

Date Received for Clearance Process (MM/DD/YYYY) <u>04/20/2011</u>	<b>INFORMATION CLEARANCE FORM</b>	S		
A. Information Category <input type="checkbox"/> Abstract <input type="checkbox"/> Journal Article <input type="checkbox"/> Summary <input type="checkbox"/> Internet <input type="checkbox"/> Visual Aid <input type="checkbox"/> Software <input type="checkbox"/> Full Paper <input type="checkbox"/> Report <input checked="" type="checkbox"/> Other <u>Site Wide Document</u>	B. Document Number <u>DOE-0357, Rev 0 (TRD-0049)</u>	C. Title <u>Hanford Radiological Worker Training, Training Program Description</u>		
E. Required Information (MANDATORY) 1. Is document potentially Classified? <input checked="" type="radio"/> No <input type="radio"/> Yes <u>M.E. Brown (See Pg. 2)</u> Manager Required (Print and Sign) If Yes <u>ADC Required (Print and Sign)</u> <input checked="" type="radio"/> No <input type="radio"/> Yes Classified 2. Official Use Only <input checked="" type="radio"/> No <input type="radio"/> Yes Exemption No. _____ 3. Export Controlled Information <input checked="" type="radio"/> No <input type="radio"/> Yes OOU Exemption No. 3 4. UCNI <input checked="" type="radio"/> No <input type="radio"/> Yes 5. Applied Technology <input checked="" type="radio"/> No <input type="radio"/> Yes 6. Other (Specify) _____		7. Does Information Contain the Following: a. New or Novel (Patentable) Subject Matter? <input checked="" type="radio"/> No <input type="radio"/> Yes If "Yes", OOU Exemption No. 3 If "Yes", Disclosure No.: _____ b. Commercial Proprietary Information Received in Confidence, Such as Proprietary and/or Inventions? <input type="radio"/> No <input type="radio"/> Yes If "Yes", OOU Exemption No. 4 c. Corporate Privileged Information? <input checked="" type="radio"/> No <input type="radio"/> Yes If "Yes", OOU Exemption No. 4 d. Government Privileged Information? <input checked="" type="radio"/> No <input type="radio"/> Yes If "Yes", Exemption No. 5 e. Copyrights? <input checked="" type="radio"/> No <input type="radio"/> Yes If "Yes", Attach Permission. f. Trademarks? <input checked="" type="radio"/> No <input type="radio"/> Yes If "Yes", Identify in Document. 8. Is Information requiring submission to OSTI? <input checked="" type="radio"/> No <input type="radio"/> Yes 9. Release Level? <input checked="" type="radio"/> Public <input type="radio"/> Limited		
F. Complete for a Journal Article				
1. Title of Journal _____				
G. Complete for a Presentation				
1. Title for Conference or Meeting _____				
2. Group Sponsoring _____				
3. Date of Conference _____				
4. City/State _____				
5. Will Information be Published in Proceedings? <input type="radio"/> No <input type="radio"/> Yes				
6. Will Material be Handed Out? <input type="radio"/> No <input type="radio"/> Yes				
H. Information Owner/Author/Requestor <u>Stephen Gulley / Stephen Gulley</u> (Print and Sign)		Responsible Manager <u>Mary E. Brown / Mary E. Brown</u> (Print and Sign)		
Approval by Direct Report to President (Speech/Articles Only) _____ (Print and Sign)				
I. Reviewers	Yes	Print	Signature	Public Y/N (If N, complete J)
General Counsel	<input checked="" type="checkbox"/>	<u>Judy Chang</u>	<u>E-mail Pg. 3</u>	<input checked="" type="checkbox"/> / N
Office of External Affairs	<input checked="" type="checkbox"/>	<u>Deanna L. Smith</u>	<u>E-mail Pg. 4</u>	<input checked="" type="checkbox"/> / N
DOE-RL	<input checked="" type="checkbox"/>	<u>Cameron Hardy</u>	<u>E-mail Pg. 5</u>	<input checked="" type="checkbox"/> / N
Other	<input checked="" type="checkbox"/>	<u>M.L. Spracklen</u>	<u>E-mail Pg. 6</u>	<input checked="" type="checkbox"/> / N
Other	<input checked="" type="checkbox"/>	<u>T.D. Aardal</u>	<u>Janis Aardal</u>	<input checked="" type="checkbox"/> / N
J. Comments				
If Additional Comments, Please Attach Separate Sheet <u>1 of 6</u>				





Date Received for Clearance Process (MM/DD/YYYY)

04/20/2011

# INFORMATION CLEARANCE FORM

### A. Information Category

- Abstract
- Summary
- Visual Aid
- Full Paper
- Journal Article
- Internet
- Software
- Report
- Other Site Wide Document

