

**District I**  
1625 N. French Dr., Hobbs, NM 88240  
Phone: (575) 393-6161 Fax: (575) 393-0720

**District II**  
811 S. First St., Artesia, NM 88210  
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**District III**  
1000 Rio Brazos Road, Aztec, NM 87410  
Phone: (505) 334-6178 Fax: (505) 334-6170

**District IV**  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone: (505) 476-3460 Fax: (505) 476-3462

## State of New Mexico

## Energy Minerals and Natural Resources

## Oil Conservation Division

1220 South St. Francis Dr.

Santa Fe, NM 87505

☐ AMENDED REPORT

HOBBS OCD

NOV 28 2016

RECEIVED

## APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

Operator Name and Address BC OPERATING, INC. P.O. BOX 50820 MIDLAND, TX 79710		OGRID Number 160825
Property Code 317132		API Number 30-025-24438
Property Name PEARSON SWD		Well No. 1

## 7. Surface Location

UL - Lot H	Section 33	Township 21S	Range 33E	Lot Idn H	Feet from 1980	N/S Line NORTH	Feet From 660	E/W Line EAST	County LEA
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## 8. Proposed Bottom Hole Location

UL - Lot H	Section 33	Township 21S	Range 33E	Lot Idn H	Feet from 1980	N/S Line NORTH	Feet From 660	E/W Line EAST	County LEA
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## 9. Pool Information

Pool Name SWD, CHERRY CANYON	Pool Code 97003
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## Additional Well Information

11. Work Type E	12. Well Type SWD	13. Cable/Rotary	14. Lease Type FEE	15. Ground Level Elevation 3644'
16. Multiple	17. Proposed Depth 6970'	18. Formation CHERRY CANYON	19. Contractor	20. Spud Date 10/25/2016
Depth to Ground water 300'		Distance from nearest fresh water well		Distance to nearest surface water R-14205

☐ We will be using a closed-loop system in lieu of lined pitsSEE ATTACHED FOR  
CONDITIONS OF APPROVAL

## 21. Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
FJ4	6.5"	5.5"	17#	7,200	570	SURFACE

## Casing/Cement Program: Additional Comments

APPROVED OCT 24 2016	BUREAU OF LAND MANAGEMENT CARLSBAD FIELD OFFICE	PKLwartz
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## 22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
ANNULAR	1158 PSI	2000 PSI	CAMERON

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief.

I further certify that I have complied with 19.15.14.9 (A) NMAC ☐ and/or 19.15.14.9 (B) NMAC ☐, if applicable.

Signature: Sarah Presley

Printed name: SARAH PRESLEY

Title: REGULATORY ANALYST

E-mail Address: SPRESLEY@BCOPERATING.COM

Date: 10.20.2016

Phone: 432-684-9696

## OIL CONSERVATION DIVISION

Approved By:

Title:

Approved Date: 11/30/16

Expiration Date: 11/30/18

Conditions of Approval Attached

Petroleum Engineer

**APD Re-entry and Operations Plan  
BC Operating, Inc.**

Pearson SWD #1

Surface: 1980' FNL & 660' FEL, UL "H"

Sec. 33-T21S-R33E

Lea County, New Mexico

1. Geological Surface Formation: **Quaternary Alluvium.**
2. Vertical disposal well

3. **TOPS OF IMPORTANT GEOLOGICAL MARKERS: TVD**

Surface:	Quaternary Alluvium	
Rustler		1480'
Top Salt		1610'
Base Salt		3410'
Yates		3510'
Seven Rivers		3520'
Capitan Reef		3680'
Manzanita		5030'
Lamar		5070'
Bell Canyon		5360'
Cherry Canyon	Target	5730'
Brushy Canyon	Target	7160'
Bone Spring Lime		8500'

4. **Estimated Depth of Anticipated/Possible Water, Oil or Gas:**

Ogallala	0-300'	Possible fresh Water
Santa Rosa Sandstone	1100'-1275'	Possible fresh waterzone
Bone Springs	8500'	Oil, gas and water

No other formations are expected to yield oil, gas or fresh water in measurable volumes. The surface fresh water will be protected by the casing in place, BC will also be putting a string of 5-1/2" from surface to 7200'. Cement will be circulated to surface.



