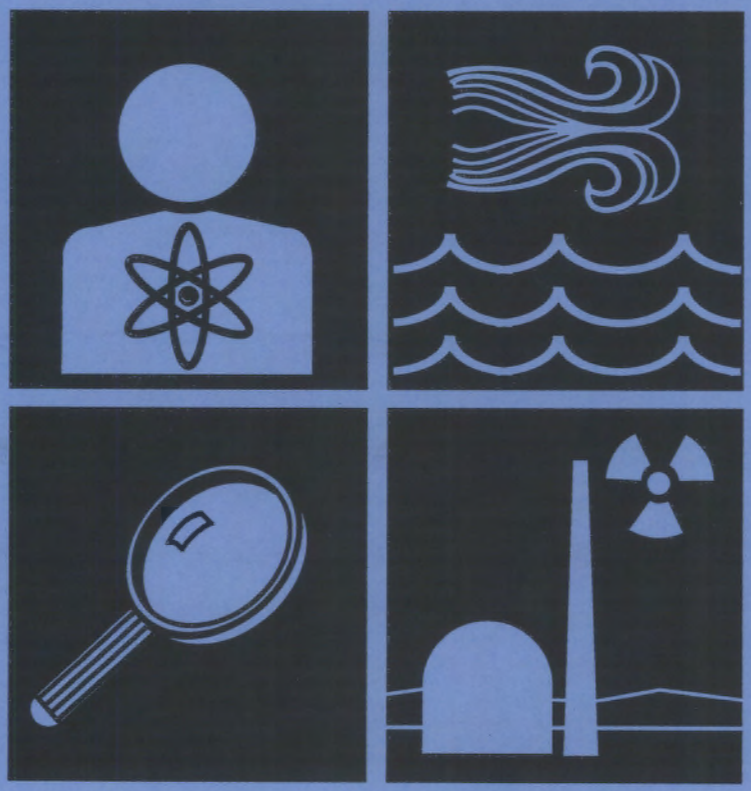
PNL-6450-40-HEDR
UC-707

6

Hanford Environmental Dose Reconstruction Project

Monthly Report

February 1991



Prepared for the Technical Steering Panel

Battelle

PNL-6450-40-HEDR

DISCLAIMER

Printed in the United States of America

Available to DOE and DOE contractors from the
Office of Scientific and Technical Information, P.O. Box 62, Oak Ridge, TN 37831;
prices available from (615) 576-8401. FTS 626-8401.

Available to the public from the National Technical Information Service,
U.S. Department of Commerce, 5285 Port Royal Rd., Springfield, VA 22161.

PNL-6450-40-HEDR
UC-707

HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION PROJECT

Monthly Report

February 1991

Prepared for the Technical Steering Panel

Pacific Northwest Laboratory
Richland, Washington 99352

HANFORD ENVIRONMENTAL DOSE
RECONSTRUCTION PROJECT

Compiled By: _____
S. M. Finch, Project Coordinator
Hanford Environmental Dose Reconstruction Project

Approved By: _____
D. B . Shipler, Manager
Hanford Environmental Dose Reconstruction Project

Approved By: _____
W. L. Templeton, Manager
NEPA Implementation and Environmental Documentation

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.

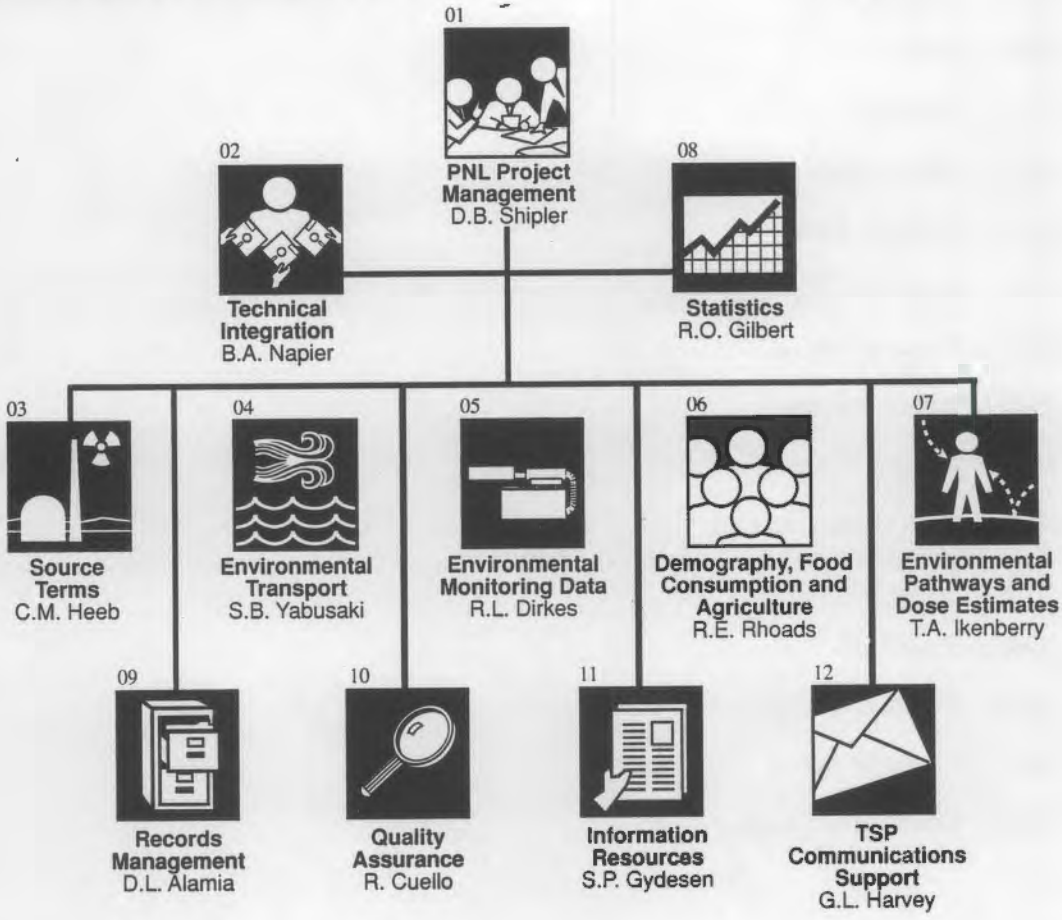


FIGURE 1. Organizational Structure of the Hanford Environmental Dose Reconstruction Project

[a] Battelle Memorial Institute operates the Pacific Northwest Laboratory.

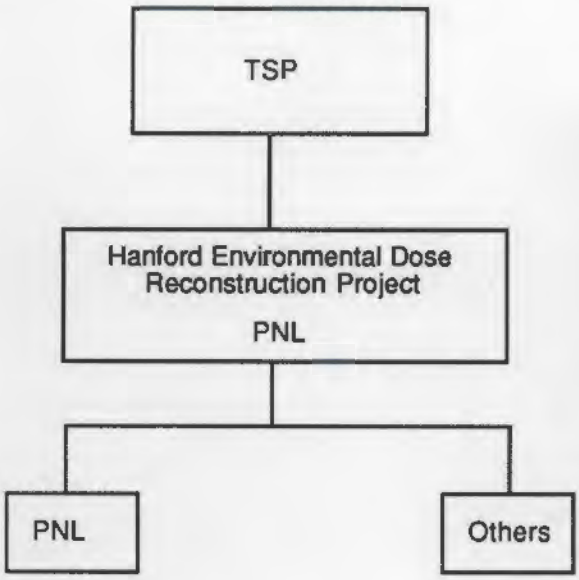
TABLE 1. Status of Directives[a]

		Complete	Ongoing	Phase I	Phase II
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 February 1991:

- provided materials for discussion at, and participated in, the TSP planning/budget workshop held in Seattle February 14-16. Provided workshop support, including a computer system that projected the computer monitor image onto a projector screen for audience viewing. The system was used to record the group's ideas and decisions in real time.
- continued development of the revised project model that estimates doses. Work activities included writing prototype codes to test the feasibility of the new dose code structure, evaluating alternative computer hardware and data storage procedures for the new structure, and developing the basic environmental model to be applied at each location and time.
- further modified the Native American version of the Phase I air pathway code to include infant milk ingestion via breastfeeding, soil ingestion by animals, and non-milk animal products such as beef, venison, poultry, and eggs
- met with the Kalispel and Coeur d'Alene Tribal Councils and the Native American Working Group on the use of data from tribal members
- submitted four, final Phase I reports to TSP Chairman J. Till for approval
- sent the draft report, "Effects of the Loss of Correlation Structure on Phase I Dose Estimates" to the TSP for review, meeting Milestone 0202C
- submitted the results computed with the HEDR Phase I model to the International Atomic Energy Agency (IAEA) for use in their coordinated research program, meeting Milestone 0203A
- extended the contracts for the Coeur d'Alene and Umatilla Tribes
- received demographic data from the Spokane Tribe
- received, processed, and stored HEDR Project records, including transferring 329 pages to the DOE-RL Public Reading Room
- declassified 92 Hanford Site-originated documents of potential interest/use to the project, most of which came from the TSP-prioritized listing. Provided the DOE-RL Public Reading Room with 42 documents of potential interest/use in the HEDR Project.
- added new citations to the document tracking system that now contains nearly 4200 titles
- received word that General Electric Company has tabled a response to the HEDR request to document the existence or non-existence of Hanford originated documents (1946-1964) at any of their corporate locations, pending the outcome of class action suits involving information of this nature
- attended the public meeting in Pasco hosted by the State of Washington Department of Health. The meeting was designed to gather public input for ways to use $5 million provided by the federal government for people in Washington, Oregon, and Idaho who may have been affected by past Hanford emissions. Met with the State of Washington epidemiologist who is writing the plan.
- submitted several papers for the June American Nuclear Society meeting on technical aspects of dose reconstruction.

Problems or Changes and Action Taken

The Centers for Disease Control (CDC) has requested acceleration of project planning to provide a master project schedule, key milestones, and scopes of major work elements for the TSP meeting in April. The information is needed for CDC/Battelle contracting for FY 1992. This information was planned for the July meeting based on bottom-up, detailed planning. The information is being generated using a top-down approach. The intent is that the results will integrate reasonably well with the detailed plans being developed for the July meeting.

Deliverables, scopes of work, schedules, and priorities for additional FY 1991 work established at the February planning/budget workshop were analyzed by Battelle HEDR staff and an integrated schedule was proposed to the TSP. The integrated schedule adjusted work effort to ensure that supporting work and data are available when needed to meet milestones associated with code development and dose estimation.

Extensive lists of Hanford-Site-originated documents have been prioritized by the TSP for declassification. An additional certified declassifier has been requested to assist in declassifying the documents in a timely manner.

Planned Work for the Next Three Months

- send the remaining Phase I reports, with TSP comments addressed, to the TSP for final approval
- revise task plans based on TSP-approved activities for the remainder of FY 1991
- restructure atmospheric code to be consistent with the overall dose assessment code
- prepare design specifications for revised code
- complete report on air model variability and send to TSP for review
- complete report on documentation of Phase I iodine-131 releases and send to the TSP for review
- complete wind field modeling white paper and send to the TSP for review
- issue revised QA Plan to include project-specific data quality objectives
- complete, with TSP assistance, the prioritized list of Hanford-Site-originated classified documents that may be of use to the project and continue declassifying them
- work with the IAEA Coordinated Research Program to validate portions of the HEDR model and obtain independent estimates of certain doses.

