Form 3160-3
(March 2012)

OCD Artesia HOBBS OCD

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: [X] DRILL [ ] REENTER	5. Lease Serial No. LC069515
	6. If Indian, Allotee or Tribe Name N/A
	7. If Unit or CA Agreement, Name and No. N/A
1b. Type of Well: [ ] Oil Well [ ] Gas Well [X] Other [X] Single Zone [ ] Multiple Zone	8. Lease Name and Well No. WAR HAMMER 25 M 1 <40449>
2. Name of Operator ConocoPhillips Company <217817>	9. API Well No. 30-025-41720
3a. Address P.O. BOX 51810 Midland, TX 79710	3b. Phone No. *(include area code)* (432)688-6943
	10. Field and Pool, or Exploratory ~~Wildcat Wolfcamp~~ Seismic Monitor WC <98061>
4. Location of Well *(Report location clearly and in accordance with any State requirements.*)* At surface 1890 FSL & 1240 FEL (NESE) 25-26S-32E At proposed prod. zone	11. Sec., T. R. M. or Blk. and Survey or Area Section 25-26S-32E
14. Distance in miles and direction from nearest town or post office* ~34.9 miles south/west of Jal, NM	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)	1240'	16. No. of acres in lease 640	17. Spacing Unit dedicated to this well N/A Monitor/Source Well
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	N/A Monitor/Source Well	19. Proposed Depth 14880	20. BLM/BIA Bond No. on file ES0085
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3115' GL		22. Approximate date work will start* 03/01/2014	23. Estimated duration 30 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	Name *(Printed/Typed)* DONNA WILLIAMS	Date 08/28/2013
Title		

Approved by *(Signature)* James A. Amos	Name *(Printed/Typed)* James A. Amos	Date Mar 3, 2014
Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

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)

Carlsbad Controlled Water Basin

KR 03/12/14

Witness Surface Casing

APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS ATTACHED

SEE ATTACHED FOR CONDITIONS OF APPROVAL

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ConocoPhillips Company
WAR HAMMER 25 M #1
SECTION 25, T26S, R32E, N.M.P.M.

BEGINNING AT THE INTERSECTION OF HIGHWAY 18 AND HIGHWAY 128 PROCEED IN A WESTERLY, THEN NORTHWESTERLY DIRECTION FROM JAL, NEW MEXICO ALONG HIGHWAY 128 APPROXIMATELY 14.1 MILES TO THE JUNCTION OF THIS ROAD AND BATTLE AXE ROAD TO THE SOUTHWEST; TURN LEFT AND PROCEED IN A SOUTHWESTERLY, THEN WESTERLY, THEN SOUTHERLY, THE SOUTHWESTERLY DIRECTION APPROXIMATELY 13.3 MILES TO THE JUNCTION OF THIS ROAD AND BATTLE AXE ROAD/CR J-2 TO THE WEST; TURN RIGHT AND PROCEED IN A WESTERLY, THEN SOUTHWESTERLY DIRECTION APPROXIMATELY 6.3 MILES TO THE JUNCTION OF THIS ROAD AND CR J-1/CR J-2 TO THE SOUTH; TURN LEFT AND PROCEED IN A SOUTHERLY, THEN SOUTHWESTERLY, THEN WESTERLY DIRECTION APPROXIMATELY 1.0 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE NORTHEAST; TURN RIGHT AND PROCEED IN A NORTHEASTERLY DIRECTION APPROXIMATELY 0.2 MILES TO THE BEGINNING OF THE PROPOSED ACCESS TO THE NORTHEAST; FOLLOW ROAD FLAGS IN A NORTHEASTERLY DIRECTION APPROXIMATELY 12' TO THE PROPOSED LOCATION.

TOTAL DISTANCE FROM JAL, NEW MEXICO TO THE PROPOSED LOCATION IS APPROXIMATELY 34.9 MILES.

OPERATORS NAME:	**ConocoPhillips Company**
LEASE NAME AND WELL NO.:	**War Hammer 25M # 1 (Monitor/Source Well)**
SURFACE LOCATION:	**1890 FSL & 1240 FEL (NESE) 25-26S-32E**
CASING POINT:	**Vertical Well**
BHL:	**Vertical Well**
FIELD NAME:	**Wildcat Wolfcamp**
POOL NAME:	**Wolfcamp**
COUNTY:	**Lea County, New Mexico**
	Federal Surface & Minerals LC069515

The following information is to supplement the Application for Permit to Drill.

DRILLING PLAN

1. Name and estimated tops of all geologic groups, formations, members, or zones.(TVD)

Quaternary	Surface	Water
Rustler	840	Water
Top of Salt (Salado)	1050	Salt
Castille	3120	Salt
Delaware Top	4540	Oil/gas/water
Lamar Shale	4540	Oil/gas/water
Bone Spring	8550	Oil/gas/water
Bone Spring 1st Carbonate	8780	Oil/gas/water
Avalon	8935	Oil/gas/water
Bone Spring 1st Sand	9730	Oil/gas/water
Bone Spring 2nd Sand	10370	Oil/gas/water
Bone Spring 3rd Sand	11420	Oil/gas/water
Wolfcamp	11820	Oil/gas/water
Cisco	13970	Oil/gas/water
Strawn	14520	Oil/gas/water
TD	14880	Oil/gas/water

2. Estimated depths and thickness of formations, members or zones potentially containing usable water, oil, gas, or prospectively valuable deposits of other minerals that the operator expects to encounter, and the operator's plans for protecting such resources.

Quanternary	Surface
Rustler	840

All of the water bearing formations identified above will be protected by the setting of the 13 3/8" casing at 865' and circulating of cement to surface

Top of Salt (Salado)	1050
Castille (Salt)	3120
Delaware	4540 (oil/gas/water)

The prospective formation identified above will be protected by the setting of the 9 5/8" casing set at 4565 and circulating of cement to surface.

