# HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION PROJECT

**Monthly Report** 

February 1993

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

Battelle
Pacific Northwest Laboratories
Richland, Washington 99352





# HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION PROJECT

**Monthly Report** 

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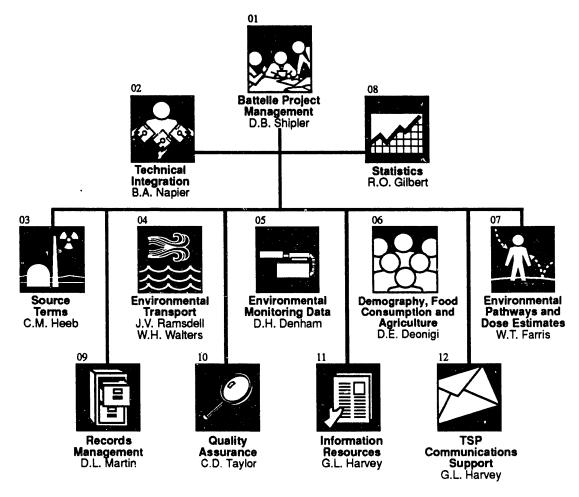
Hanford Environmental Dose Reconstruction Project

## **Preface**

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

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

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



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Figure 1. Organizational Structure of the HEDR Project

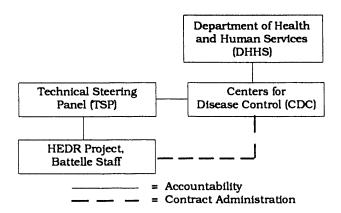
Table 1. Status of Directives(a)

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

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

## **Executive Summary**

The objective of the Hanford Environmental Dose Reconstruction (HEDR) Project is to estimate the radiation doses that individuals and populations could have received from nuclear operations at Hanford since 1944. The project is being managed and conducted by Battelle Pacific Northwest Laboratories (BNW) under contract with the Centers for Disease Control (CDC). The independent Technical Steering Panel (TSP) provides technical direction.



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

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

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

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

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

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

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

In addition to population and demographic data, the food and water sources and consumption patterns for populations are estimated because they provide a primary pathway for the intake of 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.

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

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

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

## **Project Summary**

## **Progress**

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

- met with the TSP in Seattle, Washington to discuss the reallocation of budget to accommodate redesign and implementation of the DESCARTES and CIDER dose codes
- met with the CDC and FHCRC in Atlanta, Georgia to discuss and coordinate the HEDR and HTDS Projects. BNW's turnover package will provide the information HTDS needs, but the BNW contract with the CDC will expire before HTDS has developed all of its information.
- prepared a series of scoping studies on important radionuclides, pathways, and parameters for the Columbia River pathway. These were presented to the TSP during the February budget/fiscal meeting (Milestone 0205B).
- exercised the source term release model (STRM) on the full time period from 1944 through the end of 1949 without problems. The necessary input files to calculate hourly releases through 1949 were prepared (Subtask 0303).
- completed entry of daily data on effluent radionuclide activity discharged from the reactors to the Columbia River from 1958 through 1971 (Subtask 0304)
- completed electronic entry of fuel-failure data (Subtask 0304)
- completed revision of the wind field modeling white paper (Milestone 0402A)
- conducted initial tests of Columbia River hydraulic simulations using the computer model by comparing output of water surface elevations computed independently (Milestone 0404C)
- completed the meteorological data entry of 1948 and 1949 information (Milestone 0405B)
- examined additional precipitation data to establish a basis for improvement in the representation of precipitation rate estimates in, RATCHET (Subtask 0405)
- prepared a database of radionuclide concentrations in the Columbia River from McNary Dam to Bonneville Dam from 1964-1966 (Subtask 0504)

- compiled a database of radionuclide concentrations in Columbia River and Pacific Ocean salmon (Subtask 0504)
- compiled a database of radionuclide concentrations in Columbia River fish from 1957-1972 to estimate bioaccumulation factors (Subtask 0504)
- completed the review of literature on anthropological studies of time allocation with particular reference to Native Americans (Subtask 0605)
- completed case studies and examples for the sensitivity/uncertainty analysis plan report (Milestone 0803A)
- reviewed detailed design documents for the dose code (Task 10)
- provided the U.S. Department of Energy Richland Field Office (RL) Public Reading Room with 25 documents (1,000 pages) of potential interest/use to the HEDR Project (Task 11)
- published the Media Information Review, July-December 1992 report (Milestone 1203D)

# Major Problem Areas or Changes and Action Taken

The TSP recommended that \$380K be diverted from the scope of other HEDR work and used to complete the dose code. The TSP and CDC are negotiating the recommendations. In the meantime, BNW is moving ahead with dose-code work based on the TSP action.

- meet with the CDC and FHCRC monthly to continue the technical coordination of the HEDR and HTDS Projects
- revise and publish the integrated task plans (Milestone 0101G)
- publish the Columbia River radionuclides report (Milestone 0205B)
- publish the final version of the report, Iodine-131 Releases from the Hanford Site 1944 Through 1947 (Milestone 0302A)
- determine effective release factors for iodine-131 with control filters and silver reactor installed.

- Develop effective release factors for ruthenium-103 and ruthenium-106 from the chemical separations plants (Subtask 0303).
- develop a method to calculate releases to the Columbia River based on reactor-operating data. Develop a fuel-failure record and classification system which will permit an estimate of radionuclides released to the Columbia River from failed fuel elements (Subtask 0304).
- publish the wind field modeling report (Milestone 0402A)
- complete travel-time routing and scoping studies (Milestone 0404C)
- conduct RATCHET tests (Subtask 0405)
- publish the environmental monitoring data final report (Milestone 0501A)
- publish the vegetation data report--reconstructed conversion factors for vegetation pellet data--for TSP review (Milestone 0502A)

- publish the food consumption report (Milestone 0602C)
- issue a letter documenting the population dose model (Milestone 0702B)
- complete the project sensitivity/uncertainty analysis plan (Milestone 0803A)

## **Budget Status**

Figure 2 shows the budget status of the HEDR Project. Table A.1 in Appendix A shows FY 1993 costs and budget by task and subtasks. Figure A.2 shows TSP budget status. Figure A.3 shows Native American research budget status.

## **Capital Status**

The request for \$75K for capital equipment was approved.

