



SRC BRUNO - October 18 - 19, 2001
Retrofitted

Procedures

SRC Bruno Observation Well was retrofitted October 18 to October 19, 2001. The total depth of casing installed was measured October 22, 2001 at 173.24m.

Washout Procedure

The well was washed out using the drill stem with a ~ 20 ft 1 1/2 inch galvanized pipe to 179.44 m - 588.71 ft **Oct 18, 2001** and casing # 1- #8 were installed. The rig was shut down for the evening while a joint was fabricated for a 1 inch tremie line at ~ 30 m.

Casing installation proceeded next morning **October 19, 2001** however Casing # 9 was placed on the pipe trailer inadvertently and not installed. Consequently casing # 9 was left out of completion and well was shorted 5.934 m, and the screen was set into the casing above the existing screen. The tremie was set at 167.6 m. Five 50lb bags of 10-20 frac was poured into the annulus and allowed to settle for 1 hour. Attempts to measure the sand depth were undertaken. At this point it was unknown that the casing was shorted and it was extremely difficult to feel the total depth. The annular depth to the gravel pack felt like 169 m and this may have been the top of the muffler auger assembly. When the total depth line was pulled the tip stuck at the 2" to 3" joint and snapped off at about 2 meters.

CETCO 1m crumbles #8 was mixed in a grouter however grouter was not able to pump the slurry and properly mix. Subsequently the grouter pump failed and no grout return was attained through ~ 600 ft of 1 inch id tremie. The tremie hose was completely plugged. A decision was made to pull the tremie and cut the plugged portion while the line was in place and grout the upper casing length. The tremie line joint could not be negotiated through the

coupling joint between the 2 inch and 3 inch casing and the line was subsequently cut so that the line was at ~ 85 m. The mud pump on the rig was used to mix the grout slurry. The slurry mix was 30 gallons water, 1/2 bag # 8 crumbles and 1/3 bag high yield bentonite to keep the crumbles in suspension. Return of mix was attained. It was clear at this point that an inside total depth of 173 m could only be attained and EJJ and DAZ assumed that the casing had collapsed at the muffler auger. The aquifer also was not taking water and was in need of acidation.

October 22, 2001 the total inside depth of the well was 173.236 m @ 15:17

The final analysis indicated that # 9 casing was not installed and the well was shorted by 5.934 meters. A slug of water should theoretically exist from 167.6 m to 85 m and grout from 85m to the surface.

November 1, 2001 w/ 24.165 @ 13:55
 The well was acidized with one small 4 l container of UNICID dry pellet acid and the casing was filled to within ~ 2 meters TOC

November 5, 2001 w/ 24.540 @ 09:59
 A Grundfos Redi-Flo pump was installed at about 40 meters and allowed to pump at 6 l/min @ 10:32. The Drawdown was 38.863m @ 12:22. The field PH was 7.0 at this time. This pumping rate allowed for ~ 360 l/hr. The water was clear at 13:00 and at 14:00 hrs the water became dirty. No water sample was taken for analysis. A 1 liter sample for visual lab inspection was taken. The water level was recovering at a fast rate.

SRC Bruno continued

Washout Procedure

The well was washed out using the drill stem with a ~ 20 ft - 1.5 inch galvanized pipe to 179.44 m - 588.71 ft

Screen Assembly and Casing Tally:

From bottom of screen to:

- bottom of screen slots 0.110 m
- top of screen slots 1.024 m
- bottom of 2" pipe 1.056 m
- top of 2" pipe screen assembly A-1.698 m

Auger assembly installed 1' from bottom of screen assembly to bottom of auger. Auger assembly 3.5 ft in

2 inch to 3 inch assembly

- From bottom of 2" to bottom of reducing bushing - 5.258 m
- bottom of 3" casing - 5.270 m
- top of 3" casing - D-5.574 m

Completion

- used 5 - 50lb bags of 10-20 frac sand
- Grout from 85 m to surface with hydrated 1/3 - #8 Crumbles, 1/3 bentonite and 30 g H₂O

SRC Bruno was retrofitted using 124.614 m of 2 inch SCH 40 PVC pipe, socket glued to 41.350 m of 3 inch SCH 40 casing via a 5.574 m 2 inch to 3 inch assembly. A 1 1/4 inch Slot 0.015 Johnson 1m stainless steel screen assembly 1.698 m was installed with 10-20 fractionated sand. The 2 inch to 3 inch casings were couple with an assembly 5.574 meters in length. The annular space between the existing steel casing was grouted with hydrated Cetco 1m Crumbles #8 grout from 85 m to the top of casing. **The total length of casing from top of casing is 173.236 m.** The casing stickup above the old casing is 0.150 m. The well completion was supervised/completed by SRC (EJJ & MAS) and Elk Point Drilling Corp.

3" casing in meters	2" casing in meters
5.906 - #23	5.933 - #1
5.903 - #24	5.932 - #2
5.906 - #25	5.934 - #3
5.908 - #26	5.932 - #4
5.908 - #27	5.932 - #5
5.910 - #28	5.934 - #6
5.909 - #29	5.934 - #7
Total 3" C	5.934 - #8
41.35 m	-5.934 not installed #9
	5.934 - #10
	5.936 - #11
	5.936 - #12
	5.937 - #13
	5.938 - #14
	5.932 - #15
	5.932 - #16
	5.933 - #17
	5.934 - #18
	5.936 - #19
	5.934 - #20
	5.934 - #21
	5.933 - #22
Total 2" B	124.614 m