Form 3160-3
(March 2012)

MIN F
SURF P

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

5. Lease Serial No.
NMLC0063798

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER	7. If Unit or CA Agreement, Name and No. _(322239)_
1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone	8. Lease Name and Well No. CHARLES LING FED COM 211H
2. Name of Operator MATADOR PRODUCTION COMPANY _(228937)_	9. API Well No. 30-025-45080 _(76735)_

3a. Address 5400 LBJ Freeway, Suite 1500 Dallas TX 7524	3b. Phone No. _(include area code)_ (972)371-5200	10. Field and Pool, or Exploratory WILDCAT / UPPER WOLFCAMP

4. Location of Well _(Report location clearly and in accordance with any State requirements.*)_

At surface NWNW / 360 FNL / 526 FWL / LAT 32.2383833 / LONG -103.5499534

At proposed prod. zone SWSW / 240 FSL / 330 FWL / LAT 32.2255206 / LONG -103.5505906

11. Sec., T. R. M. or Blk. and Survey or Area

SEC 11 / T24S / R33E / NMP

14. Distance in miles and direction from nearest town or post office* 23 miles	12. County or Parish LEA	13. State NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg. unit line, if any) 360 feet	16. No. of acres in lease 2480	17. Spacing Unit dedicated to this well 320
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 30 feet	19. Proposed Depth 12511 feet / 17261 feet	20. BLM/BIA Bond No. on file FED: NMB001079
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3618 feet	22. Approximate date work will start* 07/01/2018	23. Estimated duration 90 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).

4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature (Electronic Submission)	Name _(Printed/Typed)_ Brian Wood / Ph: (505)466-8120	Date 05/18/2018
Title President		
Approved by _(Signature)_ (Electronic Submission)	Name _(Printed/Typed)_ Cody Layton / Ph: (575)234-5959	Date 07/18/2018
Title Assistant Field Manager Lands & Minerals	Office CARLSBAD	

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)

GCP Rec to 08/06/18

KZ 08/13/18

APPROVED WITH CONDITIONS P.M.

Approval Date: 07/18/2018

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM 1: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

NOTICES

(Form 3160-3, page 2)

Approval Date: 07/18/2018

Additional Operator Remarks

Location of Well

1. SHL: NWNW / 360 FNL / 526 FWL / TWSP: 24S / RANGE: 33E / SECTION: 11 / LAT: 32.2383833 / LONG: -103.5499534 (TVD: 0 feet, MD: 0 feet)

   PPP: NWSW / 5280 FSL / 349 FWL / TWSP: 24S / RANGE: 33E / SECTION: 11 / LAT: 32.232193 / LONG: -103.55059 (TVD: 12511 feet, MD: 14832 feet)

   PPP: NWNW / 360 FNL / 526 FWL / TWSP: 24S / RANGE: 33E / SECTION: 11 / LAT: 32.2383833 / LONG: -103.5499534 (TVD: 0 feet, MD: 0 feet)

   BHL: SWSW / 240 FSL / 330 FWL / TWSP: 24S / RANGE: 33E / SECTION: 11 / LAT: 32.2255206 / LONG: -103.5505906 (TVD: 12511 feet, MD: 17261 feet)

BLM Point of Contact

Name: Sipra Dahal

Title: Legal Instruments Examiner

Phone: 5752345983

Email: sdahal@blm.gov

Approval Date: 07/18/2018

Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

Operator Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

NAME: Brian Wood

Title: President

Street Address: 37 Verano Loop

City: Santa Fe   **State:** NM

Phone: (505)466-8120

Email address: afmss@permitswest.com

Signed on: 05/18/2018

Zip: 87508

Field Representative

Representative Name:

Street Address:

City: **State:**   **Zip:**

Phone:

Email address:

▼AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Application Data Report
07/18/2018

APD ID: 10400030372

Operator Name: MATADOR PRODUCTION COMPANY

Well Name: CHARLES LING FED COM

Well Type: OIL WELL

Submission Date: 05/18/2018

Well Number: 211H

Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400030372

BLM Office: CARLSBAD

Federal/Indian APD: FED

Lease number: NMLC0063798

Surface access agreement in place?

Agreement in place? NO

Agreement number:

Agreement name:

Keep application confidential? NO

Permitting Agent? YES

Operator letter of designation:

Tie to previous NOS?

User: Brian Wood   **Title:** President

Is the first lease penetrated for production Federal or Indian? FED

Lease Acres: 2480

Allotted?   **Reservation:**

Federal or Indian agreement:

Submission Date: 05/18/2018

APD Operator: MATADOR PRODUCTION COMPANY

Operator Info

Operator Organization Name: MATADOR PRODUCTION COMPANY

Operator Address: 5400 LBJ Freeway, Suite 1500

Operator PO Box:

Operator City: Dallas   **State:** TX

Operator Phone: (972)371-5200

Operator Internet Address: amonroe@matadorresources.com

Zip: 75240

Section 2 - Well Information

Well in Master Development Plan? NO

Well in Master SUPO? NO

Well in Master Drilling Plan? NO

Well Name: CHARLES LING FED COM

Field/Pool or Exploratory? Field and Pool

Mater Development Plan name:

Master SUPO name:

Master Drilling Plan name:

Well Number: 211H   **Well API Number:**

Field Name: WILDCAT   **Pool Name:** UPPER WOLFCAMP

Is the proposed well in an area containing other mineral resources? USEABLE WATER,NATURAL GAS,CO2,OIL

Describe other minerals:

Is the proposed well in a Helium production area? N   **Use Existing Well Pad?** NO   **New surface disturbance?**

Type of Well Pad: MULTIPLE WELL   **Multiple Well Pad Name:**   **Number:** SLOT 1
CHARLES LING FED COM

Well Class: HORIZONTAL   **Number of Legs:** 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town: 23 Miles   **Distance to nearest well:** 30 FT   **Distance to lease line:** 360 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: CL_211H_C102_ETAL_20180518083917.pdf

Well work start Date: 07/01/2018   **Duration:** 90 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83   **Vertical Datum:** NAVD88

Survey number: 18329

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	360	FNL	526	FWL	24S	33E	11	Aliquot NWNW	32.2383833	-103.5499534	LEA	NEW MEXICO	NEW MEXICO	F	NMLC0063798	3618	0	0
KOP Leg #1	332	FSL	342	FWL	24S	33E	11	Aliquot NWNW	32.238465	-103.550583	LEA	NEW MEXICO	NEW MEXICO	F	NMLC0063798	-8314	11945	11932
PPP Leg #1	360	FNL	526	FWL	24S	33E	11	Aliquot NWNW	32.2383833	-103.5499534	LEA	NEW MEXICO	NEW MEXICO	F	NMLC0063798	3618	0	0

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
PPP Leg #1	5280	FSL	349	FWL	24S	33E	11	Aliquot NWS W	32.232193	-103.55059	LEA	NEW MEXICO	NEW MEXICO	F	FEE	-8893	14832	12511
EXIT Leg #1	240	FSL	330	FWL	24S	33E	11	Aliquot SWS W	32.2255206	-103.5505906	LEA	NEW MEXICO	NEW MEXICO	F	FEE	-8893	17261	12511
BHL Leg #1	240	FSL	330	FWL	24S	33E	11	Aliquot SWS W	32.2255206	-103.5505906	LEA	NEW MEXICO	NEW MEXICO	F	FEE	-8893	17261	12511

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U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Drilling Plan Data Report
07/18/2018

APD ID: 10400030372	**Submission Date:** 05/18/2018
Operator Name: MATADOR PRODUCTION COMPANY	
Well Name: CHARLES LING FED COM	**Well Number:** 211H
Well Type: OIL WELL	**Well Work Type:** Drill

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	---	3618	0	0	OTHER : Quaternary	USEABLE WATER	No
2	RUSTLER ANHYDRITE	2306	1312	1313		NONE	No
3	SALADO	1779	1839	1841	SALT	NONE	No
4	CASTILE	-121	3739	3746		NONE	No
5	BASE OF SALT	-1600	5218	5218		NONE	No
6	BELL CANYON	-1641	5259	5270		NATURAL GAS,CO2,OIL	No
7	CHERRY CANYON	-2666	6284	6297		NATURAL GAS,CO2,OIL	No
8	BRUSHY CANYON	-3883	7501	7514		NATURAL GAS,CO2,OIL	No
9	BONE SPRING	-5402	9020	9032	LIMESTONE	NATURAL GAS,CO2,OIL	No
10	BONE SPRING 1ST	-6300	9918	9931	OTHER : Carbonate	NATURAL GAS,CO2,OIL	No
11	BONE SPRING 1ST	-6491	10109	10122	SANDSTONE	NATURAL GAS,CO2,OIL	No
12	BONE SPRING 2ND	-6771	10389	10402	OTHER : Carbonate	NATURAL GAS,CO2,OIL	No
13	BONE SPRING 2ND	-7702	11320	11333	SANDSTONE	NATURAL GAS,CO2,OIL	No
14	BONE SPRING 3RD	-8274	11892	11905	OTHER : Carbonate	NATURAL GAS,CO2,OIL	No
15	BONE SPRING 3RD	-8526	12144	12162	SANDSTONE	NATURAL GAS,CO2,OIL	No
16	WOLFCAMP	-8579	12197	12220	OTHER : A Carbonate	NATURAL GAS,CO2,OIL	Yes

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M   **Rating Depth:** 12000

Equipment: A 12,000' 5000-psi BOP stack consisting of 3 rams with 2 pipe rams, 1 blind ram, and 1 annular preventer will be used below surface casing to TD. See attached BOP, choke manifold, co-flex hose, and speed head diagrams. An accumulator complying with Onshore Order 2 requirements for the BOP stack pressure rating will be present. Rotating head will be installed as needed.

Requesting Variance? YES

Variance request: Matador requests a variance to drill this well using a co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached. Manufacturer does not require the hose to be anchored. If the specific hose is not available, then one of equal or higher rating will be used. Matador is requesting a variance to use a speed head for setting the intermediate (9-5/8") casing. In the case of running a speed head with landing mandrel for 9-5/8" casing, BOP test pressures after setting surface casing will be 250 psi low and 5000 psi high. Annular will be tested to 250 psi low and 2500 psi high before drilling below the surface shoe. The BOPs will not be tested again until after setting 7-5/8" x 7" casing unless any flanges are separated. A diagram of the speed head is attached and does not require the hose to be anchored. If the specific hose is not available, then one of equal or higher rating will be used.

Testing Procedure: Pressure tests will be conducted before drilling out from under all casing strings. BOP will be inspected and operated as required in Onshore Order 2. Kelly cock and 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. A third party company will test the BOPs. After setting surface casing, a minimum 5M BOPE system will be installed. Test pressures will be 250 psi low and 5000 psi high with the annular being tested to 250 psi low and 2500 psi high before drilling below surface shoe. In the event that the rig drills multiple wells on the pad and the BOPs are removed after setting Intermediate 2 casing, a full BOP test will be performed when the rig returns and the 5M BOPE system is re-installed. After setting 7-5/8" x 7" Casing, pressure tests will be made to 250 psi low and 10,000 psi high. Annular will tested to 250 psi low and 5000 psi high.

