Hanford Environmental Dose Reconstruction Project

PNWD-1980-14 HEDR
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Quarterly Report

December 1993-February 1994

Prepared for the Technical Steering Panel
and the Centers for Disease Control and Prevention
under Contract 200-92-0503(CDC)/18620(BNW)

Battelle
Pacific Northwest Laboratories

PNWD-1980-14 HEDR

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**Battelle
Pacific Northwest Laboratories
Richland, Washington 99352**

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HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION PROJECT

Quarterly Report

December 1993-February 1994

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Preface

This quarterly report summarizes the technical progress and project status for the Hanford Environmental Dose Reconstruction (HEDR) Project being conducted by Battelle, Pacific Northwest Laboratories (BNW) under contract with the Centers for Disease Control and Prevention (CDC). The Technical Steering Panel (TSP), which is composed of

experts in numerous technical fields related to the project, provides technical direction of the project.

Figure 1 shows the Battelle organizational structure of the HEDR Project. Table 1 shows the status of Battelle work to comply with directives issued by the TSP.

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Figure 1. Organizational Structure of the HEDR Project

Table 1. Status of Directives^(a)

		<u>Complete</u>	<u>Ongoing</u>
88-1-a	Classified Documents	x	
88-1-b	Proposals	x	
88-2	Vegetation	x	
88-3	Status Reports	x	
88-4	Ground Water	x	
88-5	Maps	x	
88-6	Resumes	x	
88-7	TSP Comments on Proposals	x	
89-1	Indian Tribes	x (work now directed by TSP)	
89-2	Bioassay Data	x	
89-3	Document Handling	x	
89-4	Reactor Purging	x	
89-5	Modeling Approach	x	
89-6	Meeting Materials	x	
89-7	Technical Communication	x	
89-8	Phase II Planning	x	
89-9	Project QA Plan		x
89-10	Contracts with Tribes		x
90-1	Project Direction (Task Plans)	x	
90-2	Dose Cut-Off Limit	x	
92-1	Demography, Food, and Agriculture Tasks		x
92-2	Dose Code Development		x
93-1	Sensitivity and Uncertainty Analyses		x
93-2	Milk Production and Distribution		x

(a) Note: For simplicity, TSP directives are identified here using only key words. The complete directives are available from the TSP.

Executive Summary

The objective of the Hanford Environmental Dose Reconstruction (HEDR) Project is to estimate the radiation doses that individuals and populations could have received from nuclear operations at Hanford since 1944. The project is being managed and conducted by Battelle, Pacific Northwest Laboratories (BNW) under contract with the Centers for

Disease Control and Prevention (CDC). The independent Technical Steering Panel (TSP) provides technical direction.

The TSP consists of experts in environmental pathways, epidemiology, surface-water transport, ground-water transport, statistics, demography, agriculture, meteorology, nuclear engineering, radiation dosimetry, and cultural anthropology. Included are appointed members representing the states of Oregon, Washington, and Idaho, a representative of Native American tribes, and an individual representing the public.

The project is divided into the following technical tasks. These tasks correspond to the path radio-nuclides followed from release to impact on humans (dose estimates):

- Source Terms
- Environmental Transport
- Environmental Monitoring Data
- Demography, Food Consumption, and Agriculture
- Environmental Pathways and Dose Estimates.

The Source Terms Task develops estimates of radioactive emissions from Hanford facilities since 1944. These estimates are based on historical measurements and production information.

The Environmental Transport Task reconstructs the movement of radioactive materials from the areas of release to populations. Movement via the atmosphere, surface water (Columbia River), and ground water is studied.

The Environmental Monitoring Data Task assembles, evaluates, and reports historical environmental monitoring data.

The Demography, Food Consumption, and Agriculture Task develops the data needed to identify the populations that could have been affected by the releases. Population and demographic information are developed for the general population within the study area. This information is also expected to be developed for several special population groups, including Native American tribes in the study area.

In addition to population and demographic data, the food and water sources and consumption patterns for populations are estimated because they provide a primary pathway for the intake of radio-nuclides. Historical dairy farming practices and milk distribution systems are studied because milk is a significant pathway for iodine-131 to enter the human body. Cows could have eaten vegetation contaminated with this radionuclide.

Lifestyle and food habit information will be developed by the Fred Hutchinson Cancer Research Center (FHCRC) for use in the Hanford Thyroid Disease Study (HTDS).

The Environmental Pathways and Dose Estimates Task uses the information produced by the other tasks and organizations to estimate the radiation doses individuals could have received from Hanford radiation.

Project reports and Hanford-originated references used in the reports are made available to the public in a public reading room. Project progress is documented in this quarterly report, which is available to the public.

Project Summary

Progress

Figure A.1 in Appendix A shows the status of HEDR Project milestone activities. The following is a summary of activities conducted by HEDR staff from December 1993 through February 1994:

- completed and submitted to the TSP for review the draft document, *Validation of HEDR Models* (PNWD-2221 HEDR) (Milestone 0204C)
- completed and submitted to the TSP for review the draft document, *Radionuclide Releases to the Atmosphere from Hanford Operations, 1944-1972* (PNWD-2222 HEDR) (Milestone 0303D)
- completed and submitted to the TSP for review the draft document, *Radionuclide Releases to the Columbia River from Hanford Operations, 1944-1971* (PNWD-2223 HEDR) (Milestone 0304B)
- published the final report, *Regional Atmospheric Transport Code for Hanford Emission Tracking (RATCHET)* (PNWD-2224 HEDR) (Milestone 0402Brev)
- completed and submitted to the TSP for review the draft document, *Reconstruction of Radionuclide Concentrations in the Columbia River from Hanford, Washington to Portland, Oregon, January 1950-January 1971* (PNWD-2225 HEDR) (Milestone 0404C)
- worked with D. W. Price (TSP) to revise and incorporate new feeding regimes and consumption data into the dose calculations (Subtask 0603)
- provided preliminary dose estimates to the Warm Springs Tribal Council (Subtask 0605)
- completed configuration management records for the DESCARTES, CIDER, and CRD computer codes (Subtask 0702)
- completed the uncertainty and sensitivity analyses of the atmospheric dose estimations (Subtask 0803)
- completed the file classification changes identified in the *Quality Assurance Audit Report of the Hanford Environmental Dose Reconstruction Project*, OHE-3, Audit A-92-20 (PNWD-2049 HEDR) (Task 09)
- prepared for and participated in the CDC audit of the software quality assurance and configuration management of HEDR computer codes on February 22-23, 1994 (Subtask 1003)

- declassified 792 Hanford Site originated documents, 112 of which are of potential interest/use to the HEDR Project (Task 11)

Major Problem Areas or Changes and Action Taken

The TSP will not release the draft dose reports until April 1994. This will push publication of the final dose reports to the end of July. That will require a contract change and funding. Such a proposal has been submitted to the CDC.

Because the incorporation of the new milk cow feeding regime information requires the complete recalculation of the doses, the publication of the draft air dosimetry report will be delayed. A tight schedule has been developed to ensure that the report can be published prior to the TSP public meeting in April 1994.

As the HEDR Project comes to a conclusion, there will be continual fine tuning of the budget to ensure that funds are allocated appropriately. The FY 1994 budget was, therefore, again realigned. Staff of the tasks with no funds remaining but work yet to complete have been asked to submit detailed estimates of the work and hours required. The following realigned budgets are effective February 28, 1994. See Table A.1 for details.

- Task 01: Increased budget to centralize funds necessary to complete contract work
- Task 02: Closed Subtasks 0201 and 0205. Increased the budget by \$44K, \$39K of which has already been spent, leaving a balance of \$5K to address comments on the validation report, interface with HTDS, and turn over project records.
- Task 03: Closed Subtasks 0301, 0303, 0304, and 0307. Increased the budget by \$13K, \$6K of which has already been spent, to address comments on the two source term reports, complete the Milestone 0306A report, and turn over project records.
- Task 04: Authorized no further funds. Funds remaining are for a commitment of \$16K to WSU. Upon receipt of TSP comments, a budget will be established to resolve the comments and turn over project records.
- Task 05: Authorized no further funds. No funds remain in this task. Upon receipt of TSP comments, a budget will be established to resolve the comments and turn over project records.

- Task 06: Closed Subtasks 0601 and 0602. Funds remaining are for a commitment of \$4.5K to Washington State University (WSU) and approximately \$15K to support the Native American work. No funds remain in this task. An estimate of hours required to analyze the new feeding regime information, give final presentations to tribal councils, and turn over project records has been requested from Task 06 staff.
- Task 07: Closed Subtasks 0701 and 0703. In Subtasks 0702 and 0705, a balance remains of \$9K and 15K, respectively, to input new feeding regime information, complete the two dose documents, resolve TSP comments, and turn over project records.
- Task 08: Closed Subtasks 0801 and 0802. In Subtask 0803 there is \$30K of which \$24K are/ will soon be committed to Golder Associates, leaving \$6K for statistical support and turning over project records.
- Task 09: No change.
- Task 10: Closed Subtasks 1001 and 1002. A balance of \$9K remains in Subtask 1003 to complete configuration management activities, any remaining surveillances, and turn over project records.
- Task 11: No change.
- Task 12: No change.

Effective January K. M. Schanke replaced D. L. Martin as the Records Management Task Leader. We have greatly appreciated the professionalism D. L. Martin contributed to managing the myriad of records in the HEDR Project. Because K. M. Schanke has worked on similar projects, there has been a seamless transfer of the records management work.

Planned work for the Next Three Months

- continue to control the scope and budget of the HEDR Project to ensure all contract deliverables are met (Task 01)
- publish final issue of the validation report (Milestone 0204C)
- publish final issue of the radionuclide releases to air report (Milestone 0303D)
- publish final issue of the radionuclide releases to the Columbia River report (Milestone 0304B)

- publish the Hanford historical releases report (Milestone 0306A)
- publish final issue of the Columbia River modeling report (Milestone 0404C)
- publish an overview of vegetation monitoring data, 1952-1983 (Subtask 0502)
- publish an overview of air monitoring data, 1945-1957 (Subtask 0502)
- publish the Columbia River database, 1960-1970 (Subtask 0502)
- submit the guide to environmental monitoring data, 1945-1972, for TSP review; incorporate the TSP comments and publish final issue (Milestone 0502C)
- publish final issue of the milk report (Milestone 0603D)
- review and evaluate preliminary data submitted by the Yakama Indian Nation (Subtask 0605)
- give presentations to the Coeur D'Alene, Nez Perce, Umatilla, and Yakama tribes regarding preliminary dose calculations (Subtask 0605)
- re-estimate atmospheric doses incorporating new feeding regime information (Subtask 0702)
- publish the parameters report (Milestone 0703C)
- submit the Columbia River pathway dose report for TSP review (Milestone 0705B)
- submit the atmospheric pathway dose report for TSP review (Milestone 0705C + 0705A)
- publish the final report, *Uncertainty and Sensitivity Analysis of Historical Measurements of Iodine-131 for Vegetation in 1945-1947* (PNWD-1978 HEDR) (Milestone 0802A)
- complete oversight activities to check for compliance of project technical, quality assurance, and data quality objectives requirements (Task 10)
- transfer all HEDR records and working papers to the HEDR Project Office (all tasks)

Budget Status

Figure 2 shows the present HEDR Project budget status for FY 1994. Table A.1 shows fiscal year (FY) 1994 costs and budget. Figure A.2 shows the Native American research budget status for FY 1994.

