Hanford Environmental Dose Reconstruction Project

Monthly Report

February 1989

Prepared for the Technical Steering Panel

**Work supported by
the U.S. Department of Energy
under Contract DE-AC06-76RLO 1830**

**Pacific Northwest Laboratory
Operated for the U.S. Department of Energy
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Pacific Northwest Laboratory
Richland, Washington 99352

HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION PROJECT

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PREFACE

This monthly report summarizes the technical progress and project status for the Hanford Environmental Dose Reconstruction (HEDR) Project (structure shown in Figure 1) being conducted at Pacific Northwest Laboratory (PNL) 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. Hanford Environmental Dose Reconstruction Project Organization Structure

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 Pacific Northwest Laboratory under the direction of an independent Technical Steering Panel.

The Technical Steering Panel 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 among the members are appointed technical members representing the States of Oregon and Washington, cultural and technical experts nominated by the Indian tribes in the region, and an individual representing the public.

* This Executive Summary was approved by the Technical Steering Panel in September 1988.

The project is divided into the following technical tasks. These tasks address each of the primary steps in the path from radioactive releases to dose estimates:

- source terms
- environmental transport
- environmental monitoring data
- demographics, agriculture, and food habits
- environmental pathways and dose estimates.

The source terms task will develop estimates of radioactive emissions from Hanford facilities since 1944. These estimates will be based on historical measurements and production information.

The environmental transport task will reconstruct the movement of radioactive materials from the areas of release to populations. Movement via the atmosphere, surface water (Columbia River), and ground water will be studied.

The environmental monitoring task will assemble, evaluate, and report 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 due to natural sources and nuclear testing fallout.

The demographics, agriculture, and food habits task will develop the data needed to determine the populations that could have been affected by the releases. Population and demographic information will be developed for the general population within the study area. This information will also be developed for several special population groups including the Native American Tribes in the study area, Army personnel stationed at Hanford, Hanford construction workers, and migrant farm workers.

In addition to population and demographic data, the food and water consumption patterns and sources of food and water for these populations must be estimated since these provide a primary pathway for the intake of radionuclides.

Historical dairy farming practices and milk distribution systems will be 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 will use the information produced by the other tasks to estimate the radiation doses populations could have received from Hanford.

Project reports, which have been approved by the Technical Steering Panel, and references used in the reports will be made available to the public in a public reading room. Project progress will be documented in monthly reports, which are available to the public.

MANAGEMENT SUMMARY

PROGRESS

This summary covers progress for the month of February 1989:

- revised project schedule to reflect phased approach
- prepared responses to TSP Directives
- continued preparation of a draft report identifying Hanford Site facilities, process operations, and emission and waste management technologies in use as a function of time
- began development of trajectory and straight-line atmospheric models for Phase I research
- performed preliminary atmospheric calculations to investigate the effects of deposition and decay on estimated concentrations
- continued to inventory Columbia River water and sediment data for 1944 through 1972, and air data for 1945 through 1957
- summarized and reviewed the results of estimates of biases in measurements of iodine-131 in the vegetation data for 1945 through 1950
- contacted representatives from eight tribes, all of whom expressed an interest in participating in the HEDR Project
- began preparations for the Native American meeting/workshop to be held March 14-15, 1989, at the Shiloh Inn-Rivershore in Richland, Washington
- presented project overview to the Kalispel Tribal Council in Usk, Washington
- reviewed and revised white paper on the potential usefulness of iodine-129 measurements as a surrogate for iodine-131
- prepared summary report of the Sensitivity/Uncertainty Analysis Workshop held in January 1989
- continued declassification of early-day, Hanford-originated documents of potential use in the HEDR Project
- provided the DOE-RL Public Reading Room with approximately 20 Hanford-Site-originated documents of potential use in the HEDR Project
- developed five Quality Assurance (QA) procedures dealing with documentation, training, data quality, and peer review.

