BLACK & TAN 27 FEDERAL COM 304H

String: SURFACE

Hole Size:	17.5						
Top Setting Depth (MD):	0	Top Setting Depth (TVD):	0	Btm setting depth (MD):	1700	Btm setting depth (TVD):	1700
Size:	13-3/8"	Grade:	J-55	Weight (lbs/ft):	54.5	Joint (Butt,FJ, LTC,STC, SLH, N/A, Other):	Buttress

Condition (New/Used): New Standard (API/Non-API): API

Tapered String (Y/N)?: N
If yes, need spec attachment

Safety Factors

Collapse Design Safety Factor: 2.15 Burst Design Safety Factor: 1.82

Body Tensile Design Safety Factor type?: Dry/Buoyant Buoyant
Body Tensile Design Safety Factor: 3.79

Joint Tensile Design Safety Factor type?: Dry/Buoyant Buoyant
Joint Tensile Design Safety Factor: 4.04

String: INTERMEDIATE

Hole Size:	12.25						
Top Setting Depth (MD):	0	Top Setting Depth (TVD):	0	Btm setting depth (MD):	900	Btm setting depth (TVD):	900
Size:	9-5/8"	Grade:	J-55	Weight (lbs/ft):	40	Joint (Butt,FJ, LTC,STC, SLH, N/A, Other):	Buttress

Condition (New/Used): New Standard (API/Non-API): API

Tapered String (Y/N)?: N
If yes, need spec attachment

Safety Factors

Collapse Design Safety Factor: 5.37 Burst Design Safety Factor: 1.7

Body Tensile Design Safety Factor type?: Dry/Buoyant Buoyant
Body Tensile Design Safety Factor: 1.96

Joint Tensile Design Safety Factor type?: Dry/Buoyant Buoyant
Joint Tensile Design Safety Factor: 2.24

Top Setting Depth (MD):	900	Top Setting Depth (TVD):	900	Btm setting depth (MD):	5780	Btm setting depth (TVD):	5780
Size:	9-5/8"	Grade:	J-55	Weight (lbs/ft):	40	Joint (Butt,FJ, LTC,STC, SLH, N/A, Other):	LTC

Condition (New/Used): New Standard (API/Non-API): API

Tapered String (Y/N)?: N
If yes, need spec attachment

Safety Factors

Collapse Design Safety Factor: 1.54 Burst Design Safety Factor: 1.87

Body Tensile Design Safety Factor type?: Dry/Buoyant Buoyant
Body Tensile Design Safety Factor: 2.15

Joint Tensile Design Safety Factor type?: Dry/Buoyant Buoyant
Joint Tensile Design Safety Factor: 1.8

String: **PRODUCTION**

Hole Size:	8.75						
Top Setting Depth (MD):	0	Top Setting Depth (TVD):	0	Btm setting depth (MD):	15619.62	Btm setting depth (TVD):	10955
Size:	5-1/2"	Grade:	P-110	Weight (lbs/ft):	17	Joint (Butt,FJ, LTC,STC, SLH, N/A, Other):	Buttress

Condition (New/Used): New Standard (API/Non-API): API

Safety Factors

Collapse Design Safety Factor: 1.35 Burst Design Safety Factor: 1.28

Body Tensile Design Safety Factor type?: Dry/Buoyant Buoyant
Body Tensile Design Safety Factor: 2.04

Joint Tensile Design Safety Factor type?: Dry/Buoyant Buoyant
Joint Tensile Design Safety Factor: 2.13

Tapered String (Y/N)?: N
If yes, need spec attachment

Black and Tan Federal Com 304H

CEMENT: SURFACE

Stage Tool Depth: N/A

Lead:

Top MD of Segment:	0	Btm MD of Segment:	1285.47
Cmt Type:	C	Cmt Additives:	4% Bentonite + 1% CaCl2
Quantity (sks):	650		
Yield (cu/ft/sk):	1.73	Volume (cu/ft):	1124.5
Density (lbs/gal):	13.5	Percent OH Excess:	25%

Tail:

Top MD of Segment:	1285.47	Btm MD of Segment:	1700
Cmt Type:	C	Cmt Additives:	1% CaCl2
Quantity (sks):	300		
Yield (cu/ft/sk):	1.33	Volume (cu/ft):	399
Density (lbs/gal):	14.8	Percent OH Excess:	25%