Figure 2. HEDR Project Budget Status, FY 1994 - Battelle, Pacific Northwest Laboratories

Acronyms and Abbreviations

AGGREGATE	component of DESCARTES	NFCS	National Food Consumption Survey
AP	Associated Press	NPT	Nez Perce Tribe
BNW	Battelle, Pacific Northwest Laboratories	NTIS	National Technical Information Service
CAT	Coeur d'Alene Tribe	OMB	Office of Management and Budget
CDC	Centers for Disease Control and Prevention	PILOT	please iterate lots of times (computer code)
CHARIMA	river transport model (computer code)	PNL	Pacific Northwest Laboratory (operated for DOE by Battelle Memorial Institute)
CIDER	calculation of individual doses from environmental radionuclides (computer code)	QA	quality assurance
CRD	Columbia River Dosimetry (computer code)	RATCHET	regional atmospheric transport code for Hanford emissions tracking (computer code)
CRU	Columbia River United	RECIPE	component of DESCARTES
CT	Colville Tribe	REDOX	reduction and oxidation (separations process)
CTUIR	Confederated Tribes of the Umatilla Indian Reservation	RFP	request for proposal
DESCARTES	dynamic estimates of concentrations and accumulated radionuclides in terrestrial environments (computer code)	RIDS	records inventory and disposition schedule
DOE	U.S. Department of Energy	RL	U.S. Department of Energy Richland Operations
DOE-HQ	U.S. Department of Energy Headquarters	RM	reactor model (computer code)
DOI	"do" iodine (computer code)	SESRC	Social and Economic Sciences Research Center (Washington State University)
DQO	Data Quality Objective	SHUFFL	component of DESCARTES
FHCRC	Fred Hutchinson Cancer Research Center	SOW	statement of work
FY	fiscal year	ST	Spokane Tribe
GENII-S	generation II-SUNS (computer code)	STRM	source term release model (computer code)
HEDR	Hanford Environmental Dose Reconstruction	STRRM	source term river release model (computer code)
HEDRIC	Hanford Environmental Dose Reconstruction Integrated Codes	SUNS	sensitivity/uncertainty system
HHIN	Hanford Health Information Network	TSP	Technical Steering Panel
HNIS	Health and Nutrition Information Service	USDA	U.S. Department of Agriculture
HTDS	Hanford Thyroid Disease Study	UT	Umatilla Tribe
IAEA	International Atomic Energy Agency	VAMP	validation of model predictions program
IHS	Indian Health Service	WDOE	Washington State Department of Ecology
KT	Kallspel Tribe	WST	Warm Springs Tribe
NAS	National Academy of Sciences	WSU	Washington State University
NAWG	TSP Native American Working Group	YIN	Yakama Indian Nation

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Task 01 Battelle Project Management

Objective

The objective of the Battelle Project Management Task is to provide project planning, control, and management of Battelle dose reconstruction work in accordance with the Centers for Disease Control and Prevention (CDC) contract and Technical Steering Panel (TSP) technical direction.

Progress

Milestone 01011 - Project Final Report, due April 1994 and rescheduled to June 1994

- submitted a formal proposal to develop a final project report in accord with CDC guidance

Other Activities

- submitted 14 abstracts to the Health Physics Society for papers and presentations at the annual meeting in June 1994. Papers will be included in a special dose reconstruction edition of the *Health Physics* journal. BNW has provided funding for a few of the papers.
- pre-reviewed all reviewers' comments on the HEDR reports in progress to ensure that the resolution of the comments did not lead to scope outside the contract for the HEDR Project
- realigned task work and associated budgets to provide funds where needed to complete the authorized work. The realigned budgets were effective February 28, 1994.
- requested by the TSP to incorporate new feeding regimes and consumption data provided by D. W. Price (TSP) into the dose calculations
- revised the report, *HEDR Modeling Approach* (PNWD-1983 HEDR), which describes the methods used in performing scoping studies and estimating final radiation doses
- prepared for and participated in the CDC audit of the software quality assurance and configuration management of HEDR computer codes on

February 22-23, 1994. CDC found no reason to perform a more complete audit at a later date.

- attended the TSP Communications Subcommittee meetings in Portland, Oregon in December 1993 and Seattle, Washington in February 1994, to coordinate the publication of technical reports by BNW and summary versions of those reports by the TSP
- attended the TSP public meetings in Pasco, Washington, January 20-22, 1994, and Seattle, Washington, February 17-18, 1994
- worked with the Yakama Indian Nation to prepare invoices

Major Problem Areas or Changes and Action Taken

The TSP will not release the draft dose reports until April 1994. This will push publication of the final dose reports to the end of July. That will require a contract change and funding. Such a proposal has been submitted to the CDC.

Because the incorporation of the new milk cow feeding regime information requires the complete recalculation of the doses, the publication of the air dosimetry report will be delayed. A tight schedule has been developed to ensure that the report can be published prior to the TSP public meeting in April 1994.

Variance

No significant cumulative variance.

Planned Work for the Next Three Months

- control the scope and budget of the HEDR Project to ensure all contract deliverables are met
- continue to work on the HEDR Project final report (Milestone 01011)
- continue to review and publish the other 19 HEDR documents presently in process
- prepare to participate in the TSP public meeting April 21-23, 1994 in Pasco, Washington ☐

Task 02 Technical Integration

Objective

The objective of the Technical Integration Task is to provide technical overview of the project to ensure that appropriate technical activities are planned, that appropriate information is generated, and that technical task work is integrated effectively for performing the final dose calculations.

Progress

Milestone 0204C - HEDR Model Validation Results, due December 1993, rescheduled to January 1994, and completed (PNWD-2221 HEDR)

- completed and submitted to the TSP for review the draft document, *Validation of HEDR Models*. The results and conclusions in the document were reported at the meeting; TSP review comments are anticipated shortly. These comments will be incorporated and the document issued as a final report.

Other Activities

- participated in a meeting with CDC and Fred Hutchinson Cancer Research Center/Hanford Thyroid Disease Study (FHCRC/HTDS) on January 19, 1994, to resolve interface questions. Exchange of computer disks with input and output is now occurring regularly with no significant difficulties. Nearly 95 percent of the input received from HTDS runs without modification. Nearly half of the total HTDS interview cases have been run through the CIDER code.
- identified at the January TSP meeting a scoping study requiring investigation: weathering half-time on vegetation in winter as related to the model validation report. The results of this scoping studies will be reported in the final validation report.
- attended the TSP planning meeting in Seattle, Washington, on February 18, 1994. As a result of this meeting, a further meeting was held with

TSP member D. W. Price in Richland on February 24, 1994 to finalize the commercial and private cow feeding regime information to be incorporated into the representative individual dose calculations for the air pathway. The new feeding regime information has been incorporated, and the recalculations initiated.

Major Problem Areas or Changes and Action Taken

The Validation of Model Predictions Program (VAMP) Secretariat at the International Atomic Energy Agency would like a final version of the Hanford Scenario document. A meeting on the Hanford Scenario has been scheduled for late March in Oak Ridge, Tennessee. Funding from outside of the HEDR Project is being sought to support attendance at this meeting.

Variance

No significant cumulative variance.

Planned Work for the Next Three Months

- incorporate comments from the TSP in the validation report and issue final publication (Milestone 0204C)
- coordinate activities with FHCRC (Subtask 0204)
- transfer all HEDR records and working papers to the HEDR Project Office (Subtask 0204)
- participate in final calculations and preparation of dose reports (Subtask 0705) □

Task 03 Source Terms

Objective

Source terms are the amount and type of radioactive materials released to the environment. The objective of the Source Terms Task is to develop estimates of radioactive emissions since 1944 from Hanford facilities based on historical measurements and production information. Source term estimates are used by Environmental Transport Task members to reconstruct the concentrations of radionuclides in the environment.

Progress

Milestone 0303D + 0303B + 0305A + 0307A - Report on Key Radionuclides Released to Air, 1944-1991 + Iodine-131 Source Term Report, 1948-1991 + Letter Report: Radionuclide Release Model + Letter Report: Hanford Operations, 1944-1991, due December 1993, rescheduled to January 1994, and completed (PNWD-2222 HEDR)

- completed and submitted to the TSP for review the draft document, *Radionuclide Releases to the Atmosphere from Hanford Operations, 1944-1972*. The document covers hourly iodine-131 release estimates for 1944-1949 from B and T plants. The iodine-131 release estimates for 1944-1947, which were previously reported in PNWD-2033 HEDR, are restated and new results for the two additional years 1948 and 1949 are reported for the first time. The bases for the source term file transmitted to the HEDR atmospheric transport code (RATCHET) are described. Monthly releases for all reprocessing plants are estimated for the period 1944-1972. Radionuclides covered are: iodine-131, ruthenium-103, ruthenium-106, strontium-90, plutonium-239, and cerium-144. Reactor atmospheric releases of tritium, carbon-14 and argon-41 are also discussed. Highlights of this report were presented to the TSP at the January public meeting in Pasco, Washington.

Milestone 0304B + 0305A + 0307A - Report on Key Reactor Releases to the Columbia River, 1944-1991 + Letter Report: Radionuclide Release Model + Letter Report: Hanford Operations, 1944-1991, due December 1993, rescheduled to January 1994, and completed (PNWD-2223 HEDR)

- completed and submitted to the TSP for review the draft document, *Radionuclide Releases to the Columbia River from Hanford Operations, 1944-1971*. The document covers the complete operating history of all eight Hanford single-pass reactors from 1944 through 1971. The radionuclides covered on a monthly time scale are sodium-24, phosphorus-32, zinc-65, arsenic-76, neptunium-239, chromium-51, scandium-46, manganese-56, gallium-72, yttrium-90, iodine-131, as well as gross beta activity. The bases for the source term provided to the river transport model (CHARIMA) are discussed. Highlights of this report were presented to the TSP at the January public meeting in Pasco, Washington.

Milestone 0306A - Letter Report: Hanford Historical Releases, 1944-1991, due March 1994 and rescheduled to April 1994

- completed the work and began the draft of a letter report covering the nine Hanford facilities specified in the HEDR Task Plan PNWD-2187 HEDR. This report will provide information on releases from facilities other than the single-pass reactors and chemical separations plants which have been covered by previous HEDR Source Term Task reports.

Major Problem Areas or Changes and Action Taken

None.

Variance

No significant cumulative variance.

Planned Work for the Next Three Months

- incorporate the TSP comments in the radionuclide releases to air report and issue final publication (Milestone 0303D)

- incorporate the TSP comments in the radionuclide releases to the Columbia River report and issue final publication (Milestone 0304B)
- publish the Hanford historical releases report (Milestone 0306A)
- transfer all HEDR records and working papers to the HEDR Project Office (Subtask 0306) □

Task 04 Environmental Transport

Objective

The objective of the Environmental Transport Task is to reconstruct the movement of radioactive materials (the source term information) from the areas of release to the environment. Radionuclide movement via the atmosphere, Columbia River, and groundwater is studied.

Progress

Milestone 0402Brev - Atmospheric Transport Model (RATCHET) Documentation Report, published final January 1994 (PNWD-2224 HEDR)

- published the final report, *Regional Atmospheric Transport Code for Hanford Emission Tracking (RATCHET)*, as a replacement for the February 1992 draft report (PNL-8003 HEDR). Because the report was rewritten, the resolutions of the TSP comments on the draft report were issued as a separate document.

