

ConocoPhillips, ZIA HILLS 19 FEDERAL COM 103H

1. Geologic Formations

TVD of target	11,820'	Pilot hole depth	N/A
MD at TD:	22,100'	Deepest expected fresh water:	300

Basin

Formation	Depth (TVD) from KB	SSTVD (ft.)	Water/Mineral Bearing/Target Zone	Hazards *
Quaternary Fill	Surface	0	Water	
Base of Fresh Water	300	300	Water	
Rustler	1,119	2060	Water	
Top of Salt / Salado	1,279	1900	Mineral	
Castile	2,629	550	Mineral	
Delaware Top / Base Salt	4,229	-1050	O & G	
Ford Shale	4,354	-1175	O & G	
Cherry Canyon	5,154	-1975	O & G	
Brushy Canyon	6,629	-3450	O & G	
Bone Springs	8,029	-4850	O & G	
Bone Springs 3 rd Carb	10,339	-1760	O & G	
WolfCamp	11,379	-8200	O & G	
WolfCamp 1	11,604	-8425	O & G	

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

2. Casing Program

ConocoPhillips Company respectfully requests to approve the following 3-string casing and cementing program with the 8-5/8" casing set in the Bone Spring 3rd Carb. The intent for the casing and cementing program:

- Drill 14-3/4" surface hole to Rustler.
- Drill 10-5/8" hole from Rustler to Bone Spring 3rd Carb with the same density mud (OBM or Saturated Brine).
- Case and cement the well with 11-3/4" surface, 10-5/8" intermediate and 5-1/2" production casing (3-strings).
- Isolate the Salt & Delaware utilizing Annulus Casing Packer and Stage Tool with 2-Stage Cement or Remediate with Bradenhead Squeeze if necessary.
- Bring cement for 11-3/4" casing and 8-5/8" casing to surface. Cement 5-1/2" casing to lap inside 8-5/8" casing shoe.
- 5-1/2" TXP buttress Casing Connection in 7-7/8" OH for minimum of 0.422 in clearance per Onshore Oil and Gas Order #2 III.B.

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Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
14.75"	0	1170	11.75"	47.0	J55	BTC	2.89	5.87	15.4
10.875"	0	11420	8.625"	32.0	P110	BTC	**2.04	1.55	3.53
7.875"	0	22100	5.5"	20.0	P110	TXP	1.50	1.71	2.29
BLM Minimum Safety Factor							1.125	1.00	1.6 Dry 1.8 Wet

**COP Collapse Design: 1/3 Partial Evacuation to the next casing depth (TVD).

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

	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?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	Y
If yes, are the first 2 strings cemented to surface and 3 rd string cement tied back 500' into previous casing?	Y
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 nd string set 100' to 600' below the base of salt?	
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?	

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3. Cementing Program

Option 1:

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H ₂ O gal/sk	500# Comp. Strength (Estimated hours)	Slurry Description
Surf.	470	13.5	1.68	8.94	8	Lead: Class C + 4.0% Bentonite + 0.2% Anti-Foam + 2.0% CaCl ₂ + 0.125lb/sk LCM + 0.1% Dispersant.
	240	14.8	1.35	6.38	7	Tail: Class C + 0.2% Anti-Foam + 0.1% Lost Circ Control
Inter.	800	11.0	2.7	16.5	18	Lead: Class C 75.00 lb/sk BWOB D049 + 1.00 % BWOB D013 Retarder + 10.00 % BWOB D020 Extender + 0.02 gal/sk VBWOB D047 Anti foam + 2.00 % BWOB D154 Extender + 0.15 % BWOB D208 Viscosifier
	570	13.5	1.29	6.02	7	Tail: Class C 75.00 lb/sk BWOB D049 + 0.50 % BWOB D013 Retarder + 1.00 % BWOB D020 Extender + 3.00 lb/sk WBWOB D042 Extender + 0.02 gal/sk VBWOB D047 Anti foam + 0.10 % BWOB D065 Dispersant + 0.13 lb/sk WBWOB D130 Lost Circulation + 0.30 % BWOB D238 Fluid loss
Prod.	2290	16.4	1.08	4.38	10	Tail: Class H + 1.00 % BWOB D020 Extender + 0.02 gal/sk VBWOB D047 Anti Foam + 0.10 % BWOB D065 Dispersant + 0.15 % BWOB D255 Fluid loss + 0.30 % BWOB D800 Retarder
	DV/ACP Tool: NO					

Option 2:

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H ₂ O gal/sk	500# Comp. Strength (Estimated hours)	Slurry Description
Surf.	470	13.5	1.68	8.94	8	Lead: Class C + 4.0% Bentonite + 0.2% Anti-Foam + 2.0% CaCl ₂ + 0.125lb/sk LCM + 0.1% Dispersant.
	240	14.8	1.35	6.38	7	Tail: Class C + 0.2% Anti-Foam + 0.1% Lost Circ Control
Inter.	370	11.0	2.7	16.5	18	Lead: Class C 75.00 lb/sk BWOB D049 + 1.00 % BWOB D013 Retarder + 10.00 % BWOB D020 Extender + 0.02 gal/sk VBWOB D047 Anti foam + 2.00 % BWOB D154 Extender + 0.15 % BWOB D208 Viscosifier

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	570	13.5	1.29	6.02	7	Tail: Class C 75.00 lb/sk BWOB D049 + 0.50 % BWOB D013 Retarder + 1.00 % BWOB D020 Extender + 3.00 lb/sk WBWOB D042 Extender + 0.02 gal/sk VBWOB D047 Anti foam + 0.10 % BWOB D065 Dispersant + 0.13 lb/sk WBWOB D130 Lost Circulation + 0.30 % BWOB D238 Fluid loss
	DV/ACP Tool: 4,200'					
	420	11.0	3.10	19.03	15	2nd Stage Lead: Class 'C' + 2.00 % BWOB Extender + 3.40 lb/sk WBWOB D042 Extender + 0.02 gal/sk VBWOB D047 Anti Foam + 2.00 % BWOB D079 Extender + 5.00 % BWOB D154 Extender + 1.00 % BWOB S001 CaCl2
Prod.	2290	16.4	1.08	4.38	10	Tail: Class H + 1.00 % BWOB D020 Extender + 0.02 gal/sk VBWOB D047 Anti Foam + 0.10 % BWOB D065 Dispersant + 0.15 % BWOB D255 Fluid loss + 0.30 % BWOB D800 Retarder
	DV/ACP Tool: NO					

DV tool depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.

Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess in OH
Surface	0'	>100%
Intermediate	0'	>30%
Production	10,200'	>15%

Include Pilot Hole Cementing specs: NO PILOT HOLE.

Pilot hole depth N/A

KOP

Plug top	Plug Bottom	% Excess	No. Sacks	Wt. lb/gal	Yld ft3/sack	Water gal/sk	Slurry Description and Cement Type

4. Pressure Control Equipment

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N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
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BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
10-5/8"	11" or 13-5/8"	10M	Annular	x	50% of working pressure
			Blind Ram	x	100% of working pressure
			Pipe Ram	x	
			Double Ram	x	
			Other*		
7-7/8"	11" or 13-5/8"	10M	Annular	x	50% of working pressure
			Blind Ram	x	100% of working pressure
			Pipe Ram	x	
			Double Ram	x	
			Other*		

*Specify if additional ram is utilized.

Note: A 11" or 13-5/8" BOPE will be utilize depending on availability and Rig Substructure Clearance.

BOP/BOPE will be isolated from the casing and tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. BOPE controls will be installed prior to drilling under the surface casing and will be used until the completion of drilling operations. The intermediate interval and the production interval will be tested per 10M working system requirements.

Pipe rams will be operationally checked each 24-hour period. Choke manifold will have one remotely operated valve and a manual adjustable valve in front of the choke manifold, as detailed in the Onshore Order 2. It currently contains one 10M hydraulic choke for a total of three choke branches (two manual and one hydraulic). 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.

A Spudder Rig may be used to drill the surface and/or intermediate hole for economical reason depending on availability.

The wellhead will be installed and tested as soon as the surface casing is cemented. Prior to drilling out the surface casing, ConocoPhillips shall nipple up a 10M BOPE & choke arrangement with 10M components and test to the rated working pressure of a 10M BOPE system as it is subjected to the maximum anticipated surface pressure 5697 psi. The pressure test to MASP and 50% for annular shall be performed with a test plug after installing the casing head and nipping up the 5M BOPE system prior to drilling out the surface casing.

