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HANFORD ENVIRONMENTAL DOSE
RECONSTRUCTION PROJECT

Monthly Report

November 1990

Prepared for the Technical Steering Panel

Pacific Northwest Laboratory
Richland, Washington 99352

MASTER

HANFORD ENVIRONMENTAL DOSE
RECONSTRUCTION PROJECT

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Preface

This monthly report summarizes the technical progress and project status for the Hanford Environmental Dose Reconstruction (HEDR) Project being conducted at the Pacific Northwest Laboratory (PNL)^(a) under the direction of a Technical Steering Panel (TSP). The TSP is composed of experts in numerous technical fields related to this project and represents the interests

of the public. The U.S. Department of Energy (DOE) funds the project.

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

FIGURE 1. Organizational Structure of the Hanford Environmental Dose Reconstruction Project

^(a)Battelle Memorial Institute operates the Pacific Northwest Laboratory.

TABLE 1. Status of Directives(a)

		<u>Complete</u>	<u>Ongoing</u>	<u>Phase I</u>	<u>Phase II</u>
88-1	(a) Proposals		x		
	(b) Source Terms			x	
88-2	Vegetation			x	x
88-3	Status Reports		x		
88-4	Ground Water			x	x
88-5	Maps	x			
88-6	Resumes	x			
89-1	Indian Tribes			x	
89-2	Bioassay Data			x	x
89-3	Document Handling		x		
89-4	Reactor Purging			x	x
89-5	Phased Approach		x		
89-6	Meeting Materials		x		
89-7	Tech Communication			x	x
89-8	Phase II Planning			x	
89-9	Project QA Plan		x	x	
89-10	Contracts with Tribes			x	
90-1	Project Direction		x		
90-2	Dose Cut-Off Limit		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 Project is to estimate the radiation doses that populations could have received from nuclear operations at Hanford since 1944. The project is being managed and conducted by the Pacific Northwest Laboratory (PNL) under the direction of an independent Technical Steering Panel (TSP).

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 technical members representing the states of Oregon and Washington, cultural and technical experts nominated by the regional Native American tribes, and an individual representing the public.

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

- Source Terms
- Environmental Transport
- Environmental Monitoring Data
- Demographics, Agriculture, Food Habits
- 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. A major effort of this task is to separate Hanford as a source of radionuclide concentrations in the environment from concentrations caused by natural sources and nuclear testing fallout.

The Demographics, Agriculture, Food Habits 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 will also be developed for several special population groups, including Native American tribes in the study area, Army personnel who were stationed at Hanford, Hanford construction workers, and migrant farm workers.

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 radionuclides. 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.

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

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

Project Summary

Progress

Figure 2 shows the status of project milestone activities. The following is a summary of activities conducted by HEDR staff in November 1990:

- submitted the FY 1991 Project Plan to the TSP for review and approval, completing Milestone 0101A
- discussed the transfer of the HEDR contract from DOE-RL to the Centers for Disease Control (CDC) at a meeting in Richland with CDC, Battelle, and DOE staff
- met with TSP members at PNL to discuss the development of data quality objectives with HEDR task leaders
- drafted the Model Correlations Analysis report and began the PNL peer review process for the report
- met with Hanford Thyroid Disease Study staff from the Fred Hutchinson Cancer Research Center, TSP members, and HEDR staff to discuss inter-project data needs and interactions
- conducted training for HEDR staff on the Geographic Information System (GIS) in preparation for the demonstration of GIS capabilities at the January TSP meeting
- completed technical work on Milestone 0402C, Air Model Variability
- obtained information on Columbia River riparian wells
- prepared food consumption data for the Kalispel and Coeur d'Alene tribes for input into the Phase I computer code
- scheduled meetings with the Tribal Councils of the Kalispel and Coeur d'Alene Tribes to present preliminary dose calculations based on the data they provided
- extended the period of performance of work orders for the Yakima, Umatilla and Spokane Tribes
- sent a request for proposal for a work order to collect population data to the Colville Tribe
- calculated milk surplus/deficit estimates based on census data for northern counties of Washington
- attended a TSP Communications Subcommittee meeting in Portland on November 15; discussed various alternatives for conducting a public opinion survey
- made preliminary arrangements for a January 15, 1991 presentation on dose reconstruction to the Renton Kiwanis Club
- presented the papers, "Atmospheric Modeling for Dose Reconstruction at Hanford" and "GENII - Hanford Environmental Dosimetry Software Package" at the American Nuclear Society winter meeting
- made a presentation on the HEDR Project to the Hanford Environmental Health Foundation Board of Directors
- arranged a media interview between Bill Templeton (Battelle) and Peter Fimrite (San Francisco Chronicle) regarding the HEDR Project.

Major Problems or Changes and Action Taken

The draft reports for Milestone 0202C, Model Correlations Analysis, and Milestone 0402C, Air Model Variability, were scheduled to be delivered to the TSP on November 30, 1990. Because of delays in final preparations, the reports will now be ready for TSP review in December.

The TSP Communications Subcommittee is investigating alternatives for producing a TSP videotape. Until Subcommittee direction is given, development of a videotape work plan will be delayed.

Planned Work for Subsequent Months

Work planned for subsequent months includes

- finalize about 21 Phase I reports: summary reports on Phase I results and supporting reports on various aspects of Phase I work•finish Milestone 0202C, Model Correlation Analysis Report, and send to the TSP in December for review
- finish Milestone 0402C, Report on Air Model Variability, and send to the TSP in December for review
- prepare code design specifications for Phase II computational model
- close iodine-131 release estimates, 1944-1947
- begin literature searches for significant airborne radionuclide releases other than iodine-131

- modify the original response to TSP Directive 88-4, "Ground-Water Contamination Data," to include impacts
- collect additional Columbia River monitoring data
- confirm and validate the milk source for Okanogan county.

Budget Status

Figures 2 and 3 show the budget status of the HEDR Project and TSP activities, respectively. Table 2 outlines FY 1991 costs and budget by task showing labor and non-labor dollars expended. Table 3 summarizes prior fiscal year costs and budgets.

Capital Status

\$141K capital funds were authorized in FY 1990. Capital expenditures were \$48K. FY 1991 capital allocations have not yet been made.

FIGURE 2. Project Summary Report - Pacific Northwest Laboratory

FIGURE 2. Project Summary Report - Pacific Northwest Laboratory (Contd)

FIGURE 2. Project Summary Report - Pacific Northwest Laboratory (Contd)

[illegible]

FIGURE 3. Project Summary Report - Technical Steering Panel

TABLE 2. Fiscal Year Costs through November 25, 1990
(Dollars in Thousands)

		November, 1990			FY 1991 (October, 1990 - September, 1991)					TSP
		Labor \$	Labor \$(a)	Total \$	Labor \$	Labor \$(a)	Total \$	Cum Budget	Cum Variance	Approved FY Budget
<u>HEDR Project Tasks</u>										
Task 01	Project Management (b)	36	2	38	82	4	86	139	53	908
Task 02	Project Tech Integration	46	4	50	53	9	62	55	-7	260
Task 03	Source Terms	4	0	4	11	0	11	9	-2	93
Task 04	Environmental Transport	11	0	11	23	0	23	52	29	451
Task 05	Environ Monitoring Data	1	0	1	2	0	2	0	-2	41
Task 06	Demo, Food, & Agriculture	7	-12	-5	14	-12	2	41	39	221
Task 07	Envir Pathways & Dose Est	12	0	12	15	0	15	18	3	223
Task 08	Statistics	2	0	2	11	2	13	9	-4	48
Task 09	Records Management	1	0	1	3	0	3	12	9	75
Task 10	Quality Assurance	3	0	3	6	0	6	14	8	59
Task 11	Information Resources	9	0	9	18	0	18	23	5	164
Task 12	TSP Comm Support	2	0	2	6	2	8	14	6	148
Subtotal		134	-6	128	244	5	249	386	137	2,691
Contingency								0	0	400
Subtotal HEDR Tasks		134	-6	128	244	5	249	386	137	3,091
<u>Technical Steering Panel (c)</u>		0	23	23	0	37	37	132	95	800
TOTAL		134	17	151	244	42	286	518	232	3,891

(a) Non-labor dollars include expenses such as travel, publication production, procurements, and subcontracts.

