



# ORAU TEAM Dose Reconstruction Project for NIOSH

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**PUBLICATION RECORD**

<b>EFFECTIVE DATE</b>	<b>REVISION NUMBER</b>	<b>DESCRIPTION</b>
08/22/2005	00	New document to describe the contents of the Pacific Northwest National Laboratory Site Profile. First approved issue. Training required: As determined by the Task Manager. Initiated by Edward D. Scalsky.
05/08/2007	01	Approved revision initiated to include a Purpose, Scope, and Attributions and Annotations. Incorporates formal internal review comments. This revision results in no change to the assigned dose and no PER is required. Training required: As determined by the Task Manager. Initiated by Edward D. Scalsky.

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## ACRONYMS

AEC	Atomic Energy Commission	
DOE	Department of Energy	
EEOICPA	Energy Employees Occupational Illness Compensation Program Act of 2000	
MDA	minimum detectable activity	
NIOSH	National Institute for Occupational Safety and Health	
PNNL	Pacific Northwest National Laboratory	
POC	Probability of Causation	
TBD	technical basis document	
U.S.C.	United States Code	

## 1.1 INTRODUCTION

Technical basis documents and site profile documents are not official determinations made by the National Institute for Occupational Safety and Health (NIOSH) but are rather general working documents that provide historic background information and guidance to assist in the preparation of dose reconstructions at particular sites or categories of sites. They will be revised in the event additional relevant information is obtained about the affected site(s). These documents may be used to assist NIOSH staff in the completion of the individual work required for each dose reconstruction.

In this document the word “facility” is used as a general term for an area, building, or group of buildings that served a specific purpose at a site. It does not necessarily connote an “atomic weapons employer facility” or a “Department of Energy [DOE] facility” as defined in the Energy Employees Occupational Illness Compensation Program Act [EEOICPA; 42 U.S.C. § 7384l(5) and (12)]. EEOICPA defines a DOE facility as “any building, structure, or premise, including the grounds upon which such building, structure, or premise is located ... in which operations are, or have been, conducted by, or on behalf of, the Department of Energy (except for buildings, structures, premises, grounds, or operations ... pertaining to the Naval Nuclear Propulsion Program)” [42 U.S.C. § 7384l(12)]. Accordingly, except for the exclusion for the Naval Nuclear Propulsion Program noted above, any facility that performs or performed DOE operations of any nature whatsoever is a DOE facility encompassed by EEOICPA.

For employees of DOE or its contractors with cancer, the DOE facility definition only determines eligibility for a dose reconstruction, which is a prerequisite to a compensation decision (except for members of the Special Exposure Cohort). The compensation decision for cancer claimants is based on a section of the statute entitled “Exposure in the Performance of Duty.” That provision [42 U.S.C. § 7384n(b)] says that an individual with cancer “shall be determined to have sustained that cancer in the performance of duty for purposes of the compensation program if, and only if, the cancer ... was at least as likely as not related to employment at the facility [where the employee worked], as determined in accordance with the [probability of causation<sup>1</sup>] guidelines established under subsection (c) ...” [42 U.S.C. § 7384n(b)]. Neither the statute nor the probability of causation guidelines (nor the dose reconstruction regulation) define “performance of duty” for DOE employees with a covered cancer or restrict the “duty” to nuclear weapons work.

As noted above, the statute includes a definition of a DOE facility that excludes “buildings, structures, premises, grounds, or operations covered by Executive Order No. 12344, dated February 1, 1982 (42 U.S.C. 7158 note), pertaining to the Naval Nuclear Propulsion Program” [42 U.S.C. § 7384l(12)]. While this definition contains an exclusion with respect to the Naval Nuclear Propulsion Program, the section of EEOICPA that deals with the compensation decision for covered employees with cancer [i.e., 42 U.S.C. § 7384n(b), entitled “Exposure in the Performance of Duty”] does not contain such an exclusion. Therefore, the statute requires NIOSH to include all occupationally derived radiation exposures at covered facilities in its dose reconstructions for employees at DOE facilities, including radiation exposures related to the Naval Nuclear Propulsion Program. As a result, all internal and external dosimetry monitoring results are considered valid for use in dose reconstruction. No efforts are made to determine the eligibility of any fraction of total measured exposure for inclusion in dose reconstruction. NIOSH, however, does not consider the following exposures to be occupationally derived:

- Radiation from naturally occurring radon present in conventional structures

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<sup>1</sup> The U.S. Department of Labor is ultimately responsible under the EEOICPA for determining the probability of causation (POC).