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However, ConocoPhillips shall nipple up a 10M BOPE with 5M Annular Preventer if drilling out surface casing with Primary Rig.

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	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart. See attached data sheet & certification.
N	Are anchors required by manufacturer?
Y	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. See attached schematic.

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	1,170	Spud Mud	8.34 - 8.6	32-36	N/C
0	11,420	Cut-Brine or OBM	8.6-9.4	30-40	≤5
0	21,838	Oil Base Mud	9.5-13.5	30-40	≤5

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/MDTotco/Visual Monitoring
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6. Logging and Testing Procedures

Logging, Coring and Testing.	
x	GR from 200' above KOP to TD (GR as part of the BHA while drilling).
	No Logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain
	Coring? If yes, explain
x	Dry samples taken 30' from intermediate 1 casing point to TD.

Additional logs planned		Interval
	Resistivity	
	Density	
	CBL	
x	Mud log	
	PEX	

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7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	8297 psi
Abnormal Temperature	No

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

Hydrogen Sulfide (H₂S) monitors will be installed prior to drilling out the surface shoe. If H₂S 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.

N	H ₂ S is present
Y	H ₂ S Plan attached

8. Other facets of operation

Is this a walking operation? If yes, describe. Yes, please see below.

Will be pre-setting casing? If yes, describe. Yes, please see below.

Spudder Rig and Batch Drilling Operations:

A blind flange cap of the same pressure rating as the wellhead will be secured to seal the wellbore on all casing strings. Pressure will be monitored via flanged port tied to a needle valve and pressure gauge to monitor pressures on each wellhead section and a means for intervention will be maintained while the drilling rig is not over the well.

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Attachments:

- Attachment#1: Directional Plan.
- Attachment#2: Wellbore Casing & Cementing Schematic.
- Attachment #3: Special (Premium) Connections.
- Attachment#4: Wellhead Schematic.
- Attachment #5: BOP Schematic.
- Attachment #6: Choke Schematic.
- Attachment #7: Flex Hose Documentation.
- Attachment #8: Rig Layout.

Option 2:

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H ₂ O gal/sk	500# Comp. Strength (Estimated hours)	Slurry Description
Surf.	470	13.5	1.68	8.94	8	Lead: Class C + 4.0% Bentonite + 0.2% Anti-Foam + 2.0% CaCl ₂ + 0.125lb/sk LCM + 0.1% Dispersant.
	240	14.8	1.35	6.38	7	Tail: Class C + 0.2% Anti-Foam + 0.1% Lost Circ Control
Inter.	370	11.0	2.7	16.5	18	Lead: Class C 75.00 lb/sk BWOB D049 + 1.00 % BWOB D013 Retarder + 10.00 % BWOB D020 Extender + 0.02 gal/sk VBWOB D047 Anti foam + 2.00 % BWOB D154 Extender + 0.15 % BWOB D208 Viscosifier
	570	13.5	1.29	6.02	7	Tail: Class C 75.00 lb/sk BWOB D049 + 0.50 % BWOB D013 Retarder + 1.00 % BWOB D020 Extender + 3.00 lb/sk WBWOB D042 Extender + 0.02 gal/sk VBWOB D047 Anti foam + 0.10 % BWOB D065 Dispersant + 0.13 lb/sk WBWOB D130 Lost Circulation + 0.30 % BWOB D238 Fluid loss
	DV/ACP Tool: 4,200'					
	420	11.0	3.10	19.03	15	2nd Stage Lead: Class 'C' + 2.00 % BWOB Extender + 3.40 lb/sk WBWOB D042 Extender + 0.02 gal/sk VBWOB D047 Anti Foam + 2.00 % BWOB D079 Extender + 5.00 % BWOB D154 Extender + 1.00 % BWOB S001 CaCl ₂
Prod.	2290	16.4	1.08	4.38	10	Tail: Class H + 1.00 % BWOB D020 Extender + 0.02 gal/sk VBWOB D047 Anti Foam + 0.10 % BWOB D065 Dispersant + 0.15 % BWOB D255 Fluid loss + 0.30 % BWOB D800 Retarder
	DV/ACP Tool: NO					



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

Drilling Plan Data Report

11/16/2017

APD ID: 10400015525

Submission Date: 07/13/2017

Highlighted data
reflects the most
recent changes

Operator Name: CONOCOPHILLIPS COMPANY

Well Name: ZIA HILLS 19 FEDERAL COM

Well Number: 103H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	QUATERNARY	3179	0	0		NONE	No
2	RUSTLER	2060	1119	1119	DOLOMITE, ANHYDRITE	NONE	No
3	SALADO	1900	1279	1279	SALT	NONE	No
4	CASTILE	550	2629	2629	SALT	NONE	No
5	DELAWARE	-1050	4229	4229	SANDSTONE	NATURAL GAS, OIL	No
6	CHERRY CANYON	-1975	5154	5154	SANDSTONE	NATURAL GAS, OIL	No
7	BRUSHY CANYON	-3450	6629	6629	SANDSTONE	NATURAL GAS, OIL	No
8	BONE SPRING	-4850	8029	8029	SANDSTONE	NATURAL GAS, OIL	No
9	BONE SPRING 1ST	-6025	9204	9204	SANDSTONE	NATURAL GAS, OIL	No
10	BONE SPRING 2ND	-6700	9879	9879	SANDSTONE	NATURAL GAS, OIL	No
11	BONE SPRING 3RD	-7160	10339	10339	LIMESTONE	NATURAL GAS, OIL	No
12	WOLFCAMP	-8200	11379	11379	LIMESTONE, SHALE, SANDSTONE	NATURAL GAS, OIL	Yes

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M

Rating Depth: 22100

Equipment: Rotating Head, Annular Preventer, Pipe/Blind Rams, Kill Lines, Choke Lines, Adapter Spool

Requesting Variance? YES

Variance request: A variance to use flexible choke line(s) from the BOP to Choke Manifold. Testing certificate is attached in "Flexhose Variance data" document. A variance to use a multibowl wellhead system. Please see attached in section 8 of drilling plan.

Testing Procedure: BOP/BOPE will be isolated from the casing and tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. BOPE controls will be installed prior to drilling

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under the surface casing and will be used until the completion of drilling operations. The intermediate interval and the production interval will be tested per 10M working system requirements. See attached "Drill Plan" document.

Choke Diagram Attachment:

Zia_Hills_19_Pad_1_Choke_Manifold_07-11-2017.pdf

BOP Diagram Attachment:

Zia_Hills_19_Pad_1_BOPE_07-11-2017.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	14.75	11.75	NEW	API	N	0	1170	0	1170	-8641	-9811	1170	J-55	47	OTHER - BTC	2.89	5.87	DRY	15.4	DRY	15.4
2	INTERMEDIATE	10.875	8.625	NEW	API	N	0	11420	0	10410	-8641	-19051	11420	P-110	32	OTHER - BTC	2.04	1.55	DRY	3.53	DRY	3.53
3	PRODUCTION	7.875	5.5	NEW	API	N	0	22100	0	22100	-8641	-30741	22100	P-110	20	OTHER - TXP	1.5	1.71	DRY	2.29	DRY	2.29

Casing Attachments

Casing ID: 1 String Type: SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

ZIA_HILLS_19_Fed_COM_103H_csg_design_07-11-2017.pdf

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Casing Attachments

Casing ID: 2 String Type: INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

ZIA_HILLS_19_Fed_COM_103H_csg_design_07-11-2017.pdf

Casing ID: 3 String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Zia_Hills_19_Pad_1_Production_csg_specification_07-05-2017.pdf

ZIA_HILLS_19_Fed_COM_103H_csg_design_07-11-2017.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	1170	470	1.68	13.5	789.6	100	Class C	+ 4.0% Bentonite + 0.2% Anti-Foam + 2.0% CaCl2 + 0.125lb/sk LCM + 0.1% Dispersant.
SURFACE	Tail				240	1.35	14.48	324	100	Class C	+ 0.2% Anti-Foam + 0.1% Lost Circ Control
INTERMEDIATE	Lead		0	11420	800	2.7	11	2160	30	Class C	75.00 lb/sk BWOB D049 + 1.00 % BWOB D013 Retarder + 10.00

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String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
											% BWOB D020 Extender + 0.02 gal/sk VBWOB D047 Anti foam + 2.00 % BWOB D154 Extender + 0.15 % BWOB D208 Viscosifier
INTERMEDIATE	Tail				570	1.29	13.5	735.3	30	Class C	75.00 lb/sk BWOB D049 + 0.50 % BWOB D013 Retarder + 1.00 % BWOB D020 Extender + 3.00 lb/sk WBWOB D042 Extender + 0.02 gal/sk VBWOB D047Anti foam + 0.10 % BWOB D065 Dispersant + 0.13 lb/sk WBWOB D130 Lost Circula + 0.30 % BWOB D238 Fluid loss
PRODUCTION	Lead		0	2210 0	0	0	0	0	0	No lead	No lead
PRODUCTION	Tail				2290	1.08	16.4	2473. 2	15	Class H	+ 1.00 % BWOB D020 Extender + 0.02 gal/sk VBWOB D047 Anti Foam + 0.10 % BWOB D065 Dispersant + 0.15 % BWOB D255 Fluid loss + 0.30 % BWOB D800 Retarder

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: Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times. See attached "Drill Plan" for additional information.

