

ATS 16-191

Form 3160-3  
(March 2012)~~SECRETARY'S POTASH~~FORM APPROVED  
OMB No. 1004-0137  
Expires October 31, 2014UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

R-111-POTASH

5. Lease Serial No. NMNM 78272  
NMNM 149957/NMNM 67995/NMNM 67996

6. If Indian, Allottee or Tribe Name

## APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		7. If Unit or CA Agreement, Name and No.	
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		8. Lease Name and Well No. (316227) Rusty Anchor 7 Federal Com #3H	
2. Name of Operator BC Operating, Inc. (160825)		9. API Well No. 30-025-43347	
3a. Address P.O. Box 50820 Midland, Texas 79710	3b. Phone No. (include area code) 432-684-9696	10. Field and Pool, or Exploratory Gem; Bone Spring (27220)	
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface 534' FNL & 2437' FEL of Unit Letter 'B', Section 18, T-20S, R-33E At proposed prod. zone 240' FNL & 2260' FEL of Unit Letter '2', Section 6, T-20S, R-33E		11. Sec., T. R. M. or Blk. and Survey or Area Section 18, T-20S, R-33E Section 6, T-20S, R-33E	
14. Distance in miles and direction from nearest town or post office* 30 miles Southwest of Carlsbad		12. County or Parish Lea	13. State NM
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 240'	16. No. of acres in lease 1361.21	17. Spacing Unit dedicated to this well 320	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 304'	19. Proposed Depth 20,558' MD / 10,000' TVD	20. BLM/BIA Bond No. on file NM2572	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3528' GL	22. Approximate date work will start* 06/01/2016	23. Estimated duration 45 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.   | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan.  | 5. Operator certification   |
| 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). | 6. Such other site specific information and/or plans as may be required by the BLM.             |

25. Signature <i>Pam Stevens</i>	Name (Printed/Typed) Pam Stevens	Date 09/15/2015
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Title  
Regulatory Analyst

Approved by (Signature) <i>/s/George MacDonell</i>	Name (Printed/Typed)	Date JUN 27 2016
Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

Application approval does not warrant or certify that 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. States any false, fictitious or fraudulent state

See attached NMOCD  
Conditions of Approval

APPROVAL FOR TWO YEARS

willfully to make to any department or agency of the United

(Continued on page 2)

\*(Instructions on page 2)

Capitan Controlled Water Basin

Approval Subject to General Requirements  
& Special Stipulations AttachedSEE ATTACHED FOR  
CONDITIONS OF APPROVALKZ  
06/05/16

KZ



# BC Operating, Inc., Rusty Anchor 7 Federal Com #3H

## 1. Geologic Formations

TVD of target	10000	Pilot hole depth	10130
MD at TD:	20558	Deepest expected fresh water:	185

### Capitan

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	1110		
Top Salt	1250		
Base Salt	2600		
Yates	2780	Oil	
Capitan	3260		
Capitan Base	3405		
Delaware (Cherry Canyon) Sand	4820	Oil	
Manzanita Marker	5060		
Brushy Canyon	5310	Oil/Gas	
Bone Spring Lime	8050	Oil/Gas	
1 <sup>st</sup> Bone Spring Sand	9120	Oil/Gas	
2 <sup>nd</sup> Carbonate	9420	Oil/Gas	
2 <sup>nd</sup> Bone Spring Sand	9730	Horiz. Target 10000'	
3 <sup>rd</sup> Carbonate	10080	Oil/Gas	
TD Pilot Hole	10130		

\*H2S, water flows, loss of circulation, abnormal pressures, etc.

## 2. Casing Program *See COA*

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
24"	0	<del>1135</del> <i>1228</i>	20"	133.0	K55	LTC	2.86	1.84	9.63
16"	0	3200	13.375"	72	N80	STC	1.61	2.45	4.51
12.25"	0	4600	9.625"	40	L80	LTC	1.41	1.15	3.95
8.75"	0	<del>16601</del> <i>21,132</i>	5.5"	17	P110	Semi-Buttr.	1.44	1.12	1.86
BLM Minimum Safety Factor							1.125	1	1.6 Dry 1.8 Wet

*Per Standard Planning Report*  
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Must have table for contingency casing. See attached semi-premium buttress connection Specs.