MAJOR ISSUES AND ACTION TAKEN

None.

PLANNED WORK FOR SUBSEQUENT MONTHS

Work planned for subsequent months includes the following:

- present project status update to the TSP at the meeting to be held March 16-18, 1989, in Spokane, Washington
- complete revised project schedule for FY 1989
- provide written response to TSP Directives
- begin revision of project work plan to incorporate phased approach
- issue PNL-cleared report identifying Hanford Site facilities, process operations, and emissions and waste management technologies
- prepare a report describing the chemical form and atmospheric chemistry of iodine emissions at the Hanford Site
- complete the calculations to define the fission-product inventory of iodine-131 and its emission from the Separations Plants for 1945
- continue entering data into data bases at all task levels
- review annual environmental monitoring reports to identify potentially useful ground-and river-water data
- prepare letter report evaluating the input from ground water to the Columbia River from 1964 through 1966
- hold Native American meeting/workshop March 14-15, 1989, at the Shiloh Inn-Rivershore in Richland, Washington
- continue efforts on the definition of study populations, dominant radionuclides study, key food pathway definitions, radiation dose factors, and model selection and rationale
- initiate Phase I report
- continue to declassify early-day, Hanford-originated documents and provide documents of potential use in the HEDR Project to the DOE-RL Public Reading Room.

BUDGET STATUS

Projected expenditures through February 1989 \$ 1142K

Actual expenditures through February 1989 \$ 1231K

VARIANCE EXPLANATION

None.

CAPITAL STATUS

No FY 1989 capital budget.

PROJECT SUMMARY REPORT

1. IDENTIFICATION NUMBER: DE-AC076RLO 1830		2. PROGRAM/PROJECT TITLE: HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION						3. REPORTING PERIOD: FEBRUARY 1989									
4a. PARTICIPANT NAME AND ADDRESS: PACIFIC NORTHWEST LABORATORY P. O. BOX 999 RICHLAND, WA 99352						4b. CLIENT NAME AND ADDRESS: DOE/RL RICHLAND WA 99352						5. START DATE: OCTOBER 1988					
6. COMPLETION DATE: SEPTEMBER 1989																	
7. FY 89		8. MONTHS		O	N	D	J	F	M	A	M	J	J	A	S	FY90	
9. COST STATUS:																	
a. \$ EXPRESSED IN THOUSANDS																	
b. BUDGET & REPORTING NO./SUB. ACCT NO.																	
c. FIN. NO.																	
d. ACTUAL COSTS PRIOR YEARS																	
e. FY BUDGET																	
f. TOTAL BUDGET																	
g. FY FUNDS AUTH																	
h. TOTAL FUNDS AUTH																	
COSTS		I. PLANNED	203	162	312	253	212	187	405	269	269	405	299	304			
		J. ACTUAL	193	178	275	180	398										
		K. VARIANCE	10	-16	37	73	-186										
		L. CUM PLANNED	203	365	677	930	1142	1329	1734	2003	2272	2677	2976	3280			
		M. CUM ACTUAL	193	371	648	834	1231										
		N. CUM VARIANCE	10	-6	31	96	-89										
10. LEGEND: PLANNED ACTUAL ——— PROJECTED FUNDS AUTH. ——— 90% FUNDS SPENT ▶																	
11. MILESTONES																	
<div style="display: flex; justify-content: space-between;"> <div style="width: 40%;"> <p>01 Revise total project schedule</p> <p>1) internal</p> <p>2) draft to TSP</p> <p>3) final draft</p> <p>03 Prepare preliminary estimate of I-131 releases in 1945</p> <p>03 Identify Hanford Site facilities, process operations, emission and waste mgmt technologies</p> <p>1) proposed report outline</p> <p>2) draft report</p> <p>03 Preliminary report on radionuclides from fuel processing plants</p> <p>04 Draft report of literature review</p> </div> <div style="width: 55%;"> </div> </div>																	
12. NAME/SIGNATURE OF PARTICIPANTS PROG/PROJ MANAGER & DATE H A Haerer																	

PROJECT SUMMARY REPORT *

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Source Terms

OBJECTIVE

Source terms are the amount and type of radioactive materials released to the environment. The Source Terms Task will develop estimates of radioactive emissions from Hanford facilities since 1944. These estimates will be based on historical measurements and production information. The estimates developed by this task will be used by the Environmental Transport Task to reconstruct the concentrations of radionuclides in the environment.

