equilibrium, that will result in the ultimate emission of 1.3 E+05 MeV of alpha energy.	<b>Article 223.3 (excerpt)</b> “CHPRC and its subcontractors shall [835 App. A and C] comply with the contents of 10 CFR 835 Appendices A and C [835 App. A and C].”	Compliant: 10 CFR 835 (2007)
#260 §835 Appendix C, AC(a)	The data presented in appendix C are to be used for controlling occupational exposures in accordance with §835.209, identifying the need for air monitoring in accordance with §835.403 and identifying the need for posting of airborne radioactivity areas in accordance with §835.603(d).	<b>Article 223.3 (excerpt)</b> “CHPRC and its subcontractors shall [835 App. A and C] comply with the contents of 10 CFR 835 Appendices A and C [835 App. A and C].”	Compliant: 10 CFR 835 (2007)
#261 Appendix C, AC(b)	The air immersion DAC values shown in this appendix are based on a stochastic dose limit of 5 rems (0.05 Sv) per year. Four columns of information are presented: (1) Radionuclide; (2) half-life in units of seconds (s), minutes (min), hours (h), days (d), or years (yr); (3) air immersion DAC in units of $\mu\text{Ci/mL}$ ; and (4) air immersion DAC in units of $\text{Bq/m}^3$ . The data are listed by radionuclide in order of increasing atomic mass. The air immersion DACs were calculated for a continuous, nonshielded exposure via immersion in a semi-infinite cloud of airborne radioactive material. The DACs listed in this appendix may be modified to allow for submersion in a cloud of finite dimensions.	<b>Article 223.3 (excerpt)</b> “CHPRC and its subcontractors shall [835 App. A and C] comply with the contents of 10 CFR 835 Appendices A and C [835 App. A and C].”	Compliant: 10 CFR 835 (2007)
#262 Appendix C, AC(c)	The DAC values are given for individual radionuclides. For known mixtures of radionuclides, determine the sum of the ratio of the observed concentration of a particular radionuclide and its corresponding DAC for all radionuclides in the mixture. If this sum exceeds unity (1), then the DAC has been exceeded. For unknown radionuclides, the most restrictive DAC (lowest value) for those isotopes not known to be absent shall be used.	<b>Article 223.3 (excerpt)</b> “CHPRC and its subcontractors shall [835 App. A and C] comply with the contents of 10 CFR 835 Appendices A and C [835 App. A and C].”	Compliant: 10 CFR 835 (2007)
#263 §835 Appendix C, Footnote	For any single radionuclide not listed above with decay mode other than alpha emission or spontaneous fission and with radioactive half-life less than two hours, the DAC value shall be $6 \text{ E}-06 \mu\text{Ci/mL}$ ( $2 \text{ E}+04 \text{ Bq/m}^3$ ).	<b>Article 223.3 (excerpt)</b> “CHPRC and its subcontractors shall [835 App. A and C] comply with the contents of 10 CFR 835 Appendices A and C [835 App. A and C].”	Compliant: 10 CFR 835 (2007)
#264	NA - Reserved	N/A - Reserved	N/A - Reserved
#265	N/A - Reserved	N/A - Reserved	N/A - Reserved

