State of Idaho INEEL Oversight Program

Final Report – 01/01/1996 – 09/30/2000

K. Tever

September 2000

Work Performed Under Contract No. DE-FG07-96ID13373

For
U.S. Department of Energy
Assistant Secretary for
Environmental Management
Washington, DC

By
State of Idaho INEEL Oversight Program
Boise, ID
STATE OF IDAHO INEEL OVERSIGHT PROGRAM

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AIP AGREEMENT
DOE GRANT: DE-FG07-96ID-13373

Final Progress Report
September 30, 2000
PRIMARY GOALS

To maintain an independent, impartial, and qualified State of Idaho INEEL Oversight Program to assess the potential impacts of present and future Department of Energy (DOE) activities in Idaho; to assure the citizens of Idaho that all present and future DOE activities in Idaho are protective of the health and safety of Idahoans and the environment; and to communicate the findings to the citizens of Idaho in a manner which provides them the opportunity to evaluate impacts of present and future DOE activities in Idaho. This will be accomplished through primary technical work activities and providing clear, factual data and other information to the public.

PRIMARY WORK ACTIVITIES

EMERGENCY PLANNING, PREPAREDNESS, AND RESPONSE

Accomplishments

A. Coordination

X Reviewed DOE-ID Operational Emergency Plan for the INEEL and provided comments.

X Hosted the Regional Emergency Planning Committee meeting with the five surrounding counties and associated state and INEEL emergency response organizations. Provided the latest maps and information to participants.

X Participated in LEPC conference hosted by the Bureau of Hazardous Materials.

X Participated in the Southeast Idaho Regional LEPC meeting in Pocatello. Gave a presentation to the Bonneville County LEPC on the INEEL range fires during September.

X Participated in the INEEL wildfire post critiques.

X Attended State Regional Response Team meeting held by Bureau of Hazardous Materials at Boise Fire Station 12. Discussed TEPP training modules and availability of
teams to receive training from Eastern Idaho Technical College.

Met with Idaho Bureau of Disaster Services to identify requirements and format for inclusion of the state Fixed Nuclear Facility Emergency Plan. Disaster Services sent a letter to Oversight directing them to coordinate and complete the plan. Oversight will also be responsible for updating the plan.

B. Planning

X Worked with Bureau of Disaster Services to review State INEEL Fixed Nuclear Facility Emergency Plan.

X Met with DOE to clarify INEEL OP's roles and responsibilities involving the INEEL and emergency response. Clarified the roles and responsibilities of various state agencies in the event of an emergency at INEEL or along transportation routes used by DOE to ship radioactive materials. Discussed OP involvement in the DOE-EOC and the potential for conducting unified Dose Assessments.

C. Preparedness

Participated in the following drills:

February 10, 2000 - Notification Drill
March 22, 2000 - HAZMAT and Notification Drill
April 12, 2000 - Notification Drill
May 2, 2000 - Notification Drill  (INEEL OP did not receive notification)
June 6, 2000 - Notification Drill  (INEEL OP did not receive notification)
Bonneville County Weapons of Mass Destruction exercise.
July 6th INEEL offsite notification drill.
July 12th NRF Table Top Exercise.
Aug 9th NRF Dry Run Exercise.
Aug 23rd INEEL Drill.
Sept 6th Notification Drill.
Sept 13th INEEL Drill.
Sept 14th NRF Exercise.
X Completed facility modeling runs for annual mixing concentrations from INEEL facilities and results formatted for the database. ANL-W and NRF were not included. The modeling runs for those facilities will be completed during the 3rd quarter. Met with the contractor to follow up on the current status of this project. Soil sampling sites (in GPS) were requested from the contractor to put on the computer-generated maps.

X Reviewed a new atmospheric dispersion and radiological dose assessment code that may work for the state for INEEL fixed facilities. OP will solicit NOAA to evaluate the atmospheric dispersion portion of this code.

X Finalized the radiological response-training format with Eastern Idaho Technical College, including the modules for the self-study and the additional training requirements for the instrumentation. Completed a brochure for the training. Funding for this activity was provided by the Western Governor’s Association but leverages support for community efforts near the INEEL.