Bone Spring	8550-11420 (oil/gas/water)

The prospective formation identified above will be protected by the setting of the 7" casing set at 12025 and circulating of cement to tie into previous casing string

Wolfcamp	11820-14880 MD

The geologic tops identified above from the top of the Wolfcamp are part of the target formation

3. The operator's minimum specifications for blowout prevention equipment and diverter systems to be used, including size, pressure rating, configuration, and the testing procedure and frequency.

The rig slated to drill this location will have a 10M system as it pertains to the BOP. It is our intent to test to the 10M requirements as indicated in Onshore Order 2. By utilizing the .78 psi/ft gradient (based off offset wells) minus the .22 psi/ft as per the Onshore Order, this well would require 8332 psi. Testing to the 10M requirements will meet the guidelines for well control. After nippling up, and every 30 days thereafter, preventors will be pressure tested. BOP will be inspected and operated at least daily to insure good working order. All pressure and operating tests will be recorded on the daily drilling reports. Ram type preventors will be tested to rated working pressure or 70% of the minimum internal yield of the casing. **See attached schematic**. This rig is equipped with co-flex hoses. COP respectfully request a variance for said use of co-flex hoses. Please see attached manufacturer specifications and test information.

see COA
Test plug required

4. The proposed casing program including size, grade, weights, type of thread and coupling, and the setting depth of each string and its condition. For exploratory wells, or for wells as otherwise specified by the authorized officer, the operator shall include the minimum design factors for tensions, burst, and collapse that are incorporated into the casing design. In cases where tapered casing strings are utilized, the operator shall also include and/or setting depths of each portion.

NEW CASING:

see COA

700

Surface: 17 1/2" hole, 13 3/8" 54.5# J55 STC csg, set @ ~~865~~'. Drill out with 12 ¼" bit and perform shoe test to 12.5 ppg MWE.
Burst: 4.39/Collapse: 1.88/Tension: 5.98/9.13
Intermediate 1: 12 1/4" hole, 9 5/8" 40# J55 LTC csg, set @ 4565'
Burst: 2.43/Collapse: 1.4/Tension: 5.45/6.44
Intermediate 2: 8 ¾"hole, 7" 29# P110 BTC csg set @ 12025'
Burst: 3.25/Collapse: 3.36/Tension: 5.78/6.8

Production Liner: 6 1/8" hole, 4 ½" 15.1# P110 BTC liner set @ 10745-14880 Burst: 3.25/Collapse: 3.36/Tension: 5.78/6.80 (~~Packers and Sleeves~~ Cement)

ConocoPhillips will utilize casing friendly hardbanded drill pipe in a manner that is consistent with current company policy and standards with respect to minimizing or mitigating internal casing wear. The responsibility to ensure all parties are acting according to their roles and responsibilities rest with the Company. Any damage or impacts from use of casing friendly hardbanded drill pipe rest with ConocoPhillips Company.

5. The amount and type(s) of cement, including anticipated additives to be used in setting each casing string, shall be described. If stage cementing techniques are to be employed, the setting depth of the stage collars and amount and type of cement, including additives, and preflush amounts to be used in each stage, shall be given. The expected linear fill-up of each cemented string, or each stage when utilizing stage-cementing techniques, shall also be given.

13 3/8 casing: Lead w/450 sxs Class C cmt + HalCem-C (Yield 1.75 cft) Tail w/320 sxs Class C cmt + 1 lbm/sk EconoChem HRLTRRC (Yield 1.33 Cuft/sk). Circulated to surface based on 17 ½" hole with 100% excess

9 5/8" casing: Lead w/2380 sxs 50/50 Class C Poz + 2.5 gal/bbl WG-19 + 1 lbm/sk EconoCem-C (Yield 1.88 cft/sk/12.9 ppg), Tail w/310 sxs H + HalCem C (Yield 1.33 cft/sk/14.8 ppg) Circulated to surface based on 12 ¼" hole w/200% Excess.
Optional: 9 5/8" DV + ECP @ 3500-3600. Cemented w/1975 sxs (+/- 50 sxs) Class C (1.88 cft/sk @ 12.9 ppg) w250% excess

DV Tool @ ECP @ 4700-4800

7" casing: Stage 1: Lead w/810 sxs 50/50 Class C Poz (Tune Light System) + 2.5 ga/bbl WG-19 + 1 lbm/sk EconoCem-C (Yield: 3.2 cft/sk/9.5 ppg) Tail w/183 sxs Class H + HalCem C (Yield 1.33 cft/sk/14.8 ppg). Stage 2: Cement w/420 sxs 50/50 Class C Poz (Tune Light System) + .2.5 ga/bbl WG-19 + 1 lbm/sk EconoCem-C (Yield: 3.2 cft/sk/9.5 ppg) Circulate cement 500'into the 9 5/8" casing based on 8 ¾" hole w/200% excess.
Optional: 7" DV + ECP @ 4700-4800. Cemented 500' into previous shoe w/90 sxs (+/- 10 sxs) of 9.5 ppg tuned light with yield of 3.2 cuft/sx w/250% excess
Optional: 7" DV + ECP @ 8200-8300. Cemented 500' into previous shoe w/500 sxs (+/- 10 sxs) of 9.5 ppg Tuned Light with yield of 3.2 cuft/sk w/250% excess

4 ½" Liner: Tail w/310 sxs (1.09 cf/sk, 16.4 ppg). Circulate cement 500' Into the 7" casing based on 6 1/8"hole w/135% excess

Toc Liner Top

See COA

6. The anticipated type and characteristics of the proposed circulating medium or mediums proposed for the drilling of each wellbore section, the quantities and types of mud and weighting material to be maintained, and the monitoring equipment to be used on the circulating system.

Mud Program:

0-865 700	Aquagel-Spud Mud	8.8	Wt/Gl	32-36 Vis.	NC
865-4565	Brine	10	Wt/Gl	28-30 Vis.	5-8
4565-12025	Brine	9.5	Wt/Gl	30-39 Vis	<=4
12025-14880	OBM	15	Wt/Gl	40-45 Vis	<=5

Gas detection equipment and pit level flow monitoring equipment will be on location. ConocoPhillips Company will maintain sufficient mud and weighted material on location at all times.

