



# CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES QUALITY ASSURANCE SURVEILLANCE REPORT

PROJECT NO.: 20.06002.01.031

REPORT NO.: 2004-10

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SURVEILLANCE SCOPE: Geohydrology Activities: Unsaturated and Saturated Flow in Isothermal Conditions and Thermal Effects on Flow

REFERENCE DOCUMENTS: QAP-001, Scientific Notebook Control; QAP-002, Review of CNWRA Documents, Reports and Papers; QAP-004, Surveillance Control; QAP-007, Professional Personnel Qualification; TOP-018, Development and Control of Scientific and Engineering Software; QAP-019, Control of Measuring and Test Equipment.

STARTING DATE: 07/7/04

ENDING DATE: 07/12/04

QA REPRESENTATIVE: Mark R. Ehnstrom

PERSONS CONDUCTING TEST/EXAM/ACTIVITY: G. Wittmeyer, R. Green, R. Fedors, J. Winterle, C. Dinwiddie, D. Farrell, A. Jain, D. Bannon.

SATISFACTORY FINDINGS: A discussion was held with the manager of geohydrology activities, G Wittmeyer. Geohydrology activities are divided into the areas of Thermal Effects on Flow and Unsaturated and Saturated Flow Under Isothermal Conditions. The discussion helped direct the surveillance into areas which are currently active and also identified two recently completed reports.

### Review of Completed Documents

Two reports were reviewed for compliance to QAP-002 procedural requirements:

- Temperature and Relative Humidity Along Heated Drifts With and Without Drift Degradation
- Drift Scale Thermohydrological Process Modeling- In drift Heat Transfer and Drift Degradation

Both report QA packages were reviewed and appeared to meet the requirements of QAP-002. Software code referenced in these reports is under TOP-018 controls.

### Review of Ongoing Experiments

Surveillance was performed on the 20% Cold Trap and the Rock Evaporation experiments. The following critical measuring and test equipment was noted:

| <u>Manufacturer</u> | <u>Model</u> | <u>Serial No.</u>  | <u>Calibration Date</u> | <u>Calibration Due</u> |
|---------------------|--------------|--------------------|-------------------------|------------------------|
| Hewlett Packard     | 34970A       | US37011843         | 11/14/03                | 11/14/04               |
| Fluke               | N/A          | 5832650            | 5/24/04                 | 5/24/05                |
| Power Transducers   | PC-5-103D    | 03080276<br>- 0279 | 9/23/03                 | 9/23/04                |
| Digital Manometer   | 475          | N/A                | 8/13/03                 | 8/13/04                |
| Fluke               | 87           | 003674             | 8/13/03                 | 8/13/04                |

The surveillance shows that currently calibrated equipment is being used to record critical measurements in accordance with procedure QAP-019.

### Review of Software

Currently the Geohydrology element uses MULTIFLO, Flow 3D and MODFLOW controlled software. Discussions with D. Farrell focused on an extension to the Flow 3D software. A Software Change Request will be initiated to document the description of the change and the description of the acceptance tests performed on the change. No other software development or use activities were noted.

### Institute Personnel/Consultants/Subcontractors/Students

Professional Personnel Qualification files for the following individuals involved in geohydrologic activities were reviewed and found to be acceptable: A. Woolhiser, S. Green, D. Bannon, R. McGinnis, and K. Bradbury.

### Scientific Notebooks

Scientific Notebook control was discussed with the principal investigators contacted during the surveillance. As a result of these discussions, 5 notebooks have been turned into the manager for final review. Within the next few weeks, an additional four notebooks may be turned in to the manager for review and close-out.

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| UNSATISFACTORY FINDINGS: None<br>NONCONFORMANCE REPORT NO.: N/A<br>CORRECTIVE ACTION REQUEST NO.:N/A          |  |
| ATTACHMENTS: None   |  |
| RECOMMENDATIONS/ACTIONS: None   |  |
| APPROVED: <u><i>AD Swail</i></u><br>CENTER DIRECTOR OF QUALITY ASSURANCE<br><br>DATE: <u><i>2/15/2004</i></u> | DISTRIBUTION:<br>ORIGINAL - QA Records<br>CNWRA QA DIRECTOR<br>ORIGINATOR<br>PRINCIPAL INVESTIGATORS: R. Green, J. Winterle,<br>R. Fedors, C. Dinwiddie, D. Farrell<br>ELEMENT MANAGER: G. Wittmeyer<br>B. Sagar |
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