Choke Diagram Attachment:

    CL_211H_choke_20180622100144.pdf

BOP Diagram Attachment:

    CL_211H_BOP_297_20180622082411.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	1340	0	1340	3618		1340	J-55	54.5	OTHER - BTC	1.125	1.125	DRY	1.8	DRY	1.8
2	INTERMEDIATE	8.75	7.625	NEW	API	Y	0	4920	0	4890	3618		4920	P-110	29.7	OTHER - BTC	1.125	1.125	DRY	1.8	DRY	1.8
3	INTERMEDIATE	12.25	9.625	NEW	API	N	0	5220	0	5214	3618		5220	J-55	40	OTHER - BTC	1.125	1.125	DRY	1.8	DRY	1.8
4	PRODUCTION	6.125	5.5	NEW	API	Y	0	11700	0	11688	3618		11700	P-110	20	OTHER - BTC	1.125	1.125	DRY	1.8	DRY	1.8

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
5	INTERMEDIATE	8.75	7.625	NEW	API	Y	4921	11800	4891	11471			6879	P-110	29.7	OTHER - VAM HTF-NR	1.125	1.125	DRY	1.8	DRY	1.8
6	INTERMEDIATE	8.75	7.0	NEW	API	Y	11801	12744	11788	12496			943	P-110	29	OTHER - VAM HTF-NR	1.125	1.125	DRY	1.8	DRY	1.8
7	PRODUCTION	6.125	4.5	NEW	API	Y	11701	17261	11689	12511			5560	P-110	13.5	OTHER - VAM DWC/C-IS MS	1.125	1.125	DRY	1.8	DRY	1.8

Casing Attachments

Casing ID: 1   **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

   CL_211H_Casing_Design_Assumptions_20180518091723.pdf

Casing ID: 2   **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

   CL_211H_Casing_Design_Assumptions_20180518092249.pdf

Casing Design Assumptions and Worksheet(s):

   CL_211H_Casing_Design_Assumptions_20180518092522.pdf

Casing Attachments

Casing ID: 3   **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

    CL_211H_Casing_Design_Assumptions_20180518092016.pdf

Casing ID: 4   **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

    5.500in_Casing_Spec_20180518093240.PDF

Casing Design Assumptions and Worksheet(s):

    CL_211H_Casing_Design_Assumptions_20180518093627.pdf

Casing ID: 5   **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

    7.625in_VAM_Casing_Spec_20180518092831.pdf

Casing Design Assumptions and Worksheet(s):

    CL_211H_Casing_Design_Assumptions_20180518093031.pdf

Casing Attachments

Casing ID: 6   **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

    CL_211H_Casing_Design_Assumptions_20180518092959.pdf

Casing Design Assumptions and Worksheet(s):

    CL_211H_Casing_Design_Assumptions_20180518093022.pdf

Casing ID: 7   **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

    4.500in_Casing_Spec_20180518093504.PDF

Casing Design Assumptions and Worksheet(s):

    CL_211H_Casing_Design_Assumptions_20180518093552.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	1340	800	1.82	13.5	1456	100	Class C	Bentonite + 2% CaCl2 + 3% NaCl + LCM
SURFACE	Tail		0	1340	340	1.38	14.8	469	100	Class C	5% NaCl + LCM
INTERMEDIATE	Lead		0	4920	520	2.36	11.5	1227	75	TXI	Fluid Loss + Dispersant + Retarder + LCM
INTERMEDIATE	Tail		0	4920	320	1.38	14.8	442	75	TXI	Fluid Loss + Dispersant + Retarder + LCM
INTERMEDIATE	Lead		0	5220	1290	1.82	12.8	2348	100	Class C	Bentonite + 2% CaCl2 + 3% NaCl + LCM

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
INTERMEDIATE	Tail		0	5220	500	1.38	14.8	690	100	Class C	5% NaCl + LC
PRODUCTION	Lead		0	11700	0	0	0	0	0	None	None
PRODUCTION	Tail		0	11700	500	1.17	15.8	585	10	Class H	Fluid Loss + Dispersant + Retarder + LCM
INTERMEDIATE	Lead		4921	11800	520	2.36	11.5	1227	75	TXI	Fluid Loss + Dispersant + Retarder + LCM
INTERMEDIATE	Tail		4921	11800	320	1.38	14.8	442	75	TXI	Fluid Loss + Dispersant + Retarder + LCM
INTERMEDIATE	Lead		11801	12744	520	2.36	11.5	1227	75	TXI	Fluid Loss + Dispersant + Retarder + LCM
INTERMEDIATE	Tail		11801	12744	320	1.38	14.8	442	75	TXI	Fluid Loss + Dispersant + Retarder + LCM
PRODUCTION	Lead		11701	17261	0	0	0	0	0	None	None
PRODUCTION	Tail		11701	17261	500	1.17	15.8	585	10	Class H	Fluid Loss + Dispersant + Retarder + LCM

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: All necessary mud products (barite, bentonite, LCM) for weight addition and fluid loss control will be on location at all times. Mud program is subject to change due to hole conditions. A closed loop system will be used.
Describe the mud monitoring system utilized: An electronic Pason mud monitoring system complying with Onshore Order 1 will be used.

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	1340	OTHER : Fresh water spud	8.3	8.3							
5220	12744	OTHER : Fresh water & cut brine	9	9							
1340	5220	OTHER : Brine water	10	10							
12744	17261	OIL-BASED MUD	12.5	12.5							

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

A 2-person mud logging program will be used from 5,220' to TD. No electric logs are planned at this time. GR will be collected through the MWD tools from intermediate casing to TD. CBL with CCL will be run as far as gravity will let it fall to TOC.

List of open and cased hole logs run in the well:

CBL

Coring operation description for the well:

No core or drill stem test is planned.

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 8760   **Anticipated Surface Pressure:** 6007.58

Anticipated Bottom Hole Temperature(F): 178

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

CL_211H_H2S_Plan_Slot1_20180518095126.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

CL_211H_Horizontal_Drill_Plan_20180518095138.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:
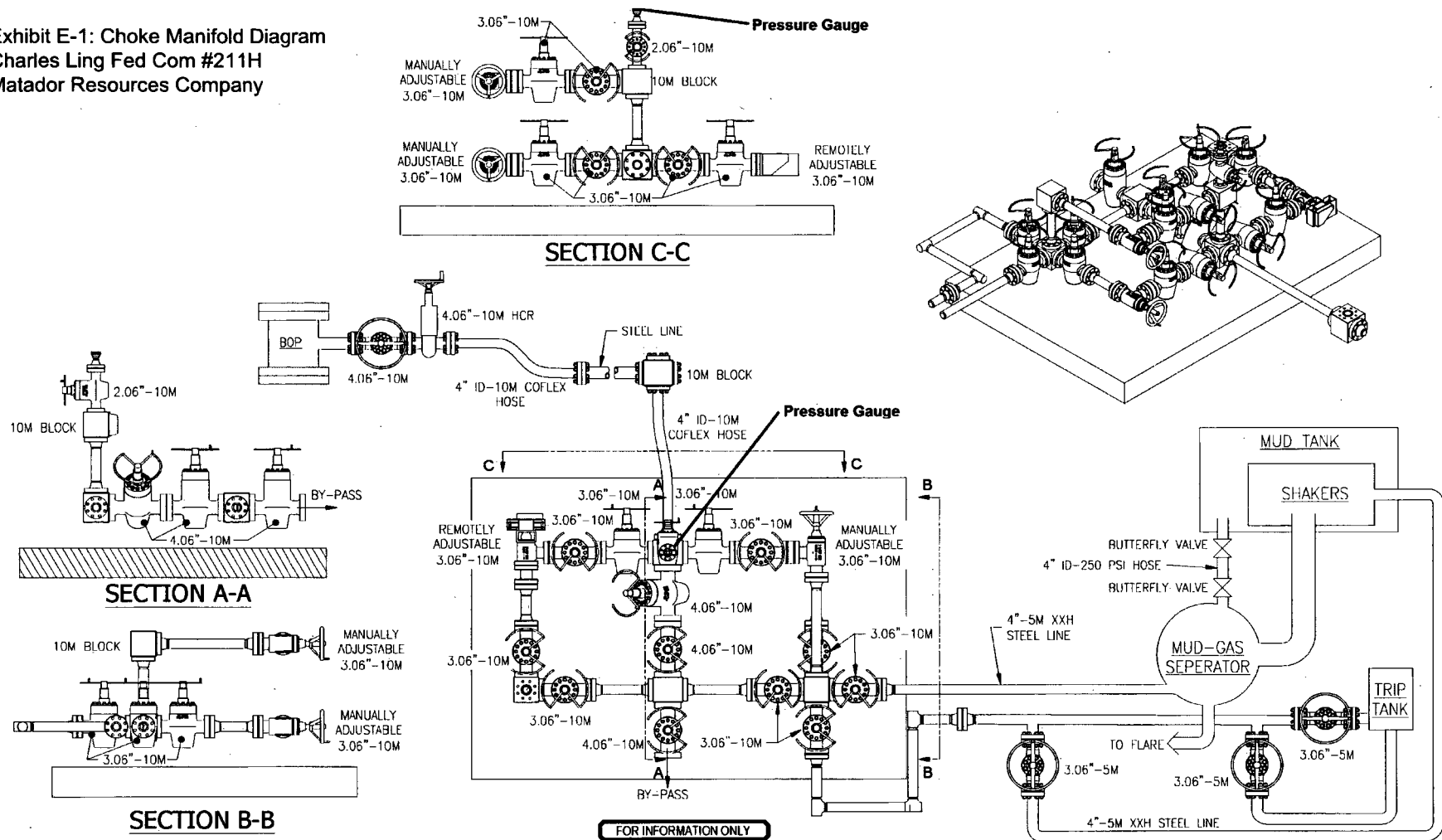
CL_211H_Speedhead_Specs_20180518095320.pdf

CL_211H_Drill_Plan_Revised_20180622100303.pdf

10M_Well_Control_Plan_20180622100509.pdf

Other Variance attachment:

CL_211H_Casing_Variance_20180518091520.pdf

Exhibit E-1: Choke Manifold Diagram
Charles Ling Fed Com #211H
Matador Resources Company

SECTION C-C

- 3.06"–10M
- Pressure Gauge
- 2.06"–10M
- MANUALLY ADJUSTABLE 3.06"–10M
- 10M BLOCK
- MANUALLY ADJUSTABLE 3.06"–10M
- REMOTELY ADJUSTABLE 3.06"–10M
- 3.06"–10M

SECTION A-A

- 2.06"–10M
- 10M BLOCK
- BY-PASS
- 4.06"–10M

SECTION B-B

- 10M BLOCK
- MANUALLY ADJUSTABLE 3.06"–10M
- MANUALLY ADJUSTABLE 3.06"–10M
- 3.06"–10M

Main Diagram

- BOP
- 4.06"–10M HCR
- 4.06"–10M
- STEEL LINE
- 4" ID–10M COFLEX HOSE
- 10M BLOCK
- 4" ID–10M COFLEX HOSE
- Pressure Gauge
- C   C
- 3.06"–10M   3.06"–10M
- 3.06"–10M
- REMOTELY ADJUSTABLE 3.06"–10M
- 3.06"–10M
- MANUALLY ADJUSTABLE 3.06"–10M
- B
- 4.06"–10M
- 4.06"–10M
- 3.06"–10M
- 3.06"–10M
- 3.06"–10M
- 4.06"–10M
- 3.06"–10M
- A
- B
- BY-PASS
- MUD TANK
- SHAKERS
- BUTTERFLY VALVE
- 4" ID–250 PSI HOSE
- BUTTERFLY VALVE
- 4"–5M XXH STEEL LINE
- MUD–GAS SEPERATOR
- TO FLARE
- TRIP TANK
- 3.06"–5M
- 3.06"–5M
- 3.06"–5M
- 4"–5M XXH STEEL LINE

FOR INFORMATION ONLY

PATTERSON-UTI DRILLING COMPANY LLC

APEX-XK 1500 WALKING
RIG 282
CHOKE ARRANGEMENT

DWG NO. R282-PIP.001   SHT 1 OF 1   REV 1

WELDING NOTE & TOLERANCES UNLESS OTHERWISE SPECIFIED.