7. The anticipated testing, logging, and coring procedures to be used, including drill stem testing procedures, equipment, and safety measures.

a. DST or DFIT Program: 8500-14880 (specific intervals to be based on logs)
b. Core: 8500-14880 (specific intervals to be based on logs)
b. Mud Logging: One-Man Mudlogging: N/A
Two-Man Mudlogging: Spud to TD
Dry samples (30') 865-14880; Isotubes/Isojars 865-14880'
Logs to be Run: Quad combo + Sonic 25-865'
Triple Combo, Spectral GR, Sonic, FMI, NMR 865-14880'

8. List the expected bottom-hole pressure and any anticipated abnormal pressures, temperatures or potential hazards that are expected to be encountered, such as lost circulation zones and hydrogen sulfide. The operator's plans for mitigating such hazards shall be discussed. Should the potential to encounter hydrogen sulfide exist, the mitigation procedures shall comply with the provisions of the BLM.

The maximum anticipated bottom hole pressure is .78 psi/ft
No hydrogen sulfide is expected during drilling operations; however, the potential does exist for H2S. Please see attached H2S contingency plan to be used in the event of occurrence.

Any other facets of the proposed operation which the operator wishes to be considered in reviewing the application.
Anticipated construction date is October 15, 2013 with anticipated spud date of November 15, 2013. Construction of well pad and road will begin as soon as all Agency approvals are obtained.

9. Address the proposed directional design, plan view, and vertical section in true vertical and measured depth for directional, horizontal, or coil tubing operations.

There is no proposed directional plan. This well is planned as a monitor/source well only. It is not intended to produce oil and gas.

Request for Variance

ConocoPhillips Company
Lease Number: LC 069515
Well: War Hammer 25 M #1
Location: Sec. 25, T26S, R32E
Rig: H&P 453
Date: 2/5/2014

Request:

ConocoPhillips Company respectfully requests a variance to install a flexible choke line instead of a straight choke line prescribed in the Onshore Order No. 2, III.A.2.b Minimum standards and enforcement provisions for choke manifold equipment. This request is made under the provision of Onshore Order No. 2, IV Variances from Minimum Standard. The rig to be used to drill this well is equipped with a flexible choke line if the requested variance is approved and determined that the proposed alternative meets the objectives of the applicable minimum standards.

Justifications:

The applicability of the flexible choke line will reduce the number of target tees required to make up from the choke valve to the choke manifold. This configuration will facilitate ease of rig up and BOPE Testing.

Attachments:

- Attachment # 1 Specification from Manufacturer
- Attachment # 2 Mill & Test Certification from Manufacturer

Contact Information:

Program prepared by:
Jason A. Levinson
Drilling Engineer, ConocoPhillips Company
Phone (281) 206-5335
Cell (281) 682-2783
Date: 05 February 2014

DRILLING PLAN

PROSPECT/FIELD	Wolfcamp/Red Hills				COUNTY/STATE		Lea County, NM
OWNERS	ConocoPhillips			LEASE			
WELL NO.	War Hammer Federal 25#1M		FNL	FSL	FEL	FWL	
LOCATION		Surface Location:		1890	1240		
		Bottom Hole Location:		1890	1240		SECTION 25
EST. T.D.	Leg #1 14,880' MD				GROUND ELEV.		3,115' (est)
						RKB	3,140' (est)

PROGNOSIS:

Marker	TVD	S.S. Depth
Quaternary	Surface	
Rustler	840	2,300
Delaware Top	4,540	-1,400
Lamar Shale	4,540	-1,400
Bone Spring	8,550	-5,410
Bone Spring 1st Carbonate Top	8,780	-5,640
Avalon A Top	8,935	-5,795
Avalon B Top	9,180	-6,040
Avalon C Top	9,405	-6,265
1st Bone Spring Sand	9,730	-6,590
2nd Bone Spring Carbonate	9,910	-6,770
2nd Bone Spring Sand	10,370	-7,230
3rd Bone Spring Carbonate	10,705	-7,565
3rd Bone Spring Sand	11,420	-8,280
Wolfcamp Top	11,820	-8,680
Wolfcamp Marker	13,180	-10,040
Pilot TD	14,880	-11,740

LOGS:

Type	Interval
Open Hole:	
Quad-combo + Sonic	25 - 865
Triple-Combo, Spectral GR, Sonic, FMI, NMR	865-14880

DEVIATION:

Surf:	3° max., svy every 500'
Int1/2:	3° max., svy every 500'
Pilot:	3° max., svy every 500'

DST'S:

DFIT
8500 - 14880
Specific intervals to be based on logs

CORES:

Core
8500 - 14880
Specific intervals to be based on logs

SAMPLES:

	Start	End
Mudlogging:		
Two-Man:	Spud	TD
Dry samples (30ft)	865'	14,880'
Isotubes/Isojars	865'	14,880'

BOP:

COP Category 3 Well Control Requirements
BOPE: (With Rotating Head)
13-5/8"-5Mpsi Annular
13-5/8"-10Mpsi Blind Ram
13-5/8"-10Mpsi Cross / Choke & Kill Lines
13-5/8"-10M psi Pipe Ram
13-5/8"-10Mpsi Spacer Spool

Dip Rate:

Max. Anticipated BHP: 0.78 psi/ft

Surface Formation:

MUD:	Interval	Type	Max. MW	Vis	WL	Remarks
Surface:	0'-865'	Aquagel - Spud Mud	8.8	32-36	NC	
Intermediate 1:	865'-4565'	Brine	10	28-30	5-8	
Intermediate 2:	4565'-12025'	Cut Brine	9.5	30-39	<=4	
Production:	12025'-14880'	OBM	15	40-45	<=5	

CASING:	Size	Wt ppf	Hole	Depth	Cement	WOC	Remarks
Surface:	13-3/8"	54.5	17-1/2	865'	To Surface	18hrs	
Intermediate 1:	9-5/8"	40	12-1/4"	4,565'	To Surface	18hrs	
Intermediate 2:	7"	29	8-3/4"	12,025'	500' into intermediate	18hrs	
Production Liner:	4-1/2"	15.1	6 1/8"	14,880'	Cement to TOL	18hrs	