B. Document Number DOE-0357, Rev 0 (TPD-0049)

C. Title  
Hanford Radiological Worker Training, Training Program Description

D. Internet Address

### E. Required Information (MANDATORY)

- Is document potentially Classified?  No  Yes  
M.E. Brown for  
Manager Required (Print and Sign) Jon Lucette
- If Yes ADC Required (Print and Sign)  No  Yes Classified
- Official Use Only  No  Yes Exemption No. \_\_\_\_\_
- Export Controlled Information  No  Yes OOU Exemption No. 3
- UCNI  No  Yes
- Applied Technology  No  Yes
- Other (Specify) \_\_\_\_\_

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- New or Novel (Patentable) Subject Matter?  No  Yes  
If "Yes", OOU Exemption No. 3  
If "Yes", Disclosure No.: \_\_\_\_\_
- Commercial Proprietary Information Received in Confidence, Such as Proprietary and/or Inventions?  
 No  Yes If "Yes", OOU Exemption No. 4
- Corporate Privileged Information?  No  Yes  
If "Yes", OOU Exemption No. 4
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1. Title of Journal

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- Title for Conference or Meeting \_\_\_\_\_
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- Will Information be Published in Proceedings?  No  Yes
- Will Material be Handed Out?  No  Yes

### H. Information Owner/Author/Requestor

Stephen Gulley / Stephen Gulley  
(Print and Sign)

### Responsible Manager

Mary E. Brown / Mary E. Brown  
(Print and Sign)

Approval by Direct Report to President (Speech/Articles Only)

(Print and Sign)

I. Reviewers	Yes	Print	Signature	Public Y/N (If N, complete J)
General Counsel	<input checked="" type="checkbox"/>	<u>Judy Chang</u>	_____	Y / N
Office of External Affairs	<input checked="" type="checkbox"/>	<u>Deanna L. Smith</u>	_____	Y / N
DOE-RL	<input checked="" type="checkbox"/>	<u>Cameron Hardy</u>	_____	Y / N
Other	<input type="checkbox"/>	_____	_____	Y / N
Other	<input type="checkbox"/>	_____	_____	Y / N

### J. Comments

Information Clearance Approval

If Additional Comments, Please Attach Separate Sheet

2 of 6

**Aardal, Janis D**

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**From:** Chang, Judy  
**Sent:** Thursday, March 03, 2011 2:27 PM  
**To:** Gulley, Stephen M  
**Subject:** Approved for Public Release: Please review for approval to release TPD-0049, DOE-0357

**Aardal, Janis D**


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**From:** Smith, Deanna L  
**Sent:** Wednesday, March 02, 2011 4:11 PM  
**To:** Gulley, Stephen M; Chang, Judy; Hardy, Cameron  
**Cc:** Aardal, Janis D; Stevens, William H  
**Subject:** RE: Please review for approval to release TPD-0049, DOE-0357

Approved

**DEANNA L. SMITH**  
**MSA COMMUNICATIONS**

*Mission Support Alliance LLC, "A Lockheed Martin/Jacobs/WSI Company"*  
office 509-373-0857 | cell: 509-308-5476 | web site: [msa.hanford.gov/msa](http://msa.hanford.gov/msa)

 Please consider the environment before printing this email.

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**From:** Gulley, Stephen M  
**Sent:** Wednesday, March 02, 2011 3:49 PM  
**To:** Chang, Judy; Smith, Deanna L; Hardy, Cameron  
**Cc:** Aardal, Janis D; Stevens, William H  
**Subject:** Please review for approval to release TPD-0049, DOE-0357

The attached Hanford Radiological Worker Training Program Description was recently converted to a DOE Site Standard document (DOE-0357). This document needs to be available to all Hanford contractors and subcontractors some of which only have access on an external site. Please review and use the voting button for approval to externally release and make available via internet access. Please let me know if you have any additional questions.

Thanks,  
*Stephen Gulley*



Emergency Services Training and Programs  
372-1885, Pager 85-7046

"If we could read the secret history of our enemies, we should find in each man's life sorrow and suffering enough to disarm all hostility" – Henry Wadsworth Longfellow.



**Aardal, Janis D**

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**From:** Hardy, Cameron  
**Sent:** Thursday, April 07, 2011 4:00 PM  
**To:** Gulley, Stephen M  
**Subject:** RE: Please review for approval to release TPD-0049, DOE-0357

approved

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**From:** Gulley, Stephen M  
**Sent:** Thursday, April 07, 2011 3:58 PM  
**To:** Hardy, Cameron  
**Subject:** Please review for approval to release TPD-0049, DOE-0357

The attached Hanford Radiological Worker Training Program Description was recently converted to a DOE Site Standard document (DOE-0357). This document needs to be available to all Hanford contractors and subcontractors some of which only have access on an external site. Please review and use the voting button for approval to externally release and make available via internet access. Please let me know if you have any additional questions.

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372-1885, Pager 85-7046

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## Aardal, Janis D

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**From:** Spracklen, Michael L  
**Sent:** Thursday, April 14, 2011 8:04 AM  
**To:** Aardal, Janis D  
**Cc:** Gulley, Stephen M  
**Subject:** RE: DOE Training Program Description posting on HAMMER External Web Page

Janis,

No security concerns with posting TPD-0048 or 0049 to the HAMMER external site.