**5. Proposed Casing Program**

HOLE SIZE	CASING SIZE	WT./GRADE	COUPLING	SETTING DEPTH
17.5"	13 3/8" (EXISTING)	48# H-40	STC	390'
12.25"	9 5/8" (EXISTING)	40# K-55, N-80	BTC	5035'
8.5"	7 5/8" (EXISTING)	33.7#, 29.7# S-95, N-80	BTC	11,098'
6.5" AND	5 1/2" (NEW)	17# L-80	FJ4	7,200'

**MINIMUM SAFETY FACTORS:****BURST 1.125****COLLAPSE 1.125****TENSION 1.8****ALL EXISTING CASING WILL BE PRESSURE TESTED BEFORE MOVING ON, ALL NEW CASING WILL BE API STANDARD.****CEMENT PROGRAM-ALL CEMENT BLENDS WILL BE TESTED TO BLM MINIMUM REQUIREMENTS.****A. 5.5"****NEW PRODUCTION STRING****CEMENT TO SURFACE**LEAD 420 SXS CLASS PRO-ECO C 2.03FT<sup>3</sup>/FT  
12.5#/GAL. TAIL WITH 120 SXS CLASS H

10% EXCESS

**SPECIFICATIONS FOR PRESSURE CONTROL EQUIPMENT: (EXHIBIT #5)**

Prior to commencing work a 2000# Workover BOP will be installed. A Pressure test will be conducted prior to drilling out any cement plugs. BOP controls will be installed prior to drilling under surface casing and will remain in use until completion of drilling operations. BOP's will be inspected and operated as recommended in Onshore Order #2. A Kelly cock and a sub equipped with a full opening valve sized to fit the drill pipe and collars will be available on the rig floor in the open position when the Kelly is not in use, float sub will be available If operations last more than 30 days from 1<sup>st</sup> test, will test again as per BLM Onshore Oil and Gas order #2.

**MUD PROGRAM:**

Fresh Water will fresh water gel sweeps to clean the hole

**Auxiliary Equipment**

- A. A Kelly cock will be in the drill string at all times.
- B. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times
- C. Hydrogen Sulfide detection equipment will be in operation before drilling out any cement plugs

**TESTING, LOGGING & CORING PROGRAM:**

- a. Cased hole Gamma and Cement bond log
- b. Water Analysis on injection interval produced fluid

**POTENTIAL HAZARDS:**

No significant hazards are expected. Slightly above normal pressure gradient expected. Normal temperature gradient is expected, **estimated pressure gradient of .2 psi/ft (injection well). 1158 psi at 5,790 ft.** Expected temperature at 6,970 TVD is **95 deg F** based on data from area wells. No H<sub>2</sub>S is expected, but the operator will utilize a 3<sup>rd</sup> party H<sub>2</sub>S monitoring package from during perforation of injection interval. If H<sub>2</sub>S is encountered the operator will comply with the provisions of onshore oil and gas order no 6. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well.

**ANTICIPATED STARTING DATE & DURATION:**

BC Operating, Inc. anticipates drilling operations to begin around August, 2017 and completed in approximately 45 days. An additional 15 days will be needed for completion activities. Road and location construction will begin after the BLM has approved the APD.

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Billy Moore, Operations Engineer  
BC Operating, Inc.

Date



## **Water Disposal Wells with Fee or State Surface & Fed Minerals**

The NMOCD production water disposal Order No. R-14205 is for a proposed project involving private surface & federal mineral rights. In that document the section "IT IS ORDERED THAT:" paragraph (5), division (d) requires that BLM approve the "Applicant's Application for Permit to Drill or Reenter (APD)".

The APD referenced in the order is the one submitted to NMOCD.