Hanger set 500' into previous casing

DIRECTIONAL PLAN

	MD	TVD	INC	AZ	
Surface:	N/A	N/A	0	0	Directional Company: DDC
Vertical KOP :	N/A	N/A	0	0	Vertical Build Rate: 0.0 °/100'
End Build :	N/A	N/A	0	0	Tan Leg Turn Rate: 0.0 °/100'
Tangent:	N/A	N/A	0	0	
Turn:	N/A	N/A	0	0	
TD:	14,880'	14,880'	0	0	

Comments:
Vertical Monitor Well

Prep By:	Jason A. Levinson	Date:	8/15/13	Doc:	REV.0

War Hammer Federal 25#1M

Surface Location:		Bottom Hole Location	
1890	1240	1890	1240

Directional:

	MD	TVD	FNL/FSL	FEL/FWL	S-T-R	AZI
Vertical KOP :	N/A	N/A	0	0	0	0
End Build :	N/A	N/A	0	0	0	0.0
Tangent:	N/A	N/A	0	0	0	0.0
Turn:	N/A	N/A	0	0	0	0.0
TD:	14,880'	14,880'	0	0	0	0.0

Formation	TVD
Marker	TVD
Quaternary	
Rustler	640
Delaware Top	4540
Lamar Shale	4540
Bone Spring	8550
Bone Spring 1st Carbonate Top	8780
Avalon A Top	8935
Avalon B Top	9180
Avalon C Top	9405
1st Bone Spring Sand	9730
2nd Bone Spring Carbonate	9910
2nd Bone Spring Sand	10370
3rd Bone Spring Carbonate	10705
3rd Bone Spring Sand	11420
Wolfcamp Top	11820
Wolfcamp Marker	13180
Pilot TD	14880

CASING	Drill Fluids	Cement		
	Surf. Hole:	Data. These numbers are only estimates.		
Surface	FW gel mud:	Surface:		Slurry Top
865', 13-3/8" 54.5# J-55 STC	8.6# w/ high vis sweeps	320 Sx Lead 450 Sx Tail	Based on 17-1/2" OH with 100% excess	Surface.
Optional DV & ECP: 3600 +/- 50ft				
Intermediate 1	Interm 1	Intermediate 1		Slurry Top
4,555' 9-5/8" 40# L-80 LTC	Brine 10# 40-50 Vis 5-8 WL	2,380 Sx Lead 190 Sx Tail	Based on 12-1/4" OH with 250% excess	Surface.
Optional DV & ECP 4800 +/- 50ft				
Optional DV & ECP 8300 +/- 50ft				
TOL 10745' MD/ 10745' TVD	Interm 2	Intermediate 2		Slurry Top
Intermediate 2	Brine	Stage 1		500' into 9-5/8".
12,025' 7" 29# P110 LTC	9.5# 40-50 Vis 5-8 WL	810 Sx Lead 183 Sx Tail	Based on 8-3/4" OH with 150% excess	
		Stage 2		
		420 Sx Lead	Based on 8-3/4" OH with 175% excess	
	Prod Hole:			
	OBM			
	15# 28-36 Vis <=5 WL	Production 310 Sx Tail	Based on 6-1/8" OH with 135% excess	Slurry Top 500' into 7".
Production Liner	high vis sweeps as required.			
14,880' 4-1/2" 13.1# P110 LTC				
Max. Anticipated BHP:	0.78 psi/ft			

Analysis

Mudlogging:
Two-Man:
Spud
TD

Open Hole:
Quad-Combo/Sonic from Spud to Surface

Triple Combo, Spectral GR,Sonic, FMI, and NMR from Surface to TD

Cased Hole Logs: None.

Completion: None

Frac: None

Notes for Well:

Refer to the drilling program for detailed casing, drilling fluids, bit etc.
Drill 17 1/2", surface hole with conventional BHA and INC Survey Tool or MWD, RIH 13 3/8" CSG and cement it up to surface
Install well head and NU BOP. CSG Pressure Test and FIT 12.5ppg
Mud logger (two-man) to be on at spud.
Drill 12 1/4" intermediate #1 hole with Motor + MWD or Vertical Seeking Scout Tool+Motor and INC Survey Tool or MWD
RIH 9 5/8" CSG and cement it up to surface. CSG Pressure Test and FIT 11.5ppg
Drill 8 3/4" intermediate #2 hole with Packed Hole BHA (Straight Motor+MWD) or Directional Motor+MWD till casing point
Run Gyro to casing point if run INC Tool before. If run MWD, consider Gyro optional
RIH 7" CSG and cement it up to 500ft into 9 5/8". Pressure Test 3500psi.
Drill 6 1/8" production hole with PDM+MWD.
POOH Backreaming after circulating the hole until clean returns
RIH 4 1/2" Liner and cement it to hanger (500ft inside of 7" shoe).
POOH Backreaming after circulating the hole until clean returns
RIH 4 1/2" Liner and cement it to hanger (500ft inside of 7" shoe).
Displace cement with 5% KCL Brine.
POOH laying down 4in Drill Pipe
ND BOPE. Install 10M tubing head . Test connection
Release drilling rig.