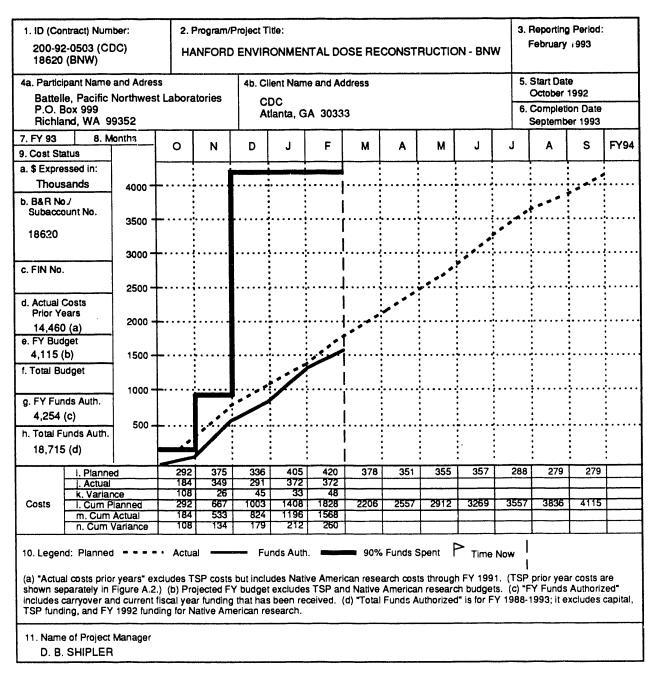


Figure 2. HEDR Project Budget Status - Battelle Pacific Northwest Laboratories

## **Acronyms and Abbreviations**

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

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

## **Progress**

Milestone 0101E - 1992-1994 Integrated Task Plans, due July 1992, rescheduled to September 1992 and completed (PNWD-2020 HEDR)

 reviewed with the TSP the revised version of this report which incorporates the TSP comments.
 The final version will be published in March.

#### **Other Activities**

- met with the TSP in Seattle, Washington to discuss the reallocation of funds to complete the DESCARTES and CIDER dose codes
- received a letter from the TSP directing us to continue with the dose-code development as planned and asking us to respond to their questions. Participated in the review of the dose-code design.
- met with the CDC and FHCRC in Atlanta, Georgia to discuss and coordinate the HEDR and HTDS Projects. BNW's turnover package will provide the information HTDS needs, but the BNW contract with the CDC will expire before HTDS has developed all of its information. It was decided that the staff members of both projects would meet monthly and the managers quarterly to discuss data needs and transfer of dose calculations.
- sent a letter to the TSP and CDC on the time required for the Office of Management and

Budget (OMB) clearance of the milk cow survey and our proposed alternative to use focus groups should the OMB clearance process not meet the deadlines

 presented an overview of the HEDR Project to Savannah River Laboratory staff

# Major Problem Areas or Changes and Action Taken

The TSP recommended that \$380K be diverted from the scope of other work and used to complete the dose code. The TSP and CDC are negotiating the recommendations. In the meantime, BNW is moving ahead with dose-code work based on the TSP actions and CDC concurrence.

#### Variance

The cumulative cost underrun was, as reported in January, caused by a delay in procuring computer software, the availability of a records custodian only part time, and less project peer review than anticipated. The records custodian has been selected and is expected to begin work by April.

- revise and publish the integrated task plans (Milestone 0101G)
- meet with the CDC and FHCRC to continue coordination of the HEDR and HTDS Projects



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 0205B - Letter Report on Key Radionuclides due May 1992, rescheduled to October 1992 and completed (BN-SA-3674 HEDR, BN-SA-3675 HEDR, BN-SA-3735 A HEDR)

prepared a series of scoping studies on important radionuclides, pathways, and parameters for the Columbia River pathway. These were presented to the TSP during the February budget/fiscal meeting. Drafted text for these presentations to be provided as supporting information for this milestone.

#### Other Activities

- participated in a meeting with CDC and FHCRC staff in Atlanta. The meeting addressed the specifics of coordination between the HEDR and the HTDS Projects.
- participated in a follow-up meeting with CDC and FHCRC in Seattle, Washington. Computercode interfaces between HTDS and HEDR were addressed. An additional conference telephone call was held between all parties. Information was provided on the definition of animal-feeding regimes and the definition of reference individuals.
- provided the FHCRC and CDC with detailed maps which cross-reference the HEDR computer grid nodes to their physical location
- participated in the peer review of the HEDR dose-code design held in Richland, Washington

participated in the quality assurance (QA) surveillance of the calculations which supported the scoping reports that were provided to the TSP in December. All records were in order.

## Major Problem Areas or Changes and Action Taken

Completion of scoping calculations to support decisions regarding direction and level of effort on the Columbia River pathway modeling took longer than planned. Results of the calculations were available for the TSP budget/fiscal meeting, but the accompanying text was delayed. This will be provided soon.

#### **Variance**

The cumulative cost overrun was, as reported in January, caused by enhanced scoping efforts needed for the atmospheric dose model, the surface-water codes, evolving TSP and CDC needs beyond that originally envisioned and budgeted for this task. The costs in February were near the originally projected level. The cumulative variance should disappear within the next few months.

- publish the Columbia River radionuclides report (Milestone 0205B)
- coordinate recovery of atmospheric transport dose codes
- coordinate the surface-water dose code activities
- coordinate HEDR Project activities with the FHCRC □



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

### **Progress**

## Milestone 0302A - Iodine-131 Source Terms Report, 1944-1947

 resolved and incorporated the HEDR Project Office final comments, some of which delayed final publication of this report

#### Radioactive Releases to Air (Subtask 0303)

- exercised the STRM on the full time period from 1944 through the end of 1949 without problems.
   The necessary input files to calculate hourly releases through 1949 are being prepared.
- continued to gather reference materials on the performance of the silver reactors. This information is required to determine the proper iodine-131 release factors for the post-1951 period when all separations plants were equipped with silver reactor devices to limit the stack releases of iodine-131.

#### Surface Water Releases (Subtask 0304)

- completed entry of daily data on effluent radionuclide activity discharged from the reactors to the Columbia River from 1958 through 1971.
   This information will be used to develop algorithms and uncertainties to supply activity estimates for periods where no data exits.
- completed electronic entry of fuel-failure data.
   This data will be used to construct the Columbia River source term.

# Major Problem Areas or Changes and Action Taken

None.

#### **Variance**

No significant cumulative variance.

- publish the final version of the report, Iodine-131 Releases from the Hanford Site 1944 Through 1947 (Milestone 0302A)
- determine effective release factors for the iodine-131 with control filters and silver reactor installed. Develop effective release factors for ruthenium-103 and ruthenium-106 from the chemical separations plants (Subtask 0303).
- develop a method to calculate releases to the Columbia River based on reactor-operating data. Develop a fuel-failure record and classification system which will permit an estimate of radionuclides released to the Columbia River from failed fuel elements (Subtask 0304).
- complete data entry and run release model for hourly iodine releases in the 1944 through 1949 period □



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

## **Progress**

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

 completed revision of the wind field modeling white paper. The revised report has undergone peer review and been submitted to the Project Office for editing.

## Milestone 0404C - Report on Columbia River Modeling Approach, due June 1993

began work on scoping studies using a traveltime routing procedure. Continued work on
hydraulic data input to the computer model.
Conducted initial tests of Columbia River
hydraulic simulations using the model by
comparing output of water surface elevations
computed independently. The testing was
successful and the model performed as expected.
Requested Task 05 (Environmental Monitoring
Data) staff to prepare a monitoring database for
the Columbia River from McNary Dam to
Bonneville Dam using both off-site and on-site
data sources.

## Milestone 0405B - Letter Report: Atmospheric Model Database Status, due September 1993

 received the last shipment of the 1948 and 1949 meteorological data from the National Climatic Data Center. Meteorological data entry was completed.