GENERAL WELDING NOTE:
ALL ACCESSIBLE CONTACT SURFACES SHALL BE JOINED WITH CONTINOUS 45 DEGREE FILLET WELDS. WELD SIZE TO BE 1/16 INCH SMALLER THAN THINNER MEMBER JOINED UP TO 5/16 INCH THICKNESS AND 1/8 INCH SMALLER THAN THINNER MEMBER JOINED UP TO 3/4 INCH THICKNESS WELDMENT TOLERANCES = +/- 1/16

MACHINING TOLERANCES
1 PLACE DECIMAL = ±.1
2 PLACE DECIMAL = ±.03
3 PLACE DECIMAL = ±.015
FRACTIONAL TOLERANCES = 1/64
INSIDE MACHINED CORNER RADII = ±.031
CHAMFER OUTSIDE CORNERS .03 X 45 DEG
ANGLE TOLERANCES = ±1 DEGREE
MACHINED SURFACE FINISH 125 RMS
ALL UNSPECIFIED DIMENSIONS ARE IN INCHES

REV	DATE	DESCRIPTION	DRWN BY	CHK BY	APRVD ENG.
1	04/13/2018	ADDED 3RD CHOKE & MULTIPLE VIEWS	RA	JN	JD
0	12/04/2017	ISSUE FOR INFORMATION	JN		

PATTERSON-UTI
Well Control

Made by Cameron
(Shaffer Spherical)
Clone Annular

PATTERSON-UTI # __PS2-628__

STYLE: New Shaffer Spherical

BORE 13 5/8" **PRESSURE** 5,000

HEIGHT: 48 ½" **WEIGHT:** 13,800 lbs

PATTERSON-UTI # __PC2-128__

STYLE: New Cameron Type U

BORE 13 5/8" **PRESSURE** 10,000

RAMS: TOP 5" Pipe BTM Blinds

HEIGHT: 66 5/8" **WEIGHT:** 24,000 lbs

Length 40" **Outlets** 4" 10M

DSA 4" 10M x 2" 10M

PATTERSON-UTI # __PC2-228__

STYLE: New Cameron Type U

BORE 13 5/8" **PRESSURE** 10,000

RAMS: 5" Pipe
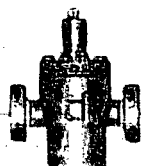
HEIGHT: 41 5/8" **WEIGHT:** 13,000 lbs

WING VALVES
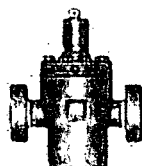
| 2" Check Valve | 2" Manual Valve | 2" Manual Valve | 4" Manual Valve | 4" Hydraulic Valve |
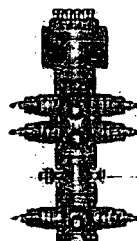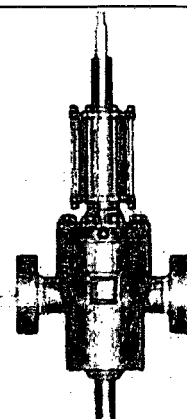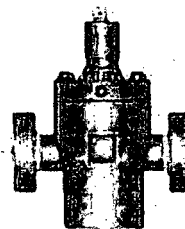
Internal Hydrostatic Test Graph

Midwest Hose & Specialty, Inc.

Customer: Patterson

Pick Ticket #: 284918

Hose Specifications

Hose Type	Length
Ck	10'
I.D.	**O.D.**
3"	4.79"
Working Pressure	**Burst Pressure**
10000 PSI	Standard Safety Multiplier Applies

Verification

Type of Fitting	Coupling Method
4-1/16 10K	Swage
Die Size	**Final O.D.**
5.37"	5.37"
Hose Serial #	**Hose Assembly Serial #**
10490	284918-2

Pressure Test

PSI vs Time in Minutes

Y-axis: 0, 2000, 4000, 6000, 8000, 10000, 12000, 14000, 16000, 18000

X-axis: 7:06 PM, 7:07 PM, 7:08 PM, 7:09 PM, 7:10 PM, 7:11 PM, 7:20 PM, 7:21 PM, 7:22 PM, 7:23 PM, 7:24 PM, 7:25 PM, 7:26 PM, 7:27 PM, 7:28 PM, 7:29 PM

Test Pressure	Time Held at Test Pressure	Actual Burst Pressure	Peak Pressure
15000 PSI	15 2/4 Minutes		15732 PSI

Comments: Hose assembly pressure tested with water at ambient temperature.

Tested By: Tyler Hill

Approved By: Ryan Adams

Midwest Hose & Specialty, Inc.

Internal Hydrostatic Test Certificate

General Information		Hose Specifications	
Customer	PATTERSON B&E	Hose Assembly Type	Choke & Kill
MWH Sales Representative	AMY WHITE	Certification	API 7K
Date Assembled	12/8/2014	Hose Grade	MUD
Location Assembled	OKC	Hose Working Pressure	10000
Sales Order #	236404	Hose Lot # and Date Code	10490-01/13
Customer Purchase Order #	260471	Hose I.D. (Inches)	3"
Assembly Serial # (Pick Ticket #)	287918-2	Hose O.D. (Inches)	5.30"
Hose Assembly Length	10'	Armor (yes/no)	YES

Fittings

End A		End B	
Stem (Part and Revision #)	R3.0X64WB	Stem (Part and Revision #)	R3.0X64WB
Stem (Heat #)	91996	Stem (Heat #)	91996
Ferrule (Part and Revision #)	RF3.0	Ferrule (Part and Revision #)	RF3.0
Ferrule (Heat #)	37DA5631	Ferrule (Heat #)	37DA5631
Connection (Part #)	4 1/16 10K	Connection (Part #)	4 1/16 10K
Connection (Heat #)		Connection (Heat #)	
Dies Used	5.37	Dies Used	5.37

Hydrostatic Test Requirements

Test Pressure (psi)	15,000	Hose assembly was tested with ambient water temperature.
Test Pressure Hold Time (minutes)	15 1/2	

Date Tested	Tested By	Approved By
12/8/2014		

Midwest Hose & Specialty, Inc.

Certificate of Conformity

Customer:	PATTERSON B&E	Customer P.O.# 260471
Sales Order # 236404		Date Assembled: 12/8/2014

Specifications

Hose Assembly Type:	Choke & Kill	
Assembly Serial #	287918-2	Hose Lot # and Date Code	10490-01/13
Hose Working Pressure (psi) 10000		Test Pressure (psi) 15000

We hereby certify that the above material supplied for the referenced purchase order to be true according to the requirements of the purchase order and current industry standards.

Supplier:
Midwest Hose & Specialty, Inc.
3312 S I-35 Service Rd
Oklahoma City, OK 73129

Comments:

Approved By	Date
	12/9/2014

Internal Hydrostatic Test Graph

Midwest Hose & Specialty, Inc.

Customer: Patterson

Pick Ticket #: 284918

Hose Specifications

Hose Type	Length
Ck	20'
I.D.	**O.D.**
3"	4.77"
Working Pressure	**Burst Pressure**
10000 PSI	Standard Safety Multiplier Applies

Verification

Type of Fitting	Coupling Method
4-1/16 10K	Swage
Die Size	**Final O.D.**
5.37"	5.40"
Hose Serial #	**Hose Assembly Serial #**
10490	284918-1

Pressure Test

PSI vs. Time in Minutes graph. Y-axis: 0 to 18000 PSI. X-axis: 2:41 AM to 2:56 AM.

Test Pressure	Time Held at Test Pressure	Actual Burst Pressure	Peak Pressure
15000 PSI	15 2/4 Minutes		15893 PSI

Comments: Hose assembly pressure tested with water at ambient temperature.

Tested By: Tyler Hill

Approved By: Ryan Adams

Midwest Hose & Specialty, Inc.

Internal Hydrostatic Test Certificate

General Information		Hose Specifications	
Customer	PATTERSON B&E	Hose Assembly Type	Choke & Kill
MWH Sales Representative	AMY WHITE	Certification	API 7K
Date Assembled	12/8/2014	Hose Grade	MUD
Location Assembled	OKC	Hose Working Pressure	10000
Sales Order #	236404	Hose Lot # and Date Code	10490-01/13
Customer Purchase Order #	260471	Hose I.D. (Inches)	3"
Assembly Serial # (Pick Ticket #)	287918-1	Hose O.D. (Inches)	5.30"
Hose Assembly Length	20'	Armor (yes/no)	YES

Fittings

End A		End B	
Stem (Part and Revision #)	R3.0X64WB	Stem (Part and Revision #)	R3.0X64WB
Stem (Heat #)	A141420	Stem (Heat #)	A141420
Ferrule (Part and Revision #)	RF3.0	Ferrule (Part and Revision #)	RF3.0
Ferrule (Heat #)	37DA5631	Ferrule (Heat #)	37DA5631
Connection (Part #)	4 1/16 10K	Connection (Part #)	4 1/16 10K
Connection (Heat #)	V3579	Connection (Heat #)	V3579
Dies Used	5.37	Dies Used	5.37

Hydrostatic Test Requirements

Test Pressure (psi)	15,000	*Hose assembly was tested with ambient water temperature.*
Test Pressure Hold Time (minutes)	15 1/2	

Date Tested	Tested By	Approved By
12/9/2014		

Midwest Hose & Specialty, Inc.

Certificate of Conformity

Customer:	**PATTERSON B&E**	Customer P.O.#	**260471**
Sales Order #	**236404**	Date Assembled:	**12/8/2014**

Specifications

Hose Assembly Type:	**Choke & Kill**		
Assembly Serial #	**287918-1**	Hose Lot # and Date Code	**10490-01/13**
Hose Working Pressure (psi)	**10000**	Test Pressure (psi)	**15000**

We hereby certify that the above material supplied for the referenced purchase order to be true according to the requirements of the purchase order and current industry standards.

Supplier:
Midwest Hose & Specialty, Inc.
3312 S I-35 Service Rd
Oklahoma City, OK 73129

Comments:

Approved By	Date
	12/9/2014

Internal Hydrostatic Test Graph

Midwest Hose & Specialty, Inc.

Customer: Patterson

Pick Ticket #: 284918

Hose Specifications

Hose Type	Length
Mud	70'
I.D.	**O.D.**
3"	4.79"
Working Pressure	**Burst Pressure**
10000 PSI	Standard Safety Multiplier Applies

Verification

Type of Fitting	Coupling Method
4 1/16 10K	Swage
Die Size	**Final O.D.**
5.37"	5.37"
Hose Serial #	**Hose Assembly Serial #**
10490	284918-3

Pressure Test

PSI vs. Time in Minutes (2:38 PM – 2:56 PM)

Test Pressure	Time Held at Test Pressure	Actual Burst Pressure	Peak Pressure
15000 PSI	16 3/4 Minutes		15410 PSI

Comments: Hose assembly pressure tested with water at ambient temperature.

Tested By: Tyler Hill

Approved By: Ryan Adams

Midwest Hose & Specialty, Inc.

Internal Hydrostatic Test Certificate

General Information		Hose Specifications	
Customer	PATTERSON B&E	Hose Assembly Type	Choke & Kill
MWH Sales Representative	AMY WHITE	Certification	API 7K
Date Assembled	12/8/2014	Hose Grade	MUD
Location Assembled	OKC	Hose Working Pressure	10000
Sales Order #	236404	Hose Lot # and Date Code	10490-01/13
Customer Purchase Order #	260471	Hose I.D. (Inches)	3"
Assembly Serial # (Pick Ticket #)	287918-3	Hose O.D. (Inches)	5.23"
Hose Assembly Length	70'	Armor (yes/no)	YES

Fittings

End A		End B	
Stem (Part and Revision #)	R3.0X64WB	Stem (Part and Revision #)	R3.0X64WB
Stem (Heat #)	A141420	Stem (Heat #)	A141420
Ferrule (Part and Revision #)	RF3.0	Ferrule (Part and Revision #)	RF3.0
Ferrule (Heat #)	37DA5631	Ferrule (Heat #)	37DA5631
Connection (Part #)	4 1/16 10K	Connection (Part #)	4 1/16 10K
Connection (Heat #)		Connection (Heat #)	
Dies Used	5.37	Dies Used	5.37

Hydrostatic Test Requirements

Test Pressure (psi)	15,000	Hose assembly was tested with ambient water temperature.
Test Pressure Hold Time (minutes)	16 3/4	

Date Tested	Tested By	Approved By
12/9/2014		

Midwest Hose & Specialty, Inc.

Certificate of Conformity

Customer:	PATTERSON B&E	Customer P.O.# 260471
Sales Order # 236404		Date Assembled: 12/8/2014

Specifications
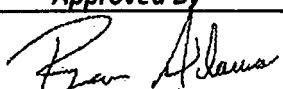
Hose Assembly Type:	Choke & Kill		
Assembly Serial #	287918-3	Hose Lot # and Date Code	10490-01/13
Hose Working Pressure (psi)	10000	Test Pressure (psi)	15000

We hereby certify that the above material supplied for the referenced purchase order to be true according to the requirements of the purchase order and current industry standards.

Supplier:
Midwest Hose & Specialty, Inc.
3312 S I-35 Service Rd
Oklahoma City, OK 73129

Comments:

Approved By	Date
	12/9/2014

Casing Design Criteria and Load Case Assumptions

Surface Casing

Collapse: DF_c=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.43 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and an internal force equal to mud gradient of displacement fluid (0.52 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.43 psi/ft), which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (8.3 ppg).