CEMENT: INTERMEDIATE

Single Stage

Lead:

Top MD of Segment:	0	Btm MD of Segment:	5144.38
Cmt Type:	C	Cmt Additives:	5% NaCl + 6% Bentonite + 2 lb/sk Kolseal + 0.125 lb/sk Celloflake + 0.4% Retarder
Quantity (sks):	1043		
Yield (cu/ft/sk):	1.885	Volume (cu/ft):	1966.06
Density (lbs/gal):	12.9	Percent OH Excess:	25%

Tail:

Top MD of Segment: 5144.38

Btm MD of Segment: 5780

Cmt Type: C

Cmt Additives: 0.2% Retarder

Quantity (sks): 200
Yield (cu/ft/sk): 1.34 Volume (cu/ft): 268
Density (lbs/gal): 14.8 Percent OH Excess: 25%

2 Stage Cement Job

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

***If lost circulation is encountered, Apache may 2-stage Interm csg. A DVT may be used in the 9-5/8" csg & ECP may be placed below DVT.**

1st Stage

Lead:

Top MD of Segment: 3500

Btm MD of Segment: 5144.38

Cmt Type: C

Cmt Additives: 5% NaCl + 6% Bentonite + 2 lb/sk Kolseal + 0.125 lb/sk Celloflake + 0.4% Retarder

Quantity (sks): 345
Yield (cu/ft/sk): 1.885 Volume (cu/ft): 650.33
Density (lbs/gal): 12.9 Percent OH Excess: 25%

Tail:

Top MD of Segment: 5144.38

Btm MD of Segment: 5780

Cmt Type: C

Cmt Additives: 0.3% Retarder

Quantity (sks): 200
Yield (cu/ft/sk): 1.34 Volume (cu/ft): 268

Density (lbs/gal): 14.8 Percent OH Excess: 25%

Stage Tool / ECP Depth: ± 3500'

2nd Stage

Lead:

Top MD of Segment: 0 Btm MD of Segment: 2815.44

Cmt Type: C Cmt Additives: 5% NaCl + 6% Bentonite

Quantity (sks): 565
Yield (cu/ft/sk): 1.868 Volume (cu/ft): 1055.42
Density (lbs/gal): 12.9 Percent OH Excess: 25%

Tail:

Top MD of Segment: 2815.44 Btm MD of Segment: 3500

Cmt Type: C Cmt Additives: 0.3% Retarder

Quantity (sks): 200
Yield (cu/ft/sk): 1.34 Volume (cu/ft): 268
Density (lbs/gal): 14.8 Percent OH Excess: 25%

CEMENT: PRODUCTION

Single Stage

Lead:

Top MD of Segment: 0 Btm MD of Segment: 10529.1

Cmt Type: H Cmt Additives: 10% gel + 5% Salt

1270

Quantity (sks): 1270
Yield (cu/ft/sk): 2.32 Volume (cu/ft): 2946.4
Density (lbs/gal): 11.9 Percent OH Excess: 20%

Tail:

Top MD of Segment:	10529.1	Btm MD of Segment:	15619.62
Cmt Type:	TXI Lite	Cmt Additives:	0.3% Fluid Loss + 0.2% Retarder
Quantity (sks):	1078		
Yield (cu/ft/sk):	1.44	Volume (cu/ft):	1552.32
Density (lbs/gal):	12.8	Percent OH Excess:	20%

2 Stage Cement Job

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

***If lost circulation is encountered, Apache may 2-stage Interm csg. A DVT may be used in the 7" csg & ECP may be placed below DVT.**

1st Stage

Lead:

Top MD of Segment:	5830	Btm MD of Segment:	10529.1
Cmt Type:	H	Cmt Additives:	10% gel + 5% Salt
Quantity (sks):	614		
Yield (cu/ft/sk):	2.32	Volume (cu/ft):	1424.48
Density (lbs/gal):	11.9	Percent OH Excess:	20%

Tail:

