PNL--6450-55-HEDR

DE92 017156

**HANFORD ENVIRONMENTAL DOSE
RECONSTRUCTION PROJECT**

Monthly Report

May 1992

Prepared for the Technical Steering Panel

**Pacific Northwest Laboratory
Richland, Washington 99352**

MASTER

Handwritten signature

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

HANFORD ENVIRONMENTAL DOSE
RECONSTRUCTION PROJECT

Compiled By:

S. M. Finch

S. M. Finch, Project Coordinator
Hanford Environmental Dose Reconstruction Project

A. H. McMakin

A. H. McMakin, Communication Specialist
Hanford Environmental Dose Reconstruction Project

Approved By:

M. D. Freshley for DBS

D. B. Shieler, Manager
Hanford Environmental Dose Reconstruction Project

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 interest

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.

R9205064.3

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>
88-1	(a) Proposals		x
	(b) Source Terms		x
88-2	Vegetation		x
88-3	Status Reports		x
88-4	Ground Water		x
88-5	Maps	x	
88-6	Resumes	x	
89-1	Indian Tribes		x
89-2	Bioassay Data	x	
89-3	Document Handling		x
89-4	Reactor Purging		x
89-5	Phased Approach	x (modified 2/14/91)	
89-6	Meeting Materials		x
89-7	Tech Communication		x
89-8	Phase II Planning	x (modified 2/14/91)	
89-9	Project QA Plan		x
89-10	Contracts with Tribes		x (revised annually)
90-1	Project Direction (Task Plans)		x
90-2	Dose Cut-Off Limit	x	
92-1	Demography, Food, and Agriculture Tasks		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 individuals and 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, 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 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 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 also be developed for individuals included in the Hanford Thyroid Disease Study as a basis for dose estimates and for other interested individuals.

The Environmental Pathways and Dose Estimates Task uses the information produced by the other tasks 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 monthly report, which is available to the public.

Project Summary

Progress

Figure A.1 in Appendix A shows the status of project milestone activities. The following is a summary of activities conducted by HEDR staff in May 1992:

- published the report, "Milk Cow Feed Intake and Milk Production and Distribution Estimates for Phase I" (PNL-7227 HEDR), meeting Milestone 0601C
- published the report, "Methodology for Reconstruction of Historical Food Consumption Estimates" (PNL-8123 HEDR), meeting Milestone 0602B
- published the report, "Parameters Used in the Environmental Pathways and Radiological Dose Modules of the Phase I Air Pathway Code" (PNL-8093 HEDR), meeting Milestone 0703A
- completed calculation of hourly iodine-131 releases for the 1944 - 1947 period. One hundred "realizations" were generated using the Source Term Release Model.
- assessed the effect of reactor coolant purges on radionuclide releases to the Columbia River
- met with Technical Steering Panel (TSP) Demography Subcommittee members at PNL to review Task 06 staffing and work issues and to discuss the food consumption estimation methodology. A letter was sent to TSP members describing work and staffing plans for agricultural reconstruction work, meeting certain requirements of TSP Directive 92-1.
- HEDR quality assurance (QA) staff completed a report on the preaward survey of SESRC's QA procedures.
- completed data collection on production and distribution of fresh fruits and vegetables and began classifying and recording the data
- met with representatives of all eight tribes to discuss contract work and offer assistance in work planning for the remainder of FY 1992
- declassified 408 Hanford-Site-originated documents, 49 of which are of potential interest/use to the project

- extracted, from two handwritten notebooks, selected monthly operating data (1944-1947) for all separations plants from two handwritten notebooks and published it as HW-89085
- completed the collection of additional daily separations process data for 1952. This activity continues for other years.

Major Problems or Changes and Action Taken

CDC and the U.S. Department of Energy (DOE) continue to negotiate HEDR Project funding that was approved by the TSP in budget planning meetings and requested in writing by Battelle several times over the past few months. HEDR-related subcontracts, including those of the TSP and Native American tribes, are on hold pending receipt of funding. The delay in closing on the CDC contract has delayed the placement of subcontracts with WSU to conduct Columbia River pathway work and agricultural reconstruction work. This work will resume when the contract is signed, which will free funds for subcontracts.

W.T. Farris was assigned as leader of Task 07, Environmental Pathways and Dose Estimates. T.A. Ikenberry will continue to contribute to dose calculations and code development.

Work on the meteorological data report and verification of the RATCHET code was delayed while RATCHET was prepared to support the sensitivity and uncertainty analysis of the DESCARTES and CIDER codes. Model runs were completed in May; the delayed work will resume in June.

Dose calculations for Native American tribes are on hold pending tribal input.

Planned Work for the Next Three Months

- complete letter report on HEDR modeling approach
- complete final negotiations and sign contract with the CDC to continue HEDR work
- publish FY 1992 Task Plans final and revise FY 1993 Task Plans

- prepare HEDR data management plan (Milestone 0204A)
- develop recommendation for TSP consideration on sufficiency of monitoring data for surface-water dose calculations (Milestone 0204B)
- complete the iodine closure document (Milestone 0302A)
- complete meteorological data report (Milestone 0402D)
- finalize Milestone 0501A, Environmental Monitoring Data Report; 0502A, Vegetation Data Report; and Milestone 0502B, Letter Report: Vegetation Monitoring Data (1948-1951), Bias and Data Correction
- complete Milestone 0603B, Letter Report on Milk Outside Phase I, and 0603C, Letter Report: Assessment of Fruit and Vegetable Pathways, 1944-1957
- complete letter reports on parameters and dose factors for Phase I (Milestone 0703B)
- complete Milestone 0802A, Iodine-131 Conversion Factor Report
- complete Milestone 1203C, Letter Report: Mid-Year Media Analysis, 1992
- issue remaining HEDR procedure, "HEDR Documentation of Critical Decisions" (HEDR TP-3)

Budget Status

Figure 2 shows the budget status of the HEDR Project. Table A.1 in Appendix A shows FY 1992 costs and budget by task and subtasks. Figure A.2 shows TSP budget status. Figure A.3 shows Native American research budget status. Additional DOE funds for May have been requested through CDC.

Funding for work performed by PNL is expected to transfer from DOE to CDC in June, 1992. At the request of CDC, DOE will fund PNL to administer the TSP and the Native American research contracts through September, 1992. The fiscal-year budgets for the TSP and the Native American research contracts are shown in Figures A.2 and A.3, respectively.

Capital Status

The HEDR Project has been approved for \$75K of capital funding for FY 1992. Funding for the \$75K was transferred from RL to PNL in the March 1992 Financial Plan. Purchase orders for additional computer disk storage and upgrades have been placed with vendors.

FIGURE 2. HEDR Project Budget Status - Pacific Northwest Laboratory

Contents

Preface	v
Executive Summary	vii
Project Summary	ix
Task 01 - PNL Project Management	1.1
Task 02 - Technical Integration	2.1
Task 03 - Source Terms	3.1
Task 04 - Environmental Transport	4.1
Task 05 - Environmental Monitoring Data	5.1
Task 06 - Demography, Food Consumption and Agriculture	6.1
Task 07 - Environmental Pathways and Dose Estimates	7.1
Task 08 - Statistics	8.1
Task 09 - Records Management	9.1
Task 10 - Quality Assurance	10.1
Task 11 - Information Resources	11.1
Task 12 - TSP Communications Support	12.1
Appendix A - Milestones, Schedule, and Costs	A.1
Appendix B - Hanford-Site-Originated Documents of Potential Interest/Use in the HEDR Project - Placed in the RL Public Reading Room During May 1992	B.1
Appendix C - HEDR Documents to the TSP - May 1992	C.1
Appendix D - HEDR Presentation Handouts to the TSP - May 1992	D.1
Appendix E - HEDR Open-Literature Publications and Presentations - May 1992	E.1
Appendix F - Communications Log - May 1992	F.1

Figures

1	Organizational Structure of the Hanford Environmental Dose Reconstruction Project . . .	v
2	HEDR Project Budget Status - Pacific Northwest Laboratory	xi
A.1	HEDR Project Milestones	A.1
A.2	Technical Steering Panel Budget Status	A.9
A.3	Native American Research Budget Status	A.10

Tables

1	Status of Directives	vi
11.1	Declassification of Hanford-Originated Documents	11.2
A.1	Cost Summary	A.4

Task 01 PNL Project Management

Objective

The objective of the PNL Project Management Task is to provide project planning, control, and management of PNL dose reconstruction work in accordance with TSP direction.