(b) Project management includes activities such as project control and administration, project communications, subcontract administration, records control, and peer review.

(c) Technical Steering Panel (TSP) costs are administered through subcontracts which are reflected as non-labor costs. Actual TSP expenses include both labor and non-labor.

TABLE 3. Summary of Prior Fiscal Year Costs

<u>Fiscal Year</u>	<u>Cost</u>	<u>Funding</u>	<u>Carryover(a)</u>	<u>Budget(b)</u>
1988	2,323	2,433	0	2433
1989	3,301	3,400	110	3510
1990	3,558	3,733	209	3942
TOTAL	9,182	9,566		

(a) Carryover equals unspent budget from prior year.

(b) Budget equals current fiscal year funding plus carryover.

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Task 02

Project

Technical

Integration

Objective

The objective of the Project 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 0202A - Draft Code Design Specifications, due December 1990

- reviewed pre-Phase II code improvements and data structure modifications. Began informal discussions with task staff on objectives and strategy for restructuring. Much of the effort required is concurrent with that for Milestone 0202 C (below).

Milestone 0202C - Model Correlations Analysis Report, due November 1990

- finished milestone report and began the PNL peer review process for the report. This report evaluates the extent the Phase I dose results were affected by the loss of correlation structure caused by the modular construction of the Phase I dose code. The extent of loss was evaluated by conducting computer simulations on a simplified non-modular dose code and comparing the resulting doses to the doses reported in the draft Phase I HEDR Project reports. Doses from submersion, inhalation, groundshine, fruit and vegetable consumption, and milk consumption from family cows were evaluated. The simulation study indicated that the loss of correlation structure tended to inflate some doses reported in the Phase I report, in particular, doses from exposure to groundshine and the consumption of fruits and vegetables. This study indicates that in Phase II it will be necessary to determine how to modify the Phase I dose code so that correlations are fully taken into account.

Milestone 0203A - Submit VAMP Number One Results, due January 1991

- evaluated data from the International Atomic Energy Agency (IAEA) coordinated research project on Validation of Model Predictions (VAMP). An outline was prepared of the minor model modifications that need to be made to accommodate the form of the IAEA data. A separate subdirectory will be established to ensure that the changes necessary to incorporate the IAEA input will not corrupt the main HEDR code.

Other Activities

- met with Hanford Thyroid Disease Study (HTDS) staff from the Fred Hutchinson Cancer Research Center (FHCRC), TSP members, and HEDR staff to discuss inter-project data needs and interactions. Information was presented to the FHCRC staff relating to 1940s milk production and atmospheric transport for counties outside of the HEDR Phase I study area. Plans for further cooperation were made.
- began preparation of an internal report on decisions made or planned, describing potential outcomes on result uncertainty, project schedule and resources, and project products and goals.
- conducted training for HEDR staff on the Geographic Information System (GIS) in preparation for the demonstration of GIS capabilities at the January TSP meeting.

Major Problem Areas or Changes and Action Taken

The draft report for Milestone 0202C, Model Correlations Analysis, was scheduled to be delivered to the TSP on November 30, 1990. Because of delays in final preparations, the report will now be ready for TSP review in December.

Variance

Part of the cost overrun was caused by costs for work on Milestone 0402C (Sensitivity/Uncertainty of Air Model) being incorrectly charged to Subtask 0202 (Dose Code Revisions), and some of Task 07 costs being charged to Task 02. These problems will be corrected in December.

Planned Work for Subsequent Months

Work planned for the subsequent months includes

- finalize Phase I reports
- prepare code design specifications for Phase II computational model
- continue coordinating efforts with HTDS personnel
- work with the IAEA coordinated research program on VAMP program to validate portions of the HEDR model and to obtain independent estimates of certain doses
- finish Milestone 0202C, Model Correlation Analysis Report, and send to the TSP in December for review.

Task 03 Source Terms

Objective

Source terms are the amount and type of radioactive materials released to the environment. Members of the Source Terms Task 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.

Uncertainty in calculated and measured data can result from many factors. Uncertainties in measured emissions may result from early measurement techniques. For calculated emissions, uncertainties may result from the differences in published variables that are used to perform calculations. By comparing the uncertainty in the available data, Source Term Task staff determine the most accurate method for developing source terms. For time periods where measured values do not exist, source terms are calculated from available information. The proposed methods and results of this task are reviewed, evaluated, and approved by the TSP.

Progress

No technical activities occurred this month.

Major Problem Areas or Changes and Action Taken

Work on Task 0302, Closure of Phase I Iodine Releases, was postponed to December because of staff unavailability.

Variance

The cost overrun was caused by a charging error. Once corrected, there will be an underrun resulting from planned work on iodine-131 closure being postponed to December because of staff

unavailability. This work delay will not affect Milestone 0302A, Documented Phase I Iodine-131 Releases.

Planned Work for Subsequent Months

Work planned for the subsequent months includes

- finalize Phase I reports
- close iodine-131 release estimates, 1944-1947
- begin literature searches for significant airborne radionuclide releases other than iodine-131.

Task 04 Environmental Transport

Objective

Members of the Environmental Transport Task 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 ground water are studied.

To track releases to the atmosphere from Hanford Site operations, meteorological data are needed, including wind speed, wind direction, and other data that affect the dispersion of the releases. Mathematical models are applied to these meteorological data and the source term data to calculate concentrations of radionuclides in the air and on the ground. The TSP reviews, evaluates, and provides direction concerning the proposed models.

Reconstruction of the transport of radionuclides in the Columbia River is based primarily on historical studies of the Columbia River and its tributaries. Computer models are used to reconstruct radionuclide concentrations in the river for time periods when previously published data are limited or unavailable.

The movement of radionuclides in the ground water is reconstructed initially by using ground-water monitoring data to estimate the contribution to the Columbia River exposure pathway. Modeling will be used where previously published data are lacking.

Progress

Milestone 0402A - Wind Field Modeling White Paper, due April 1991

- began examining alternative methods of estimating wind fields from available wind data. This activity was conducted jointly with the Statistics Task and the Environmental Transport Task.

Milestone 0402C - Report on Air Model Variability, due November 1990

- finished technical work on air model variability. The report, which is about 80% complete, evaluates the effects of the Phase I air model parameterization on Phase I dose estimates. Several alternative ways of parameterizing the air model results were

examined via computer simulations. Primary interest was in examining methods for retaining spatial correlation information when parameterizing the air model.