Uncertainty in calculated and measured data can result from many factors. For the measured emissions, the uncertainty may be because of early measurement techniques. For calculated emissions, the uncertainty may be because of differences in the published variables that are used for calculations. By comparing the uncertainty in the available data, this task will determine the most accurate method for developing source terms. For some time periods, measured values may not exist; therefore, the task must calculate the source terms from the information available. The proposed methods and results of this task will be reviewed, evaluated, and approved by the TSP.

PROGRESS

Activities for this reporting period included the following:

- prepared task input/output information necessary for preparation of an overall FY 1989 project schedule
- defined task activities, activity completion dates and financial resources required to meet overall FY 1989 project schedule
- began work on a report describing the chemical form and atmospheric chemistry of iodine emissions at the Hanford Site
- prepared a draft format for the task's numerical data base for internal task/project review and comment
- continued preparation of a draft report identifying Hanford Site facilities, process operations, and emission and waste management technologies in use as a function of time
- began to obtain and document information on the airborne radionuclide releases from fuel processing at the Hanford Site, 1944 through 1947

- maintained informal dialogue with members of the Statistics Task to address uncertainty/sensitivity analysis issues specific to the Source Terms Task.

MAJOR PROBLEM AREAS AND ACTION TAKEN

None.

PLANNED WORK FOR SUBSEQUENT MONTHS

Work planned for subsequent months includes:

- issue a recommendation to the TSP on modifying the ORIGEN computer code to provide data specific to Hanford reactors
- prepare a report describing the chemical form and atmospheric chemistry of iodine emissions at the Hanford Site
- complete calculations to define the fission product inventory of iodine-131 and its emission from the Separations Plants for 1945
- issue the PNL-cleared report to the TSP identifying Hanford Site facilities, process operations, and emission and waste management technologies in use as a function of time
- prepare a preliminary report on the fraction of various radionuclides released from fuel processing plants
- complete the structure of the numerical data base and initiate its use
- document the airborne radionuclide releases from fuel processing during 1944 through 1947
- continue the review of records at the Hanford Records Holding Area scheduled for disposition for potential relevance to the HEDR Project.

Environmental Transport

OBJECTIVE

The Environmental Transport Task will reconstruct the movement of radioactive materials (the source term information) from the areas of release to the accessible environment. Movement via the atmosphere, Columbia River, and ground water will be studied.

To track the releases to the atmosphere from the Hanford Site, meteorological data are needed including wind speed, wind direction, and other data that affect the dispersion of the releases. Mathematical models will be applied to these meteorological data and the source term data to calculate concentrations of radionuclides in the air and on the ground. The TSP will review, evaluate, and provide direction concerning the models proposed by this task.

Reconstruction of the transport of radionuclides in the Columbia River will be based primarily on historical studies of the Columbia River and its tributaries. For those time periods when data were limited or unavailable, computer models will be used to reconstruct radionuclide concentrations in the river.

The movement of radionuclides in the ground water will be determined initially by reviewing ground-water monitoring data and using these data to estimate the contribution to the surface-water pathway. As in the case of the surface-water pathway, some modeling might be required where data are lacking.

PROGRESS

Activities for this reporting period included the following:

- revised contributions to the project influence diagram and cost estimates for Phase I of the project
- began developing two models for Phase I. The first is a trajectory model based on the MESOI and MESORAD codes, and the other is a straight-line model. Development of the models for the Phase I estimates is planned for completion by the end of May. Atmospheric concentration and surface contamination estimates based on available meteorological data will be available for dose calculations by the end of July and preliminary estimates of uncertainty for the estimates will be available in August.