Progress

Milestone 0101E - FY 1993 Updated Task Plans, due July 1993

- began compiling input from task leaders to update and add more detail to the existing FY 1993 task plans. Revisions are based on the revised FY 1992 task plans, work proposed to the Centers for Disease Control (CDC), and current status of the project.

Other Activities

- submitted letter to the CDC describing TSP-approved funding needed from DOE through May 1992 to continue HEDR work. HEDR-related subcontracts, including those of the TSP and Native American tribes, have been put on hold pending receipt of necessary funding. All technical issues have been agreed upon with a letter confirming Battelle's ability to staff the work and complete deliverables as proposed.
- presented a poster session on the HEDR Project at the National Association of Environmental Professionals meeting in Seattle

Major Problem Areas or Changes and Action Taken

Battelle is responding to TSP Directive 92-1--Demography, Food, and Agriculture Tasks--by publishing a letter report on food consumption estimation methodology this month, by submitting a work and staffing plan for agricultural reconstruction activities, and by regularly reporting progress on Task 06 activities.

W.T. Farris was assigned as leader of Task 07, Environmental Pathways and Dose Estimates. Farris's technical background is in radiological sciences, focusing on dose assessment. He also has project management experience. T.A. Ikenberry, former Task 07 leader, will continue as Subtask 0705 leader and will provide additional support to Task 02.

Variance

No significant cumulative variance.

Planned Work for the Next Three Months

- sign a contract with the CDC to continue HEDR work
- publish revised FY 1992 Task Plans after addressing TSP comments
- submit revised FY 1993 Task Plans to the TSP for review (Milestone 0101E)
- update the existing HEDR Project Management Plan (Milestone 0101F) ☐

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 0204A - Letter Report: Data Management Plan, due May 1992 and rescheduled to August 1992

- searched the literature to obtain additional ideas for content and structure of this report. Discussed content ideas with computer management groups within Battelle and Westinghouse Hanford Company, leading to a revised and strengthened outline and initial draft.

Milestone 0204B - Recommendation on Modeling or Monitoring Approach for River Pathways, due June 1992

- completed initial draft of recommendations with supporting justification. This draft has been routed for review and consensus within the project tasks and management.

Milestone 0205B - Letter Report: Key Radionuclides, Rev. 1, due May 1992 and rescheduled to September 1992

- investigated use of total beta measurements in Columbia River fish as a surrogate for detailed radionuclide information. It appears that, for the mid-to-late 1950s, an approach combining source term/transport and gross beta monitoring could provide useful information.

Other Activities

- continued revising the "white paper" on the proposed HEDR modeling approach. This paper was discussed at the April TSP meeting in Pasco.
- addressed HEDR-related questions from members of a Department of Energy Headquarters team.
- led one day of discussions at a two-day Environmental Protection Agency Office of Radiation Programs workshop on the "State of the Art of Atmospheric Environmental Transport and Dosimetry Models" in Bethesda, Maryland. Introduced the GENII-S and HEDR calculational techniques. It was generally agreed that the PNL approaches are among the most advanced in use.

Major Problem Areas or Changes and Action Taken

Staffing difficulties, which delayed startup of work on several milestones, have been resolved and work is under way on all milestones.

Variance

The cumulative cost underrun was caused by staff support directed to other tasks earlier in the year. Current staffing levels are reducing the variance.

Planned Work for the Next Three Months

- complete project Data Management Plan (Milestone 0204A)
- prepare model parameter distributions strategy (Milestone 0205D)
- finalize Hanford scenario for publication by the International Atomic Energy Agency
- continue coordinating efforts with Hanford Thyroid Disease Study (HTDS) personnel □

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 0302A - Documented Phase I Iodine-131 Releases, due May 1991 and rescheduled to July 1992

- completed calculation of hourly iodine-131 releases for the 1944-1947 period. One hundred "realizations" were generated using the Source Term Release Model (STRM). This information will be used in the upcoming review of the sensitivity and uncertainty plan. Documentation, quality assurance (QA), and the final STRM run remain to be completed.

Milestone 0304B - Surface-Water Source Terms Report, 1944-1991, due FY 1993

- continued developing a regression analysis of total beta activity discharged to Columbia River in the 1947-1957 period. The regression may be used to provide an estimate via extrapolation of the total beta activity from 1944- through 1946 where data are lacking.
- assessed the effect of reactor coolant purges on radionuclide releases to the Columbia River. The assessment considered the use of diatomaceous earth as the purge medium. This purge medium removed radioactive film from reactor process tubes and fuel elements by mechanical scrubbing action, and was used during all periods of reactor operations.

Milestone 0307A - Letter Report: Hanford Operations, 1944-1991, due September 1992

- continued to process Hanford document reference material germane to reconstructing the operations of Hanford reactors and separations plants. This activity was limited because of work on Milestone 0302A.

Major Problem Areas or Changes and Action Taken

None.

Variance

No significant cumulative variance.

Planned Work for the Next Three Months

- complete the 1944-1947 iodine-131 release document (Milestone 0302A)
- continue developing database on reactor and separations plants operations
- continue work on estimating releases to the Columbia River ☐

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 are studied.

Progress

Milestone 0402A - Wind Field Modeling White Paper, due FY 1991 and rescheduled to August 1992

- received source term data from Task 03 staff. White paper is awaiting revision following peer review. Model evaluation will resume in June.

Milestone 0402D - Meteorological Data Report, due December 1991 and rescheduled to June 1992

- continued entry of meteorological data for 1946-1947. Entry of 1946 data has been completed.

Milestone 0403A - Groundwater Pathway Report, due December 1991, rescheduled to January 1992, and completed

- addressed TSP comments and began revising report for final publication

Milestone 0404A - Columbia River Pathway Summary Report, due December 1991, rescheduled to April 1992, and completed

- TSP comments were not received during May. According to TSP member P.C. Klingeman,

the comments will be forwarded during the first week in June.

Milestone 0404B - Letter Report: Columbia River Conceptual Model, due September 1992 and rescheduled to FY 1993

- prepared statement of work and purchase requisition for the Washington State University (WSU) subcontract. A request for a cost proposal will be forwarded to WSU in June to begin the subcontracting process in anticipation of placement of the CDC contract.

Major Problem Areas or Changes and Action Taken

The staff needed to complete the meteorological data report (Milestone 0402D) have been diverted to preparation of the RATCHET (atmospheric transport) code for model runs to support the sensitivity and uncertainty analysis of the DESCARTES and CIDER (environmental and dose) codes. This effort is also delaying the verification of the RATCHET code. The model runs were completed at the end of May; work in these areas will resume in June.

The delay in placing the CDC contract has slipped the Columbia River work with WSU by about three weeks. This will reduce the time available to

develop results for the July TSP meeting. The report milestone for 0404B remains on schedule at this time.

Finalization of the Columbia River Pathway Report (Milestone 0404A) is awaiting receipt of TSP comments. The report was provided to the TSP for review in April.

Variance

The cumulative cost overrun in the Atmospheric Transport Task is the result of 1) additional time spent on the code documentation during November and December and 2) addition of a second person entering meteorological data, and 3) the effort required to make 100 runs of RATCHET for 1945 to provide input for use in sensitivity and uncertainty evaluation of the DESCARTES and CIDER codes. Data entry is ahead of schedule.

Planned Work for the Next Three Months

- complete numerical verification of the RATCHET code
- start preliminary sensitivity studies on the RATCHET code
- continue work on database for use with RATCHET
- complete the meteorological data report (Milestone 0402D)
- complete the wind field modeling report (Milestone 0402A)
- issue a revised (final) version of the groundwater report (Milestone 0403A)
- place subcontract with WSU for Columbia River work □

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 0501A - Environmental Monitoring Data Final Report, due FY 1991 and rescheduled to July 1992

- received technical peer review comments on the subject report comments are being addressed

Milestone 0502A - Vegetation Data Report (1944-1951), due FY 1991 and rescheduled to August 1992

- reviewed the subject report and began preparing it in HEDR report format

Milestone 0502B- Letter Report: Vegetation Monitoring Data (1949-1951), Bias and Data Correction, due February 1992 and rescheduled to August 1992

- reviewed the subject report and continued revising the document into a HEDR letter report format

Vegetation Monitoring Data (Subtask 0502)

- continued to add vegetation data summaries for the years 1973-1991 to the completed summaries for the years 1952-1972

Monitoring Document Search and Inventory (Subtask 0503)

- continued work on the monitoring document search and inventory activities

Major Problem Areas or Changes and Action Taken

Milestones 0501A, 0502A, and 0502B continue to slip. New Task 05 staff assigned last month will help get these activities back on track.