Milestone 0402D - Report on Sensitivity/ Uncertainty of Air Model, due September 1991

- began to investigate uncertainty in the atmospheric transport model. Initially, we are attempting to estimate the uncertainty caused by lack of information in the release times and quantities. The first step will be to estimate doses for several release-time scenarios. This activity was conducted jointly with the Statistics Task and the Environmental Transport Task.

Milestone 0403A - Well Report, due January 1991

- worked with a TSP member to finalize scope of work for this subtask activity.
- obtained information on Columbia River riparian wells from Task 06 (Demography, Food Consumption, and Agriculture). The information is being processed to develop a list of riparian wells.
- generated a preliminary outline for the final report on this subtask activity.

Milestone 0404A - Columbia River Data, 1944-1989, due September 1991

- inventoried available literature and data bases in project files. The literature and data were sorted by type (e.g., water, sediment, biota) and location (Columbia River, Columbia River estuary).
- discussed with a TSP member the expectations for presentations at the upcoming January TSP meeting regarding our subtask work.

Major Problem Areas or Changes and Action Taken

The information on riparian wells must be compiled as stated in the FY 1991 HEDR project plan. Therefore, we have more work than anticipated to complete Milestone 0403A. However, this will not affect the milestone schedule.

Variance

A draft report on air model variability (Milestone 0402C) was due to the TSP on November 30, 1990. Because of delays in final preparation, the report is now expected to be available to the TSP for review in December.

The cost underrun was caused by a work delay to accommodate the schedules of staff from the Environmental Monitoring Data Task who contribute to the work on Milestone 0404A, Columbia River Data, 1944-1989. Their contribution to this milestone will begin in January 1991. This adjustment should not delay the schedule or affect the budget. Another contributing factor to the cost underrun was that costs for work on sensitivity/uncertainty of the air model were incorrectly charged to the Dose Code Revisions subtask. The problem will be corrected in December.

Planned Work for Subsequent Months

Work planned for the subsequent months includes

- finalize Phase I reports
- finish Milestone 0402C, Report on Air Model Variability, and send to the TSP in December for review
- modify the original response to TSP Directive 88-4, "Ground-Water Contamination Data," to include impacts
- complete list of riparian wells and estimation of impacts; produce draft document for January 1991 Milestone 0403A
- continue to review literature and data bases on surface water transport.

Task 05 Environmental Monitoring Data

Objective

Members of the Environmental Monitoring Data Task assemble, 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 Environmental Pathways and Dose Estimates Task staff to estimate radiation doses and by Environmental Transport Task staff to calibrate computer models. Methods to attain this objective are proposed to the TSP for review, evaluation, and approval.

Progress

Technical activities are in support of Task 04, Environmental Transport, and are reported under that section.

Major Problem Areas or Changes and Action Taken

None.

Variance

Task management activities were inadvertently not budgeted within this task because current technical work is funded through Task 04, Environmental Transport. This situation will be corrected in December.

Planned Work for Subsequent Months

Work planned for the subsequent months includes

- finalize Phase I reports
- collect additional Columbia River monitoring data
- collect additional vegetation data for model validation.

Task 06 Demography, Food Consumption and Agriculture

Objective

Task members develop the demographic, food consumption, and food production information needed to estimate doses. Demographic information for populations that may have been exposed to radionuclides during the time period of interest is developed for the general population and for several special population groups that are not adequately represented by the U.S. Census. These groups include Native American tribes, Army personnel stationed at Hanford, some Hanford construction workers, and migrant workers.

Sources and quantities of food and water consumed by these populations must be estimated, because food and water provide pathways for the intake of radionuclides. In particular, milk produced from cows represents a significant food pathway for iodine-131 if the cows ate vegetation contaminated with radionuclides. Dairy farming practices and milk distribution systems are studied to identify the populations that may have consumed potentially contaminated milk.

Methods to collect data and to estimate population densities and food consumption have been proposed to the TSP for review, evaluation, and approval.

Progress

Milestone 0602A - Dose Estimates, Two Tribes, due December 1990

- prepared food consumption data for the Kalispel and Coeur d'Alene tribes for input into the Phase I computer code.
- scheduled meetings with the Tribal Councils of the Kalispel and Coeur d'Alene Tribes to present preliminary dose calculations based on the data they provided.
- met with staff members from Task 07 and 08 to discuss the types of food consumption distributions that should be modeled in cases where data are limited. Because Native American diets include traditional and non-traditional components, it was determined that some model adjustments must be made to account for differences from other Phase I dose calculations.

Milestone 0602B - Dose Estimates, Six Tribes, due March 1991

- extended the period of performance of work orders for the Yakima, Umatilla and Spokane Tribes.
- sent a request for proposal for a work order to collect population data to the Colville Tribe.

Milestone 0603A - Phase I Milk Report Addendum, due March 1991

- calculated milk surplus/deficit estimates based on census data for northern counties of Washington. Most counties were milk net importers.
- started gathering milk data for Okanogan county. The milk industry in this county began to diminish in the 1940s.

Major Problem Areas or Changes and Action Taken

None.

Variance

The cost underrun was caused by a delayed start on food consumption data collection for Native Americans pending completion of a process being developed by the TSP Native American Working Group.

Planned Work for Subsequent Months

Work planned for the subsequent months includes

- finalize Phase I reports
- continue Phase I dose estimation efforts and present preliminary dose calculations to the Kalispel and Coeur d'Alene Tribes
- confirm and validate the milk source for Okanogan county.

Task 07 Environmental Pathways and Dose Estimates

Objective

Task members 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 populations, typical individuals, and specific individuals. These calculations include doses via direct transfer of radionuclides from concentrations in air and water to people (such as via 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. All significant decisions on exposure models and input parameters are presented to the TSP for review, evaluation, and approval.

Progress

Activities for this month were in support of Milestone 0602A, Dose Estimates, Two Tribes, and are reported under Task 06.

Major Problem Areas or Changes and Action Taken

None.

Variance

No significant variance.

Planned Work for Subsequent Months

Work planned for the subsequent months includes

- finalize Phase I reports

- support Task 02 in developing design specifications for Phase II code (Milestone 0202A)
- support Task 02 to restructure the HEDR computational model to incorporate changes necessary for VAMP comparison (Milestone 0203A)
- support Task 06 with dose estimation for the Kalispel and Coeur d'Alene tribes (Milestone 0602A)
- continue evaluating Hanford worker whole body count data (funded outside of the HEDR Project).

Task 08 Statistics

Objective

Task members provide statistical support to members of 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. Using sensitivity analyses results, project staff can focus resources where the benefit in terms of accurate dose estimates is greatest. Uncertainty analyses enable task leaders 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

Activities this reporting period included

Task Management (0801)

- arranged for a Battelle staff member to assist with technical computer sensitivity/uncertainty analyses.
- attended a meeting with representatives of the TSP, the HTDS team, and the HEDR Project to discuss approaches for determining the most appropriate control counties for the HTDS.
- sent draft Phase I reports, upon request, to Dr. Elezabeth M. Cardis of the International Agency for Research on Cancer, Lyon France and Professor Leonig A. Ilyin, Chairman of the National Committee on Radiation Protection, Academy of Medical Sciences of the USSR, Moscow. Professor Ilyin is organizing international cooperative efforts on dose reconstruction in connection with the Chernobyl accident.