Describe the mud monitoring system utilized: Closed-loop mud system using steel mud containers will be on location. Mud monitoring of any changes in levels (gains or losses) will use Pressure Volume Temperature, Pason, Visual Observations. See attached "Drill Plan" for additional information.

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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
0	2210 0	OIL-BASED MUD	9.5	13.5							
0	1170	SPUD MUD	8.34	8.6							
0	1142 0	OIL-BASED MUD	8.6	9.4							

Section 6 - Test, Logging, Coring

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

Production tests will be conducted multiple times per week, through a test separator, during first months following completion. Thereafter, tests will be less frequently. See attached "Drill Plan" for additional information.

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

GR

Coring operation description for the well:

No coring operation is planned, at this time

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 8297

Anticipated Surface Pressure: 5696.6

Anticipated Bottom Hole Temperature(F): 205

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

Describe:

Contingency Plans geohazards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

ZIA_HILLS_19_Federal_COM_103H_H2S_C_Plan_06-29-2017.pdf

Zia_Hills_19_Pad_1_Rig_Layout_07-05-2017.pdf

Operator Name: CONOCOPHILLIPS COMPANY

Well Name: ZIA HILLS 19 FEDERAL COM

Well Number: 103H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Zia_Hills_19_Federal_COM_103H__Directional_Drill_Plan_07-03-2017.pdf

Zia_Hills_19_Federal_COM_103H_Section_View_07-11-2017.pdf

Zia_Hills_19_Federal_COM_103H_Wellbore_Schematic_20170830095101.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

Zia_Hills_19_Pad_1_Drill_Waste_Containment_07-03-2017.pdf

Zia_Hills_19_Pad_1_Gas_Capture_Plan_07-11-2017.pdf

ZIA_HILLS_19_103H_Drilling_Plan_20170914130658.pdf

Option_2_for_cement_plan_20170914130753.pdf

Other Variance attachment:

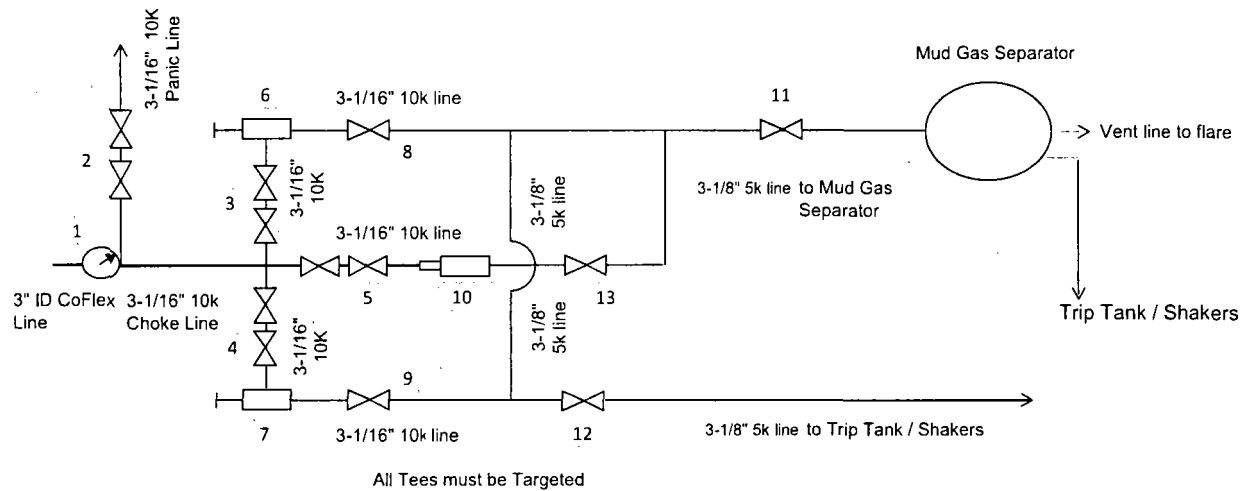
Zia_Hills_19_Pad_1_Generic_WH_07-03-2017.pdf

Zia_Hills_19_Pad_1_Flexhose_Variance_07-05-2017.pdf

Zia_Hills_19_Pad_1_Running_Procedure_2_20170914130806.pdf

CHOKE MANIFOLD ARRANGEMENT - 10M Choke

per Onshore Oil and Gas Order No. 2 utilizing 5M/10M Equipment



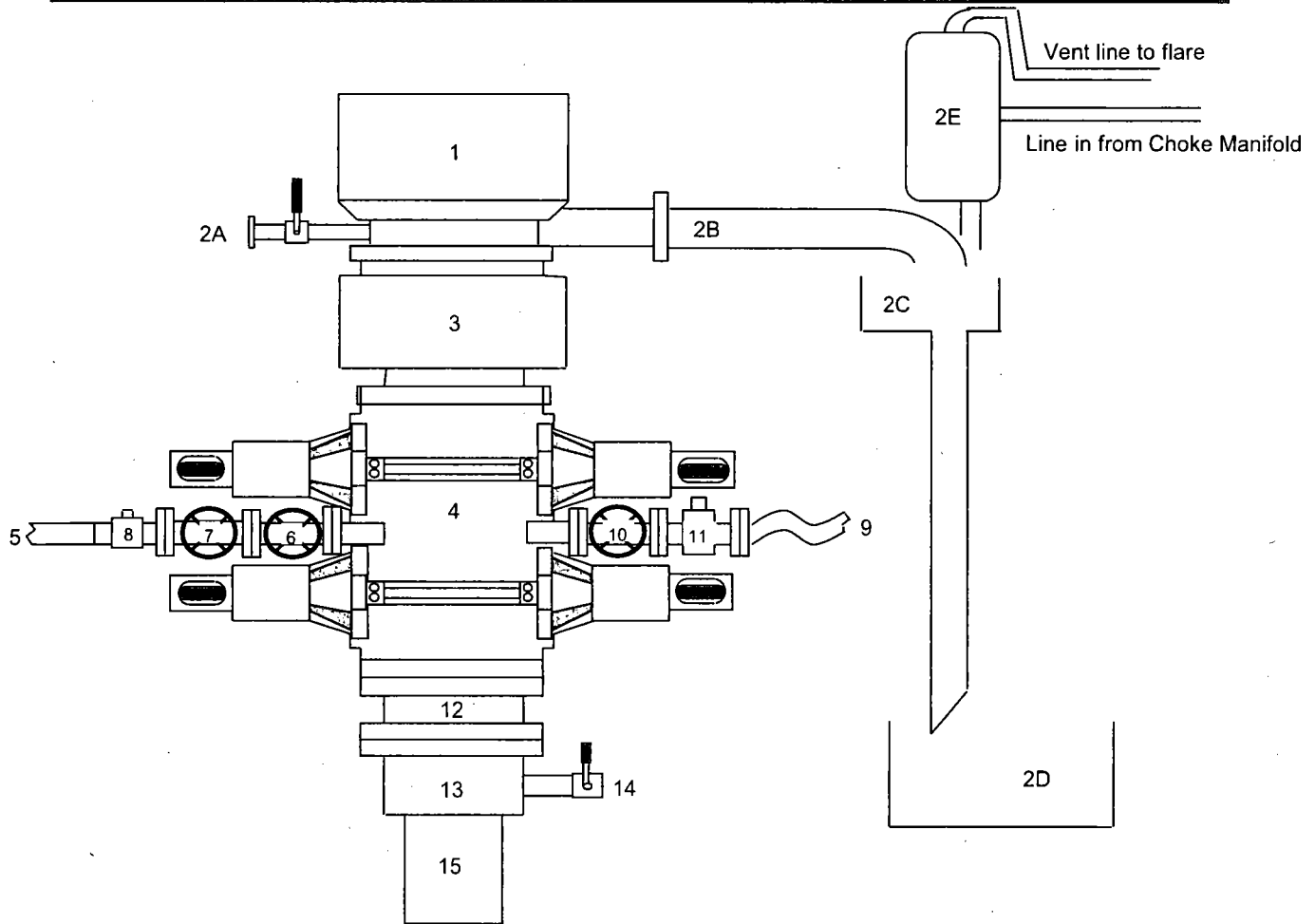
Item	Description
1	Pressure Gauge
2	2 Gate Valves, 3-1/16" 10M
3	2 Gate Valves, 3-1/16" 10M
4	2 Gate Valves, 3-1/16" 10M
5	2 Gate Valves, 3-1/16" 10M
6	Upper Manual Adjustable Choke, 4-1/16", 10M
7	Lower Manual Adjustable Choke, 4-1/16", 10M
8	Gate Valve, 3-1/16" 10M
9	Gate Valve, 3-1/16" 10M
10	Remote Controlled Hydraulic Adjustable Choke, 4-1/16", 10M
11	Gate Valve, 3-1/8" 5M
12	Gate Valve, 3-1/8" 5M
13	Gate Valve, 3-1/16" 10M