#### **Other Activities**

 met with CDC's panel of experts who have been reviewing the RATCHET computer code. The panel's comments indicate that they consider RATCHET to be an appropriate tool for the HEDR Project, and they anticipate that RATCHET will perform as well as or better than other codes. The meteorological database was considered to be of high quality but limited in both spatial and temporal resolution. The atmospheric physics in RATCHET was found to be acceptable. The panel noted that the code was complex and required a knowledgeable user. They also noted that the code which they reviewed was still under development and no longer identical to the code described in the RATCHET documentation. As a result, the documentation is presently out of date. Up-to-date documentation of RATCHET will be issued. Several questions were raised by the panel related to specific aspects of the implementation of the physics within the code. These questions are under further study.

- revised the computer program that creates the
  meteorological data input file for RATCHET. The
  CDC review panel noted inconsistencies in the
  stability class distribution in the data files used
  for input to RATCHET. Examination of the computer code that creates the input files revealed
  an error in the determination of stability classes
  that resulted in most unstable stabilities being
  coded as neutral. An error in converting precipitation codes was also discovered in the
  examination. Both errors have been corrected.
- examined additional precipitation data to establish a basis for improvement in the representation of precipitation rate estimates in RATCHET. Precipitation rate data were obtained for five additional stations. These data will be used to determine precipitation rate distributions. Climatological precipitation data were obtained for Washington, Oregon, and Idaho for use in validation of the precipitation algorithms in RATCHET.

 continued preliminary evaluation of results of the RATCHET runs for 1945

# Major Problem Areas or Changes and Action Taken

None.

#### **Variance**

No significant variance for Subtasks 0402 and 0405. As reported previously, the cumulative cost underrun for Subtask 0404 was caused by the delay in placing the contract with Washington State University (WSU). That underrun continues to rapidly decrease since the contract has been implemented.

# Planned Work for the Next Three Months

publish the wind field modeling report (Milestone

#### 0402A)

- complete travel-time routing and scoping studies. Continue extending the computer model downstream and conducting intermediate testing of the Columbia River hydraulic computations. Prepare presentation for the TSP Environmental Transport Subcommittee meeting in April (Milestone 0404C).
- conduct RATCHET tests
- continue model sensitivity/uncertainty tests
- prepare supporting documents for selection of RATCHET input data on iodine partitioning and surface roughness



# Task 05 Environmental Monitoring Data

## **Objective**

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

## **Progress**

#### Milestone 0501A - Environmental Monitoring Data Final Report, due FY 1991 and rescheduled to February 1993

• delivered report for Project Office review

# Milestone 0502A - Vegetation Data Report (1945-1951), due FY 1991 and rescheduled to February 1993

 edited the revised report and had it formatted by Text Processing. This report will be issued to the TSP for their review.

## Environmental Monitoring Document Data (Subtask 0503)

 delivered updated disk copies of the HEDR environmental monitoring document database to the Project Office for review

#### Surface-Water Monitoring Data (Subtask 0504)

- prepared a database of radionuclide concentrations in the Columbia River from McNary Dam to Bonneville Dam from 1964-1966 for Subtask 0404 (Surface-Water Transport) staff
- compiled a database of radionuclide concentrations in Columbia River and Pacific Ocean salmon
- compiled a database of radionuclide concentrations in Columbia River fish from 1957-1972 to estimate bioaccumulation factors

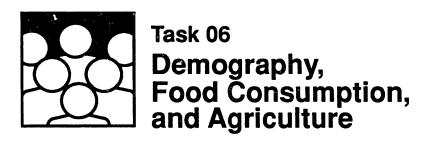
# Major Problem Areas or Changes and Action Taken

The Milestone 0501A and 0502A reports have experienced delays in publication because of review priorities and electronic transcription problems. Both reports are now expected to be issued by the end of March.

#### **Variance**

No significant cumulative variance.

- publish the environmental monitoring data final report (Milestone 0501A)
- publish for TSP review the vegetation data report--reconstructed conversion factors for vegetation pellet data (Milestone 0502A)
- evaluate the availability of data to estimate bioaccumulation factors
- continue to add data concerning radionuclide concentrations in fish and water to database
- provide the HEDR Project Office with a hard copy of the new entries to the environmental monitoring document database. A copy will be sent to the RL Public Reading Room.
- work with the other tasks to determine their environmental data needs □



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

## **Progress**

## **Milestone 0602C** - Food Consumption Report, General Population, due March 1993

 conducted Project Office review of this report and incorporated the recommended changes

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

- presented to the TSP for their approval a plan to test the use of a focus group versus the use of a survey questionnaire to establish feeding-regime information for each production area
- presented to the TSP for their approval a plan
  to hold a workshop with the three experts to
  resolve the differences of opinion they have on
  the milk distribution. The experts will be asked
  to review and reach a consensus on milk distribution in those twelve county census divisions
  where the opinions on the percentage of milk
  provided differed by 30 percent or more.

#### Native American Data (Subtask 0605)

- received and reviewed submittals from the Coeur D'Alene, Umatilla, Spokane, and Colville tribes
- met with HTDS staff to review the progress of the HEDR Native American work to date
- completed the review of literature on anthropological studies of time allocation with particular reference to Native Americans
- provided technical work planning guidance to Coeur D'Alene and Nez Perce tribes

## Major Problem Areas or Changes and Action Taken

None.

#### **Variance**

The cumulative cost underrun was caused because not all invoices from the Battelle Seattle Research Center in support of the Native American work have been received.

- publish the food consumption report (Milestone 0602C)
- organize the test, pending TSP approval, to determine the preferred method of collecting feeding-regime information (Milestone 0603D)
- organize a meeting, pending TSP approval, of the three experts to reach a consensus on the milkdistribution patterns (Milestone 0603D)
- plan training sessions for the Native American Working Group (NAWG) regarding implementation of the data collection protocol
- review the preliminary data submitted to BNW by the Native American tribes relative to the contract requirements
- provide guidance to tribal representatives who plan to come to Seattle, Washington, to review unpublished materials stored at the Sand Point Federal Archives facility □



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

## **Progress**

## Milestone 0703C - Letter Report: Key Radionuclide Parameters, due July 1993

 continued to collect references and Hanfordspecific data for the Columbia River environmental accumulation and dose models. The staff from Task 0703 continued to work with Task 05 (Environmental Monitoring Data) staff to develop radionuclide, fish species, and season dependent bioaccumulation factors.

## Milestone 0705A - Report on Iodine-131 Doses, 41 x 51 Grid, 1944-1991, due June 1993

 determined with the TSP to fold this report into the Milestone 0705C report

# Milestone 0705B - Doses from Key Radionuclide in Columbia River Water, 1944-1991, due September 1993

 determined with the TSP that this report will document "spreadsheet" caliber dose calculations for the Columbia River pathway

#### Milestone 0705C - Report on Key Radionuclide Releases to Air, 1944-1991, due September 1993

 determined with the TSP to incorporate the Milestone 0705A report into this one

## Pathways and Dose Code Development and Documentation (Subtask 0702)

 received approval from the TSP at the budget/ fiscal subcommittee meeting in Seattle, Washington, to reallocate funds to support the remainder of the coding activities. All code development activities outlined in the Software Development Plan for DESCARTES and CIDER have been started.

# Major Problem Areas or Changes and Action Taken

The code-development activities that greatly impacted this task have been resolved. The funds required to complete the code work have been allowed to be reallocated by the TSP. The DESCARTES and CIDER codes are scheduled to be operational in June.