Task Assistance (0802)

- informed all HEDR Project task leaders of upcoming meetings to determine the type and

level of statistical assistance they will require during FY 1999 and met with the Task 05 (Environmental Monitoring Data) leader on this topic.

- met with the leaders of Task 02 (Project Technical Integration) and Task 07 (Environmental Pathways and Dose Estimates) to provide advice on statistical analysis procedures for whole-body counter data on Hanford workers.

Major Problem Areas or Changes and Action Taken

None.

Variance

The cost overrun was caused by more time than expected being required to plan FY 1991 work. Task management costs may vary substantially from month to month because of unanticipated changes in work scope and associated planning efforts. Costs for routine, non-planning, task management should be fairly constant over the year.

Planned Work for Subsequent Months

Work planned for the subsequent months includes

- meet with task leaders to identify and plan statistical assistance for their subtasks
 - perform statistical analyses/assistance as required
 - continue to work with the Project Technical Coordinator (Task 02) to develop a revised dose code structure. Continue bench-scale simulation studies; test various code structures to determine which ones work best
- work with Task 04 (Environmental Transport) and Task 02 (Project Technical Integration) staff to
 - conduct bench-scale sensitivity analyses to assess the sensitivity and uncertainty of doses from lack of information about release times and quantities
 - revise the parameterization of the atmospheric model output for input to the dose code to ensure that doses/uncertainties are estimated and reported on sufficiently small temporal/spatial scales to avoid biased dose/uncertainty estimates for individuals
 - use results of bench-scale analyses to write the Milestone 0402D, Report on Sensitivity/Uncertainty of Air Models.

Task 09 Records Management

Objective

Members of the Records Management Task 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

Activities for this reporting period included

- received project records from the project office (43 records/605 pages)
- verified, processed, and stored project records (108 records/742 pages)
- transferred one package of records to the DOE-RL Public Reading Room (8 records/269 pages).

Major Problem Areas or Changes and Action Taken

None.

Variance

A cost overrun occurred because of a departmental staff shortage. This situation will be alleviated when new staff are hired and trained.

Planned Work for Subsequent Months

Work planned for subsequent months includes

- continue processing incoming project records
- continue transferring processed project records to the DOE-RL Public Reading Room
- revise Records Inventory and Disposition Schedule to include new task leaders and additional file categories
- review technical procedures RMP-1 and RMP-2 and update if necessary.

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

Activities for this reporting period included

- met with key HEDR staff members and TSP staff to discuss appropriate Phase II data quality objectives for each task/subtask
- continued working on expanding existing QA plan and task plans to include project-specific data quality objectives that will be included as part of Phase II planning.

Major Problem Areas or Changes and Action Taken

None.

Variance

The cost underrun was caused by 1) work efforts of the task leader being focused on other Battelle

projects and 2) minimal Quality Engineering assistance and surveillance because most of the work performed to date has been related to planning activities. This variance will be corrected within the next few months as the QA planning documents are finalized and the technical work increases.

Planned Work for Subsequent Months

Work planned for subsequent months includes

- issue remaining HEDR procedures: HEDR-TP-3, "HEDR Documentation of Critical Decisions", and "HEDR-TP-4, "HEDR Data Quality Objectives"
- issue revised QA Plan or other document to include project-specific data quality objectives.

Task 11 Information Resources

Objective

Members of the Information Resources Task work with the other task members to meet information needs, including ensuring that all data referenced in the reports are publicly available and establishing a microcomputer-based tracking system for ready retrieval of historical information.

Progress

Activities for this reporting period included

- added new citations to the tracking system that now contains more than 3900 publications
- provided the DOE-RL Public Reading Room with 27 documents of potential interest/use in the HEDR Project. A title listing of these reports is given in Appendix A
- filled information requests from the TSP and HEDR task members
- completed necessary preparations for a declassification work session with a TSP member to be held in early December.

Major Problem Areas or Changes and Action Taken

None.

Variance

The cost underrun was caused by fewer declassification activities than planned pending a prioritized listing from the TSP of documents to be declassified.

Planned Work for Subsequent Months

Planned work for subsequent months includes

- make necessary arrangements to determine the existence or non-existence of Hanford Site-originated documents that were transferred to the corporate headquarters of General Electric during the years 1946 through 1964
- continue to add input to the information resources tracking data base
- continue to provide documents to the DOE-RL Public Reading Room in an orderly, timely fashion
- develop a list of Hanford-originated raw data logs/notes of potential interest/use to the HEDR Project
- continue to identify and collect significant documents that address silver reactor capabilities, performance, and incidents
- watch for information that may explain in detail, and support data in, "green run" document HW-17381 DEL
- identify significant documents that address fuel element failures that occurred in now-decommissioned Hanford production reactors
- continue to identify and collect documents and/or data of potential interest/use to the HEDR Project that address activities during the years from reactor startup through 1957.

Task 12 TSP Communications Support

Objective

The objective of this task is to assist the TSP in developing and implementing communications strategies to further establish an effective, informative dialogue with interested audiences, provide public and media relations support, and manage activities that foster a better understanding of the HEDR process and its progress.

Progress

Activities this reporting period included

- attended a TSP Communications Subcommittee meeting in Portland on November 15. Considerable attention and discussion centered around the scope of public information and communication activities outlined for FY 1991 and the associated funding
- discussed with the TSP Communications Subcommittee various alternatives for conducting a public opinion survey (Subtask 1203). Meetings will be arranged for early December with Battelle and private and state agencies to evaluate options
- compiled Battelle review comments on a draft TSP newsletter at the request of a TSP staff member. The newsletter answers common questions raised at the August public meetings after release of Phase I preliminary dose estimates
- distributed to TSP members 155 pages of newspaper clippings that indicate how the press views project and TSP activities. The clippings included recently received articles from July 12 through October 27, 1990
- began compiling a collection of 11 technical documents requested by a TSP member
- made preliminary arrangements for a January 15, 1991, presentation to the Renton Kiwanis Club. A TSP member is tentatively scheduled to discuss the project and results
- scheduled and then postponed, at their request, a HEDR briefing for the Hanford Education Action League
- arranged a media interview between Bill Templeton (Battelle) and Peter Fimrite (San Francisco Chronicle) regarding the HEDR Project
- referred to key TSP members an inquiry by the Seattle Times about the legal action regarding Dr. Vietchau Nguyen.

Major Problem Areas or Changes and Action Taken

The TSP Communications Subcommittee is investigating alternatives for producing a TSP videotape (Subtask 1202). Until Subcommittee direction is given, development of a videotape work plan will be delayed. This most likely will result in rescheduling the December milestone.

Variance

A cost underrun resulted from a delay in direction from TSP Communications Subcommittee support in work to be performed, primarily the TSP video and public information survey.

Planned Work for Subsequent Months

Planned work for subsequent months includes

- finalize Phase I reports
- initiate development of a work plan for a TSP videotape (1202) pending Subcommittee direction
- consider various options for conducting a public opinion survey, including jointly sponsoring a survey with other private and/or state agencies.