**BC Operating, Inc., Rusty Anchor 7 Federal Com #3H**

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	Y
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	Y
If yes, does production casing cement tie back a minimum of 50' above the Reef?	Y
Is well within the designated 4 string boundary.	Y
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 <sup>rd</sup> string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	Y
If yes, are the first three strings cemented to surface?	Y
Is 2 <sup>nd</sup> string set 100' to 600' below the base of salt?	Y
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

**3. Cementing Program** *see COA*

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H <sub>2</sub> O gal/ sk	500# Comp. Strength (hours)	Slurry Description
Surf.	900	13.5	1.757	9.0 9	10	Lead: ExtendaCem + 2 lbm Kol-Seal + 0.125 lbm Poly-E-Flake
	770	14.8	1.345	6.2 3	8	Tail: HalCem + 2 lbm Kol-Seal + 0.125 lbm Poly-E-Flake + 1% Calcium Chloride - flake
Inter.	970	12.6	1.934	10. 36	15	Lead: EconoCem + 0.25 lbm Poly-E-Flake + 0.60% Halad®-9 + 3 lbm Kol-Seal
	1540	14.8	1.339	6.1 3	11	Tail: HalCem + 3 lbm Kol-Seal + 0.25 lbm Poly-E-Flake
Int2.	1250	13.5	1.757	9.0 9	10	Lead: ExtendaCem + 2 lbm Kol-Seal + 0.125 lbm Poly-E-Flake
	600	14.8	1.345	6.2 3	8	Tail: HalCem + 2 lbm Kol-Seal + 0.125 lbm Poly-E-Flake + 1% Calcium Chloride - flake



**BC Operating, Inc., Rusty Anchor 7 Federal Com #3H**

Prod.	1340	11.9	2.303	13. 19	24	Lead: VersaCem + 10% Bentonite + 2 lbm Kol-Seal + 0.25 lbm D-Air 5000 + 0.50% HR-601
	1420	15	2.625	11. 40	10	Tail: SoluCem + 0.25 lbm D-Air 5000 + 0.80% HR-601 (Acid Soluble Cement)

*See COA*  
~~Optional DV tool depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. Optional DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.~~

Casing String	TOC	% Excess
Surface	0'	100%
Intermediate and Inter. #2	0'	100%
Production	0'	30%

*See COA*  
~~Include Pilot Hole Cementing specs: (Optional pilot on subsequent wells in section.)~~

**Pilot hole depth 10130**

**KOP 9213**

*Does not apply, APD only for 4H.*

Plug top	Plug Bottom	% Excess	No. Sacks	Wt. lb/gal	Yld ft3/sack	Water gal/sk	Slurry Description and Cement Type
9100	9470	10	140	15.6	1.204	5.36	PlugCem System
9630	10130	10	190	15.6	1.204	5.36	PlugCem System

#### 4. Pressure Control Equipment

A variance is requested for the use of a 30" diverter on the surface casing. See attached for schematic.
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**BC Operating, Inc., Rusty Anchor 7 Federal Com #3H**

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
16"	20"	2M	Annular	X	50% of working pressure
			Blind Ram		2M
			Pipe Ram		
			Double Ram		
			Other*		
12-1/4"	13-5/8"	2M	Annular	X	50% testing pressure
			Blind Ram		2M
			Pipe Ram		
			Double Ram		
			Other*		
8-3/4"	11"	3M	Annular	X	3M
			Blind Ram	X	
			Pipe Ram	X	
			Double Ram		
			Other*		

\*Specify if additional ram is utilized.

