

**Crawford 1**  
**40.587816 / -104.018899**  
**05-123-14374**

**Crawford 1 Procedure**

1. Survey and locate plugged wellbore. Set a stake and record as-drilled GPS coordinates.
2. Excavate around wellbore to expose the top of the surface casing.
3. Cut existing cap off wellbore. Weld a slip collar to 8-5/8" casing and necessary length of casing to reach ground level. Weld another 8-5/8" slip collar.
4. MIRU workover rig.
5. Install wellhead and BOP. Test BOP.
6. PU and RIH with 6-1/4" tricone bit, 10 3-1/2" drill collars, and 2-7/8", 6.5#, L80, EUE workstring.
7. Drill out 1st surface cement plug and circulate hole clean.
8. Continue drilling or RIH to top of 2<sup>nd</sup> surface casing plug. Record depth of plug.
9. Continue drilling to ~200' (**DO NOT DRILL PAST 200'**). Circulate hole clean.
10. Pressure test surface casing to 250 psi. If surface casing fails pressure test, contact engineer and hunt holes.
11. After pressure test of surface casing, drill out remainder of surface casing plug. If pressure is encountered below surface casing plug, circulate hole with mud or kill fluid until well is dead or blown down.
12. POOH and LD 6-1/4" tricone bit.
13. PU and RIH with mule shoe, 7 joints of 2-3/8", 6.5#, L80 EUE tubing, cross over and 2-7/8" L80 tubing down to top of casing stub (5939').
14. Work tubing into casing stub and RIH to 6135'. If unable to work tubing into casing, contact engineer.
15. RU cement crew, pressure test lines to 4,500 psi, and spot plug from 6135'-5835' with class G cement (100 sks) to cover the Niobrara formation.
  - a. **FROM THIS POINT MOVING FORWARD:** Must wait a sufficient time on all subsequent plugs to confirm static conditions. If at any time after placing this plug there is evidence of pressure or of fluid migration, contact engineer before continuing operations.
  - b. **IF UNABLE TO WORK TUBING INTO CASING STUB:** Spot plug from 5939'-5439' with class G cement (100 sks) to cover the Niobrara formation.
16. POOH to surface casing. Wait 4 hours and tag TOC. Record tag depth. If tag is deeper than 5935' (5839' if unable to work tubing into casing stub), contact engineer.
17. POOH and spot plug from 1609'-1459' with class G cement (50 sks) to cover the Pierre formation.
18. POOH to surface casing. Wait 4 hours and tag TOC. Record tag depth. If tag is deeper than 1509', contact engineer.
19. POOH and spot plug from 415' to surface with class G cement (140 sks).
20. POOH and wait 4 hours. Tag TOC if not set at surface. Record tag depth. If tag is deeper than 171', contact engineer.
21. RDMO. Top off cement after rig has moved, if necessary.
22. After surface plug has set, cut casing to 5' below ground level and weld on a plate to seal the well.
23. Inscribe the well's legal location, well name and number, and API number on the plate as shown:

1980' FSL, 1980' FEL, NWSE Sec 7, T7N, R59W
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24. Photograph welded name plate and send to engineer before proceeding.
25. After confirmation from engineer is received, backfill hole and reclaim surface to original conditions.
26. Cover up the well and remediate the disturbed area.

## Crawford 1 Cement Plug Table

CEMENT PLUG TABLE												
Plug Number	Plug Status	Plug Location	Formation	Plug Bottom Depth	Plug Top Depth	Cement Class	Yield (ft <sup>3</sup> /sk)	Number of Sacks	Must Be Tagged?	Maximum Tag Depth	New Sks Required	New Sks Required w/ (10% SF)
1	Existing	Casing	D&J Sand	6710'	6684'	Unknown	Unknown	2	No	N/A	290	319
2.1	New	Casing	Niobrara	6135'	5939'	G	1.15	16	Yes	5935'		
2.2	New	Open Hole	Niobrara	5939'	5835'	G	1.15	34				
2.3	New	Annulus	Niobrara	6135'	5939'	G	1.15	50	Yes	1509'		
3	New	Open Hole	Pierre	1609'	1459'	G	1.15	50				
4.1	New	Open Hole	Fresh Water	415'	221'	G	1.15	64	Possibly	171'		
4.2	New	Casing	Fresh Water	221'	Surface	G	1.15	76				