The 10M Choke Manifold & Valves will be tested to rated working pressure.

*Choke manifold will have one remotely operated valve and a manual adjustable valve in front of the choke manifold, as detailed in the Onshore Order 2. It currently contains one 10M hydraulic choke for a total of three choke branches (two manual and one hydraulic).

BLOWOUT PREVENTER ARRANGEMENT - 13-5/8" 5M BOPE

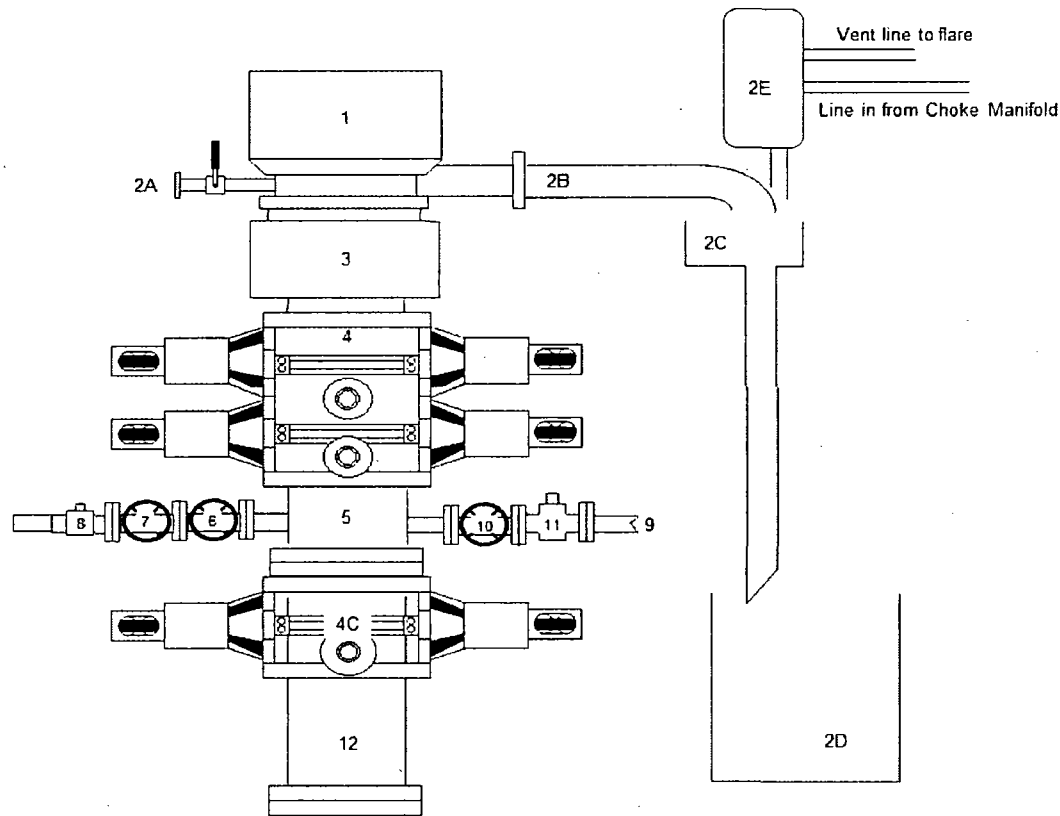
per Onshore Oil and Gas Order No. 2 utilizing 5M Rated Equipment



Item	Description
1	Rotating Head, 13-5/8"
2A	Fill up Line and Valve
2B	Flow Line (10")
2C	Shale Shakers and Solids Settling Tank
2D	Cuttings Bins for Zero Discharge
2E	Rental Mud Gas Separator with vent line to flare and return line to mud system
3	Annular BOP (13-5/8", 5M)
4	Double Ram (13-5/8", 5M, Blind Ram top x Pipe Ram bottom)
5	Kill Line (2" flexible hose, 5M)
6	Kill Line Valve, Inner (2-1/16", 5M)
7	Kill Line Valve, Outer (2-1/16", 5M)
8	Kill Line Check Valve (2-1/16", 5M)
9	Choke Line (3-1/8", 5M Stainless Steel Coflex Line)
10	Choke Line Valve, Inner (3-1/8", 5M)
11	Choke Line Valve, Outer (3-1/8", 5M, Hydraulically operated, 5M)
12	Spacer Spool (13-5/8", 5M)
13	Casing Head (13-5/8" 5M)
14	Ball Valve and Threaded Nipple on Casing Head Outlet, 2" 5M
15	Surface Casing

BLOWOUT PREVENTER ARRANGEMENT - 11" 10M BOPE

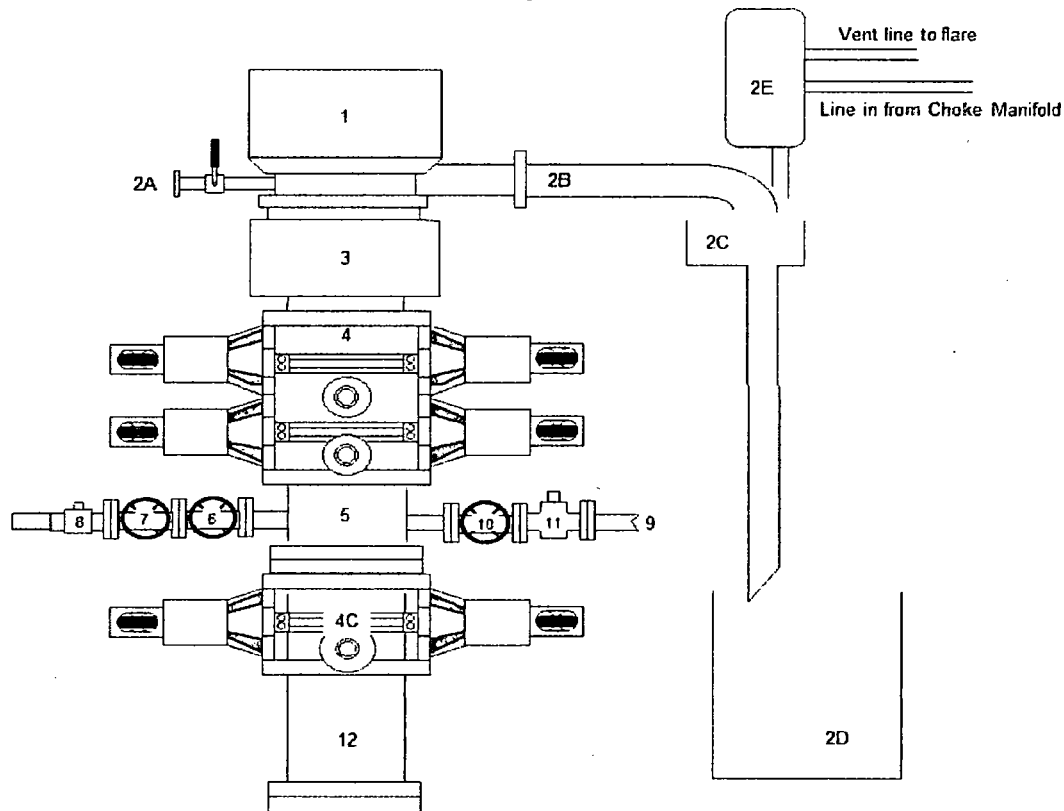
per Onshore Oil and Gas Order No. 2 utilizing 10M Rated Equipment