Variance

No significant cumulative variance.

Planned Work for the Next Three Months

- finalize the Phase I report (Milestone 0501A, Environmental Monitoring Data Report)
- complete review draft of the report on vegetation monitoring data (Milestone 0502A)
- complete review draft of the letter report on vegetation monitoring data bias (Milestone 0502B) ☐

Task 06 Demography, Food Consumption and Agriculture

Objective

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

Progress

Milestone 0601C - Milk Distribution Estimates Final Report, due FY 1991, rescheduled to May 1992, and completed

- published the Phase I report, "Milk Cow Feed Intake and Milk Production and Distribution Estimates for Phase I"

Milestone 0602B - Letter Report: Status of Food Consumption Methodology, due March 1992 and rescheduled to May 1992, and completed

- published the report, "Methodology for Reconstruction of Historical Food Consumption Estimates"
- met with TSP Demography Subcommittee members D.W. Price and R.L. Morrill to review task staffing, progress on task deliverables, and the clearance and publishing process applicable for Task 06 documents. The food consumption methodology was informally presented.
- received a memo from D.W. Price with additional comments on the food consumption methodology. Two concerns were noted: 1) how estimates will be derived for the 1940s migrant workers using the current methodology, and 2) use of two types of data to derive the backcasting ratios. The issue noted

in item No. 1 will be addressed in future HEDR work for "special populations." In response to item No. 2, it was decided to use one type of data, called "disappearance data," for the backcasting ratios.

- continued the procurement process to acquire the summer and fall 1977-1978 National Food Consumption Survey (NFCS) raw data on magnetic tape from National Technical Information Service (NTIS). Ordered the 1965 spring NFCS raw data on magnetic tape from the Health and Nutrition Information Service (HNIS). Implementation of the methodology leading to the food consumption final report will begin once all the raw survey data are received at PNL. The final report is due in March 1993.

Milestone 0603B - Letter Report on Milk Outside Phase I, due FY 1991 and rescheduled to June 1992

- revised and reorganized the report, "Milk Production and Distribution in Low-Dose Counties for the Hanford Thyroid Disease Study." Began internally clearing the report.

Milestone 0603D - Milk Production/Distribution Report, 1944-1991, due FY 1993

- met with staff from WSU's Social and Economic Sciences Research Center (SESRC)

and with TSP member D.W. Price to discuss SESRC's interest in conducting the milk distribution activities that follow the SESRC milk and farm producer survey.

- SESRC completed the pilot study of Yakima County. For the 256 current farmers contracted, 111 provided information and approximately 234 names were volunteered as those who farmed in 1945 and/or 1951. This method is being used to obtain contact information for farmers in other counties. State Agricultural Statistic Service Branches of U.S. Department of Agriculture, National Agricultural Statistics Service, will be drawing the sample from their state databases on current farmers. They will randomly select the stratified samples for each of the counties and conduct the first telephone contact of current farmers. The sample will be stratified by telephone contact of current farmers. The sample will be stratified by dairy, vegetable, home and "other" types of farms.
- began designing a follow-up telephone interview of primary and secondary names obtained in the initial calls. Two versions of a 5-min telephone script were written to obtain more information on these farmers.
- drafted a questionnaire to be reviewed and revised by HEDR staff. The questionnaire is to be used in the face-to-face interviews for 1945 farm practices. The questionnaire currently includes sections for all dairy, poultry, beef, sheep, goats, grain, hay, fruit, and vegetable production and farm practices. The questionnaire will need to be shortened before it is used.

Milestone 0603C - Letter Report: Assessment of Fruit and Vegetable Pathways, 1944-1957, due June 1992 and rescheduled to August 1992

- completed data collection. Distribution information on fruits and vegetables is nearly complete. Production information has been entered into spread sheets and has gone through a QA procedure. Distribution data are being classified and recorded.
- discussed with D.W. Price and R.L. Morrill the procedure and methodology for the letter report. It was decided that the distribution section of the report should focus on lettuce, asparagus, and spinach.

Native American Data (Subtask 0605)

- visited with representatives of all eight tribal project staffs to review the progress of work to date and to discuss plans for work to be conducted for the rest of FY 1992
- continued reviewing published and unpublished information sources that will help to independently assess the reliability, validity, and uncertainty associated with key informant and sample survey interview data regarding food consumption and mobility patterns

Major Problem Areas or Changes and Action Taken

Battelle Contracts has raised the issue of compliance with Paper Reduction Act requirements that require Office of Management and Budget approval of certain questionnaires for surveys. PNL has been exempt from this requirement under its contract with DOE, but it appears that Battelle will be required to comply under the CDC contract. This requirement will likely mean that the questionnaires for the agricultural surveys will be in federal approval cycles for months. This delay could delay the generation of dose estimates for the HTDS and the recalculation of Phase I doses.

Milestone 0603B, Letter Report on Milk Outside Phase I, was delayed to June because of internal review and clearance requirements.

A letter describing work and staffing plans for Task 06 agricultural reconstruction work was sent to TSP Members J.E. Till, D.W. Price, and R.L. Morrill, partially meeting requirements of TSP Directive 9-21.

The letter report on fresh vegetables and fruits (Milestone 0603C) is now scheduled for August 1992. This delay was caused by a delay in initiating the work and in having staff focus efforts during May on TSP-directed activities.

Variance

The cumulative cost underrun is caused by delayed contracting with and invoicing of WSU agricultural survey work. This situation will be corrected when Battelle receives the necessary funding through DOE.

Planned Work for the Next Three Months

- work with SESRC to get the remaining portion of the WSU contract negotiated and signed
- complete the survey of approximately 400 farmers who farmed in the HEDR study area during 1945
- issue reports for Milestones 0603B and 0603C
- provide the TSP with a monthly progress report within 10 days after the end of each month
- place contracts with WSU SESRC to conduct agricultural reconstruction activities
- conduct a scoping review of reports concerning Native American lactation and culturally patterned nursing practices
- review feasibility of alternatives for representing spatial distribution of tribal members' residential locations, using unpublished residential location data compiled in the early 1960s for the Colville, Yakima, and Nez Perce tribes
- participate in discussions regarding sensitivity analysis and model validation techniques
- review tribal work plans for remainder of FY 1992
- provide liaison to the Native American Working Group at the June meeting in Seattle and at the July TSP meeting □

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 populations, 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 0702B - Documentation Report of Population Dose Model, Major Pathways, due September 1992

- prepared draft outline for internal review of this revised milestone report. The content of this report has been changed to incorporate information in the design specification (Milestones 0202A and 0205A) and the initial code documentation (Milestone 0702A), as well as current coding developments for stochastic parameter selection and report generation.

Milestone 0703A - Letter Report: Iodine-131 Parameters and Dose Factors, Phase I, due November 1991, rescheduled to May 1992 and completed

- completed and issued this final report

Milestone 0703B - Letter Report: Iodine-131 Parameters and Dose Factors, Revised Model, due February 1992 and rescheduled to September 1992

- continued documenting parameter values and descriptions in the controlled manual format. This letter report will address most of the parameters that are required by the DESCARTES and CIDER codes. Some parameters, such as ingestion rates and parameters for the milk and vegetable distribution model, will not be included in the report, but will be documented as part of Task 06.

Pathways and Dose Code Development and Documentation (Subtask 0702)

- completed conversion testing of the environmental accumulation (DESCARTES) and dose estimation (CIDER) codes on the HEDR Sun computer. Results from single best-estimate runs of the Sun implementation of both codes have been compared to results from the VAX implementation for selected nodes and time periods. Results from both codes agree, thus verifying correct conversion of the codes.
- development of the stochastic parameter selection code, PARSEL, is nearing completion. The stochastic version of the report generator program, REPGEN, is also nearing completion.