- Radiation from diagnostic X-rays received in the treatment of work-related injuries

## **1.2 PURPOSE**

The purpose of this Introduction is to provide a summary of the contents of the five TBDs that, along with this introduction, constitute the Pacific Northwest National Laboratory Site Profile.

## **1.3 SCOPE**

The Site Profile is divided into this Introduction and five major TBDs: Site Description, Occupational Medical Dose, Occupational Environmental Dose, Occupational Internal Dose, and Occupational External Dosimetry. This Introduction briefly describes the contents of those five TBDs.

## **1.4 SITE PROFILE DESCRIPTION**

This Site Profile consists of this Introduction, and five TBDs (ORAUT 2005a, 2005b, 2005c, 2005d, 2005e).

The Site Description TBD (ORAUT 2005a) briefly describes the facilities and processes of Pacific Northwest National Laboratory's (PNNL) primary mission, which originally was research and development of nuclear energy and other peaceful uses of nuclear materials. PNNL operated seven testing, research, and demonstration reactors; several fuel fabrication facilities; a plutonium fuels pilot plant; a radiological calibration and development laboratory; and a radiochemistry laboratory in the 300 Area of the Hanford site. In addition, PNNL operated other facilities for testing chemical process improvements, materials and engineering studies, pile physics technology and metallurgical studies, post irradiation testing, environmental and bioassay programs, and many other research programs. Not all of these programs were necessarily in the 300 Area.

The Occupational Medical Dose, Occupational Environmental Dose, Occupational Internal Dose and the Occupational External Dosimetry programs at the PNNL are the same programs that existed at Hanford subsequent to 01/03/1965 when Battelle Memorial Institute (BMI) assumed responsibility for operation of the Hanford Laboratories and certain Hanford-wide services and functions as part of the Atomic Energy Commission (AEC) operations at the Hanford site. Since that is the case, it has been determined that any dose reconstructions that incorporate the dose received by PNNL employees as a result of required medical x-ray examinations, environmental releases, or from internal or external exposure to radiation will be determined based on the programs described in the corresponding Hanford TBDs (ORAUT 2005f, 2006a, 2004a, 2006b) and any associated attachments (ORAUT 2004b).

The four PNNL TBDs have been revised to instruct dose reconstructors to refer to the equivalent Hanford TBDs for information needed to perform dose reconstructions for PNNL employees after 01/03/1965.

## **1.5 ATTRIBUTIONS AND ANNOTATIONS**

All information requiring identification was addressed via references integrated into the reference section of this document.

## REFERENCES

ORAUT (Oak Ridge Associated Universities Team), 2004a, *Technical Basis Document for the Hanford Site – Occupational Internal Dose*, ORAUT-TKBS-0006-5, Rev. 01, Oak Ridge, Tennessee, November 24.

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ORAUT (Oak Ridge Associated Universities Team), 2005a, *Pacific Northwest National Laboratory – Site Description*, ORAUT-TKBS-0027-2, Rev. 00, Oak Ridge, Tennessee, August 5.

ORAUT (Oak Ridge Associated Universities Team), 2005b, *Pacific Northwest National Laboratory – Occupational Medical Dose*, ORAUT-TKBS-0027-3, Rev. 00, Oak Ridge, Tennessee, August 9.

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ORAUT (Oak Ridge Associated Universities Team), 2006a, *Hanford Site – Occupational Environmental Dose*, ORAUT-TKBS-0006-4, Rev. 01, Oak Ridge, Tennessee, December 20.

ORAUT (Oak Ridge Associated Universities Team), 2006b, *Hanford Site – Occupational External Dosimetry*, ORAUT-TKBS-00006-6, Rev. 02, Oak Ridge, Tennessee, November 21.