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#266	N/A - Reserved	N/A - Reserved	N/A - Reserved
#267	N/A - Reserved	N/A - Reserved	N/A - Reserved
#268	N/A - Reserved	N/A - Reserved	N/A - Reserved
#269	N/A - Reserved	N/A - Reserved	N/A - Reserved
#270 §835 Appendix D, D.1	The data presented in appendix D are to be used in identifying the need for posting of contamination and high contamination areas in accordance with §835.603(e) and (f) and identifying the need for surface contamination monitoring and control in accordance with §§835.1101 and 835.1102.	CHPRC commits to full compliance with 10 CFR 835, Appendix D, D.1, as modified by exemption (see section 11.0).	Compliant: 10 CFR 835 (2007)*
#271 §835 Appendix D, Footnote 1	The values in this appendix, with the exception noted in footnote 6, apply to radioactive contamination deposited on, but not incorporated into the interior or matrix of, the contaminated item. Where surface contamination by both alpha-and beta-gamma emitting nuclides exists, the limits established for alpha-and beta-gamma-emitting nuclides apply independently.	<b>Table 2-2, Note 1 (modified)</b> "The values in this table, with the exception noted in footnote 6 below, apply to radioactive contamination deposited on, but not incorporated into the interior or matrix of, the contaminated item. Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides apply independently [835, App. D, Note 1]."	Compliant: 10 CFR 835 (2007)
#272 §835 Appendix D, Footnote 2	As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.	<b>Table 2-2, Note 2</b> "As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation [835.App. D, Note 2]."	Compliant: 10 CFR 835 (2007)
#273 §835 Appendix D, Footnote 3	The levels may be averaged over one square meter provided the maximum surface activity in any area of 100 cm <sup>2</sup> is less than three times the value specified. For purposes of averaging, any square meter of surface shall be considered to be above the surface contamination value if: (1) From measurements of a representative number of sections it is determined that the average contamination level exceeds the applicable value; or (2) it is determined that the sum of the activity of all isolated spots or particles in any 100 cm <sup>2</sup> area exceeds three times the applicable value.	<b>Table 2-2, Note 3</b> "The levels may be averaged over one square meter provided the maximum surface activity in any area of 100 cm <sup>2</sup> is less than three times the value specified. For purposes of averaging, any square meter of surface shall [835, App. D, Note 3] be considered to be above the surface contamination value if: (1) from measurements of a representative number of sections it is determined that the average contamination level exceeds the applicable value; or (2) it is determined that the sum of the activity of all isolated spots or particles in any 100 cm <sup>2</sup> area exceeds three times the applicable value."	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#274 §835 Appendix D, Footnote 4	The amount of removable radioactive material per 100 cm <sup>2</sup> of surface area should be determined by swiping the area with dry filter or soft absorbent paper, applying moderate pressure, and then assessing the amount of radioactive material on the swipe with an appropriate instrument of known efficiency. (Note—The use of dry material may not be appropriate for tritium.) When removable contamination on objects of surface area less than 100 cm <sup>2</sup> is determined, the activity per unit area shall be based on the actual area and the entire surface shall be wiped. It is not necessary to use swiping 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.	<b>Table 2-2, Note 4</b> "The amount of removable radioactive material per 100 cm <sup>2</sup> of surface area should be determined by swiping the area with dry filter or soft absorbent paper, applying moderate pressure, and then assessing the amount of radioactive material on the swipe with an appropriate instrument of known efficiency. (Note - The use of dry material may not be appropriate for tritium.) When removable contamination on objects of surface area less than 100 cm <sup>2</sup> is determined, the activity per unit area shall [835, App. D, Note 4] be based on the actual area and the entire surface shall [835, App. D, Note 4] be wiped. It is not necessary to use swiping 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."	Compliant: 10 CFR 835 (2007)
#275 §835 Appendix D, Footnote 5	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.	<b>Table 2-2, Note 5</b> "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 [835, App. D, Note 5]."	Compliant: 10 CFR 835 (2007)
#276 §835 Appendix D, Footnote 6	Tritium contamination may diffuse into the volume or matrix of materials. Evaluation of surface contamination shall consider the extent to which such contamination may migrate to the surface in order to ensure the surface contamination value provided in this appendix is not exceeded. Once this contamination migrates to the surface, it may be removable, not fixed; therefore, a "Total" value does not apply. In certain cases, a "Total" value of 10,000 dpm/100 cm <sup>2</sup> may be applicable either to metals, of the types which form insoluble special tritium compounds that have been exposed to tritium; or to bulk materials to which particles of insoluble special tritium compound are fixed to a surface.	<b>Table 2-2, Note 6</b> "Tritium contamination may diffuse into the volume or matrix of materials. Evaluation of surface contamination shall [835, App. D, Note 6] consider the extent to which such contamination may migrate to the surface in order to ensure the surface contamination value provided in this appendix is not exceeded. Once this contamination migrates to the surface, it may be removable, not fixed; therefore, a "Total" value does not apply [835.App. D, Note 6]. In certain cases, a "Total" value of 10,000 dpm/100 cm <sup>2</sup> may be applicable either to metals, of the types which form insoluble special tritium compounds that have been exposed to tritium; or to bulk materials to which insoluble special tritium compound particles are fixed to a surface."	Compliant: 10 CFR 835 (2007)
#277 §835 Appendix D, Footnote 7	These limits only apply to the alpha emitters within the respective decay series.	<b>Table 2-2, Note 7</b> "These limits only apply to the alpha emitters within the respective decay series [835.App. D, Note 7]."	Compliant: 10 CFR 835 (2007)
#278 §835 Appendix E, AE1.01	The data presented in appendix E are to be used for identifying accountable sealed radioactive sources and radioactive material areas as those terms are defined at §835.2(a),...	CHPRC commits to full compliance with 10 CFR 835, Appendix E, AE1.01, as written. The full text of 10 CFR 835 Appendix E is included as Appendix 4A.	Compliant: 10 CFR 835 (2007)
#279 §835 Appendix E, AE1.02	...establishing the need for radioactive material area posting in accordance with §835.603(g), and...	CHPRC commits to full compliance with 10 CFR 835, Appendix E, AE1.02, as written. The full text of 10 CFR 835 Appendix E is included as Appendix 4A.	Compliant: 10 CFR 835 (2007)
#280 §835 Appendix E, AE1.03	...establishing the need for radioactive material labeling in accordance with §835.605.	CHPRC commits to full compliance with 10 CFR 835, Appendix E, AE1.03, as written. The full text of 10 CFR 835 Appendix E is included as Appendix 4A.	Compliant: 10 CFR 835 (2007)

10 CFR 835 Section	Restatement of the Requirement	Policy and Commitment Basis	Compliance Status
#281 §835 Appendix E, AE2	Any alpha emitting radionuclide not listed in appendix E and mixtures of alpha emitters of unknown composition have a value of 10 µCi.	CHPRC commits to full compliance with 10 CFR 835, Appendix E, AE2 as written. The full text of 10 CFR 835 Appendix E is included as Appendix 4A.	Compliant: 10 CFR 835 (2007)
#282 §835 Appendix E, AE3	With the exception that any type of STC has a value of 10 Ci, any radionuclide other than alpha emitting radionuclides not listed in appendix E and mixtures of beta emitters of unknown composition have a value of 100 µCi.	CHPRC commits to full compliance with 10 CFR 835, Appendix E, AE3 as written. The full text of 10 CFR 835 Appendix E is included as Appendix 4A.	Compliant: 10 CFR 835 (2007)
#283 §835 Appendix E, AE Note	Where there is involved a mixture of radionuclides in known amounts, derive the value for the mixture as follows: determine, for each radionuclide in the mixture, the ratio between the quantity present in the mixture and the value otherwise established for the specific radionuclide when not in the mixture. If the sum of such ratios for all radionuclides in the mixture exceeds unity (1), then the accountability criterion has been exceeded.	CHPRC commits to full compliance with 10 CFR 835, Appendix E, AE Note, as written. The full text of 10 CFR 835 Appendix E is included as Appendix 4A.	Compliant: 10 CFR 835 (2007)

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