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested. Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

Y	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
Y	<u>A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold.</u> See attached for specs and hydrostatic test chart.
Y	Are anchors required by manufacturer?
	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.  <ul style="list-style-type: none"> <li>Provide description here: See attached schematic.</li> </ul>

See  
COA



**5. Mud Program**

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	Surf. shoe	FW Gel	8.4-8.9	28-34	N/C
Surf csg	Int shoe	Saturated Brine	9.8-10.0	28-34	N/C
Int shoe	Int2 shoe	Cut Brine	8.4-9.2	30-36	<12
Int2 shoe	TD	CutBrine/FWgel	8.4-8.9	30-36	<12

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
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**6. Logging and Testing Procedures****Logging, Coring and Testing.**

Y	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No Logs are planned based on well control or offset log information.
N	Drill stem test? If yes, explain
N	Coring? If yes, explain

Additional logs planned		Interval
Y	Resistivity	Int. shoe to KOP
Y	Density	Int. shoe to KOP
Y	CBL (Optional)	Production casing
Y	Mud log	Intermediate shoe to TD
	PEX	

**7. Drilling Conditions**

Condition	Specify what type and where?
BH Pressure at deepest TVD	4380 psi
Abnormal Temperature	No

Mitigation measure for abnormal conditions. Describe. Lost circulation material/sweeps/mud scavengers.

Hydrogen Sulfide (H<sub>2</sub>S) monitors will be installed prior to drilling out the surface shoe. If H<sub>2</sub>S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.

Y	H <sub>2</sub> S is present
Y	H <sub>2</sub> S Plan attached

**8. Other facets of operation**

Is this a walking operation? No. If yes, describe.

Will be pre-setting casing? No. If yes, describe.

Attachments

☒ Directional Plan

☒ Other, describe

- Improved 5.5" casing thread design example
- ~~30" diverter~~ *Does not apply, per pressure control equipment program*
- 20" annular
- 13-5/8" annular
- 11" BOPE
- Flexible hose specs and test chart



## GB Connection Performance Properties Sheet

Rev. 1 (02/05/2014)

ENGINEERING THE RIGHT CONNECTIONS<sup>(M)</sup>

Casing: **5.5 OD, 17 ppf**  
 Grade: **P-110**

Connection: **GB CD Butt 6.050**  
 Grade: **API P-110**

PIPE BODY GEOMETRY				
Nominal OD (in.)	5 1/2	Wall Thickness (in.)	0.304	Drift Diameter (in.)
Nominal Weight (ppf)	17.00	Nominal ID (in.)	4.892	API Alternate Drift Dia. (in.)
Plain End Weight (ppf)	16.89	Plain End Area (in. <sup>2</sup> )	4.962	N/A

PIPE BODY PERFORMANCE				
Material Specification	P-110	Min. Yield Str. (psi)	110,000	Min. Ultimate Str. (psi)
Collapse		Tension		
API (psi)	7,480	Pl. End Yield Str. (kips)	546	Min. Int. Yield Press. (psi)
High Collapse (psi)	8,580	Torque		Bending
		Yield Torque (ft-lbs)	64,680	Build Rate to Yield (°/100 ft)
				91.7

GB CD Butt 6.050 COUPLING GEOMETRY		
Coupling OD (in.)	6.050	Makeup Loss (in.)
Coupling Length (in.)	8.500	Critical Cross-Sect. (in. <sup>2</sup> )
		6.102

GB CD Butt 6.050 CONNECTION PERFORMANCE RATINGS/EFFICIENCIES				
Material Specification	API P-110	Min. Yield Str. (psi)	110,000	Min. Ultimate Str. (psi)
Tension		Efficiency		
Thread Str. (kips)	568	Internal Pressure (%)	100%	Build Rate to Yield (°/100 ft)
Min. Tension Yield (kips)	638	External Pressure (%)	100%	Yield Torque
Min. Tension Ult. (kips)	725	Tension (%)	100%	Yield Torque (ft-lbs)
Joint Str. (kips)	568	Compression (%)	100%	17,030
		Ratio of Areas (Cplg/Pipe)	1.23	

MAKEUP TORQUE			
Min. MU Tq. (ft-lbs)	6,470	Max. MU Tq. (ft-lbs)	12,940
		Running Tq. (ft-lbs)	See GBT RP
		Max. Operating Tq. (ft-lbs)*	16,180

Units: US Customary (lbm, in., °F, lbf)

1 kip = 1,000 lbs

\* See Running Procedure for description and limitations.