X Oversight provided office supplies to county disaster coordinators per their request for assistance.

D. Response

Oversight responded to the following INEEL incidents:

- April 12, 2000 - Regulatory notification for small petroleum spill (no radioactive material involved).
- July 26th INEEL Range Fire
- July 27th INEEL Range Fire
- Sept 17th INEEL Range Fire

ENVIRONMENTAL SURVEILLANCE

Accomplishments

X Performed routine sample collection and analysis for radiological constituents in air, soils, and dairy milk and monitored gamma radiation levels on and around the INEEL. Also collected and analyzed ground and surface water samples for a suite of radiological and non-radiological constituents.

X Performed routine maintenance on air samplers including hose and pump replacement on several samplers. However, several problems were encountered with the air and radiation monitoring equipment during the 1st quarter. First, technical difficulties were encountered with the
Pressurized Ion Chamber (PIC) network, related to the data loggers and radio communications. INEEL OP staff identified a software issue with both the data loggers and polling computer. Apparently, the vendor failed to communicate with INEEL OP regarding software upgrades to both instruments. Second, problems with the solar power systems at the remote PIC stations disabled the equipment. Repairs were made and radio telemetry was reinstated. Third, malfunctions occurred with the modified flow totalizers for the Wedding & Associates Intermediate-Flow PM$_{10}$ Samplers developed by ThermoEnvironmental. Identified the problem as an issue with reduced flow volume measurements, which was corrected, but concerns remain as to whether this is a long-term solution. The reduced flow problem is a result of a design flaw in the flow control valve. This valve is sensitive to the extreme weather conditions at the site and a more robust system may have to be designed to ensure reliability of operation in the future.

- Completed the 1998 Environmental Surveillance Program Annual Report. Issued the document in hard copy, CD Rom, and made it available on the INEEL OP website. In preparation for the 1999 Environmental Surveillance Program Annual Report issued and posted the 2nd Quarter 1999 report on the website. Delays in sample analysis at the ISU lab due to the move to a new location affected timely issuance of the 3rd and 4th quarter reports for 1999. However, both are scheduled for issuance during 2nd Quarter 2000 and should not hinder progress on the 1999 Annual.

- Reviewed draft data for 4th Quarter 1999 and 1st quarter 2000. Identified a significant increase in gross beta in air concentrations for the last two weeks of December 1999 and the first week of January 2000. The increase was also observed by the BBWI Environmental Monitoring Group and by the Environmental Science and Research Foundation, even though the increase observed by these groups was not as noticeable as that observed by INEEL OP. The increase in gross beta screening measurements for this period is attributed to the trapping of radon progeny near the ground surface as a result of unusually severe inversion patterns experienced during this time period.

- Reviewed a white-paper Status Report on ISU Experiments Related to Measurement of Tritium in the Environment. Drafted a proposal to test and determine whether INEEL OP is using the appropriate desiccant material for atmospheric moisture sampling. This study will be carried out during the second half of 2000. Deployed a modified atmospheric moisture sampler at the NOAA meteorological tower located near CFA690 to compare the two commonly used desiccant materials for atmospheric moisture sampling.

- Irradiated Environmental Dosimeters (Rad Elec E-PERM Electret Ion Chambers) at Idaho State University as part of internal quality assurance. Reviewed the past 5 calendar quarters worth of irradiation data and found that spike results have demonstrated an adequate level of consistency with measurements showing agreement well within pre-determined tolerance ranges.
Brought the INEEL OP gamma monitoring station at the NOAA Big Southern Butte meteorological tower on line after several technical problems were resolved.

Began compiling and organizing all the E-PERM EIC data collected by INEEL OP for entry into a permanent MS Access database. These entries will add to the rest of the INEEL OP environmental surveillance data that has been put into this new program format together with QA/QC query systems and more accessible, user-friendly capabilities. Eventually, this database will be made publicly available through the INEEL OP website.