While the Operator is not required to file a Federal APD and the operation of the wellbore (completion to abandonment) is to be managed by NMOCD. The OCD Order does require the Operator seek (functionally preferred) prior BLM approval of the NMOCD APD or Recompletion Sundry that will be submitted to NMOCD. The BLM approval of the NMOCD wellbore APD, well completion, and ultimately the plugging procedure will incorporate similar Conditions of Approval that would be applied to any similar wellbore penetrating federal minerals. Other than confirming that the intended mechanical construction meets BLM standards the BLM COA's will stipulate that the formation is to be hydrocarbon unproductive prior to water disposal and is to be accepted as such by BLM.

Compliance with this OCD order will insure federal wellbore standards are adhered to where federal minerals are penetrated. Prior to this OCD stipulation BLM was filing a protest letter for each water disposal well involving split estate, bottlenecking the process.

A summary of the guidance for these procedures (from the March 21, 1989, BLM Information Bulletin No. 89- 192) is offered here:

*"If a well is drilled on private or state surface/federal minerals as a disposal well for water not produced on-lease or unit (a commercial water disposal well) it is BLM responsibility to ensure that the disposal does not adversely impact Federal minerals. The Board stated that BLM's permitting authority under section 302(b) of FLPMA is not the appropriate means to protect the mineral resource. The Board stated that such protection can be achieved through coordination and cooperation with the Environmental Protection Agency or the State primacy Agency with underground injection program responsibility.*

*The solicitors opinion provides the following:*

*In sum, the BLM has no authority over salt water disposal on a tract of land with a Federal mineral reservation from another tract where the mineral estate is not producing nor will the disposal aid in production on the tract where the disposal well is located. Conversely, if disposal on a tract of land with a federal mineral reservation will aid in production from that tract, or if secondary and tertiary recovery methods will aid in production of oil and gas from that tract, then BLM and its lessee have complete authority over such uses and not the surface owner."*



Operator: BC Operating, Inc.  
Surface Lease: NM124661  
Case No: NM124661

Subsurface Concerns for Casing Designs: R111P C R, 4csgs  
Well Status: P&A  
Spud date: 12/23/1973  
Plug'd Date: 3/25/1976  
Reentry Date:

BHL: NM124661  
Lease Agreement

Well: Ongard-1  
API: 3002524438  
@ Srfce: T21S-R33E,33.1980n660e  
@ M TD: T21S-R33E,33.1980n660e

Estate: P\F\F  
CWDW, R of W: 0  
Admn Order, date: R-14205, 08/29/2016  
Frmtn, Depths, psig: Cherry Cyn,5790-6970,1158psig

Plugging Procedure has  
statement: "2. Check all  
casing valves and determine  
which casing annulus is  
venting gas."