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 and subtask, showing labor and non-labor dollars expended. Table 3 summarizes prior fiscal years' costs and budgets.

Capital Status

FY 1991 capital allocations have not yet been made.

1. ID (Contract) Number:	2. Program/Project Title:	3. Reporting Period:
DE-AC06-76RLO 1830	HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION - PNL	FEBRUARY 1991

4a. Participant Name and Adress	4b. Client Name and Address	5. Start Date
Pacific Northwest Laboratory P.O. Box 999 Richland, WA 99352	DOE-RL Richland, Washington 99352	OCTOBER 1990 6. Completion Date SEPTEMBER 1991

7. FY 91 | 8. Months

9. Cost Status

a. $ Expressed in: Thousands

b. B&R No./ Subaccount No.
12578
EW7002

c. FIN No.

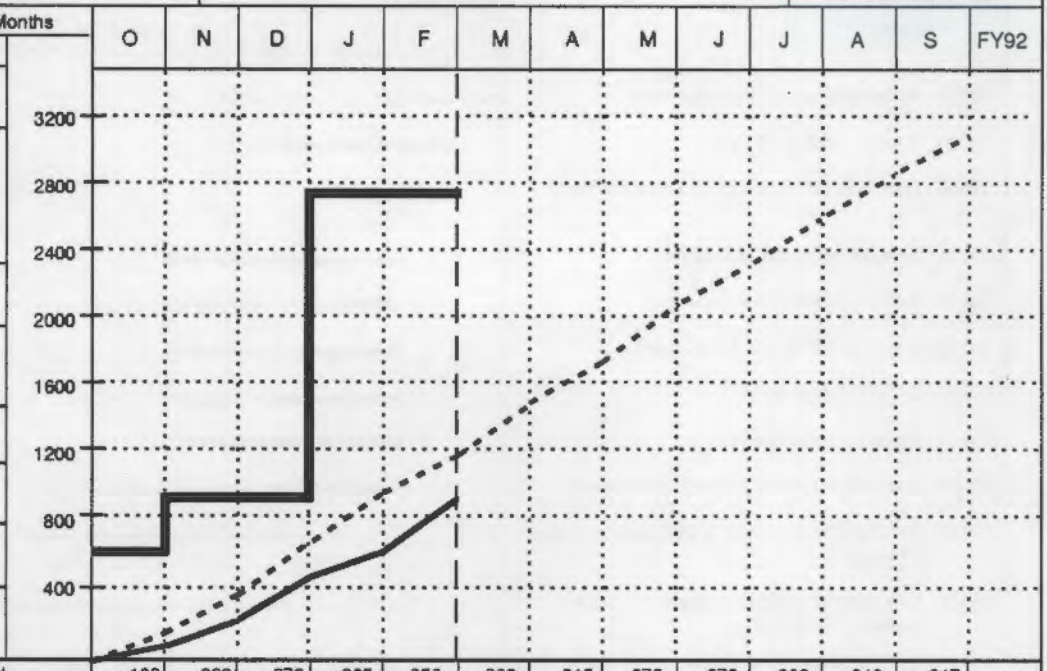
d. Actual Costs Prior Years
7,676 (a)

e. FY Budget
3,091 (b)

f. Total Budget

g. FY Funds Auth.
2,766 (c)

h. Total Funds Auth.
10,442 (d)

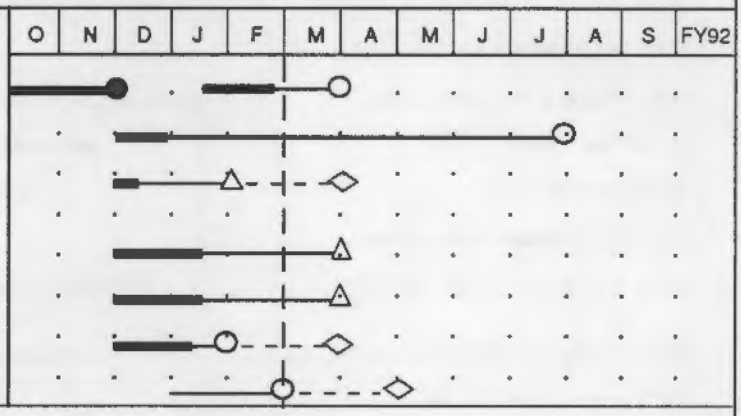


Costs		O	N	D	J	F	M	A	M	J	J	A	S	FY92
	i. Planned	163	223	273	265	256	289	315	279	273	268	240	247	
	j. Actual	121	128	188	214	237								
	k. Variance	42	95	85	51	19								
	l. Cum Planned	163	386	659	924	1180	1469	1784	2063	2336	2604	2844	3091	
	m. Cum Actual	121	249	437	651	888								
	n. Cum Variance	42	137	222	273	292								

10. Legend: Planned - - - - - Actual ——— Funds Auth. ▬▬ 90% Funds Spent ▷

(a) Actual cost prior years excludes TSP costs. (b) Projected FY budget excludes TSP budget. (c) Includes carryover and PNL's share of current fiscal year funding that has been received. (d) FY88-91; excludes capital and TSP funding.

11. Milestones:



Note:
1. Completion dates for Phase II reports are for draft versions for TSP approval, not finalization. They are indicated by circles.

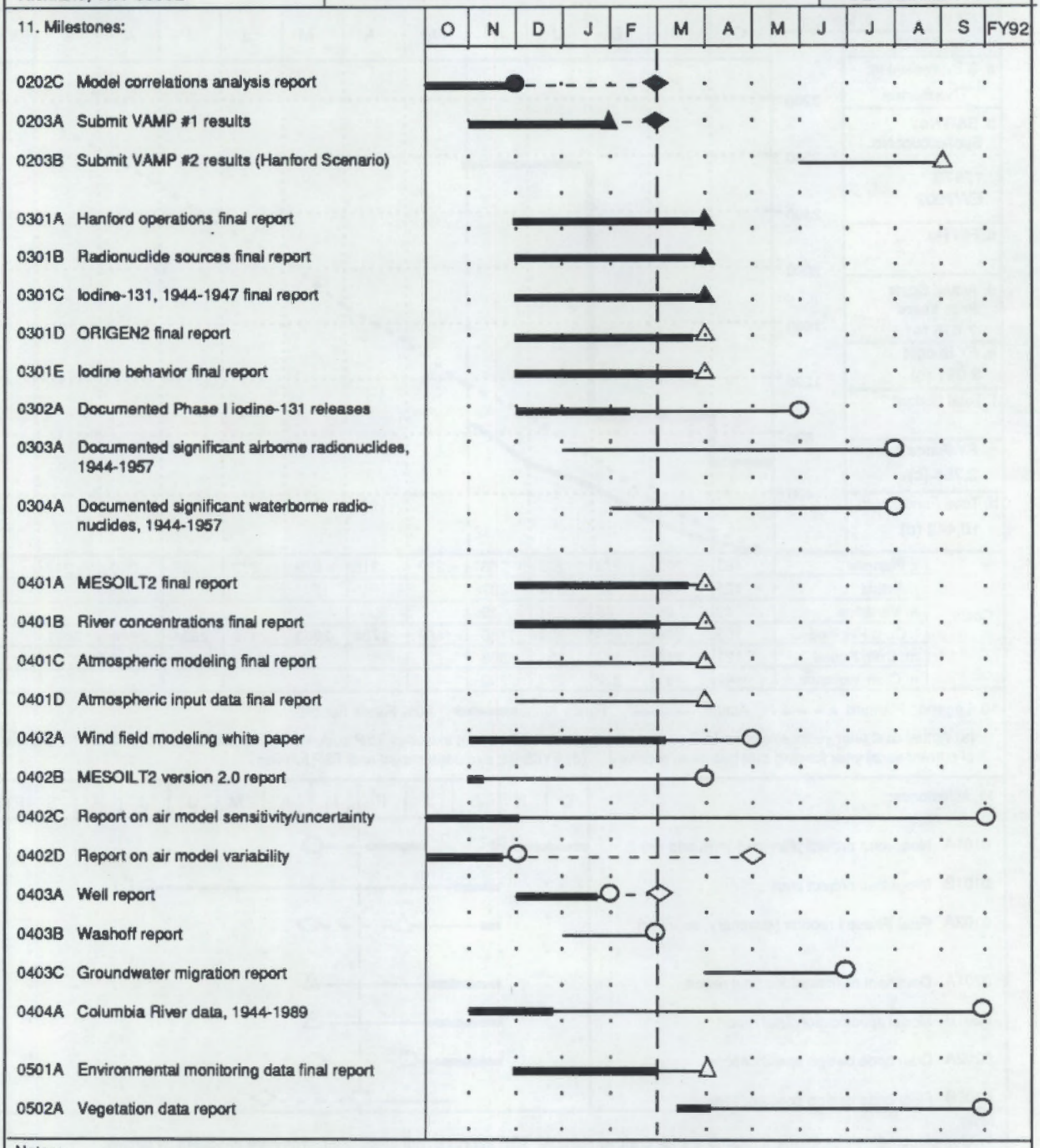
Legend: Scheduled Final △ Deviation — — ◇ To TSP for Review ○ Completed ▲ ● ◆ Time Line ——— Progress Line ▬▬ Time Now |

12. Name/Signature of Participants Prog/Proj Manager & Date
D. B. SHIPLER

FIGURE 2. Project Summary Report - Pacific Northwest Laboratory

1. ID (Contract) Number:	2. Program/Project Title:	3. Reporting Period:
DE-AC06-76RLO 1830	HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION - PNL	FEBRUARY 1991

4a. Participant Name and Adress	4b. Client Name and Address	5. Start Date	6. Completion Date
Pacific Northwest Laboratory P.O. Box 999 Richland, WA 99352	DOE-RL Richland, Washington 99352	OCTOBER 1990	SEPTEMBER 1991