David Sills
Geologist
Date 8/15/2013

Jason A. Levinson
Drilling Engineer
Date 8/15/2013

Wolfcamp/Red Hills
ConocoPhillips
War Hammer Federal 25#1M

Surface Casing:	
Surface Casing Depth (Ft)	865
Surface Casing O.D. (In.)	13.375
Surface Casing ID (In)	12.715
Hole O.D. (In)	17.5
Excess (%)	100%
Volume Tail (Sx)	320
Yield Tail (Cu. Ft./Sx)	1.33
Yield Lead (Cu. Ft./Sx)	1.75
Shoe Joint (Ft)	40
Shoe Volume (Cu. Ft)	35.3
Tail feet of cement	300
Calculated Total Volume (Cu. Ft.)	1,237
Calc. Tail Volume (Cu. Ft.)	417
Calc. Lead Volume (Cu. Ft.)	785
Calc. Lead Volume (Sx)	450

Stage #2

Intermediate #1 Casing (Lead):	12.9ppg
Intermediate Casing O.D. (In.)	9.625
Intermediate Casing ID (In)	8.835
Hole O.D. (In)	12.25
Excess (%)	250%
cap 12-1/4 - 9-5/8"	0.0558
Calculated fill:	4,065'
Yield Lead (Cu. Ft./Sx)	1.88
Calculated Total Lead (Cu. Ft.)	4,456
Calc. Lead Volume (Sx)	2380
9 5/8" DV + ECP	@ 3600ft Same Cement

Stage #1

Intermediate #1 Casing (Tail):	14.8ppg
Intermediate Casing O.D. (In.)	9.625
Production Casing ID (In)	8.835
Hole O.D. (In)	12.25
Excess (%)	150%
cap 12-1/4 - 9-5/8"	0.0558
Calculated fill:	500'
Yield Tail (Cu. Ft./Sx)	1.33
Shoe Joint (Ft)	40
Shoe Volume (Cu. Ft)	17.0
Calc. Tail Volume (Cu. Ft.)	252
Required Tail Volume (Sx)	190

Stage 1

Intermediate #2 Casing (Lead):	9.5ppg
Intermediate Casing O.D. (In.)	7.000
Intermediate Casing ID (In)	6.184
Hole O.D. (In)	8.75
Excess (%)	150%
Cap 7" - 8-3/4" bbl/ft	0.0268
Cap 7" - 9-5/8" bbl/ft	0.0282
Calculated fill: (500' into 9-5/8")	10,825'
Yield Lead (Cu. Ft./Sx)	3.2
Calculated Total Lead (Cu. Ft.)	2,560
Calc. Lead Volume (Sx)	810
7" DV + ECP	@ 4800ft & 8300ft Same Cement

Intermediate #2 Casing (Tail):	14.8ppg
Intermediate Casing O.D. (In.)	7.000
Intermediate Casing ID (In)	6.184
Hole O.D. (In)	8.75
Excess (%)	135%
Cap 7" - 8-3/4" bbl/ft	0.0268
Cap 7" - 9-5/8" bbl/ft	0.0282
Calculated fill:	1,200'
Yield Lead (Cu. Ft./Sx)	1.33
Calculated Total Tail (Cu. Ft.)	244
Required Tail Volume (Sx)	183

Stage 2

Intermediate #2 Casing (Lead):	9.5ppg
Intermediate Casing O.D. (In.)	7.000
Intermediate Casing ID (In)	6.184
Hole O.D. (In)	8.75
Excess (%)	175%
Cap 7" - 8-3/4" bbl/ft	0.0268
Cap 7" - 9-5/8" bbl/ft	0.0282
Calculated fill: (500' into 9-5/8")	4,435'
Yield Lead (Cu. Ft./Sx)	3.2
Calculated Total Lead (Cu. Ft.)	1,305
Calc. Lead Volume (Sx)	420

Production Casing:	16.4ppg
Production Casing O.D. (In.)	4.500
ProductionCasing ID (In)	3.826
Hole O.D. (In)	6.125
Excess (%)	135%
Cap 7" - 4-1/2"	0.0175
Cap 6-1/8" - 4-1/2"	0.0168
Calculated fill:	2,855'
Calculated fill (7" - 4-1/2"):	500'
Yield Lead (Cu. Ft./Sx)	1.09
Calculated Total Lead (Cu. Ft.)	335
Calc. Tail Volume (Sx)	310

DV 1Volume

264.3990737	BBL
1484.600799	FT3
3711.501998	250% XS
1974.20319	Sacks @ 1.88 ft3/s:
39.4840638	

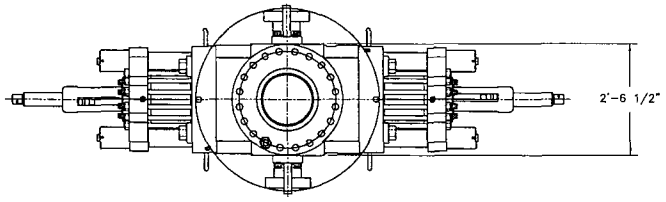
DV2 Volume

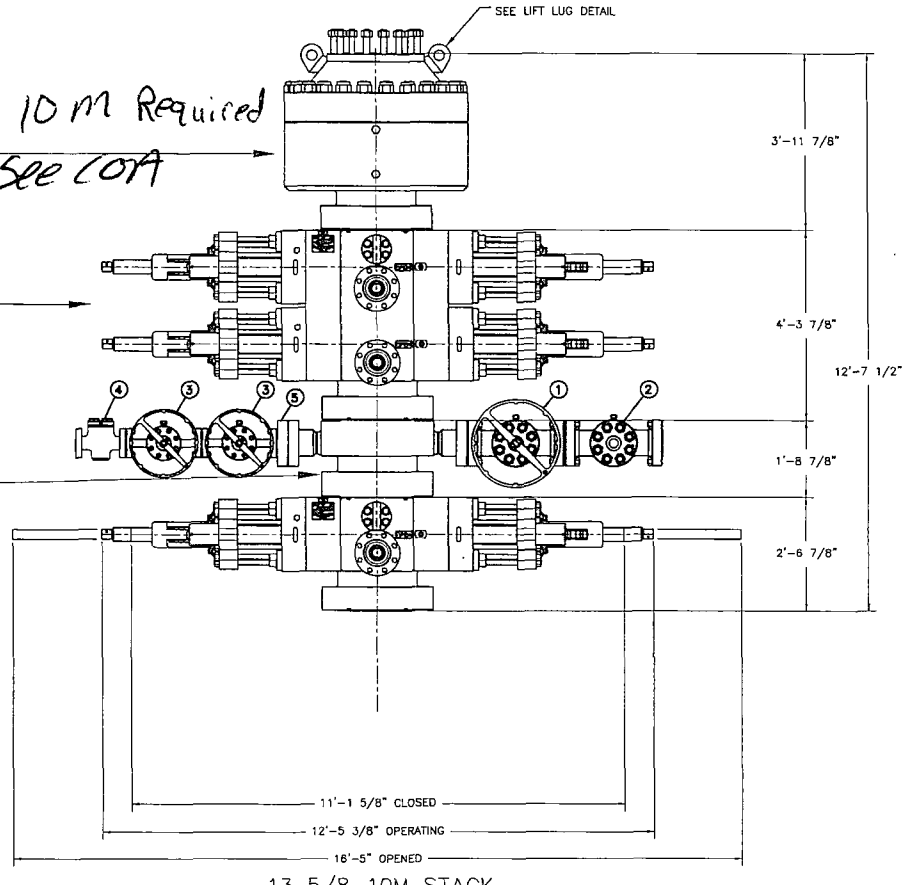
114.0936949	BBL
640.6360967	FT3
1601.590242	250% XS
500.4969505	Sacks @ 3.2 ft3/sx
10.00993901	