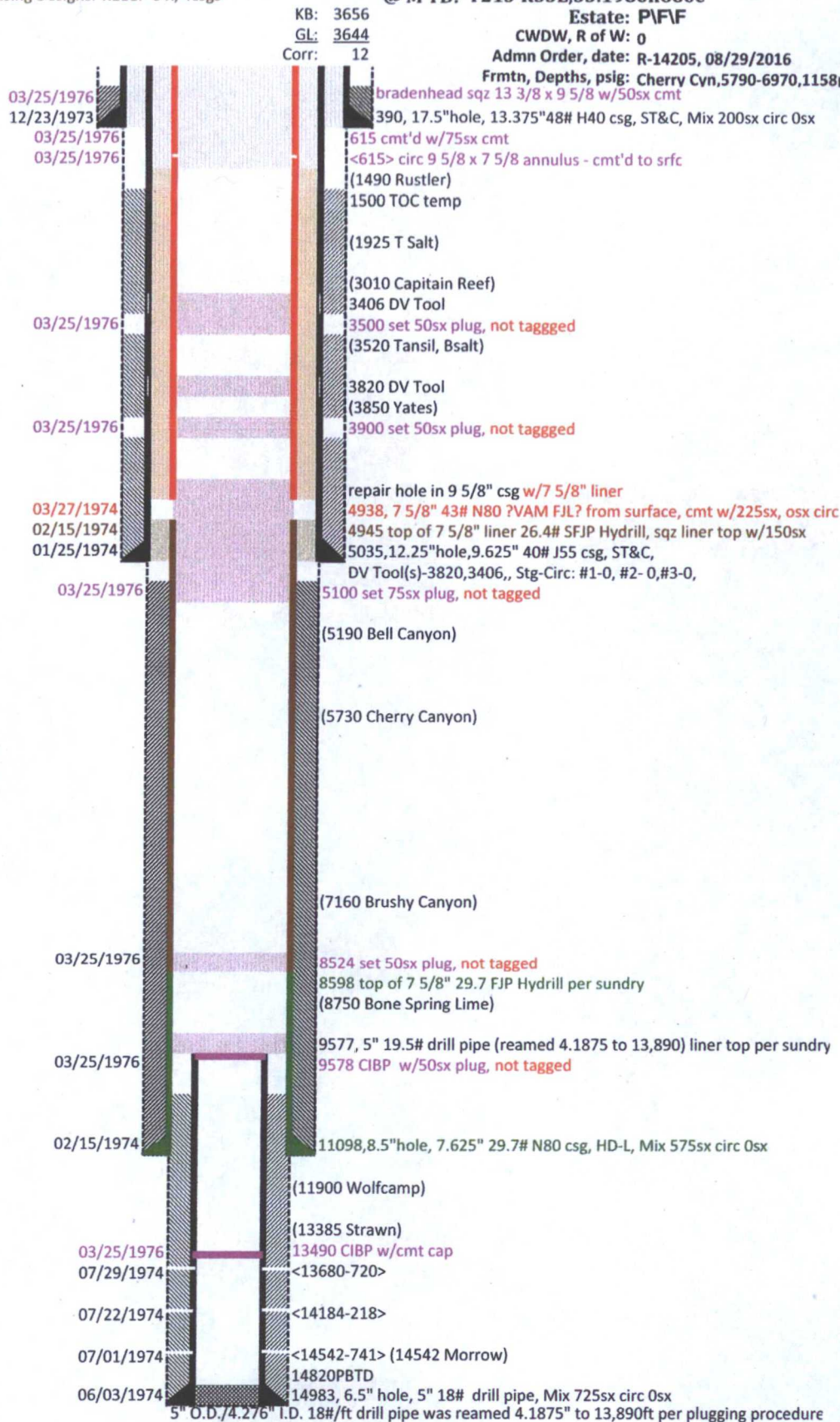


Diagram last updated: 09/20/2016

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 Well Status: P&A  
 Spud date: 12/23/1973  
 Plug'd Date: 3/25/1976  
 Reentry Date:

BHL: NM124661  
 Lease Agreement

Well: Pearson - 01  
 API: 3002524438  
 @ Srfce: T21S-R33E,33.1980n660e  
 @ M TD: T21S-R33E,33.1980n660e