Added chapters to the INEEL OP Health and Safety Plan. One chapter addresses field safety including concerns such as inclement weather, range fires, risk avoidance, and insect or snake bites. The other chapter is a Chemical Hygiene Plan for use in the INEEL OP laboratory in Idaho Falls.

Added three interactive chapter quizzes to the Community Monitoring Station website and introduced games to assist learning.

Performed routine sample collection and analysis for radiological constituents in air, soils and dairy milk, and monitored gamma radiation levels on and around the INEEL. Collected and analyzed ground and surface water samples for a suite of radiological and non-radiological constituents.

Located a permanent and functioning ambient gamma radiation monitoring station at Big Southern Butte.

Presented a poster session at the National Health Physics Society meeting in Denver, Colorado, regarding an ongoing study comparing efficiency and reliability of molecular sieve bed and silica gel bed tritium samples.

INEEL Environmental Monitoring and Surveillance Committee met on April 27 and discussed the future direction of the committee. It was decided to make each meeting topical by environmental medium and to meet every other month.

The Monitoring and Surveillance Committee also met on May 25, 2000. The topic was soil sampling. The meeting included a presentation by Doug Walker and discussion of soil sampling grids and schedule.

Developed concepts for integrating Program information into high school science curricula. Made arrangements to hire a teacher to design presentation materials.

Conducted additional sampling (100 samples) at INE02 site for further investigation as part of the comparison of conventional soil sampling to In Situ gamma spectroscopy. Presented the
initial results of this comparison to the INEEL Monitoring and Surveillance Committee and to the National Health Physics Society Meeting in Denver, Colorado.

X Collected samples for air (particulates), radioiodine, atmospheric tritium, precipitation tritium, precipitation for “wash out” man-made gamma emitting radionuclides, and ambient radiation monitoring as scheduled.

X Repaired failed volumetric flow totalizers and pumps on the Wedding & Associates PM$_{10}$ samplers. By the end of 3rd quarter, each sampling station had a working flow totalizer and relatively new pump. Investigated the possibility of implementing a totalizer retrofit designed by BBWI electronics support laboratory personnel and/or replacement of old samplers with a more robust, simpler air monitoring system.

X Maintained remaining sampling equipment by replacing two pumps used for atmospheric moisture sampling, replaced EPROM for Handar data loggers used with the HPIC at Mud Lake/Terreton community Monitoring Station.

X Repaired the atmospheric moisture sampler and the PM$_{10}$ that were significantly damaged at the Big Lost River Rest Area as a result of the July fire.

X Moved the sampling station presently located in Atomic City to the NOAA meteorological tower on the west of Atomic City. The move allows NOAA access to the Atomic City HPIC which in turn provides additional redundancy in HPIC data collection. This monitoring station now includes particulate air sampling, atmospheric moisture sampling, precipitation sampling, and gamma monitoring including an HPIC and EIC.

X Identified and temporarily repaired problem with the Big Southern Butte gamma monitor. Corrosion in the deep cycle battery caused significant drops in voltage at night, which caused the data logger to shut down until battery charged later in the day.

X Terrestrial Monitoring – Soils and Milk

Collected milk samples July 11, August 8, and September 23.

Collected routine soil samples at Big Lost River Rest Area, Howe, Sand Dunes tower, Atomic City, and INEEL Main Gate on September 7, 2000.

• Water Quality Monitoring

Collected surface and groundwater samples at scheduled monitoring sites, with the exception of USGS 112, 115, and 85 because of the RCRA issues related to
containment of purged water.

Participated in discussions with DOE, BBWI, and USGS regarding the containment of purged water issue. The conclusion reached was that purged water from wells co-sampled by USGS and INEEL OP would not need to be contained and transported to a designated treatment facility.

Collected effluent samples as part of the prime contractor water quality verification program.

- General Environmental Monitoring


Developed several procedures for environmental monitoring, covering: verification and validation of data, chemical hygiene in the INEEL OP laboratories, and field safety.

Continued importing INEEL OP ESP sampling data into Microsoft Access. Tritium data, E-perm data, precipitation, milk, and soil data now entered and QA/QC completed.