Top MD of Segment:	10529.1	Btm MD of Segment:	15619.62
Cmt Type:	TXI Lite	Cmt Additives:	0.3% Fluid Loss + 0.2% Retarder
Quantity (sks):	1078		
Yield (cu/ft/sk):	1.44	Volume (cu/ft):	1552.32
Density (lbs/gal):	12.8	Percent OH Excess:	20%

Stage Tool / ECP Depth: ± 5830'

2nd Stage

Lead:

Top MD of Segment:	0	Btm MD of Segment:	4810.33
Cmt Type:	H	Cmt Additives:	10% gel + 5% Salt
Quantity (sks):	540		
Yield (cu/ft/sk):	2.32	Volume (cu/ft):	1252.8
Density (lbs/gal):	11.9	Percent OH Excess:	20%

Tail:

Top MD of Segment:	4810.33	Btm MD of Segment:	5830
Cmt Type:	C	Cmt Additives:	0.3% Retarder
Quantity (sks):	200		
Yield (cu/ft/sk):	1.34	Volume (cu/ft):	268
Density (lbs/gal):	14.8	Percent OH Excess:	20%

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE					CERT. N°:	373	
PURCHASER:	ContiTech Oil & Marine Corp.				P.O. N°:	4500398355	
CONTITECH RUBBER order N°:	538079		HOSE TYPE:	3" ID	Choke and Kill Hose		
HOSE SERIAL N°:	67090		NOMINAL / ACTUAL LENGTH:		10,67 m / 10,73 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	1252 8901	AISI 4130	A0709N A1126U
4 1/16" 10K API b.w. Flange end		AISI 4130	035285

NOT DESIGNED FOR WELL TESTING **API Spec 16 C**

Temperature rate:"B"

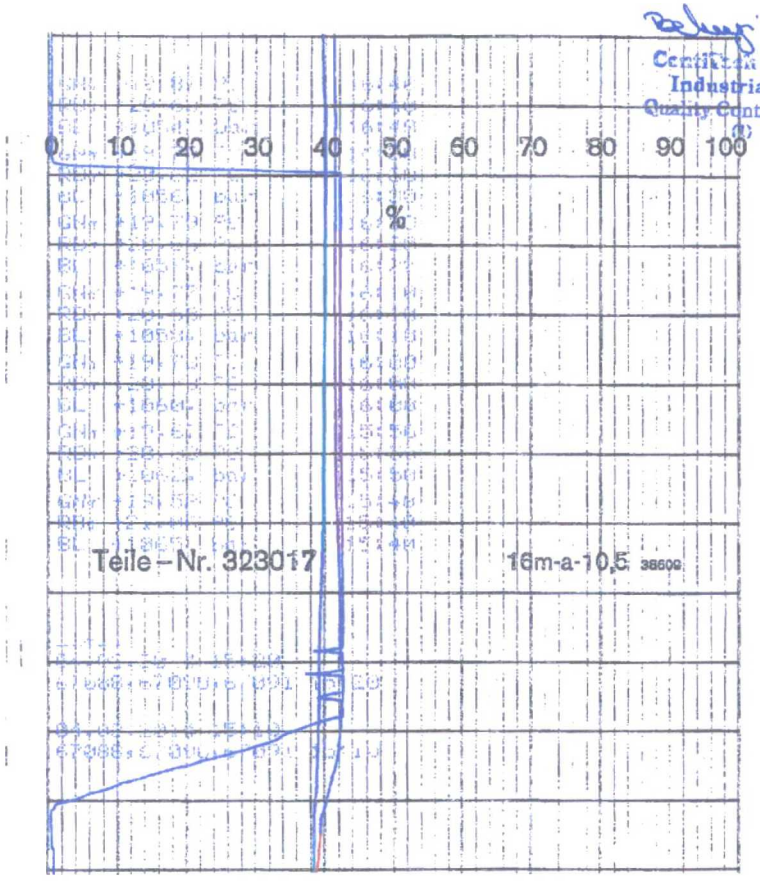
All metal parts are flawless

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/EU

Date:	Inspector	Quality Control
05. March 2014.		ContiTech Rubber Industrial Kft. Quality Control Dept.