Appendix A

**Hanford-Site-Originated Documents
of Potential Interest/Use to the HEDR Project -
Placed in the DOE-RL Public Reading Room During November 1990**

Appendix A

Hanford Site Originated Documents of Potential Interest/Use to the HEDR Project - Placed in the DOE/RL Public Reading Room During November 1990

* CPD-220-REV1-ADD	Hanford Radioactive Waste Management Plans. 7 p.	11/30/70
* HW-3-2291	Exposure History of Discharged Metal. 2 p.	04/30/45
* HW-7-622	Review of Water Supply, Induced Activities, & Water-Monitoring in 100 B Area. 2 p.	09/09/44
* HW-7-906	Cooling Water Requirements in 212 Buildings. 6 p.	11/09/44
• HW-9817	Activity Associated with Particles from Process Solutions. 2 p.	05/18/48
* HW-14078	Processing of Runs X-9-07-9 and X-9-07-27. 3 p.	08/03/49
* HW-18223	Hanford Codes & Jargon. 11 p.	07/03/50
HW-20888	Components of Radiation Exposure of Military Personnel within the Hanford Reservation. 10 p.	04/20/51
* HW-22730	Ruptured Slug Data. 10 p.	11/13/51
* HW-27041	Operating Level at C Pile. 2 p.	02/03/53
* HW-28303	Neutron Energy Spectra in a Hanford Pile. 5 p.	06/05/53
* HW-29132	Severe Pitting Attack of Pile Process Tubes and Slugs. 86 p.	06/30/53
* HW-29412	Ruptured Slug & Water Leak - Tube 2483-H. 3 p.	09/21/53
* HW-29907	Single Tube Failures. 5 p.	11/09/53
* HW-31043-REV	Investigation of Severe Pitting Slugs & Tubes in the Hanford Piles. 21 p.	06/07/56
* HW-31044	Macro-examination of Enriched Uranium Slug Ruptures. 8 p.	04/19/54

- Declassified in 1990 by Secretary of Energy Watkins' directive
- * Declassified in 1990 by earlier guidance

**Hanford Site Originated Documents of
Potential Interest/Use to the HEDR Project -
Placed in the DOE/RL Public Reading Room
During November 1990**

* HW-31297	Tube Power Distribution at Start-up of 105-W. 5 p.	04/02/54
* HW-31488	Fission Gas Experiment. 11 p.	04/19/54
* HW-32004	Effects of Tube Power & Exposure on Rupture Rates of 8" Metal at C Reactor. 7 p.	09/01/54
* HW-32786	Activity of Ru-103 and Ru-106 in Pile Fission Products. 5 p.	08/17/54
* HW-33535	Design Considerations Regarding Slug Ruptures in the Intermediate Power Level Reactor. 13 p.	11/01/54
* HW-33645	Slug Rupture Outbreak at H Pile. 6 p.	11/03/54
• HW-33685-REV	Possible Slug Rupture Mechanism. 15 p.	05/27/55
* HW-42230	200 Area Waste Storage Study. 13 p.	03/27/56
* HW-51952	Charted Material for Nuclear Safety Review. 65 p.	07/30/57
* HW-53221	Special Hazards Report - I&E Fuel Loads. 41 p.	10/15/57
• HW-57649	Radioactive Contamination in Liquid Wastes Discharged to Ground at Separations Facilities through June 1958. 32 p.	01/03/58

- Declassified in 1990 by Secretary of Energy Watkins' directive
- * Declassified in 1990 by earlier guidance

Appendix B

HEDR Publications - To Date

Appendix B

HEDR Publications - To Date

Title	Author	Date Issued	Publication No.	Additional Information	Status
Hanford Environmental Dose Reconstruction Project Monthly Report	HEDR Project Office	Ongoing	PNL-6450 HEDR	Monthly report; cleared one time for documentation	Periodic report; TSP approval not necessary
FY 1991 Project Plan for the HEDR Project, Phase II	HEDR Staff	11/90	PNL-7563 HEDR	Supersedes PNL-7515 HEDR (HEDR Project Plan, Pre-Decisional Draft)	To TSP for review 11/90
HEDR Project Plan - Pre-Decisional Draft	Shippler, DB	10/90	PNL-7515 HEDR	Distributed at TSP Public Meeting	
Draft Summary Report	HEDR Staff	7/90	PNL-7410 HEDR	Available from TSP	Released 7/12/90 by the TSP (draft)
Draft Air Pathway Report	HEDR Staff	7/90	PNL-7412 HEDR	Available from TSP	Released 7/12/90 by the TSP (draft)
Draft Water Pathway Report	HEDR Staff	7/90	PNL-7411 HEDR	Available from TSP	Released 7/12/90 by the TSP (draft)
Initial Communication Survey Results for the HEDR Project	Beck, DM	7/90	PNL-7423 HEDR	WSU omnibus survey of WA State residents; HEDR questions	To TSP for review 7/90
QA Audit Report of the HEDR Project-Data Traceability, A-90-15	Pratt, RC	7/90	PNL-7428 HEDR		To TSP for review 7/90
A Preliminary Examination of Audience-Related Communications Issues: Hanford Environmental Dose Reconstruction Project	Holmes, CW	4/90	PNL-7231 HEDR		PNL addressing TSP comments
MESOILT2, A Lagrangian Trajectory Climatological Dispersion Model	Ramsdell, JV	4/90	PNL-7340 HEDR		PNL addressing TSP comments

HEDR Publications - To Date

Title	Author	Date Issued	Publication No.	Additional Information	Status
Population Estimates for Phase I	Beck, DM	2/90	PNL-7263 HEDR		PNL addressing TSP comments
Estimates of Food Consumption	Callaway	2/90	PNL-7260 HEDR		PNL addressing TSP comments
Soil Ingestion by Dairy Cattle	Darwin, RF	2/90	PNL-SA-17918 HEDR		For possible use later in project; TSP approval not required
Computational Model Design Specification for Phase I of the Hanford Environmental Dose Reconstruction Project	Napier, BA	2/90	PNL-7274 HEDR		PNL addressing TSP comments
Estimates of Columbia River Radionuclide Concentrations: Data for Phase I Dose Calculations	Richmond, MC; Walters, WH	1/90	PNL-7248 HEDR		PNL addressing TSP comments
Evaluation of Thyroid Radioactivity Measurement Data From Hanford Workers, 1944-1946	Ikenberry, R	1/90	PNL-7254 HEDR		PNL addressing TSP comments
I-131 in Irradiated Fuel at Time of Processing from December 1944 Through December 1947	Morgan, LG	1/90	PNL-7253 HEDR		PNL addressing TSP comments
Work Plan for the Hanford Environmental Dose Reconstruction Project	Haerter, HA	12/89	PNL-6696 HEDR REV 1		TSP approved; published 12/89
Uncertainties in Source Term Calculations Generated by the ORIGEN2 Computer Code for Hanford Production Reactors	Heeb, CM	12/89	PNL-7223 HEDR		PNL addressing TSP comments
Selection of Dominant Radionuclides for Phase I of the HEDR Project	Napier, BA	12/89	PNL-7231 HEDR		PNL addressing TSP comments