#### **Variance**

The cumulative cost underrun was caused by work on the dose reports being delayed pending the completion of coding activities.

- issue the letter documenting the population dose model (Milestone 0702B)
- continue work on the parameters and dose factors report for the Columbia River pathway model (Milestone 0703C)
- continue limited work on the dose calculations for Milestones 0705A, 0705B, 0705C and 0705D
- continue computer-coding activities 🔾



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

## **Progress**

Milestone 0803A - Letter Report: Project Sensitivity/Uncertainty Analysis Plan, due August 1992 and rescheduled to April 1993

- completed approximately half of the first draft of the report
- completed case studies and examples for the report

#### **General Statistics Support (Subtask 0802)**

- met with D.E. Deonigi (Leader of Task 06: Demography, Food Consumption and Agriculture) to:
  - continue to develop a test to determine whether focus groups or a questionnaire is preferred to obtain feeding-regime information for the additional 9 counties beyond the already studied 10-county area. A memo discussing the design considerations was sent to D.E. Deonigi.
  - continue to develop an approach to resolve differences in the original 10-county HEDR study area among three experts concerning which processing plants and producer/ distributors supplied milk to census divisions
- conducted a detailed technical review of the draft Milestone 0602C report that describes methods used to estimate daily food consumption amounts for reference individuals
- met with D. M. Anderson (Task 06) to discuss resolution of review comments on the draft milestone report 0602C

- assigned D.J. Bates (Task 08) the responsibility
  of working closely with Task 05 (Environmental
  Monitoring Data) to assure that data required for
  the surface-water model for parameter estimation and model validation are properly summarized and used
- attended weekly meetings to review progress of code development
- attended weekly meetings to review progress of water pathway transport and dose models

#### Analysis of Model Reliability (Subtask 0803)

- interacted with key task leaders regarding methods and progress on assessing reliability
- continued operating the PILOT Software System to prepare case studies of doses for sensitivity and uncertainty analysis and scoping (screening) studies
- continued verification testing and documenting the PILOT Software System
- worked on subcontracts for peer reviewers of the sensitivity/uncertainty workshop

## Major Problem Areas or Changes and Action Taken

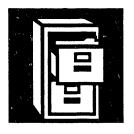
The costs of completing the Milestone 0803B model reliability report and validation plan and other required Task 08 work in FY 1993 are estimated to be about \$30K more than was budgeted for FY 1993. This information has been forwarded to the HEDR Project Office.

#### **Variance**

No significant cumulative variance.

- revise the iodine-131 conversion factor report in response to CDC and TSP comments once those comments are received (Milestone 0802A)
- complete the project sensitivity/uncertainty analysis plan (Milestone 0803A)
- continue to plan the sensitivity/uncertainty analysis workshop

- conduct sensitivity/uncertainty analysis of test cases
- continue to provide task leaders with statistical support for data/information gathering, analysis, and reporting
- finish documenting the PILOT Software System
- conduct final internal development review of the PILOT Software System
- document the results of the statistical analyses of the diet information
- review draft reports 🔾



# Task 09 Records Management

## **Objective**

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

## **Progress**

- received project records from the HEDR Project Office - 16 records totalling 2,084 pages
- transferred two packages of records to the RL Public Reading Room - 17 records totalling 877 pages
- verified, processed, and stored project records -490 records totalling 13,801 pages
- performed inspection of project records stored in the PNWD Records Center to verify accuracy
- assisted in the interview process for the project records custodian

# Major Problem Areas or Changes and Action Taken

None.

#### **Variance**

No significant cumulative variance.

- continue processing incoming project records
- issue RMP-1, HEDR Records Systems, Revision 2, which includes changes that were identified as a result of the PNL Audit A-92-20
- continue transferring processed project records to the RL Public Reading Room
- complete changes to file classifications as identified in the PNL Audit A-92-20
- provide training to appropriate project staff and task leaders on the following documents when issued: 1) HEDR Records Inventory and Disposition Schedule (RIDS), Revision 5, and
   2) RMP-1, HEDR Records System, Revision 2
- provide training and guidance in records requirements to the new project records custodian □



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**

- performed a surveillance on the documentation of the hand calculations for the dose-code reports BN-SA-3661, 3672, 3673, 3674, 3675, and 3678. In all but two reports, the new HEDR Hand Calculation form was utilized to document the hand calculations.
- re-reviewed the final version of the Milestone 0302A report, Iodine-131 Releases from the Hanford Site 1944 through 1947. Completed the surveillance of the Software Control Procedures which was begun during the time the draft report was written and issued.
- reviewed and provided comments on the Milestone 0602C food consumption report
- reviewed the letter report for Milestone 1203D,
   Media Information Review, July-December 1992.
   No comments were identified.
- met with S. D. Cannon (BNW) to discuss HEDR data quality objectives (DQO) and milestones for the upcoming year
- developed a surveillance plan for the second quarter of FY 1993
- began work on the documentation of decisions procedure

#### Other Activities

- reviewed detailed design documents for the dose code
- met with HEDR personnel to discuss updates to the Project Management Plan and ideas for the

- Configuration Management Plan (CMP) and procedures. R. L. Johnson, from the BNW Software Quality Assurance Group, will lead the development, implementation, and training for the CMP.
- attended the review meeting to discuss the recommendations on the dose code
- began developing a schedule for reviewing module development folders for the dose-code development

# Major Problem Areas or Changes and Action Taken

HEDR-TP-2, HEDR Indoctrination and Training, was a required technical procedure for the HEDR Project because the project is classified as a Level II project and until 1989 HEDR-TP-2 was the procedure for Level II projects. Since 1989 the PNL-MA-70, *Quality Assurance Manual*, has expanded to cover not only Level I but Level II projects as well. Because the HEDR Project now follows the PNL-MA-70 procedure, HEDR-TP-2 has been deleted from the HEDR Project requirements.

#### **Variance**

The cumulative cost overrun was caused by the reasons reported in the January monthly report. The incorrect charges have not yet been removed. The minor cost overrun for the month of February was due to unexpected work in responding to the previous audit and surveillance deficiencies. This work should now be completed.

- finalize the decision plan and issue the implementing procedure for the different techniques described in the plan
- continue performing oversight activities to check for compliance to the HEDR Project technical, QA, and DQO requirements
- develop action-tracking procedures to be used to document the results of the technical staff meetings



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

#### **Progress**

- continued to develop the list of currently classified documents that originated at the Hanford
  Site between 1961-1972 and pertain to the
  operations information from the production
  facilities. Activity is on schedule and within
  budget.
- · verified bibliographic references in HEDR reports
- provided the RL Public Reading Room with 25 documents (1000 pages) of potential interest/ use to the HEDR Project. A title listing of these reports is given in Appendix B.

## **RL Public Reading Room Activity**

During the month, the RL Public Reading Room had 1 HEDR patron and distributed 2 HEDR reports.

#### **Other Activities**

- declassified no Hanford-Site originated documents. Table 11.1 shows the status of declassification to date.
- continued to gather information on fuel failures between 1948 and 1971. Approximately 1900 failures have been identified to date. The results will be documented in a letter report.