Estate: P&F  
 CWDW, R of W: 0  
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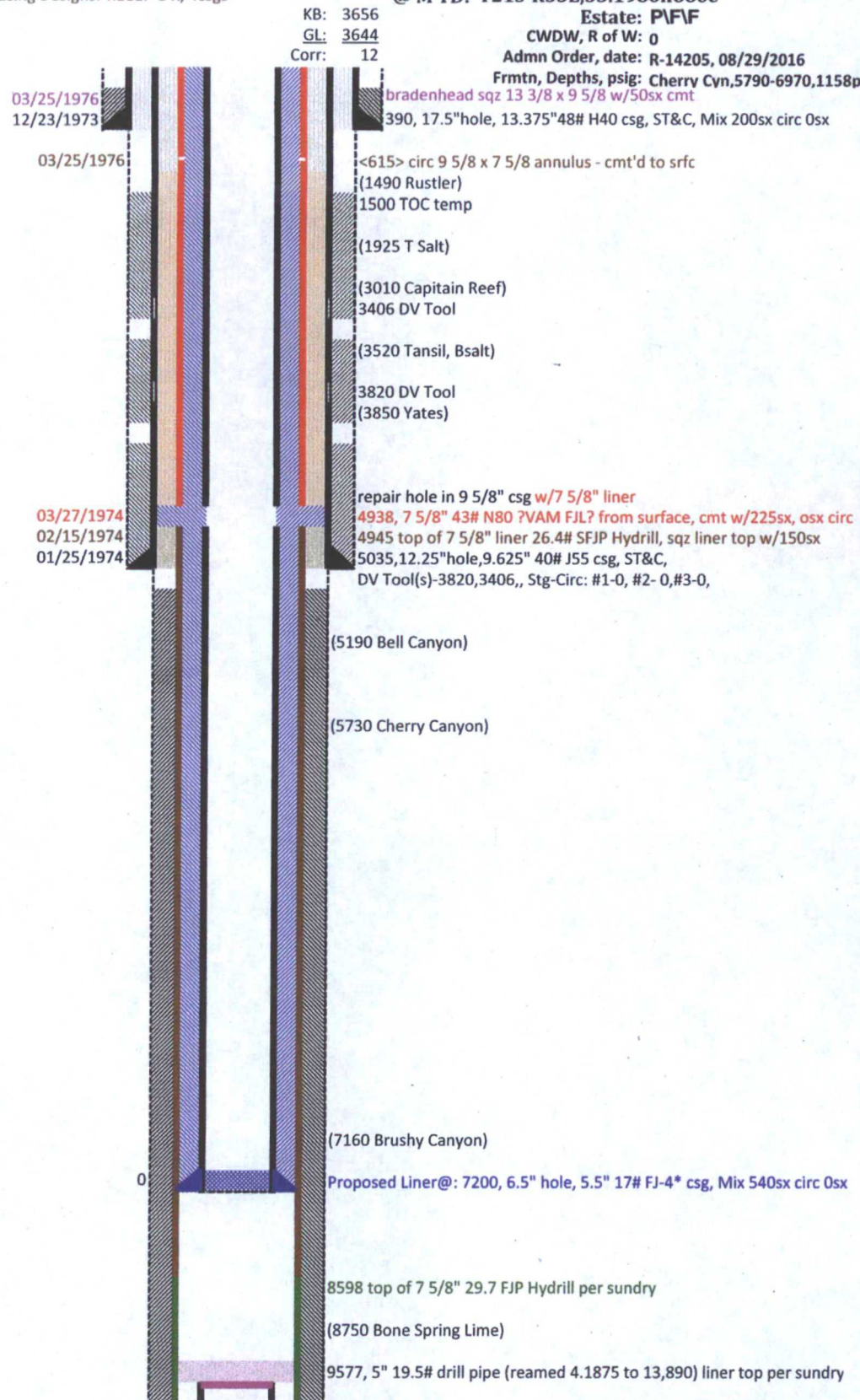


Diagram last updated: 09/20/2016

Abandoned TD not shown on this wellbore diagram for clarity of WDW



**Captain Reef & Sec Potash R111P requirements: 4 casings, production cement to cover a minimum of 50ft above the Captain Reef**

13 3/8 surface csg in a 17 1/2 inch hole.					Design Factors		SURFACE		
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	
"A"	48.00	H 40	ST&C	17.2	4.42	0.66	390	18,720	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,041			Tail Cmt	does	circ to sfc.	Totals:	390	18,720	
Comparison of Proposed to Minimum Required Cement Volumes									
Hole Size	Annular Volume	Proposed Sx Cmt	CuFt Cmt Proposed	Min Cu Ft	Excess % Cmt	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
17 1/2	0.6946	200	268	292	-8	8.60	1508	2M	1.56

9 5/8 casing inside the 13 3/8 casing.					Design Factors		INTERMEDIATE		
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	
"A"	40.00	J 55	ST&C	2.24	0.98	0.70	5,035	201,400	
w/8.4#/g mud, 30min Sfc Csg Test psig: 568						Totals:	5,035	201,400	
The cement volume(s) proposed may achieve a top					0	feet from surface.			
Hole Size	Annular Volume	Proposed Sx Cmt	CuFt Cmt Proposed	Min Cu Ft	Excess DVT Cmt	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
12 1/4	0.3132	2100	3539	1620	O K	10.00	3208	5M	0.81