Milestone 0404C + 0404B - Report on Columbia River Modeling Approach + Letter Report: Columbia River Conceptual Model, due June 1993, rescheduled to January 1994, and completed (PNWD-2225 HEDR)

- completed and submitted to the TSP for review a draft document, *Reconstruction of Radionuclide Concentrations in the Columbia River from Hanford, Washington to Portland, Oregon, January 1950-January 1971*

Other Activities

- presented a summary of RATCHET development and results to the TSP at the January public meeting in Richland, Washington
- presented a paper, "Sensitivity of a Lagrangian Puff Climatological Dispersion Model to Model Parameters," at the American Meteorological Society's Eighth Joint Conference on Applications of Air Pollution Meteorology with the Air and Waste Management Association in Nashville, Tennessee

- completed documentation of the RATCHET code verification tests
- presented an overview of the final Columbia River modeling results to the TSP at the January public meeting in Richland, Washington
- completed quality assurance records and forwarded them to the HEDR Project Office

Major Problem Areas or Changes and Action Taken

None.

Variance

The cumulative cost underrun was caused by a delay in receiving charges from Washington State University (WSU). Once those charges are received this task's budget will be depleted. Funds will be provided from Task 01 for resolution of TSP comments on the Columbia River modeling report.

Planned Work for the Next Three Months

- incorporate TSP comments in the Columbia River modeling report and issue final publication (Milestone 0404C)
- transfer all HEDR records and working papers to the HEDR Project Office (Subtasks 0404 and 0406) □

Task 05 Environmental Monitoring Data

Objective

The objective of the Environmental Monitoring Data Task is to search, retrieve, evaluate, and summarize key historical measurements of the concentrations of radionuclides in the environment around the Hanford Site. Radionuclide concentrations have been measured at various times in air, drinking water, foods, fish, the Columbia River, soil, and in other materials. These measurements are evaluated to estimate their accuracies and then used by the Environmental Pathways and Dose Estimates Task to estimate radiation doses and by the Environmental Transport Task to calibrate and validate computer models.

Progress

Milestone 0502A - Conversion and Correction Factors for Iodine-131 in Vegetation, 1945-1947 (PNWD-2133 HEDR)

- incorporated comments from the TSP and issued the final publication, *Conversion and Correction Factors for Historical Measurements of Iodine-131 in Hanford-Area Vegetation, 1945-1947*

Milestone 0502C - Summary Report: Environmental Monitoring Data Located to Date, due September 1993 and rescheduled to March 1994

- revised the environmental monitoring data report as a result of the Project Office review. Because the report is a guide rather than a summary, the title will be changed to reflect that.

Other Activities

- prepared three other environmental monitoring reports for publication as diskettes only. Diskettes rather than hard copies are being published because of the size of these documents and the type of information they contain. The diskettes will be available from the HEDR Technical Steering Panel (c/o K. CharLee, Office of Nuclear Waste Management, Department of Ecology, Technical Support and Publication Information Section, P.O. Box 47651, Olympia, Washington 98504-7651).

Duncan, J. P. 1994. *Overview of Vegetation Monitoring Data, 1952-1983*. PNWD-2235 HEDR, Battelle, Pacific Northwest Laboratories, Richland, Washington.

Hanf, R. W. and M. E. Thiede. 1994. *Environmental Radiological Monitoring of Air, Rain, and Snow on and near the Hanford Site, 1945-1957*. PNWD-2234 HEDR, Battelle, Pacific Northwest Laboratories, Richland, Washington.

Thiede, M. E. and J. P. Duncan. 1994. *Database of Radionuclide Measurements in Columbia River Water, Fish, Waterfowl, Gamebirds, and Shellfish Downstream of Hanford's Single-Pass Production Reactors 1960-1970*. PNWD-2242 HEDR, Battelle, Pacific Northwest Laboratories, Richland, Washington.

Major Problem Areas or Changes and Action Taken

Minor discrepancies have been identified in three Environmental Monitoring Data Task reports. An errata sheet will be issued identifying the discrepancies for the recipients of the reports.

Variance

No significant cumulative variance.

Planned Work for the Next Three Months

- publish an overview of vegetation monitoring data, 1952-1983 (Subtask 0502)

- publish an overview of air monitoring data, 1945-1957 (Subtask 0502)
- publish the Columbia River database, 1960-1970 (Subtask 0502)
- complete and submit to the TSP for review the draft of a guide to environmental monitoring data, 1945-1972; incorporate the TSP comments and issue final publication (Milestone 0502C)
- transfer all HEDR records and working papers to the HEDR Project Office □

Task 06

Demography, Food Consumption, and Agriculture

Objective

The objective of the task is to develop the population and agricultural data needed to estimate for real and representative individuals the doses that may have resulted from historical releases of radioactive materials from operations at the Hanford Site.

Progress

Milestone 0603D - Milk Production/Distribution Report, 1944-1991, due March 1993, rescheduled to December 1993 and completed (PNWD-2218 HEDR)

- completed and submitted to the TSP for review a draft document, *Commercial Milk Distribution Profiles and Production Locations*
- received and began incorporation of the TSP comments on this report
- continued to provide information to D. W. Price (TSP) on the feeding regime model

Native American Data (Subtask 0605)

- prepared preliminary Columbia River pathway dose estimates for the Umatilla and Warm Springs tribes
- provided preliminary dose estimates to the Warm Springs Tribal Council
- worked to resolve issues concerning delivery of preliminary food consumption summaries from the Yakama and Nez Perce projects
- helped prepare for and facilitate the January 1994 meeting of the Native American Working Group (NAWG) in Pasco, Washington
- attended the February 1994 Technical Steering Panel's Demography, Food, and Agriculture Subcommittee meeting in Seattle, Washington
- briefed the Umatilla technical staff on dose calculations in preparation for presentation to the Umatilla Board of Trustees

- presented portions of an interviewer training workshop and prepared study area maps as interview props
- helped finalize Native American dosimetry questionnaire and data entry routines, including legal value ranges for variable coding

Major Problem Areas or Changes and Action Taken

To date, no invoices have been received from the Yakama Indian Nation. Close-out activities will begin on this subcontract in the near future if invoices are not received.

Variance

The cumulative cost overrun was caused by time spent on feeding regime issues that were not within the scope of work. The HEDR budget was re-aligned to cover these unanticipated costs.

Planned Work for the Next Three Months

- incorporate TSP comments in the milk report and issue final publication (Milestone 0603D)
- review and evaluate preliminary data submitted by the Yakama Indian Nation (Subtask 0605)
- give presentations to the Coeur D'Alene, Nez Perce, Umatilla, and Yakama tribes regarding preliminary dose calculations (Subtask 0605)
- provide maps (interview props) to tribal project staffs (Subtask 0605)

- provide guidance to Native American tribal representatives who plan to come to Seattle to review unpublished materials stored at the Sand Point Federal Archives facility (Subtask 0605)
- provide input to CDC planning for work anticipated after the HEDR turnover package is completed (Subtask 0605)
- transfer all HEDR records and working papers to the HEDR Project Office (Subtasks 0603 and 0605) □

Task 07 Environmental Pathways and Dose Estimates

Objective

The objective of the task is to use calculated and measured concentrations of radionuclides provided by members of the Environmental Transport Task and the Environmental Monitoring Data Task to calculate doses to representative individuals, and specific individuals. These calculations include doses via direct transfer of radionuclides from concentrations in air and water to people (such as breathing, drinking, and immersion). The calculations also include doses from radionuclide concentrations in air and water transferred through environmental pathways, such as soil, plants, animals, and fish, to people.

Progress

Milestone 0703C - Letter Report: Revision of Milestone 0703B Key Radionuclide Parameters (PNWD 2023-HEDR)

- delayed publication of this report to coincide with the publication of the air and Columbia River pathway dose reports. This will ensure that all parameter values used in the air and river pathway dose reports are included in the final parameter document.

Milestone 0705B - Doses from Key Radionuclides in Columbia River Water, 1944-1992, due September 1993 and rescheduled at TSP request to April 1994

- incorporated review comments into the draft of this document. The document includes summary information on the methods used to estimate doses, the doses calculated for representative individuals, and the results of sensitivity and uncertainty analyses.

Milestone 0705C + 0705A - Doses from Key Radionuclides Released to Air (excluding Iodine-131), 1944-1992 + Report on Iodine-131 Doses, 1944-1992, due September 1993 and rescheduled at TSP request to April 1994

- completed the uncertainty and sensitivity analyses, completed the draft of the document, and began to incorporate review comments. This document, like its Columbia River counterpart, includes summary information on the

methods used to estimate doses, the doses calculated for representative individuals, and the results of sensitivity and uncertainty analyses.

Milestone 0705D - Native American Phase I Doses, no due date

- completed Columbia River pathway dose estimations for two Native American tribes. Formal presentations of the dose results were given to one tribe this quarter, bringing the total number of tribes receiving their dose results to four. A total of four tribes have now allowed the TSP to release their dose results to the public. No new data sets have been received, nor could doses be estimated from the data set received last quarter because problems in the data set have yet to be resolved. A presentation on how dose is estimated from the Columbia River pathway was given to the NAWG in Pasco, Washington, on January 19, 1994.

Pathways and Dose Code Development and Documentation (Subtask 0702)

- completed configuration management records for the DESCARTES, CIDER, and CRD computer codes. Established schedule to re-run the DESCARTES and CIDER computer codes to estimate doses with the new feeding regime information incorporated.

Dose Calculations (Subtask 0705)

- continued HTDS dose calculations during the reporting period. Doses for real individuals have

been estimated based on life histories provided by HTDS. All dose results and input files have been returned to HTDS. Because of the new feeding regime information, previously estimated HTDS doses will have to be re-estimated.

Major Problem Areas or Changes and Action Taken

As a result of the decision at the TSP public meeting in Seattle, Washington, February 17-18, 1994, to incorporate more feeding regime information into the estimation of doses, the doses resulting from the atmospheric pathway will need to be re-estimated. A schedule has been established for the work. Although this unanticipated work will delay the work on the air pathway dose report, it will not affect its publication in time for the TSP meeting in April.

Variance

No significant cumulative variance.

Planned work for the Next Three Months

- re-estimate atmospheric doses incorporating new feeding regime information (Subtask 0702)
- publish the parameters report (Milestone 0703C)
- continue dose calculations for HTDS individuals (Subtask 0705)
- continue Native American interactions needed for dose calculations (Subtask 0705)
- publish the Columbia River pathway dose report (Milestone 0705B)
- publish the atmospheric pathway dose report (Milestone 0705C + 0705A) □

Task 08 Statistics

Objective

The objective of the task is to provide statistical support to other technical tasks and develop and apply sensitivity and uncertainty analyses. Sensitivity analyses will be used to identify parameters with the greatest influence on dose estimates. Sensitivity analyses results will be used to focus resources where the benefit in terms of accurate dose estimates is greatest. Uncertainty analyses enable the project to determine the extent to which the accuracy and precision of the dose estimates are influenced by accuracy and precision in the input parameters.

Progress

Milestone 0802A - Iodine-131 Conversion Factor Report (PNWD-1978 HEDR)

- received and incorporated the TSP comments into the report, *Uncertainty and Sensitivity Analysis of Historical Measurements of Iodine-131 for Vegetation in 1945-1947*

General Statistics Support (Subtask 0802)

- completed all statistics support to the HEDR Project and closed out this subtask

Analysis of Model Reliability (Subtask 0803)

- completed uncertainty and sensitivity analyses of the air and river doses
- completed configuration management documentation for the HEDR computer dose codes

Major Problems

None.