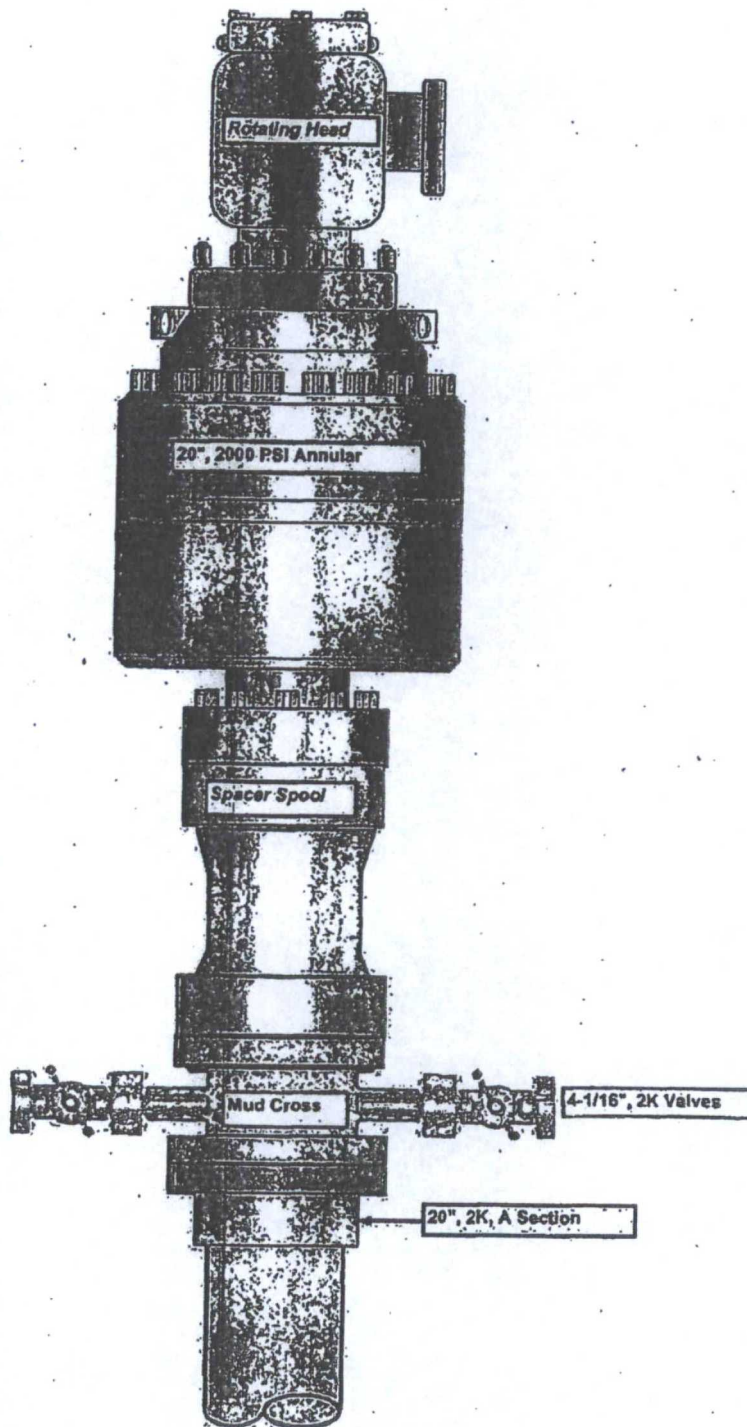
See attached: Notes for GB Connection Performance Properties.