7 5/8 casing inside the 9 5/8				Design Factors			INTERMEDIATE		
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	
"A"	42.80	N 80	VAM FJL	2.12	4.29	1.83	4,945	211,646	
"B"	26.40	N 80	HD-L	2.13	0.77	1.07	3,697	97,601	
"C"	29.70	N 80	HD-L	6.00	0.85	1.22	2,456	72,943	
w/8.4#/g mud, 30min Sfc Csg Test psig: -20						Totals:	11,098	382,190	
The cement volume(s) proposed may achieve a top				0	feet from surface.				
Hole Size	Annular Volume	Proposed Sx Cmt	CuFt Cmt Proposed	Min Cu Ft	Excess % Cmt	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
8 1/2	0.0770	575	904	1025	-12	9.80	1782	2M	0.44

Tail cmt proposed for the csg below could overlap the previous csg shoe.

5 1/2 casing inside the 7 5/8					Design Factors		PRODUCTION		
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	
"A"	17.00	L 80	FJ-4*	1.71	1.87	2.30	7,200	122,400	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,584						Totals:	7,200	122,400	
The cement volume(s) proposed may achieve a top					3898	feet from surface.			
Hole Size	Annular Volume	Proposed Sx Cmt	CuFt Cmt Proposed	Min Cu Ft	Excess % Cmt	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
6 1/2	0.0654	540	997	602	66	9.00			0.50

\*FJ-4 Coupling Technical Specifications from data supplied by Operator

\*FJ-4 Coupling Technical Specifications from data supplied by Operator



## **Reentry Conditions of Approval**

**BC Operating, Inc.  
Pearson - 01, API 3002524438  
T21S-R33E, Sec 33, 1980FNL & 660FEL  
September 24, 2016**

- 1. Operator is required to have BLM approved NOI procedure with applicable conditions of approval on location during workover operations.**
2. Surface disturbance beyond the existing pad shall have prior approval.
3. A closed loop system is required. The operator shall properly dispose of drilling/circulating contents at an authorized disposal site. Tanks are required for all operations, no excavated pits.
4. Functional H<sub>2</sub>S monitoring equipment shall be on location.
5. 5000 (5M) Blow Out Prevention Equipment to be used. All BOPE and workover procedures shall establish fail safe well control. Blind ram(s) and pipe ram(s) designed to close on all workstring diameters used is required equipment. A manual BOP closure system (hand wheels) shall be available for use regardless of BOP design. Function test the installed BOPE to 500psig when well conditions allow. Related equipment, (choke manifolds, kill trucks, gas vent or flare lines, etc.) shall be employed when needed for reasonable well control requirements.
6. All waste (i.e. trash, salts, chemicals, sewage, gray water, etc.) created as a result of work over operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area. Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.
- 7. Notify BLM as work begins. Procedures to be witnessed. Notify [pswartz@blm.gov](mailto:pswartz@blm.gov), 575-200-7902 24 hours prior.**
- 8. Drill out all P&A cement plugs above 9,000ft. Tag and report to BLM if the 7 5/8" PBTD above the 5" 19.5# drill pipe liner top is below 9377. Pressure the 7 5/8" csg to the PBTD with 500psig and establish an injection rate. Evaluate the results and take necessary correction steps to insure the cementing success of the proposed 5 1/2" csg.**
- 9. Set a Class "H" mixed 16.4#/gal, 1.06ft<sup>3</sup>/sx, 4.3gal/sx water cmt plug from 8800 across the Bone Spring formation top of 8750. WOC & tag the plug with tbg at 8600 or above.**