*Mike Spracklen*  
MSC Classification Officer  
(509) 376-3730

---

**From:** Aardal, Janis D  
**Sent:** Tuesday, April 12, 2011 4:09 PM  
**To:** Spracklen, Michael L  
**Cc:** Gulley, Stephen M  
**Subject:** FW: DOE Training Program Description posting on HAMMER External Web Page

Hi Mike, May we still have your approval, or comments on TPD-0048 and TPD-0049? (You approved TPD-0047 last Friday, 4/8.) Thanks much, Janis Aardal

---

**From:** Aardal, Janis D  
**Sent:** Thursday, April 07, 2011 4:53 PM  
**To:** Spracklen, Michael L  
**Subject:** RE: DOE Training Program Description posting on HAMMER External Web Page

Hi Mike, I just received TPD-0047 (DOE-0358), TPD-0048 (DOE-0356), and TPD-0049 (DOE-0357) by separate e-mail from Stephen Gulley – each with e-mail approvals from Judy Chang, Deanna Smith, and Cameron Hardy. (See the att.) We wanted to determine whether they should be posted with, or without the clearance form before finalizing. Thanks! Janis

---

**From:** Spracklen, Michael L  
**Sent:** Thursday, April 07, 2011 4:43 PM  
**To:** Aardal, Janis D  
**Subject:** RE: DOE Training Program Description posting on HAMMER External Web Page

Janis,

Have you received any of these for clearance. I haven't seen them.

-Mike

---

**From:** Aardal, Janis D  
**Sent:** Thursday, April 07, 2011 4:17 PM

HDNS# **TPD-0049 DOE-0357 R0**

TRAINING PROGRAM DESCRIPTION TITLE:

**DOE-0357, Hanford Radiological Worker Training**

REVISION: **0**

DATE: **03/03/2010**

INTERPRETATIVE AUTHORITY: **Brian L Killand**

TECHNICAL AUTHORITY: \_\_\_\_\_

FUNCTIONAL AREA MANAGER: **Teodore P Giltz**

*Approved for Public Release;  
Further Dissemination Unlimited*

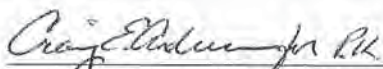


## HANFORD STANDARDIZED RADIATION SAFETY TRAINING


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### Hanford Radiological Worker Training Program Description, Rev. 0, January 2010 Training Program Description for Hanford Site Core Radiological Control Technician Qualification, Rev 0, June 2010

Site Wide Safety Standards  
Senior Management Team  
APPROVAL



Paul W. Kruger, Vice President  
Mission Support Alliance, LLC  
Mission Support Contract



Patrice M. McEahern, Vice President  
CH2MHill Plateau Remediation Company  
Plateau Remediation Contract



Emily J. Millikin, Director  
Washington Closure Hanford, LLC  
River Corridor Contract



Raymond J. Skwarek, Vice President  
Washington River Protection Solutions, LLC  
Tank Operations Contract



David E. Molnaa, President  
Hanford Atomic Metal Trades Council



Dave Davis, President  
Central Washington Building Trades Council



# Hanford Radiological Worker Training Program Description



Department of ENERGY  
Hanford

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# Hanford Radiological Worker Training Program Description


Rev.0 January 2010

## Hanford Radiological Forum Endorsement


This document establishes requirements for Hanford Site Radiological Worker training applicable to Hanford contractors and the Hanford DOE Offices except for the Bechtel National Vitrification construction project. This program includes Radiological Worker Training I and II initial, accelerated and retraining/qualification. The program satisfies the requirements of 10 CFR 835, *Occupational Radiation Protection*; DOE/RL-2002-12, Rev. 0, *Hanford Radiological Health and Safety Document*; and Hanford Site Contractor individual radiation safety training programs.

  
\_\_\_\_\_  
Jim Rolph  
HRCF Chair  
WRPS Rad Con Director

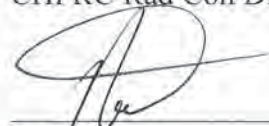
2/10/2010  
Date

  
\_\_\_\_\_  
Gerald Simiele  
WCH Representative to the HRCF

2/24/10  
Date

  
\_\_\_\_\_  
Tom Bratvold  
CHPRC Rad Con Director

03/03/2010  
Date

  
\_\_\_\_\_  
Robert Ford  
PNNL Rad Con Director

2/26/2010  
Date

  
\_\_\_\_\_  
Wayne Schofield  
MSA Rad Con Director

2/26/2010  
Date

## **Radiological Worker Training Program Description Rev. 0 January 2010**

Technical / Functional Manager Approval: Ted Giltz

HAMMER/Hanford Training Approval: Brian Killand

### **1.0 PURPOSE**

This document establishes requirements for Hanford Site Radiological Worker training applicable to Hanford contractors and the Hanford DOE Offices except for the Bechtel National Vitrification construction project. This program includes Radiological Worker Training I and II initial, accelerated and retraining/qualification. The program satisfies the requirements of 10 CFR 835, *Occupational Radiation Protection*; DOE/RL-2002-12, Rev. 0, *Hanford Radiological Health and Safety Document*; and Hanford Site Contractor individual radiation safety training programs.

