

Joint U.S.-Russian Contaminant Transport Modeling Workshop Record of Meeting

Richland, Washington
July 22- August 5, 2000

On-Site Participants:

Signe Wurstner, Pacific Northwest National Laboratory
Charles Cole, Pacific Northwest National Laboratory
Nelly Vasilkova, Hydrospeztsgeologiya
Galina Zinina, Institute for Physics and Power Engineering
Natalia Kotcherguina, Hydrospeztsgeologiya
Liliya Petrachenkova, Science Applications International Corporation
Irene Firsow, Thomas E. Albert and Associates, Inc. - Interpreter
Sergey Silichtchev, Thomas E. Albert and Associates, Inc. - Interpreter

Background:

The contract between the United States Department of Energy (DOE) and the Company "Hydrospeztsgeologiya" of the Russian Federation on contaminant transport modeling is being implemented under the auspices of the Joint Coordinating Committee for Environmental Restoration and Waste Management (JCCEM). The purpose of the contract, the period of performance of which is January 1-September 30, 2000, is to pursue the transient recharge and hydrodynamic models of the Mayak site, the transient-inverse calibration approach.

The main objectives of the workshop were to complete development of the transient hydrodynamic models of the Mayak site which included development of the transient recharge and pumping, initial trial and error calibration of the transient model and development of a transient-inverse calibration approach in order to develop the Lake Karachay contaminant-plume model.

Workshop Activities:

Through discussions, the workshop participants were able to obtain critical information, exchange ideas, and accomplish the objectives stipulated above.

This workshop continued the efforts to develop and calibrate the transient model initiated in the previous workshop. Information in the database was updated and corrected. The transient recharge and pumping databases were created for the simulation period 1983 to 1997. A series of steady-state model calibration runs aimed at developing the appropriate zones for the transient inverse model were performed. The programs and scripts used to make changes in the database and build the transient model input files were developed.

Four transient calibration runs were made. A summary of technical accomplishments from the workshop is presented in the technical notes below.

Future work that was discussed includes:

- 1) Galina Zinina agreed to contact Vyacheslav Rumynin of St. Petersburg Mining University to expedite publication of the journal article describing the model comparison study.
- 2) Charles Cole and Signe Wurstner agreed to provide a CD of the Mayak model database in time for the next contaminant transport modeling workshop.
- 3) Other issues regarding future work and workshops identified and discussed included:
 - completion of the development of parameter zones for the transient inverse computations,
 - dealing with density issues associated with the near field around Lake Karachay,
 - approaches to define main migration pathways important for modeling migration and dealing with uncertainty.

It was agreed that some of uncertainty can be addressed through the use of results from the transient flow model inverse. However, inclusion of transport in the inverse calibration would better address the uncertainty in the porosity which is believed to be a major contributor to uncertainty. It was agreed that modeling of tracer from the source areas would provide an appropriate means to define discharge areas where local models should be developed to evaluate remediation alternatives. It was also noted that a major uncertainty related to the source term could not be addressed by the current regional modeling and requires more detailed local approach.

The Record of Meeting was signed by:

For the U.S. side

Signe Wurstner
Assistant Project Manager,
Pacific Northwest National Laboratory

For the Russian side

Nelly Vasilkova
Senior Hydrogeologist,
Hydrospetzgeologiya