

[Form 2 (to be reported to Committee on Countermeasures for Contaminated Water Treatment and to be disclosed to public)]

Technology Information	
Area	<p>6.1 and 6.2 Understanding the groundwater flow</p> <p>Simple measuring techniques besides the boring system</p> <p>Analyzing radioactivity material density (tritium and strontium) within a couple of hours</p> <p>NOTE: Sensor Technology also applicable for Area 1, 2, 3, 4, 5.3 and 6</p>
Title	<p>System of real time data processing for monitoring the level of activity in the bore holes (AREVA 6-2-2)</p>
Submitted by	AREVA NC and CANBERRA + GEOVARIANCES
<p>1. Overview of Technologies (features, specification, functions, owners, etc.)</p> <p><u>Objective:</u></p> <p>3D-Cartography in real time of the level activity in the groundwater flow</p> <p><u>Proposed Solution:</u></p> <p>On-line and real time water monitoring system that can measure the activity (90Sr, 137Cs, ...) in the boring area. The system combines sensors for measuring ⁹⁰Sr and ¹³⁷Cs with a data processing which allows determining the groundwater flow radioactivity level with a 3D cartography</p> <p><u>Main specifications:</u></p> <p><u>Detectors :</u></p> <ul style="list-style-type: none"> - Based : <ul style="list-style-type: none"> o on the Intelligent Sensor Platform ISP Technology (to be develop by CANBERRA) with a large area silicon planer detectors o on the ARGOS β sensors with a thin plastic scintillator - Type: On line Monitor (Off-line also possible) - -Emitters: β and gamma - -Sensitivity: <ul style="list-style-type: none"> o Not yet determined for the ISP technology o 30 Bq/kg of Sr90 within 20 minutes, and can detect higher levels much more quickly for the thin plastic scintillator. - <p><u>Software:</u></p> <ul style="list-style-type: none"> - Data collection and supervisory: The HORIZON summary explanation and specification sheet are provided below: http://www.canberra.com/products/env_rad_monitoring/ems-rms-software.asp 	

- Data processing (geostatistic calculation) for a 3D Cartography of data with alarm in case of overtaking of threshold for monitoring the level of activity in the bore holes

Description:

Install a mobile device multi-detectors in (each) boring. This device moves automatically (step by step or continuously) in the boring and transmits the result of measure, the date and the position to a supervisory software.

An other software process these data (geostatistic calculation) and build a 3D mapping of activity level of the groundwater flow.

Owners: All of the key elements of the sensors are manufactured by AREVA/Canberra, the supervisory software HORIZON is a CANBERRA product and the data processing software for 3D cartography will be develop by AREVA

2. **Notes** (Please provide following information if possible.)

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Technology readiness level (including cases of application, not limited to nuclear industry, time line for application)

The critical elements in the success of the ground water monitoring are:

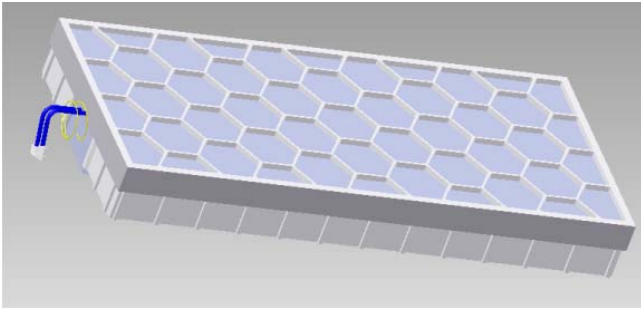
2.1 The radiation detector.

The first sensor proposed is a large area Passivated Implanted Planar Silicon (PIPS) detector product with modern semiconductor technology.



This sensor is implemented with the ISP technology which offers a low noise analog front end electronics, low power signal processing and signal stabilization a wide temperature range. Furthermore, with the technology ISP, it is possible to calculate directly the activity for every sensor according to its configuration of measure

The second sensor proposed is a plastic scintillator beta module from our Argos Total Body Contamination

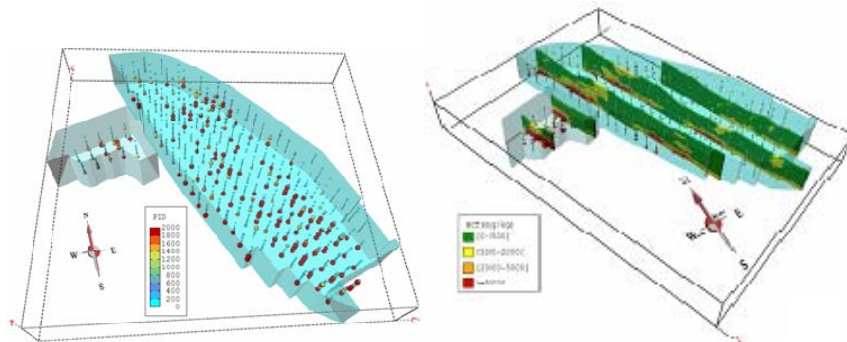


2.2 Supervisory Software

Horizon is a real-time data acquisition and control system that provides supervisory oversight of your radiological instruments. It combines Canberra's radiological monitoring expertise with industry leading technology for SCADA (Supervisory Control and Data Acquisition) applications. The result is software that delivers an easy to use, reliable, monitoring and control solution for nuclear facilities.

2.3 Data processing software for built the 3D mapping in real time

This software process these data (geostatistic calculation) and built a 3D mapping allowing the monitoring of the activity of the groundwater flow.



Challenges

- Develop an operational IHM for a 3D cartography of the activity in real time of the groundwater flow.

Others (referential information on patent if any)

Patent pending on the beta/gamma discrimination.

Filing of a patent Simplified Silicon Drift Detector

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