Variance

The cumulative cost underrun was caused by charges not yet received from Golder Associates.

Planned Work for the Next Three Months

- publish the final report, *Uncertainty and Sensitivity Analysis of Historical Measurements of Iodine-131 for Vegetation in 1945-1947* (PNWD-1978 HEDR) (Milestone 0802A)
- review atmosphere and Columbia River pathway dosimetry reports (Subtask 0803)
- transfer all HEDR records and working papers to the HEDR Project Office (Subtask 0803) □

Task 09 Records Management

Objective

The objective of the Records Management Task is to provide storage and control of completed project records, maintain an automated inventory of all project documentation, and provide a reference service to project staff and the TSP.

Progress

- received project records from the HEDR Project Office - 697 records totalling 19,645 pages.
- verified, processed, and stored project records - 1,535 records totalling 48,041 pages
- transferred five packages of records to the U.S. Department of Energy Richland Operations (RL) Public Reading Room - 11 records totalling 933 pages
- prepared for and participated in the CDC audit of the HEDR computer software quality assurance and configuration management records on February 22-23, 1994
- met with C. M. Wood (CDC) during the CDC audit to review the various types of software used to track records and reports and provided him with a listing of the fields used to track the records and reports
- completed the file classification changes identified in the *Quality Assurance Audit Report of the Hanford Environmental Dose Reconstruction Project*, OHE-3, Audit A-92-20 (PNWD-2049 HEDR) and prepared file folders for each HEDR report and milestone. Staff have updated the database and transferred the files to the new file locations.

- provided M. R. Donnelly (CDC) with an estimate of the number of boxes to be turned over to the CDC at the end of the HEDR Project. The estimate is 175 boxes.

Major Problem Areas or Changes and Action Taken

None.

Variance

No significant cumulative variance.

Planned Work for the Next Three Months

- continue processing incoming project records
- continue transferring processed project records to the RL Public Reading Room
- begin preparations for the turnover of HEDR Project records to CDC □

Task 10 Quality Assurance

Objective

The objective of this task is to ensure continuous quality assurance (QA) support and coordination with all project tasks. This objective is met through the identification and documentation of QA requirements in the form of a QA Plan and periodic monitoring of project activities during the life of the project to ensure compliance with these requirements.

Progress

- reviewed and provided comments on the following technical reports for final clearance review:
 - Milestone 0204C, *Validation of HEDR Models* (PNWD-2221 HEDR)
 - Milestone 0303D, *Radionuclide Releases to the Atmosphere from Hanford Operations, 1944-1972* (PNWD-2222 HEDR)
 - Milestone 0304B, *Radionuclide Releases to the Columbia River from Hanford Operations, 1944-1972* (PNWD-2223 HEDR)
 - Milestone 0402B, *Regional Atmospheric Transport Code for Hanford Emission Tracking (RATCHET)* (PNWD-2224 HEDR)
 - Milestone 0404C, *Reconstruction of Radionuclide Concentrations in the Columbia River from Hanford, Washington to Portland, Oregon for January 1950-January 1971* (PNWD-2225 HEDR)
 - Milestone 0502C, *guide to environmental monitoring data*
 - Milestone 0603D, *Commercial Milk Distribution Profiles and Production Locations* (PNWD-2218 HEDR)
 - Milestone 0705B, *Columbia River dosimetry report*
 - Milestone 0705C, *air pathway dosimetry report*
 - Task 05 report, *overview of vegetation monitoring data, 1952-1983*
 - Task 05 report, *environmental radiological monitoring of air, rain, and snow, 1945-1957*
 - performed data traceability assessments of the following reports. Each of these data traceability assessments found that there is traceability from the raw data to the final report.
 - Guide to environmental monitoring data (Assessment Report No. JFM-01-06-94)
 - Radionuclide Releases to the Columbia River from Hanford Operations, 1944-1971 (Assessment Report No. JFM-02-01-94)
 - Reconstruction of Radionuclide Concentrations in the Columbia River from Hanford, Washington to Portland, Oregon for January 1950-January 1971 (Assessment Report No. JFM-02-11-94)
- recommended to HEDR Project Management and members of the TSP at the TSP public meeting in Pasco, Washington, January 20-22, 1994 that the 1994 annual audit be canceled for the following reasons:
 - numerous quality verification activities (e.g., data traceability self-assessments and surveillances) are currently going on which are more timely and can better focus the quality assurance efforts for this project
 - the client is performing an in-depth audit of the code development and testing, and their results will add to the history of the HEDR Project
 - deficient areas identified in the 1992 audit of the HEDR Project have been verified and are continuously being monitored
 - timing of the audit so near to the completion of the project prohibits the opportunity for meaningful corrective action.

Because this recommendation was accepted by HEDR Project Management and the TSP, the 1994 annual audit has been canceled.

- prepared HEDR Quarterly Assessment Plan for second quarter of FY 1994 and submitted the results of the assessments planned for the first quarter of FY 1994
- documented in an assessment report all QA activities performed in preparation for the CDC audit in February

Other Activities

- completed the revision to HEDR-TP-9, Revision 1, "HEDR Software Configuration Management Plan," and submitted it to Document Control for controlled distribution
- performed a surveillance on HEDR technical procedures, HEDR-TP-5, "HEDR Peer Review," and HEDR-TP-6, "HEDR Review Process." Initial selection of five reports to be included in the surveillance are:
 - Milestone 0204C, *Validation of HEDR Models* (PNWD-2221 HEDR)
 - Milestone 0303D, *Radionuclide Releases to the Atmosphere from Hanford Operations, 1944-1972* (PNWD-2222 HEDR)

- Milestone 0402B, *Regional Atmospheric Transport Code for Hanford Emission Tracking (RATCHET)* (PNWD-2224 HEDR)
- Milestone 0404C, *Reconstruction of Radionuclide Concentrations in the Columbia River from Hanford, Washington to Portland, Oregon for January 1950-January 1971* (PNWD-2225 HEDR)
- Milestone 0705B, Columbia River dosimetry report

A final surveillance report has not yet been issued.

Major Problem Areas or Changes and Action Taken

None.

Variance

No significant cumulative variance.

Planned Work for the Next Three Months

- complete oversight activities to check for compliance of project technical, QA, and data quality objectives requirements □

Task 11 Information Resources

Objective

The objective of the Information Resources Task is to work with other tasks to meet information needs, including ensuring that all data referenced in the reports are publicly available and establishing a micro-computer-based tracking system for ready retrieval of historical information.

Progress

- assisted TSP members (G. G. Caldwell, P. D. McGavran, M. L. Blazek, N. J. Germond) with reviews of classified and unclassified documents during visit to document repositories
- cleared and provided photocopies of all documents referenced in a report prepared by M. A. Robkin (TSP). Copies of these documents were sent to the RL Public Reading Room.
- made significant progress in declassifying and making publicly available all but a few of 113 documents specifically requested by the TSP
- declassified 792 Hanford Site originated documents, 112 of which are of potential interest/use to the HEDR Project. Table 11.1 shows the status of declassification to date.
- verified bibliographic references in HEDR reports
- attended TSP Public and Communications Subcommittee meetings in January at the Red Lion Inn in Pasco, Washington
- sent 139 documents containing information of potential interest/use to the HEDR Project to the RL Public Reading Room

RL Public Reading Room Activity

During December 1993, January and February 1994, the RL Public Reading Room had 25 HEDR patrons and distributed 58 HEDR reports.

Major Problem Areas or Changes and Action Taken

None.

Variance

The cumulative cost underrun was caused by less declassification work than was budgeted. That will balance out in the next quarter.

Planned Work for the Next Three Months

- complete the clearance of documents identified in a report to be issued by M. A. Robkin (TSP)
- support visiting TSP members during document search, review and declassification efforts
- attend the TSP Communications Subcommittee meeting in March and the TSP Public and Communications Subcommittee meetings in April
- transfer all HEDR records and working papers to the HEDR Project Office □

Table 11.1. Declassification of Hanford-Site-Originated Documents

<u>Documents Declassified</u>	<u>Hanford Historical</u>	<u>HEDR- Related^(a)</u>
March 1987 - September 1987 (FY 1987)	35	27
October 1987 - September 1988 (FY 1988)	52	37
October 1988 - September 1989 (FY 1989)	186	177
October 1989 - September 1990 (FY 1990)	455	236
October 1990 - September 1991 (FY 1991)	1323	599
October 1991 - September 1992 (FY 1992)	2862	554
October 1992 - September 1993 (FY 1993)	870	88
October 1993 - February 1994 (FY 1994)	<u>864</u>	<u>113</u>
TOTAL (March 1987 - February 1994)	6647	1831

(a) Reported in HEDR quarterly reports and included in a HEDR master listing in the RL Public Reading Room. Some of these are from the list requested by the TSP and the public.

Task 12

TSP Communications Support

Objective

The objective of this task is to support the TSP in its efforts to involve the public in HEDR Project activities and communicate project plans and progress.

Progress

- provided copies of recently released draft reports on model validation (PNWD-2221 HEDR), atmospheric releases (PNWD-2222 HEDR), Columbia River releases (PNWD-2223 HEDR) and milk distribution (PNWD-2218 HEDR) to several news media representatives and state agency personnel. Also, discussed project information with various local and regional reporters
- provided various HEDR Project reports and historic Hanford information to members of the Hanford Health Information Network (HHIN)/ Oregon State Service Center Board in The Dalles, Oregon, on January 25, 1994
- provided electronic copies of the text but not the doses presently in the dose reports to the TSP for use in the TSP summary report of the HEDR Project
- arranged for and coordinated distribution of unescorted access badges and dosimeters to TSP members at the January TSP public meeting
- provided continuing assistance to identify historical information for an individual in Benton City, Washington regarding a whole-body count taken in the early 1960s. Also, assisted an Oregon resident in her search to locate her late husband's dose records from the period when he was employed at the Hanford Site.
- assisted in providing graphic material to TSP staff for use in a newsletter article
- provided review of draft script for the TSP videotape
- assisted TSP staff in determining local television cable access and production capabilities for the April news conference
- duplicated copies of historic photos for D. Johnson and D. Mayo (Idaho HHIN) for public information activities

- provided TSP Fact Sheets 2, 4 and 5 to R. Working, Mail Tribune, Medford, Oregon and discussed past iodine releases and general HEDR Project information
- provided available information regarding human subjects testing to N. J. Germond (TSP)
- attended the TSP Public and Communications Subcommittee meetings on January 20 and 21, 1994 in Pasco, Washington

Major Problem Areas or Changes and Action Taken

None.

Variance

The cumulative cost overrun was caused by an accrual of fiscal year (FY) 1992 work (a survey) performed by WSU. Recent invoices indicate the costs to be more than originally anticipated. A ratification is being processed to allow payment.