**Table 11.1.** Declassification of Hanford-Site-Originated Documents

Documents Declassified	Hanford Historical	HEDR- Related <sup>(a)</sup>
March 1987 - September 1987 (FY 1987)	35	27
October 1987 - September 1988 (FY 1988)	52	37
October 1988 - September 1989 (FY 1989)	186	177
October 1989 - September 1990 (FY 1990)	455	236
October 1990 - September 1991 (FY 1991)	1323	599
October 1991 - September 1992 (FY 1992)	2862	554
October 1992 - February 1993 (FY 1993)	687	54
TOTAL (March 1987 - February 1993)	5600	1684

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

# **Major Problem Areas or Changes and Action Taken**

None.

#### **Variance**

The cumulative cost underrun was caused by less document declassification than anticipated.

- continue to develop the list of currently classified documents that originated at the Hanford Site between 1961 and 1972
- support visiting TSP members' document search efforts
- continue to identify and collect information on fuel failures between 1948 and 1971 □



# Task 12 TSP Communications Support

## **Objective**

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

## **Progress**

Milestone 1203D - Letter Report: Media Review, 1932, due February 1993 and completed (PNWD-2099 HEDR)

 published the Media Information Review, July-December 1992 report

#### Other Activities

- attended the TSP budget/iscai meeting in Seattle, Washington
- discussed river-monitoring activities with G. Combs, TSP staff, in response to questions from a Washington State resident
- provided information and contact numbers for the HEDR Project and HTDS offices to L. Crisps, Richland, Washington, and V. Eller, Kennewick.

Washington. Also, provided toll-free numbers to C. Marseilles, Apple Valley, California, after she viewed a piece about Hanford on network television.

# Major Problem Areas or Changes and Action Taken

None.

#### **Variance**

No significant cumulative variance.

# Planned Work for the Next Three Months

• attend the TSP Public Meeting and Communications Subcommittee meetings in April in Richland, Washington I

# Appendix A Milestones, Schedule, and Costs

		EV 1007	EV 1001	FV 1004
	Milestone	S O N D J	F M A M J J A S	O N D J F M A MS
0101E 15	1992-1994 Integrated task plans (PNWD-2020 HEDR)			
0101F P	Project Management Plan revision (PNWD-2021 HEDR)		· · · · · · · · · · · · · · · · · · ·	
0101G R	Revised integrated task plans			
0101H PA	Project Management Plan Revision (Internal revision, no publication)			
01011 PA	Project final report			
0204A L	Letter Report: Data management plan (Incorporate into software development plan)			
0204B L	Letter Report: Recommendation on modeling or monitoring approach for river pathway (PNWD-1977 HEDR Vols. 1 and 2)	• • • • • • • • • • • • • • • • • • • •		
LA 0205B L	Letter Report: Key radionuclides, Rev. 1 (Air complete; river in process)		· · · · · · · · · · · · · · · · · · ·	
0205E L	Letter Report: Project model validation plan (being redefined)		· · · · · · · · · · · · · · · · · · ·	
0205F L	Letter Report: Output display document (project decision, no publication)	• • •		
0302A D	Documented Phase I iodine-131 releases, 1944-1947 (PNWD-2033 HEDR Vols. 1 and 2)			
03038 10	lodine-131 source term report, 1948-1991 (Incorporate into 0303D)			
	Legend: Scheduled Final (no TSP/CDC review) Δ To Deviation — — — — ← Co	To TSP/CDC for Review ○ Completed ▲ ● ◆	Time Line Progress Line	Time Now

		FY 1992		FY 1993	FY 1994
	Milestone	J J A S	ONDJF	M A M J J A S	O N D J F M A MS
0303D	(3) Remort on key radionnelides released to air 1944-1901 ± Lodine-131 source			(	
	Radionuclide release model (Milestone 0305A) and Letter Report: Hanford				
	Operations 1944-1991 (Milestone 0307A)				
0304B	4B Report on key reactor releases to the Columbia River 1944-1991 + aspects of	•		. (	
	Letter Report: Radionuclide release model (Milestone 0305A) and			· ·	
	Report: Hanford Operations 1944-1991 (Milestone 0307A)				
0305A	54 Letter Report: Radionuclide Release Model (Incomparate/dinto				•
		•			
:					
0307A					
	Milestones 0303D, 0304B)				
0402A	2A Letter Report: Wind field modeling white paper		·   .   .	· · · · · · · · · · · · · · · · · · ·	
A 1				· · · · · · · · · · · · · · · · · · ·	
0404B					
	Milestone ()4()4C)				
0404C	4(2. Report on Columbia River modeling approach + Letter Report: Columbia				
0405A					
	report (Milestone 0402D)				
0405B	SR Tetter Report: Atmospheric model database status				
<u>.</u>					
0501A	1A Environmental monitoring data final report			· · · · · · · · ·	
0502A	2A Vegetation data report (1945-1951)			· · · · · · · · · · · · · · · · · · ·	
	Legend: Scheduled Final (no TSP/CDC review) △ To 1	To TSP/CDC for Review	Ō	Time Line	Time Now
	Deviation — — — — — — — — — — — — — — — — — — —	Completed A • •		Progress Line	

			FY 1992		E	FY 1993						FY 1994	4		
		Milestone	J J A S	O N D	F.	V	M J	J A	S	N O	1 a	F	W W	Σ	S
	0502B	Letter Report: Vegetation monitoring data (1949-1951) bias/data correction (Internal document, no publication)													
	0502C	Summary Report: Environmental monitoring data located to date			-				<del>-</del>						
	0602C	Food consumption report, general population			<b>-</b>	 ე.									
	0603B	Letter report on milk outside Phase I (PNL-8153 HEDR)	· ·	· · · · · · · · · · · · · · · · · · ·											
	0603C	Letter Report: Assessment of fruit and vegetable pathways, 1945-1951 (PNWD-2022 HEDR)			- — — `	 (	· · ·		<del></del>	· · ·					
	0603D	Milk production/distribution report, 1945 and 1951, 19 counties			<del>-</del>	 ງ . ₄									
A	0702B	Documentation report of population dose model, major pathways (Transmit as a letter, no publication)			<u>r</u> – –	 &· ·									
	0703B	Letter Report: Todine-131 parameters and dose factors, revised model + Letter Report: Model parameter distributions strategy (Milestone 0205D) (PNWD-2023 HEDR)						· · · · ·							
	0703C	Letter Report: Key radionuclide parameters					:	· ·			• •				
	0705A	Report on iodine-131 doses, 41 x 51 grid 1944-1991 (Incorporate into Milestone 0705C)													
	0705B	Doses from key radionuclides in Columbia River water, 1944-1991			  -				<del>) (</del>						
	0705C	Doses from key radionuclides released to air (excluding iodine-131), 1944-1991 + Report on Iodine-131 doses, 41 x 51 grid 1944-1991 (Milestone 0705A)							<del>)</del>		• • • •				
		Legend: Scheduled Final (no TSP/CDC review) △ To T  Deviation — — — — ← Com	To TSP/CDC for Review Completed ▲ ●	O ***		Tim	Time Line Progress Line	ပ္က			Ti	Time Now			