DV3 Volume

20.38012386	BBL
114.4343955	FT3
286.0859887	250% XS
89.40187146	Sacks @ 3.2 ft3/sx
1.788037429	

LEGEND
① 4 1/16"–10M FLANGED END GATE VALVE
② 4 1/16"–10M FLANGED END GATE VALVE WITH DOUBLE ACTING HYDRAULIC ACTUATOR
③ 2 1/16"–10M FLANGED END GATE VALVE
④ 2 1/16"–10M FLANGED END CHECK VALVE
⑤ DOUBLE STUDDED ADAPTER





SHAFFER BOLTED–COVER SPHERICAL ANNULAR PREVENTER, (API 16A MONOGRAMMED, 13 5/8"–~~5M~~–WP). 10M BOTTOM FLANGE x 5M STUDDED TOP (WEIGHT = 14,300 LBS WITH SHAFFER API 16A HOT OIL RESISTANT ACRYLONITRILE ELEMENT)

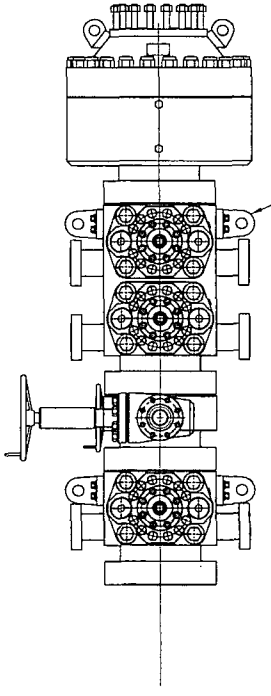
10M Required
See COA

CAMERON UM DOUBLE RAM–TYPE PREVENTER (API 16A MONOGRAMMED, 13 5/8"–10M WP), WITH 5" CAMERON PIPE RAMS (CAMRAM FRONT PACKERS & TOP SEALS) IN TOP CAVITY AND CAMERON DS SHEARING BLIND RAMS IN BOTTOM CAVITY. BOTTOM FLANGE x STUDDED TOP (WEIGHT = 21,100 LBS, WITH RAMS)

13 5/8"–10M WP CAMERON DRILLING SPOOL (API 16A MONOGRAMMED), STUDDED TOP x FLANGED BOTTOM. WITH 4 1/16"–10M WP FLANGED OUTLETS (WEIGHT APPROXIMATELY 6,000 LBS)

CAMERON UM SINGLE RAM–TYPE PREVENTER (API 16A MONOGRAMMED, 13 5/8"–10M WP), WITH 5" CAMERON PIPE RAMS (CAMRAM FRONT PACKERS & TOP SEALS) BOTTOM FLANGE x STUDDED TOP WEIGHT = 10,900 LBS

13 5/8–10M STACK



PRELIMINARY
April-14-2011
DRAFTSMAN
ENGINEER

API 6A MONOGRAMMED CAMERON CHOKE AND KILL WING VALVE ASSEMBLIES ARE NOT SHOWN FOR CLARITY

WEIGHTS DO NOT INCLUDE HOSES, ADAPTER SPOOLS OR QUICK CONNECT FITTINGS

REV	DATE	DESCRIPTION	BY
E	12/18/07	ADDED SHEET 03	JAV
D	4–10–07	DESIGNATION REVISED, DOUBLE STUDDED ADAPTER, VALVES 1, 2, & 3, AND HIS CHECK VALVE ADDED	JBG
C	4–04–07	8" ADDED TO SPACER ADAPTER SPOOL	JBG
B	02–07–07	ADDED ADAPTER SPOOL	MWL
A	06–13–02	CORRECTED BOP STACK	MWL

ENGINEERING APPROVAL | DATE

HELMERICH & PAYNE INTERNATIONAL DRILLING CO.