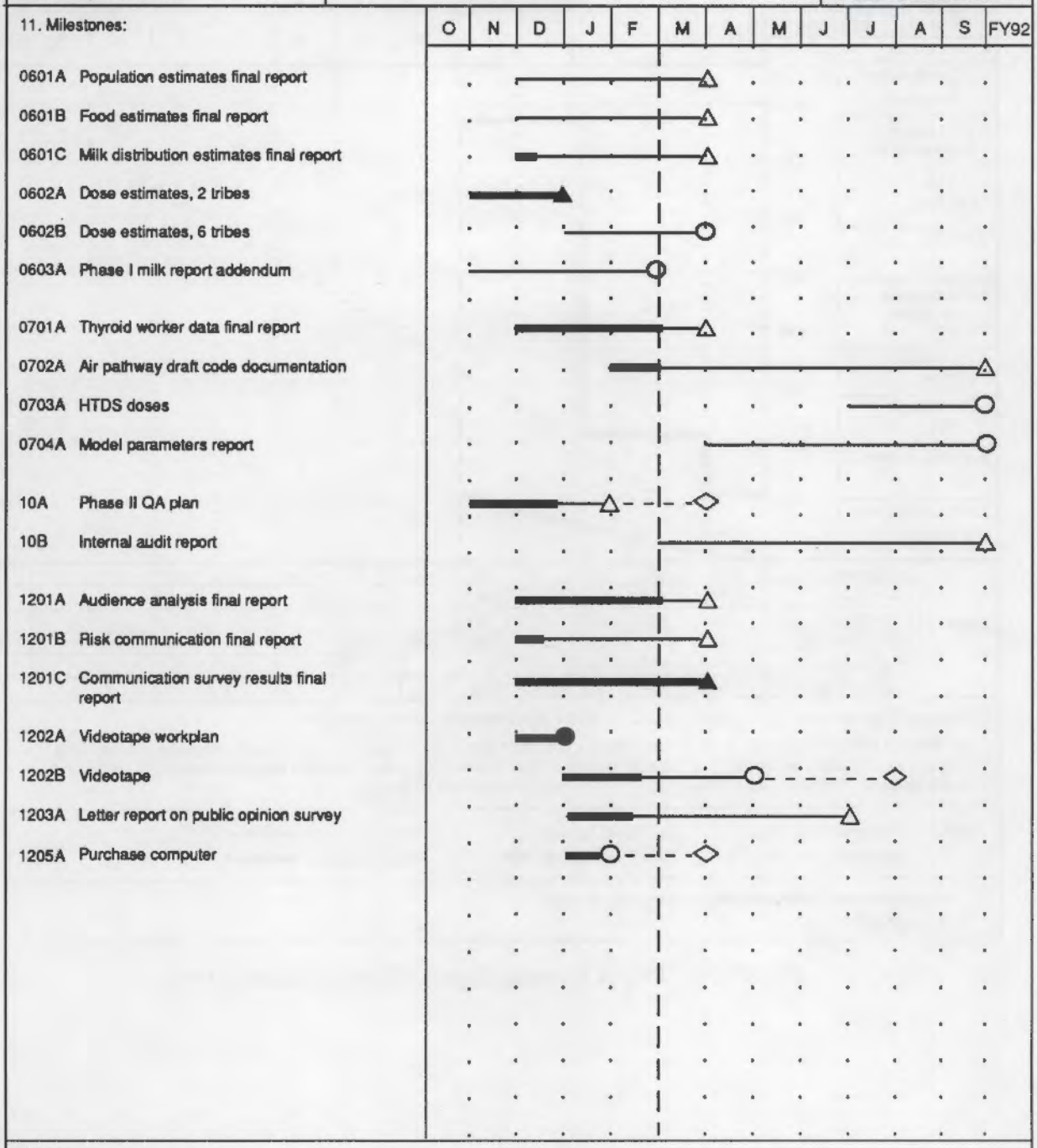
Notes:
1. Completion dates for Phase II reports are for draft versions for TSP approval, not finalization. They are indicated by circles.

Legend: Scheduled Final △ Deviation — — ◇ To TSP for Review ○ Completed ▲ ● ◆ Time Line —— Progress Line ▬▬ Time Now |

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

1. ID (Contract) Number:	2. Program/Project Title:	3. Reporting Period:
DE-AC06-76RLO 1830	HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION - PNL	FEBRUARY 1991

4a. Participant Name and Adress	4b. Client Name and Address	5. Start Date / 6. Completion Date
Pacific Northwest Laboratory P.O. Box 999 Richland, WA 99352	DOE-RL Richland, Washington 99352	5. Start Date OCTOBER 1990 6. Completion Date SEPTEMBER 1991



Notes:
1. Completion dates for Phase II reports are for draft versions for TSP approval, not finalization. They are indicated by circles.

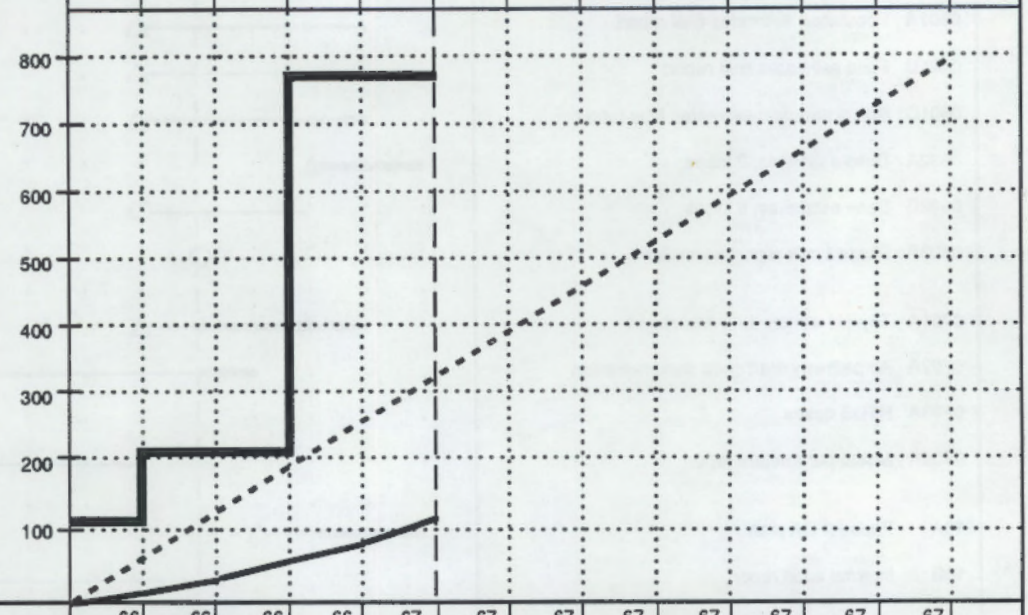
Legend: Scheduled Final △ Deviation — — ◇ To TSP for Review ○ Completed ▲ ● ◆ Time Line —— Progress Line ▬▬ Time Now |

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

1. ID (Contract) Number:	2. Program/Project Title:	3. Reporting Period:
DE-AC06-76RLO 1830	HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION - TSP	FEBRUARY 1991

4a. Participant Name and Adress	4b. Client Name and Address	5. Start Date	6. Completion Date
Pacific Northwest Laboratory P.O. Box 999 Richland, WA 99352	DOE-RL Richland, Washington 99352	OCTOBER 1990	SEPTEMBER 1991

7. FY 91	8. Months	O	N	D	J	F	M	A	M	J	J	A	S	FY92
9. Cost Status														
a. $ Expressed in: Thousands														
b. B&R No./ Subaccount No. 12578 EW7002														
c. FIN No.														
d. Actual Costs Prior Years 1504														
e. FY Budget 800 (a)														
f. Total Budget														
g. FY Funds Auth. 764 (b)														
h. Total Funds Auth. 2,268 (c)														



Costs	i. Planned	66	66	66	66	67	67	67	67	67	67	67	67	
	j. Actual (d)	14	23	9	31	40								
	k. Variance	52	43	57	35	24								
	l. Cum Planned	66	132	198	264	331	398	465	532	599	666	733	800	
	m. Cum Actual (d)	14	37	46	77	117								
	n. Cum Variance	52	95	152	187	214								

10. Legend: Planned - - - - - Actual ——— Funds Auth. ▬▬ 90% Funds Spent ▷

(a) $800K = $725K for the TSP; $40K of TSP carryover; and $35K for service assessment. (b) Includes carryover and the TSP's share of current fiscal year funding that has been received. (c) FY88-91. (d) Actual costs are booked after invoices are received and processed. Therefore, current month costs may not reflect actual work performed.

Legend: Scheduled Final △ To TSP for Review ○ Time Line ——— Time Now |
Deviation — — ◇ Completed ▲ ● ◆ Progress Line ▬▬

11. Name/Signature of Participants Prog/Proj Manager & Date
D. B. SHIPLER

FIGURE 3. Project Summary Report - Technical Steering Panel

TABLE 2. Cost Summary (Dollars in Thousands)

HEDR Project Tasks	February 1991 Labor $	February 1991 Non-Labor $ (a)	February 1991 Total $	FY 1991 to Date (October 1990 - September 1991) Labor $	FY 1991 to Date Non-Labor $ (a)	FY 1991 to Date Total $	Cum Budget	Cum Variance	TSP Approved FY Budget
Task 01 - Project Management (b)									
0101 Project Control	74	18	92	182	73	255	222	-33	554
0102 Final Phase I Reports	13	0	13	34	0	34	65	31	114
0103 Records Control	7	0	7	28	0	28	28	0	70
0104 Peer Review	2	0	2	5	0	5	6	1	14
0105 Subcontract Administration	3	0	3	8	0	8	23	15	57
0106 Project Communication Sup	6	2	8	39	3	42	41	-1	99
Subtotal Task 01	105	20	125	296	76	372	385	13	908
Task 02 - Technical Integration									
0201 Task Mgmt/Proj Integration	6	-2	4	55	20	75	39	-36	90
0202 Code Design Specification	15	1	16	56	4	60	70	10	119
0203 Model IAEA Intercompar.	5	7	12	18	2	20	20	0	51
Subtotal Task 02	26	6	32	129	26	155	129	-26	260
Task 03 - Source Terms									
0301 Task Management	1	0	1	10	1	11	10	-1	20
0302 Closure of Phase I Iodine Rel	4	0	4	8	0	8	20	12	29
0303 Airborne Isotopes not I-131	0	0	0	0	0	0	8	8	22
0304 Waterborne Isotopes (44-57)	0	0	0	0	0	0	2	2	22
Subtotal Task 03	5	0	5	18	1	19	40	21	93

TABLE 2. Cost Summary (Dollars in Thousands)

	February 1991			FY 1991 to Date (October 1990 - September 1991)					
	Labor $	Non-Labor $ (a)	Total $	Labor $	Non-Labor $ (a)	Total $	Cum Budget	Cum Variance	TSP Approved FY Budget
Task 04 - Environmental Transport									
0401 Task Management	4	1	5	25	1	26	19	-7	43
0402 Atmospheric Transport	14	1	15	63	4	67	127	60	257
0403 Groundwater Transport	6	0	6	15	0	15	26	11	59
0404 Surface Water Transport	2	0	2	18	0	18	38	20	92
Subtotal Task 04	26	2	28	121	5	126	210	84	451
Task 05 - Environmental Monitoring Data									
0501 Task Management	0	0	0	0	0	0	0	0	0
0502 Vegetation Data	0	0	0	0	0	0	0	0	41
Subtotal Task 05	0	0	0	0	0	0	0	0	41
Task 06 - Demographics, Food Consumption, & Agriculture									
0601 Task Management	2	1	3	18	2	20	16	-4	30
0602 Prelim Native American Data	8	3	11	35	-9	26	106	80	169
0603 Milk Model Refinements	0	0	0	0	0	0	22	22	22
Subtotal Task 06	10	4	14	53	-7	46	144	98	221

TABLE 2. Cost Summary (Dollars in Thousands)