Major Problem Areas or Changes and Action Taken

W. T. Farris was assigned Task 07 leader effective May 1. T.A. Ikenberry, former task manager, will continue as Subtask 0705 leader and will provide additional support to Task 02.

Dose calculations for Native American tribes are on hold pending tribal input.

Variance

The cumulative cost overrun was caused by work on Subtask 0702, Pathways and Dose Code Development and Documentation, where four staff members are completing computer coding for DESCARTES, CIDER, PARSEL, and REPGEN.

Planned Work for the Next Three Months

- complete development and testing of the stochastic parameter selection code, PARSEL

- conduct final modifications and testing of DESCARTES and CIDER. The initial set of model runs will be made using 100 realizations of air concentration and surface deposition data from the atmospheric transport code RATCHET, and 100 input parameter value sets from PARSEL will be used in the testing. These runs will cover the entire year of 1945 for a selected set of locations (nodes). Doses will be computed for representative individuals from selected age/sex/lifestyle groups.
- complete the stochastic report generator program and use it to examine the model outputs. These initial results will be used only for purposes of developing a draft sensitivity/uncertainty analysis plan and for model verification activities. They will not be formally reported.
- write test plans for code verification. Formal verification testing will begin and plans will be made for conducting an independent code review. Software QA forms required by the HEDR QA plan and PNL Software Control Procedures will be completed.
- continue work on the iodine-131 parameters and dose factors report for revised air pathway codes (Milestone 0703B)
- continue work on the report documenting air exposure pathways and the population dose model for major pathways (Milestone 0702B) □

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, due FY 1991 and rescheduled to July 1992

- continued review and clearance of this report

Milestone 0803A - Letter Report: Project Sensitivity/Uncertainty Analysis Plan, due August 1992 and rescheduled to September 1992

- continued preparing for the sensitivity and uncertainty analysis workshop, Pasco, Washington, September 15-17, 1992

Statistic Technical Planning, Control, and Reporting (Subtask 0801)

- Three Task 08 staff attended training for using computer software control procedures. Prepared training assignments for new Task 08 staff member C.A. Lopresti. P.E. Redgate completed internal reading assignments on BECAMP computer software control procedures.

General Statistics Support (Subtask 0802)

- participated in meetings at WSU and PNL of the survey design team to plan and review

activities for the agricultural producer's survey being conducted by WSU SESRC. This work supports Milestone 0603D, Milk Production/Distribution Report, 1944-1991.

- wrote draft paper, "Uncertainty Issues of the Hanford Environmental Dose Reconstruction Project," which will be presented at the symposium, "Environmental Statistics, Assessment and Forecasting" associated with the American Chemical Society National Meeting, August 23-27, in Washington, DC. This paper will be published in the symposium proceedings.
- reviewed second drafts of the letter report on status of food consumption methodology (Milestone 0602B) and a draft of the letter report on milk production and distribution in low-dose counties (Milestone 0603B).

Analysis of Model Reliability (Subtask 0803)

- conducted sensitivity and uncertainty analysis on the Source Term Release Model code and conducted verification checks of the code
- assisted in verifying the air pathway dispersion model code (RATCHET) and reviewed the plans developed by atmospheric transport staff for conducting sensitivity and uncertainty analysis of the code

- assisted Task 07 (Environmental Pathways and Dose Estimates) with developing parameter values and parameter probability density functions for inclusion in the letter report on iodine-131 parameters and dose factors, for the revised model (Milestone 0703B)
- meet frequently with the Assistant Project Manager for Technical Integration, as well as task and subtask leaders, to plan, coordinate and conduct model reliability activities for the project

Major Problem Areas or Changes and Action Taken

A new statistics staff person, C.A. Lopresti, was added to support Task 08 in verifying HEDR Project codes.

The completion date of the iodine-131 conversion factor report (Milestone 0802A) was moved from May 1992 to July 1992 to allow time for additional technical peer review before submitting it to the TSP for review and comment.

Variance

The cumulative cost underrun was caused by unavailability of staff and the delay in completing the dose code and subsequent sensitivity and uncertainty analyses. The variance is expected to decline in future months with the assignment of PNL statistician C.A. Lopresti to help verify HEDR computer codes and as uncertainty and sensitivity analyses are conducted.

Planned Work for the Next Three Months

- send Milestone 0802A, Iodine-131 Conversion Factor Report, to the TSP for review and comment
- draft the letter report on project sensitivity uncertainty analysis plan (Milestone 0803A)
- review the 100 realizations of the atmospheric transport model DESCARTES outputs (air and ground concentrations)
- continue planning for the sensitivity/uncertainty analysis workshop
- continue working with HEDR staff to conduct uncertainty and sensitivity analysis
- continue to serve on the survey design team, which supports the survey of agricultural producers being conducted by WSU
- finalize the strategy for uncertainty and sensitivity analyses and the elicitation of expert opinion for HEDR dose models
- finalize the paper on project uncertainty issues for presentation at the symposium Environmental Statistics, Assessment and Forecasting in August
- review draft project reports □

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 - 32 records, totalling 1,805 pages
- verified, processed, and stored project records - 60 records, totalling 7,118 pages
- transferred three packages of records to the RL Public Reading Room - 28 records, totalling 3,598 pages
- received comments for changes to the draft HEDR Records Inventory and Disposition Schedule/File Index (RIDS) from several tasks
- provided assistance to Task 06 staff to consolidate records from prior task/subtask leaders into one central file system

Major Problems or Changes and Action Taken

None.

Variance

The cumulative cost underrun resulted in fewer records management activities than expected.

Planned Work for the Next Three Months

- continue processing incoming project records
- continue transferring processed project records to the RL Public Reading Room
- finalize the revised RIDS form and forward copies to the Project Office and task leaders
- provide training to new project staff on records management requirements ☐

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

- finalized the revision of the HEDR Quality Assurance Plan and initiated the final approval and clearance process
- reviewed and commented on the following HEDR milestone reports: "Milk Production and Distribution in Low-Dose Counties from the Hanford Thyroid Disease Study" and "Methodology for Construction of Historical Food Consumption Estimates"
- finalized the report for the preaward survey of the Social and Economic Science Research Center at WSU
- participated in the working group meeting with R.L. Morrill and D.W. Price of the TSP Demography Subcommittee
- provided training and assistance in software QA to HEDR staff through one-on-one meetings and group briefings

Major Problem Areas or Changes and Action Taken

None.

Variance

The cumulative cost underrun resulted from less quality assurance activities than expected.

Planned Work for the Next Three Months

- finalize critical decision plan and issue the implementing procedure: HEDR-TP-3, "HEDR Documentation of Critical Decisions"
- develop action tracking procedure to be used for documenting results of technical staff meetings
- continue performing oversight activities to check for compliance to project technical, QA, and data quality objective requirements and for implementation of corrective actions for the last audit
- issue QA plan for HEDR
- develop surveillance plan to assess project implementation of the QA plan ☐

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

Milestone 1102A, Letter Report: Declassified, Prioritized Document List, due September 1992

- declassified 408 Hanford-Site-originated documents, 49 of which are of potential interest/use to the project. Table 11.1 shows the status of declassification to date. Approximately 40 declassifications requested by the TSP and public are yet to be completed.

Milestone 1103A, Letter Report: Status of Document Search and Data Quality Objectives Efforts, due September 1992

- extracted selected monthly operating data for all separations plants (1944-1972) from two handwritten notebooks and published it as HW-89085
- collected additional daily separations process data and related information. The year 1952 was completed this month.

- added new citations to the tracking system that now contains more than 5,400 citations
- provided the RL Reading Room with 40 documents (~8000 pages) of potential interest/use in the HEDR Project. A title listing of these reports is given in Appendix B.

RL Public Reading Room Activity

The Reading Room had 3 HEDR patrons and distributed 8 HEDR reports in May 1992.

Major Problem Areas or Changes and Action Taken

Preparation of a title listing of Hanford-Site-originated reports that are currently classified and address operations for years 1961-1972 is awaiting directions and funding through RL.

Variance

No significant cumulative variance.