GBT Running Procedure (GBT RP): [www.gbtubulars.com/pdf/RP\\_GB\\_DWC\\_Connections.pdf](http://www.gbtubulars.com/pdf/RP_GB_DWC_Connections.pdf)

Blanking Dimensions: [www.gbtubulars.com/pdf/GB\\_DWC\\_Blanking\\_Dimensions.pdf](http://www.gbtubulars.com/pdf/GB_DWC_Blanking_Dimensions.pdf)



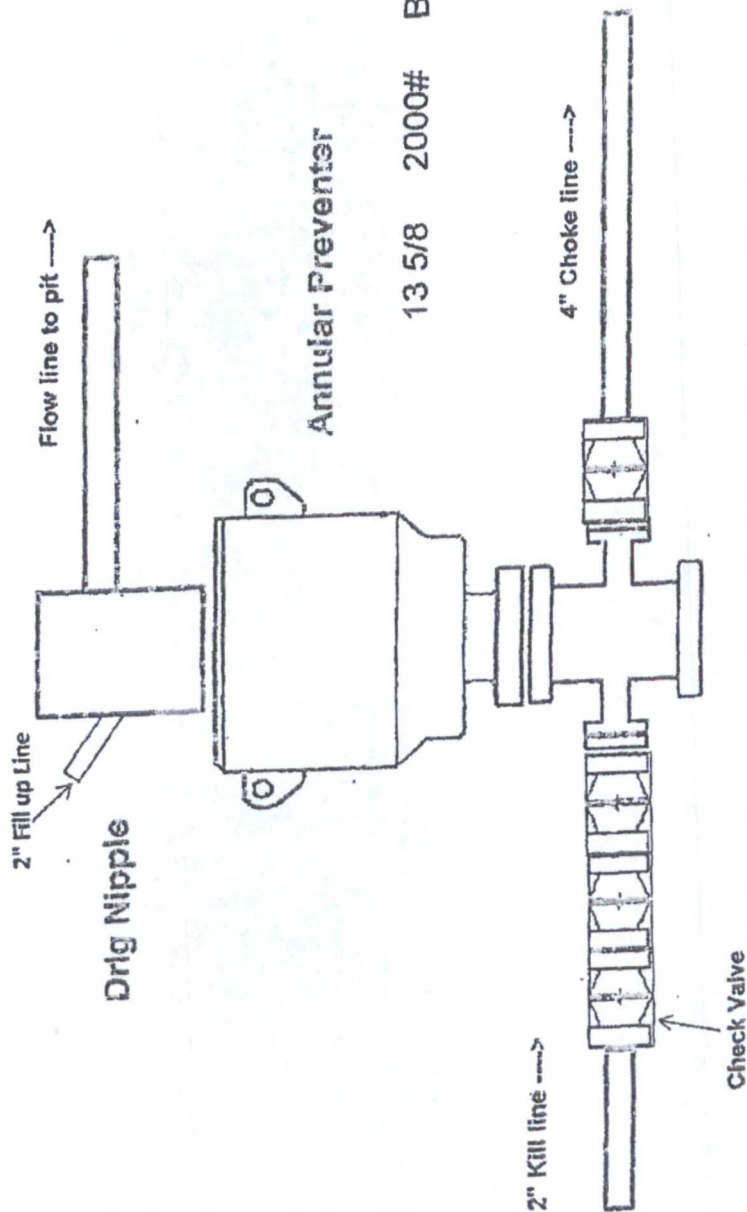
# 20" 2K Annular





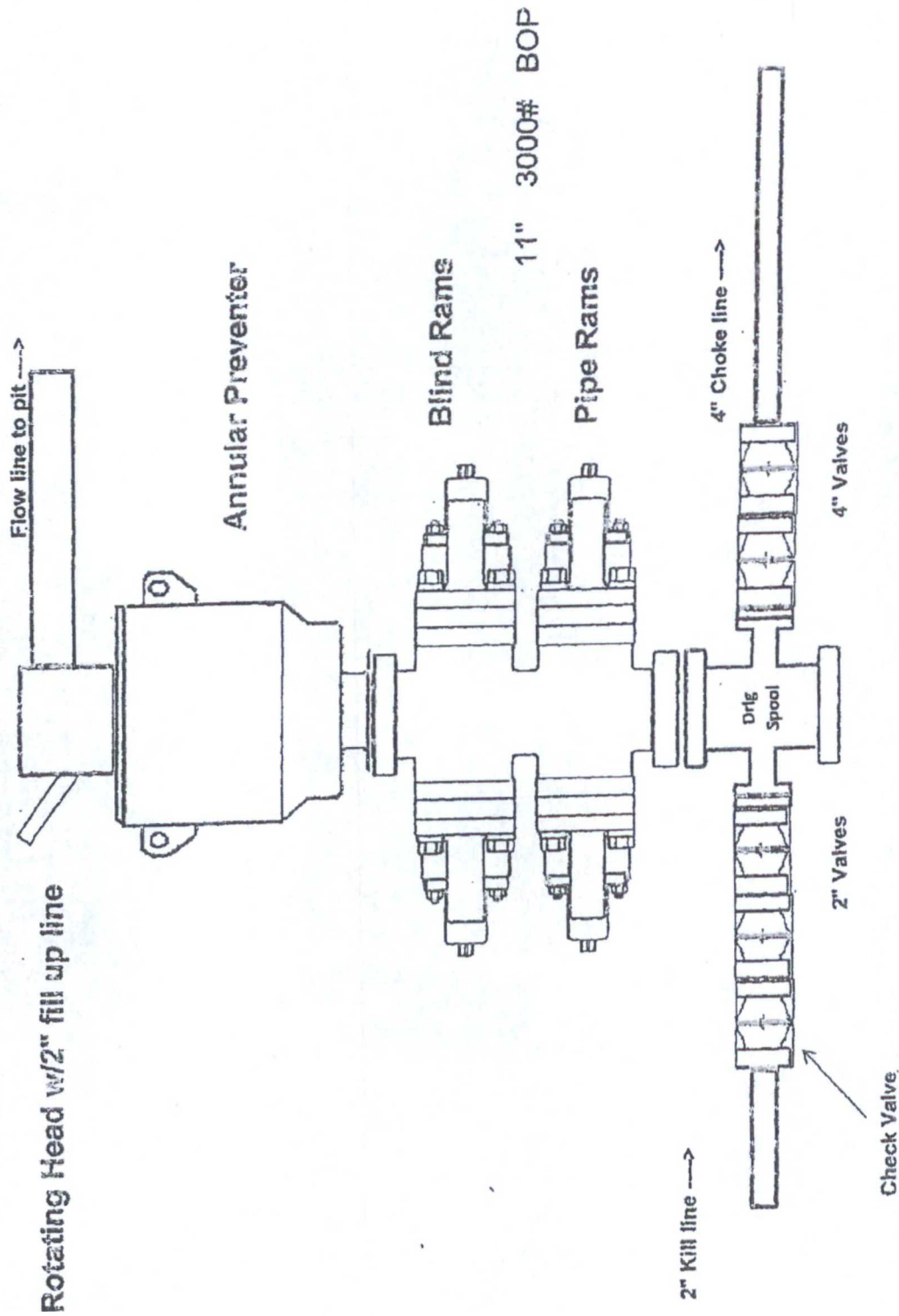
BC Operating, Inc.  
Exhibit 1

## 2,000 psi BOP Schematic



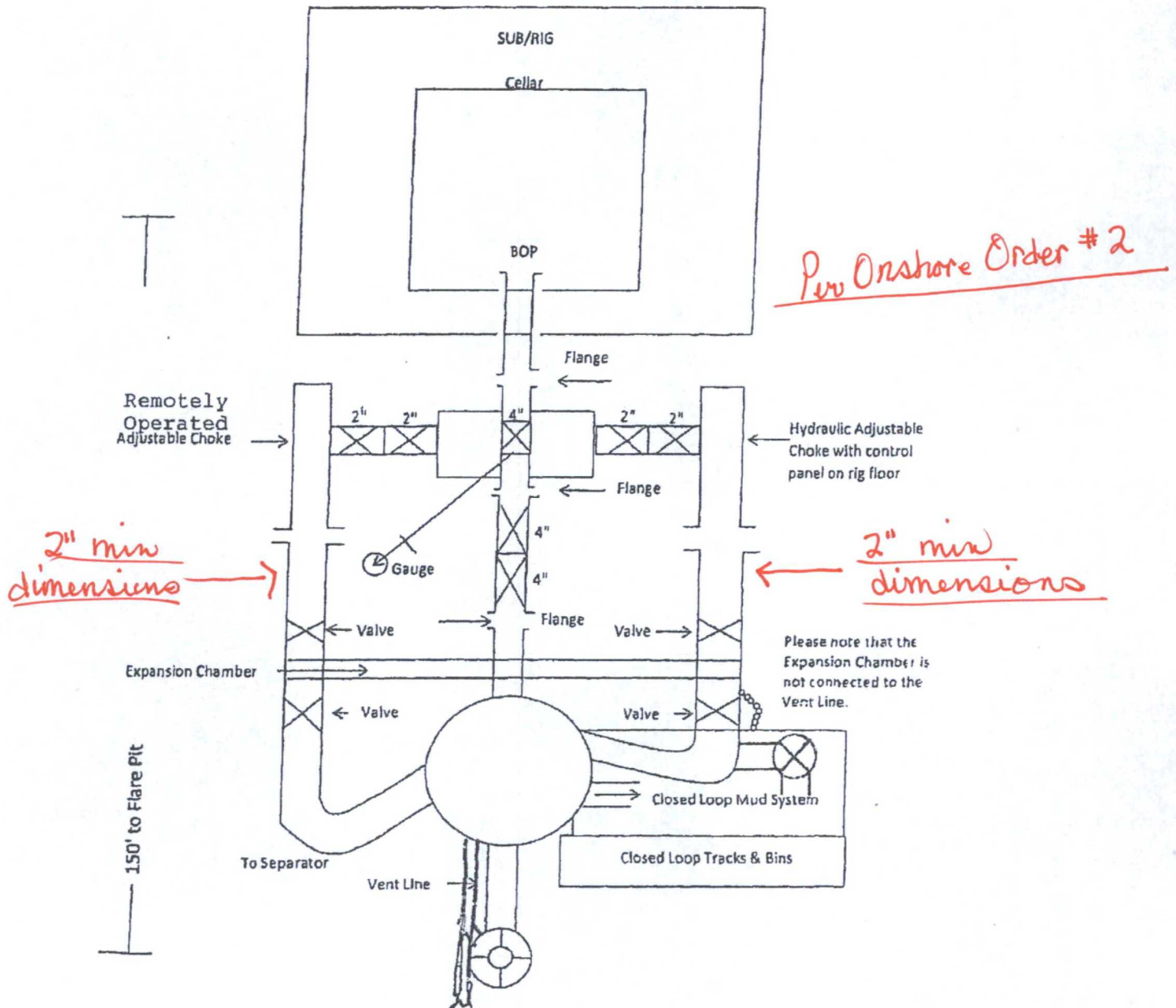


# 3,000 psi BOP Schematic





### 3M Choke Manifold Equipment





Fluid Technology

Quality Document

QUALITY CONTROL	No.: QC-DB- 89 / 2011
	Page : 1 / 54
Hose No.: 60313, 60314, 60315, 60316	Revision : 0
	Date: 07. March 2011.
	Prepared by: <i>[Signature]</i>
	Appr. by: <i>[Signature]</i>