NOTE: This revision transitions the previous PHMC Radiological Worker Training Program Description (Rev. 2) to a Hanford Site Training Program Description to support implementation of DOE/RL-2002-12 and the Hanford Radiological Control Forum direction for establishing Standardized Radiation Worker training between Hanford Contractors. No technical changes to the Radiation Worker training and qualification requirements or process are made by this revision.

### **2.0 SCOPE**

This training program description applies to all Hanford DOE Office personnel who enter radiological areas managed by Hanford Contractors, Hanford contractor employees, and subcontractors (including vendors) employees performing work within the scope of one of the Hanford Contractor Radiation Protection Program Plans. HAMMER provides Radiation Worker training to all Hanford organizations except for PNNL; equivalency with PNNL Radiation Worker training is established and documented in this program description (Attachment A). Bechtel National currently does not have radiation workers or the need for radiation workers during construction. In general Radiation Worker training is required for unescorted access to:

- Areas posted as Radiological Buffer Areas, Radioactive Material Areas, Radiation Areas, High Radiation Areas and Very High Radiation Areas (**Radiological Worker I**).
- Require unescorted access to all of the areas listed above, plus Contamination Areas, High Contamination Areas, Airborne Radioactivity Areas and Soil Contamination Area (when disturbing soil) (**Radiological Worker II**).
- As specified by individual Hanford Contractor policies and procedures.



### **3.0 RESPONSIBILITIES**

#### **3.1 Hanford Radiological Control Forum (HRCF)**

1. As required by DOE/RL 2002-12, Sections A and I; and the HRCF Charter establish criteria and requirements that utilize DOE standardized core training material to the maximum extent practical.

#### **3.2 HAMMER Radiation Safety Training Manager:**

- Implement the criteria and requirements for Radiation Worker training and qualification established by the HRCF.
- Keep the Hanford Radiological Control Forum informed of recommended technical and training changes.
- Implement and administer the Radiological Worker initial and continuing training program.
- Authorize training waivers and extensions for portions of Radiological Worker training course(s) based on the trainee's previous training and/or experience with the responsible contractor's concurrence.
- Support training assessments or evaluations of the Radiological Worker's initial and continuing training program as required by HAMMER procedures and/or contractor 10 CFR 835 Assessment Programs.
- Approve Radiological Worker training program tasks selected for training.
- Approve Radiological Worker training program learning objectives based on the recommendations of Radiological Worker (RW) Training Materials (DOE-HDBK-1130-2008)
- Approve Radiological Worker training program course materials.
- Approve training equivalencies established with the PNNL Radiation Worker Training Program\*

\* Program equivalency is established. Due to the low number of needed equivalencies and differences between the PNNL electronic data systems and HAMMER data systems an individual equivalency will be generated for each event. The HAMMER Radiation Safety Manager may change this policy if warranted.

#### **3.3 HAMMER Nuclear Safety Training Program Manager**

1. Coordinate staff and scheduling of initial, accelerated, and retraining to meet the needs of requesting contractors.
2. Prepare training waivers, extensions, and equivalencies in accordance with approved HAMMER procedures.
3. Review and submit training records in accordance with HAMMER procedures.
4. Maintain program training records in accordance with HAMMER procedures.

5. Provide recommendations on needed level of qualification to contractor training representatives and First Line Managers.

#### 4.0 INITIAL TRAINING REQUIREMENTS

The Radiological Worker Training program is comprised of Radiological Worker I & II initial and accelerated courses. The course content implement the requirements of 10 CFR 835.901(b) and recommendations of DOE-HDBK-1130-2008.

#### 4.1 Training Program Entry Requirements

1. There are no education and experience requirements for Radiological Worker qualification.
2. Reading and understanding the English language is necessary.
3. Students should normally be able to read English adequately enough to understand safety and health postings and warnings and complete the Radiation Worker examinations that are written at an approximately 6<sup>th</sup> grade level.
4. The Contractor Radiation Protection Directors must approve any language deviation or the use of oral exams.
5. Employees must meet the physical requirements necessary for use of protective equipment required for the job as established by the Contractor Employee Job Task Analysis (EJTA) or equivalent.
6. Radiation Worker practical training requires substantial footwear.

#### 4.2 Initial Training

The table below lists the training activities included in initial Radiological Worker training program. In addition, other training requirements may also apply (see Training Selection Tool).

Activity No.	ITEM Course Title
020701	RW I training, OR
0207A1	RW I accelerated training
020001	RW II training, OR
0200A1	RW II accelerated training



## **5.0 INITIAL TRAINING PROCESSES**

### **5.1 Instructional Methods**

Radiological Worker training (Rad Worker) is administered by HAMMER/Hanford Training in a variety of settings to match the instructional method with the students' level of experience. Classroom instruction, computer based instruction and hands-on practical factors are used to accomplish training. PNNL performs an independent Radiation Worker training program which is equivalent to that provided by HAMMER.