- continued preparation of the atmospheric data base, literature review and evaluation of the conceptual model for the Columbia River
- continued literature review and evaluation of the potential contribution to dose from the Hanford Site unconfined aquifer
- performed preliminary calculations of atmospheric transport and diffusion with deposition to investigate the effects of deposition and decay on the estimated concentrations using two analyses. In the first analysis, the effects of two deposition/depletion parameterizations on air concentrations and surface contamination were investigated by reviewing other published studies. The two parameterizations compared were a source depletion model and a surface depletion model. In the second analysis, the MESOILT model was applied to evaluate the effects of deposition and decay. The model was applied using 1964 meteorological data to a distance of about 150 miles from the Hanford Site. The release rate for iodine-131 was assumed to be constant at 1 Ci/hr. The results of the model application are still being evaluated.
- continued entry of Hanford data into the data base
- ordered data to support Phase I calculations from the National Climatic Data Center. When the data arrive, priority will be given to entry of the pre-1948 data into the data base.
- completed the draft response to TSP Directive 88-4. The draft will be deliver to the TSP by March 17, 1989.

MAJOR PROBLEM AREAS AND ACTION TAKEN

None.

WORK PLANNED FOR SUBSEQUENT MONTHS

Work planned for subsequent months includes the following:

- continue entry of early Hanford meteorological data into the computer data base
- continue atmospheric transport model evaluation and development for the Phase I calculations
- review annual environmental monitoring reports for data pertaining to monitoring of the Columbia River, and identify available data
- begin review of annual environmental monitoring reports for the ground-water transport subtask

- focus on collection and interpretation of monitoring data at locations defined by the Demography, Agriculture, Food Habits and Environmental Pathways and Dose Estimates Tasks
- consider the Hanford reach of the Columbia River for 1964 through 1966
- prepare a letter report evaluating the input from ground water to the Columbia River during 1964 through 1966.

Environmental Monitoring

OBJECTIVE

The Environmental Monitoring Task will assemble, evaluate, and summarize key historical measurements of the concentrations of radionuclides in the environment around Hanford. Radionuclide concentrations have been measured at various times in such media as air, drinking water, foods, fish, the Columbia River, soil and in other sample materials. These measurements will be evaluated to estimate their accuracy and then used by the Environmental Pathways and Dose Estimates Task to estimate radiation doses and by the Environmental Transport Task to calibrate computer models. A major objective of this task is to separate Hanford as a source of radionuclide concentrations from concentrations resulting from natural sources and fallout from worldwide atmospheric tests. Methods to attain this objective will be proposed to the TSP for review, evaluation, and approval.

PROGRESS

Activities for this reporting period included the following:

- continued work on the data inventory focusing on Columbia River water and sediment data for 1944 through 1972, and on air data for 1945 through 1957
- summarized and reviewed internally the results of estimates of biases in measurements of iodine-131 in vegetation for 1945 through 1950
- initiated effort to address the intercomparability of radiochemical separation methods used to analyze vegetation samples in the late 1940s and gamma spectroscopy introduced in the mid-1950s
- planned and reprogrammed task effort to coincide with the revised phased project approach and FY 1989 objectives.

MAJOR PROBLEM AREAS AND ACTION TAKEN

None.

PLANNED WORK FOR SUBSEQUENT MONTHS

Work planned for subsequent months includes the following:

- continue planning and implementing revised tasks for Phase I research
- continue internal review of vegetation bias estimates
- assemble data for Phase I inputs to other tasks
- continue review of the Seattle Records Center holdings.

Demographics, Agriculture, Food Habits

OBJECTIVE

This task will develop the demographic, food consumption, and food production information needed to conduct dose estimates.