Certified Rubber
Industrial Kft.
Quality Control Dept.
0 10 20 30 40 50 60 70 80 90 100
%
Teile-Nr. 323017
16m-a-10,5 38600

Continental CONTITECH

Hose Data Sheet

CRI Order No.	538079
Customer	ContiTech Oil & Marine Corp.
Customer Order No	4500398355
Item No.	1
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" 10K API SPEC 6A TYPE 6BX FLANGE C/W BX155 R.GR.SOUR
Type of coupling other end	FLANGE 4.1/16" 10K API SPEC 6A TYPE 6BX FLANGE C/W BX155 R.GR.SOUR
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 + GAS RESISTANT SOUR
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
Min. Bend Radius operating [m]	0,90
Min. Bend Radius storage [m]	0,90
Electrical continuity	The Hose is electrically continuous
Type of packing	WOODEN CRATE ISPM-15

APACHE BOP AND CHOKE MANIFOLD SCHEMATIC

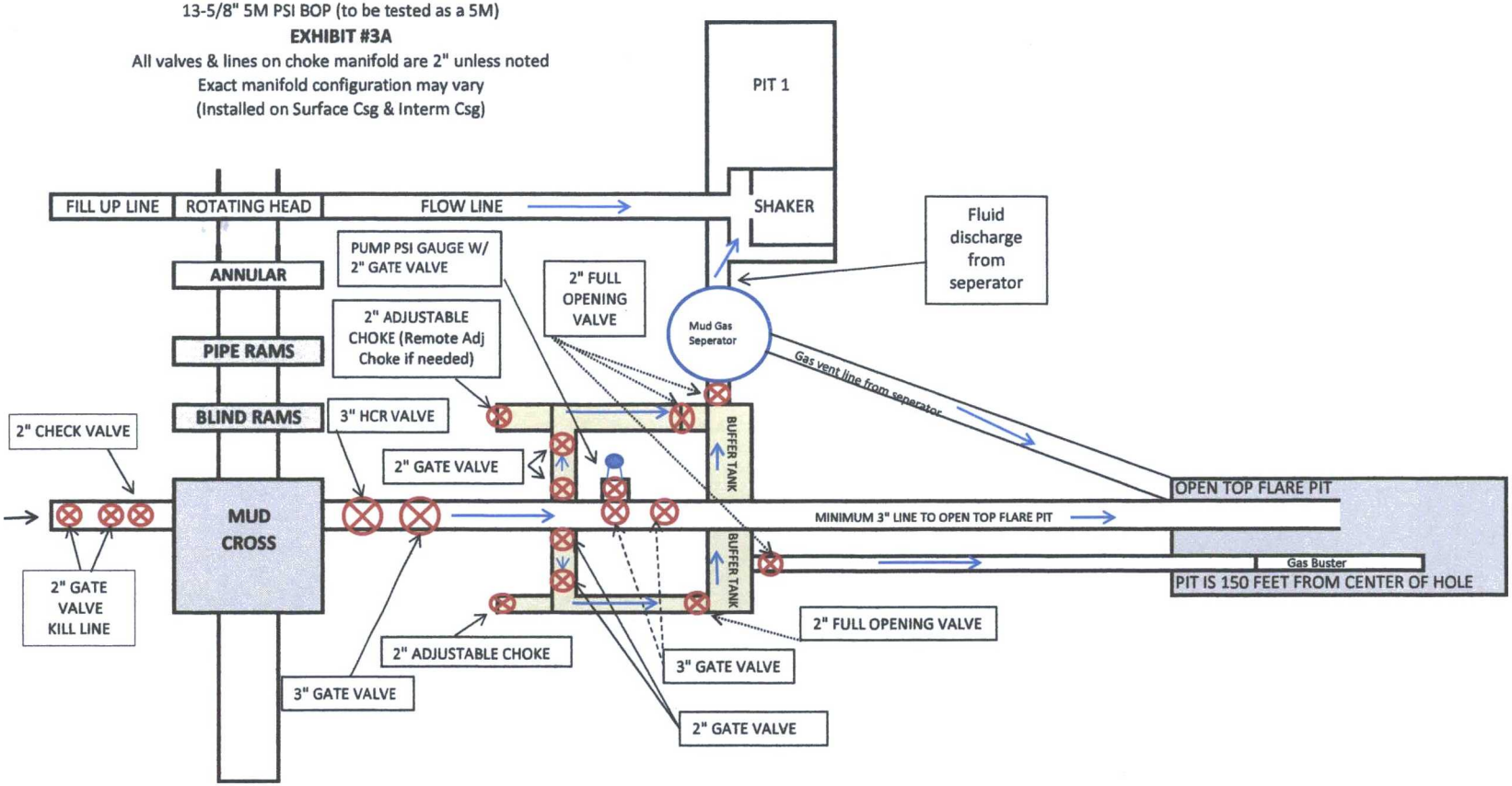
13-5/8" 5M PSI BOP (to be tested as a 5M)