TABLE 11.1. Declassification of Hanford-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 through September 1988 (FY 1988)	52	37
October 1988 through September 1989 (FY 1989)	186	177
October 1989 through September 1990 (FY 1990)	455	236
October 1990 through September 1991 (FY 1991)	1323	599
October 1991 through May 1992 (FY 1992)	<u>1553</u>	<u>200</u>
TOTAL (March 1987 - May 1992)	3604	1276

(a) Reported in HEDR monthly 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.

Planned Work for the Next Three Months

- continue providing input to the information resources tracking database and provide documents to the RL Public Reading Room in an orderly, timely fashion
- watch for information that may explain in detail, and support data in, "green run" document HW-17381 DEL REV 1
- identify significant documents that address fuel element failures that occurred in now decommissioned Hanford production reactors
- continue to develop "packing lists" for boxes of retired Hanford records of potential interest/ use to the project
- identify and collect documents that address reactor purges, 1944-1971
- identify and retrieve data on ruthenium releases from separations processes □

Task 12 TSP Communications Support

Objective

The objective of this task is to assist the TSP in developing competent 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

- provided information and materials to TSP Communications Subcommittee staff: photos of Columbia River monitoring and TSP members for use in the next TSP newsletter, information for the fact sheets on declassification and Native American work, news articles on the TSP's presentations to Canadians visiting Hanford in April
- offered to provide copies of the just-published annual Hanford Environmental Monitoring Report for Calendar Year 1990 to TSP members
- submitted to the TSP Communications Subcommittee responses to Battelle-related issues that arose during the April TSP Communications Subcommittee meeting regarding the HEDR turnover package
- supplied information materials to an individual upon request of Westinghouse Hanford Company. Provided materials and toll-free phone numbers for the HEDR Project and HTDS.

- faxed a current listing of HEDR reports and presentations to TSP member W.A. Bishop at his request

Major Problem Areas or Changes and Action Taken

None.

Variance

No significant cumulative variance.

Planned Work for the Next Three Months

- prepare and submit draft of HEDR fact sheet on sensitivity studies to the TSP Communications Subcommittee
- attend TSP Communications Subcommittee meeting regarding the dose estimating turnover package in Seattle in June ☐

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)

TABLE A.1. Cost Summary (Dollars in Thousands)

May 1992				FY 1992 to Date (October 1991 - September 1992)					Budgeted
				TSP (c)					FY Labor
Labor \$	Non- Labor \$ (a)	Total \$	Labor \$	Non- Labor \$ (a)	Total \$	Cum(b) Planned	Cum Variance	Approved FY Budget	Hours
HEDR Project Tasks									
Task 01 - Project Management (d)									
0101 Project Planning & Control	51	20	71	406	112	518	477	727	7,441
0102 Final Phase I Reports	1	2	3	11	5	16	12	12	250
0103 Project Administration	31	3	34	178	27	205	284	413	5,164
0104 Project Peer Review	0	0	0	31	1	32	16	42	372
Subtotal Task 01	83	25	108	626	145	771	789	1,194	13,227
Task 02 - Technical Integration									
0201 Tech Planning/Control/Rep	10	0	10	39	2	41	44	71	670
0204 Proj Tech Cord /Analysis	9	0	9	55	2	57	49	77	785
0205 Path & Dose Model Require	8	0	8	34	3	37	90	129	1,335
Subtotal Task 02	27	0	27	128	7	135	183	277	2,790
Task 03 - Source Terms									
0301 Tech Planning/Control/Rep	1	0	1	20	5	25	36	46	403
0302 Closure of Ph I Iodine Rel	4	0	4	20	1	21	5	5	54
0304 Rad Releases to Water	4	0	4	20	0	20	66	98	870
0305 Source Term Release Model	3	6	9	6	10	16	5	5	54
0307 Rad Release Data Avail/Rev	19	0	19	124	7	131	116	180	2,154
Subtotal Task 03	31	6	37	190	23	213	228	334	3,535

TABLE A.1. Cost Summary (Dollars in Thousands)

May 1992		FY 1992 to Date (October 1991 - September 1992)					TSP (c)		Budgeted
Labor \$	Non-Labor \$ (a)	Total \$	Labor \$	Non-Labor \$ (a)	Total \$	Cum Planned	Cum Variance	Approved FY Budget	FY Labor Hours
Task 04 - Environmental Transport									
0401 Tech Planning/Control/Rep	0	0	1	0	1	0	-1	0	0
0402 Atmospheric Model Develop	14	16	130	5	135	129	-6	214	2,228
0403 Groundwater Transport	4	5	51	10	61	61	0	61	684
0404 Surface-Water Transport	3	3	69	3	72	71	-1	132	1,408
0405 Atmospheric Model Databas	17	18	85	2	87	52	-35	71	940
0406 Atmospheric Model Calculat	0	0	0	0	0	3	3	31	355
Subtotal Task 04	38	42	336	20	356	316	-40	509	5,615
Task 05 - Environmental Monitoring Data									
0501 Tech Planning/Control/Rep	7	8	26	1	27	26	-1	38	352
0502 Terrestrial Monitoring Data	5	5	39	-3	36	53	17	67	621
0503 Environmental Monitoring Dai	0	4	14	13	27	22	-5	46	546
0504 Surface-Water Monitoring	0	0	16	-1	15	15	0	15	186
Subtotal Task 05	12	17	95	10	105	116	11	166	1,705
Task 06 - Demography, Food Consumption & Agriculture									
0601 Tech Planning/Control/Rep	3	4	29	1	30	26	-4	41	461
0602 Food Consumption	4	4	35	6	41	56	15	60	512
0603 Milk/Other Food Model Dev	30	31	66	4	70	245	175	337	1,481
0605 Native American Data	8	9	14	36	50	100	50	137	341
Subtotal Task 06	45	48	144	47	191	427	236	575	2,795

TABLE A.1. Cost Summary (Dollars in Thousands)

May 1992				FY 1992 to Date (October 1991 - September 1992)						Budgeted
Labor \$	Non- Labor \$ (a)	Total \$	Labor \$	Non- Labor \$ (a)	Total \$	Cum(b) Planned	Cum Variance	Approved FY Budget	FY Labor Hours	
Task 07 - Environmental Pathways & Dose Estimates										
0701 Tech Planning/Control/Rep	8	0	8	29	0	29	36	7	62	
0702 Path & Dose Code Dev/Doc	43	2	45	179	17	196	138	-58	240	
0703 Path & Dose Model Paramet	9	0	9	70	1	71	52	-19	75	
0705 Dose Calculations	0	0	0		0	0	19	19	39	
Subtotal Task 07	60	2	62	278	18	296	245	-51	416	
Task 08 - Statistics										
0801 Tech Planning/Control/Rep	3	-1	2	22	2	24	32	8	49	
0802 Stats Support for Tech Work	10	0	10	55	-1	54	93	39	140	
0803 Analysis of Model Reliability	17	-1	16	85	-1	84	106	22	205	
Subtotal Task 08	30	-2	28	162	0	162	231	69	394	
Task 09 - Records Management										
0901 Tech Planning/Control/Rep	2	0	2	12	0	12	12	0	15	
0902 Project Records Management	3	0	3	12	4	16	39	23	71	
Subtotal for Task 09	5	0	5	24	4	28	51	23	86	
Task 10 - Quality Assurance										
1001 Tech Planning/Control/Rep	1	0	1	12	3	15	9	-6	13	
1002 QA Program Development	2	0	2	8	0	8	9	1	17	
1003 QA Verification	0	0	0	3	0	3	17	14	28	
Subtotal Task 10	3	0	3	23	3	26	35	9	58	

TABLE A.1. Cost Summary (Dollars in Thousands)