### **5.2 Testing**

1. Rad Worker training courses have both a knowledge examination and practical factors evaluation. The knowledge examination may be in the form of a computer-based exam or provided by an instructor as a written examination. In either format, the student will be administered an examination to measure the achievement of learning objectives for each course.
2. The passing criterion for knowledge examinations is 80 percent.
3. Examinations will be controlled.
4. Practical factors evaluation will be graded on a satisfactory/unsatisfactory system with remediation provided for any objective that was missed.
5. Completion of the exam and performance practical must be completed within 30 days of each other.

### **5.3 Failures and Remediation**

Remediation for Rad Worker training will be as follows:

1. Written/computer based exams will be reviewed with the student prior to taking a second exam. Remediation plans for qualification examinations will be provided to the employee verbally unless they request otherwise in writing.
2. Second or subsequent failure requires a remedial plan discussed with the individual's manager or supervisor.
3. Performance (practical) deficiencies noted in Rad Worker training will be communicated to the employee during the practical factors debrief. Satisfactory performance of pass/fail criteria is required prior to satisfactory completion of a performance deficiency.

### **5.4 Training Exceptions:**

1. The HAMMER Radiation Protection Training Manager approves exceptions or waivers to radiological training requirements with written concurrence of the individual's contractor Radiation Protection Director.

2. The HAMMER Radiation Protection Training Manager may authorize equivalencies to training requirements based upon satisfactory evidence of prior training satisfying the objectives of the training program.

NOTE: See HNF-PRO-179, *Obtaining Training Equivalencies, Waivers, and Extensions*.

## 5.5 Training Process:

1. Radiological Worker training is based on DOE Handbook 1130-2008.
2. Revisions have been made in accordance with the Systematic Approach to Training (SAT) to add Hanford Site information in the program.
3. Practical factors have been developed to ensure basic skills are learned prior to use in the field. The Hanford Radiological Control Forum has approved a generic approach to performance elements to support a standardized site Radiation Worker qualification as required by DOE/RL-2002-12. Facility specific requirements are addressed in other training or orientations.
4. Individuals who have previous Rad Worker training or experience (another DOE site, commercial nuclear, navy nuclear, etc.) or an advanced degree (BS/MS/PhD) may be accelerated through the initial training using the accelerated training course(s).
5. Satisfactory completion of both the examination and the practical factors are required.

## 5.6 Facility Training Support

1. Facilities may identify additional training requirements to supplement the Standardized Hanford Radiation Worker training program. Typically, this training provides additional knowledge and skill needed by the employee to work safely with those facility's specific radiological hazards.
2. HAMMER Radiation Safety Training personnel and the ALARA Center are available to assist in the development and implementation of facility specific training.
3. Development of this training should be conducted in accordance with the Systematic Approach to Training and provided to the necessary employees prior to unsupervised task performance.

## 6.0 RETRAINING PROCESS

### 6.1 Continuing Training

Continuing training is provided as "retraining" and is required as listed below. Additional continuing training will be provided as necessary when policies or procedures change or as directed by the HRCF.

## 6.2 Retraining

1. Rad Worker I Retraining (#020703) will be accomplished every two years. Retraining will include the academics (classroom or computer based portions) and the practical factors performance. Retraining shall include examinations and or performance demonstration evaluations as appropriate for the topic presented.
2. Rad Worker II Retraining (#020003) will be accomplished every two years. Retraining will include the academics (classroom or computer based portions) and the practical factors performance. Retraining shall include examinations and or performance demonstration evaluations as appropriate for the topic presented.

## 6.3 Extensions

An employee's Rad Worker qualification may be extended for up to 30 days on a case-by-case basis. Extensions are documented and approved in advance per HNF-PRO-179, *Obtaining Training Equivalencies, Waivers and Extensions*.

Individuals whose qualifications have been expired less than six months are encouraged to complete the retraining course. Over six months should be completed through the accelerated Radiation Worker course or re-performance of the initial course.

## 6.4 Examinations and Remedial Training

1. Passing scores for knowledge examinations will be 80% or greater. A satisfactory score shall be achieved for Practical Factors. All mandatory pass/fail practical factor criteria must be satisfactorily completed.
2. Remediation for continuing training courses will be as follows:
  - Performance deficiencies noted in Rad Worker training will be communicated to the employee. Practical Factors deficiencies will be addressed during a debriefing with the worker.
  - If an individual's Rad Worker qualification has expired, the individual must take the accelerated or initial classroom training course to requalify.
  - Remediation for the first qualification examinations failure will be provided to the employee verbally unless they request otherwise in writing. 2<sup>nd</sup> or subsequent exam failures require a minimum of a discussion with the responsible First Line Manager/buyer technical representative or supervisor.