Completed review of historical background measurements for ambient gamma and soil sample analysis. Reviewed dose conversion factors for ground shine and immersion, specifically for Cs-137 and compared with other dose conversion factors and exposure models in order to identify risk-based action levels for ambient gamma monitoring data.

Identified risk-based action levels for air monitoring data. These action levels will be incorporated in the Air Monitoring Sampling and Analysis Plan revision.

Deployed and collected desiccant columns in July, August, and September as part of the ongoing study to determine appropriate desiccant material for tritium sampling. Preliminary results indicate that the silica gel desiccant may experience bleeding or punch-through during the summer months. Otherwise, the two desiccants demonstrate similar collection efficiency and moisture retention.

Operated the High Desert Monitor for several weeks at the Big Lost River Rest Area following the WERF fire. Enhanced volumes and detector efficiency indicated the presence of Cs-137 in particulate matter suspended during dust storms following fire. Particulate concentrations in terms of pCi/g were comparable to surface soil concentrations of Cs-137 resulting from fall out from historical testing of nuclear
Monitoring and Surveillance Committee (MSC) met on July 27, 2000 and discussed water sampling issues and again on September 28 where INEEL OP staff gave a presentation to the committee on the fires at the INEEL and the monitoring results after the fires.

Conducted additional high-volume air sampling during the INEEL range fires. Coordinated with EPA Air and Radiation Environmental Laboratory to perform radiochemical analysis on samples collected during the fires.

Made a presentation to the INEEL Citizen’s Advisory Board in Jackson, Wyoming regarding INEEL OP ESP. Presented some historical results for air and gamma monitoring as well as more recent monitoring data.

Completed four presentations for classroom use: Snake River Plain Aquifer, Risk, Basic Radiation, and Background Radiation.

INEEL OP staff, together with a NOAA representative, hosted a group of 20 Boy Scouts and their leaders from Jackson, Wyoming, at the Idaho Falls Community Monitoring Station. Talked to the boys about basic radiation and INEEL OP’s equipment at the kiosk.

**IMPACT ASSESSMENT**

**Accomplishments**

X Reviewed and commented on the Yucca Mountain Draft EIS.

X Continued to participate as a cooperating agency in the preparation of DOE-ID=s HLW & FD EIS. Work involved attendance at numerous meetings and presentations on behalf of the State of Idaho at seven public hearings on the draft EIS. Also, as part of the process for selecting a preferred alternative for the final EIS, attended numerous team meetings designed to identify criteria and considerations associated with waste treatment and facility disposition alternatives.

X Received an update from DOE on the HEPA filter program at INEEL and progress toward responding to related Defense Nuclear Facilities Safety Board concerns. Requested and received relevant documents.
Developed a proposal for conducting a soil sampling survey in the windblown area of INTEC to verify DOE's determination that the area could be released because sample and survey results did not show Cs-137 levels in excess of 16.7 pCi/g. The proposal has been reviewed and approved internally and will be submitted to DOE for review during 2nd quarter.

Collected additional soil samples in a downwind direction from INTEC as part of an ongoing study to compare the measured radionuclide constituents in these samples with the results of a hand-held in-situ gamma spectrometer used to survey the same area. This study will help determine whether or not INEEL OP will rely on the spectrometer to do more extensive surveys in the future.

Received and responded to external peer review comments on an INEEL OP study that evaluates differences in water quality chemistry in proximate wells along the INEEL northeast boundary near Mud Lake. These wells are among those used to determine water quality constituents upgradient of INEEL and are therefore important for screening out contaminants that have not been introduced by DOE operations. The study will be published 2nd quarter 2000 in the Journal of Idaho Science.

Issued the SL-1 Report, documenting verification sampling results undertaken at these radiological burial grounds. This study verified DOE's determination that the area had been cleaned up to 16.7 pCi/g and confirmed the reliability of the vehicle-mounted gamma radiation detector for making these determinations. The report is available in hardcopy, CD-Rom, and on the INEEL OP website.