Intermediate #1 Casing

Collapse: DF_c=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.52 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.52 psi/ft), which is a more conservative backup force than pore pressure.
- Gas Kick Profile: Internal burst force at the shoe will be Fracture Pressure at that depth. Surface burst pressure will be fracture gradient at setting depth less a gas gradient to equivalent height of 50 bbl kick with Drill Pipe inside casing and mud gradient with which the next hole section will be run above that (0.47 psi/ft). External force will be equal to the mud gradient in which the casing will be run (0.52 psi/ft), which is a more conservative backup force than pore pressure.
- Fracture at Shoe with 1/3 BHP at Surface: Internal burst force at the shoe will be Fracture Pressure at setting depth. Internal burst force at surface will be 1/3 of pore pressure at setting depth. External force will be equal to the mud gradient in which the casing will be run (0.52 psi/ft) which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (10.0 ppg).

Intermediate #2 Casing

Collapse: DF_c=1.125

- Partial Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.47 psi/ft). The effects of axial load on collapse will be considered. Internal force equal to gas gradient over half of setting depth and mud gradient with which the next hole section will be run below that (0.65 psi/ft).

- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and mud gradient in which the casing will be run above that (0.47 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.47 psi/ft), which is a more conservative backup force than pore pressure.
- Gas Kick Profile: Internal burst force at the shoe will be Fracture Pressure at that depth. Surface burst pressure will be fracture gradient at setting depth less a gas gradient to equivalent height of 100 bbl kick with Drill Pipe inside casing and mud gradient with which the next hole section will be run above that (0.65 psi/ft). External force will be equal to the mud gradient in which the casing will be run (0.47 psi/ft), which is a more conservative backup force than pore pressure.
- Fracture at Shoe with 1/3 BHP at Surface: Internal burst force at the shoe will be Fracture Pressure at setting depth. Internal burst force at surface will be 1/3 of pore pressure at setting depth. External force will be equal to the mud gradient in which the casing will be run (0.47 psi/ft) which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (9.0 ppg).

Production Casing

Collapse: DF_c=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.65 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and mud gradient in which the casing will be run above that (0.65 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: 8000 psi casing test with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
- Injection Down Casing: 9500 psi surface injection pressure plus an internal pressure gradient of 0.65 psi/ft with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (12.5 ppg).

**DATA ARE INFORMATIVE ONLY.
BASED ON SI_PD-101836 P&B**

VAM HTF-NR

Connection Data Sheet

OD	Weight	Wall Th.	Grade	API Drift	Connection
7 5/8 in.	29.70 lb/ft	0.375 in.	P110 EC	6.750 in.	VAM® HTF NR

PIPE PROPERTIES

Nominal OD	7.625 in.
Nominal ID	6.875 in.
Nominal Cross Section Area	8.541 sqin.
Grade Type	Enhanced API
Min. Yield Strength	125 ksi
Max. Yield Strength	140 ksi
Min. Ultimate Tensile Strength	135 ksi
Tensile Yield Strength	1 068 klb
Internal Yield Pressure	10 760 psi
Collapse pressure	7 360 psi

CONNECTION PROPERTIES

Connection Type	Premium Integral Flush
Connection OD (nom)	7.701 in.
Connection ID (nom)	6.782 in.
Make-Up Loss	4.657 in.
Critical Cross Section	4.971 sqin.
Tension Efficiency	58 % of pipe
Compression Efficiency	72.7 % of pipe
Compression Efficiency with Sealability	34.8 % of pipe
Internal Pressure Efficiency	100 % of pipe
External Pressure Efficiency	100 % of pipe

CONNECTION PERFORMANCES

Tensile Yield Strength	619 klb
Compression Resistance	778 klb
Compression with Sealability	372 klb
Internal Yield Pressure	10 760 psi
External Pressure Resistance	7 360 psi
Max. Bending	44 °/100ft
Max. Bending with Sealability	17 °/100ft

TORQUE VALUES

Min. Make-up torque	9 600 ft.lb
Opti. Make-up torque	11 300 ft.lb
Max. Make-up torque	13 000 ft.lb
Max. Torque with Sealability	58 500 ft.lb
Max. Torsional Value	73 000 ft.lb

VAM® HTF™ (High Torque Flush) is a flush OD integral connection providing maximum clearance along with torque strength for challenging applications such as extended reach and slim hole wells, drilling liner / casing, liner rotation to acheive better cementation in highly deviated and critical High Pressure / High Temperature wells.

Looking ahea on the outcoming testing industry standards, VAM® decided to create an upgraded design and launch on the market the VAM® HTF-NR as the new standard version of VAM® extreme high torque flush connection. The VAM® HTF-NR has extensive tests as per API RP 5C5:2015 CAL II which include the gas sealability having load points with bending, internal pressure and high temperature at 135°C.

Other Connection Data Sheets are available at www.vamservices.com

vallourec

Vallourec Group

Casing Design Criteria and Load Case Assumptions

Surface Casing

Collapse: DF_C=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.43 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and an internal force equal to mud gradient of displacement fluid (0.52 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.43 psi/ft), which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (8.3 ppg).

Intermediate #1 Casing

Collapse: DF_C=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.52 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.52 psi/ft), which is a more conservative backup force than pore pressure.
- Gas Kick Profile: Internal burst force at the shoe will be Fracture Pressure at that depth. Surface burst pressure will be fracture gradient at setting depth less a gas gradient to equivalent height of 50 bbl kick with Drill Pipe inside casing and mud gradient with which the next hole section will be run above that (0.47 psi/ft). External force will be equal to the mud gradient in which the casing will be run (0.52 psi/ft), which is a more conservative backup force than pore pressure.
- Fracture at Shoe with 1/3 BHP at Surface: Internal burst force at the shoe will be Fracture Pressure at setting depth. Internal burst force at surface will be 1/3 of pore pressure at setting depth. External force will be equal to the mud gradient in which the casing will be run (0.52 psi/ft) which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (10.0 ppg).

Intermediate #2 Casing

Collapse: DF_C=1.125

- Partial Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.47 psi/ft). The effects of axial load on collapse will be considered. Internal force equal to gas gradient over half of setting depth and mud gradient with which the next hole section will be run below that (0.65 psi/ft).

- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and mud gradient in which the casing will be run above that (0.47 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.47 psi/ft), which is a more conservative backup force than pore pressure.
- Gas Kick Profile: Internal burst force at the shoe will be Fracture Pressure at that depth. Surface burst pressure will be fracture gradient at setting depth less a gas gradient to equivalent height of 100 bbl kick with Drill Pipe inside casing and mud gradient with which the next hole section will be run above that (0.65 psi/ft). External force will be equal to the mud gradient in which the casing will be run (0.47 psi/ft), which is a more conservative backup force than pore pressure.
- Fracture at Shoe with 1/3 BHP at Surface: Internal burst force at the shoe will be Fracture Pressure at setting depth. Internal burst force at surface will be 1/3 of pore pressure at setting depth. External force will be equal to the mud gradient in which the casing will be run (0.47 psi/ft) which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (9.0 ppg).

Production Casing

Collapse: DF_C=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.65 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and mud gradient in which the casing will be run above that (0.65 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: 8000 psi casing test with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
- Injection Down Casing: 9500 psi surface injection pressure plus an internal pressure gradient of 0.65 psi/ft with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (12.5 ppg).

Technical Specifications

Connection Type:	Size(O.D.):	Weight (Wall):	Grade:
DWC/C-IS MS Casing	5-1/2 in	20.00 lb/ft (0.361 in)	VST P110 EC
standard			

	Material
VST P110 EC	Grade
125,000	Minimum Yield Strength (psi)
135,000	Minimum Ultimate Strength (psi)

	Pipe Dimensions
5.500	Nominal Pipe Body O.D. (in)
4.778	Nominal Pipe Body I.D.(in)
0.361	Nominal Wall Thickness (in)
20.00	Nominal Weight (lbs/ft)
19.83	Plain End Weight (lbs/ft)
5.828	Nominal Pipe Body Area (sq in)

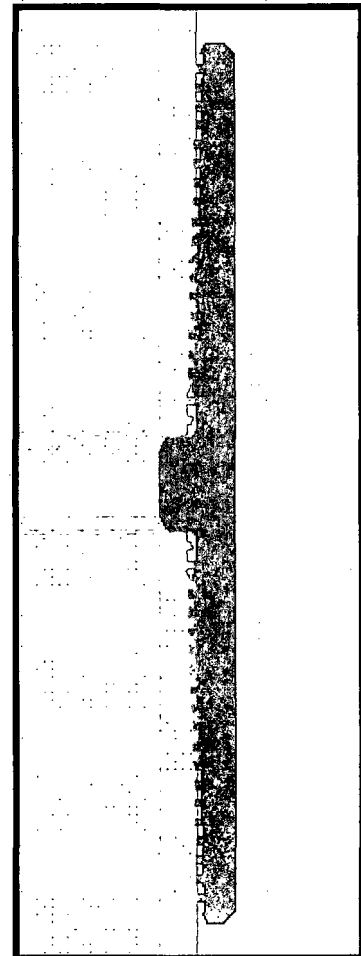|	**Pipe Body Performance Properties**
729,000	Minimum Pipe Body Yield Strength (lbs)
12,090	Minimum Collapse Pressure (psi)
14,360	Minimum Internal Yield Pressure (psi)
13,100	Hydrostatic Test Pressure (psi)

	Connection Dimensions
6.115	Connection O.D. (in)
4.778	Connection I.D. (in)
4.653	Connection Drift Diameter (in)
4.13	Make-up Loss (in)
5.828	Critical Area (sq in)
100.0	Joint Efficiency (%)

	Connection Performance Properties
729,000	Joint Strength (lbs)
26,040	Reference String Length (ft) 1.4 Design Factor
728,000	API Joint Strength (lbs)
729,000	Compression Rating (lbs)
12,090	API Collapse Pressure Rating (psi)
14,360	API Internal Pressure Resistance (psi)
104.2	Maximum Uniaxial Bend Rating [degrees/100 ft]

	Appoximated Field End Torque Values
16,100	Minimum Final Torque (ft-lbs)
18,600	Maximum Final Torque (ft-lbs)
21,100	Connection Yield Torque (ft-lbs)

For detailed Information on performance properties, refer to DWC Connection Data Notes on following page(s).
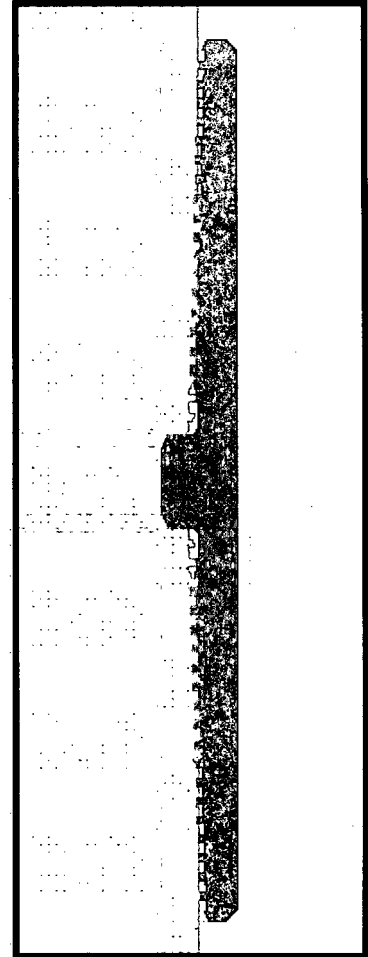
Connection specifications within the control of VAM USA were correct as of the date printed. Specifications are subject to change without notice. Certain connection specifications are dependent on the mechanical properties of the pipe. Mechanical properties of mill proprietary pipe grades were obtained from mill publications and are subject to change. Properties of mill proprietary grades should be confirmed with the mill. Users are advised to obtain current connection specifications and verify pipe mechanical properties for each application.

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DWC Connection Data Notes:

1. DWC connections are available with a seal ring (SR) option.

2. All standard DWC/C connections are interchangeable for a give pipe OD. DWC connections are interchangeable with DWC/C-SR connections of the same OD and wall.

3. Connection performance properties are based on nominal pipe body and connection dimensions.

4. DWC connection internal and external pressure resistance is calculated using the API rating for buttress connections. API Internal pressure resistance is calculated from formulas 31, 32, and 35 in the API Bulletin 5C3.

5. DWC joint strength is the minimum pipe body yield strength multiplied by the connection critical area.

6. API joint strength is for reference only. It is calculated from formulas 42 and 43 in the API Bulletin 5C3.

7. Bending efficiency is equal to the compression efficiency.

8. The torque values listed are recommended. The actual torque required may be affected by field conditions such as temperature, thread compound, speed of make-up, weather conditions, etc.