TITLE: 13 5/8"–10M BOP 3 RAM STACK FLEXRIG3

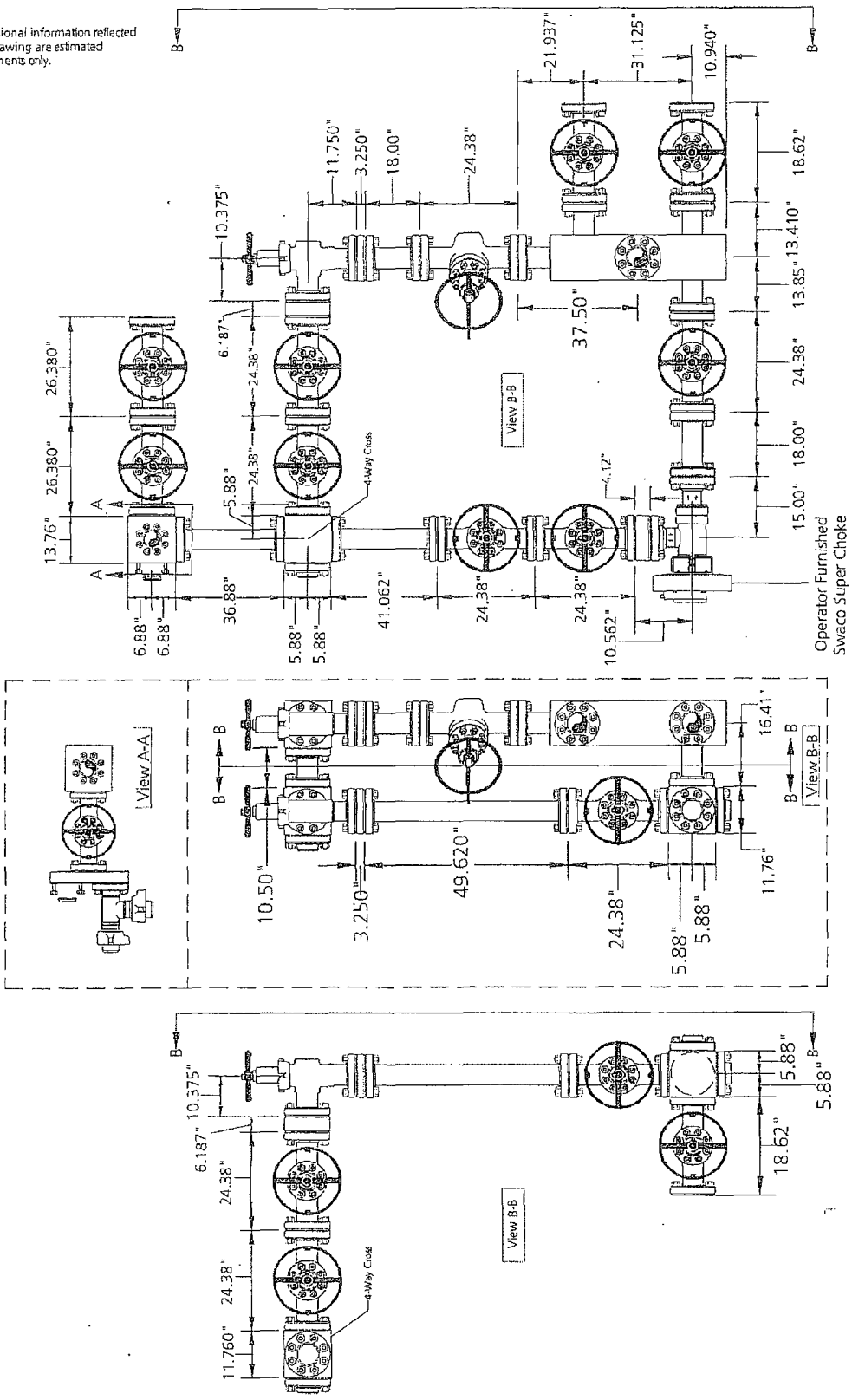
CUSTOMER: H&P

PROJECT: FLEXRIG3

DRAWN: MTS | DATE: 6–5–02 | DWG. NO.: 210–P1–07 | REV: E

SCALE: 3/4"=1" | SHEET: 1 OF 3

Note: Dimensional information reflected on this drawing are estimated measurements only.