Issued a report documenting the results of a reconnaissance survey in the vicinity of Big Southern Butte and on Blizzard Mountain. Analytical results from soil samples taken in these areas confirmed DOE's report that there are two places where Cs-137 exceeds background levels. A follow-up study to investigate these two areas more closely will be proposed for 3rd quarter 2000.

Attended April quarterly meeting at INTEC regarding SNF movement to dry storage. Tourd INTEC-603 after removal of final SNF from the pool. Discontinued these quarterly meetings with the completion of the 603 Basin transfers.

Began review of INEEL documents regarding soil-structure interaction (SSI) and the evaluation of structural adequacy related to the Seismic Evaluation and Upgrade of INTEC-651.

Assisted in the development of the Decision Management Team Plan designed to result in the selection of a preferred alternative by DOE and the State of Idaho for the final HLW & FD EIS. Prepared State of Idaho position papers on four key issues of concern. Attended two decision management team meetings on May 8 and 9, 2000, and May 30 through June 1, 2000.
and presented the results of support team efforts to identify decision criteria and considerations associated with mission, policy, agency concerns, and uncertainties.

X Completed Proposal and sampling analysis plan to verify Cs-137 levels at the wind blown area outside the INTEC fence line. Started grid and obtained GPS coordinates for each sampling location.

X Met with Idaho Falls manager and other INEEL OP staff interested in the project plans to calculate and map $/q$ values from INEEL facilities and fugitive source areas. Prepared a draft project proposal for peer review.

X Met with BBWI, NOAA and INEEL OP personnel regarding the development of a soil sampling grid. Made progress toward reaching consensus on a grid, sampling-co-sampling schedule, and sample site rotation.

X Requested a briefing from DOE regarding the current status of the hazards assessments. A presentation is scheduled for the 3rd quarter of this year.

X Toured ANL-W to develop understanding of electrometallurgical treatment process for the EBR II fuel and to view the phytoremediation CERCLA project at ANL-W. Participated in several tours of INEEL facilities with public groups including the Snake River Alliance and Keep Yellowstone Nuclear Free.

X Reviewed and commented as appropriate on the following Draft NEPA documents:

Draft Environmental Assessment – Demolition of Fourteen Buildings and One Structure Ancillary to the Naval Prototype Plants at the Naval Reactors Facility (INEEL).


Draft Environmental Assessment for the Offsite Transportation of Certain Low-Level and Mixed Radioactive Waste from the Savannah River Site for Treatment and Disposal at Commercial and Government facilities, September 2000, U.S. DOE.

Reviewed the following additional documents:

1999 INEEL National Emission Standard for Hazardous Air Pollutants-Radionuclides,
July 2000, U.S. Department of Energy;
Electrometallurgical Techniques for DOE Spent Fuel Treatment, Final Report, 2000, National Research Council; and
CPP-651 interim documents.

Continued carrying out responsibilities as a cooperating agency on the High-Level Waste and Facility Disposition EIS. Work included:

Preparation of comment responses to public comment concerning the State of Idaho issues.

A detailed review of other comment responses, identifying technical and policy issues for State attention and interactions with DOE to agree on wording for specific responses.

Participation in the third Decision Management Team meeting, which resulted in consensus on a preferred alternative for the HLW liquid and Calcine at INTEC;

Extensive interaction with DOE on text describing the preferred alternative, documentation of the process used to select a preferred alternative, and minutes of related meetings; and

Issue resolution related to Appendix C9, which documents the groundwater modeling of low-level waste disposal scenarios at INTEC.

Continued work on the PEST-GMS integration and continued calibration of flow model. When completed, this fate and transport model will be a valuable tool to verify predictions of future contamination concentrations in the Snake River Plain aquifer near the INEEL based on historical waste disposal and estimated future inputs to determine key hydrogeologic parameters and to evaluate “what-if” scenarios.

Finalized a sampling and analysis plan and commenced soil sampling and in-situ measurements of the INTEC windblown soils area.

Compiled an Access data base for a large-scale and small-scale grid and began model runs that will estimate annual mixing concentrations from each facility at INEEL, under normal operating conditions.