Demographic information will be 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.

In addition to demographic data, the sources and quantities of food and water consumed must be estimated, since food and water provide a pathway for the intake of radionuclides.

Milk produced from cows represents a significant food pathway for iodine-131 if the cows were fed vegetation contaminated with radionuclides. Dairy farming practices and milk distribution systems will be studied to locate the populations that may have consumed potentially contaminated milk.

Consumption of contaminated fish and shellfish is also a food pathway for exposure to radioactive materials. Estimates of the amount of potentially contaminated fish and shellfish consumed from the Columbia River and ocean bays will be developed through an extensive review of numerous studies conducted in the past.

Airborne radionuclides from the plant stacks may have been deposited on fruits and vegetables. Consumption of these foods provided a pathway to man. The pathways will be studied.

Treated Columbia River water was used by some of the communities downstream from Hanford. Drinking this water provided a pathway for exposure to radioactive materials. To estimate the doses from this pathway, it is necessary to know the communities using the water, the amount of water withdrawn, the treatment process, the travel time through the system, and the amount of water consumed. Irrigation water usage downstream from Hanford will also be studied because the radioactive materials in the river water could have been deposited on crops consumed

by people or animals. Recreational users of the river could also have been exposed to radiation from the river and shoreline. Differences in the food habits and lifestyles of Native Americans will also be considered. Methods to collect data and to estimate population densities and food consumption have been proposed to the TSP for review, evaluation, and approval.

PROGRESS

Activities for this reporting period included the following:

- contacted representatives from all eight tribes, all of whom have expressed an interest in participating in the HEDR Project. Six tribes have made commitments to attend the meeting/workshop. To date, proposals have been received from four tribes (Nez Perce, Spokane, Yakima, and Colville) in response to PNL's Request for Proposal.
- combined revised versions of the demographic, milk model, and Native American research proposals into a single document, which has been distributed to TSP members.
- produced component II, vital rates, and ratio correlation population estimates for the counties in the Phase I study area, and began preparing estimates for county subdivisions
- produced demographic data by census subdivisions
- planned the meeting/workshop with the eight Indian tribes to be held March 14-15, 1989, at the Shiloh Inn-Rivershore in Richland, Washington
- presented information to the Kalispel Tribal Council in Usk, Washington, on February 15, 1989. The Council responded favorably to the presentation and agreed to send representatives to the meeting/workshop.

MAJOR PROBLEM AREAS AND ACTION TAKEN

None.

PLANNED WORK FOR SUBSEQUENT MONTHS

Work planned for subsequent months includes the following:

- continue QA on population estimates for Phase I research
- document initial milk model results

- hold the HEDR Native American Meeting/Workshop on March 14-15, 1989, at the Shiloh Inn-Rivershore in Richland, Washington
- initiate Phase I research with the eight Indian tribes
- conduct background interviews of milk producers
- develop a map of the Hanford Site showing the location of the living quarters of the construction work force
- locate and list all water uses from the Columbia River between 1964 through 1966.

Environmental Pathways and Dose Estimates

OBJECTIVE

This task will use calculated and measured concentrations of radionuclides provided by the Environmental Transport Task and the Environmental Monitoring Data Task to calculate doses to populations, typical individuals, and specific individuals. These calculations will include direct transfer of radionuclides from concentrations in air and water to people (via breathing, drinking, immersion, etc.). The calculations will also require transfer from concentrations in air and water through environmental pathways, such as soil, plants, animals, and fish, to people. All significant decisions on exposure models and input parameters will be presented to the TSP for review, evaluation, and approval.

PROGRESS

Activities for this reporting period included the following:

- defined the schedule and necessary data to accomplish a preliminary estimate of doses for the air pathway for 1944 through 1947 and the water pathway doses for 1964 through 1966
- continued planning a laboratory experiment of iodine interception/retention on various types of natural vegetation and crop plants. This experiment will address a major uncertainty in interpretation of historical monitoring data: the relationship between deposition of radionuclides on native vegetation and other variables such as time of year and precipitation.
- began a literature survey to define data gaps and refine proposed treatments
- reviewed and revised a "white paper" on the potential usefulness of iodine-129 measurements as a surrogate for iodine-131.