HEDR Publications - To Date

Title	Author	Date Issued	Publication No.	Additional Information	Status
Atmospheric Transport and Dispersion Modeling for the Hanford Environmental Dose Reconstruction Project	Ramsdell, JV	12/89	PNL-7198 HEDR		PNL addressing TSP comments
Atmospheric Transport Modeling and Input Data for Phase I of the Hanford Environmental Dose Reconstruction Project	Ramsdell, JV; Burk, KW	12/89	PNL-7199 HEDR		PNL addressing TSP comments
Fission-Product Iodine During Early Hanford-Site Operations: Its Production and Behavior During Fuel Processing, Off-Gas Treatment, and Release to the Atmosphere	Burger, LL	12/89	PNL-7210 HEDR		PNL addressing TSP comments
The Hanford Environmental Dose Reconstruction Project: Background Information	Byram, SJ	12/89	PNL-SA-17658 HEDR	For use with focus groups	TSP approval not required
Summary of Literature Review of Risk Communication	Byram, SJ	12/89	PNL-7226 HEDR		PNL addressing TSP comments
Milk Cow Feed Intake and Milk Production and Distribution Estimates for Phase I	Beck, DM	12/89	PNL-7227 HEDR		PNL addressing TSP comments
Preliminary Summaries for Vegetation, River and Drinking Water and Fish Radionuclide Concentration Data (DRAFT)	Woodruff, RK	11/89	PNL-SA-17641 HEDR		To TSP for review 12/89
Radionuclide Sources and Radioactive Decay Figures Pertinent to the HEDR Project	Heeb, CM	10/89	PNL-7177 HEDR		PNL addressing TSP comments
Estimations of Traditional Native American Diets in the Columbia Plateau	Hunn, ES; Bruneau, CL	8/89	PNL-SA-17296		Reviewed by tribes
Summary of Workshop on Milk Production and Distribution, November 30, 1988-HEDR Project	Beck, DM, et al.	7/89	PNL-6975 HEDR		To TSP 8/89

HEDR Publications - To Date

Title	Author	Date Issued	Publication No.	Additional Information	Status
A History of Major Hanford Operations Involving Radioactive Material	Ballinger, MY; Hall, RA	6/89	PNL-6964 HEDR		TSP reviewed; PNL addressing comments
Feasibility of Using ¹²⁹ I Concentrations in Human Tissue to Estimate Radiation Dose from ¹³¹ I	McCormack, WD	4/89	PNL-6889 HEDR		TSP approved 9/89; published 1989
Summary Report of HEDR Workshop on Sensitivity and Uncertainty Analysis	Sagar, B; Liebetrau, AM	3/89	PNL-SA-16804 HEDR	Summary of workshop held January 16-18, 1989	Sent to Till 3/89-no written response provided to PNL
Response to TSP Directive 88-4, Ground-Water Contamination Data	Freshley, MD	3/89	PNL-6847 HEDR		TSP received 3/89; no written response provided to PNL
Demographic, Agricultural, Food Consumption, and Lifestyle Research for the Hanford Environmental Dose Reconstruction Project	Beck, DM, et al.	2/89	PNL-6834 HEDR	Incorporates earlier TSP comments	TSP received 3/89; no written response provided to PNL
Proposed Approach for Developing Information on Population Food Consumption and Lifestyles of Native Americans in the HEDR Study Area	Rhoads, RE; Bruneau, CL	1/89	PNL-6803 HEDR	Working document	TSP comments were incorporated into PNL-6834 HEDR
Hanford Environmental Dose Reconstruction	Bruneau, CL	1/89	PNWD-1323 HEDR	Informational brochure used in PNL's work with Tribes	TSP approval not required
Hanford Environmental Dose Reconstruction Project - Work Plan	Haerer, HA	9/88	PNL-6696 HEDR	Superseded by new work plan	TSP approved

Appendix C

HEDR Presentation Handouts to the TSP - To Date

Appendix C

HEDR Presentation Handouts to the TSP - to Date

Title	Author	Date Issued	Publication No.	Additional Information
Hanford Environmental Dose Reconstruction Project - Phase I Report	Haerer, HA	5/90	PNL-18304 S HEDR	Presented at the workshop, "Public Health Aspects of Hanford Health Studies, A Workshop for State, Local, and Tribal Health Officials," June 6, 1990
Detailed Example Calculations for HEDR, Phase I	Napier, BA	2/90	PNL-SA-17913 HEDR	Presented at the TSP mtg. Feb 15-17, 1990, Richland, WA
Communications Directive	Rhoads, RE	2/90	PNL-SA-17903 S HEDR	Presented at the TSP mtg, Feb 15-17, 1990, Richland, WA
HEDR Project Report to the TSP	Haerer, HA	2/90	PNL-SA-27904S HEDR	Presented at the TSP mtg, Feb 15-17, 1990, Richland, WA
Hanford Environmental Dose Reconstruction Project	Haerer, HA	12/89	PNL-SA-17661S HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Communications Directive	Rhoads, RE	12/89	PNL-SA-17653 S HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Preliminary Evaluation of Thyroid Bioassay Data from Hanford Workers, 1944-1946	Ikenberry, T; Napier, BA	12/89	PNL-SA-17670 S HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Overview of Project Model - Air Pathway	Napier, BA	12/89	PNL-SA-17673 HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Source Terms - Air Pathway Source Terms - Surface-Water Pathway	Morgan, LG	12/89	PNL-SA-17657 HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Atmospheric Transport Model	Freshley, MD	12/89	PNL-SA-17662 S HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Environmental Monitoring Data: Vegetation, 1945-1947	Woodruff, RK	12/89	PNL-SA-17671 HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA

HEDR Presentation Handouts to the TSP - to Date

Title	Author	Date Issued	Publication No.	Additional Information
Preliminary Calculated and Measured Concentrations of Iodine-131 in Vegetation for Phase I	Napier, BA	12/89	PNL-SA-17674 HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Milk Production and Distribution	Beck, DM	12/89	PNL-SA-17649 S HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Overview of Project Model - Surface-Water Pathway	Napier, BA	12/89	PNL-SA-17672 HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Surface-Water Pathway	Freshley, MD	12/89	PNL-SA-17660 S HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Environmental Measurements - Columbia River	Poston, TM; Dirkes, R	12/89	PNL-17669 HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Phase II Planning	Haerer, HA	12/89	PNL-17661 S HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Discussion with TSP Subcommittee on Communication Strategy	Rhoads, RE	10/89	PNL-SA-17475 HEDR	Presented at the TSP Subcommittee meeting on Communication Strategy, October 5, 1989, Portland, OR
Surface Water Exposure Pathways	Napier, BA; Poston, TM	10/89	PNL-SA-17502 S HEDR	Presented at the TSP meeting, October 12-14, 1989, Portland, OR
HEDR Project Report to the TSP	Haerer, HA	10/89	PNL-SA-17501 HEDR	Presented at the TSP mtg, Oct 12-14, 1989, Portland, OR
Methods for Presenting Results to the Public	Rhoads, RE	8/89	PNL-SA-17368 HEDR	Presented at the TSP meeting, September 6, 1989, Portland, OR
HEDR Project Report to the TSP July 21, 1989	Haerer, HA	7/89	PNL-SA-17218 HEDR	Presented at the TSP mtg, July 21, 1989, Richland, WA
Radionuclides Transported by the Columbia River	Freshley, MD	7/89	PNL-SA-17235 HEDR	Presented at the TSP mtg, July 21, 1989, Richland, WA