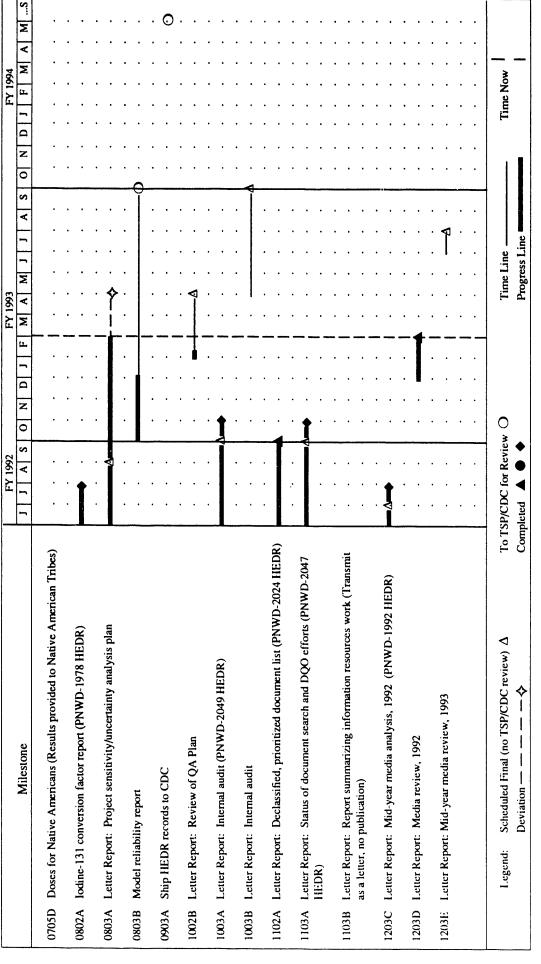


Table A.1. Cost Summary (Dollars in Thousands)

	Budgeted FY Labor Hours		6,648 5,482 341	12.471		563 404 1,216	2,183		309	1,850	2,337	375	0	4.871
	Funds F Remaining		354 283 37	<u>674</u>		37 53 37	127		26	119	116	30	-11	280
993)	CDC/TSP Approved FY Budget (c)		606 397 40	1.043		68 73 134	275		37	171	208	41	0	457
september 1	Cum Variance		-1 47 14	8		4 11 -50	43		ø	27	6-	11	-11	24
FY 1993 to Date (October 1992 - September 1993)	Cum Planned (b)		251 161 17	429		27 31 47	105		17	79	83	22	0	201
Date (Oct	Total \$		252 114 3	369		31 20 97	148		11	22	92	11	Ξ	177
FY 1993 to	Non- Labor \$ (a)		32 15 0	47		246	6		0	0	œ	11	0	19
	Labor \$		220 99 3	322		29 16 94	139		11	52	<b>%</b>	0	11	158
	Total \$		70 22 3	25		10 0 13	23		0	18	12	9	0	36
February 1993	Non- Labor \$ (a)		16 1 0	17		2 0 0	71		0	0	∞	9	0	14
F	Labor \$		54 21 3	78		8 0 13	21		0	18	4	0	0	22
l	HEDR Project Tasks	Task 01 - Project Management (d)	0101 Project Planning & Control 0103 Project Administration 0104 Project Peer Review	Subtotal Task 01	Task 02 - Technical Integration	P 0201 Tech Planning/Control/Rep on 0204 Proj Tech Cord /Analysis 0205 Path & Dose Model Require	Subiotal Task 02	Task 03 - Source Terms	0301 Tech Planning/Control/Rep	0303 Rad Releases to Air	0304 Rad Releases to Water	0305 Source Term Release Model	0307 Rad Release Data Avail/Rev	Subtotal Task 03

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

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

ı		February 1993	3		FY 1993 to	o Date (Ox	FY 1993 to Date (October 1992 - September 1993)	September	1993)		
	Labor \$	Non- Labor \$ (a)	Total §	Labor \$	Non- <u>Labor \$ (a)</u>	Total \$	Cum Planned (b)	Cum <u>Variance</u>	CDC/TSP Approved FY <u>Budget (c)</u>	Funds <u>Remaining</u>	Budgeted FY Labor <u>Hours</u>
Task 07 - Environmental Pathways & Dose Estimates	se Estimates	<b>,</b>									
0701 Tech Planning/Control/Rep	2	<i>د</i> -	7,	33	2 [	35	23	-12	54	19	508
0/02 Path & Dose Code Dev/Doc 0703 Path & Dose Model Paramet	64 6	0	9 9	17	1/	<u>₹</u> %	10 <del>4</del>	7	58	40	657. 759
0705 Dose Calculations	0	2	2	2	0	S	55	20	138	133	1,424
Subtotal Task 07	9	16	<u>76</u>	129	20	152	267	115	469	317	4.784
Task 08 - Statistics											
0801 Tech Planning/Control/Rep	3	0	3	15	0	15	21	9	51	36	373
0802 Stats Support for Tech Work 0803 Analysis of Model Reliability	4 21	-1 0	3 21	28	-1 0	27 130	39 93	12 -37	95	73	837 1,991
Subtotal Task 08	<u>28</u>	7	27	173	7	172	153	-19	349	177	3.201
Task 09 - Records Management											
0901 Tech Planning/Control/Rep 0902 Project Records Management	0 7	0	0 7	21	9	4 23	2 28	-2	69	1 46	90
Subtotal for Task 09	7	O	7	25	7	27	30	ы	74	47	1.570
Task 10 - Quality Assurance											
1001 Tech Planning/Control/Rep 1002 QA Program Development 1003 QA Verification	0 0 9	0 0 0	0	7 3 3	000	7 3 25	5 6 16	-6-	13	6 11 17	121 169 524
Subtotal Task 10	91	0	91	35	0	35	27	ᅇ	69	34	814

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

	Budgeted FY Labor Hours		1,314	120	0	!	3.117		146	192	269	607	42,567
	Funds Remaining		48	8	14		121		7	<b>00</b>	13	23	2,547
(993)	CDC/TSP Approved FY Budget (c)		56	103	70 70 70	İ	207		13	11	17	41	4,115
September	Cum <u>Variance</u>		15		7 6	)	<b>왕</b>		4	7	7	0	260
FY 1993 to Date (October 1992 - September 1993)	Cum <u>Planned (b)</u>		23	S :	7 %	•	ଷ		7	<b>S</b>	9	18	1,828
Date (Oc	Total \$		∞ į	<u> </u>	<u> </u>	•	20		11	3	4	81	1,568
FY 1993 to	Non- Labor \$ Labor \$ (a)		0	<b></b> (	<b>o</b> c	•	7		7	0	0	7	149
	Labor \$		∞ ;	16	91		49		4	3	4	T	1,416
	Total \$		3	7	4 4	t	ET			_	-	က	372
February 1993	Non- Labor \$ Labor \$ (a)		1	0	0 0	>	-		-	0	0	<b>~</b>	28
	Labor \$		2	7	4 4	4	77		C	,		7	314
1		Task 11 - Information Resources	1101 Tech Planning/Control/Rep	1102 Hanford Document Declass	1103 Hanford Info Resources Iden	1104 Document Listing	Subtotal Task 11	Task 12 - TSP Communications Support	1201 Tech Dlanning/Centrol/Ren	1201 Comm Assessment Research	1204 TSP Meeting/Material Sup	Subtotal - Task 12	Subtotal, HEDR Project Tasks