MAJOR PROBLEM AREAS AND ACTION TAKEN

None.

PLANNED WORK FOR SUBSEQUENT MONTHS

Work planned for subsequent months includes the following:

- continue efforts on the definition of study populations, the dominant radionuclides study, the key food pathway definitions, radiation dose factors, and on model selection and rationale
- continue work on defining the overall structure of the needed HEDR data base and on the type of data processing equipment needed for smooth project integration
- issue the iodine-129 "white paper"
- prepare for the March 14-15 Tribal Workshop
- establish a subtask on use of historical bioassay data.

Statistics

OBJECTIVE

This task will provide statistical support to the technical tasks and will be responsible for the development and application of sensitivity and uncertainty analyses. Sensitivity analyses will identify parameters that have the greatest influence on the dose estimates. In this way, project resources can be focused where the benefit in terms of accurate dose estimates is greatest. The uncertainty analyses enable the task leaders to determine how the accuracy and precision of the dose estimates are influenced by certain levels of accuracy and precision in the many input parameters.

PROGRESS

Activities for this reporting period included the following:

- prepared a summary report of the Sensitivity/Uncertainty Analysis Workshop held at the Red Lion, Pasco, Washington, January 16-18, 1989
- prepared responses to TSP Directive 89-5, Items 1,2,4, and 5
- continued developing a plan for conducting sensitivity/uncertainty analyses during Phase I research
- met with other HEDR task leaders to develop input to the Phase I project schedule
- attended a meeting held 1-30 through 2-1, 1989, of the National Cancer Institute Task Group on "Exposure of American People on Kiawah Island, South Carolina, to Iodine-131 from Nevada-Test-Site Fallout."

MAJOR PROBLEM AREAS AND ACTION TAKEN

None.

PLANNED WORK FOR SUBSEQUENT MONTHS

Work planned for subsequent months includes the following:

- develop final plans and schedule for conducting sensitivity/uncertainty analyses during Phase I research

- statistically analyze iodine-131 concentrations on native vegetation collected in October, November, and December of 1945 to identify the temporal and spatial pattern of vegetation concentrations during that time
- meet with HEDR task leaders to develop estimates of uncertainties in parameters as input to sensitivity/uncertainty analyses for Phase I studies
- evaluate and rank approaches for conducting sensitivity/uncertainty analyses
- write a final report describing the preliminary uncertainty analyses conducted for the estimated iodine-131 dose to the thyroid of infants in Pasco, Washington, in 1946
- work with Source Terms Task representatives to ensure that current HEDR procedures are adequate to assure that all significant Hanford emissions have been identified.

Information Resources

OBJECTIVE

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

PROGRESS

Activities for this reporting period included the following:

- declassified 5 early-day, Hanford-originated documents of potential interest/use in the HEDR Project and provided them to appropriate task leaders. One 200-page document required substantial deletions.
- provided the DOE-RL Public Reading Room with approximately 20 Hanford-Site originated documents of potential interest/use in the HEDR Project. Approximately 275 remain to be sent.
- filled numerous requests for documents from HEDR Project tasks and TSP members
- added new citations to the tracking system.

MAJOR PROBLEM AREAS AND ACTION TAKEN

None.

PLANNED WORK FOR SUBSEQUENT MONTHS

Planned work for subsequent months includes the following:

- continue to add input to the information resources tracking data base
- continue to provide documents to the DOE-RL Public Reading Room in an orderly, timely fashion
- develop a list of Hanford-originated raw data logs/notes of potential interest/use to the HEDR Project
- develop a collection of reports that address activities during December 1945 that may further explain the iodine-131 in vegetation data

- continue to identify and collect documents and/or data of potential interest/use to the HEDR Project that address activities during the years from reactor startup through 1949.