Planned Work for the Next Three Months

- attend the TSP Communications Subcommittee meeting in March
- attend the TSP Public and Communications Subcommittee meetings in April
- assist the TSP Communications Subcommittee staff prepare for the final HEDR Project results presentation planned for April
- transfer all HEDR records and working papers to the HEDR Project Office □

Appendix A

Milestones, Schedule, and Costs

Figure A.1. HEDR Project Milestones

Figure A.1. HEDR Project Milestones (contd)

Figure A.1. HEDR Project Milestones (contd)

Figure A.1. HEDR Project Milestones (contd)

Figure A.1. HEDR Project Milestones (contd)

Table A.1. Cost Summary for FY 1994 (Dollars in Thousands)

December 1993-February 1994				FY 1994 to Date (October 1993 - February 1994)											
				Labor \$	Non-Labor \$	Total \$	Labor \$	Non-Labor \$	Total \$	Cum Planned (a)	Cum Variance	FY 94 Budget	Balance	Budgeted FY Labor Hours	Status
HEDR Project Tasks															
Task 01 - Project Management (b)															
0101	Project Planning & Control	155	21	176	258	31	289	317	28	603	314	6058			
0103	Project Administration	59	8	67	105	9	114	131	17	174	60	2688			
0104	Project Peer Review	6	3	9	18	3	21	21	0	21	0	204			Closed
Subtotal Task 01		220	32	252	381	43	424	469	45	798	374	8,950			
Task 02 - Technical Integration															
0201	Tech Planning/Control/Rep	4	5	9	7	8	15	15	0	15	0	152			Closed
0204	Proj Tech Cord /Analysis	34	0	34	74	0	74	74	0	79	5	302			
0205	Path & Dose Model Require	0	-1	-1	7	1	8	8	0	8	0	60			Closed
Subtotal Task 02		38	4	42	88	9	97	97	0	102	5	514			
Task 03 - Source Terms															
0301	Tech Planning/Control/Rep	10	1	11	14	1	15	15	0	15	0	168			Closed
0303	Rad Releases to Air	17	0	17	17	0	17	17	0	17	0	214			Closed
0304	Rad Releases to Water	7	0	7	15	0	15	15	0	15	0	74			Closed
0306	Hanford Historical Releases	12	2	14	31	4	35	35	0	42	7	232			
Subtotal Task 03		46	3	49	77	5	82	82	0	89	7	688			
Task 04 - Environmental Transport															
0404	Surface-Water Transport	12	4	16	34	-11	23	35	12	39	16	328			
0406	Atmospheric Model Calculat	17	7	24	38	8	46	42	-4	46	0	426			Closed
Subtotal Task 04		29	11	40	72	-3	69	77	8	85	16	754			

Table A.1. Cost Summary for FY 1994 (Dollars in Thousands) (contd)

December 1993-February 1994				FY 1994 to Date (October 1993 - February 1994)									
		<u>Labor \$</u>	<u>Non- Labor \$</u>	<u>Total \$</u>	<u>Labor \$</u>	<u>Non- Labor \$</u>	<u>Total \$</u>	<u>Cum Planned (a)</u>	<u>Cum Variance</u>	<u>FY 94 Budget</u>	<u>Balance</u>	<u>Budgeted FY Labor Hours</u>	<u>Status</u>
Task 05 - Environmental Monitoring Data													
0501	Tech Planning/Control/Rep	2	-1	1	3	-1	2	2	0	2	0	25	Closed
0502	Terrestrial Monitoring Data	4	1	5	10	1	11	11	0	11	0	117	Closed
Subtotal Task 05		<u>6</u>	<u>0</u>	<u>6</u>	<u>13</u>	<u>0</u>	<u>13</u>	<u>13</u>	<u>0</u>	<u>13</u>	<u>0</u>	<u>142</u>	
Task 06 - Demography, Food Consumption & Agriculture													
0601	Tech Planning/Control/Rep	2	2	4	5	1	6	6	0	6	0	104	Closed
0602	Food Consumption	0	0	0	0	0	0	0	0	0	0	24	Closed
0603	Milk/Other Food Model Dev	8	-1	7	19	-1	18	18	0	22	4	100	
0605	Native American Data	31	27	58	33	34	67	52	-15	82	15	318	
Subtotal Task 06		<u>41</u>	<u>28</u>	<u>69</u>	<u>57</u>	<u>34</u>	<u>91</u>	<u>76</u>	<u>-15</u>	<u>110</u>	<u>19</u>	<u>546</u>	
Task 07 - Environmental Pathways & Dose Estimates													
0701	Tech Planning/Control/Rep	1	-1	0	3	0	3	3	0	3	0	116	Closed
0702	Path & Dose Code Dev/Doc	48	9	57	62	14	76	82	6	85	9	702	
0703	Path & Dose Model Paramet	1	1	2	9	1	10	10	0	10	0	71	Closed
0705	Dose Calculations	57	3	60	101	3	104	119	15	119	15	1086	
Subtotal Task 07		<u>107</u>	<u>12</u>	<u>119</u>	<u>175</u>	<u>18</u>	<u>193</u>	<u>214</u>	<u>21</u>	<u>217</u>	<u>24</u>	<u>1,975</u>	
Task 08 - Statistics													
0801	Tech Planning/Control/Rep	4	0	4	6	0	6	6	0	6	0	166	Closed
0802	Stats Support for Tech Work	10	0	10	19	0	19	19	0	19	0	257	Closed
0803	Analysis of Model Reliabilit	-10	21	11	0	22	22	52	30	52	30	228	
Subtotal Task 08		<u>4</u>	<u>21</u>	<u>25</u>	<u>25</u>	<u>22</u>	<u>47</u>	<u>77</u>	<u>30</u>	<u>77</u>	<u>30</u>	<u>651</u>	

Table A.1. Cost Summary for FY 1994 (Dollars in Thousands) (contd)

December 1993-February 1994					FY 1994 to Date (October 1993 - February 1994)								
		Labor \$	Non-Labor \$	Total \$	Labor \$	Non-Labor \$	Total \$	Cum Planned (a)	Cum Variance	FY 94 Budget	Balance	Budgeted FY Labor Hours	Status
Task 09 - Records Management													
0901	Tech Planning/Control/Rep	2	-1	1	2	-1	1	3	2	5	4	90	
0902	Project Records Managemen	29	1	30	37	1	38	33	-5	60	22	1385	
0903	Records Turnover Package	0	0	0	0	0	0	0	0	67	67	1435	
Subtotal for Task 09		31	0	31	39	0	39	36	-3	132	93	2,910	
Task 10 - Quality Assurance													
1001	Tech Planning/Control/Rep	2	0	2	4	10	4	4	0	4	0	117	Closed
1002	QA Program Development	1	0	1	2	0	2	2	0	2	0	58	Closed
1003	QA Verification	26	1	27	34	1	35	31	-4	44	9	391	
Subtotal Task 10		29	1	30	40	11	41	37	-4	50	9	566	
Task 11 - Information Resources													
1101	Tech Planning/Control/Rep	2	1	3	5	4	9	9	0	14	5	240	
1102	Hanford Document Declass	11	1	12	12	1	13	17	4	43	30	725	
1103	Hanford Info Resources Iden	10	-1	9	14	-1	13	19	6	30	17	540	
Subtotal Task 11		23	1	24	31	4	35	45	10	87	52	1,505	
Task 12 - TSP Communications Support													
1201	Tech Planning/Control/Rep	0	1	1	0	1	1	3	2	6	5	90	
1203	Comm Assessment Researc	2	3	5	4	3	7	3	-4	5	-2	76	
1204	TSP Meeting/Material Sup	3	4	7	4	4	8	7	-1	12	4	180	
Subtotal - Task 12		5	8	13	8	8	16	13	-3	23	7	346	
Subtotal, HEDR Project Tasks		579	121	700	1,006	151	1,147	1,236	89	1,783	636	19,547	

Table A.1. Cost Summary for FY 1994 (Dollars in Thousands) (contd)

	<u>December 1993-February 1994</u>			<u>FY 1994 to Date (October 1993 - February 1994)</u>							<u>Budgeted FY Labor Hours</u>	<u>Status</u>
	<u>Labor \$</u>	<u>Non- Labor \$</u>	<u>Total \$</u>	<u>Labor \$</u>	<u>Non- Labor \$</u>	<u>Total \$</u>	<u>Cum Planned (a)</u>	<u>Cum Variance</u>	<u>FY 94 Budget</u>	<u>Balance</u>		
<u>Native American Research (c)</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>-10</u>	<u>-10</u>	<u>32</u>	<u>42</u>	<u>32</u>	<u>42</u>	<u>0</u>	
TOTAL	<u>579</u>	<u>121</u>	<u>700</u>	<u>1,006</u>	<u>141</u>	<u>1,137</u>	<u>1,268</u>	<u>131</u>	<u>1,815</u>	<u>678</u>	<u>19,547</u>	

- (a) The monthly planned amounts are given in the cost section of Figures 2 and A.2.
- (b) Project management includes activities such as project control and administration, report publication, project communications, subcontract administration, records control, computer system support, and peer review.
- (c) The FY 1994 Native American Research budget is carryover from FY 1992 and will be used to pay invoices upon receipt of the deliverables. The FY 1994 contracts for Native American Research are administered by the CDC. That budget is not reflected here.

Figure A.2. Native American Research Budget Status, FY 1994

Appendix B

**Hanford-Site-Originated Documents of
Potential Interest/Use to the HEDR Project -
Placed in the RL Public Reading Room
During December 1993-February 1994**

Appendix B

Hanford-Site-Originated Documents of Potential Interest/Use to the HEDR Project - Placed in the RL Public Reading Room During December 1993-February 1994

ARH-0100-RD	Dissolver Operation and Metal Transfer. 200 p.	10/12/67
ARH-0174-RD	MFC Study - Krypton and Xenon Recovery. 4 p.	11/08/67
ARH-0243	Determining Acceptable Stack Concentrations for Gaseous Wastes Released to the Atmosphere. 11 p.	11/07/67
ARH-0263-RD	Waste Management. 53 p.	12/19/67
ARH-1090-RD	Hanford Production Cut-back Studies 146 p.	02/03/69
ARH-1172	A Study of ARHCO Radioactive Gaseous and Liquid Effluent Release Points to the Environs from 200 Area Facilities. 348 p.	04/01/79
ARH-1394	Nuclear and Chemical Safety Analysis Purex Plant 1970 Thorium Campaign. 43 p.	05/22/70
ARH-1943	Interim Storage of Radioactive Xenon and Krypton Gas. 4 p.	01/14/71
ARH-2036	Radioactivity Discharged in Gaseous Wastes from Separations Facilities 200 Area Stacks During 1970. 29 p.	03/29/71
ARH-2530	Sampling and Analyzing Tritium Release from the Purex Stack. 18 p.	07/14/72
ARH-2585-DEL	Study (iv) Utilization of Z Plant.	08/23/72
ARH-2762	Input and Decayed Values of Radioactive Solid Wastes Buried in the 200 Areas Through 1971. 23 p.	03/22/73
ARH-2807-4Q	Radioactivity in Gaseous Waste Discharged from the Separations Facilities During 1973. 40 p.	03/29/74
ARH-3093-4Q	Radioactive Liquid Wastes Discharged to Ground in the 200 Areas During 1974. 130 p.	03/28/75
ARH-3094-4Q	Radioactivity in Gaseous Waste Discharged from the Separations Facilities During 1974. 32 p.	03/17/75
ARH-CD-370-4Q	Radioactivity in Gaseous Waste Discharged from the Separations Facilities During 1975. 34 p.	03/12/76
ARH-CD-371-4Q	Radioactive Liquid Wastes Discharged to Ground in the 200 Areas During 1975. 75 p.	04/01/76
ARH-CD-742-4Q	Radioactivity in Gaseous Waste Discharged from the Separations Facilities During 1976. 45 p.	04/07/77