9. Connection yield torque is not to be exceeded.

10. Reference string length is calculated by dividing the joint strength by both the nominal weight in air and a design factor (DF) of 1.4. These values are offered for reference only and do not include load factors such as bending, buoyancy, temperature, load dynamics, etc.

11. DWC connections will accommodate API standard drift diameters.

Connection specifications within the control of VAM USA were correct as of the date printed. Specifications are subject to change without notice. Certain connection specifications are dependent on the mechanical properties of the pipe. Mechanical properties of mill proprietary pipe grades were obtained from mill publications and are subject to change. Properties of mill proprietary grades should be confirmed with the mill. Users are advised to obtain current connection specifications and verify pipe mechanical properties for each application.

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Casing Design Criteria and Load Case Assumptions

Surface Casing

Collapse: DF_c=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.43 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and an internal force equal to mud gradient of displacement fluid (0.52 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.43 psi/ft), which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (8.3 ppg).

Intermediate #1 Casing

Collapse: DF_c=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.52 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.52 psi/ft), which is a more conservative backup force than pore pressure.
- Gas Kick Profile: Internal burst force at the shoe will be Fracture Pressure at that depth. Surface burst pressure will be fracture gradient at setting depth less a gas gradient to equivalent height of 50 bbl kick with Drill Pipe inside casing and mud gradient with which the next hole section will be run above that (0.47 psi/ft). External force will be equal to the mud gradient in which the casing will be run (0.52 psi/ft), which is a more conservative backup force than pore pressure.
- Fracture at Shoe with 1/3 BHP at Surface: Internal burst force at the shoe will be Fracture Pressure at setting depth. Internal burst force at surface will be 1/3 of pore pressure at setting depth. External force will be equal to the mud gradient in which the casing will be run (0.52 psi/ft) which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (10.0 ppg).

Intermediate #2 Casing

Collapse: DF_c=1.125

- Partial Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.47 psi/ft). The effects of axial load on collapse will be considered. Internal force equal to gas gradient over half of setting depth and mud gradient with which the next hole section will be run below that (0.65 psi/ft).

- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and mud gradient in which the casing will be run above that (0.47 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.47 psi/ft), which is a more conservative backup force than pore pressure.
- Gas Kick Profile: Internal burst force at the shoe will be Fracture Pressure at that depth. Surface burst pressure will be fracture gradient at setting depth less a gas gradient to equivalent height of 100 bbl kick with Drill Pipe inside casing and mud gradient with which the next hole section will be run above that (0.65 psi/ft). External force will be equal to the mud gradient in which the casing will be run (0.47 psi/ft), which is a more conservative backup force than pore pressure.
- Fracture at Shoe with 1/3 BHP at Surface: Internal burst force at the shoe will be Fracture Pressure at setting depth. Internal burst force at surface will be 1/3 of pore pressure at setting depth. External force will be equal to the mud gradient in which the casing will be run (0.47 psi/ft) which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (9.0 ppg).

Production Casing

Collapse: DF_C=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.65 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and mud gradient in which the casing will be run above that (0.65 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: 8000 psi casing test with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
- Injection Down Casing: 9500 psi surface injection pressure plus an internal pressure gradient of 0.65 psi/ft with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (12.5 ppg).

Casing Design Criteria and Load Case Assumptions

Surface Casing

Collapse: DF_c=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.43 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and an internal force equal to mud gradient of displacement fluid (0.52 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.43 psi/ft), which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (8.3 ppg).

Intermediate #1 Casing

Collapse: DF_c=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.52 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.52 psi/ft), which is a more conservative backup force than pore pressure.
- Gas Kick Profile: Internal burst force at the shoe will be Fracture Pressure at that depth. Surface burst pressure will be fracture gradient at setting depth less a gas gradient to equivalent height of 50 bbl kick with Drill Pipe inside casing and mud gradient with which the next hole section will be run above that (0.47 psi/ft). External force will be equal to the mud gradient in which the casing will be run (0.52 psi/ft), which is a more conservative backup force than pore pressure.
- Fracture at Shoe with 1/3 BHP at Surface: Internal burst force at the shoe will be Fracture Pressure at setting depth. Internal burst force at surface will be 1/3 of pore pressure at setting depth. External force will be equal to the mud gradient in which the casing will be run (0.52 psi/ft) which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (10.0 ppg).

Intermediate #2 Casing

Collapse: DF_c=1.125

- Partial Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.47 psi/ft). The effects of axial load on collapse will be considered. Internal force equal to gas gradient over half of setting depth and mud gradient with which the next hole section will be run below that (0.65 psi/ft).

- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and mud gradient in which the casing will be run above that (0.47 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.47 psi/ft), which is a more conservative backup force than pore pressure.
- Gas Kick Profile: Internal burst force at the shoe will be Fracture Pressure at that depth. Surface burst pressure will be fracture gradient at setting depth less a gas gradient to equivalent height of 100 bbl kick with Drill Pipe inside casing and mud gradient with which the next hole section will be run above that (0.65 psi/ft). External force will be equal to the mud gradient in which the casing will be run (0.47 psi/ft), which is a more conservative backup force than pore pressure.
- Fracture at Shoe with 1/3 BHP at Surface: Internal burst force at the shoe will be Fracture Pressure at setting depth. Internal burst force at surface will be 1/3 of pore pressure at setting depth. External force will be equal to the mud gradient in which the casing will be run (0.47 psi/ft) which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (9.0 ppg).

Production Casing

Collapse: DF_c=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.65 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and mud gradient in which the casing will be run above that (0.65 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: 8000 psi casing test with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
- Injection Down Casing: 9500 psi surface injection pressure plus an internal pressure gradient of 0.65 psi/ft with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (12.5 ppg).

Casing Design Criteria and Load Case Assumptions

Surface Casing

Collapse: DF$_c$=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.43 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and an internal force equal to mud gradient of displacement fluid (0.52 psi/ft).

Burst: DF$_b$=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.43 psi/ft), which is a more conservative backup force than pore pressure.

Tensile: DF$_t$=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (8.3 ppg).

Intermediate #1 Casing

Collapse: DF$_c$=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.52 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF$_b$=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.52 psi/ft), which is a more conservative backup force than pore pressure.
- Gas Kick Profile: Internal burst force at the shoe will be Fracture Pressure at that depth. Surface burst pressure will be fracture gradient at setting depth less a gas gradient to equivalent height of 50 bbl kick with Drill Pipe inside casing and mud gradient with which the next hole section will be run above that (0.47 psi/ft). External force will be equal to the mud gradient in which the casing will be run (0.52 psi/ft), which is a more conservative backup force than pore pressure.
- Fracture at Shoe with 1/3 BHP at Surface: Internal burst force at the shoe will be Fracture Pressure at setting depth. Internal burst force at surface will be 1/3 of pore pressure at setting depth. External force will be equal to the mud gradient in which the casing will be run (0.52 psi/ft) which is a more conservative backup force than pore pressure.

Tensile: DF$_t$=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (10.0 ppg).

Intermediate #2 Casing

Collapse: DF$_c$=1.125

- Partial Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.47 psi/ft). The effects of axial load on collapse will be considered. Internal force equal to gas gradient over half of setting depth and mud gradient with which the next hole section will be run below that (0.65 psi/ft).

- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and mud gradient in which the casing will be run above that (0.47 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.47 psi/ft), which is a more conservative backup force than pore pressure.
- Gas Kick Profile: Internal burst force at the shoe will be Fracture Pressure at that depth. Surface burst pressure will be fracture gradient at setting depth less a gas gradient to equivalent height of 100 bbl kick with Drill Pipe inside casing and mud gradient with which the next hole section will be run above that (0.65 psi/ft). External force will be equal to the mud gradient in which the casing will be run (0.47 psi/ft), which is a more conservative backup force than pore pressure.
- Fracture at Shoe with 1/3 BHP at Surface: Internal burst force at the shoe will be Fracture Pressure at setting depth. Internal burst force at surface will be 1/3 of pore pressure at setting depth. External force will be equal to the mud gradient in which the casing will be run (0.47 psi/ft) which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (9.0 ppg).

Production Casing

Collapse: DF_c=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.65 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and mud gradient in which the casing will be run above that (0.65 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: 8000 psi casing test with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
- Injection Down Casing: 9500 psi surface injection pressure plus an internal pressure gradient of 0.65 psi/ft with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (12.5 ppg).

Casing Design Criteria and Load Case Assumptions

Surface Casing

Collapse: DF_c=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.43 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and an internal force equal to mud gradient of displacement fluid (0.52 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.43 psi/ft), which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (8.3 ppg).

Intermediate #1 Casing

Collapse: DF_c=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.52 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.52 psi/ft), which is a more conservative backup force than pore pressure.
- Gas Kick Profile: Internal burst force at the shoe will be Fracture Pressure at that depth. Surface burst pressure will be fracture gradient at setting depth less a gas gradient to equivalent height of 50 bbl kick with Drill Pipe inside casing and mud gradient with which the next hole section will be run above that (0.47 psi/ft). External force will be equal to the mud gradient in which the casing will be run (0.52 psi/ft), which is a more conservative backup force than pore pressure.
- Fracture at Shoe with 1/3 BHP at Surface: Internal burst force at the shoe will be Fracture Pressure at setting depth. Internal burst force at surface will be 1/3 of pore pressure at setting depth. External force will be equal to the mud gradient in which the casing will be run (0.52 psi/ft) which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (10.0 ppg).

Intermediate #2 Casing

Collapse: DF_c=1.125

- Partial Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.47 psi/ft). The effects of axial load on collapse will be considered. Internal force equal to gas gradient over half of setting depth and mud gradient with which the next hole section will be run below that (0.65 psi/ft).

- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and mud gradient in which the casing will be run above that (0.47 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.47 psi/ft), which is a more conservative backup force than pore pressure.
- Gas Kick Profile: Internal burst force at the shoe will be Fracture Pressure at that depth. Surface burst pressure will be fracture gradient at setting depth less a gas gradient to equivalent height of 100 bbl kick with Drill Pipe inside casing and mud gradient with which the next hole section will be run above that (0.65 psi/ft). External force will be equal to the mud gradient in which the casing will be run (0.47 psi/ft), which is a more conservative backup force than pore pressure.
- Fracture at Shoe with 1/3 BHP at Surface: Internal burst force at the shoe will be Fracture Pressure at setting depth. Internal burst force at surface will be 1/3 of pore pressure at setting depth. External force will be equal to the mud gradient in which the casing will be run (0.47 psi/ft) which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (9.0 ppg).

Production Casing

Collapse: DF_c=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.65 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and mud gradient in which the casing will be run above that (0.65 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: 8000 psi casing test with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
- Injection Down Casing: 9500 psi surface injection pressure plus an internal pressure gradient of 0.65 psi/ft with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (12.5 ppg).

Casing Design Criteria and Load Case Assumptions

Surface Casing

Collapse: $DF_C=1.125$

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.43 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and an internal force equal to mud gradient of displacement fluid (0.52 psi/ft).

Burst: $DF_b=1.125$

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.43 psi/ft), which is a more conservative backup force than pore pressure.

Tensile: $DF_t=1.8$

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (8.3 ppg).

Intermediate #1 Casing

Collapse: $DF_C=1.125$

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.52 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: $DF_b=1.125$

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.52 psi/ft), which is a more conservative backup force than pore pressure.
- Gas Kick Profile: Internal burst force at the shoe will be Fracture Pressure at that depth. Surface burst pressure will be fracture gradient at setting depth less a gas gradient to equivalent height of 50 bbl kick with Drill Pipe inside casing and mud gradient with which the next hole section will be run above that (0.47 psi/ft). External force will be equal to the mud gradient in which the casing will be run (0.52 psi/ft), which is a more conservative backup force than pore pressure.
- Fracture at Shoe with 1/3 BHP at Surface: Internal burst force at the shoe will be Fracture Pressure at setting depth. Internal burst force at surface will be 1/3 of pore pressure at setting depth. External force will be equal to the mud gradient in which the casing will be run (0.52 psi/ft) which is a more conservative backup force than pore pressure.

Tensile: $DF_t=1.8$

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (10.0 ppg).