	February 1991			FY 1991 to Date (October 1990 - September 1991)					
	Labor $	Non-Labor $ (a)	Total $	Labor $	Non-Labor $ (a)	Total $	Cum Budget	Cum Variance	TSP Approved FY Budget
Task 07 - Environmental Pathways & Dose Estimates									
0701 Task Management	1	0	1	14	0	14	12	-2	26
0702 Code Restructure	4	3	7	26	7	33	38	5	125
0703 HTDS Doses	0	0	0	0	0	0	0	0	39
0704 Model Parameters (c)	0	0	0	2	1	3	2	-1	33
Subtotal Task 07	5	3	8	42	8	50	52	2	223
Task 08 - Statistics									
0801 Task Management	1	0	1	19	1	20	11	-9	25
0802 Task Assistance	2	0	2	5	0	5	10	5	23
Subtotal Task 08	3	0	3	24	1	25	21	-4	48
Task 09 - Records Management	3	0	3	9	1	10	31	21	75
Task 10 - Quality Assurance	4	0	4	16	0	16	27	11	59
Task 11 - Information Resources									
1101 Task Management	1	0	1	6	0	6	5	-1	16
1102 Declassification	5	0	5	19	0	19	27	8	87
1103 Resource Identification/Avail	5	0	5	22	0	22	26	4	61
Subtotal Task 11	11	0	11	47	0	47	58	11	164

TABLE 2. Cost Summary (Dollars in Thousands)

	February 1991			FY 1991 to Date (October 1990 - September 1991)					
	Labor $	Non-Labor $ (a)	Total $	Labor $	Non-Labor $ (a)	Total $	Cum Budget	Cum Variance	TSP Approved FY Budget
Task 12 - TSP Communications Support									
1201 Task Management	1	0	1	9	2	11	17	6	39
1202 Video	0	0	0	1	1	2	22	20	29
1203 Public Opinion Survey	1	0	1	4	0	4	28	24	44
1204 TSP Com Subcom Support	1	1	2	3	0	3	7	4	19
1205 Computer & AV Support	0	0	0	0	2	2	9	7	17
Subtotal - Task 12	3	1	4	17	5	22	83	61	148
Subtotal, HEDR Project Tasks	**201**	**36**	**237**	**772**	**116**	**888**	**1,180**	**292**	**2,691**
Contingency (d)									400
Subtotal, Project Tasks Plus Contingency	**201**	**36**	**237**	**772**	**116**	**888**	**1,180**	**292**	**3,091**
Technical Steering Panel (e, f)	0	40	40	0	117	117	331	214	800
TOTAL	**201**	**76**	**277**	**772**	**233**	**1,005**	**1,511**	**506**	**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) Delayed until April 1, 1991.
(d) Budget not yet allocated.
(e) TSP costs are administered through subcontracts which are reflected as non-labor costs. Actual TSP expenses include both labor and non-labor.
(f) Final TSP invoices for FY 1990 expenses were received and processed during February 1991. The process of subtracting estimated costs and adding the actual invoiced costs for FY 1990 activities resulted in a $12K credit. This credit is reflected in the "Total $" columns for the TSP.

TABLE 3. Summary of Prior Fiscal Year Costs

Fiscal Year	Cost	Funding	Carryover(a)	Budget(b)
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.

Contents

Figures

Tables

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 0101A **- Near-Term Project Plan, due November 1990 and completed; Mid-Year Review and Planned Add-on Work, due March 1991**

- provided the TSP with a FY 1991 preliminary task plan for dose reconstruction in November 1990. TSP comments were addressed by Battelle staff and the approved task plan was issued in February 1991. After the Seattle TSP planning/budget workshop in February, a prioritized list of additional and revised activities and associated work scopes for the remainder of FY 1991, based on costs and critical path needs, was sent to TSP Chairman J. Till for review and approval. Task plans for approved and proposed FY 1991 work are being updated to reflect the results of the Seattle TSP workshop and to address data quality objectives.

Milestone 0101B **- Integrated Project Plan, due July 1991**

- prepared working materials that, once approved by the TSP, will be used as a basis for the integrated project plan. These materials, which were used in initial discussions at the Seattle planning/budget workshop, include a work breakdown structure for the entire project; key deliverables for FY 1992, 1993, and 1994; and a network of key technical activities. These materials are being revised to reflect results of the planning/budget workshop, and will be presented at the TSP meeting in April.

Milestone 0102A **- Final Phase I Reports (Summary, Air, River) - Due January 1991 and rescheduled to March 1991**

- put TSP comments in a HEDR document review record format and assigned task leaders to address each one.

Other Activities

- provided input and meeting support for the Seattle planning/budget workshop. Input included
  - a proposed process and agenda for the workshop
  - project objectives
  - a complete project work breakdown structure and list of project deliverables
  - task plans and a network of approved FY 1991 activities
  - prioritized add-on activities for FY 1991.

  Workshop support included a computer system that projected the computer monitor image onto a projector screen for audience viewing. The system was used to record the group's ideas and decisions in real time.

- as a result of working with PNL, Westinghouse Hanford Company (WHC), and DOE-RL staff, sent letters to J. Till and WHC staff in response to Till's request to preapprove TSP members to enter the 712 Building (on the Hanford Site) to review documents

- attended the public meeting in Pasco hosted by the State of Washington Department of Health. The meeting was designed to gather public input for ways to use $5 million provided by the federal government for people in Washington, Oregon, and Idaho who may have been affected by past Hanford emissions. The money must be used to disseminate information and set up health registries. D. Shipler met with D. Manders, an epidemiologist from the State of Washington, who is writing the plan.

- Responded to a Tri–City Herald reporter on questions regarding V. Nguyen (TSP member) expenses. Mailed letter to V. Nguyen informing him of Battelle's intent to provide publicly available information to media regarding his past expense reports.

- participated in the paper review for the June American Nuclear Society meeting. Twenty dose reconstruction papers--from Fernald, Hanford, DOE-RL, DOE-HQ, and the TSP--were reviewed and organized into three special sessions.

Major Problem Areas or Changes and Action Taken

The Centers for Disease Control (CDC) has requested acceleration of project planning to provide a master project schedule, key milestones,and scopes of major work elements for the TSP meeting in April. The information is needed for CDC/Battelle contracting for FY 1992. This information was planned for the July meeting based on bottom-up, detailed planning. The information is being generated using a top-down approach. The intent is that the results will integrate reasonably well with the detailed plans being developed for the July meeting.

Variance

No significant cumulative variance.

Planned Work for the Next Three Months

- finalize Phase I reports

- revise task plans based on TSP-approved activities for the remainder of FY 1991

- prepare integrated planning information to be presented at the April TSP meeting.

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 0202A* - Draft Code Design Specifications, due January 1991 and rescheduled to March 1991**

- continued work on this milestone, though not in the direction originally anticipated for the subject report:
  - began writing a prototype preliminary environmental radionuclide transport code to test the feasibility of the new dose code structure. The length of time required to run the code will be determined.
  - began evaluating alternative computer hardware and data storage procedures for the new dose code structure.
  - developed the basic environmental model to be applied at each location and time.
  - continued writing a prototype code to test the feasibility of this new air model code structure, specifically for computer execution time, data storage requirements, and data input/output structure.

  Each of these activities is vital to the development of the revised project model, but the level of detail is greater than anticipated for the design specification report originally envisioned. In March, this milestone will either be rescoped, or a simplified design specification, generic to the results of the current investigations, will be written.

***Milestone 0202C* - Model Correlations Analysis Report, due November 1990, rescheduled to February 1991, and completed**

- completed milestone; mailed this report to the TSP for review. A companion paper, "Effects of the Loss of Correlation Structure on Dose Estimates," by J. Simpson, was accepted for presentation at the June American Nuclear Society meeting.

***Milestone 0203A* - Submit VAMP Number One Results, due January 1991, rescheduled to February 1991, and completed**

- completed milestone; submitted the results computed with the HEDR Phase I model to the International Atomic Energy Agency (IAEA) in their desired format. The travel request is still pending at DOE Headquarters for participation in the Validation of Model Predictions (VAMP) Coordinated Research Meeting, March 4-8, 1991, in Vienna, Austria.

Other Activities

- met with the Coeur d'Alene Tribal Council to present the results of the dose calculation process using data from their tribal members
- participated in the Native American Working Group at a meeting in Pasco to draft work plans for the various tribes involved with the project. Initial results for a single tribe were presented to the group, with explanation of the data requirements and output limitations.

Major Problem Areas or Changes and Action Taken

The continued efforts on Milestone 0202A, code design specifications were originally anticipated to be expended on code development. The efforts are necessary and, in general, were anticipated, but the current source of funding, the design specifications, was not. In March, a decision will be made whether to issue a design specification that is general enough to include the possible results of current investigations (including machine-dependencies and database structure questions) or to rescope and reschedule the milestone.

Variance

The cumulative overrun was caused by planning efforts since October 1990 that were larger than originally anticipated when spending plans for FY 1991 were formulated. Additionally, procurement and subcontract expenses for Geographic Information System support that were thought to have been billed during FY 1990 were billed during FY 1991.

Planned Work for the Next Three Months

- finalize Phase I reports
- attend Native American Working Group meetings
- prepare code design specifications for the Phase II computational model
- continue coordinating efforts with thyroid disease study personnel
- work with the IAEA Coordinated Research Program (VAMP) to validate portions of the HEDR model and obtain independent estimates of certain doses.

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

***Milestones 0301A, B, C, D, and E* - Phase I Final Reports, due March 1991, and completed 0301A, B, and C**

- forwarded three of the five revised documents to the TSP for final signature (0301A, B, and C).
- revised "Uncertainties in Source Term Calculations Generated by the ORIGEN2 Computer Code for Hanford Production Reactors," (Milestone 0301D), to address TSP comments; report is in final review. Addressed additional peer review comments on "Fission Product Iodine During Early Hanford-Site Operations" (Milestone 0301E).

Other Activities

- submitted an American Nuclear Society summary for an invited paper. The subject is the estimation of iodine-131 releases in the 1944-1947 Phase I time period.
- received direction at the Seattle planning/ budget workshop to add a source term work activity, construction of an airborne release model, which will be planned and scoped for presentation to the TSP at the April meeting.

Major Problem Areas or Changes and Action Taken

Progress on Task 0302, Phase I Closure of Iodine-131 Releases, was delayed as a result of other HEDR activities. There should be no impact on milestones.

The start of Tasks 0303, Significant Airborne Releases 1944-1957, and Task 0304, Significant Waterborne Releases 1944-1957, was delayed pending TSP approval of the revised task plans which include additional requirements mandated by project data quality objectives. These requirements determine how the literature searches, which are the main substance of the tasks, will be conducted. The delay will not yet impact the task milestone schedules.

Variance

The cost underrun was caused by a higher-than-expected level of effort in planning and scoping activities, document revisions, and TSP meeting attendance, all of which are funded from Task 01. A delay in the start of Tasks 0303 and 0304 also contributed to the underrun.