Finalized a project proposal to model and map $\chi/q$ values from emissions from key INEEL
Finalized a project proposal to sample soils at sites on Blizzard Mountain that were identified in a reconnaissance study last year as exceeding background for Cs-137.

Attended a meeting of the Nuclear Waste Technical Review Board panel on the Waste Management system to discuss spent fuel transportation

PUBLIC INFORMATION/EDUCATION

Accomplishments


X Completed preparation and publication of a series of seven fact sheets for the draft High Level Waste and Facilities Disposition EIS:

- Basic Information
- About High-Level Radioactive Waste
- How Decisions Are Made (NEPA)
- Options for Treatment and Disposal
- Comparing Options
- The EIS and Idaho=s Settlement Agreement
- Get Involved

X Made presentations and responded to questions and media inquiries at the seven public hearings on the draft HLW EIS in Idaho, Washington, and Oregon per DOE-ID request.

X Completed bid development and processing for one-year printing contract for Monitor. Negotiated with pre-press vendor and printer to expedite printing on Monitor.

X Prepared information related to the AMWTP, including a dose assessment map for AMWTP emissions. Distributed information to potentially affected federal agencies, including Yellowstone and Teton Parks, Bridger-Teton, and Targhee National Forests.
X Completed preparation and publication of an AMWTP-focused Monitor. Re-worked transportation route graphic originally created by DOE-Carlsbad regarding WIPP shipments for use in this Monitor.

X Responded to public and media (Post Register, Journal, Times News, Statesman, Associated Press) inquiries regarding AMWTP and the high-level waste EIS. (Post-Register AMWTP coverage included Oversight's toll-free number and appeared to generate a flurry of calls.)

X Evaluated "usability testing" or "focus group" type review of technical publications meant for a general audience.


X Began work on folder for annual Overview for publication in summer. Reviewed critique of the 1999 Overview.

X Created scanned photo library. Reviewed National Archives website and reviewed photos from historic sources.

X Prepared and published high-level waste EIS-focused Monitor, including discussion of MACT upgrades for calciner and the Yucca Mountain EIS.

X Began planning for monitoring tabloid in July, which will be used at fairs. Developed conceptual sketches for tabloid, including maps and information tables.

X Scheduled photo shoots during on and off site monitoring events for next quarter. Planned to update monitoring maps.

X Responded to various questions, comments, and requests for information generated by 1-800 number.

X Completed production and mail out of the June 2000 Monitor newsletter, focusing on Advanced Mixed Waste Treatment Project and the settlement between DOE and Keep Yellowstone Nuclear Free, et al.; this newsletter issue also included a reader survey.

X Began production activities related to a Monitor newsletter focusing on the environmental surveillance program, to be issued in time for the Twin Falls Fair in August.

X Improved bulk mailing efficiency by implementing system to spray on bar codes.
- Revised internal public information plan.
- Compiled historical photos through contacts with INEEL, museums and Post-Register for Program photo library.
- Continued to post new information on website.
- Canvassed variety of organizations and government agencies to obtain their insights on educational initiatives to help improve the Program’s efforts in this area.
- Participated in INEEL-hosted archaeological tour & Program water sample collection to gather both information and photographs.
- Planned and began development of annual report on INEEL issues.
- Responded to various citizen and media inquiries, including issues related to the calciner and WERF.
- Conducted planning for Jerome and Twin Falls County Fairs later in the summer.
- Participated in several tours of INEEL facilities with public groups.
- Issued report, *Variations in Penetrating Background Radiation Doses On and Around the INEEL* on measured variability in ambient gamma radiation levels at different INEEL OP sampling locations.
- Prepared displays and manned booth at both the Jerome County Fair and the Twin Falls County Fair. Staffed booth at the Eastern Idaho State Fair.
- Prepared handouts for the AMWTP Blue Ribbon Panel.
- Posted all information on monitoring results from fire on website as well as historical results for comparison.
- Issued two news releases relating to fire-related monitoring. Attended DOE news conference about fire-related monitoring data.