**Table A.1.** Cost Summary (Dollars in Thousands) (contd)

	Budgeted FY Labor <u>Hours</u>	a	01	42,567
		29	174	2,780
<b>793)</b>	CDC/TSP Approved FY Funds Budget (c) Remaining	63	176	4.354
September 19		ន	81	417
FY 1993 to Date (October 1992 - September 1993)	Cum Planned (b)	ଷ	001	1991
Date (Oct	Total \$	41	7	155 1.574
FY 1993 to	Non- Cum Cum Cum Cum Labor \$ (a) Total \$ Planned (b) Variance	বা	7	155
	<u>Labor \$</u>	а	01	1416
	Total \$	<del>41</del>	-	311
February 1993	Non- Labor \$ Labor \$ (a)	41	-	<b>63</b>
	Labor \$	O	0	314
		Technical Steering Panel (e)	Native American Research (f)	TOTAL

Non-labor dollars include expenses such as travel, publication production, procurements, and subcontracts. **@**£050

The monthly planned amounts are given in the cost section of Figures 2, A.2, and A.3.

<sup>&</sup>quot;CDC/TSP Approved FY Budget" is the FY 1993 budget approved in the CDC contract plus carryover from FY 1992.

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

The FY 1993 Technical Steering Panel budget is carryover from FY 1992 and will be used to complete the closeout of the TSP subcontracts. The FY 1993 TSP

subcontracts are being administered by the State of Washington and that budget is not reflected here.

The FY 1993 Native American Research budget is carryover from FY 1992 and will be used to complete the FY 1992 scopes of work. The FY 1993 contracts for Native American Research will be administered by the CDC and that budget is not reflected here.  $\in$ 

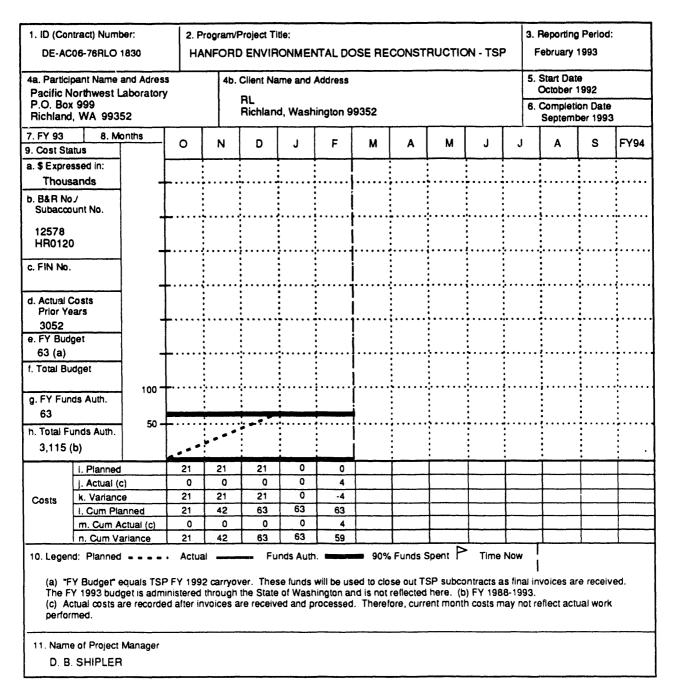


Figure A.2. Technical Steering Panel Budget Status

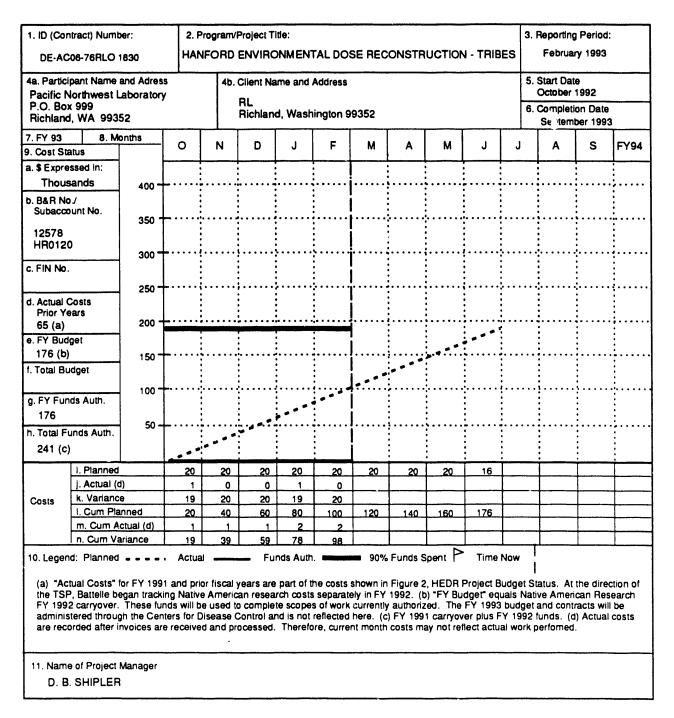


Figure A.3. Native American Research Budget Status

#### Appendix B

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

#### **Appendix B**

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

BN-SA-2661 HEDR	Scoping Calculations for Components of the Cow-Milk Dose Pathway for Evaluating the Dose Contribution from Iodine-131. 18p.	12/28/92
BN-SA-3667 HEDR	Software Development Plan for Descartes and Cider. 39p.	12/08/92
BN-SA-3668 S HEDR	Software Code Limitations "Items not Required or Supported" for the Hanford Environmental Dose Reconstruction Project Air Pathway Environmental Accumulation and Dose Models. 7p.	12/28/92
BN-SA-3671 HEDR	Responses to TPS Directive 92-2 Summary Report. 6p.	12/28/92
BN-SA-3672 HEDR	Determination of the Contribution Livestock Water Ingestion to Dose from the Cow-Milk. 14p.	12/28/92
BN-SA-3673 HEDR	Determination of Radionuclides and Pathways Contributing to Cumulative Dose. 30p.	12/28/92
BN-SA-3674 HEDR	Determination of Radionuclides and Pathways Contributing to Dose in 1945. 83p.	12/28/92
BN-SA-3675 HEDR	Determination of Dose Distributions and Parameter Sensitivity. 85p.	11/30/92
BN-SA-3676 HEDR	Software Requirements Specification for the Hanford Environmental Dose Reconstruction Project Air Pathway Environmental Accumulation and Dose Code. 8p.	12/28/92
BN-SA-3677 HEDR	Determination of the Spatial Resolution Required for the HEDR Dose Code. 30p.	11/30/92
BN-SA-3678 HEDR	Determination of the Feasibility of Reducing the Spatial Domain of the HEDR Dose Code. 20p.	11/30/92
BN-SA-3679 HEDR	Data Model Description for the Descartes and Cider Codes. 27p.	12/31/92
PN-SA-3680 HEDR	Benchmarking Studies for the Descartes and Cider Codes. 18p.	12/31/92
BN-SA-3681 HEDR	Preliminary Design Studies for the Descartes and Cider Codes. 24p.	11/30/92
BN-SA-3682 HEDR	Determination of the Temporal Resolution Required for the HEDR Dose Code. 12p.	11/30/92