Item	Description
1	Rotating Head
2A	Fill up Line and Valve
2B	Flow Line (10")
2C	Shale Shakers and Centrifuges
2D	Cuttings Bins for Zero Discharge
2E	Mud Gas Separator with vent line to flare and return line to mud system
3	Annular Preventer (11", 10M)
4	Double Ram (11", 10M, Pipe Ram top x Blind Ram bottom)
5	Drilling Spool (11" 10M)
4C	Single Ram (11", 10M, Pipe Rams)
6	Kill Line Gate Valve, Inner (2-1/16", 10M)
7	Kill Line Gate Valve, Outer (2-1/16", 10M)
8	Kill Line Check Valve (2-1/16", 10M)
9	CoFlex Choke Line (4-1/16", 10M)
10	Choke Line Gate Valve, Inner (4-1/16", 10M)
11	Choke Line Hydraulically Operated Gate Valve, Outer, (4-1/6" 10M w/ Double Acting
12	HCR) Drilling Spool Adapter (11", 10M)

BLOWOUT PREVENTER ARRANGEMENT - 13-5/8" 10M BOPE

per Onshore Oil and Gas Order No. 2 utilizing 10M Rated Equipment



Item	Description
1	Rotating Head
2A	Fill up Line and Valve
2B	Flow Line (10")
2C	Shale Shakers and Centrifuges
2D	Cuttings Bins for Zero Discharge
2E	Mud Gas Separator with vent line to flare and return line to mud system
3	Annular Preventer (13-5/8", 10M)
4	Double Ram (13-5/8", 10M, Pipe Ram top x Blind Ram bottom)
5	Drilling Spool (13-5/8" 10M)
4C	Single Ram (13-5/8", 10M, Pipe Rams)
6	Kill Line Gate Valve, Inner (2-1/16", 10M)
7	Kill Line Gate Valve, Outer (2-1/16", 10M)
8	Kill Line Check Valve (2-1/16", 10M)
9	CoFlex Choke Line (4-1/16", 10M)
10	Choke Line Gate Valve, Inner (4-1/16", 10M)
11	Choke Line Hydraulically Operated Gate Valve, Outer, (4-1/6" 10M w/ Double Acting HCR)
12	Drilling Spool Adapter (13-5/8", 10M)

Type	Depth	MD	TVD	Csg length ft	Wt	MW	Col	Tensile	Drill Fluid
Surface Casing	10410	10410	10379	10410	32	7860	3420	1006000	9.4
Intermediate 1 Casing	1170	1170	1170	1170	47	3070	1510	737000	8.6
Intermediate 2 Casing	0	0	0	0	0	0	0	0	0
Production 1 Casing	22100	11820	22100	22100	29	12630	11100	641000	12
Production 2 Casing									

Burst Design (Safety) Factors - BLM Criteria

- Where
- SFb = PI / BHP
- Burst Design (Safety) Factor: SFb
- PI is the rated pipe burst (Minimum Internal Yield) Pressure in pounds per square inch (psi)
- BHP is bottom hole pressure in pounds per square inch (psi)
- The Minimum Acceptable Burst Design (Safety) Factor SFb = 1.0

Collapse Design (Safety) Factors - BLM Criteria

- Where
- SFc = P_c / (MW x .052 x Ls)
- Collapse Design (Safety) Factor: SFc
- P_c is the rated pipe collapse pressure in pounds per square inch (psi)
- MW is mud weight in pounds per gallon (ppg)
- Ls is the length of the string in feet (ft)
- The Minimum Acceptable Collapse Design (Safety) Factor SFc = 1.125

Joint Strength Design (Safety) Factors - BLM Criteria

- Where
- SFj = F_j / MW
- Joint Strength Design (Safety) Factor: SFj
- F_j is the rated pipe joint strength in pounds (lbs)
- Wt is the weight of the casing string in pounds (lbs)
- The Minimum Acceptable Joint Strength Design (Safety) Factor SFj = 1.8 dry or 1.8 buoyant

Surface Casing	SFb =	3070	/	523	=	5.87	Surface Casing	SF _c =	1510	/	523	=	2.89	Surface Casing	SF _j Dry =	737000	/	54990	=	13.4	Surface Casing	SF _j Buoyant =	737000	/	0.869	=	15.4
Intermediate 1 Casing	SFb =	7860	/	5073	=	1.55	Intermediate 1 Casing	SF _c =	3420	/	5073	=	0.67	Intermediate 1 Casing	SF _j Dry =	1006000	/	333120	=	3.02	Intermediate 1 Casing	SF _j Buoyant =	1006000	/	0.856	=	3.53
Intermediate 2 Casing	SFb =	0	/	0	=	#DIV/0!	Intermediate 2 Casing	SF _c =	0	/	0	=	#DIV/0!	Intermediate 2 Casing	SF _j Dry =	0	/	0	=	#DIV/0!	Intermediate 2 Casing	SF _j Buoyant =	0	/	0	=	#DIV/0!
Production 1 Casing	SFb =	12630	/	7376	=	1.71	Production 1 Casing	SF _c =	11100	/	7376	=	1.50	Production 1 Casing	SF _j Dry =	641000	/	342780	=	1.87	Production 1 Casing	SF _j Buoyant =	641000	/	0.817	=	2.29
Production 2 Casing	SFb =	0	/	0	=	#DIV/0!	Production 2 Casing	SF _c =	0	/	0	=	#DIV/0!	Production 2 Casing	SF _j Dry =	0	/	0	=	#DIV/0!	Production 2 Casing	SF _j Buoyant =	0	/	0	=	#DIV/0!

Uses TVD!!!!

Depth	MD	TD	length	Csg	WT	MY	Col	Tensile	Drm Fluid
1170	1170	1170	1170	47	3070	1510	737000	8.6	
10410	10379	10410	32	7860	3420	1006000	9.4		
22100	11820	22100	29	12630	11100	641000	12		

Uses TVDi III

Joint Strength Design (Safety) Factors – BLM Criteria

- FJ is the rated pipe joint strength in pounds (lbs)
- WJ is the weight of the casing string in pounds (lbs)

The Minimum Acceptable Joint Strength Design (Safety) Factor SFT = 1.5 dry or 1.8 buoyant

Collapse Design (Safety) Factors – BLM Criteria

Collapse Design (Safety) Factor, SFC

$$SFC = P_c / (MW \times 0.052 \times L_b)$$

Where

- P_c is the rated pipe Collapse Pressure in pounds per square inch (psi)

Burst Design (Safety) Factors – BLM Criteria

Burst Design (Safety) Factor: SFB

Where

- PI is the rated pipe Burst (Minimum Internal Yield) Pressure in pounds per square inch (psi)
- BHP is bottom hole pressure in pounds per square inch (psi)

The Minimum Acceptable Burst Design (Safety) Factor: $SFB = 1.0$

The Minimum Acceptable Collapse Design (Safety) Factor SFC = 1.125

The Minimum Acceptable Burst Design (Safety) Factor $SFB = 1.0$

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Production Casing Specification Sheet

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

August 29 2016



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

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

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	11100 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	11100 psi				

ESTIMATED MAKE-UP TORQUES⁽³⁾

Minimum	11270 ft-lbs	Optimum	12520 ft-lbs	Maximum	13770 ft-lbs
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OPERATIONAL LIMIT TORQUES

Operating Torque	21500 ft-lbs	Yield Torque	23900 ft-lbs		
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Type	Depth MD	Depth TVD	Csg length ft	Wt	MIY	Col	Tensile	Drill Fluid
Surface Casing	1170	1170	1170	47	3070	1510	737000	8.6
Intermediate 1 Casing	10410	10379	10410	32	7860	3420	1006000	9.4
Intermediate 2 Casing	0	0	0					
Production 1 Casing	22100	11820	22100	29	12630	11100	641000	12
Production 2 Casing								

Uses TVD!!!!