May 1992				FY 1992 to Date (October 1991 - September 1992)						TSP (c)		Budgeted
Labor \$	Non- Labor \$ (a)	Total \$	Labor \$	Non- Labor \$ (a)	Total \$	Cum(b) Planned	Cum Variance	Approved FY Budget	FY Labor Hours			
Task 11 - Information Resources												
1101 Tech Planning/Control/Rep	4	0	4	29	0	29	31	2	44			1,044
1102 Hanford Document Declass	3	0	3	37	0	37	36	-1	51			1,179
1103 Hanford Info Resources Iden	7	1	8	45	3	48	49	1	63			1,141
Subtotal Task 11	14	1	15	111	3	114	116	2	158			3,364
Task 12 - TSP Communications Support												
1201 Tech Planning/Control/Rep	1	0	1	17	3	20	13	-7	17			289
1202 TSP Public Outreach Support	1	0	1	1	3	4	8	4	20			245
1203 Comm Assessment Research	0	0	0	6	0	6	8	2	12			134
1204 TSP Meeting/Material Sup	0	1	1	4	11	15	22	7	30			152
Subtotal - Task 12	2	1	3	28	17	45	51	6	79			820
Subtotal, HEDR Project Tasks	350	45	395	2,145	297	2,442	2,788	346	4,246			44,620
Management Reserve	0	0	0	0	0	0	0	0	0			0
Subtotal, Project Tasks Plus Management Reserve	350	45	395	2,145	297	2,442	2,788	346	4,246			44,620

TABLE A.1. Cost Summary (Dollars in Thousands)

	May 1992			FY 1992 to Date (October 1991 - September 1992)					Budgeted FY Labor Hours	
	Labor \$	Non- Labor \$ (a)	Total \$	Labor \$	Non- Labor \$ (a)	Total \$	Cum(b) Planned	Cum Variance		TSP (c) Approved FY Budget
Technical Steering Panel (e)	0	93	93	0	342	342	600	258	1,003 (f)	0
Native American Research	0	5	5	0	2	2	215	206	356 (f)	0
TOTAL	350	143	493	2,145	648	2,793	3,603	810	5,605	44,620

- (a) Non-labor dollars include expenses such as travel, publication production, procurements, and subcontracts.
- (b) The monthly planned amounts are given in the cost section of Figures 2, A.2, and A.3, pages xi, A.9, and A.10, respectively.
- (c) "TSP approved FY Budget" is the approved FY 1992 budget from the FY 1992 Task Plans plus the allocation of FY 1991 carryover funds as approved in a letter from D. B. Shipley to J. E. Till, dated 11-19-91.
- (d) Project management includes activities such as project control and administration, project communications, subcontract administration, records control, and peer review.
- (e) TSP costs are administered through subcontracts which are reflected as non-labor costs. Actual TSP expenses include both labor and non-labor.
- (f) FY budget provides funding through September 30, 1992. See Figures A.2 and A.3 for additional information. The FY budget includes FY 1991 carryover and PNL overheads applied to subcontracts.

FIGURE A.3. Native American Research Budget Status

Appendix B

**Hanford Site-Originated Documents of
Potential Interest/Use in the HEDR Project -
Placed in the RL Public Reading Room
During May 1992**

Appendix B

Hanford Site-Originated Documents of Potential Interest/Use in the HEDR Project - Placed in the RL Public Reading Room During May 1992

BNWL-939	Composition and Radioactivity of Reactor Films. 41p.	11/18/68
GENEVA-2-P/394	Atomic In-Line Analyzers for Radioactive Constituents in Liquid and Gaseous Waste. 5p.	10/01/58
HAN-45831-DEL	100 Areas Monthly Report January 1952 - December 1952. 220p.	02/04/52
HAN-77681-DEL	Monthly Reports January Thru December 1961 (Reactor Operation Branch). 144p.	01/09/62
HW-3-2466	100-F Unit Purge, May 3, 1945. 7p.	05/22/45
HW-3-2593	100-F Unit Purge, May 20, 1945. 5p.	05/29/45
HW-3-2638	100-B Unit Purge, June 14, 1945. 3p.	06/14/45
HW-3-3046	100-B Unit Purge, May 20, 1945. 4p.	05/28/45
HW-7-2108	100-B Unit Purge, July 12, 1945. 3p.	07/28/45
HW-7-2511	100-F Unit Purge, September 7, 1945. 2p.	10/01/45
HW-24055	Production Test 105-3-MR, The Use of Dicalite Diatomaceous Earth as a Purge Material in the 100 areas. 4p.	04/08/52
HW-24605-DEL	Hanford Works Monthly Report for May 1952. 392p.	06/20/52
HW-25533-DEL	Hanford Works Monthly Report for August 1952. 389p.	09/24/52
HW-26047-DEL	Hanford Works Monthly Report for October 1952. 348p.	11/20/52
HW-26720-DEL	Hanford Works Monthly Report for December 1952. 373p.	01/23/53
HW-26946-DEL	Hanford Works Monthly Report for January 1953. 382p.	02/24/53
HW-27288-DEL	Hanford Works Monthly Report for February 1953. 367p.	03/18/53

**Hanford Site-Originated Documents of
Potential Interest/Use in the HEDR Project -
Placed in the RL Public Reading Room
During May 1992**

HW-28906-DEL	Monthly Report Hanford Atomic Products Operation for July 1953. 380p.	08/20/53
HW-29229-DEL	Monthly Report Hanford Atomic Products Operation for August 1953. 383p.	09/18/53
HW-29513-DEL	Monthly Report Hanford Atomic Products Operation for September 1953. 386p.	10/21/53
HW-29794-DEL	Monthly Report Hanford Atomic Products Operation for October 1953. 378p.	11/20/53
HW-30130-DEL	Monthly Report Hanford Atomic Products Operation for November 1953. 368p.	12/21/53
HW-31267-DEL	Monthly Report Hanford Atomic Products Operation for March 1954. 376p.	04/23/54
HW-31964-DEL	Monthly Report Hanford Atomic Products Operation for May 1954. 360p.	06/22/54
HW-32317-DEL	Monthly Report Hanford Atomic Products Operation for June 1954. 359p.	07/26/54
HW-33698	Process Test MR-105-25 Reactor Purge at Low Concentrations. 5p.	11/05/54
HW-36021	Production Test 105-12-MR Crossheader Purge with Chromic Acid. 11p.	07/05/55
HW-38808	Interim Report, Production Test MR-105-12 Crossheader Purge with Chromic Acids. 3p.	09/19/55
HW-40703	In-Pile Defilming of Process Tubes. 8p.	01/06/56
HW-48132-DEL	Chemical Processing Department Monthly Report for January 1957. 101p.	02/21/57
HW-48769-DEL	Monthly Record Report Irradiation Processing Department February 1957. 165p.	03/20/57
HW-48835-DEL	Chemical Processing Department Monthly Report for February 1957. 103p.	03/21/57
HW-54378	Purging of Surface Condenser Tubes CA-719 Study Report. 6p.	01/07/58

**Hanford Site-Originated Documents of
Potential Interest/Use in the HEDR Project -
Placed in the RL Public Reading Room
During May 1992**

HW-69074-RD	Control of Radio-Iodine Emissions from the Separations Plants. 20p.	12/19/60
HW-75609	Water Treatment Program-Old Reactors. 11p.	11/19/62
HW-89085	Selected Monthly Operating Data for B and T Plants, REDOX and PUREX (1944-1972). 27p.	04/13/92
PNL-7929	Hanford Site Environmental Data for Calendar Year 1990-Surface and Columbia River. 307p.	01/01/92
PNL-7930	Hanford Site Environmental Data for Calendar Year 1990. 174p.	12/20/91
PNL-8083 HEDR	Literature and Data Review for the Surface-Water Pathway: Columbia River and Adjacent Coastal Areas. 100p.	04/12/92
WASH-170 (pp. 40-47)	Hanford Air Cleaning Operations. pp. 40-47 of the 3rd AEC Air Cleaning Conference held at LASL 9/21-9/23/53. 8p.	04/13/53

Appendix C

HEDR Documents to the TSP - May 1992

Appendix C

HEDR Documents to the TSP - May 1992

Title	Author	Date Issued	Publication No	Additional Information	Status
Methodology for Reconstruction of Historical Food Consumption Estimates	DM Anderson	5/92	PNL-8123 HEDR	Milestone 0602B	Published final 5/92
Parameters Used in the Environmental Pathways and Radiological Dose Modules of the Phase I Air Pathway Code	SF Shindle et al.	5/92	PNL-8093 HEDR	Milestone 0703A	Published final 5/92
Milk Cow Feed Intake and Milk Production and Distribution Estimates for Phase I	DM Beck et al.	5/92 (dated 4/92)	PNL-7227 HEDR	Milestone 0601C	Published final 5/92

Appendix D

HEDR Presentation Handouts to the TSP - May 1992

Note: No presentation handouts were generated in May.