10. Set a Class "H" mixed 16.4#/gal, 1.06ft<sup>3</sup>/sx, 4.3gal/sx water cmt plug from 7470. WOC & tag the plug with tbg at 7270 or above.
11. Provide BLM with an electronic copy cement bond log record of the 7 5/8" csg from 7200 to 2800 (above the Capitan Reef) taken with 0psig casing pressure. The CBL is to be submitted to NMOCD or attached a [pswartz@blm.gov](mailto:pswartz@blm.gov) email.
12. Provide BLM with an electronic copy cement bond log record of the proposed 5 1/2" csg to be set from 7200 to surface taken with 0psig casing pressure. The CBL is to be submitted to NMOCD or attached a [pswartz@blm.gov](mailto:pswartz@blm.gov) email.
13. The well is considered a commercial hydrocarbon producer until proven otherwise. Provide statements with evidence that paying quantities of hydrocarbons are not produced when the well has a pumped off fluid level. A copy of the well's mudlog, and an estimated insitu water salinity based on copies of open hole logs may be offered as evidence.
14. A minimum of 1000 barrels is to be withdrawn from the proposed disposal formation after any recent stimulation load volumes have been recovered. Reports of ten samples from the last 200bbls analyzed for hydrocarbons and insitu salinity by a reputable laboratory. BLM agreement is to be obtained prior to the well is utilized as a disposal well.
15. The swabbing procedure is to be witnessed by BLM. Notify [pswartz@blm.gov](mailto:pswartz@blm.gov), 575-200-7902 24 hours prior to taking the 10 samples of paragraph 14.
16. Approval is granted for disposal of water produced from the lease, communitization, or unit agreement of this well only. Disposal fluid from another operator, lease, communitization, or unit agreement require surface right-of-way agreement **approvals** and authorization from the surface owner.
17. File NMOCD intermediate **subsequent sundry** within 30 days of any interrupted workover procedures and a complete (dated daily) workover subsequent sundry.
18. Submit a NMOCD **Recompletion Report** within 30 days of the date all BLM approved procedures are complete. **Include formation tops on every well Recompletion Report.** The operator shall provide to the BLM their formation depth picks based on mud log and geophysical logs along with a copies of the mud log and open-hole logs.
19. An inactive/shut-in well bore is a non-producing completion that is capable of "beneficial use" i.e. production in paying quantities or of service use.
20. Should active production water disposal for this well not be maintained for more than 90 consecutive days, submit for NMOCD & BLM approval a plan for restoration or plug and abandonment.



### Well with a Packer – Operations

- 1) Compliance with the NMOCD Administrative Order is required.
  - a) Approved injection pressure compliance is required.
  - b) If injection pressure exceeds the approved pressure you are required to reduce that pressure and notify the NMOCD within 24 hours.
  - c) When injection pressure is within 50 psig of the maximum pressure, install automation equipment that will prevent exceeding that maximum. Submit a subsequent report describing the installed automation equipment within 30 days.
- 2) Stimulation injection pressures are not to exceed NMOCD permitted wellhead pressure or 50psig below the well's frac pressure established by a NMOCD/BLM approved step rate test for Class II water injection wells.
- 3) The casing/tubing annulus is required to be monitored for communication with injection fluid or loss of casing integrity. A BLM inspector may request verification of a full annular fluid level at any time.
- 4) **Maintain the annulus full of packer fluid at atmospheric pressure. Installation of equipment that will display continuous open to the air packer fluid level above the casing vent is required for this disposal well.**
- 5) **Notify the BLM's authorized officer ("Paul R. Swartz" <[pswartz@blm.gov](mailto:pswartz@blm.gov)>, cell phone 575-200-7902) before injection begins to arrange for approval of the annular monitoring system.**
- 6) **Class II (production water disposal) wells will not be permitted Stimulation Pressures or "Injectivity Tests" that exceed the NMOCD/BLM generic frac pressure which is: .2 x ft depth to the topmost injection or 50psig below the frac point as clearly indicated by a BLM accepted "Step Rate Test". Initial wellhead pressure through tubing with an ID greater than 2 1/2" is reduced to 0.18 x the depth of the top perforation.**
- 7) **BLM notification of application for increased disposal wellhead pressure is required prior to running a "Step Rate Test".**
- 8) **The SRT is to be conducted per BLM specifications developed from United States Environmental Protection Agency guidance. An injectivity test ran to determine the disposal rate at an NMOCD/BLM accepted wellhead pressure requires no BLM notification.**
- 9) **The subsequent report is to include all stimulation injection pressures. Report maximum/minimum injection rate (bpm) and max/min stimulation injection pressures (psig).**