Planned Work for the Next Three Months

- finalize Phase I reports
- continue work on Task 0302 (Iodine Closure)
- begin work on Tasks 0303 (Significant Airborne Releases) and 0304 (Significant Waterborne Releases).

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 0401A **- MESOILT2 Final Report, due March 1991**

- addressed TSP comments and forwarded the report to the HEDR Project Office for processing. The Project Office put the Battelle responses to TSP comments into Document Review Record format and provided the revised version to the author for checking.

Milestone 0401B **- River Concentrations Final Report, due March 1991**

- addressed TSP comments and forwarded the report to the HEDR Project Office for processing. Responses were put into Document Review Record format.

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

- completed draft portions of the white paper. Continued to work on implementing the code received from the University of Kentucky. Also discussed methods of evaluating the effects of changes in the wind field model in MESOILT2 with HEDR staff B. Napier and J. Simpson.

Milestone 0402B **- MESOILT2 Version 2.0 Report, due March 1991**

- continued revision of the MESOILT2 code. Modifications to the code and the schedule for completion of the modifications were discussed at the TSP planning/budget workshop in Seattle.

Milestone 0402C **- Report on Air Model Sensitivity/Uncertainty, due September 1991**

- received assistance from Task 08 (Statistics) on how to evaluate alternative wind field models.

Milestone 0402D **- Report on Air Model Variability, due November 1991 and rescheduled to April 1991**

- rescheduled milestone to April to make the draft report more reader-friendly.

Milestones 0403A, B, and C **- Well Report, Washoff Report, and Groundwater Migration Report, due January, February, and June 1991**

- As a result of the Seattle planning/budget workshop, these milestone reports are expected to be combined and expanded into a single document due December 1991. The draft text for the well report is complete and an outline for the washoff report was discussed with S. Davis of the TSP.

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

- continued the inventory and review of available literature and databases to a limited extent. Project planning work was the priority addressed during February. Work on the subtask files was further delayed until March, but does not impact any milestones.

Major Problem Areas or Changes and Action Taken

Changes in atmospheric transport work (Subtask 0402) involve acceleration of the work on the atmospheric model and meteorological database. The changes will be formally considered at the April TSP meeting.

Milestone 0403A, Well Report, was not delivered to TSP because of scope changes identified during the planning/budget workshop in Seattle. These changes are documented in a letter from P. Klingeman, chairman of the TSP Environmental Transport Subcommittee. At the planning meeting, TSP chairman J. Till suggested that the three scheduled milestones for the Groundwater Transport Subtask be combined into a single, comprehensive document. This document will provide an overall perspective on the groundwater pathway that is presently not included. In addition, Till suggested that dosimetry be included in the single report. These changes in scope are being resolved by discussions with S. Davis and P. Klingeman of the TSP and will be finalized at the April, 1991 TSP meeting.

Supplemental funding is being considered to complete FY 1991 work for Milestone 0404A, Columbia River Data, 1944-1989.

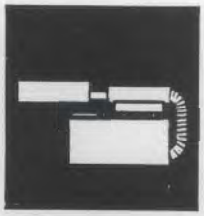
Variance

Cost underruns were caused by

- diversion of effort to preparation for the TSP planning/budget workshop, which is funded from Task 01
- incompletion of the new air model code structure, which prevented conducting sensitivity and uncertainty analyses on the new code.

Planned Work for the Next Three Months

- finalize Phase I reports
- continue evaluation of wind field interpolation methods; restructure atmospheric code to be consistent with the overall dose assessment code
- complete Milestone 0402D (Report on Air Model Variability) and send to TSP for review
- complete and document the calculations for washoff report
- initiate work on groundwater migration report
- continue literature and database review for Columbia River transport of radionuclides
- receive assistance from Task 08 (Statistics) on evaluation of alternative computer hardware and data storage procedures for the new dose code structure to ensure statistical computational needs are met
- conduct sensitivity and uncertainty analyses



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

Milestone 0501A **- Environmental Monitoring Data Final Report, due March 1991**

- completed TSP comment resolution and submitted report for final internal review.

Other Activities

- discussed individual work assignments, funding and milestones for the Vegetation Data Task (0502); work will be initiated in full during March. Subcontract arrangements are being pursued to ensure staff continuity on critical aspects of the data uncertainty evaluation.
- Technical activities are conducted in support of Task 04, Subtask 0404, and are reported under that section.

Major Problem Areas or Changes and Action Taken

None.

Variance

No significant cumulative variance.

Planned Work for the Next Three Months

- finalize Phase I report on environmental monitoring data
- collect and inventory additional Columbia River monitoring data
- collect and inventory additional vegetation data and initiated evaluation of assumptions used in determining uncertainty factors.

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 0601C **- Milk Distribution Estimates Final Report, due March 1991**

- began addressing TSP comments

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

- extended the contract for the Coeur d'Alene tribe
- presented information on the dose model to the Kalispel and Coeur d'Alene tribal councils.

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

- received demographic data from the Spokane tribe
- extended the contract for the Umatilla tribe.

Other Activities

- submitted three papers for presentation at the American Nuclear Society June meeting:
  - "Native American Food Consumption Data Collection" by C. Bruneau
  - "Developing Population Estimates for Dose Reconstruction Projects" by D. Beck
  - "Developing Milk Industry Estimates for Dose Reconstruction Projects" by D. Beck.

  All were accepted.

Major Problem Areas or Changes and Action Taken

Completion of Milestone 0602B is dependent upon receipt of data from the six remaining tribes. It is expected that the data may not be received until late FY 1991, resulting in delaying the Milestone to FY 1992.

Work on Task 0603, Milk Model Refinements, has not yet begun. Plans for carrying out this work will be presented to the TSP at the April public meeting.

Variance

The cost underrun resulted from a delay in tribal work and a delay in the start of Task 0603, Milk Model Refinements. We are waiting for the Native American Working Group of the TSP to complete development of a process for completing the data collection.

Planned Work for the Next Three Months

- finalize Phase I reports
- begin work on Task 0603.

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

Milestone 0701A **- Thyroid Worker Data Final Report, due March 1991**

- began addressing TSP comments.

Milestone 0702A **- Air Pathway Draft Code Documentation, due September 1991**

- further modified the Native American version of the Phase I air pathway code to include a new human ingestion pathway: breastfeeding infants. This pathway is modeled by calculating the radionuclide ingestion uptake by nursing mothers, multiplying by a transfer factor, and then determining the infant uptake based on ingestion rate data for breastfeeding infants. This pathway can be applied to any population group, given the appropriate food consumption data. Other, recent, model improvements include the calculation of concentrations in animal products (in addition to milk) and the resulting human ingestion doses from consumption of beef, venison, poultry, and eggs, and the addition of a soil ingestion pathway to the computation of concentrations in animal products.

The design of a bench-scale test program to estimate database access times and run times for the dose calculation portion of the Phase II model has begun.

Other Activities

- Additional 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

Milestones 0703A (HTDS Doses), and 0704A (Model Parameters Report) are being reevaluated as a result of the TSP planning/budget workshop in Seattle. They will likely be rescheduled to FY 1992.

Variance

No significant cumulative variance.

Planned Work for the Next Three Months

- finalize Phase I report on worker thyroid data (Milestone 0701A)
- support Task 02 in developing design specifications for Phase II code (Milestone 0202A)
- begin restructuring and documenting changes to the air pathway draft code. This includes continuing the development of the prototype bench-scale test program to evaluate database accesses and dose calculation run times. Complete the first draft of the Phase II air pathway code design specification document (Milestone 0702A).

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

Task Assistance (0802)

- met with leader of Task 06 (Demography, Food Consumption and Agriculture) to discuss data quality objectives for that task
- reviewed a revised draft FY 1991 work plan for Task 03 (Source Terms) that included new material on data quality objectives.

Other Activities

- conducted activities in support of Milestones 0202C, 0402C, and 0402D, as reported under Tasks 02 and 04
- peer reviewed the abstract of the paper "Effects of the Loss of Correlation Structure on Dose Estimates" to be presented at the June American Nuclear Society meeting
- peer reviewed the draft document "Preliminary Uncertainty and Sensitivity Analysis of the Conversion Factor for Historic Iodine-131 Gross Beta Vegetation Measurements."

Major Problem Areas or Changes and Action Taken

- presented a request at the Seattle planning/budget workshop for funding from the FY 1991 reserves to support task leaders in developing data quality objectives and in publishing a report on uncertainty analysis of radiation concentrations measured in vegetation. Awaiting final TSP approval.

Variance

The cumulative cost overrun was caused by greater-than-expected planning costs during the first quarter of FY 1991. Planning budgets are expected to be increased as a result of the planning/budget workshop and will be funded in Task 01.

Planned Work for the Next Three Months

- continue to perform and document planning and statistical analyses/assistance as required for Milestones 0202C (model correlations analysis report), 0402C (report on air model sensitivity/uncertainty), and 0402D (report on air model variability)
- work with task leaders to provide statistical assistance for their milestones and to develop data quality objectives
- present a seminar at the Center for Quantitative Sciences at the University of Washington in March on statistical aspects of the HEDR Project
- assist Task 04 (Environmental Transport) to evaluate wind field 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

- received project records from the HEDR Project Office (244 records/1,137 pages)
- verified, processed, and stored project records (273 records/691 pages)
- transferred one package of records to the DOE-RL Public Reading Room (18 records/329 pages).

Major Problem Areas or Changes and Action Taken

None.

Variance

A cost underrun occurred because new staff are still in training. Work is expected to increase later in the year.

Planned Work for the Next Three Months

- continue processing incoming project records
- continue transferring processed project records to the DOE-RL Public Reading Room
- 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

Milestone 10A **- Phase II QA Plan, due January 1991 and rescheduled to March 1991**

- completed the draft of the revised HEDR QA Plan (OHE-3, Revision 4) and submitted it to the project manager and key task leaders for review
- continued reviewing revised task plans to include project-specific data quality objectives that will be included as part of FY 1991 planning.

Major Problem Areas or Changes and Action Taken

Milestone 10A (Phase II QA Plan) has been drafted and is currently undergoing internal HEDR review. This QA Plan will be issued with the revised task plans in March 1991.

Variance

The cost underrun was caused primarily by 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 the Next Three Months

- issue revised QA Plan and updated task plans to include project-specific data quality objectives
- issue remaining HEDR procedure: HEDR-TP-3, "HEDR Documentation of Critical Decisions."

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

Declassification (1102)

- received from N. J. Germond, TSP, the second and final prioritized listing of about 2000 classified documents that the TSP and interested public identified as potentially of interest to the HEDR Project. A special database has been established to track declassification actions on these documents. Approximately 550 document titles were deleted because they are currently unclassified. The multiple requests now number 369, and there are 1,072 single requests. During the month, M. Robkin, TSP, spent three days on site reviewing the multiple-request documents and identifying those containing information of use to HEDR. Approximately 330 have been reviewed and about 67% identified for declassification review.
- declassified 92 Hanford Site-originated documents of potential interest/use to the project. The majority of these documents came from the TSP-prioritized listing. Appendix A and its addendum identify the specific documents.
- worked with M. Robkin, TSP, to review classified documents of potential use to the project.