BNWL-0676	Theory of Corrosion Product Generation, Dispersion, and Activation Process. 96p.	05/01/68
HAN-54065-DEL	100 & 300 Areas Monthly Reports January 1954 Through December 1954. 300p.	01/04/55
HW-72172	Spectroscopic Analysis of Pile Gas. 1p.	08/10/45
HW-44097	Reactor Gas Loss Analysis. 15p.	07/12/56
HW-72383	Production Test IP-485-A Fuel Element Film Formation Studies. 4p.	01/22/62
HW-73026	Production Reactor Process Tube, Dummy, and Fuel Element Cladding Film and Radioactivity Studies. 5p.	03/14/62
HW-SA-3242	Control of Nuclear Reactor Gas Systems. 9p.	10/11/63
PNWD-1980-07 HEDR	Hanford Environmental Dose Reconstruction Project Monthly Report December 1992. 60p.	11/30/92
PNWD-2090 HEDR	Interim Report on the Meteorological Database. 62p.	01/04/93
WHC-EP-0527-1	Environmental Releases for Calendar Year 1991. 119p.	07/01/92

#### **Appendix C**

#### **HEDR Documents to the TSP - February 1993**

A complete listing appears in the September monthly reports.

## Appendix C

## **HEDR Documents to the TSP - February 1993**

Status	Published Final	
Additional Information	Milestone 1203D	
Publication No	PNWD-2099 HEDR	
Date Issued	2/93	
Author	GL Harvey	
Title	Media Information Review, July- December 1992	

#### Appendix D

#### HEDR Presentation Handouts to the TSP - February 1993

A complete listing appears in the September monthly reports.

## Appendix D

# HEDR Presentation Handouts to the TSP - February 1993

Additional Information	BN-SA-3735 A HEDR Presented at the TSP Budget/Fiscal Subcommittee meeting, February 25-26, 1993, Seattle, WA
Publication No	BN-SA-3735 A HEDR
Date Issued	2/93
Author	BA Napier
Title	Determination of Radionuclides Contributing to Dose from the Columbia River Pathway and other Results of Sconing Studies

#### Appendix E

#### HEDR Open-Literature Publications and Presentations - February 1993

This appendix lists publications that present aspects of dose reconstruction in the open scientific literature. TSP approval is not required. A complete listing appears in the September monthly reports.

(Note: No Publications in February)

### Appendix F Communications Log - February 1993

#### Appendix F

#### **Communications Log - February 1993**

Initiated By/ Affiliation	Contact/ Affiliation	Туре	Subject
B Aripa/CT	TA Ikenberry/ BNW	Phone	Status of deliverables for the Colville Tribe
B Aripa/CT	EB Liebow/BNW	Phone	Data submittal to BNW; status of data submittal and work planning
WA Bishop/TSP	GL Harvey/BNW	Phone	Disposition of dosimeter for 1992 and 1993
WA Bishop/TSP	EB Liebow/BNW	Phone	Status of tribal work plans and OMB clearance
ML Blazek/TSP	GL Harvey/BNW	Phone	Media access to monitoring information
K CharLee/TSP Staff	SM Finch/BNW	Phone	Battelle attendees at TSP budget/fiscal subcommittee meeting
G Combs/TSP Staff	GL Harvey/BNW	Phone	HEDR Project; public questions regarding Columbia River pathway
L Crisps/Public	GL Harvey/BNW	Phone	HEDR Project
V Eller/Public	GL Harvey/BNW	Phone	HEDR and HTDS Projects
SM Finch/BNW	K CharLee/TSP Staff	Phone	Meeting rooms available for TSP budget/fiscal subcommittee meeting
SM Finch/BNW	JE TIII/TSP	Phone	Comments on software requirements specifications
NJ Germond/TSP	GL Harvey/BNW	Phone	Progress and status of classified documents list for 1961-1972
GL Harvey/BNW	ML Blazek/TSP	Phone	February budget/fiscal meeting agenda
GL Harvey/BNW	NJ Germond/TSP	Phone	Search for environmental monitoring data
GL Harvey/BNW	PD McGavran/TSP	Phone	Attempts to locate and provide monitoring data to media
HTDS-HEDR Data Exchange Coordinating Group	BA Napier/BNW PW Eslinger/BNW	Phone	Group discussion of CIDER design and inputs
L Kaplan/HHIN	BA Napier/BNW	Phone	Dominant radionuclides

Initiated By/ Affiliation	Contact/ Affiliation	Туре	Subject
PC Klingeman/TSP	WH Walters/BNW	Phone	River modeling; surface-water brochure; technical work plan and budget; April TSP meeting
EB Liebow/BNW	B Aripa/CT	Phone	Status of data submittal to BNW
EB Liebow/BNW	WA Bishop/TSP	Phone/ Fax	Status of tribal work plans and OMB clearance
EB Liebow/BNW	D Seyler/CAT	Phone	Status of data submittal and work planning
EB Liebow/BNW	DE Walker/TSP	Phone	Status of tribal work plans and OMB clearance
C Marseilles/Public	GL Harvey/BNW	Phone	Hanford's past; HEDR Project; other studies
PD McGavran/TSP	BA Napier/BNW	Phone	Monitoring data for Lewiston Tribune reporter
BA Napier/BNW	KJ Kopecky/ FHCRC	Phone	Schedule for meeting on computer interface
BA Napier/BNW	MA Robkin/TSP	Phone	Use of source term spreadsheets in scoping studies
C Nappo/NOAA/ATDD	JV Ramsdell/BNW	Phone	RATCHET review Atmospheric Stability Distribution
MS Power/TSP Staff	EB Liebow/BNW	Phone	Status of tribal work plans
JV Ramsdell/BNW	AH Murph.y/TSP	Phone	RATCHET review; preliminary results of analysis of model output
JV Ramsdell/BNW	C Nappo/NOAA/ ATDD	Phone	RATCHET review Atmospheric Stability and Precipitation Distributions
JV Ramsdell/BNW	D Randerson/ NOAA/NSO	Phone	RATCHET review Atmospheric Stability and Precipitation Distributions
D Randerson/NOAA	JV Ramsdell/BNW	Phone	RATCHET review Atmospheric NSO Stability Distribution
MA Robkin/TSP	CM Heeb/BNW	Phone	Status of source-term work; agenda for February source-term meeting; on-going activity relating to releases to the Columbia River; February TSP meeting
DB Shipler/BNW	JE TIII/TSP	Phone	Custom feeding regime/HTDS questionnaire; alternatives for dose code requirements

Initiated By/ Affiliation	Contact/ Affiliation	Туре	Subject
B Shleien/TSP	SM Finch/BNW	Phone	TSP budget/fiscal subcommittee meeting
B Shleien/TSP	DB Shipler/BNW	Phone	Understanding code documents; update on budget; draft memo on budget issues
J Thomas/HEAL	CM Heeb/BNW	Letter	Offsite processing of Hanford- irradiated material; inclusion of accidental releases in HEDR Source Term Tasking; possible air releases from boiling in Hanford high-level waste tanks.
JE TIII/TSP	DB Shipler/BNW	Phone	Need for preliminary meetings; PILOT code; FY 1993 budget

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