ARH-CD-743-4Q	Radioactive Liquid Wastes Discharged to Ground in the 200 Areas During 1976. 226 p.	05/09/77
ARH-CD-744-4Q	Summary of Radioactive Solid Waste Burials in the 200 Areas During 1976. 36 p.	04/27/77
ARH-CD-745	Input and Decayed Values of Radioactive Liquid Wastes Discharged to the Ground in the 200 Areas Through 1975. 56 p.	07/08/76
ARH-CD-962	Purex Process Engineering Study Purex Aqueous Discharge. 13 p.	05/06/77
ARH-N-170	Tritium Calculations. 152 p.	06/23/70
ARH-R-51	Strontium Isotope Ratios. 2 p.	12/01/69
BNWL-C-073	Tritium Testwell Data 1964-65. 6 p.	05/18/71
BNWL-C-119	Management of Radioactive Wastes at the Hanford Plant. 83 p.	06/24/69
BNWL-CC-0337-DEL	Tritium Release from Lithium Silicate and Lithium Aluminate, In-Reactor and Out-of-Reactor. 51 p.	11/03/65
BNWL-SA-2019	Radionuclide Distribution in Pacific Salmon. 15 p.	08/31/68
CPD-220-ADD	Hanford Radioactive Waste Management Plans. 8 p.	01/15/69
DOE-RL-93-36	Radionuclide Air Emissions Report for the Hanford Site, Calendar Year 1992. 112 p.	06/30/93
DUN-0648-RD	Unusual Operation - KE Reactor January 16 to January 20, 1966. 7 p.	03/01/66
DUN-0660	Optimization of Cobalt-60 Production in the Hanford Testing Facilities. 11 p.	02/02/66
DUN-0714	Stuck Fuel Element Failure Frequency During the Period of Improved Gamma Monitor Facilities at KE And KW Reactors. 3 p.	02/18/66
DUN-1728	Classification 100 Areas Chemical Discharges. 2 p.	11/18/66
DUN-3247	K-reactor - Loss of Coolant Temperature Study of the Biological Skin. 9 p.	10/13/67
DUN-3530	Tritium Production Using Highly Enriched Fuel. 8 p.	12/18/67
DUN-4513	Personnel Exposure Reduction. 2 p.	07/23/68
DUN-4927	C Reactor Fuel Failures Tubes 2562 & 3361. 14 p.	04/12/68
DUN-4979	Hanford Isotope Production Capabilities for Single Pass Reactors. 47 p.	12/12/68
DUN-5000-PT4-DEL	KW Incident Miscellaneous Information. 472 p.	09/25/68
DUN-5000-PT5	KW Incident Miscellaneous Information (this Document is Declassified and can be Reviewed upon Request). 143 p.	09/25/68
DUN-5000-PT6	KW Incident Miscellaneous Information (this Document is Declassified and can be Reviewed upon Request). 26 p.	09/25/68

DUN-5000-PT7	Kw Incident Miscellaneous Information. 294 p.	09/25/68
DUN-5090-RD	Columbia River Program. 94 p.	11/21/68
DUN-5295-RD	Section I Reactor Incident File General Information from 1945. 50 p.	01/10/69
DUN-5296-RD	Section II Reactor Incident File Reactor Incident File General Information from 1945. 12 p.	01/10/69
DUN-5298-RD	Section IV Reactor Incident File General Information from 1945. 15 p.	11/09/67
DUN-5299-RD	Section V Reactor Incident File General Information from 1945. 29 p.	01/10/69
DUN-5300-RD	Section VI Reactor Incident File General Information from 1945. 44 p.	01/10/69
DUN-5302-RD	Section VIII Reactor Incident File General Information from 1945. 15 p.	01/10/69
DUN-5303-RD	Section IX Reactor Incident File General Information from 1945. 99 p.	01/10/69
DUN-5304-RD	Section X Reactor Incident File General Information from 1945. 53 p.	01/10/69
DUN-5391-RD-DEL	Working Papers Cage Mod 2A Definitions. 68 p.	01/30/69
DUN-5538-RD	Presentation Charts for 3560-KW Incident. 47 p.	02/28/59
DUN-5929-A	N Operations Nuclear Materials Monthly Inventory Reports Fiscal Year 1970. 275 p.	07/01/69
DUN-6251	Sensitivity to VSR Failure-K Pile Break Accident. 8 p.	09/12/69
DUN-6274	Failure To Comply With Operating Limits-105-KW Flux Monitors. 4 p.	10/06/69
DUN-6650	Source of Process Water Scandium. 10 p.	01/20/70
DUN-7238	Liquid Waste Disposal Review 100-K Plant. 32 p.	09/09/70
DUN-7372-RD	Radioisotopes Released in DUN Liquid Effluents. 26 p.	03/26/70
DUN-7433	Materials Discharged to the River (preliminary estimate). 14 p.	12/23/70
DUN-7579	Historical Record and Final Status Report of K Reactor Zircaloy Hydride Problem. 16 p.	03/26/71
DUN-7929	KW Reactor Incident. 1 p.	06/26/68
DUN-8185-RD	Plutonium-238 - Program Analysis. 8 p.	09/23/68
EPRI-EA-3096	Dry Deposition Field Studies. 123 p.	05/31/83
HAN-100076	Plutonium Production History. 2 p.	03/27/68

HAN-82224	Columbia River Temperatures. 4 p.	06/22/62
HAN-84269-DEL	NPR Tritium Production. 2 p.	02/14/63
HAN-89378	Minutes of the Meeting Between Richland Operations Office and United States Public Health Service on Columbia River Contamination at Richland, Washington on July 19, 1964. 21 p.	09/04/64
HAN-91479	Quality and Availability of Fission Products. 10 p.	04/30/65
HAN-93855-RPT4-DEL	200 Area Monthly Report for April 1966. 16 p.	05/10/66
HAN-93855-RPT5	200 Area Monthly Report for May 1966. 16 p.	06/13/66
HAN-93855-RPT6-DEL	200 Area Monthly Report for June 1966. 14 p.	07/14/66
HAN-93855-RPT7-DEL	200 Area Monthly Report for July 1966. 8 p.	08/09/66
HAN-93855-RPT8-DEL	200 Area Monthly Report for August 1966. 9 p.	09/09/66
HAN-95575	Operation Of KW Reactor Outside Operating Limits 1 p.	09/20/66
HAN-96780	Table—Average Monthly River Temperature. 1 p.	03/03/67
HW-18231-DEL	Feasibility Survey - Krypton Removal at Hanford. 10 p.	07/03/50
HW-19296	P-10 Research Program in Biology. 7 p.	10/23/50
HW-19974	Calculated and Observed P-10 Production in H-10. 2 p.	01/12/51
HW-22209	Statistical Analysis of P-10 Yield Data by Exposure Levels. 1 p.	09/21/51
HW-23151-DEL	History of the P-10 Project as of February 1, 1951. 95 p.	01/04/52
HW-23352	Study of Atmospheric Contamination in the Melt Plant Building. 66 p.	04/04/52
HW-29027	Conversion Efficiency and U235 Depletion in H-10. 12 p.	08/11/53
HW-31528	Equations for Predicting Tritium Content of Irradiated Lithium-Aluminum Slugs. 2 p.	04/20/54
HW-45047-RD	Hot Semiworks Summary Run Px-13. 24 p.	08/24/56
HW-47811	Tabulation of Reactor Effluent Water Contaminants in the Columbia River October 1956. 5 p.	01/14/57
HW-49843	Tabulation of Reactor Effluent Water Contaminants in the Columbia River, January-March 1957. 8 p.	05/01/57
HW-50769	Tabulation of Reactor Effluent Water Contaminants in the Columbia River, April 1957. 4 p.	06/14/57
HW-51397	Tabulation of Reactor Effluent Water Contaminants in the Columbia River May 1957. 4 p.	07/17/57
HW-61082	Radioactive Particles in the 234-5 Building Ventilation Exhaust. 10 p.	07/13/59

HW-68337-APP-DEL	Artificial Cooling of the Columbia River by Dam Regulation 1960. 11 p.	02/15/61
HW-69517	Purex Plant Birch Isolation Run April 1961. 11 p.	06/20/61
HW-69561	Hazard Analysis for Cesium Shipments. 13 p.	05/11/61
HW-69985	Reduction of The Amount of Dichromate Added to Reactor Cooling Water - Interim Report Production Test IP-321-A. 20 p.	06/19/61
HW-71619-RD-REV1	Nuclear Health and Safety Technical Specifications. 14 p.	12/07/61
HW-72738	River Contamination Reduction Studies Program Outline and Schedule. 8 p.	02/20/62
HW-73707-APP1-DEL	Artificial Cooling of the Columbia River by Dam Regulation 1961. 20 p.	06/15/62
HW-75452	Tritium in Hanford Sagebrush Samples. 5 p.	10/31/62
HW-75958-RD	Selected Radioisotopes Concentrations in Integrated Reactor Effluent Water Samples. 265 p.	12/30/62
HW-76078	Production Test IP-560-A Half-Plant Low Dichromate - Low Ph Water Treatment At C Reactor. 8 p.	02/18/63
HW-76297	The Production of Tritium at Intermediate Temperatures by Means of the $\text{Li6(n,}\alpha\text{)h3}$ (Literature Review). 26 p.	01/21/63
HW-76327-RD	Operating Limits - Hanford Production Reactors Operating and Performance Restrictions. 11 p.	01/23/63
HW-76404	Summary Report Dissolved Air in Process Water Study. 10 p.	01/21/63
HW-76887-ADD	Artificial Cooling of the Columbia River By Dam Regulation 1962. 6 p.	03/07/63
HW-77942	Recommended MWD Factors for Tritium Yield Predictions. 3 p.	06/18/63
HW-78100	Hanford Reactor and Separations Facility Advantages. 39 p.	06/27/63
HW-78741	Nuclear Safety Experience - Hanford Production Reactors. 7 p.	08/27/63
HW-79468	Fuel Element Performance. 5 p.	12/31/57
HW-79944	Radiological Aspects of Dissolving Irradiated Li-Al. 3 p.	12/11/63
HW-80888	Effects of Hanford Operations on Columbia River Temperatures - Interim Report No.2. 93 p.	12/03/64
HW-80937	Fission Product Formation in Fuel Elements. 3 p.	02/19/64
HW-81203	Operating History. 83 p.	03/05/64
HW-81741-RD	Hanford Isotopes Production Plant. 66 p.	04/06/64
HW-82143-RD	Investigation Report H Reactor Mischarging Incident. 13 p.	05/01/64
HW-82143-RD-REV1	Investigation Report H Reactor Mischarging Incident. 20 p.	05/01/64

