SAND2013-8962P

Compliance Monitoring Program

EPA Annual Inspection – 2013

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Steve Wagner
SNL/JHA

Sandia National Laboratories is a multi-program laboratory operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

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Presentation Overview

- Brief description and scope of the Compliance Monitoring Program and what is monitored
- Summary of what is new for this reporting period
- Briefly discuss Compliance Monitoring Program results for 2012

Compliance Monitoring Program

- **Addresses EPA requirements in 40 CFR 194.42 – Monitoring**

- **Compliance Monitoring is used to monitor the disposal system to detect any substantial and detrimental deviations from expected long-term repository performance**
  - **Monitoring parameters are based on their importance to the PA**
  - **“Substantial and detrimental deviations” are not expected**
  - **Program compares monitoring data against PA assumptions, repository conditions and expectations**
  - **Exceeding expected results (Trigger Values) does not indicate an out-of-compliance condition**

- **Annual assessment in COMPs reports**
  - ***Sandia National Laboratories Compliance Monitoring Parameter Assessment for 2012,* ERMS 558589**

What is Monitored

- Ten Compliance Monitoring Parameters (COMPs)
  - Drilling Rate
  - Probability of Encountering a Brine Reservoir
  - Waste Activity
  - Subsidence
  - Changes in Groundwater Flow
  - Change in Groundwater Composition
  - Creep Closure
  - Extent of Deformation
  - Initiation of Brittle Deformation
  - Displacement of Deformation Features

What's New

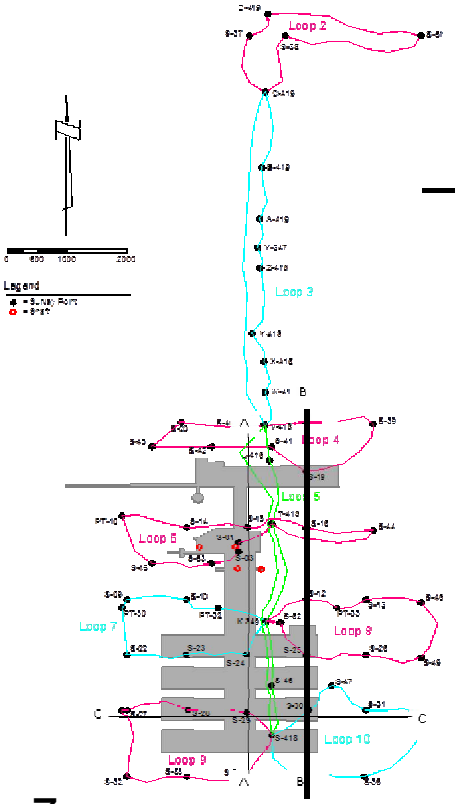
- 2012 COMPs report concluded - monitoring results do not indicate unexpected conditions
- Draft 2013 COMPs report does not indicate unexpected conditions

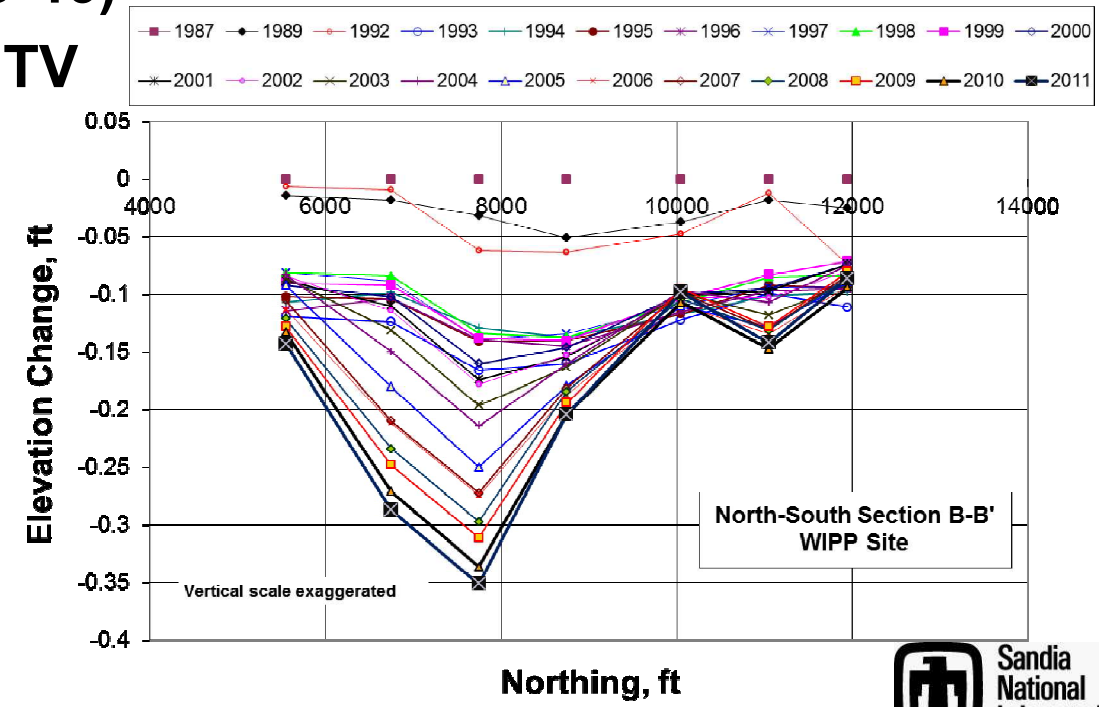
COMPs Results for 2012

- Drilling Rate (bh/km^2/10,000yrs)
  - 2011 rate = 64.1
  - 2012 rate = 67.3
  - No TV
- Probability of Encountering a Brine Reservoir
  - No new Castile brine encounters
  - No TV
- Waste Activity
  - Emplaced Curies less than PA input parameters
  - RH less than 5.1 Million Curies (TV)