Resource Identification and Availability (1103)

- added new citations to the tracking system that now contains nearly 4200 publications
- provided the DOE-RL Public Reading Room with 42 documents of potential interest/use in the HEDR Project. A title listing of these reports is given in Appendix A.
- filled information requests from TSP members B. Shleien and M. Robkin, as well as several HEDR task members
- received word that General Electric Company has tabled a response to the HEDR request to document the existence or nonexistence of Hanford originated documents (1946-1964) at any of their corporate locations, pending the outcome of class action suits involving information of this nature
- developed a small collection of documents to support the results of an aerial radioactivity survey of the Hanford Site by the U.S. Geological Survey in 1959. This information will be used by the TSP to respond to an inquiry they received at a public meeting in Prosser in January.

- provided consultation and reference assistance to A. Blasewitz, consultant on separations plant operation and technology, during a day-long visit at the Hanford Technical Library. Numerous HEDR-related documents were later supplied to A. Blasewitz.

Other Activities

- submitted an invited summary entitled, "Providing Information Resources for the Hanford Environmental Dose Reconstruction Project" to the ANS for presentation at the June meeting.

Major Problem Areas or Changes and Action Taken

We are in the process of acquiring part-time services of a certified declassifier to assist in declassification of documents deemed to be of use to the Project.

Variance

The cost underrun will be used for time necessary to train a new information specialist.

Planned Work for the Next Three Months

- with the assistance of M. Robkin, complete the prioritized list of Hanford-Site-originated classified documents that may be of use to the project
- from the prioritized list of Hanford-Site-originated classified documents, declassify with or without deletions, those documents reviewed by M. Robkin and identified as being of use to the project
- continue to add input to the information resources tracking database and provide documents to the DOE-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
- 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 that address radioactive materials released to the environment during the years from reactor startup through 1957
- 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, 1944-1957.

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

Milestone 1201A **- Audience Analysis Final Report, due March 1991**

- addressed TSP comments and forwarded the report to the HEDR Project Office for processing. The Project Office put the Battelle responses into Document Review Record format.

Milestone 1201C **- Communication Survey Results Final Report, due March 1991 and completed**

- sent this report to the TSP for final approval

Milestone 1202B **- Videotape, due April 1991 and rescheduled to July 1991**

- presented to the TSP Communications Subcommittee demonstration videos illustrating capabilities of six northwest video production houses
- distributed the latest draft of the video workplan to all Communications Subcommittee members for review and comment.

Milestone 1203A **- Letter Report on Public Opinion Survey, due June 1991**

- provided survey purpose, goals and candidate questions to all Communications Subcommittee members for review and comment. Comments are due back by early March.

Milestone 1205A **- Purchase Computer, due January 1991 and rescheduled to March 1991**

- submitted purchase request to PNL Procurement for purchase of computer. Equipment will be provided to the Washington Department of Ecology (WDOE) for use on HEDR Project communications activities.

Other Activities

- attended a TSP Communications Subcommittee meeting in Portland to discuss TSP videotape production, communications assessment survey, poster development, newsletter, and declassification status
- presented a draft poster layout to the Communications Subcommittee for initial review. Such a poster would be distributed to various locations within communities where TSP presentations are scheduled. It would provide information about the study, invite interested parties to attend public meetings, and identify the toll-free comment and information number. No funding is presently earmarked for this activity; however, action may be taken if available funds result from other underrun activities.
- attended Washington State Department of Health meeting at Columbia Basin College. The public meeting invited interested individuals to provide comments on the development of a joint Washington, Oregon

individuals to provide comments on the development of a joint Washington, Oregon and Idaho plan for residents who may have been exposed to radiation from past Hanford operations. Development funds have been provided by Congress under the National Defense Authorization Act for FY 1991.

- provided an orientation and Hanford Site tour to D. Manders, Washington State Department of Health. Ms. Manders will be instrumental in developing the plan mentioned above. Discussed HEDR Project objectives and activities and how they might relate and complement the plan she is developing.

- reviewed and commented on upcoming TSP newsletter articles and provided accompanying photo.

Major Problem Areas or Changes and Action Taken

The TSP videotape (Milestone 1202B) was delayed during February, awaiting TSP Subcommittee action.

The communications assessment survey (Milestone 1203A) was delayed during February, awaiting TSP Subcommittee action.

Computer purchase (Milestone 1205A) was delayed pending preparation of PNL purchase requisition. The requisition has been completed and submitted to PNL Procurement for processing.

Variance

The cumulative cost underrun resulted from delays in various activities identified above.

Planned Work for the Next Three Months

- finalize Phase I reports
- support video development
- support communications assessment survey preparation
- provide audiovisual support for the April TSP public meeting.

Appendix A

Hanford Site Originated Documents of Potential Interest/Use to the HEDR Project - Placed in the DOE/RL Public Reading Room During February 1991

Appendix A

Hanford Site Originated Documents of Potential Interest/Use to the HEDR Project - Placed in the DOE/RL Public Reading Room During February 1991

•	DUH-47	Proposed Program for Study of Stack Dispersion at Hanford. 5 p.	12/31/43
•	DUH-90	Discussions at HEW January 24 & 25, 1944, Concerning Stack Dispersion Studies. 8 p.	01/29/44
*	HAN-45762	200 Area Daily Logs Vol.2: 6-3-46 to 12-31-46. 162 p.	12/31/46
•	HAN-45807	200 Area Monthly Reports 1948. 126 p.	12/31/48
•	HW-3-2758	200 Area Reports for Technical Progress Letters 7-5-45 through 12-31-45. 169 p.	01/04/26
•	HW-7-703-DEL	HEW Operating Standards - 100, 200, & 300 Areas. 409 p.	07/26/46
•	HW-7-5362-DEL	Hanford Engineer Works Monthly Report October 1946. 167 p.	11/18/46
•	HW-7-5505-DEL	Hanford Engineer Works Monthly Report November 1946. 169 p.	12/18/46
•	HW-9761	Table of Constants of the Repeating Functions for Iodine & Xenon Calculation. 300 p.	05/06/48
	HW-10067	H.I. Div. Monthly Rpt on 200 Areas & Assoc Labs for Month of May, 1948. 5 p.	06/07/48
	HW-10396	H.I. Div. Monthly Rpt on 200 Areas & Assoc Labs for Month of June, 1948. 6 p.	06/30/48
	HW-10702	H.I. Div. Monthly Rpt on 200 Areas & Assoc Labs for Month of July, 1948. 6 p.	07/30/48
	HW-11006	H.I. Div. Monthly Rpt on 200 Areas & Assoc Labs for Month of August, 1948. 7 p.	08/31/48

• Declassified by Secretary of Energy Watkins' directive
* Declassified 1990-1991 by earlier guidance

HW-11244	H.I. Div. Monthly Rpt on 200 Areas & Assoc Labs for Month of September, 1948. 5 p.	09/30/48
HW-11530	H.I. Div. Monthly Rpt on 200 Areas & Assoc Labs for Month of October, 1948. 6 p.	12/31/48
HW-12390	H.I. Div. Monthly Rpt on 200 Areas & Assoc Labs for Month of January, 1949. 6 p.	01/31/49
HW-12733	H.I. Div. Monthly Rpt on 200 Areas & Assoc Labs for Month of February, 1949. 7 p.	02/28/49
HW-12959	H.I. Div. Monthly Rpt on 200 Areas & Assoc Labs for Month of March, 1949. 9 p.	03/31/49
HW-13329	H.I. Div. Monthly Rpt on 200 Areas & Assoc Labs for Month of April, 1949. 8 p.	04/29/49
HW-13586	H.I. Div. Monthly Rpt on 200 Areas & Assoc Labs for Month of May, 1949. 7 p.	05/31/49
HW-13852	H.I. Div. Monthly Rpt on 200 Areas & Assoc Labs for Month of June, 1949. 7 p.	06/30/49
HW-14087	H.I. Div. Monthly Rpt on 200 Areas & Assoc Labs for Month of July, 1949. 7 p.	07/29/49
HW-14392	H.I. Div. Monthly Rpt on 200 Areas & Assoc Labs for Month of August, 1949. 7 p.	08/31/49
HW-14725	H.I. Div. Monthly Rpt on 200 Areas & Assoc Labs for Month of September, 1949. 8 p.	10/12/49
HW-15011	H.I. Div. Monthly Rpt on 200 Areas & Assoc Labs for Month of October, 1949. 9 p.	11/08/49
HW-17191	H.I. Div. Monthly Rpt on 200 Areas & Assoc Labs for Month of February, 1950. 8 p.	03/13/50

• Declassified by Secretary of Energy Watkins' directive
* Declassified 1990-1991 by earlier guidance

	HW-17398	Hanford Works Separations Section Operating Standards. 62 p.	10/15/51
•	HW-17776	Status Report on Instruments and Techniques for the Measurement of Radioactive Liquids. 15 p.	05/11/50
	HW-23409	Separations Sec. Radiation Monitoring Monthly Rpt January, 1952. 7 p.	02/01/52
	HW-26121	Separations Sec. Radiation Monitoring Monthly Rpt October, 1952. 7 p.	11/04/52
•	HW-28470-DEL	Evaluation Study of Selected Hanford Type Reactors. 28 p.	07/15/53
	HW-29214	Separations Sec. Radiation Monitoring Monthly Rpt August, 1953. 7 p.	09/01/53
	HW-29517	Separations Sec. Radiation Monitoring Monthly Rpt September, 1953. 7 p.	12/02/53
	HW-38010	Separations Sec. Radiation Monitoring Monthly Rpt June, 1955. 9 p.	07/13/55
*	HW-38629	"Low Exposure" Slug Failures: Associated Factors & Hypothesized Causes. 13 p.	07/29/55
*	HW-38781	History of Separations Plant Capacities. 6 p.	08/24/55
*	HW-40371	Preliminary Appraisal of Meteorological Aspects of Disposal of Reactor Effluent Through an Inland Lake System. 17 p.	12/08/55
*	HW-41006	Investigation Committee Report on D-Reactor Incident of 1-6-56. 8 p.	01/19/56
•	HW-42111	Counting Methods & Calculations Used by the Analytical Labs - Separations Section. 27 p.	03/21/56
*	HW-54225	Reactor Effluent Dilution Factors. 7 p.	12/23/57
	HW-SA-2065	Zinc-65 in Marine Organisms along the Oregon & Washington Coasts. 4 p.	06/09/61
	PNL-MA-580	Surface Environmental Surveillance Procedures Manual. 159 p.	03/01/90

• Declassified by Secretary of Energy Watkins' directive
* Declassified 1990-1991 by earlier guidance

ADDENDUM

These two-page documents on krypton-85 releases at Hanford were declassified in 1991 under the guidelines of Secretary of Energy Watkins' directive. They are not yet in the DOE-RL Public Reading Room in Richland, Washington. However, the data from these reports have been incorporated into HAN-56128-DEL, which is in the DOE-RL Reading Room in Richland.