HW-82657	Answers to Questions of the Advisory Committee on Reactor Safeguards Relative to the Need for Retention of Government Land. 49 p.	06/08/64
HW-83906-A-RD	Chemical Processing Department 200 West Area Tank Farm Inventory and Waste Reports 6-22-53 Through 12-31-55. 234 p.	09/09/64
HW-83906-B-RD	Chemical Processing Department 200 West Area Tank Farm Inventory and Waste Reports January 1956 Through December 1956. 124 p.	09/09/64
HW-84415	NPR Liquid Radioactive Waste. 11 p.	04/18/63
HW-SA-2984	The Role of Exponential and PCTR Experiments at Hanford in the Design of Large Power Reactors. 35 p.	07/08/63
ISO-098	Radioactive Contamination in Liquid Wastes Discharged to Ground at the Separations Facilities Through December, 1965. 40 p.	02/15/66
ISO-698	Radioactive Contamination in Liquid Wastes Discharged To Ground at the Separations Facilities Through December, 1966. 44 p.	02/15/67
PNL-868	Hanford Site Environmental Report for Calendar Year 1992. 345 p.	06/30/93
PNL-3998	Mesol: An Interactive Lagrangian Trajectory Puff Diffusion Model. 85 p.	12/31/81
PNL-8727	1966 Radiation Survey Reports, 300 Wye Burial Ground. 25 p.	04/30/66
PNL-8830	Air Pathway Effects of Nuclear Materials Production at the Hanford Site, 1983 to 1992. 75 p.	10/30/93
PNL-8884	Hanford Site Environmental Data for Calendar Year 1992 - Ground Water. 150 p.	10/30/93
PNWD-1980-13 HEDR	Hanford Environmental Dose Reconstruction Project Quarterly Report, September—November 1993. 70 p.	12/01/93
PNWD-2133 HEDR	Conversion and Correction Factors for Historical Measurements of Iodine-131 in Hanford-Area Vegetation, 1945-1947. 50 p.	05/01/93
PNWD-2224 HEDR	Regional Atmospheric Transport Code for Hanford Emission Tracking (RATCHET). 65 p.	01/18/94
RHO-CD-0278	The Alleged 231-Z Discharge of Plutonium to the 216-Z-19 Ditch (February 1977). 10 p.	03/15/78
RHO-CD-078-34-4Q	Radioactivity Liquid Wastes Discharged to Ground in the 200 Areas During 1978. 200 p.	03/26/79
RHO-CD-078-35-4Q	Radioactivity in Gaseous Waste Discharged from the Separations Facilities During 1978. 38 p.	03/30/79
RHO-CD-079-34-4Q	Radioactive Liquid Wastes Discharged to Ground in the 200 Areas During 1979. 222 p.	03/06/80

RHO-CD-079-35-4Q	Radioactivity in Gaseous Waste Discharged from the Separations Facilities During 1979. 37 p.	02/22/80
RHO-CD-080-34-4Q	Radioactive Liquid Wastes Discharged to Ground in the 200 Areas During 1980. 222 p.	03/09/81
RHO-HS-SR-81-1-P	Rockwell Hanford Operations Effluents and Solid Waste Burials During CY 1981. 122 p.	05/17/92
RHO-HS-SR-82-1-P	Rockwell Hanford Operations Effluents and Solid Waste Burials During CY 1982. 100 p.	05/23/83
RHO-HS-SR-82-3-4Q-LI	Radioactive Liquid Wastes Discharged to Ground in the 200 Areas During 1982. 224 p.	03/02/83
RHO-HS-SR-84-3-4Q-LI	Radioactive Liquid Wastes Discharged To Ground in the 200 Areas During 1984. 156 p.	03/06/85
RL-GEN-0022-SUP14-RE	Richland Integrated Process Development Program Columbia River Studies. 28 p.	07/30/65
RL-GEN-1467	Radiation Incident. 2 p.	02/23/67
RL-GEN-1571-DEL	Extraction of Tritium from (IIA102) Targets. 7 p.	04/10/67
RL-SEP-22	Plutonium, Neptunium and Americium Waste Tank Inventories. 3 p.	10/19/64
RL-SEP-676-DEL	Tritium Extraction Facility Study - 1965. 32 p.	08/20/65
RL-SEP-939-RD-DEL	HAPO Tritium Production Facilities Study - 1958 - Study Reports Numbers 1 & 2. 38 p.	11/12/68
WHC-92-00001	Trac Data Files. 100 p.	04/16/92
WHC-MR-0425	Manhattan Project Buildings and Facilities at the Hanford Site: A Construction History. 300 p.	09/30/93
WHC-MR-0437	A Brief History of the Purex and UO3 Facilities. 64 p.	11/30/93

Appendix C

HEDR Documents to the TSP - December 1993-February 1994

Appendix C

HEDR Documents to the TSP - December 1993-February 1994

C.1	Title	Author	Date Issued	Publication No	Additional Information	Status
	Commercial Milk Distribution Profiles and Production Locations	DE Deonigi GL Willert DM Anderson	12/93	PNWD-2218 HEDR	Milestone 0603D	To TSP and CDC for review
	Validation of HEDR Models	BA Napier et al.	1/94	PNWD-2221 HEDR	Milestone 0204C	To TSP and CDC for review
	Radionuclide Releases to the Atmosphere from Hanford Operations, 1944-1972	CM Heeb	1/94	PNWD-2222 HEDR	Milestone 0303D	To TSP and CDC for review
	Radionuclide Releases to the Columbia River from Hanford Operations, 1944-1971	CM Heeb DJ Bates	1/94	PNWD-2223 HEDR	Milestone 0304B	To TSP and CDC for review
	Regional Atmospheric Transport Code for Hanford Emission Tracking (RATCHET)	JV Ramsdell CA Simonen KW Burk	2/94	PNWD-2224 HEDR	Milestone 0402Brev	Published final
	Reconstruction of Radionuclide Concentrations in the Columbia River from Hanford, Washington to Portland, Oregon January 1950-January 1971	WH Walters MC Richmond BG Gilmore	1/94	PNWD-2225 HEDR	Milestone 0404C	To TSP and CDC for review

Appendix D

HEDR Presentation Handouts to the TSP - December 1993-February 1994

Appendix D

HEDR Presentation Handouts to the TSP - December 1993-February 1994

D.1	Title	Author	Date Issued	Publication No	Additional Information
	Status of Technical Work - HEDR Project - January 20-21, 1994	DB Shipler et al.	01/94	PNWD-SA-3957 HEDR S	Presented at TSP meeting, Jan. 20-21, 1994, Pasco, WA
	Discussion Items at TSP Subcommittee Meetings	DB Shipler et al.	01/94	PNWD-SA-3976 A HEDR	Presented at TSP meeting, Jan. 20-21, 1994, Pasco, WA
	Columbia River Dose Modeling for Native American Tribes	TA Ikenberry	01/94	PNWD-SA-3979 S HEDR	Presented at NAWG meeting, Jan. 19, 1994, Richland, WA
	Initial Radiation Dose Estimates to the Confederated Tribes of the Warm Springs Reservation	TA Ikenberry	02/94	PNWD-SA-4037 S HEDR	Presented to the Tribal Council of the Warm Springs Reservation, Feb. 24, 1994, Warm Springs, OR

Appendix E

HEDR Open-Literature Publications and Presentations - December 1993-February 1994

This appendix lists publications that present aspects of dose reconstruction in the open scientific literature. TSP approval is not required.

Appendix E

HEDR Open-Literature Publications and Presentations - December 1993-February 1994

E.1

Title	Author	Date Issued	Publication No.	Audience	Status
Overview of the Hanford Environmental Dose Reconstruction Project	DB Shipler et al.	01/94	PNWD-SA-3959 A HEDR	Health Physics Society 39th Annual Meeting Review Committee	Provided abstract
Developing Food Production and Consumption Information for Use in Dose Estimation	DM Anderson et al.	01/94	PNWD-SA-3960 A HEDR	Health Physics Society 39th Annual Meeting Review Committee	Provided abstract
Dose Reconstruction Research at Hanford	EB Liebow et al.	01/94	PNWD-SA-3961 A HEDR	Health Physics Society 39th Annual Meeting Review Committee	Provided abstract
Compilation, Evaluation, and Use of Environmental Monitoring Data	ME Thiede	01/94	PNWD-SA-3962 A HEDR	Health Physics Society 39th Annual Meeting Review Committee	Provided abstract
Search, Retrieval, Evaluation, and Declassification of Hanford-Originated Information for the HEDR Project	GL Harvey SP Gydesen	01/94	PNWD-SA-3963 A HEDR	Health Physics Society 39th Annual Meeting Review Committee	Provided abstract
Computer Implementation of HEDR Integrated Codes	PW Eslinger et al.	01/94	PNWD-SA-3964 A HEDR	Health Physics Society 39th Annual Meeting Review Committee	Provided abstract
Uncertainty and Sensitivity Analysis of HEDR Dose Estimates	PW Eslinger JC Simpson	01/94	PNWD-SA-3965 A HEDR	Health Physics Society 39th Annual Meeting Review Committee	Provided abstract
Estimates of Dose from Groundwater Pathways	MD Freshley WT Farris	01/94	PNWD-SA-3966 A HEDR	Health Physics Society 39th Annual Meeting Review Committee	Provided abstract

Title	Author	Date Issued	Publication No.	Audience	Status
Environmental Accumulation of Radioactive Materials Released to the Columbia River	WT Farris SF Snyder	01/94	PNWD-SA-3967 A HEDR	Health Physics Society 39th Annual Meeting Review Committee	Provided abstract
Doses from Exposures to Radioactive Materials Released to the Columbia River	WT Farris BA Napier	01/94	PNWD-SA-3968 A HEDR	Health Physics Society 39th Annual Meeting Review Committee	Provided abstract
Modeling of Environmental Accumulation of Radioactive Materials Historically Released to the Atmosphere from Hanford	BA Napier et al.	01/94	PNWD-SA-3969 A HEDR	Health Physics Society 39th Annual Meeting Review Committee	Provided abstract
Reference Individual Doses Resulting from Hanford Atmospheric Releases, 1944-1992	BA Napier et al.	01/94	PNWD-SA-3970 A HEDR	Health Physics Society 39th Annual Meeting Review Committee	Provided abstract
Validation of Models for the HEDR Project	BA Napier JC Simpson	01/94	PNWD-SA-3971 A HEDR	Health Physics Society 39th Annual Meeting Review Committee	Provided abstract
Atmospheric Transport and Deposition of Iodine-131 Released from Hanford	JV Ramsdell et al.	01/94	PNWD-SA-3972 A HEDR	Health Physics Society 39th Annual Meeting Review Committee	Provided abstract
Reconstruction of Radionuclide Concentrations in the Columbia River for the Hanford Environmental Dose Reconstruction Project	WH Walters et al.	01/94	PNWD-SA-3973 A HEDR	Health Physics Society 39th Annual Meeting Review Committee	Provided abstract
Reconstruction of Hanford Separations Plant Atmospheric Releases, 1944-1972	CM Heeb	01/94	PNWD-SA-3974 A HEDR	Health Physics Society 39th Annual Meeting Review Committee	Provided abstract
Reconstruction of Hanford Production Reactor	CM Heeb DJ Bates	01/94	PNWD-SA-3975 A HEDR	Health Physics Society 39th Annual Meeting Review Committee	Provided abstract

Appendix F

Communications Log - December 1993-February 1994

Appendix F

Communications Log - December 1993-February 1994

Initiated By/ Affiliation	Contact/ Affiliation	Type	Subject
December 1993			
M Allen/BNW	J Thomas/HHIN	Phone	Report publication dates
B Aripa/CCT	EB Liebow/BNW	Phone	Status of OMB review of protocol
WA Bishop/TSP	TA Ikenberry/BNW	Phone	Viewgraphs for a presentation to Native Americans in Spokane
WA Bishop/TSP	EB Liebow/BNW	Phone	Ideas regarding agenda for NAWG meeting
SD Cannon/BNW	K Niles/TSP Staff	Phone	TSP press release
SD Cannon/BNW	K Charlee/TSP Staff	Phone	HEDR publications
K Charlee/TSP Staff	SD Cannon/BNW	Phone	HEDR publications
K CharLee/TSP Staff	SM Finch/BNW	Phone	Meeting in December
K CharLee/TSP Staff	GL Harvey/BNW	Phone	Review of unclassified documents; progress in clearing documents referenced in report by MA Robkin (TSP); audio/visual requirements for January 20-21 meeting in Pasco
G Combs/TSP Staff	SD Cannon/BNW	Phone	BNW review of TSP "blue book"
G Combs/TSP Staff	GL Harvey/BNW	Phone	Availability of personal dosimetry information for interested individual; review and development of public information materials; photo of fish from Columbia, Yakima or Snake Rivers for use in newsletter
G de Bruler/CRU	SD Cannon/BNW	Phone	Publication of HEDR reports
SM Finch/BNW	K CharLee/TSP Staff	Phone	Audio visual support for TSP meetings
SM Finch/BNW	A Peters/YIN	Phone	Invoices for past workshop agreements
GL Harvey/BNW	G Combs/TSP Staff	Phone	Draft summary document
TA Ikenberry/BNW	M Quehpama/WST	Phone	Warm Springs dose calculations and presentation could be scheduled; clarification of the Warm Springs food consumption data