Intermediate #2 Casing

Collapse: $DF_C=1.125$

- Partial Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.47 psi/ft). The effects of axial load on collapse will be considered. Internal force equal to gas gradient over half of setting depth and mud gradient with which the next hole section will be run below that (0.65 psi/ft).

- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and mud gradient in which the casing will be run above that (0.47 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.47 psi/ft), which is a more conservative backup force than pore pressure.
- Gas Kick Profile: Internal burst force at the shoe will be Fracture Pressure at that depth. Surface burst pressure will be fracture gradient at setting depth less a gas gradient to equivalent height of 100 bbl kick with Drill Pipe inside casing and mud gradient with which the next hole section will be run above that (0.65 psi/ft). External force will be equal to the mud gradient in which the casing will be run (0.47 psi/ft), which is a more conservative backup force than pore pressure.
- Fracture at Shoe with 1/3 BHP at Surface: Internal burst force at the shoe will be Fracture Pressure at setting depth. Internal burst force at surface will be 1/3 of pore pressure at setting depth. External force will be equal to the mud gradient in which the casing will be run (0.47 psi/ft) which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (9.0 ppg).

Production Casing

Collapse: DF_c=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.65 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and mud gradient in which the casing will be run above that (0.65 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: 8000 psi casing test with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
- Injection Down Casing: 9500 psi surface injection pressure plus an internal pressure gradient of 0.65 psi/ft with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (12.5 ppg).

Casing Design Criteria and Load Case Assumptions

Surface Casing

Collapse: DF_c=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.43 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and an internal force equal to mud gradient of displacement fluid (0.52 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.43 psi/ft), which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (8.3 ppg).

Intermediate #1 Casing

Collapse: DF_c=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.52 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.52 psi/ft), which is a more conservative backup force than pore pressure.
- Gas Kick Profile: Internal burst force at the shoe will be Fracture Pressure at that depth. Surface burst pressure will be fracture gradient at setting depth less a gas gradient to equivalent height of 50 bbl kick with Drill Pipe inside casing and mud gradient with which the next hole section will be run above that (0.47 psi/ft). External force will be equal to the mud gradient in which the casing will be run (0.52 psi/ft), which is a more conservative backup force than pore pressure.
- Fracture at Shoe with 1/3 BHP at Surface: Internal burst force at the shoe will be Fracture Pressure at setting depth. Internal burst force at surface will be 1/3 of pore pressure at setting depth. External force will be equal to the mud gradient in which the casing will be run (0.52 psi/ft) which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (10.0 ppg).

Intermediate #2 Casing

Collapse: DF_c=1.125

- Partial Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.47 psi/ft). The effects of axial load on collapse will be considered. Internal force equal to gas gradient over half of setting depth and mud gradient with which the next hole section will be run below that (0.65 psi/ft).

- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and mud gradient in which the casing will be run above that (0.47 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.47 psi/ft), which is a more conservative backup force than pore pressure.
- Gas Kick Profile: Internal burst force at the shoe will be Fracture Pressure at that depth. Surface burst pressure will be fracture gradient at setting depth less a gas gradient to equivalent height of 100 bbl kick with Drill Pipe inside casing and mud gradient with which the next hole section will be run above that (0.65 psi/ft). External force will be equal to the mud gradient in which the casing will be run (0.47 psi/ft), which is a more conservative backup force than pore pressure.
- Fracture at Shoe with 1/3 BHP at Surface: Internal burst force at the shoe will be Fracture Pressure at setting depth. Internal burst force at surface will be 1/3 of pore pressure at setting depth. External force will be equal to the mud gradient in which the casing will be run (0.47 psi/ft) which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (9.0 ppg).

Production Casing

Collapse: DF_c=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.65 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and mud gradient in which the casing will be run above that (0.65 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: 8000 psi casing test with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
- Injection Down Casing: 9500 psi surface injection pressure plus an internal pressure gradient of 0.65 psi/ft with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (12.5 ppg).

Casing Design Criteria and Load Case Assumptions

Surface Casing

Collapse: DF_c=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.43 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and an internal force equal to mud gradient of displacement fluid (0.52 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.43 psi/ft), which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (8.3 ppg).

Intermediate #1 Casing

Collapse: DF_c=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.52 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.52 psi/ft), which is a more conservative backup force than pore pressure.
- Gas Kick Profile: Internal burst force at the shoe will be Fracture Pressure at that depth. Surface burst pressure will be fracture gradient at setting depth less a gas gradient to equivalent height of 50 bbl kick with Drill Pipe inside casing and mud gradient with which the next hole section will be run above that (0.47 psi/ft). External force will be equal to the mud gradient in which the casing will be run (0.52 psi/ft), which is a more conservative backup force than pore pressure.
- Fracture at Shoe with 1/3 BHP at Surface: Internal burst force at the shoe will be Fracture Pressure at setting depth. Internal burst force at surface will be 1/3 of pore pressure at setting depth. External force will be equal to the mud gradient in which the casing will be run (0.52 psi/ft) which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (10.0 ppg).

Intermediate #2 Casing

Collapse: DF_c=1.125

- Partial Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.47 psi/ft). The effects of axial load on collapse will be considered. Internal force equal to gas gradient over half of setting depth and mud gradient with which the next hole section will be run below that (0.65 psi/ft).

- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and mud gradient in which the casing will be run above that (0.47 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: Casing test per Onshore Oil and Gas Order No. 2 with an external force equal to the mud gradient in which the casing will be run (0.47 psi/ft), which is a more conservative backup force than pore pressure.
- Gas Kick Profile: Internal burst force at the shoe will be Fracture Pressure at that depth. Surface burst pressure will be fracture gradient at setting depth less a gas gradient to equivalent height of 100 bbl kick with Drill Pipe inside casing and mud gradient with which the next hole section will be run above that (0.65 psi/ft). External force will be equal to the mud gradient in which the casing will be run (0.47 psi/ft), which is a more conservative backup force than pore pressure.
- Fracture at Shoe with 1/3 BHP at Surface: Internal burst force at the shoe will be Fracture Pressure at setting depth. Internal burst force at surface will be 1/3 of pore pressure at setting depth. External force will be equal to the mud gradient in which the casing will be run (0.47 psi/ft) which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (9.0 ppg).

Production Casing

Collapse: DF_c=1.125

- Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.65 psi/ft). The effects of axial load on collapse will be considered.
- Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and mud gradient in which the casing will be run above that (0.65 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft).

Burst: DF_b=1.125

- Pressure Test: 8000 psi casing test with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
- Injection Down Casing: 9500 psi surface injection pressure plus an internal pressure gradient of 0.65 psi/ft with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.

Tensile: DF_t=1.8

- Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (12.5 ppg).

DATA ARE INFORMATIVE ONLY.
BASED ON SI_PD-101836 P&B

VAM® HTF-NR

Connection Data Sheet

OD	Weight	Wall Th.	Grade	API Drift	Connection
7 5/8 in.	29.70 lb/ft	0.375 in.	P110 EC	6.750 in.	VAM® HTF NR

PIPE PROPERTIES

Nominal OD	7.625 in.
Nominal ID	6.875 in.
Nominal Cross Section Area	8.541 sqin.
Grade Type	Enhanced API
Min. Yield Strength	125 ksi
Max. Yield Strength	140 ksi
Min. Ultimate Tensile Strength	135 ksi
Tensile Yield Strength	1 068 klb
Internal Yield Pressure	10 760 psi
Collapse pressure	7 360 psi

CONNECTION PROPERTIES

Connection Type	Premium Integral Flush
Connection OD (nom)	7.701 in.
Connection ID (nom)	6.782 in.
Make-Up Loss	4.657 in.
Critical Cross Section	4.971 sqin.
Tension Efficiency	58 % of pipe
Compression Efficiency	72.7 % of pipe
Compression Efficiency with Sealability	34.8 % of pipe
Internal Pressure Efficiency	100 % of pipe
External Pressure Efficiency	100 % of pipe

CONNECTION PERFORMANCES

Tensile Yield Strength	619 klb
Compression Resistance	778 klb
Compression with Sealability	372 klb
Internal Yield Pressure	10 760 psi
External Pressure Resistance	7 360 psi
Max. Bending	44 °/100ft
Max. Bending with Sealability	17 °/100ft

TORQUE VALUES

Min. Make-up torque	9 600 ft.lb
Opti. Make-up torque	11 300 ft.lb
Max. Make-up torque	13 000 ft.lb
Max. Torque with Sealability	58 500 ft.lb
Max. Torsional Value	73 000 ft.lb

VAM® HTF™ (High Torque Flush) is a flush OD integral connection providing maximum clearance along with torque strength for challenging applications such as extended reach and slim hole wells, drilling liner / casing, liner rotation to acheive better cementation in highly deviated and critical High Pressure / High Temperature wells.

Looking ahea on the outcoming testing industry standards, VAM® decided to create an upgraded design and launch on the market the VAM® HTF-NR as the new standard version of VAM® extreme high torque flush connection. The VAM® HTF-NR has extensive tests as per API RP 5C5:2015 CAL II which include the gas sealability having load points with bending, internal pressure and high temperature at 135°C.

Vallourec Group

vallourec

For the latest performance data, always visit our website: www.tenaris.com

July 15 2015

≡ Tenaris

Size: 5.500 in.
Wall: 0.361 in.
Weight: 20.00 lbs/ft
Grade: P110-IC
Min. Wall Thickness: 87.5 %

Connection: TenarisXP™ BTC
Casing/Tubing: CAS
Coupling Option: REGULAR

PIPE BODY DATA

GEOMETRY

Nominal OD	5.500 in.	Nominal Weight	20.00 lbs/ft	Standard Drift Diameter	4.653 in.
Nominal ID	4.778 in.	Wall Thickness	0.361 in.	Special Drift Diameter	N/A
Plain End Weight	19.83 lbs/ft				

PERFORMANCE

Body Yield Strength	641 x 1000 lbs	Internal Yield	12630 psi	SMYS	110000 psi
Collapse	12100 psi				

TENARISXP™ BTC CONNECTION DATA

GEOMETRY

Connection OD	6.100 in.	Coupling Length	9.450 in.	Connection ID	4.766 in.
Critical Section Area	5.828 sq. in.	Threads per in.	5.00	Make-Up Loss	4.204 in.

PERFORMANCE

Tension Efficiency	100 %	Joint Yield Strength	641 x 1000 lbs	Internal Pressure Capacity[1]	12630 psi
Structural Compression Efficiency	100 %	Structural Compression Strength	641 x 1000 lbs	Structural Bending[2]	92 °/100 ft
External Pressure Capacity	12100 psi				

ESTIMATED MAKE-UP TORQUES[3]

Minimum	11270 ft-lbs	Optimum	12520 ft-lbs	Maximum	13770 ft-lbs

OPERATIONAL LIMIT TORQUES

Operating Torque	21500 ft-lbs	Yield Torque	23900 ft-lbs

BLANKING DIMENSIONS

Blanking Dimensions

(1) Internal Pressure Capacity related to structural resistance only. Internal pressure leak resistance as per section 10.3 API 5C3 / ISO 10400 - 2007.

(2) Structural rating, pure bending to yield (i.e no other loads applied)

(3) Torque values calculated for API Modified thread compounds with Friction Factor=1. For other thread compounds please contact us at licensees@oilfield.tenaris.com. Torque values may be further reviewed.

For additional information, please contact us at contact-tenarishydril@tenaris.com

December 31 2015

Tenaris

Size: 4.500 in.
Wall: 0.290 in.
Weight: 13.50 lbs/ft
Grade: P110-ICY
Min. Wall Thickness: 87.5 %

Connection: TenarisXP® BTC
Casing/Tubing: CAS
Coupling Option: REGULAR

Nominal OD	4.500 in.	Nominal Weight	13.50 lbs/ft	Standard Drift Diameter	3.795 in.
Nominal ID	3.920 in.	Wall Thickness	0.290 in.	Special Drift Diameter	N/A
Plain End Weight	13.05 lbs/ft				

Body Yield Strength	479 x 1000 lbs	Internal Yield	14100 psi	SMYS	125000 psi
Collapse	11620 psi				

Connection OD	5.000 in.	Coupling Length	9.075 in.	Connection ID	3.908 in.
Critical Section Area	3.836 sq. in.	Threads per in.	5.00	Make-Up Loss	4.016 in.