Records Management

OBJECTIVE

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

PROGRESS

Activities for this reporting period included the following:

- continued to receive and process project records
- transferred records to the DOE-RL Public Reading Room.

MAJOR PROBLEM AREAS AND ACTION TAKEN

None.

PLANNED WORK FOR SUBSEQUENT MONTHS

Work planned for subsequent months includes the following:

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

Quality Assurance

OBJECTIVE

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

PROGRESS

Activities for this reporting period included the following:

- wrote the following procedures, which are either in review or have been issued:
 - HEDR-TP-1, "Documentation of Primary Data Collection" - contains methodology used to document field contacts, key informant interviews and field surveys
 - HEDR-TP-2, "HEDR Indoctrination and Training" - contains methods for planning, performing, and documenting training
 - HEDR-TP-3, "HEDR Documentation of Critical Decisions" - contains methods for documenting critical decisions of key project activities
 - HEDR-TP-4, "HEDR Data Quality Objectives in Proposals" - contains methods for determining what and how data quality objectives are to be described in proposals
 - HEDR-TP-5, "HEDR Peer Review" - contains methods for performing and documenting peer reviews.
- develop a training matrix for evaluating all HEDR staff training. The matrix will show the training received by each staff member and identify additional necessary training.

MAJOR PROBLEM AREAS AND ACTION TAKEN

None.

PLANNED WORK FOR SUBSEQUENT MONTHS

Planned work for subsequent months includes the following:

- continue assisting in implementation of QA program requirements
- complete and issue technical procedures
- begin surveillances of software control requirements.

APPENDIX A

Communications Log

COMMUNICATIONS LOG - FEBRUARY 1989

<u>INITIATED BY</u>	<u>CONTACT</u>	<u>AFFILIATION</u>	<u>TYPE</u>	<u>SUBJECT</u>
PNL/Haerer	John Till	TSP, Chairman	Telephone	Ongoing discussions re:HEDR Project
PNL/Haerer	Mary Lou Blazek	TSP, Vice Chairperson	Telephone	Ongoing discussions re:HEDR Project
PNL/Haerer	Bernard Shleien	TSP, Secretary	Telephone	Ongoing discussions re:HEDR Project
Bryan Berry	Carol Bruneau	PNL	Telephone	RFP & project update
PNL/C. Bruneau	Bill Burke	Umatilla Tribe	Telephone	Follow-up to letters of 1/27/89
Bryan Berry	Carol Bruneau	PNL	Telephone	Meeting/workshop with Tribes
PNL/C. Bruneau	Adeline Fredin	Colville Tribe	Telephone	Meeting/workshop with Tribes
PNL/C. Bruneau	John Till	TSP, Chairman	Telephone	Meeting/workshop with Tribes
PNL/C. Bruneau	Dave Ernst	Spokane Tribe	Telephone	Meeting/workshop with Tribes
PNL/C. Bruneau	Dave Bonga	Kalispel Tribe	Telephone	Presentation of HEDR Project to Kalispel Tribal Council
Mike Penny	Carol Bruneau	PNL	Telephone	Meeting/workshop with Tribes
PNL/C. Bruneau	Myrtle Adams	Warm Springs Tribe	Telephone	Meeting/workshop with Tribes
PNL/C. Bruneau	Council Secretary	Coeur d'Alene Tribe	Telephone	Meeting/workshop with Tribes
PNL/C. Bruneau	Lawrence Aripa	Coeur d'Alene Tribe	Telephone	Meeting/workshop with Tribes
PNL/M. Hattrup	F. T. Mchale	AEC	Telephone	Prisoners at Columbia Camp
PNL/M. Hattrup	John Roberts	Bureau of Prisons	Telephone	Prisoners at Columbia Camp