## 7.0 SOURCE REQUIREMENTS DOCUMENTS

- 10 CFR 835.103, *Education, training and Skills*
- 10 CFR 835 Subpart J--*Radiation Safety training*
- DOE/RL-2002-12, *Hanford Radiological Health and Safety Document*
- Contractor Radiological Control Manual Training Requirements (e.g., HNF-5173, Chapter 6, Part 3; *Radiological Worker Training*)

### Approvals

\_\_\_\_\_  
HAMMER Nuclear Training Program Manager  
Brian Killand

\_\_\_\_\_  
Date

\_\_\_\_\_  
HAMMER Radiation Safety Training Manager  
Ted Giltz

\_\_\_\_\_  
Date

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**Copy of PNNL Radiation Worker Equivalency  
Attachment 1**

**Note:** DOE Handbook 1130-2008 has replaced DOE Handbook 1130-1998. No training program changes affecting the equivalency resulted from the update.

**Contact the HAMMER Radiological Training Nuclear Program Manager for information associated with the attached reciprocity review.**



## **Reciprocity Review Performed November 2006**

### **Purpose**

The purpose of this review is to provide information regarding Pacific Northwest National Laboratory (PNNL) Training and comparison between the Radiological Worker Training provided by PNNL and Fluor Hanford Training for Radworker I and Radworker II. The objective of this review is to determine if the training given by the two programs is sufficiently equivalent to allow for reciprocity between the two programs. FHI manages the training program provided at the HAMMER facility for radiological workers of FHI and other Hanford Contractors; therefore, this review also applies to the other Hanford Contractors that use the radiological worker training provided at the HAMMER facility.

### **Summary**

This evaluation verifies that PNNL and Fluor Hanford, Inc. (FHI) have equivalent programs that meet DOE's expectations for quality of content and effectiveness.

### **Drivers**

10 CFR 835, DOE-HDBK-1130-98, Hanford Radiological Health and Safety Document.

### **Background**

In late 1996, the radworker training at PNNL was assessed by FHI and the conclusion of the validation and verification at that time was, *"the Pacific Northwest National Laboratories radworker training meets all the requirements for Project Hanford Management Contract (PHMC) radworker training."*

A reciprocity agreement was made which allowed workers to train with FHI or PNNL and each would accept the others training with provided proof that it was completed. It was also agreed that changes to the training at either site would be shared and annually reviewed to maintain equivalency. A letter from E. Hochheiser dated December 18, 1996 is the only documented mention of this equivalency agreement other than word of mouth.

The Hanford Radiological Health and Safety Document states in section I.3 that: "The Hanford Radiological Control Forum shall ensure that radiation safety training programs including course content, examinations, performance demonstrations, and requalification for GERT, Radworker I and Radworker II will be sufficiently consistent to maintain reciprocity of this training between contractors for core training materials and Hanford site-specific training."

A preliminary meeting took place on July 6, 2006 to introduce the leads/or personnel in charge of providing radiological worker training with the different contractors at Hanford. Included in that meeting were representatives from FHI; the HAMMER facility; PNNL Training; Washington Closure Hanford; LLC; and CH2MHill Hanford Group, Inc.

It was determined by this group that training by PNNL and FHI should be evaluated for reciprocity since the annual reviews had not taken place since 1996. The only contractors providing coursework training were PNNL and FHI (HAMMER). This report includes the review done of PNNL and FHI radworker training and their associated practical evaluations.

**Review of Objectives**

The review is broken down by sections included in the coursework and practical factors, and how or if they are met by the two training providers.

DOE OBJECTIVES	BY FHI (HAMMER)	BY PNNL
<p><b>Radiological Fundamentals</b></p> <ul style="list-style-type: none"> <li>• Identify the parts of an atom</li> <li>• Define radioactive material, radioactivity, radioactive half-life, and radioactive contamination.</li> <li>• Identify the units used to measure radioactivity and contamination.</li> <li>• Define ionization and ionizing radiation</li> <li>• Distinguish between ionizing radiation and non-ionizing radiation</li> <li>• Identify the four basic types of ionizing radiation and the following for each type</li> </ul>	<p><b>Radiological Fundamentals:</b> meets requirements as described in DOE-HDBK-1130-98 (some items reordered for clarity does not distract to affect lesson plan)</p>	<p><b>Radiological Fundamentals:</b> meets requirements as described in DOE-HDBK-1130-98</p>

<ol style="list-style-type: none"> <li>1. physical characteristics</li> <li>2. range</li> <li>3. shielding</li> <li>4. biological hazards</li> <li>5. sources at the site</li> </ol> <ul style="list-style-type: none"> <li>• Identify the units used to measure radiation</li> <li>• Convert rem to milli-rem and milli-rem to rem</li> </ul>		
<p><b>Biological Effects</b></p> <ul style="list-style-type: none"> <li>• Identify the major sources of natural background and man-made radiation</li> <li>• Identify the average annual dose to the general population from natural background and manmade sources of radiation</li> <li>• State the method by which radiation causes damage to cells</li> <li>• Identify the possible effects of radiation on cells</li> <li>• Define the terms "acute" and "chronic" dose</li> <li>• State examples of chronic radiation dose</li> <li>• Define the terms "somatic" and "heritable effect"</li> <li>• State the potential</li> </ul>	<p><b>Biological Effects:</b> meets requirements as described in DOE-HDBK-1130-98</p>	<p><b>Biological Effects:</b> meets requirements as described in DOE-HDBK-1130-98</p>