These calculations were a part of the Atomic Energy Commission Department of Research and Development effort to estimate the amounts of radioactive noble gases released by Hanford operations. Noble gases such as krypton and xenon do not react with other materials; therefore, they remain in the atmosphere until they decay. Also, if the release rate exceeds the decay rate, there will be a net increase in the atmospheric content of the gas. In terms of quantity and longevity, krypton-85 (10-yr half-life) is, by far, the most significant radioactive noble gas released during reprocessing operations.

HAN-35381	Data on Krypton-85 Release at Hanford	01/04/51
HAN-35550	"	01/19/51
HAN-35851	"	02/06/51
HAN-36082	"	02/20/51
HAN-36265	"	03/05/51
HAN-36821	"	04/04/51
HAN-36972	"	04/18/51
HAN-37275	"	05/04/51
HAN-37443	"	05/18/51
HAN-37736	"	06/06/51
HAN-38001	"	06/21/51
HAN-40145	"	07/10/51
HAN-40269	"	07/18/51
HAN-40549	"	08/06/51
HAN-40741	"	08/21/51
HAN-40918	"	09/06/51
HAN-41034	"	09/18/51
HAN-41279	"	10/05/51
HAN-41533	"	10/19/51
HAN-41696	"	11/06/51
HAN-41864	"	11/20/51

HAN-42084	Data on Krypton-85 Release at Hanford	12/05/51
HAN-42279	"	12/19/51
HAN-42558	"	01/05/52
HAN-42803	"	01/18/52
HAN-43102	"	02/07/52
HAN-43291	"	02/20/52
HAN-43561	"	03/05/52
HAN-43761	"	03/20/52
HAN-44002	"	04/04/52
HAN-44253	"	04/22/52
HAN-44518	"	05/05/52
HAN-44715	"	05/21/52
HAN-44997	"	06/06/52
HAN-45135	"	06/18/52
HAN-45429	"	07/07/52
HAN-45656	"	07/18/52
HAN-45988	"	08/06/52
HAN-46382	"	08/20/52
HAN-46524	"	09/06/52
HAN-46632	"	09/18/52
HAN-46938	"	10/07/52
HAN-47154	"	10/23/52
HAN-47296	"	10/28/52
HAN-47639	"	11/17/52
HAN-47813	"	11/28/52
HAN-48127	"	12/17/52
HAN-48331	"	12/31/52
HAN-48636	"	01/20/53
HAN-48790	"	02/02/53

HAN-48980	Data on Krypton-85 Release at Hanford	02/11/53
HAN-49700	"	03/27/53
HAN-49772	"	04/01/53
HAN-49928	"	04/15/53
HAN-50233	"	05/11/53
HAN-50400	"	05/21/53
HAN-50585	"	06/02/53
HAN-50765	"	06/12/53
HAN-51152	"	07/14/53
HAN-51231	"	07/22/53
HAN-51333	"	07/28/53
HAN-51740	"	08/21/53
HAN-52002	"	09/17/53
HAN-52114	"	09/25/53
HAN-52388	"	10/16/53
HAN-52439	"	10/29/53
HAN-52728	Hanford Release Calculations	11/04/53
HAN-53820	"	02/18/54
HAN-53821	"	02/16/54
HAN-53824	"	02/17/54
HAN-54038	"	03/10/54
HAN-54437	"	04/06/54
HAN-54747	"	04/29/54
HAN-55179	"	05/28/54
HAN-56239	"	09/01/54

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
Effects of the Loss of Correlation Structure on Phase I Dose Estimates	Simpson, JC	2/91	PNL-SA-191085 HEDR	Milestone 0202C	To TSP for review 2/91
Assessment of FY 1991 Scope Limitations on Out-Year Activities	Shipler, DB	12/90	PNL-7588 HEDR		To TSP 12/90
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)	PNL addressing TSP comments
HEDR Project Plan - Pre-Decisional Draft	Shipler, 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	No TSP comments
QA Audit Report of the HEDR Project-Data Traceability, A-90-15	Pratt, RC	7/90	PNL-7428 HEDR		No TSP comments

Title	Author	Date Issued	Publication No.	Additional Information	Status
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
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	Haerer, HA	12/89	PNL-6696 HEDR REV 1		TSP approved; published 12/89

Title	Author	Date Issued	Publication No.	Additional Information	Status
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
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

Title	Author	Date Issued	Publication No.	Additional Information	Status
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
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

Title	Author	Date Issued	Publication No.	Additional Information	Status
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
Process for Estimating Doses to the Coeur d'Alene Tribe	Ikenberry, TA	3/91	PNL-SA-19204 S HEDR	Presented to the Coeur d'Alene Tribal Council, February 28, 1991, Plummer, ID
Information for the HEDR Planning Workshop - 2/14-16/91	Shipler, DB	2/91	PNL-SA-19108 S HEDR	Presented at the TSP Workshop, February 14-16, 1991, Seattle, WA
Phase I Dose Estimates for the Kalispel Tribe	Ikenberry, TA	1/91	PNL-SA-19098 A HEDR	Presented to the Kalispel Tribal Council, February 5, 1991, Usk, WA
Long-Range Project Plan	Shipler, DB	1/91	PNL-SA-18949 S HEDR	Presented at the TSP mtg, Jan 11, 1991, Pasco, WA
Preliminary Response to the FY 1991 Project Plan	Shipler, DB	1/91	PNL-SA-18981 HEDR	Presented at the TSP mtg, Jan 11, 1991, Pasco, WA
Application of a Geographical Information System to the HEDR Project	Stephan, JG	1/91	PNL-SA-18958 S HEDR	Presented at the TSP mtg, Jan 11, 1991, Pasco, WA
Dose Model and Parameter Restructuring	Ikenberry, TA	1/91	PNL-SA-18957 S HEDR	Presented at the TSP mtg, Jan 11, 1991, Pasco, WA
Status of TSP Directive 89-9	Cuello, R.	1/91	PNL-SA-18962 S HEDR	Presented at the TSP mtg, Jan 11, 1991, Pasco, WA
Atmospheric Model Restructuring	Ramsdell, JV	1/91	PNL-SA-18956 S HEDR	Presented at the TSP mtg, Jan 11, 1991, Pasco, WA
Uncertainty Analysis	Simpson, JC	1/91	PNL-SA-18948 S HEDR	Presented at the TSP mtg, Jan 11, 1991, Pasco, WA
Project Model Analysis and Restructuring	Napier, BA	1/91	PNL-SA-18955 S HEDR	Presented at the TSP mtg, Jan 11, 1991, Pasco, WA

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-27904 S 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

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

Title	Author	Date Issued	Publication No.	Additional Information
Radionuclides Transported by the Columbia River	Freshley, MD	7/89	PNL-SA-17235 HEDR	Presented at the TSP mtg, July 21, 1989, Richland, WA
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	PNL-SA-16794 HEDR	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

Title	Author	Date Issued	Publication No.	Additional Information
Surface Water Transport Uncertainty	Walters, W.	1/89	PNL-SA-16572 HEDR	Presented at the HEDR Workshop on Sensitivity and Analysis, January 16-18, 1989, Pasco, WA
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

Appendix D

HEDR-Related Publications

Title	Author	Date Issued	Publication No.	Audience	Status
Developing Milk Industry Estimates for Dose Reconstruction Projects	Beck, DM	2/91	PNL-SA-19172 S HEDR	American Nuclear Society 1991 Annual Meeting	To be presented 6/91
Native American Food Consumption Data Collection	Bruneau, CL	2/91	PNL-SA-19174 S HEDR	American Nuclear Society 1991 Annual Meeting	To be presented 6/91
Developing Population Estimates for Dose Reconstruction Projects	Beck, DM	2/91	PNL-SA-19173 S HEDR	American Nuclear Society 1991 Annual Meeting	To be presented 6/91
Effects of the Loss of Correlation Structure on Dose Estimates	Simpson, JC	2/91	PNL-SA-19115 S HEDR	American Nuclear Society 1991 Annual Meeting	To be presented 6/91
Recovery and Evaluation of Historic Environmental Monitoring Data at Hanford	Dirkes, RL	2/91	PNL-SA-19119 S HEDR	American Nuclear Society 1991 Annual Meeting	To be presented 6/91
Sensitivity of the MESOILT2 Dispersion Model to Input Uncertainty	Ramsdell, JV	2/91	PNL-SA-19117 S HEDR	American Nuclear Society 1991 Annual Meeting	To be presented 6/91
Developments in Atmospheric Modeling for Dose Reconstruction at Hanford	Ramsdell, JV	2/91	PNL-SA-19116 S HEDR	American Nuclear Society 1991 Annual Meeting	To be presented 6/91
Hanford Environmental Dose Reconstruction: A Public Communications Effort Toward Credibility, Understanding and Independence	Harvey, GL	2/91	PNL-SA-19118 S HEDR	American Nuclear Society 1991 Annual Meeting	To be presented 6/91
Providing Information Resources for the Hanford Environmental Dose Reconstruction Project	Gydesen, SP	1/91	PNL-SA-19079 A HEDR	American Nuclear Society 1991 Annual Meeting	To be presented 6/91
Overview of Hanford Environmental Dose Reconstruction Project	Shipler, DB	1/91	PNL-SA-19078 A HEDR	American Nuclear Society 1991 Annual Meeting	To be presented 6/91

Title	Author	Date Issued	Publication No.	Audience	Status
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
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	Strenge, 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	PNL-SA-17586 A HEDR	Workshop on Uncertainty Analyses in Accident Consequence Assessment, Nov 13-16, 1989, Santa FE, NM	Presented 11/89

Title	Author	Date Issued	Publication No.	Audience	Status
The Identification of Terrain-Induced Circulations Using Principal Components	Skyllingstad, 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
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

Appendix E

Communications Log

Appendix E

Communications Log - February 1991

Initiated By/ Affiliation	Contact/ Affiliation	Type	Subject
B Shleien/TSP	DB Shipler/PNL	Phone	Tri-City Herald request for Nguyen invoices
JE Till/TSP	DB Shipler/PNL	Phone	Tri-City Herald request for Nguyen invoices
DB Shipler/PNL	B Shleien/TSP	Phone	Tri-City Herald request for Nguyen invoices
B Shleien/TSP	DB Shipler/PNL	Phone	Nguyen invoices, information for workshop
DB Shipler/PNL	JS Stohr/WDOE	Phone	Arrange workshop, TSP letters, Department of Health and Human Services (DHHS) organizational meeting
H Jacques/legal counsel	DB Shipler/PNL	Phone	Monitoring database information
B Shleien/TSP	DB Shipler/PNL	Phone	Tri-City Herald request for Nguyen invoices
J Stohr/WDOE	DB Shipler/PNL	Phone	Arrangements for workshop
ML Blazek/TSP	DB Shipler/PNL	Phone	Materials for workshop
B Shleien/TSP	DB Shipler/PNL	Phone	Task scopes and milestones for FY 1990
B Shleien/TSP	DB Shipler/PNL	Phone	Summary of FY 1988 progress
B Shleien/TSP	DB Shipler/PNL	Phone	Task scopes and milestones for FY 1989
B Shleien/TSP	DB Shipler/PNL	Phone	% HEDR work by categories, letter to Nguyen by Battelle, workshop expectations
B Shleien/TSP	DB Shipler/PNL	Phone	Review workshop input