# CHOKE AND KILL HOSES

id.: 3" 68,9 MPa x ( 25 ft ) 7,62 m 1 pc  
x ( 45 ft ) 13,72 m 3 pcs

## DATA BOOK

Purchaser:


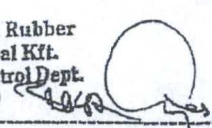
Purchaser Order No.:

ContiTech Rubber Order No.: 493934

ContiTech Beattie Co. Order No.: 004795

ASSET 66-0638, 66-0639, 66-0640, 66-0641



QUALITY CONTROL INSPECTION AND TEST CERTIFICATE				CERT. N°: 246	
PURCHASER: ContiTech Beattie Co.				P.O. N°: 004795	
CONTITECH ORDER N°: 493934		HOSE TYPE: 3" ID Choke and Kill Hose			
HOSE SERIAL N°: 60313		NOMINAL / ACTUAL LENGTH: 7,62 m / 7,63 m			
W.P. 68,9 MPa 10000 psi		T.P. 103,4 MPa 15000 psi		Duration: 60 min.	
<p>Pressure test with water at ambient temperature</p> <p style="text-align: center;">See attachment. ( 1 page )</p> <p>↑ 10 mm = 10 Min. → 10 mm = 20 MPa</p>					
COUPLINGS Type	Serial N°	Quality	Heat N°		
3" coupling with	324 320	AISI 4130	H0434		
4 1/16" Swivel Flange end		AISI 4130	31742		
Hub		AISI 4130	B2297A		
ASSET NO.: 66-0638			API Spec 16 C Temperature rate:"B"		
All metal parts are flawless					
WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER INSPECTED AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.					
STATEMENT OF CONFORMITY: We hereby certify that the above items/equipment supplied by us are in conformity with the terms, conditions and specifications of the above Purchaser Order and that these items/equipment were fabricated inspected and tested in accordance with the referenced standards, codes and specifications and meet the relevant acceptance criteria and design requirements.					
COUNTRY OF ORIGIN HUNGARY/EU					
Date:	Inspector	Quality Control			
01. March 2011.		ContiTech Rubber Industrial Kft. Quality Control Dept. (1)  			

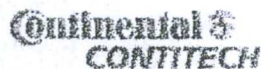
No: 246, 249

Jack

[illegible]



CONTITECH RUBBER Industrial Kft.	No: QC-DB- 89 / 2011
	Page: 9 / 54



### Hose Data Sheet

CRI Order No.	493934
Customer	ContiTech Beattie Co.
Customer Order No	PO4795, PBC10685
Item No.	3
Hose Type	Flexible Hose
<b>Standard</b>	<b>API SPEC 16 C</b>
Inside dia in inches	3
Length	25 ft
Type of coupling one end	FLANGE 4.1/16" 10KPSI API SPEC 17D SV SWIVEL FLANGEC/W BX155 ST/ST INLAID RING GR
Type of coupling other end	FLANGE 4.1/16" 10KPSI API SPEC 17D SV SWIVEL FLANGE C/W BX155 ST/ST INLAID RING GR
H2S service NACE MR0175	Yes
Working Pressure	10 000 psi
Design Pressure	10 000 psi
Test Pressure	15 000 psi
Safety Factor	2,25
Marking	USUAL PHOENIX
Cover	NOT FIRE RESISTANT
Outside protection	St. steel outer wrap
Internal stripwound tube	No
Lining	OIL RESISTANT
Safety clamp	Yes
Lifting collar	Yes
Element C	Yes
Safety chain	No
Safety wire rope	Yes
Max.design temperature [°C]	100
Min.design temperature [°C]	-20
MBR operating [m]	1,60
MBR storage [m]	1,40
Type of packing	WOODEN CRATE ISPM-15