EXHIBIT #3A

All valves & lines on choke manifold are 2" unless noted

Exact manifold configuration may vary

(Installed on Surface Csg & Interm Csg)



***** If H2S is encountered in quantities greater than 100ppm, Apache will shut in well & install a remote operated choke *****

APACHE BOP AND CHOKE MANIFOLD SCHEMATIC

13-5/8" 5M PSI BOP (to be tested as a 5M)

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Exact manifold configuration may vary

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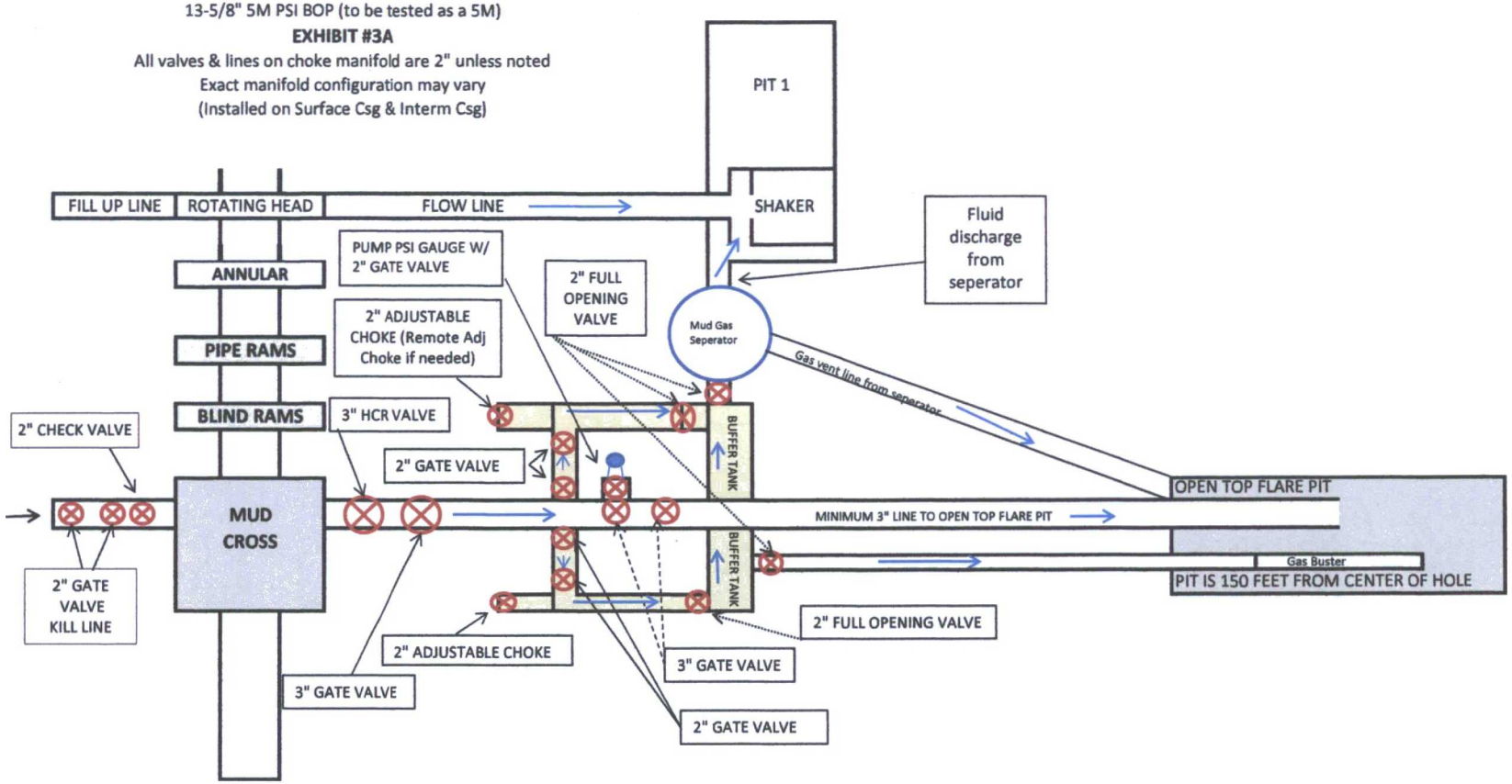