Initiated By/ Affiliation	Contact/ Affiliation	Type	Subject
JE Till/TSP	DB Shipler/PNL	Phone	Tech integration, document review strategy, scope of task planning for 1991, tribe documents
M Sage/CDC	DB Shipler/PNL	Phone	Centers for Disease Control (CDC) meeting at Hanford 3/20-21
JE Till/TSP	DB Shipler/PNL	Phone	CDC input for project milestones, scope of input
M Sage/CDC	DB Shipler/PNL	Phone	Meeting date (3/20), proposal
B Shleien/TSP	DB Shipler/PNL	Phone	Input for task plans
DB Shipler/PNL	ML Blazek/TSP	Phone	Battelle/CDC meeting
WJ Roberds/Golder Associates	DB Shipler/PNL	Phone	Contract, decision input to plan
DB Shipler/PNL	RF Brich/DOE	Phone	Activity data sheets for FY 1992, DOE contact
DB Shipler/PNL	HA Haerer/NUS	Phone	NUS contract, planning work
AH McMakin/PNL	ML Blazek/TSP	Fax	TSP meeting support
R Brich/DOE	AH McMakin/PNL	cc: mail	Absence of TSP milestones in HEDR monthly report
AH McMakin/PNL	JE Till/TSP	Phone & fax	FY 1991 Project Plan
K Charlee/TSP Staff	SM Finch/PNL	Phone & fax	Agenda and rooms for TSP April meeting, Native American wkshp agreements
K Kopecky/TSP	SM Finch/PNL	Phone	Summary of invoices for CY 1990
B Shleien/TSP	SM Finch/PNL	Phone	Summary of TSP invoices for FY 1991
SM Finch/PNL	WA Bishop/TSP	Phone	Wanapum Tribe workshop agreements

Initiated By/ Affiliation	Contact/ Affiliation	Type	Subject
WA Bishop/TSP	SM Finch/PNL	Phone	Wanapum Tribe workshop agreements
J Reinhart/ Oregon Dept. of Energy	SM Finch/PNL	Phone	Payment question
K Charlee/TSP	JM Daer/PNL	Phone	Request for January 1991 monthly report
BA Napier/PNL	WA Bishop/TSP	Phone	Attendance at Coeur d'Alene tribal council meeting
M Power/TSP Staff	BA Napier/PNL	Fax	Native American Working Group draft workplan review
BA Napier/PNL	H Koehler/IAEA	Fax	VAMP information
PD Thorne/PNL	SN Davis/TSP	Fax	Watershed report outline
PD Thorne/PNL	SN Davis/TSP	Phone	Watershed report approach
AR Anderson/PNL	J Colburn/Fed. Milk Market Admin.	Phone	County-level data for 1945-50 on farm milk
AR Anderson/PNL	R McKee/USDA, Dairy Division	Phone	County-level data for 1945-50 on farm milk
AR Anderson/PNL	S Powers/Census Bureau	Phone	County-level data for 1945-50 on farm milk
B Shleien/TSP	RO Gilbert/PNL	Phone	Request for full citation for "Statistical Aspects of the Hanford Environmental Dose Reconstruction Project and the Hanford Thyroid Disease Study"
SP Gydesen/PNL	MA Robkin/TSP	Phone	Robkin's visit to Richland on 2/11-12
NJ Germond/TSP	SP Gydesen/PNL	Phone	Status of declassification actions
B Shleien/TSP	PM Cleavenger/PNL	Phone	Request for information from PNL journal collection

Initiated By/ Affiliation	Contact/ Affiliation	Type	Subject
G Kuster/VTR Productions	GL Harvey/PNL	Phone	Video production status
M DeCesare/ Rocky XL Productions	GL Harvey/PNL	Phone	Video production status
ML Blazek/TSP	GL Harvey/PNL	Phone	Communications assessment survey
K Niles/ODOE	GL Harvey/PNL	Phone	Video production status and communications assessment survey
JS Stohr/WDOE	GL Harvey/PNL	Phone	Purchase of computer for WDOE HEDR use
JV Ramsdell/PNL	AH Murphy/TSP	Phone & fax	Atmospheric model restructuring and task revision

Distribution

No. of Copies

OFFSITE

18 Technical Steering Panel

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

W. A. Bishop
2503 Wedgewood Court SE
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
Bldg. 11
University of Arizona
Tucson, AZ 85721

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

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

No. of Copies

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

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

A. H. Murphy
c/o Climate Analyses Center
National Weather Service, NOAA
W/NMC51, WWB, Room 604
Washington, DC 20233

V. Nguyen
EWA, Inc.
133 1st Ave. N.
Minneapolis, MN 55401

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
Rt. 1, Box 139H
Elysian, MN 56028

No. of Copies

B. Shleien
2421 Homestead Drive
Silver Springs, MD 20902

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

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

D. E. Walker, Jr.
c/o P. Arroyo
2041 Walnut St.
Boulder, CO 80302

2 DOE Office of Scientific and Technical Information
Technical Information Center
P.O. Box 62
Oak Ridge, TN 37830

M. A. Andrews
Canadian Embassy
501 Pennsylvania Ave. N.W.
Washington, DC 20001

B. Brooks, EH-421
Department of Energy
Room J-112
Germantown, MD 20545

H. Burgess
General Electric Nuclear Energy
175 Curtner Ave.
Mail Code 822
San Jose, CA 95125

18 K. CharLee
Office of Nuclear Waste Mgmt.
Department of Ecology
99 South Sound Center
Mail Stop PV-11
Olympia, WA 98504

No. of Copies

T. Conner
W. 2208 First Ave.
Spokane, WA 99204

L. P. Duffy, EM-1
Department of Energy
Forrestal Bldg. Room 7A-049
1000 Independence Ave.
Washington, DC 20585

J. Erickson
Washington State Dept. of Health
LE-13
Olympia, WA 98504-0095

A. Fingeret, GC-22
Department of Energy
Forrestal Bldg. Room 6H-087
1000 Independence Ave.
Washington, DC 20585

J. V. Flett
Spokane Business Council
P.O. Box 100
Wellpinit, WA 99040

K. Gebbie, Secretary
Washington Dept. of Health
MS ET-21
Olympia, WA 98504

L. George, Chairman
Tribal Council
Confederated Tribes and Bands of the Yakima Indian Nation
P.O. Box 151
Toppenish, WA 98948

H. A. Haerer
NUS Corporation
430 Broadmoor
Richland, WA 99352

G. J. Hardcastle, EH-222
Department of Energy
Forrestal Bldg. Room 3G-089
1000 Independence Ave.
Washington, DC 20585

No. of
Copies

C. H. Hayes
Nez Perce Tribal Exec Committee
P.O. Box 305
Lapwai, ID 83540

A. P. Hull
Safety & Environmental
Protection Division
Bldg. 535A
Brookhaven National Laboratory
Upton, NY 11973

Z. Jackson, Chairman
Tribal Council
Confederated Tribes of the
Warm Springs Reservation
P.O. Box C
Warm Springs, OR 97761

L. D. Jecha, M.D., M.P.H.
District Health Officer
Benton-Franklin District Health Dept.
506 McKenzie St.
Richland, WA 99352

L. Kaplan
711 N. 68th St.
Seattle, WA 98103

K. J. Mahoney
BDM International, Inc.
12850 Middlebrook Rd.
Suite 3000
Germantown, MD 20874

D. B. Manders
Chronic Disease Epidemiology
Dept. of Health
MS EY-12
1408 State St.
Olympia, WA 98504

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

No. of
Copies

M. McHugh
Colorado Department of Health
P.O. Box 7302
Crescent Branch Station
Golden, CO 80403

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

J. D. Mulder
Public Health Liaison to EPA
U.S. EPA
1200 Sixth Ave.
Seattle, WA 98101

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

G. Nenema, Chairman
Kalispel Business Council
P.O. Box 39
Usk, WA 99180

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

G. W. Passmore, Director
Colville Confederated Tribes
P.O. Box 150
Nespelem, WA 99155

E. H. Patawa, Chairman
Board of Trustees
Confederated Tribes of the
Umatilla Indian Reservation
P.O. Box 638
Pendleton, OR 97801

No. of Copies

D. Phalen
EPA Region 10, MS HW 117
1200 Sixth Avenue
Seattle, WA 98101

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

M. Schulman, ER-70
Department of Energy
Room F-207
Germantown, MD 20585

E. Schumacher
The Seattle Times
Fairview Ave N. & John Street
P.O. Box 70
Seattle, WA 98111

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

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

J. Smith
Centers for Disease Control
1600 Clifton Rd.
Atlanta, GA 30333

J. S. Smith
Bureau of Preventive Medicine
Idaho Dept. of Health & Welfare
450 W. State Street
Boise, ID 83720

No. of Copies

E. Stensgar, Chairman
Coeur d'Alene Tribal Council
Plummer, ID 83851

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

J. C. Tseng, EM-35
Department of Energy
Forrestal Bldg. Room 7A-075
1000 Independence Ave.
Washington, DC 20585

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

A. Wallo, EH-232
Department of Energy
Forrestal Bldg. Room GA-076
1000 Independence Ave. SW
Washington, DC 20585

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

ONSITE

1 Hanford Environmental Health Foundation

S. E. Dietert H1-03

2 Westinghouse Hanford Company

G. D. Carpenter B2-16
D. E. Wood H4-51

No. of Copies

10 DOE Richland Operations

T. A. Bauman, COM	A7-75
R. F. Brich, TSD	A5-55
J. P. Hamrick, DMO	A7-50
R. A. Holten, TSD	A5-55
J. R. Hunter, OPD	A6-55
J. J. Keating, AMS	A6-54
J. E. Mecca, OPD	A6-55
R. M. Rosselli, AMT	A7-70
R. R. Tibbatts, FRD	A7-88
M. W. Tiernan, TSD	A5-55

40 Pacific Northwest Laboratory

D. L. Alamia	K3-70
D. S. Broussard	K1-67
R. A. Burnett	K2-05
T. D. Chikalla	K1-74
R. Cuello	P7-50
G. H. Cunningham	K1-59
R. L. Dirkes	K6-13
S. M. Finch	K6-89

No. of Copies

R. O. Gilbert	K1-85
W. A. Glass	K1-40
R. H. Gray	K1-30
S. P. Gydesen	P8-55
G. L. Harvey	K1-55
C. M. Heeb	K6-42
T. A. Ikenberry	K3-54
R. C. Liikala	K1-57
A. H. McMakin	K6-86
B. A. Napier	K3-54
T. A. Nelson	K1-55
J. V. Ramsdell	K6-03
R. E. Rhoads	K6-64
B. S. Robbins	P7-64
D. B. Shipler	K6-89
W. L. Templeton	K1-30
W. R. Wiley	K1-46
S. B. Yabusaki	K6-77
Project Office Files (5)	K6-89
Public Reading Room (5)	A1-65
Publishing Coordination	K1-11
Records Center	K3-70
Technical Library (2)	P8-55