Appendix E

HEDR Open-Literature Publications and Presentations - May 1992

Note: This appendix lists publications (new this month) that present aspects of dose reconstruction in the open scientific literature; TSP approval is not required. A complete listing for FY 1992 will be included in the September 1992 report.

Appendix E

HEDR Open Literature Publications and Presentations - May 1992

Title	Author	Date Issue	No	Publication Audience	Status
Data Quality Objectives for Retrospective Studies	DB Shipler et al.	5/92	PNL-SA-20918 A HEDR	13th Annual Meeting, Society of Environmental Toxicology and Chemistry	To be presented 11/92
Environmental Accumulation of Radionuclides Released to the Atmosphere	DB Shipler et al.	5/92	PNL-SA-20919 A HEDR	13th Annual Meeting, Society of Environmental Toxicology and Chemistry	To be presented 11/92

Appendix F
Communications Log - May 1992

Appendix F
Communications Log - May 1992

Initiated By/ Affiliation	Contact/ Affiliation	Type	Subject
B Shleien/TSP	CM Heeb/PNL	Phone	Handbook data
CM Heeb/PNL	M Robkin/TSP	Phone	Details of upcoming TSP meeting in Astoria
CM Heeb/PNL	B Shleien/TSP	Fax	Faxed data and calculation sheets
MA Robkin/TSP	SP Gydesen/PNL	Phone	Request for copy of "Hanford- Originated Documents of Potential Interest and/or Use for the Hanford Environmental Dose Reconstruction Project"
JR Wilkinson/Con- federated Tribes of the Umatilla Indian Reservation (CTUIR)	TA Ikenberry/PNL	Phone, Fax	Draft statement of work for discus- sion, spreadsheet structure for food consumption data, categories of milk consumption, 5/7/92 meeting
TA Ikenberry/PNL	JR Wilkinson/CTUIR	Fax	Faxed spreadsheet structure for food consumption data
B Aripa/Colville Tribe	TA Ikenberry/PNL	Phone	Data entry for Native American food consumption
TA Ikenberry/PNL	DS Barth/TSP	Phone	Approval to proceed with combining design specs, current code documen- tation, and ongoing coding work into single document
GL Harvey/PNL	ML Blazek/TSP	Fax	Faxed article regarding comments by Canadian Parliament members in April
K Niles/TSP Staff	GL Harvey/PNL	Phone	Additional information for declassifi- cation fact sheet
J Gates/TSP Staff	GL Harvey/PNL	Phone	Request for photos of Hanford facilities and TSP members for TSP newsletter
GL Harvey/PNL	K Niles/TSP Staff	Fax	Faxed Liebow comments on Native American fact sheet
GL Harvey/PNL	DW Price/TSP	Fax	Faxed response questions raised at TSP Communications Subcommittee meeting in April

Communications Log - May 1992

Initiated By/ Affiliation	Contact/ Affiliation	Type	Subject
MS Power/TSP Staff	GL Harvey/PNL	Phone	Confirmed attendance at the Information Resources meeting on 4/22/92
JE Till/TSP	SM Finch/PNL	Phone	Peer review for atmospheric model
SM Finch/PNL	WA Bishop/TSP	Phone	Questions on Kalispel and Colville invoices
MS Power/TSP Staff	SM Finch/PNL	Phone	Questions on fact sheet and combined milestones
MA Robkin/TSP	SM Finch/PNL	Phone	DOE funding source for the HEDR Project
AP Slickpoo/TSP	SM Finch/PNL	Phone	Status of invoice
K CharLee/TSP Staff	SM Finch/PNL	Phone	Agenda items, room list, and invited speaker for July TSP meeting; Native American workshop agreements
JP Thomas/HEAL	SM Finch/PNL	Phone	Request for cost of producing Columbia River data report
JE Till/TSP	SM Finch/PNL	Phone	Letter summarizing meeting on information availability and declassification, March monthly report, and progress report on Task 06
B Aripa/Colville Tribe	SM Finch/PNL	Phone	Questions on new scope of work and Request for Proposal sent out by PNL
K Burke/Umatilla Tribe	SM Finch/PNL	Phone	Request for information on payments for workshop attendance
WA Bishop/TSP	AH McMakin/PNL	Phone, Fax	Faxed listing of all HEDR reports and presentations
L Leavens/lawyer for Battelle	BA Napier/PNL	Phone	Status of Hanford Site annual reports for 1990, 1991
HA Haerer/Golder Associates	BA Napier/PNL	Phone	Battelle's approach to "hot particles" in 1940s

Communications Log - May 1992

Initiated By/ Affiliation	Contact/ Affiliation	Type	Subject
DB Shipler/PNL	LE Sewell/CDC	Phone	Contracting support for WSU
R Brich/RL	DB Shipler/PNL	Phone	DOE funding through FY 1992
HA Haerer/Golder Associates	DB Shipler/PNL	Phone	Value-of-information analysis; contract status
JE Till/TSP	DB Shipler/PNL	Phone	Declassification meeting, report comments, funding status, air model review, river report costs, TSP meeting agenda
DB Shipler/PNL	JE Till/TSP	Phone	Agenda for July TSP meeting
AP Slickpoo/TSP	DB Shipler/PNL	Phone	Invoices
DB Shipler/PNL	PC Klingeman/TSP	Phone	TSP meeting agenda, aquatic accumulation, dose codes, monitoring
DB Shipler/PNL	B Smith/CDC	Phone	CDC contract with Battelle
B Shleien/TSP	DB Shipler/PNL	Phone	Environmental Protection Agency meeting, "hot particles," uranium- 235 data
DB Shipler/PNL	HA Harris/RL	Phone	HEDR funding status and plans
WA Bishop/TSP	DB Shipler/PNL	Phone	Colville Tribe-costs and work scope
P Renard/CDC	DB Shipler/PNL	Phone	HEDR funding status
ML Blazek/TSP	DB Shipler/PNL	Phone	Student and professor contacts
DB Shipler/PNL	MJ Sage/CDC	Phone	HEDR funding needs
EB Liebow/PNL	B Aripa/Colville Tribe	Phone	Schedule meeting to discuss work plans
EB Liebow/PNL	D Powauke/Nez Perce Tribe	Phone	Schedule meeting to discuss work plans
EB Liebow/PNL	V Pierre/Kalispel Tribe	Phone	Schedule meeting to discuss work plans
WA Bishop/TSP	EB Liebow/PNL	Phone	Tribal interest in agreements with CDC waning, preproposal conference date

Communications Log - May 1992

Initiated By/ Affiliation	Contact/ Affiliation	Type	Subject
EB Liebow/PNL	D Saluskin/Yakima Indian Nation	Phone	Schedule meeting to discuss work plans
D Saluskin/Yakima Indian Nation	EB Liebow/PNL	Phone	Schedule meeting to discuss work plans
EB Liebow/PNL	D Ernst/Spokane Tribe	Phone	Schedule meeting to discuss work plans
V Pierre/Kalispel Tribe	EB Liebow/PNL	Phone	Schedule meeting to discuss work plans
EB Liebow/PNL	DE Walker/TSP	Phone	Review of discussions with Warm Springs and Umatilla project staffs
P Houck/CDC	EB Liebow/PNL	Phone	Colville concerns about selection of tribal participants in Public Health Practice Training Program
EB Liebow/PNL	W Hanson/Yakima Indian Nation	Phone	Confirming meeting for Monday
EB Liebow/PNL	D Seyler/Coeur d'Alene Tribe	Phone	Schedule meeting to review work plans
EB Liebow/PNL	B Aripa/Colville Tribes	Phone	Confirming meeting for Tuesday
EB Liebow/PNL	WA Bishop/TSP	Phone	Summary of meetings with tribal project staffs
EB Liebow/PNL	DE Walker/TSP	Phone	Summary of meetings with tribal project staffs
EB Liebow/PNL	WA Bishop, DE Walker, MS Power, TSP and Staff	Phone	Budget issues, June meeting, agreements with CDC, models of regional mobility, interaction with data collected separately by eight tribes