Burst Design (Safety) Factors – BLM Criteria

Burst Design (Safety) Factor: SFb

SFb = Pi / BHP

Where

- Pi is the rated pipe Burst (Minimum Internal Yield) Pressure in pounds per square inch (psi)
- BHP is bottom hole pressure in pounds per square inch (psi)

The Minimum Acceptable Burst Design (Safety) Factor SFb = 1.0

Surface Casing

SFb = 3070 / 523 = 5.87

Intermediate 1 Casing

SFb = 7860 / 5073 = 1.55

Intermediate 2 Casing

SFb = 0 / 0 = #DIV/0!

Production 1 Casing

SFb = 12630 / 7376 = 1.71

Production 2 Casing

SFb = 0 / 0 = #DIV/0!

Collapse Design (Safety) Factors – BLM Criteria

Collapse Design (Safety) Factor: SFc

SFc = Pc / (MW x .052 x Ls)

Where

- Pc is the rated pipe Collapse Pressure in pounds per square inch (psi)
- MW is mud weight in pounds per gallon (ppg)
- Ls is the length of the string in feet (ft)

The Minimum Acceptable Collapse Design (Safety) Factor SFc = 1.125

Surface Casing

SFc = 1510 / 523 = 2.89

Intermediate 1 Casing

SFc = 3420 / 5073 = 0.67

Intermediate 2 Casing

SFc = 0 / 0 = #DIV/0!

Production 1 Casing

SFc = 11100 / 7376 = 1.50

Production 2 Casing

SFc = 0 / 0 = #DIV/0!

Joint Strength Design (Safety) Factors – BLM Criteria

Joint Strength Design (Safety) Factor: SFI

SFI = Fj / Wt

Where

- Fj is the rated pipe Joint Strength in pounds (lbs)
- Wt is the weight of the casing string in pounds (lbs)

The Minimum Acceptable Joint Strength Design (Safety) Factor SFI = 1.6 dry or 1.8 buoyant

Surface Casing

SFI Dry = 737000 / 54990 = 13.4
SFI Bouyant = 737000 / (54990 x 0.869) = 15.4

Intermediate 1 Casing

SFI Dry = 1006000 / 333120 = 3.02
SFI Bouyant = 1006000 / (333120 x 0.856) = 3.53

Intermediate 2 Casing

SFI Dry = 0 / 0 = #DIV/0!
SFI Bouyant = 0 / (0 x 1.000) = #DIV/0!

Production 1 Casing

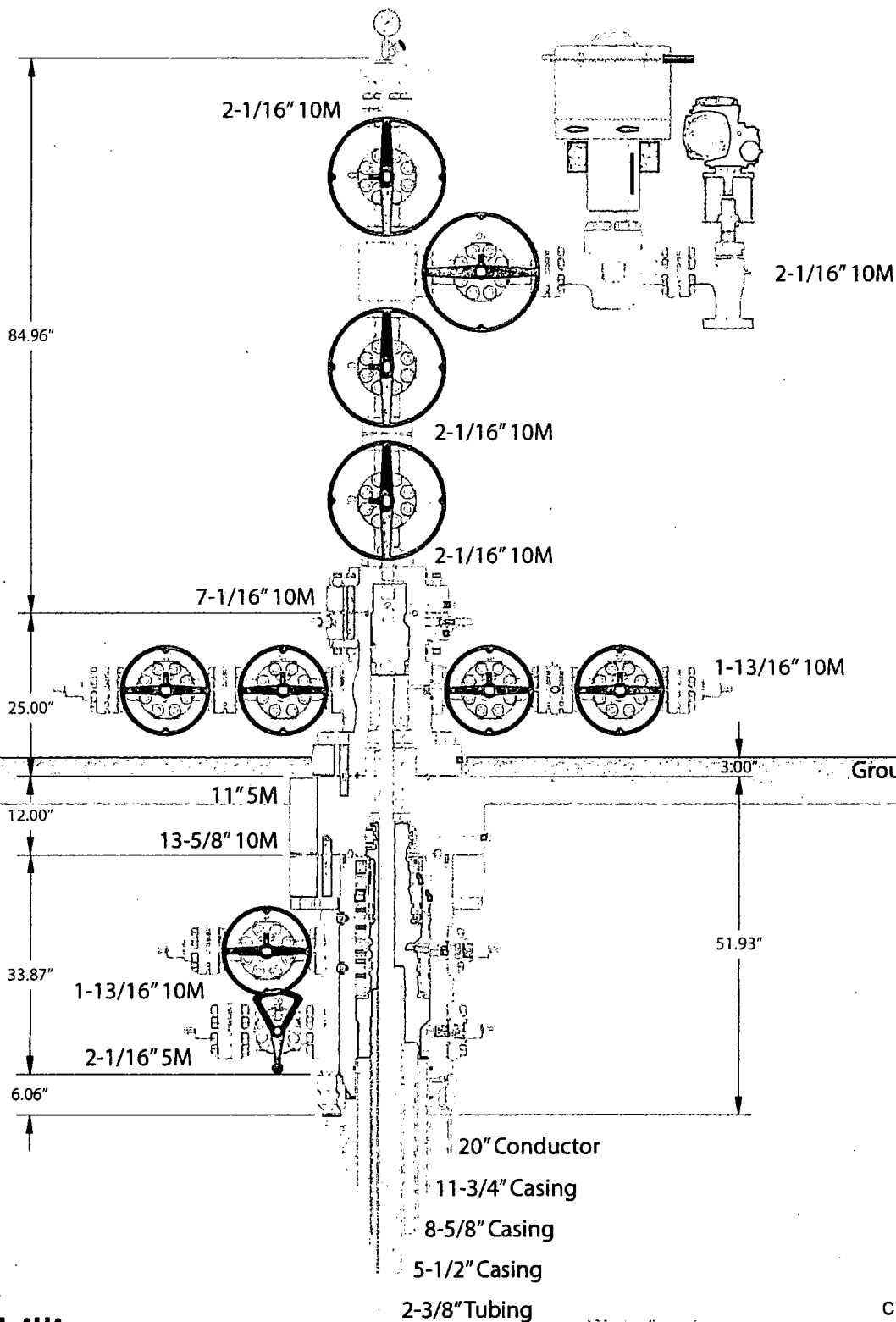
SFI Dry = 641000 / 342780 = 1.87
SFI Bouyant = 641000 / (342780 x 0.817) = 2.29

Production 2 Casing

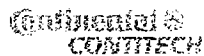
SFI Dry = 0 / 0 = #DIV/0!
SFI Bouyant = 0 / (0 x 1.000) = #DIV/0!



13-5/8" 10M MN-DS Wellhead System with CXS Completion



CONTITECH RUBBER Industrial Kft.	No: QC-DB- 45 / 2012
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Hose Data Sheet

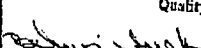
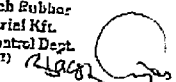
CRI Order No.	516273
Customer	ContiTech Beattie Co.
Customer Order No	PD5438 STOCK
Item No.	3
Hose Type	Flexible Hose
Standard	API SPEC 16 C
Inside dia in inches	3
Length	35 ft
Type of coupling one end	FLANGE 4 1/16" API SPEC 6A TYPE 6BX FOR 10000 PSIBX155 RING GROOVE
Type of coupling other end	FLANGE 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

QC-DB - 45/2012

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Fluid Technology

Quality Document

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE				CERT. N°: 184	
PURCHASER: Contitech Beattie Co.				P.O. N° 005438	
CONTITECH ORDER N°: 516273		HOSE TYPE: 3" ID		Choke and Kill Hose	
HOSE SERIAL N°: 61477		NOMINAL / ACTUAL LENGTH: 10,67 m / 10,71 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 = 20 MPa					
COUPLINGS Type		Serial N°		Quality	
3" coupling with		10178 10173		AISI 4130	
4 1/16" 10K API Flange end				AISI 4130	
				20231	
				33051	
NOT DESIGNED FOR WELL TESTING				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/EEU					
Date: 30. January 2012.		Inspector		Quality Control	
				Contitech Rubber Industrial Kft. Quality Control Dept.  	

