

### Short Procedure: F.V. LARSON B 16X - ESP WELL FAILURE, P&A

**Background:** Initial workover in January, unable to fish ESP & decision was made to P&A. Tubing was cut above drain & CIBP set above cut depth.

It is up to the WSR, Workover Engineer and Production Engineer to make the decisions necessary to safely do what is best for the well.

**Contacts:**

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Travis Garza	Workover Superintendent	970-210-6780
Roy Cramer	Production Engineer	970-549-6648

**WellSafe Procedure Required:** Yes, P&A operation

**MASP:** 100 psi (Tubing on vacuum with 10ppg brine, no SITP)

**Short Procedure:** Refer to the Well Intervention standard procedure for requirements and general procedure for job. Also, utilize the fields specific Well Planning Tool for field best practices.

**NOTE:** Refer to Anita Sanford's Regulatory/Permitting Document for Rangely prior to executing any work on the well. Need to ensure proper notifications have been made to all regulatory bodies before initiating job. If unsure of requirements consult with workover engineer.

**NOTE:** Refer to COA's found in the Regulatory folder on the o:drive. Ensure operations are compliant with BLM requirements. Notify CRVFO inspectors 48hrs prior to operations (contact info in BLM COA).

1.	MIRU workover rig and equipment. Check pressure on all casing strings (including bradenhead). <u>Record tubing and casing pressures every day on the WellView report.</u>
2.	<p>Circulate out 10ppg brine with river water. <b>Perform 21-day chart test on BPV to 2,100 psi for 15 minutes.</b> Set BPV and document in WV "BPV serial number xxxxxx tested on xx/xx/2020 to 2100 psi and set with xx turns to the left" (<b>WSEA 10A</b>). N/D tree. N/U 7-1/16" 5K BOP with Washington head, 5K annular and 2-7/8" pipe rams on top of blind rams (<b>WSEA 8A</b>). Perform full BOP test to 250 psi low for 5 mins and 1400 psi high for 10 mins (<b>WSEA 9A</b>).</p> <p>NOTE: 7" CIBP set at 5,685' during previous workover to suspend wellbore (previously tested to 550 psi). Notched collar and 2-7/8" workstring landed out at 5,667' with G-45 centerfire hanger.</p> <p>NOTE: If BPV cannot be set, the well must be monitored for flow for 15 minutes or longer before N/D tree. Provide reason for not being able to set BPV in WV timelog and WSEA 10B.</p>
3.	<p>Caliper elevators and document in WellView. L/D centerfire hanger and TIH to CIBP at 5,685'. Mix &amp; pump <u>Cement Plug #1</u> from 5,685' - 5,535': 29 sacks (5.9 bbls) 15.8 ppg, 1.15 yield, class G cement</p> <p>L/D to +/- 5,525' and reverse circulate clean 1.5x tubing volumes, noting in WV volume of cement returned. WOC at least 4 hrs until 50 psi CS. <b>Pressure test Cement Plug #1 to 600 psi for 15 minutes, on chart (WSEA 10B).</b> Tag TOC with 10klbs down (BLM requirement, not a WellSafe test)</p> <p>NOTE: 1st barrier to Weber formation. TOC on annulus at 5,250' (per CBL).</p> <p>NOTE: Minimum 100' verified cement above 7" packer is required. <u>BLM requires pressure test on plug.</u></p>
4.	Displace wellbore from river water to 10ppg brine. TOH L/D workstring to ~1,100'. TOH Rack back remaining pipe.
5.	<p>MIRU PLS. NU lubricator and test to 600 psi for 5 minutes. RIH with 2' - 3 1/8" perforating guns loaded 4 SPF at 90 degree phasing. Perforate 7" casing at 1,050' (82' below 10-3/4" shoe). POOH R/D PLS.</p> <p>NOTE: Verify no SISCP or bubbling prior to perforating. If either are observed, discuss with WOE and Superintendent.</p>

Phase Table		
Well Phase	Procedure Steps	Major Phase Equip.
LOCN MOB RU	1	
ABAN ABAN PA	2-16	
LOCN MOB RD	17	

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6. Establish circulation pumping down the 7" casing and taking returns up the 10-3/4" x 7" annulus. Pump just enough to establish returns, not exceeding 1000 psi.

7. P/U and TIH with 7" CICR on 2-7/8" workstring. Set CICR at +/- 1,030'. If necessary, sting out and displace well to river water. Test backside to 600 psi for 5 minutes to ensure CICR does not leak (operational test). Establish circulation up 7" x 10-3/4" annulus with river water. Pump enough volume to clean up wellbore (at least 55 bbls).

8. While stung into CICR, mix & circulate cement up 7" x 10-3/4" annulus to surface : 177 sacks (36.2 bbls) 15.8 ppg, 1.15 yield, class G cement. Displace cement with ~ 6 bbls river water to CICR. Sting out & reverse circulate clean 1.5x tubing volume with river water right above CICR. **Test 7" CICR to 600 psi for 15 minutes, on chart (WSEA 10-C). See Step 9 for contingency tests if CICR test fails.**

**NOTE: External barrier for Plug #2, Plug #3, and surface plug.**

**NOTE: Must pump cement to surface for BLM requirements.**

9. Mix & spot balanced Cement Plug #2 on top of CICR from 1,030' to 880': 29 sacks (5.9 bbls) 15.8 ppg, 1.15 yield, class G cement.

L/D to +/- 870' and reverse circulate clean 1.5x tubing volumes, noting in WV volume of cement returned.

*If previous CICR test failed, perform one of the following tests after WOC (WSEA 10-C, if needed):*

1. Pressure test to 600 psi (650 psi maximum) for 15 minutes
2. Tag TOC with 10klbs with pumps on (WOC until 50 psi CS)
3. Tag TOC with 10klbs with pumps off (WOC overnight)

**NOTE: 1st barrier to Mancos formation. 2nd barrier to Weber.**

**NOTE: Minimum 100' cement above 7" CICR is required. Test on cement plug not required per Barrier Standard Rev C (3.3.3.1). CICR already tested.**

10. Mix & spot balanced Cement Plug #3 on top of Plug #2 from 880' to 730': 29 sacks (5.9 bbls) 15.8 ppg, 1.15 yield, class G cement.

L/D to +/- 720' and reverse circulate clean 1.5x tubing volumes, noting in WV volume of cement returned. WOC at least 4 hrs until 50 psi CS. **Pressure test cement Plug #3 to 600 psi for 15 minutes, on chart (WSEA 10-D).** Tag TOC with 10klbs down (BLM requirement, not a WellSafe test).

**NOTE: 2nd barrier to Mancos.**

**NOTE: Minimum 100' verified cement required. Last cement plug prior to surface plug must be pressure tested.**

11. With EOT at TOC of cement plug #3, spot/balance 27 bbls (680') 10 ppg brine from 730' TOC to 50'. TOH L/D workstring to 50'.

12. MIRU Cement trucks. Mix and pump Surface Plug: 10 sacks (2 bbls) 15.8 ppg, 1.15 yield, class G neat cement from 50' to surface.

13. ND 7 1/16" 5M double gate BOP with 7 1/16" 5M annular.

14. RDMO.

15. Notify operations that location is ready for WH cutoff and reclamation. **ENSURE LOCATION IS CLEAN.**

Give copies of the post job cement reports & final WBD to Anita Sanford. Operations will cut all casing & remove to 4' below grade. Verify cement to surface. Weld on dry-hole marker.