<p>effects associated with prenatal radiation dose</p> <ul style="list-style-type: none"> <li>• Compare the biological risks from chronic doses to the health risks workers are subjected to in industry and daily life</li> </ul>		
<p><b>Radiation Limits and Administrative Control Levels</b></p> <ul style="list-style-type: none"> <li>• State the purposes of administrative control levels</li> <li>• Identify the DOE radiation dose limits, DOE recommended administrative control level and the facility administrative control level</li> <li>• State the site policy concerning prenatal radiation exposure</li> <li>• Identify the employees responsibilities concerning radiation dose limits and administrative control levels</li> </ul>	<p><b>Radiation Limits and Administrative Control Levels:</b></p> <p>meets requirements as described in DOE-HDBK-1130-98 (some items reordered for clarity does not distract to affect lesson plan)</p>	<p><b>Radiation Limits and Administrative Control Levels:</b></p> <p>meets requirements as described in DOE-HDBK-1130-98</p>
<p><b>ALARA</b></p> <ul style="list-style-type: none"> <li>• State the ALARA concept</li> <li>• State the DOE/Site management policy for the ALARA program</li> <li>• Identify the responsibilities of Management, the</li> </ul>	<p><b>ALARA:</b></p> <p>meets requirements as described in DOE-HDBK-1130-98 (some items reordered for clarity does not distract to affect lesson plan)</p>	<p><b>ALARA:</b></p> <p>meets requirements as described in DOE-HDBK-1130-98</p>



<p>Radiological Control Organization, and radiological worker in the ALARA program</p> <ul style="list-style-type: none"> <li>• Identify methods for reducing external and internal radiation dose</li> <li>• State the pathways by which radioactive material can enter the body</li> <li>• Identify methods a radiological worker can use to minimize radioactive waste</li> </ul>		
<p><b>Personnel Monitoring</b></p> <ul style="list-style-type: none"> <li>• State the purpose and worker responsibilities for each of the external dosimeter devices used at the site</li> <li>• State the purpose and worker responsibilities for each of the internal monitoring methods used at the site</li> <li>• State the methods for obtaining dose records</li> <li>• Identify worker responsibilities for reporting dose received at other sites and from medical applications</li> </ul>	<p><b>Personnel Monitoring:</b> meets requirements as described in DOE-HDBK-1130-98</p>	<p><b>Personnel Monitoring:</b> meets requirements as described in DOE-HDBK-1130-98</p>
<p><b>Radiological Access Controls and Postings</b></p> <ul style="list-style-type: none"> <li>• State the purpose of and information found on</li> </ul>	<p><b>Radiological Access Controls and Postings:</b> meets requirements as described in DOE-HDBK-1130-98</p>	<p><b>Radiological Access Controls and Postings:</b> meets requirements as described in DOE-HDBK-1130-98</p>

<p>Radiological Work Permits (RWPs)</p> <ul style="list-style-type: none"> <li>• Identify the worker responsibilities in using RWPs</li> <li>• Describe the colors and symbols used on radiological postings</li> <li>• Identify the radiological and disciplinary consequences of disregarding radiological postings, signs and labels</li> <li>• Define the areas controlled for radiological purposes</li> <li>• Identify the recommended requirements for entering, working in, and exiting:             <ol style="list-style-type: none"> <li>1. Radiological Buffer Areas</li> <li>2. Radiation Areas</li> <li>3. Radioactive Materials Areas</li> <li>4. Underground Radioactive Materials Areas</li> <li>5. Soil Contamination Areas</li> <li>6. Fixed Contamination Areas</li> </ol> </li> <li>• Identify the areas a Radiological 1 trained person may</li> </ul>	<p>Covered more completely with site specific additions</p> <p>High and Very High Radiation postings and access requirements covered here</p>	
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<p>enter</p> <ul style="list-style-type: none"> <li>Identify the purpose and use of personnel contamination monitors</li> </ul>		
<p><b>Radiological Emergencies</b></p> <ul style="list-style-type: none"> <li>State the purpose and types of emergency alarms</li> <li>Identify the correct responses to emergencies and alarms</li> <li>State the possible consequences of disregarding radiological alarms</li> <li>State the site administrative emergency radiation dose guidelines</li> </ul>	<p><b>Radiological Emergencies:</b> meets requirements as described in DOE-HDBK-1130-98</p>	<p><b>Radiological Emergencies:</b> meets requirements as described in DOE-HDBK-1130-98</p>
<p><b>High and Very High Radiation Areas</b></p> <ul style="list-style-type: none"> <li>Define "High Radiation Area" and "Very High Radiation Area"</li> <li>Identify sources and locations that may produce High Radiation Area and Very High Radiation Areas at the site</li> <li>State the minimum requirements for entering, working in, and exiting High Radiation Areas</li> <li>State the administrative and physical controls for access to High</li> </ul>	<p><b>High and Very High Radiation Areas:</b> meets requirements as described in DOE-HDBK-1130-98 Except the objectives to identify sources and the minimum requirements for working in and exiting High Radiation Areas</p> <p>The objectives covered were discussed in the Radiological Access Controls and Postings Unit</p> <p>There is no section for High and Very High Radiation Areas</p>	<p><b>High and Very High Radiation Areas:</b> meets requirements as described in DOE-HDBK-1130-98</p>

