

COGCC Remediation Project #9425 Update

June 22, 2016

Nelson water well

Construction / Performance

- Completed installation and commissioning of aeration system
- Methane concentrations pre and post aeration system were 33 ppm and 14 ppm respectively.
 - Suggests aeration system is removing 58% of absorbed methane in the water.
- Completing installation of water recycle / hydro-cyclone type separation finishing system
 - Anticipate reduction of post aeration concentrations to <10 ppm.

Area Water Well Sampling

- Collected required domestic well water samples from Nelson, Williams Deep and Shallow, Michaels and Woods wells
- Nelson sample analysis indicated the presence of VOC's which appear to be associated with the thermogenic gas present in the Nelson well.
- No indications of thermogenic gas or VOC's were present in other well samples taken.

Well remediation

WP-D007-1

- Perforated and squeezed at 5060' and 2890'
- While pressure testing squeeze jobs discovered leak in production casing approx. 25' from surface. Set bridge plug at 35' and placed WellLoc resin squeeze.
- Extended surface casing and replaced Larken type bradenhead with SWECO bradenhead.
- Completed remediation work May 26, 2016

WP-D007-2

- Perforated and squeezed at 5142' and 2890'
- Drilled out cement in production casing and determined lower squeeze some cement had traveled down backside of casing and reentered production casing through D3 production perforations. Re-perforated D3.
- Re-ran production packer and tubing and discover leak in tubing. Ran into issues during course of replacing tubing which delayed completion of work on this well.
- Squeeze work appears to be mitigating bradenhead pressure issue. However, still have further work to perform, e.g. acidizing / stimulation work to D3.
- Will recommence work on this well after completion of WP-D011-2 remediation

WP-D011-1

- Extended WP-D011-1 surface casing and replaced Larken type bradenhead with SWECO bradenhead
- Pressure tested casing and found circ. 2011 squeeze perforations were leaking. Performed WellLock squeeze at ~1200'. Drilled out and pressure tested. Ran temperature log.
- Removed RBP and pressure tested to bottom RBP. Found leak at ~2,300'. Will perform WellLock squeeze to repair leak on June 22, 2016

Well remediation

WP-D011-2

- Perform squeeze work
- Run CBL's and temperature logs to determine initial effectiveness
- Monitor bradenhead pressures
- Scheduled to commence work week of June 27, 2016