Initiated By/ Affiliation	Contact/ Affiliation	Type	Subject
TA Ikenberry/BNW	JR Wilkinson/ Umatilla Tribe	phone	Umatilla dose calculations and presentation
EB Liebow/BNW	WA Bishop/TSP	Phone, Fax	HHIN meeting in Spokane; YIN representatives, work order and invoicing status
EB Liebow/BNW	R Cook/YIN	Phone	Hanford Information Management strategic planning
EB Liebow/BNW	C Palmer/YIN	Phone	Work order and invoicing status
K Niles/TSP Staff	SD Cannon/BNW	Phone	Publication of HEDR reports
K Niles/TSP Staff	GL Harvey/BNW	Phone	Review of draft technical reports
DB Shieler/BNW	DE Barth/TSP	Phone	Validation report schedule; future TSP meetings
DB Shieler/BNW	DW Price/TSP	Phone	Dates of on-and-off pasture received; total feed; DW Price (TSP) has all BNW input and documents on pasture dates
DB Shieler/BNW	JE Till/TSP	Phone	Feeding regimes; declassification; SQA audit; document delivery schedule
B Shleien/TSP	SM Finch/BNW	Phone	Project cost history by task
B Shleien/TSP	DB Shieler/BNW	Phone	Breakdown of total expenditure of HEDR by task and year for February meeting
J Thomas/HHIN	M Allen/BNW	Phone	Report publication dates
J Thomas/HHIN	CM Heeb/BNW	Phone	Source Term report
JE Till/TSP	DB Shieler/BNW	Phone	Air/water data to CDC; feeding regimes presentation; press release for source term reports; summary report; price information; RATCHET; Native American doses
JR Wilkinson/UT	SM Finch/BNW	Phone	HEDR documents distribution list
January 1994			
W Arnold/RPI	CM Heeb/BNW	Phone	Zinc-65 in Columbia River 1960
WA Bishop/TSP	EB Liebow/BNW	Phone	TSP meeting; plans for next NAWG meeting
V Bowman/KT	EB Liebow/BNW	Phone	Maps available of study area; dairy location information
SD Cannon/BNW	K CharLee/TSP Staff	Phone	HEDR publications

Initiated By/ Affiliation	Contact/ Affiliation	Type	Subject
K ChaLee/TSP Staff	SD Cannon/BNW	Phone	HEDR publications
K CharLee/TSP Staff	SM Finch/BNW	Phone	Information on document declassification
K CharLee/TSP Staff	GL Harvey/BNW	Phone	Request for review of documents; badging of TSP members for 1994
PR Chevalier/BNW	GG Caldwell/TSP	Phone	Dosimeter exchange
PR Chevalier/BNW	DW Price/TSP	Phone	Badging
PR Chevalier/BNW	B Shleien/TSP	Phone	CM Heeb meeting
SN Davis/HTDS	EB Liebow/BNW	Fax	Draft guidelines on Native American thyroid study
SM Finch/BNW	K CharLee/TSP Staff	Phone	Cost estimate for duplicating dose reports
SM Finch/BNW	R Koontz/WSU	Phone	WSU work orders
SM Finch/BNW	M Saporito/FHCRC, K Kopecky/TSP	Phone	Conference call for HTDS calculations calculations
NJ Germond/TSP	GL Harvey/BNW	Phone Fax	Summary information on human subjects studies
D Glasner/USA Today Seattle, WA	GL Harvey/BNW	Phone	BNW's role in HEDR Project
SP Gydesen/BNW	K CharLee/TSP Staff	Phone	TSP's need of copies of reports submitted for declassification
SP Gydesen/BNW	MA Robkin/TSP	Phone	Document numbers in letter to DOE requesting clearance of selected documents
GL Harvey/BNW	G Walrafen/WDC	Phone	HEDR study and historic worker dosimetry information
CM Heeb/BNW	B Shleien/TSP	Phone	Water and air monthly source terms
KL Hoewing/BNW Leavens/Attorney rep WHC	CM Heeb/BNW	Phone	Possible conference call with A Klementiev (Downwinders) regarding iodine-131 source term, 1944-1947
P Houck/HCFA	EB Liebow/BNW	Phone	OMB approval of protocol; range of values for data entry routines
D Johnson/HHIN	GL Harvey/BNW	Phone	Meeting arranged
L Kaplan/HHIN	BA Napier/BNW	Phone	Contributions to dose by radionuclide and pathway; tables from HHIN and TSP about dose by radionuclide; dose from cesium-144

Initiated By/ Affiliation	Contact/ Affiliation	Type	Subject
D Kennedy/ Modesto, CA	GL Harvey/BNW	Phone	Information about HEDR Project
R Lehman/Rep., Modesto, CA	GL Harvey/BNW	Phone	HEDR and HTDS studies for congressional staff as requested by local constituent
EB Liebow/BNW	WA Bishop/TSP	Phone Fax	Agenda for NAWG meeting
EB Liebow/BNW	WA Bishop/TSP DE Walker/TSP	Fax	Summary of NAWG meeting
EB Liebow/BNW	V Bowman/KT	Phone	Council decision on project files
EB Liebow/BNW	A Peters/YIN	Phone	Technical work
EB Liebow/BNW	JH Reuben/NPT	Phone	Technical work
EB Liebow/BNW	DE Walker/TSP	Phone	Scoping studies on population
P McGavran/TSP	SM Finch/BNW	Phone Fax	Badging for 1994
BA Napier/BNW	DS Barth/TSP	Phone	TSP meeting agenda
BA Napier/BNW	MA Robkin/TSP	Phone	Monte Carlo codes to recalculate vegetation conversion factors
BA Napier/BNW	M Saporito/HTDS	Phone	HTDS cases with missing data; use of PKZIP to move files
K Niles/TSP Staff	GL Harvey/BNW	Phone	Draft video script and request from media to discuss HEDR activities
K Niles/TSP Staff	GL Harvey/BNW	Phone	Update of visitor badge and media request for HEDR information
MA Robkin/TSP	BA Napier/BNW	Phone	Monte Carlo codes to validate vegetation conversion factors
M Saporito/HTDS	BA Napier/BNW	Phone	Status of calculations; availability of diet files; meeting in January
DB Shipler/BNW	DS Barth/TSP	Phone	New feeding regimes; validation presenta- tion; CDC SQA audit
DB Shipler/BNW	DW Price/TSP	Phone	Sensitivity results; feeding regimes
DB Shipler/BNW	B Shleien/TSP	Phone	Meetings with BA Napier and CM Heeb
B Shleien/TSP	SM Finch/BNW	Phone	Badge for 1994
B Shleien/TSP	CM Heeb/BNW	Phone	River source term uncertainty

Initiated By/ Affiliation	Contact/ Affiliation	Type	Subject
B Shleien/TSP	BA Napier/BNW	Phone Fax	Feasibility of use of GENII-S code to do Columbia River dose calculations; results of GENII-S river analysis; bio-accumulation of Gallium-72; initial iodine-129 atmospheric release analysis; VAMP results, validation report
B Shleien/BNW	DB Shipler/BNW	Phone	TSP meeting; memo to TSP on work with GENII-S
J Thomas/HHIN	SM Finch/BNW	Phone	Commercial milk report
J Thomas/HHIN	CM Heeb/BNW	Phone	Questions about source term reports
February 1994			
B Aripa/CT	TA Ikenberry/BNW	Phone	Letter for release of records to project file
B Aripa/CT	EB Liebow/BNW	Phone	Maps and information on DOE Native American Policy for talk at ATSDR meeting in Atlanta
DS Barth/TSP	DB Shipler/BNW	Phone	Status of documents; feed-to-milk transfer for iodine-131
WA Bishop/TSP	EB Liebow/BNW	Phone, Fax	TSP subcommittee meeting
ML Blazek/TSP	SD Cannon/BNW	Phone	Materials for HHIN presentation
ML Blazek/TSP	GL Harvey/BNW	Phone	Duplication of recently declassified materials and ensuring public availability
SD Cannon/BNW	ML Blazek/TSP	Phone	TSP Communications Subcommittee meeting
SD Cannon/BNW	K CharLee/TSP Staff	Phone	HEDR publications
K CharLee/TSP Staff	SD Cannon/BNW	Phone	HEDR publications
PR Chevalier/BNW	K Charlee/TSP Staff	Phone	Milk production letter
G Combs/TSP staff	GL Harvey/BNW	Phone	Videotaping and perhaps cable access for the April press conference
P Houck/DHHS	EB Liebow/BNW	Phone	Value ranges and questionnaire finalization
TA Ikenberry/BNW	M Queahpama/WST	Phone	Presentation to tribal council
TA Ikenberry/BNW	JR Wilkinson/UT	Phone Fax	Viewgraphs presented to the technical staff; meeting with Environmental Planning staff

Initiated By/ Affiliation	Contact/ Affiliation	Type	Subject
EB Liebow/BNW	WA Bishop/TSP	Phone, Fax	TSP subcommittee meeting
EB Liebow/BNW	P Houck/DHHS	Email	Value ranges for data coding
EB Liebow/BNW	A Peters/YIN	Phone	YIN data summary
EB Liebow/BNW	D Ringgli/NP	Phone	Data entry procedures for NP data summaries
EB Liebow/BNW	M Squeochs/YIN	Phone	YIN data summary status
P McGavran/TSP	SM Finch/BNW	Phone	Security ID number to transfer clearance
BA Napier/BNW	B Shleien/TSP	Fax	Iodine-129 report
MS Power/TSP	DB Shieler/BNW	Phone	Milk cow feeding regimes; computers for Oregon and Washington; "blue book" publication relative to dose rerun
M Queahpama/WST	TA Ikenberry/BNW	Phone	Presentation to tribal council
M Saporito/HTDS	BA Napier/BNW	Phone	Corrections to individual input data sets; difficulty in data transmission; retry of first half of HTDS cases
DB Shieler/BNW	JE Till/TSP	Phone	Feeding regimes and consumption rates; CDC audit results
B Shleien/TSP	SM Finch/BNW	Phone	Cost status through January 1994 for TSP budget/fiscal subcommittee meeting
B Shleien/TSP	BA Napier/BNW	Phone	Committed versus cumulative dose calcu- lations for iodine-129; questions about the GENII-S code; iodine-129 conclusions
L Spino/UT	TA Ikenberry/BNW	Phone	Date for technical discussions with Environmental Planning staff in Mission, Oregon
JE Till/TSP	DB Shieler/BNW	Phone	Feeding regimes meeting at BNW
DE Walker/TSP	EB Liebow/BNW	Phone	Follow-up on TSP committee meeting

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