Distribution

No. of
Copies

No. of
Copies

OFFSITE

Technical Steering Panel

D. S. Barth
University of Nevada
4505 Maryland Parkway
Las Vegas, NV 89154

W. A. Bishop
2503 Wedgewood Court S.E.
Olympia, WA 98501

M. L. Blazek
Oregon Department of Energy
625 Marion Street N.E.
Salem, OR 97310

G. G. Caldwell
Director
Tulsa City-County Health Dept.
4616 East 15th Street
Tulsa, OK 74112

S. N. Davis
Dept. of Hydrology & Water Resources
Building 11
University of Arizona
Tucson, AZ 85721

N. J. Germond
224 Iron Mountain Blvd.
Lake Oswego, OR 97034

P. C. Klingeman
Civil Engineering Dept.
Appejin Hall 202
Oregon State University
Corvallis, OR 97331-2302

K. J. Kopecky
Fred Hutchinson Cancer
Research Center
1124 Columbia Street
Seattle, WA 98104

P. D. McGavran
Dept. of Health and Welfare
450 W. State Street, 4th Floor
Boise, ID 83720-5450

R. L. Morrill
Dept. of Geography, DP-10
University of Washington
Seattle, WA 98195

A. H. Murphy
Dept. of Atmospheric Sciences
Oregon State University
Corvallis, OR 97331-2209

D. W. Price
Agricultural Economics
Hulbert Hall Room 211
Washington State University
Pullman, WA 99164-6210

M. A. Robkin
Radiological Sciences, SB-75
University of Washington
Seattle, WA 98195

G. S. Roessler
Route 1 Box 139H
Elysian, MN 56028

B. Shleien
2421 Homestead Drive
Silver Springs, MD 20902

A. P. Slickpoo, Sr.
809 Nez Perce Lane
P. O. Box 331
Kamiah, ID 83536

J. E. Till
Route 2 Box 122
Neeses, SC 29107

No. of
Copies

No. of
Copies

	D. E. Walker, Jr. P.O. Box 4147 Boulder, CO 80306	18	K. CharLee Office of Nuclear Waste Mgmt. Department of Ecology 719 Sleater Kinney Road, S.E. Suite 200 Olympia, WA 98504
	<u>Other</u>		
2	DOE Office of Scientific and Technical Information Technical Information Center P.O. Box 62 Oak Ridge, TN 37830		M. R. Donnelly Public Health Service Centers for Disease Control 2601 Sixth Avenue, M.S. RX-22 Seattle, WA 98121
	M. A. Andrews Canadian Embassy 501 Pennsylvania Ave. N.W. Washington, DC 20001		J. Erickson Washington State Dept. of Health M.S. LE-13 Olympia, WA 98504-0095
	B. Aripa Colville Confederated Tribes P.O. Box 150 Nespelem, WA 99155		D. Ernst Spokane Tribe P.O. Box 100 Wellpinit, WA 99040
	D. M. Bernick Kirkland and Ellis 200 East Randolph Drive Chicago, IL 60601		A. Fingeret, GC-22 Department of Energy Forrestal Bldg. Room 6H-087 1000 Independence Ave. S.W. Washington, DC 20585
	D. Bonga Kalispel Tribe P.O. Box 39 Usk, WA 99180		T. H. Foulds, Esquire 1200 Westlake Ave. N. Suite 414, AGC Building Seattle, WA 98109
	B. G. Brooks, EH-421 Department of Energy Room J-112 Germantown, MD 20545		K. Gebbie, Secretary Washington State Dept. of Health M.S. ET-21 Olympia, WA 98504
	H. Burgess General Electric Nuclear Energy 175 Curtner Ave. Mail Code 822 San Jose, CA 95125		A. P. Hull Safety & Environmental Protection Division Building 535A Brookhaven National Laboratory Upton, NY 11973

No. of
Copies

D. B. Manders
Chronic Disease Epidemiology
Washington State Dept. of Health
M.S. EY-12
1408 State Street
Olympia, WA 98504

R. Mathias, S-1
Department of Energy
Forrestal Bldg. Room 7A-257
1000 Independence Ave. S.W.
Washington, DC 20585

N. Morin
Rocky Flats Program Unit
Environmental Epidemiology Division
Colorado State Dept. of Health
4210 E. 11th Avenue
Denver, CO 80220

J. D. Mulder
Public Health Liaison to EPA
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

D. V. Nelson, ER-8.2
Department of Energy
Office of Assessment and Support
Washington, DC 20585

D. Oliver, R.S., M.P.A.
Hazardous Waste Coordinator
Toxic Substances Section, LD-11
Washington State Dept. of Social &
Health Services
Olympia, WA 98504

M. Queahpama
Confederated Tribes of the
Warm Springs Reservation
P.O. Box C
Warm Springs, OR 97761

No. of
Copies

W. J. Roberds
Golder Associates
4104 148th N.E.
Redmond, WA 98052

J. H. Rueben
Nez Perce Tribe
P.O. Box 305
Lapwai, ID 83540

D. Saluskin
Confederated Tribes and Bands of
the Yakima Indian Nation
P.O. Box 151
Toppenish, WA 98948

S. H. Sell, M. D.
Director, Environmental Epidemiology
Tennessee State Dept. of Health &
Environment
C-1-130 Cordell Hull Building
Nashville, TN 37247-4912

L. E. Sewell
Centers for Disease Control
1600 Clifton Road
M.S. F-28
Atlanta, GA 30333

D. Seyler
Coeur d'Alene Tribe
Plummer, ID 83851

G. L. Sherwood, AC-21
Department of Energy
Room D-408
Germantown, MD 20545

K. F. Sparks
Shea & Gardner
1800 Massachusetts Ave. N.W.
Washington, D.C. 20036

No. of
Copies

J. Thomas
HEAL
1720 N. Ash
Spokane, WA 99205

B. Van Pelt
Confederated Tribes of the
Umatilla Indian Reservation
P.O. Box 638
Pendleton, OR 97801

S. Vendetter
Benton-Franklin District Health Dept.
800 W. Canal Drive
Kennewick, WA 99336

B. Weakley, IE-12
Department of Energy
Forrestal Bldg. Room 1E-218
1000 Independence Ave. S.W.
Washington, DC 20585

ONSITE

1	<u>Hanford Environmental Health
Foundation</u>	
	S. E. Dietert	B5-16
2	<u>Westinghouse Hanford Company</u>	
	G. D. Carpenter	B2-16
	D. E. Wood	B2-19
10	<u>DOE Richland Field Office</u>	
	T. A. Bauman, COM	A7-75
	R. F. Brich, TSD	A5-55
	R. M. Rosselli, AMT	A7-70
	R. R. Tibbatts, PBD	A7-89
	M. W. Tiernan, TSD	A5-55
	Public Reading Room (5)	A1-65

No. of
Copies

41	<u>Pacific Northwest Laboratory</u>	
	D. L. Alamia	K3-70
	A. C. Bampton	K7-73
	R. A. Burnett	K7-22
	A. J. Brothers	K6-30
	G. H. Cunningham	K1-59
	J. M. Daer (5)	K1-25
	D. H. Denham	A6-15
	W. T. Farris	K3-54
	S. M. Finch	K1-25
	M. D. Freshley	K6-77
	R. O. Gilbert	K7-34
	W. A. Glass	K4-13
	R. H. Gray	K1-33
	S. P. Gydesen	P8-55
	G. L. Harvey	K1-40
	C. M. Heeb	K6-42
	T. A. Ikenberry	K3-54
	C. A. Lopresti	K7-34
	E. B. Liebow	HARC
	R. C. Liikala	K1-57
	A. H. McMakin	K1-25
	K. A. Moore	K1-38
	B. A. Napier	K3-54
	G. R. Petersen	K1-40
	J. V. Ramsdell	K6-03
	P. E. Redgate	K7-34
	R. E. Rhoads	K6-64
	D. B. Shipler	K1-25
	J.C. Simpson	K7-34
	D. L. Stewart	K6-91
	W. L. Templeton	K1-30
	W. H. Walters	K6-77
	G. L. Wilfert	K6-09
	Publishing Coordination	K1-06
	Records Center	K3-70
	Technical Library (2)	P8-55

END

**DATE
FILMED**

8 / 25 / 92