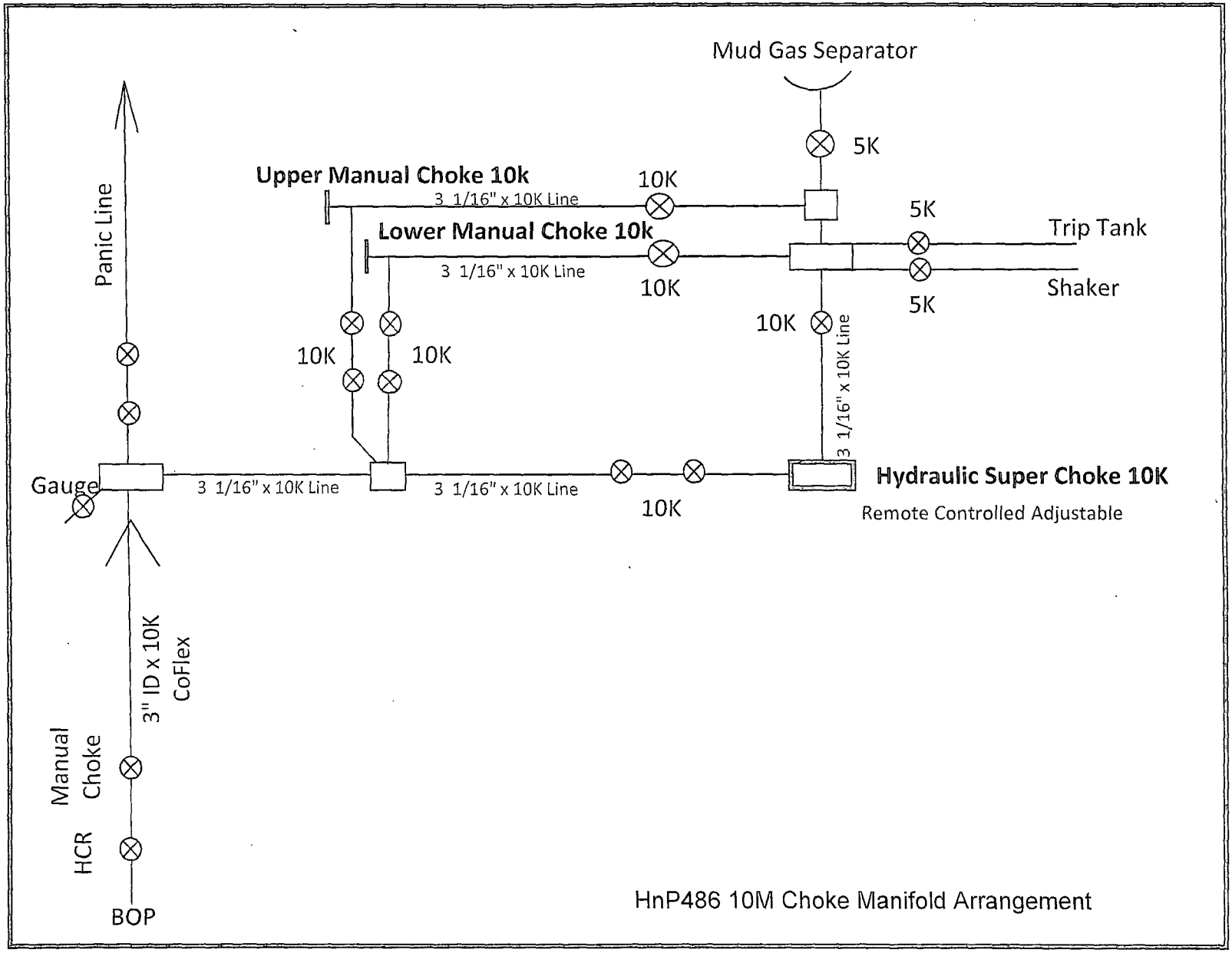


Helmerich & Payne

Rig Flex 3 Manifold with 3rd Choke Run

CAMERON

Name:	Jeanette	Date:	9-9-08	Working Pressure:	#	J-3737-3


Mud Gas Separator
5K
Upper Manual Choke 10k
10K
3 1/16" x 10K Line
5K
Trip Tank
Lower Manual Choke 10k
3 1/16" x 10K Line
10K
5K
Shaker
Panic Line
10K
10K
10K
3 1/16" x 10K Line
Gauge
3 1/16" x 10K Line
3 1/16" x 10K Line
10K
Hydraulic Super Choke 10K
Remote Controlled Adjustable
3" ID x 10K CoFlex
Manual Choke
HCR
BOP
HnP486 10M Choke Manifold Arrangement

Attachment # 1

CONTITECH RUBBER Industrial Kft.	No: QC-DB- 45 / 2012
	Page: 9 / 50

Continental CONTITECH

Hose Data Sheet

CRI Order No.	516273
Customer	ContiTech Beattie Co.
Customer Order No	PO5438 STOCK
Item No.	3
Hose Type	Flexible Hose
Standard	**API SPEC 16 C**
Inside dia in inches	3
Length	35 ft
Type of coupling one end	FLANGE 4 1/16" API SPEC 6A TYPE 6BX FOR 10000 PSIBX155 RING GROOVE
Type of coupling other end	FLANGE 4 1/16" API SPEC 6A TYPE 6BX FOR 10000 PSI BX155 RING GROOVE
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	No
Lifting collar	No
Element C	No
Safety chain	No
Safety wire rope	No
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

Continental ContiTech

Fluid Technology

Quality Document

453-369-001

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE				CERT. N°:	1098
PURCHASER:	ContiTech Beattie Co.			P.O. N°:	004452
CONTITECH ORDER N°:	482598	HOSE TYPE:	3" ID	Choke and Kill Hose	
HOSE SERIAL N°:	56839	NOMINAL / ACTUAL LENGTH:		10,67 m / 10,69 m	
W.P. 68,9 MPa	10000 psi	T.P. 103,4 MPa	15000 psi	Duration: 60	min.

Pressure test with water at ambient temperature

See attachment. (1 page)

↑ 10 mm = 10 Min.

→ 10 mm = 25 MPa

COUPLINGS Type	Serial N°	Quality	Heat N°
3" coupling with	8436 1682	AISI 4130	16837
4 1/16" Flange end		AISI 4130	31296 31501

API Spec 16 C
Temperature rate:"B"

All metal parts are flawless

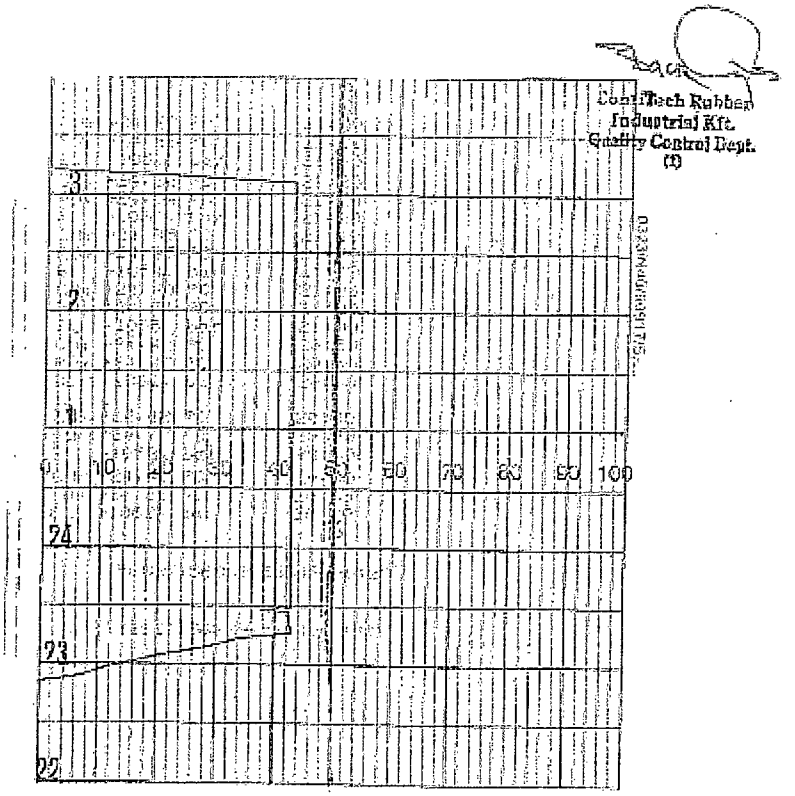
WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER INSPECTED AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.

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
02. November 2010.		ContiTech Rubber Industrial Kft. Quality Control Dept.

ContiTech Rubber Industrial Kft. Phone: +36 62 556 707 Tax Court of Commerce Registry no. Bank data


ContiTech Rubber
Industrial Kft.
Quality Control Dept.
(1)
3
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100
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