Tension Efficiency	100 %	Joint Yield Strength	479 x 1000 lbs	Internal Pressure Capacity[1]	14100 psi
Structural Compression Efficiency	100 %	Structural Compression Strength	479 x 1000 lbs	Structural Bending[2]	127 °/100 ft
External Pressure Capacity	11620 psi				

Minimum	6950 ft-lbs	Optimum	7720 ft-lbs	Maximum	8490 ft-lbs

Operating Torque	10500 ft-lbs	Yield Torque	12200 ft-lbs

Blanking Dimensions

Access surfacing type: OTHER

Access topsoil source: ONSITE

Access surfacing type description: Caliche

Access onsite topsoil source depth: 6

Offsite topsoil source description:

Onsite topsoil removal process: Grader

Access other construction information:

Access miscellaneous information:

Number of access turnouts: **Access turnout map:**

Drainage Control

New road drainage crossing: OTHER

Drainage Control comments: Crowned and ditched

Road Drainage Control Structures (DCS) description: None

Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Additional Attachment(s):

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

CL_211H_Well_Map_MAP3_20180518100325.pdf

Existing Wells description:

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: This Surface Use Plan is in support of Matador's Charles Ling well pad and production facilities. Matador will operate twelve (12) oil wells arranged across four (4) well pads (Slots 1, 2, 3,& 4), two (2) central tank batteries (CTBs) (E2 & W2), flow lines, a gas pipeline (E2 & W2), and associated access roads. Matador intends to construct two central tank batteries. The W2 CTB will service the Slot 1 & 2 pads while the E2 CTB will service the Slot 3 & 4 pads. Matador will install 489.85' of 4" buried flowline from Slots 1 & 2 to the W2 CTB and 616.32' from Slots 3 & 4 to the E2 CTB, for a total of 1,106.17'. Matador will install a total of 2,505.96' of ~6" O.D. buried gas pipeline to connect to an existing DCP gas line in the NWNE of Section 11. This pipeline will include two segments, 1,777.13' from the W2 CTB to the DCP tie-in point and 728.83' from the E2 CTB to the DCP tie-in point.
Production Facilities map:

CL_211H_Production_Facilities_FIG1_20180518100349.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Water source use type: DUST CONTROL, INTERMEDIATE/PRODUCTION CASING, STIMULATION, SURFACE CASING

Water source type: GW WELL

Describe type:

Source longitude:

Source latitude:

Source datum:

Water source permit type: PRIVATE CONTRACT

Source land ownership: PRIVATE

Water source transport method: TRUCKING

Source transportation land ownership: PRIVATE

Water source volume (barrels): 20000

Source volume (acre-feet): 2.577862

Source volume (gal): 840000

Water source and transportation map:

CL_211H_Water_Gravel_MAP4_20180518100625.pdf

Water source comments:

New water well? NO

New Water Well Info

Well latitude: **Well Longitude:**   **Well datum:**

Well target aquifer:

Est. depth to top of aquifer(ft):   **Est thickness of aquifer:**

Aquifer comments:

Aquifer documentation:

Well depth (ft):   **Well casing type:**

Well casing outside diameter (in.):   **Well casing inside diameter (in.):**

New water well casing?   **Used casing source:**

Drilling method: **Drill material:**

Grout material: **Grout depth:**

Casing length (ft.):   **Casing top depth (ft.):**

Well Production type: **Completion Method:**

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Construction Materials description: COG and NM One Call (811) will be notified before construction starts. Top 6" of soil and brush will be stockpiled south of the pad. Pipe racks will face north. Closed loop drilling system will be used. Caliche will be hauled from an existing caliche pit on private (Madera) land in SENW 6-25s-35e.
Construction Materials source location attachment:

CL_211H_Construction_Methods_FIG1_20180518100730.pdf

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: Drill cuttings, mud, salts, and other chemicals

Amount of waste: 2000   barrels

Waste disposal frequency : Daily

Safe containment description: Steel tanks

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL   **Disposal location ownership:** PRIVATE
FACILITY
Disposal type description:

Disposal location description: R360's state approved (NM-01-0006) disposal site at Halfway, NM

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

Reserve pit length (ft.)   **Reserve pit width (ft.)**

Reserve pit depth (ft.)   **Reserve pit volume (cu. yd.)**

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? YES

Description of cuttings location Steel tanks on pad

Cuttings area length (ft.)   **Cuttings area width (ft.)**

Cuttings area depth (ft.)   Cuttings area volume (cu. yd.)

Is at least 50% of the cuttings area in cut?

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

CL_211H_Well_Site_Layout_20180518101112.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance   **Multiple Well Pad Name:** CHARLES LING FED COM

                                                         Multiple Well Pad Number: SLOT 1

Recontouring attachment:

CL_211H_Interim_Reclamation_v1_FIG1_20180518101137.pdf
CL_211H_Recontour_Plat_FIG2_20180518101151.pdf
Drainage/Erosion control construction: Crowned and ditched

Drainage/Erosion control reclamation: Harrowed on the contour

Well pad proposed disturbance (acres): 4.5

Road proposed disturbance (acres): 0.2

Powerline proposed disturbance (acres): 0

Pipeline proposed disturbance (acres): 0

Other proposed disturbance (acres): 4.14

Total proposed disturbance: 8.84

Well pad interim reclamation (acres): 2

Road interim reclamation (acres): 0

Powerline interim reclamation (acres): 0

Pipeline interim reclamation (acres): 0

Other interim reclamation (acres): 0

Total interim reclamation: 2

Well pad long term disturbance (acres): 2.5

Road long term disturbance (acres): 0.2

Powerline long term disturbance (acres): 0

Pipeline long term disturbance (acres): 0

Other long term disturbance (acres): 4.14

Total long term disturbance: 6.84

Disturbance Comments:

Reconstruction method: Interim reclamation will be completed within 6 months of completing the well. Interim reclamation will consist of shrinking each pad by 2 acres by removing caliche and reclaiming a 230' x 370' wide block on the east side of each pad. This will leave roughly 2.26 acres for operating 3 wells and a tractor-trailer turn around on each pad. Disturbed areas will be contoured to match pre-construction grades. Soil and brush will be evenly spread over disturbed areas and harrowed on the contour. Disturbed areas will be seeded in accordance with the land owner's requirements.

Topsoil redistribution: Enough stockpiled topsoil will be retained on the south edge of the pad for Slots 1, 2, & 3 and on the east side of the pad for Slot 4. Top soil for the tank battery sites will be stockpiled on the south edge of each site. This soil will be used to cover the remainder of the pads and tank battery sites when the wells are plugged. Once the last well is plugged, then the rest of the pad and associated roads will be similarly reclaimed within 6 months of plugging. Noxious weeds will be controlled.

Soil treatment: None

Existing Vegetation at the well pad:

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road:

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline:

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances:

Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed type: Seed source:

Seed name:

Source name: Source address:

Source phone:

Seed cultivar:

Seed use location:

PLS pounds per acre: Proposed seeding season:

Seed Summary	
Seed Type	Pounds/Acre

Total pounds/Acre:

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: **Last Name:**

Phone: **Email:**

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: To BLM standards

Weed treatment plan attachment:

Monitoring plan description: To BLM standards

Monitoring plan attachment:

Success standards: To BLM satisfaction

Pit closure description: No pit

Pit closure attachment:

Section 11 - Surface Ownership

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Fee Owner: Mark McCloy   **Fee Owner Address:** PO Box 795 Tatum NM 88267

Phone: (505)466-8120   **Email:**

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: Agreement

Surface Access Agreement Need description: In process

Surface Access Bond BLM or Forest Service:

BLM Surface Access Bond number:

USFS Surface access bond number:

Disturbance type: PIPELINE

Describe:

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Disturbance type: WELL PAD

Describe:

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Fee Owner: Mark McCloy   **Fee Owner Address:** PO Box 795 Tatum NM 88267

Phone: (505)466-8120   **Email:**

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: Agreement

Surface Access Agreement Need description: In process

Surface Access Bond BLM or Forest Service:

BLM Surface Access Bond number:

USFS Surface access bond number:

Disturbance type: NEW ACCESS ROAD

Describe:

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Fee Owner: Mark McCloy   **Fee Owner Address:** PO Box 795 Tatum NM 88267

Phone: (505)466-8120   **Email:**

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: Agreement

Surface Access Agreement Need description: In process

Surface Access Bond BLM or Forest Service:

BLM Surface Access Bond number:

USFS Surface access bond number:

Disturbance type: OTHER

Describe: Central Tank Battery

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Fee Owner: Mark McCloy   **Fee Owner Address:** PO Box 795 Tatum NM 88267

Phone: (505)466-8120   **Email:**

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: Agreement

Surface Access Agreement Need description: In process

Surface Access Bond BLM or Forest Service:

BLM Surface Access Bond number:

USFS Surface access bond number:

Section 12 - Other Information

Right of Way needed? NO   **Use APD as ROW?**

ROW Type(s):

ROW Applications

SUPO Additional Information:

Use a previously conducted onsite? YES

Previous Onsite information: On-site inspection was held on March 20, 2018 with Jesse Bassett (BLM).

Other SUPO Attachment

CL_211H_SUPO_20180518114435.pdf

CHARLES LING FED COM SURFACE USE PLAN

Well Pad Slot 1: 131H, 201H, & 211H
Well Pad Slot 2: 132H, 202H, & 212H
Well Pad Slot 3: 133H, 203H, & 213H
Well Pad Slot 4: 134H, 204H, & 214H

1. DIRECTIONS & EXISTING ROADS (See Maps 1 & 2)

From the junction of NM State Highway 128 and Lea County Road 2A...
Go North 3.4 miles on paved CR 2A,
Then turn right and go East on unmarked lease road for 1.25 miles,
Then turn right on to new well access road

Roads on lease will be maintained to Gold Book standards. For short and long term maintenance, the existing well lease road from the well pad to CR 2A will be maintained jointly by Matador and other operators that regularly use the road. These roads are entirely on State land. For County Road 2A or roads considered as collector roads, the operator will defer to Lea County or the Roads Committee for maintenance determinations. If existing roads require reconstruction due to activity associated with this project, or if required by the New Mexico State Land Office, the operator will upgrade existing non-county road(s) according to State guidelines.

Well location is approximately 23 air miles Northwest of Jal, New Mexico.