Radiation Areas		
<p><b>Radioactive Contamination Control</b></p> <ul style="list-style-type: none"> <li>• Define fixed, removable and airborne contamination</li> <li>• State sources of radioactive contamination</li> <li>• State the appropriate response to a spill of radioactive material</li> <li>• Identify methods used to control radioactive contamination</li> <li>• Identify the proper use of protective clothing</li> <li>• Identify the purpose and use of personnel contamination monitors</li> <li>• Identify the normal methods used for decontamination</li> <li>• Define "Contamination", "High Contamination", and "Airborne Radioactivity Areas"</li> <li>• Identify the minimum requirements for entering, working in and exiting Contamination High Contamination, and Airborne</li> </ul>	<p><b>Radioactive Contamination Control:</b> meets requirements as described in DOE-HDBK-1130-98 The following items are found in different units as noted below:</p> <ul style="list-style-type: none"> <li>• The objective for use of a PCM is found in its own unit on self survey</li> <li>• Response to a spill is covered in the emergencies section</li> <li>• The objective to identify the purpose and use of personnel contamination monitors is located in its own unit</li> <li>• Objectives on definition and entry requirements found in the postings unit</li> </ul>	<p><b>Radioactive Contamination Control:</b> meets requirements as described in DOE-HDBK-1130-98 The following items are found in different units as noted below:</p> <ul style="list-style-type: none"> <li>• Response to a spill is covered in the emergencies section</li> </ul>



<p style="text-align: center;">Radioactivity Areas</p> <p><b>Practical Factors for RWI</b></p> <ul style="list-style-type: none"> <li>• Identify and comply with the RWP</li> <li>• Record appropriate information on the RWP</li> <li>• Select and wear dosimeters as per the RWP</li> <li>• Enter a simulated area and perform a specified task/job using ALARA techniques</li> <li>• Respond to abnormal conditions and alarms</li> <li>• Monitor for personnel contamination in accordance with posted facility specific instructions</li> </ul>	<p><b>Practical Factors for RWI:</b></p> <p>meets requirements as described in DOE-HDBK-1130-98</p>	<p><b>Practical Factors for RWI:</b></p> <p>meets requirements as described in DOE-HDBK-1130-98</p>
<p><b>Practical Factors for High Radiation Areas</b></p> <ul style="list-style-type: none"> <li>• Identify and comply with the RWP</li> <li>• Record appropriate information on the RWP</li> <li>• Select and wear dosimeters as per the RWP</li> <li>• Enter a High Radiation Area and perform a specified task/job using ALARA techniques</li> <li>• Respond to abnormal conditions and alarms</li> <li>• Demonstrate</li> </ul>	<p><b>Practical Factors for High Radiation Areas:</b></p> <p>meets requirements as described in DOE-HDBK-1130-98 and covered in the RWII practical</p>	<p><b>Practical Factors for High Radiation Areas:</b></p> <p>meets requirements as described in DOE-HDBK-1130-98 and covered in the RWII practical</p>

proper exit from a simulated High Radiation Area		
<p><b>Practical Factors for RWII</b></p> <ul style="list-style-type: none"> <li>• Identify and comply with the RWP</li> <li>• Record appropriate information on the RWP</li> <li>• Select and don protective clothing and dosimeters as per the RWP</li> <li>• Enter a simulated area and perform a specified task/job using Contamination Control and ALARA techniques</li> <li>• Respond to abnormal conditions and alarms</li> <li>• Remove protective clothing and dosimeters in accordance with facility specific instructions</li> <li>• Monitor for personnel contamination in accordance with posted facility specific instructions</li> </ul>	<p><b>Practical Factors for RWII:</b> meets requirements as described in DOE-HDBK-1130-98</p>	<p><b>Practical Factors for RWII:</b> meets requirements as described in DOE-HDBK-1130-98</p>

**Conclusion**

This review, as summarized in the preceding table, demonstrates that DOE's required objectives are met effectively by both programs. The objectives for this training are found in DOE-HDBK-1130-98. Training provided by FHI (at the HAMMER facility) and PNNL should be considered equivalent. There are minor site specific differences which can be covered effectively by instructors at each training site.