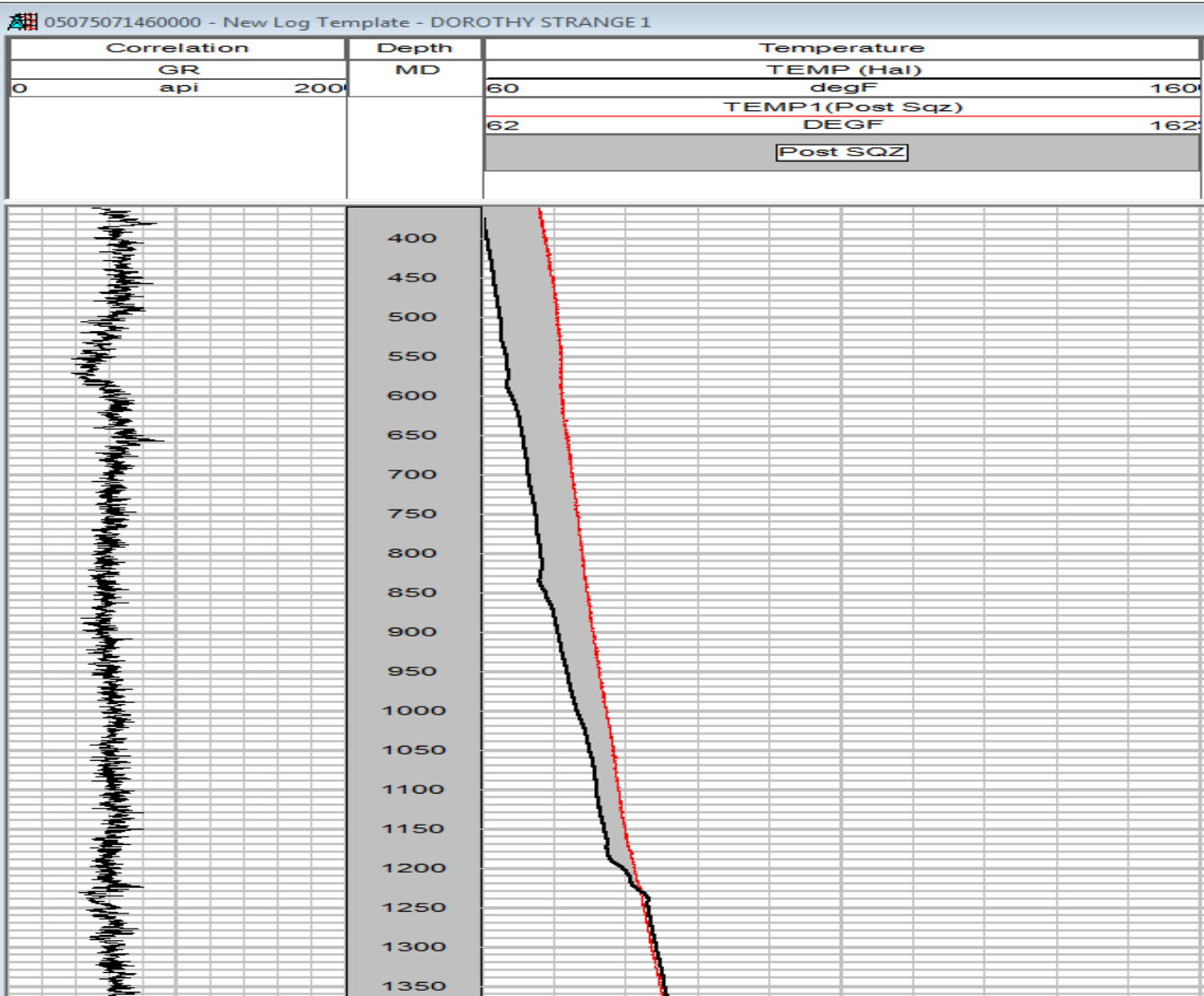
Fox Hills

- Run pulsed neutron logs through Fox Hills interval in Nelson water well, WP-D008-1 and WP-W008 in effort to determine directionality of gas plume in Fox Hills aquife
 - Work will commence upon completion of work on WP-D007-2
- Develop post mitigation monitoring / evaluation plan

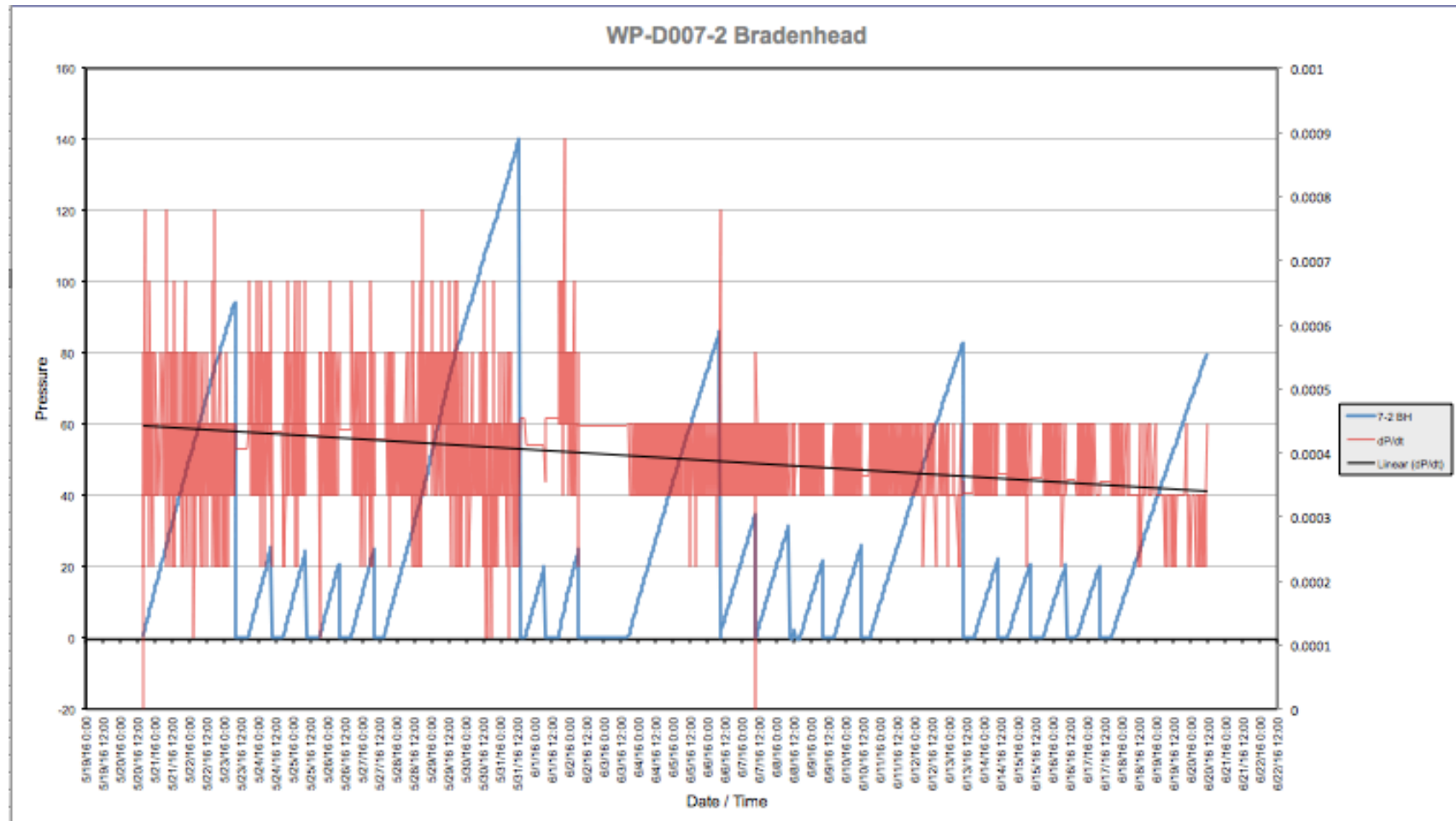
Bradenhead Pressure Mitigation

- Execute plan to mitigate high bradenhead pressures on other affected wells

WP-D011-1 Temperature logs



WP-D007-2 post-remediation bradenhead pressure monitoring



Initial Pressure 790 psig

WP-D011-1 Pre-squeeze present status

Well: Dorothy Strange # 1 WP-D011-1

Current Status: D2 Injection/Withdrawal Well

Status Date: 04/07/2014 (New Casing)