Carlson, Robert; *Journal of
Management* 16, 5 (1990) 673-686
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The Court of Criminal Justice is
Hospitals Court
Hospitals Court No. 102 (102-102-102)
Fax: 011-111-111-111

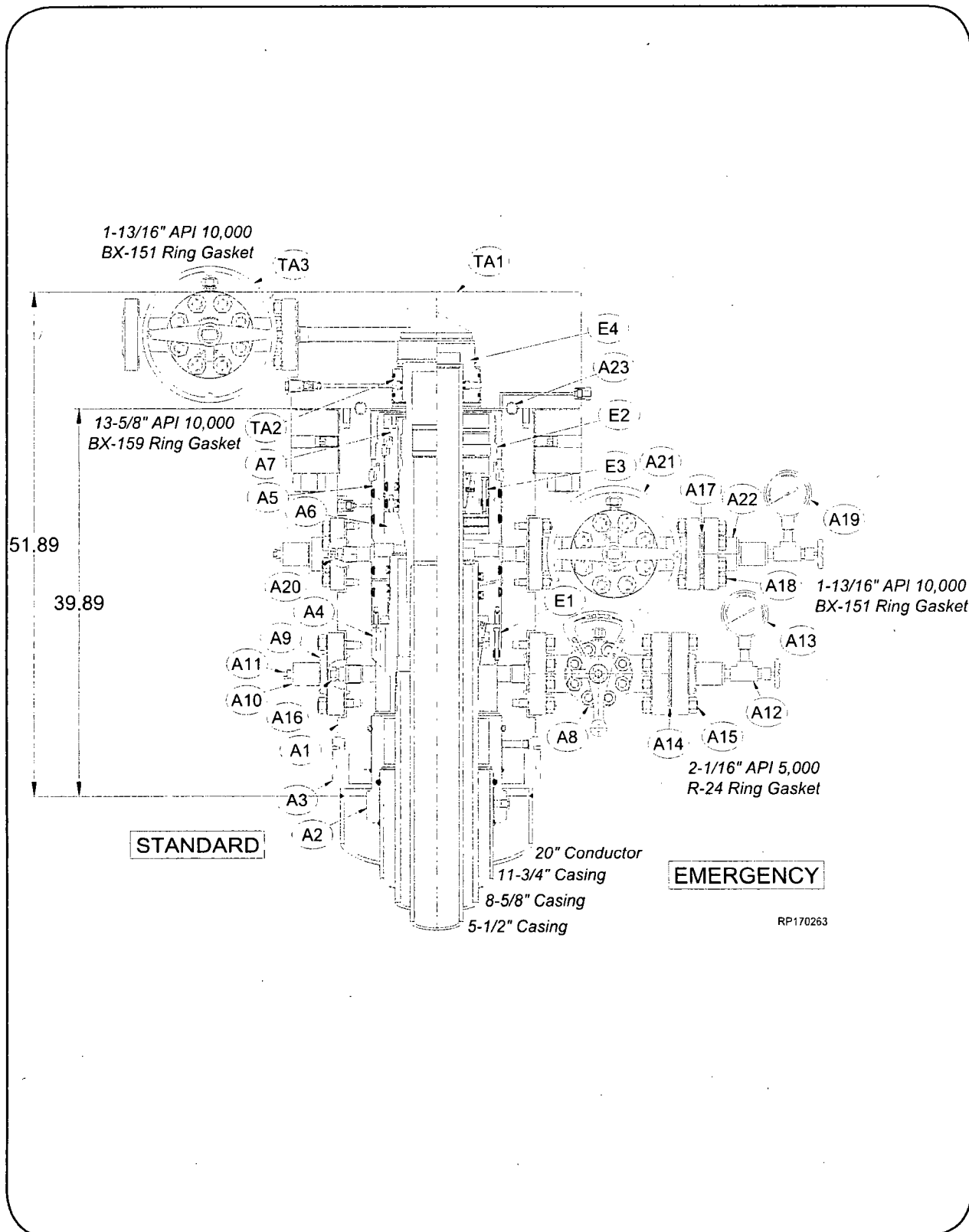
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Comments by
Editor:
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No. 153, 184, 185

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Quality Control Dept.
(7)

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System Drawing



Bill of Materials

NOTE Contact your Cameron representative for replacement part inquiries. Cameron personnel can check the latest revision of the assembly bill-of-material to obtain the appropriate and current replacement part number.

MN-DS HOUSING		
Item	Qty	Description
A1	1	Conversion; Casing Head Housing, Type 'Mn-Ds', 10K, 13-5/8 Nom 10K Oec BX-159 w/ 20.500-4TPI LH Stub Acme Top f/ Thded Flg and Prep f/ Internal Snap Ring x 13-3/8 SOW Btm w/ Four Grout Ports, w/ (2) Upper 1-13/16 API 10K BX-151 Outlets w/ 1-1/4 API Vr Thds Part# 2031060-48-02
A2	1	Body, Bushing Reducer, 13-3/8 SOW x 11-3/4 SOW Part# 2310058-03-01
A3	1	Body, Load Ring f/ 20 Casing (.375 C.S. Casing) To Accept Low Pressure Adapter Part# 2329761-07-01
A4	1	Casing Hanger, Mandrel, Type 'Mn-Ds', 13-5/8 Nom x 8-5/8 API BC Box Thd Btm x 10.000-4TPI L.H Stub Acme Running Thd, Min Bore: 8.000, 10,000 Psi Max Working Pressure, 700,000 Lbs Max Hanging Load Part# 2345509-17
A5	1	Assy; Packoff Support Bushing, Type MN-DS', 13-5/8 10K, w/ 13-5/8 Nom Dovetail Seal, and 9-5/8 Nom 'T' Seal and w/ Internal and External Lock Ring Prep, Min. Bore 8.835 Part# 2161673-01-01
A6	1	Rotating Mandrel Hanger, Type 'MN-DS'; 11 Nom, 5-1/2 20 Lb/Ft Tenaris XP Buttress Box Thd Btm X 7.500- 4 TPI Stub ACME Running Thd w/ 5.010 OD type 'H' BPV Thd w/ 7 Nom Slick Neck Top, w/ FLOW-by Slots; Min Bore: 4.754 Part# 2345649-49-01

MN-DS HOUSING		
Item	Qty	Description
A7	1	Assy; Seal Packoff f/ 11 Nom Type 'Mn-Ds', w/ 9.875-4TPI LH Stub Acme Thd w/ 7.75 Dbl 'T' Seals At ID and Dovetails At OD Part# 2217588-05-03
A8	1	Gate Valve, Manual, Model M Pow-R-Seal, 2-1/16 Bore, 5K Psi Psi, 2-1/16 API Flg x Flg Part# 2148451-31-22
A9	2	Companion Flange, 2-1/16 API 5K x 2" API LP Thd Part# 142362-01-03-02
A10	4	Bull Plug 2" LP w/ 1/2 NPT x 3.750" Lg Part# 007481-01
A11	2	Bleeder Fitting, Plug 1/2 NPT 4140 Nace Part# 2738068-02
A12	2	Needle Valve, 1/2 NPT 10000 Psi Part# 006818-23
A13	1	Pressure Gauge 0-5M Liquid Filled Part# Y52100-00300791
A14	3	Ring Gasket, R-24 Part# 702001-24-02
A15	8	Stud w/ (2) Nuts 7/8" x 6" Lg Part# Y51201-20220301
A16	1	VR Plug 1-1/2 In 11-1/2 TPI -3/4 TPF 'Vee' Tubing Thd, 2-1/16 2K - 10K Part# 2222164-02-01
A17	3	Ring Gasket, BX-151 Part# 702003-15-12
A18	8	Stud w/ (2) Nuts, 3/4"-10 x 5-1/4" Lg Part# Y51201-20120201
A19	1	Pressure Gauge 0-10M Liquid Filled Part# Y52100-00301391

MN-DS HOUSING		
Item	Qty	Description
A20	1	VR Plug 1-1/4 LP Thd, 1-13/16 2K - 10K Part# 2222164-01-01
A21	1	Gate Valve, Manual, Model FLS, 1-13/16 Bore, 10K Psi, 1-13/16 API Flg x Flg Part# 141510-41-91-01
A22	2	Companion Flange, 1-13/16 API 10K w/ 2" API Line Pipe, 5000 Psi WP Part# 142359-01-03-02
A23	1	Ring Gasket, BX-159 Part# 702003-15-92

RP-003766

Rev 01
Page 10

13-5/8" 10K MN-DS System
20" x 11-3/4" x 8-5/8" x 5-1/2" Casing Program



Bill of Materials

NOTE Contact your Cameron representative for replacement part inquiries. Cameron personnel can check the latest revision of the assembly bill-of-material to obtain the appropriate and current replacement part number.