2. ROAD TO BE UPGRADED (See Map 2)

A total of **4,312.53'** of new road will be built between the existing lease road in the SWSW of Section 2 and the Slot 4 pad in the NWNW of Section 11. Approximately **147.27'** of new road will be built on State lands in in the SWSW of Section 2 and **4,165.26'** of new road will be built on private lands in Section 11. No roads will be built on BLM surface. Topsoil and brush will be windowed beside the road. Road will be crowned ($\approx$0.04 ft/ft), ditched, and have a $\approx$14' wide running surface. Maximum disturbed road width will be 30'. Maximum cut or fill = 3'. Maximum grade = 4%. Roads will be surfaced with caliche.
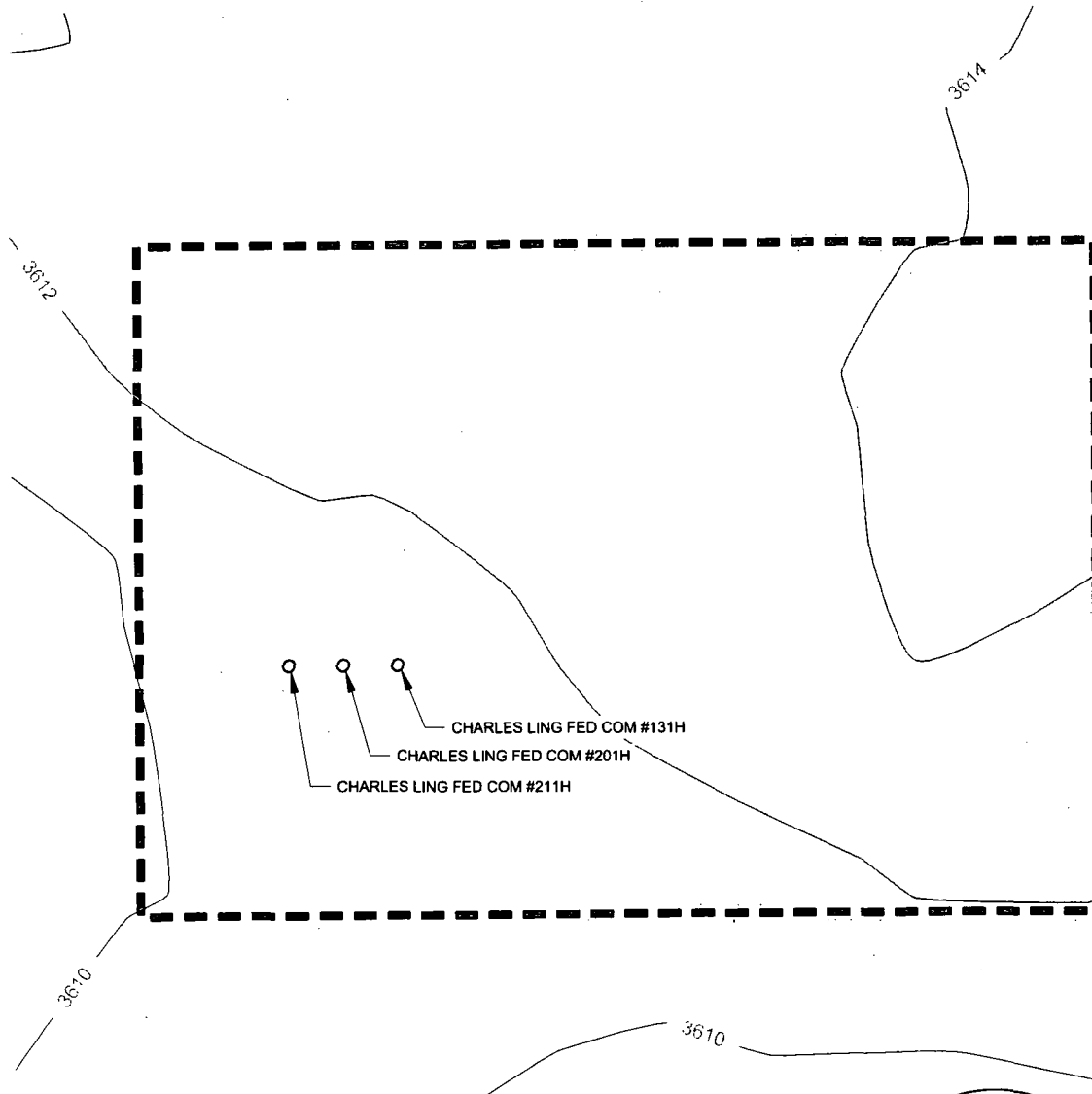
3. EXISTING WELLS (See Map 3)

Existing oil, gas, and P & A wells are within a mile. No existing disposal or injection wells are within a one mile radius. The closest existing well is an oil well and is located approximately 940' to the north. There are no fresh water wells within one mile.
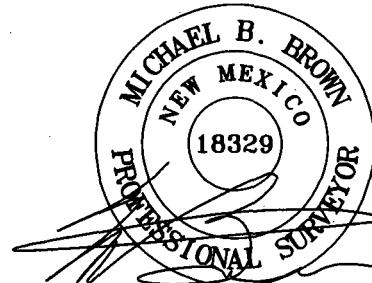
SCALE: 1" = 100'

0'   50'   100'

CHARLES LING FED COM #131H

CHARLES LING FED COM #201H

CHARLES LING FED COM #211H

3614

3612

3610

3610

Michael Blake Brown, P.S. No. 18329

MARCH 23, 2018

Field note description of even date accompanies this plat.

MICHAEL B. BROWN
NEW MEXICO
18329
PROFESSIONAL SURVEYOR

Matador PRODUCTION COMPANY

TOPOGRAPHIC
LOYALTY   INNOVATION   LEGACY
1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7548
TEXAS FIRM REGISTRATION NO. 10042504
WWW.TOPOGRAPHIC.COM

CHARLES LING SLOT 1 SURFACE PAD SITE PROFILE	REVISION:		NOTES:
	GJU	02/28/18	1. ORIGINAL DOCUMENT SIZE: 8.5" X 11"
	GJU	03/05/18	2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.
DATE: 10/18/17	GJU	03/23/18	3. CERTIFICATION IS MADE ONLY TO THE LOCATION OF THIS EASEMENT, IN RELATION TO THE EVIDENCE FOUND DURING A FIELD SURVEY, MADE ON THE GROUND, UNDER MY SUPERVISION, AND USING DOCUMENTATION PROVIDED BY MATADOR PRODUCTION COMPANY. ONLY UTILITIES/EASEMENTS THAT WERE VISIBLE ON THE DATE OF THIS SURVEY, WITHIN/ADJOINING THIS EASEMENT, HAVE BEEN LOCATED AS SHOWN HEREON OF WHICH I HAVE KNOWLEDGE. THIS CERTIFICATION IS LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE, AND MADE FOR THIS TRANSACTION ONLY.
FILE: CD_CHARLES_LING_SLOT_1_SURFACE_PAD_SITE_REV3			
DRAWN BY: EAH			
SHEET: 3 OF 3			

4. PROPOSED PRODUCTION FACILITIES (See Fig. 1 – Production Layout/Interim Rec.)

This Surface Use Plan is in support of Matador's Charles Ling well pad and production facilities. Matador will operate twelve (12) oil wells arranged across four (4) well pads (Slots 1, 2, 3,& 4), two (2) central tank batteries (CTBs) (E2 & W2), flow lines, a gas pipeline (E2 & W2), and associated access roads.

Matador intends to construct two central tank batteries. The W2 CTB will service the Slot 1 & 2 pads while the E2 CTB will service the Slot 3 & 4 pads. Matador will install **489.85'** of 4" buried flowline from Slots 1 & 2 to the W2 CTB and **616.32'** from Slots 3 & 4 to the E2 CTB, for a total of **1,106.17'**. Matador will install a total of **2,505.96'** of ~6" O.D. buried gas pipeline to connect to an existing DCP gas line in the NWNE of Section 11. This pipeline will include two segments, **1,777.13'** from the W2 CTB to the DCP tie-in point and **728.83'** from the E2 CTB to the DCP tie-in point.

See table in Section 10 (below) for a detailed break-down of length and acreage for each pad slot and facility.

5. WATER SUPPLY (See Map 4)

Water will be trucked via existing roads from the existing Madera water station on private land in NWNE 21-24s-34e.

6. CONSTRUCTION NOTICES, MATERIALS, & METHODS (See Fig. 2 – Cut & Fill)

COG and NM One Call (811) will be notified before construction starts. Top ≈6" of soil and brush will be stockpiled south of the pad. Pipe racks will face north. Closed loop drilling system will be used. Caliche will be hauled from an existing caliche pit on private (Madera) land in SENW 6-25s-35e.

7. WASTE DISPOSAL

No reserve pit will be used. No blow pit will be used.

All trash will be placed in a portable trash cage. It will be hauled to the Lea County landfill. There will be no trash burning. Contents (drill cuttings, mud, salts, and other chemicals) of the mud tanks will be hauled to R360's state approved (NM-01-0006) disposal site at Halfway. Human waste will be disposed of in chemical toilets and hauled to the Jal wastewater treatment plant.

8. ANCILLARY FACILITIES (See Figure 3 – Wellsite & Rig Layout)

There will be no airstrip, camp, or staging area. Camper trailers will be on location for the company man, tool pusher, and mud logger.

9. WELL SITE LAYOUT

See Figures 1, 2, & 3 for depictions of the well pads, central tank batteries, cross sections, cut and fill diagrams, access onto the location, parking, living facilities, and rig orientation.

10. RECLAMATION (See Fig. 1 – Production Layout/Interim Reclamation)

Interim reclamation will be completed within 6 months of completing the well. Interim reclamation will consist of shrinking each pad by ≈2 acres by removing caliche and reclaiming a 230' x 370' wide block on the east side of each pad. This will leave roughly **2.26 acres** for operating 3 wells and a tractor-trailer turn around on each pad. Disturbed areas will be contoured to match pre-construction grades. Soil and brush will be evenly spread over disturbed areas and harrowed on the contour. Disturbed areas will be seeded in accordance with the land owner's requirements.

Enough stockpiled topsoil will be retained on the south edge of the pad for Slots 1, 2, & 3 and on the east side of the pad for Slot 4. Top soil for the tank battery sites will be stockpiled on the south edge of each site. This soil will be used to cover the remainder of the pads and tank battery sites when the wells are plugged. Once the last well is plugged, then the rest of the pad and associated roads will be similarly reclaimed within 6 months of plugging. Noxious weeds will be controlled.

See following table for a breakdown of short-term and long-term disturbance by well pad slot and facility type.

Charles Ling Fed Com Short & Long Term Disturbance Figures

Facility	Disturbance Interval	Pad ac	Road ft	Road ac	Gas Line ft	Gas Line ac	Flowline ft	Flowline ac	
Slot 1	Short-term	4.5	-	- -	-	-	-	-	Total Slot 1 Long-term (incl. rd, gas, flow, & CTB)
	Interim Rec	2	-	-	-	-	-	-	
	Long-term	2.5	284.29	0.20	-	-	243.94	0.17	**6.83**
Slot 2	Short-term	4.5	-	-	-	-	-	-	Total Slot 2 Long-term (incl. rd, gas, flow, & CTB)
	Interim Rec	2							
	Long-term	2.5	1,859.76	1.28	-	-	245.91	0.17	**7.92**
Slot 3	Short-term	4.5	-	-	-	-	-	-	Total Slot 3 Long-term (incl. rd, gas, flow, & CTB)
	Interim Rec	2							
	Long-term	2.5	1,511.38	1.04	-	-	171.08	0.12	**6.91**
Slot 4	Short-term	4.5	-	-	-	-	-	-	Total Slot 4 Long-term (incl. rd, gas, flow, & CTB)
	Interim Rec	2							
	Long-term	2.5	657.10	0.45	-	-	445.24	0.31	**7.23**
CTB E2	Short-term	2.75	-	-	-	-	-	-	Total E2 CTB Long-term
	Long-term	2.75	-	-	728.83	0.50	-	-	**2.75**
CTB W2	Short-term	2.75	-	-	-	-	-	-	Total W2 CTB Long-term
	Long-term	2.75	-	-	1,777.13	1.22	-	-	**2.75**
Total Project Short-term		23.5	-	-	-	-	-	-	
Total Project Long-term		**15.50**	**4,312.53**	**2.97**	**2,505.96**	**1.72**	**1,106.17**	**0.76**	

11. SURFACE OWNER (See Map 3)

All construction for Matador's well pads, pipelines, and CTBs will be on lease and on fee lands owned by Mark McCloy, whose address is PO BOX 795, Tatum NM 88267.
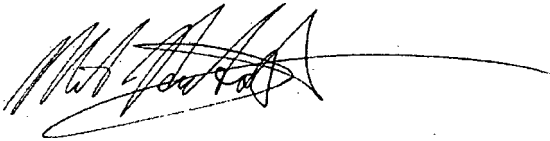
12. OTHER INFORMATION

On-site inspection was held on March 20, 2018 with Jesse Bassett (BLM).

Matador Production Company, LLC
Charles Ling Fed Com Well Project
Sec. 11, T. 24S., R. 33E.
Lea County, New Mexico

PAGE 5

13. REPRESENTATION

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U. S. C. 1001 for the filing of false statements. Executed this 16th day of May, 2018.

Mike Deutsch, Agent
Permits West, Inc.
37 Verano Loop, Santa Fe, NM 87508
(505) 466-8120

Field representative will be:

    Sam Pryor, Senior Staff Landman
    Matador Production Company
    5400 LBJ Freeway, Suite 1500, Dallas TX 75240
    Phone: (972) 371-5241

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number: Injection well name:

Assigned injection well API number?   Injection well API number:

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: PWD disturbance (acres):

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: PWD disturbance (acres):

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

APD ID: 10400030372

Operator Name: MATADOR PRODUCTION COMPANY

Well Name: CHARLES LING FED COM

Well Type: OIL WELL

Submission Date: 05/18/2018

Well Number: 211H

Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

CL_211H_Road_Map_MAP1_20180518095615.pdf

Existing Road Purpose: ACCESS   **Row(s) Exist?** NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

CL_211H_New_Road_Map_MAP2_20180518100006.pdf

New road type: LOCAL,RESOURCE

Length: 4312.53   Feet   **Width (ft.):** 30

Max slope (%): 0   **Max grade (%):** 4

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 14

New road access erosion control: Crowned and ditched

New road access plan or profile prepared? NO

New road access plan attachment:

Access road engineering design? NO

Access road engineering design attachment:

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB001079

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment:

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