***** If H2S is encountered in quantities greater than 100ppm, Apache will shut in well & install a remote operated choke *****

Black and Tan 27 Federal COM 304H Intermediate Casing Design Assumptions

Pore Pressure

Vertical Depth (ft)	Pore Pressure/EMW		Permeable Zones
Depth (ft)	(psi)	(ppg)	Zones
20	0	0	No
1700	748	8.47	No
3900	1621	8	No
5800	2552	8.47	No
8586	3970	8.9	No
11352	5661	9.6	No

Fracture Pressure

Vertical Depth (ft)	Fracture Pressure/EMW	
Depth (ft)	(psi)	(ppg)
20	9	9
1700	1189	13.46
3900	2026	10
5800	4055	13.46
8586	6004	13.46
11352	8551	14.5

Temperature Gradient

Ambient Temperature is 80° F

Temperature gradient of 0.75°/100' TVD

Analysis Options

- Single External Pressure Profile
- Temperature Deration
- Buckling

Intermediate Casing Loads

Burst Loads

Internal Profile

Drilling Loads

- Gas Kick Profile
  - Influx at 15,619.6' MD
  - 30 Bbl Kick Volume
  - 0.5 ppg Kick Intensity
  - Maximum Mud Weight of 9.5 ppg
  - Kick gas gravity of 0.7 ppg
  - No margin of error on frac gradient
  - 5" DP
  - 650' of 6.5" Drill Collars
- Lost Returns with Water
  - No margin of error on frac gradient
  - Mud/Water Interface at 5780'
  - Mud weight with losses at 9.5 ppg
- Pressure Test
  - 1500 psi casing pressure test with 8.33 ppg fresh water
- Green Cement Pressure Test
  - 2300 psi put on casing when bumping the plug with 8.33 ppg displacement fresh water

External Profile

- Mud and Cement Mix-Water
  - TOC at surface
  - Mud weight is 10.2 ppg
  - Cement Mix-Water Density is 8.33 ppg

Collapse Loads

Internal Profile

Drilling Loads

- Partial Evacuation
  - 50% evacuation. Top of mud level at 2890'.
  - Mud Weight is 10.2 ppg
- Lost Returns with Mud Drop

    - Losses occurring at 5800' MD
    - Pore Pressure at 8.33 ppg
    - Current Mud Weight at 9.5 ppg
    - Mud level drops to 714.3'
- Cementing
    - Lead Slurry Density at 12.9 ppg
    - Tail Slurry Density at 14.8 ppg
    - Tail Slurry Length of 500'
    - TOC at surface
    - Mud Weight at shoe 10.2 ppg
    - Displacement fluid density at 8.33 ppg

External Profile

- Fluid Gradients w/ Pore Pressure
    - Fluid Gradient Above TOC is 10.2 ppg
    - Fluid Gradient Below TOC is 10.2 ppg

Axial Loads

- Average Running in hole speed at 2.0 ft/s
- Overpull of 100,000 lbf
- 2300 psi Green Cement Pressure Test
- Service Loads from Burst and Collapse

Black and Tan 27 Federal COM 304H Surface Casing Design Assumptions

Pore Pressure

Vertical Depth (ft)	Pore Pressure/EMW		Permeable Zones
Depth (ft)	(psi)	(ppg)	Zones
20	0	0	No
1700	748	8.47	No
3900	1621	8	No
5800	2552	8.47	No
8586	3970	8.9	No
11352	5661	9.6	No

Fracture Pressure

Vertical Depth (ft)	Fracture Pressure/EMW	
Depth (ft)	(psi)	(ppg)
20	9	9
1700	1189	13.46
3900	2026	10
5800	4055	13.46
8586	6004	13.46
11352	8551	14.5