HEDR Presentation Handouts to the TSP - to Date

Title	Author	Date Issued	Publication No.	Additional Information
Defining Demographic Categories for Phase I	Napier, BA; Beck, DM	5/89	PNL-SA-17035 HEDR	Presentation handout for the TSP mtg, May 18-20, 1989, Toppenish, WA
HEDR Project Report to the TSP for May 1989 Public Meeting	Haerer, HA	5/89	PNL-SA-17032 HEDR	Presented at the TSP mtg, May 18-20, 1989, Toppenish, WA
Task 6 - Population, Food Consumption and Lifestyles	Rhoads, RE	3/89	PNL-SA-16785 HEDR	Presented at the Native American Workshop, March 14-15, 1989, Richland, WA
HEDR Native American Population, Food Consumption and Lifestyle Study - Data Requirements	Bruneau, CL	3/89	PNL-SA-16784 HEDR	Presented at the Native American Workshop, March 14-15, 1989, Richland, WA
Hanford Environmental Dose Reconstruction Project - Report to the Technical Steering Panel	Haerer, HA	3/89 HEDR	PNL-SA-16794	Presented at the TSP meeting, March 17, 1989, Spokane, WA
Availability of I-131 Vegetation Data	Price, KR	1/89	PNL-SA-16573 HEDR	Presented at HEDR workshop on Sensitivity and Uncertainty Analysis, January 16-18, 1989, Pasco, WA
Atmospheric Pathway	Ramsdell, JV	1/89	PNL-SA-16565 HEDR	Presented at the HEDR workshop on Sensitivity and Uncertainty Analysis, January 16-18, 1989, Pasco, WA
HEDR Demography, Agriculture, and Lifestyle Research	Beck, DM	1/89	PNL-SA-16568 HEDR	Presented at the HEDR workshop on Sensitivity and Uncertainty Analysis, January 16-18, 1989, Pasco, WA
Aspects of Sensitivity/Uncertainty Analysis in the HEDR Project	Sagar, B.	1/89	PNL-SA-16571 HEDR	Presented at the HEDR Workshop on Sensitivity and Uncertainty Analysis, January 16-18, 1989, Pasco, WA
HEDR Demography, Agriculture, and Lifestyle Research	Beck, DM	1/89	PNL-SA-16568 HEDR	Presented at the HEDR Workshop on Sensitivity and Uncertainty Analysis, January 16-18, 1989, Pasco, WA
Surface Water Transport Uncertainty	Walters, W.	1/89	PNL-SA-16572 HEDR	Presented at the HEDR Workshop on Sensitivity and Uncertainty Analysis, January 16-18, 1989, Pasco, WA

HEDR Presentation Handouts to the TSP - to Date

Title	Author	Date Issued	Publication No.	Additional Information
Source Terms	Morgan, LG	1/89	PNL-SA-16566 HEDR	Presented at the HEDR Workshop on Sensitivity and Uncertainty Analysis, January 16-18, 1989, Pasco, WA
Experience with Gress and Swats	Piepho, MG	1/89	PNL-SA-16567 HEDR	Presented at the HEDR Workshop on Sensitivity and Uncertainty Analysis, January 16-18, 1989, Pasco, WA
Purpose of Workshop	Gilbert, D.	1/89	PNL-SA-16569 HEDR	Presented at the HEDR Workshop on Sensitivity and Uncertainty Analysis, January 16-18, 1989, Pasco, WA
Example of Sensitivity/Uncertainty Analysis	Strenge, DL	1/89	PNL-SA-16570 HEDR	Presented at the HEDR Workshop on Sensitivity and Uncertainty Analysis, January 16-18, 1989, Pasco, WA
Estimated Quantity of 131I Contained in Irradiated Fuel at Time of Fuel Processing, CY 1944-1945	Jackson, PO; Morgan, LG	11/88	PNL-SA-16398 HEDR	Presented at the TSP mtg, November 11-12, 1988, Olympia, WA

Appendix D

HEDR-Related Publications

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

Appendix D

HEDR-Related Publications

Title	Author	Date Issued	Publication No.	Audience	Status
<u>Planned Materials</u>					
Demographic Forecasting Using Trends from Radio Correlation Variables	Beck and Pittinger			Demography (journal) or Journal of Rural Society	Planning for 1990
Reconstructing Historical Milk Prod/Dist Systems	Beck, DM			Journal of Health Physics	Planning for 1990
Reconstructing Food consumption Habits: The Backcasting Method	Callaway, M; Carr, D.			Journal of Health Physics	Planning for 1990
Experience in Collaborative Research with Native American Tribes*	Bruneau, CL; Rhoads, RE			Journal (not yet determined)	Planning for 1990
Uncertainty in 64-66 Data on Fish, Water, and Sediment	Poston, TM			Health Physics Society Mtg, Anaheim, CA	Planning for 1990
Communicating Radiation Dose Estimates to Affected Populations	HEDR Staff			Journal of the Society for Risk Analysis	Planning for 1990
Reconstructing Demography of Native Americans*	Beck, DM; Bruneau, CL			Journal of Rural Sociology	Planning for 1990
Fish Concentration Ratios	Poston, TM			Journal (not yet determined)	Planning for 1990
Using the Ratio-Correlation Methods for Backcasting	Beck, DM; Swanson	Spring/91		Chapter in applied demog book	To be published Spring 1991
<u>Completed Materials</u>					
A Multi-Method Approach to Audience Analyses in Developing Comprehensive Public Communications Programs	Homes, CW; Byram, S. J.; VonWinterfeldt, D	10/90	PNL-SA-18676 HEDR	Society for Risk Analysis 1990 Annual Meeting, October 7-10, 1990, New Orleans, LA	Presented 10/90

HEDR-Related Publications

Title	Author	Date Issued	Publication No.	Audience	Status
GENII - Hanford Environmental Dosimetry Package	Napier, BA et al	7/90	PNL-SA-18478	American Nuclear Society 1990 Winter Meeting	Presented 11/90
Atmospheric Modeling for Dose Reconstruction at Hanford	Ramsdell, V; Burk, K.	7/90	PNL-SA-18487A	American Nuclear Society 1990 Winter Meeting	Presented 11/90
Statistical Aspects of the Hanford Environmental Dose Reconstruction Project and the Hanford Thyroid Disease Study	Gilbert, RO et al.		PNL-SA-18396 HEDR	American Statistical Association Conference on Radiation and Health, July 8-12, 1990, Copper Mountain, CO	Presented 7/90
Statistical Aspects of Reconstructing the I-131 Dose to the Thyroid of Individuals Living Near the Hanford Site in the mid-1940s	Gilbert, RO et al.	3/90	PNL-SA-17384	Workshop: Statistics of Human Radiation Exposure to Ionizing Radiation, April 2-4, 1990, Oxford, UK	Presented 4/90
Reconstruction of Hanford Vegetation Monitoring Data for Dose Reconstruction for 1945-1947	Woodruff, RK; Mart, E; Hanf, RW	1/90	PNL-SA-17760 A HEDR	1990 Health Physics Society Meeting, June 24-28, 1990, Anaheim, CA	Presented 6/90
Uncertainty Analysis of the Conversion Factor for Historic Iodine-131 Gross Beta Vegetation Measurements	Streng, DL et al.	12/89	PNL-SA-17713 HEDR	1990 Health Physics Soc. Mtg, June 24-28, 1990, Anaheim, CA	Presented 6/90
Sensitivity and Uncertainty Analyses for Environmental Dose Reconstruction	Sagar et al.	11/89		Workshop on uncertainty, Nov 13-16, 1989, Santa Fe, NM	Presented 11/89
The Identification of Terrain-Induced Circulations Using Principal Components	Skyllingsstad, ED and Schwartz, MN	10/89	PNL-SA-17164 HEDR	American Meteorological Society Conference on Probability and Statistics, October 1-5, 1989 Monterey, CA	Presented 10/89