SERVICE TOOLS		
Item	Qty	Description
ST1	1	Conversion Assy; Casing Head Torque Tool, f/ 'MN-DS' w/ Lift Plate, 13-3/8 In API 8Rnd Short Thread Casing Box Thread Top X .750-10UNC (16) Bolt Pattern Btm, (8) Torque Pins, Min Bore: 12.605 Part# 2143701-75
ST1A	1	Conversion Body; Lift Plate for Casing Head Torque Tool w/ Exrt 14.75 Stub ACME Rng Thd and (2) OD O-ring Seals Part# 2143700-76
ST2	1	Assy; Test Plug, Type "C" 13-5/8" Nom f/ Use In Cactus Head w/ WQ Seal 4-1/2" IF Box X 4-1/2" IF Pin Btm, w/ Weep Hole On Top Portion Of Test Plug Part# 2247044-01-01
ST3	1	Weldment and Assy; Wear Bushing Running & Retrieving Tool IC-2, 13-5/8" Nom x 4-1/2" IF Box Btm x Top Part# 2301310-02
ST4	1	Assy; Wear Bushing, f/ 13-5/8" Nom 10K Type 'Mn-Ds' Housing, Installed w/ (4) O-Rings & (4) Welded Stop Lugs Min Bore: 12.615 Part# 2367788-02
ST5	1	Assy; Running Tool, 13-5/8" Nom, w/ 8-5/8 BC Box Thd Top x 10.000-4 TPI LH Stub Acme Running Thd Btm, C/ W Single O-Ring and (3) Centralizing Ribs, Min Bore: 8.00 Part# 2161757-98-01
ST6	1	Assy; Jetting Tool, 13-5/8" Nom Compact Housing, Type 'SSMC' Part# 2125914-01

SERVICE TOOLS		
Item	Qty	Description
ST7	1	Running Tool, 'MN-DS' Type f/ 13-5/8" Nom Pack-off Support Bushing w/ 4-1/2" API IF Thd Top x 4-1/2" API IF Thd Btm and 12.375" 4-TPI LH Stub Acme Thd, Safe Working Load: 275K Lbf Part# 2017712-10-01
ST8	1	Assy; Test Plug, Type 'IC', 11" Nom 4-1/2" IF Box X Pin Btm, w/ Weep Hole On Top Portion Of Test Plug, w/ (2) Dovetail Seal Grooves Part# 2247042-07-01
ST9	1	Weldment and Assembly, Retrieving Tool, 11" In Nom x 4-1/2" IF Box Btm x Top, Min Bore: 4.19" Part# 2367902-01-01
ST10	1	Assy; Wear Bushing, f/ 11" Nom Type 'MN-DS', Min Bore: 8.910" Part# 2125720-06
ST11	1	Assy; Rotating Fluted Mandrel Hanger Running Tool, TSDS-S; 11 Nom X 7.500-4 TPI Stub ACME Thd Btm X 5-1/2 23 Lb/Ft TSH Blue Box Thd Top, w/ 1/8-27 NPT Test Port Part# 2161757-83-01
ST12	1	Running Tool; F/ 11 Nom Seal Assembly w/ 4-1/2 API IF Thd Top X 2-7/8 API IF Thd Btm and 9.875-4 TPI LH Stub ACME Thd Part# 2017712-15-01
ST13	1	Assy; Casing Head Running Tool; 14.750-4 TPI LH Internal Stub ACME Thd Btm X 11-3/4 API 8Rnd Short Thd Casing Box Thd Top; Min Bore: 11.359 Part# 2254468-04-01
ST14	1	Assy; Low Pressure Adapter; 24.00 OD X 22.740 ID Part# 2222008-06-01

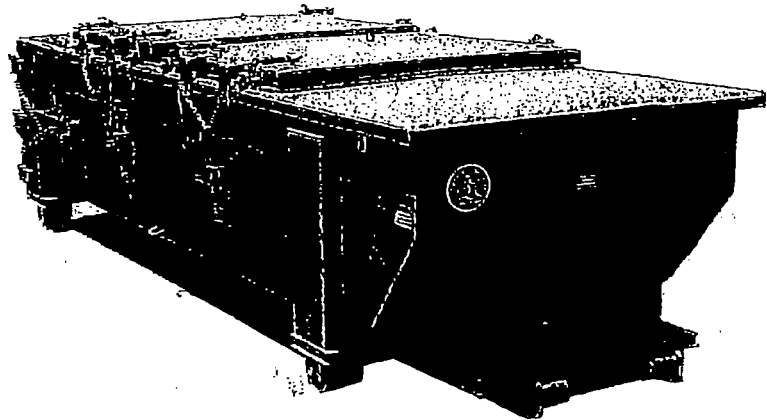
EMERGENCY EQUIPMENT		
Item	Qty	Description
E1	1	Assy; MN-DS-IC-1 Casing Slip, 13-5/8 Nom X 8-5/8 Casing; w/ Holes F/ Antirotation Pins, (Control Height) Part# 2161741-09-01
E2	1	Assy; Emergency Bushing Packoff Support, 'MN-DS', 13-5/8, w/ 13-5/8 Dovetail; 8-5/8 'T' Seals, w/ Internal and External Lockring Prep; 10K Service Part# 2161673-20-01
E3	1	Assy; Casing Hanger, IC-2, 11" x 5-1/2", (f/ 10K Above and Below) Part# 2357372-01-01
E4	1	Assy; 'NX' Bushing Nom 11" x 5-1/2" OD Csg w/ Integral Bit Guide Part# 2161829-02-01

CAPPING FLANGE		
Item	Qty	Description
TA1	1	Assy; Capping Flg, 7-1/16" API 10K BX-156 Std'd Blind Top x 13-5/8" API 10K BX-159 Std'd Btm, w/ One 1-13/16" API 10K BX-151 Std'd Side Outlet, w/ 1-13/16" API Vr Thd, w/ 11" 'NX' Btm Prep, Oal: 12" Part# 2392883-03-01
TA2	1	Assy 'NX' Bushing Nom 11" w/ 7" OD Csg Part# 608783-17
TA3	1	Gate Valve, Manual, Model FLS, 1-13/16 Bore, 10K Psi, 1-13/16 API Flg x Flg Part# 141510-41-91-01

SPECIFICATIONS

FLOOR: 3/16" PL one piece
 CROSS MEMBER: 3 x 4.1 channel 16" on center
 WALLS: 3/16" PL solid welded with tubing top, inside liner hooks
 DOOR: 3/16" PL with tubing frame
 FRONT: 3/16" PL slant formed
 PICK UP: Standard cable with 2" x 6" x 1/4" rails, gusset at each crossmember
 WHEELS: 10 DIA x 9 long with rease fittings
 DOOR LATCH: 3 Independent ratchet binders with chains, vertical second latch
 GASKETS: Extruded rubber seal with metal retainers
 WELDS: All welds continuous except substructure crossmembers
 FINISH: Coated inside and out with direct to metal, rust inhibiting acrylic enamel color coat
 HYDROTESTING: Full capacity static test
 DIMENSIONS: 22'-11" long (21'-8" inside), 99" wide (88" inside), see drawing for height
 OPTIONS: Steel grit blast and special paint, Ampliroll, Heil and Dino pickup
 ROOF: 3/16" PL roof panels with tubing and channel support frame
 LIDS: (2) 68" x 90" metal rolling lids spring loaded, self raising
 ROLLERS: 4" V-groove rollers with delrin bearings and grease fittings
 OPENING: (2) 60" x 82" openings with 8" divider centered on container
 LATCH: (2) independent ratchet binders with chains per lid
 GASKETS: Extruded rubber seal with metal retainers

Heavy Duty Split Metal Rolling Lid



CONT.	A	B
20 YD	41	53
25 YD	53	65
30 YD	65	77