COMPs Results for 2012

- **Subsidence**
  - **The highest subsidence rates measured for the 2010-2011 surveys correspond to benchmarks directly over the panels 2,3,6 & 7 (e.g., S-24, S-28, S-29 and S-46)**
  - **Less than TV**





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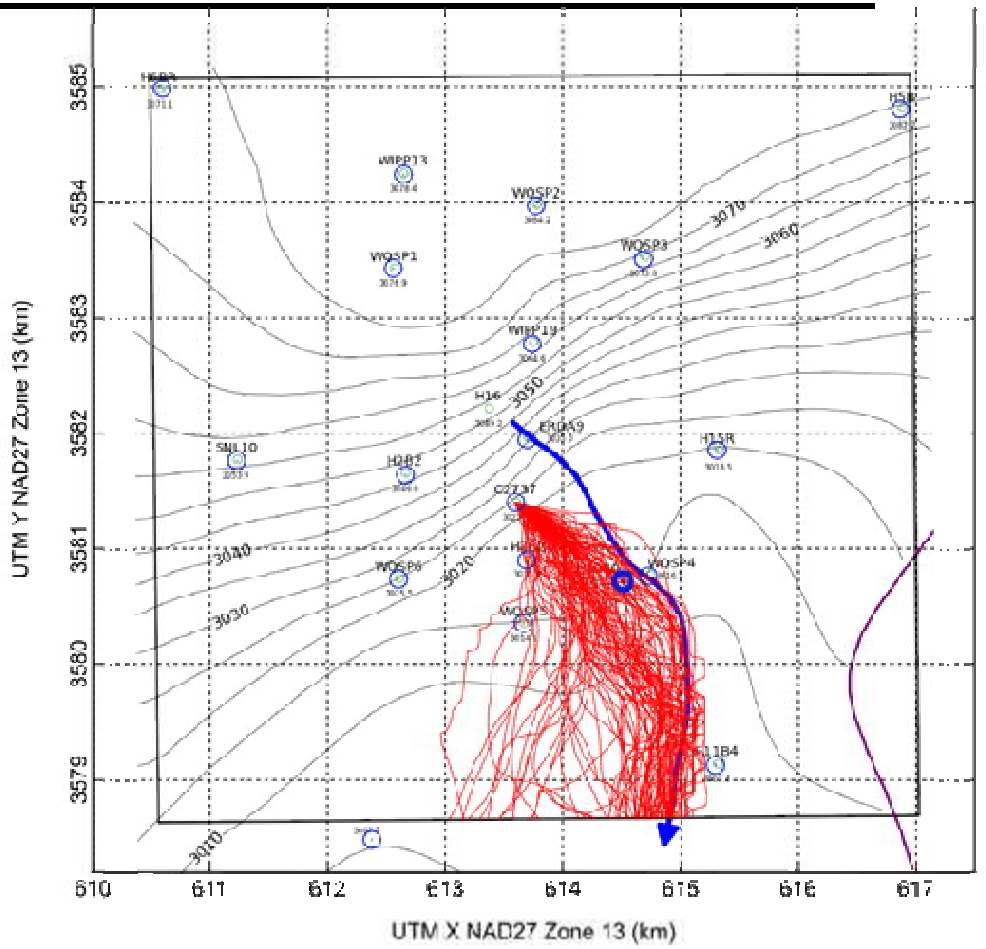
COMPs Results for 2012

- **Changes in Groundwater Flow**
  - **Within new TV**



Distribution of 100 particle traces (red lines) from C-2737 (center of waste panels) to WIPP LWB for CRA-2009 PABC. August 2011 Culebra potentiometric surface. Culebra monitoring wells are indicated with blue circles (COMPS 2012) .

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COMPs Results for 2012

- Change in Groundwater Composition
  - TV is met when the Ion concentration for both primary and duplicate sample are outside the baseline 95% confidence window for 3 consecutive rounds
  - Two Wells exceeded TV
    - SO_4^{2-} ion concentration for WQSP-3 rounds 28 - 33
    - K^+ ion concentration in WQSP-4 rounds 27 - 33
  - No action recommended at this time in COMPs report. Further instances may invoke further analysis.
  - All other wells met the TV

COMPs Results for 2012

- Creep Closure
  - Creep rate within the TV
- Extent of Deformation
  - Within expectations – no TV
- Initiation of Brittle Deformation
  - Within expectations – no TV
- Displacement of Deformation Features
  - Within expectations – no TV

COMPs Summary

- 10 monitoring parameters are assessed and compared to PA expectations and assumptions
- No additional actions were specified in the 2012 COMPs report as a result of the monitoring data analysis