HEDR-Related Publications

Title	Author	Date Issued	Publication No.	Audience	Status
Mathematical and Statistical Aspects of Reconstructing Doses to Individuals Living Near the Hanford Site Since the 1940s	Liebetrau, AM et al.	10/89	PNL-SA-17498 HEDR	SIAM Conference on Applied Probability in Science and Engineering, March 5-7, 1990, New Orleans, LA	Presented 3/90
Temporal Variations in Atmospheric Dispersion at Hanford	Ramsdell, JV	9/89	PNL-SA-17375 HEDR	Hanford Symposium on Health and the Environment, Oct 16-19, 1989, Richland, WA	Presented 10/89
The Hanford Environmental Dose Reconstruction Project: Overview	Haerer, HA et al.	9/89	PNL-SA-16859 HEDR	Hanford Symposium on Health and the Environment, Oct 16-19, 1989, Richland, WA	Presented 10/89
The Hanford Environmental Dose Reconstruction Project: Technical Approach	Napier, BA et al.	9/89	PNL-SA-16874 HEDR	Hanford Symposium on Health and the Environment, October 16-19, 1989 Richland, WA	Presented 10/89
The Hanford Environmental Dose Reconstruction Project: The Role of Applied Sociology	Beck, DM	4/89	PNL-SA-16880 HEDR	Pacific Sociological Association Meeting, April 13-16, 1989, Reno, NV	Presented 4/89
Potential Applications of Geographical Information Systems for Analyzing Hanford Environmental Dose Reconstruction Data	Stephan, JG, et al.	3/89	PNL-SA-16767 HEDR	Regional Symposium of the HPS Computer Applications in Health Physics, March 16-17, 1989 Richland, WA	Presented 3/89
Estimating Atmospheric Dispersion for Reconstruction of Doses from Hanford Operations	Ramsdell, JV	4/88	PNL-SA-15818 HEDR	69th Annual Meeting of the Pacific Division of the American Association for the Advancement of Science, June 19-23, 1988, Corvallis, OR	Presented 6/88

* All publications addressing Native American research will be reviewed and approved by the appropriate tribes.

Appendix E

Communications Log

Appendix E
Communications Log - November, 1990

Initiated By/Affiliation	Contact/Affiliation	Type	Subject
JE Till/TSP, Chairman	DB Shieler/PNL	Phone	Comments on Phase I reports
M Sage/CDC	DB Shieler/PNL	Phone	Future transfer of project funding to CDC
W Hunt/Williams, Kastner & Gibbs	DB Shieler/PNL	Phone	Document requests
JE Till/TSP, Chairman	DB Shieler/PNL	Phone	Project Status
B Shleien/TSP	DB Shieler/PNL	Phone	Carryover funding and status of project plan
DB Shieler/PNL	JE Till/TSP, Chairman	Phone	Project planning, status of monthly report, declassification of documents, and priorities
DB Shieler/PNL	WA Bishop/TSP	Phone	Native American Working Group process document
DB Shieler/PNL	M Sage/CDC	Phone	Memorandum of Understanding, meeting with Till, contract transfer
DB Shieler/PNL	ML Blazek/TSP	Phone	Speaker for Renton Kiwanis
JE Till/TSP Chairman	DB Shieler/PNL	Phone	Project status, historic document review
DE Walker/TSP	SM Finch/PNL	Phone	Status of invoice
S Walbrek/FHCRC	SM Finch/PNL	Phone & Fax	Arrangements for a meeting with PNL staff, members of the TSP, and FHCRC
SN Davis/TSP	SM Finch/PNL	Phone	Status of invoice
Ann Fossen/EWA, Inc.	SM Finch/PNL	Phone	Status of invoice for V. Nguyen
JE Till/TSP Chairman	SM Finch/PNL	Phone	Update on status of Native American contracts
B Shleien/TSP	SM Finch/PNL	Phone	Comments on monthly report; check on status of his security clearance; status of invoice
SM Finch/PNL	M Hollander/NUS Corp.	Phone	Status of contract

Appendix E
Communications Log - November, 1990

Initiated By/Affiliation	Contact/Affiliation	Type	Subject
K Charlee/TSP Staff	SM Finch/PNL	Phone	Logistics for GIS demonstration for TSP January meeting
JS Stohr/TSP Staff	SM Finch/PNL	Phone	TSP January meeting agenda
JM Daer/PNL	JS Stohr/TSP Staff	Phone	Transcripts from TSP meetings
JM Daer/PNL	K Charlee/TSP Staff	Phone	TSP resumes for project files
AH McMakin/PNL	JS Stohr/TSP Staff	Phone	TSP comments on Phase I reports
MA Robkin/TSP	CM Heeb/TSP	Phone	Phase II Task Plan
PD Thorne/PNL	SN Davis/TSP	Phone	Scope of riparian well investigation
RE Rhoads/PNL	WA Bishop/TSP	Phone	Native American work
CL Bruneau/PNL	D Ernst/Spokane Tribe	Phone	Progress to date
RL Morrill/TSP	CL Bruneau/PNL	Phone	Update on tribes
CL Bruneau/PNL	D Saluskin/Yakima Nation	Phone	Work Order #1
CL Bruneau/PNL	B Burke/Umatilla Tribe	Phone	Work Order #1
CL Bruneau/PNL	D Bonga/Kalispel Tribe	Phone	Presentation to Tribal Council
CL Bruneau/PNL	E Clark/Coeur d'Alene Tribe	Phone	Presentation to Tribal Council
AR Anderson/PNL	B Hallberg/Washington State Dairy Prod. Commission (retired)	Phone	Okanogan County people to contact regarding milk production, 1945-1950
AR Anderson/PNL	Mrs. Stan Harriman/Skookum Dairy (upper Wenatchee Valley)	Phone	Chelan County milk information, 1945-1950
AR Anderson/PNL	W Ullrich/Okanogan Creamery	Phone	Dairy practices in Okanogan County, 1945-1950
EM Cardis/International Agency for Research on Cancer, Lyon, France	RO Gilbert/PNL	Phone & Fax	Request for reports
GL Harvey/PNL	MA Robkin/TSP	Phone	Request for technical documents

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Initiated By/Affiliation	Contact/Affiliation	Type	Subject
GL Harvey/PNL	K Niles/Oregon DOE	Fax	Review of TSP newsletter draft
GL Harvey/PNL	S Frangello/Renton Kiwanis Club	Phone	Presentation to Kiwanis Club on January 15, 1991
S Gilmore/Seattle Times	GL Harvey/PNL	Phone	Dr. Nguyen legal matters
GL Harvey/PNL	ML Blazek/TSP	Phone	Arrange presentation to Renton Kiwanis Club in January 1991
P Fimrite, San Francisco Chronicle	GL Harvey/PNL	Phone	HEDR Project information

END

DATE FILMED

01 / 30 / 91