Temperature Gradient

Ambient Temperature is 80° F

Temperature gradient of 0.75°/100' TVD

Analysis Options

- Single External Pressure Profile
- Temperature Deration
- Buckling

Surface Casing Loads

Burst Loads

Internal Profile

Drilling Loads

- Fracture @ Shoe w/ Gas Gradient Above
  - No margin of error on frac gradient
  - Using a 0.7 ppg gas gradient
- Lost Returns with Water
  - No margin of error on frac gradient
  - Mud/Water Interface at 1700'
  - Mud weight with losses at 10.2 ppg
- Pressure Test
  - 1500 psi casing pressure test with 8.33 ppg fresh water
- Green Cement Pressure Test
  - 1200 psi put on casing when bumping the plug with 8.33 ppg displacement fresh water

External Profile

- Mud and Cement Mix-Water
  - TOC at surface
  - Mud weight is 8.6 ppg
  - Cement Mix-Water Density is 8.33 ppg

Collapse Loads

Internal Profile

Drilling Loads

- Partial Evacuation
  - 50% evacuation. Top of mud level at 850'.
  - Mud Weight is 8.6 ppg
- Lost Returns with Mud Drop
  - Losses occurring at 4000'
  - Pore Pressure at 8.00 ppg
  - Current Mud Weight at 10.2 ppg
  - Mud level drops to 863'
- Cementing
  - Lead slurry of 13.5 ppg with TOC at surface

- Tail slurry slurry at 14.8 ppg with length of 500'
- Mud weight at shoe 8.6 ppg
- Displacement fluid density at 8.33 ppg

External Profile

- Fluid Gradients w/ Pore Pressure
  - Fluid Gradient Above TOC is 8.6 ppg
  - Fluid Gradient Below TOC is 8.6 ppg

Axial Loads

- Average Running in hole speed at 2.0 ft/s
- Overpull of 100,000 lbf
- 1200 psi Green Cement Pressure Test
- Service Loads from Burst and Collapse

Black and Tan 27 Federal COM 304H Intermediate Casing Design Assumptions

Pore Pressure

Vertical Depth (ft)	Pore Pressure/EMW		Permeable Zones
Depth (ft)	(psi)	(ppg)	Zones
20	0	0	No
1700	748	8.47	No
3900	1621	8	No
5800	2552	8.47	No
8586	3970	8.9	No
11352	5661	9.6	No

Fracture Pressure

Vertical Depth (ft)	Fracture Pressure/EMW	
Depth (ft)	(psi)	(ppg)
20	9	9
1700	1189	13.46
3900	2026	10
5800	4055	13.46
8586	6004	13.46
11352	8551	14.5

Temperature Gradient

Ambient Temperature is 80° F

Temperature gradient of 0.75°/100' TVD

Analysis Options

- Single External Pressure Profile
- Temperature Deration
- Buckling

Intermediate Casing Loads

Burst Loads

Internal Profile

Drilling Loads

- Gas Kick Profile
  - Influx at 15,619.6' MD
  - 30 Bbl Kick Volume
  - 0.5 ppg Kick Intensity
  - Maximum Mud Weight of 9.5 ppg
  - Kick gas gravity of 0.7 ppg
  - No margin of error on frac gradient
  - 5" DP
  - 650' of 6.5" Drill Collars
- Lost Returns with Water
  - No margin of error on frac gradient
  - Mud/Water Interface at 5780'
  - Mud weight with losses at 9.5 ppg
- Pressure Test
  - 1500 psi casing pressure test with 8.33 ppg fresh water
- Green Cement Pressure Test
  - 2300 psi put on casing when bumping the plug with 8.33 ppg displacement fresh water

External Profile

- Mud and Cement Mix-Water
  - TOC at surface
  - Mud weight is 10.2 ppg
  - Cement Mix-Water Density is 8.33 ppg

Collapse Loads

Internal Profile

Drilling Loads

- Partial Evacuation
  - 50% evacuation. Top of mud level at 2890'.
  - Mud Weight is 10.2 ppg
- Lost Returns with Mud Drop

    - Losses occurring at 5800' MD
    - Pore Pressure at 8.33 ppg
    - Current Mud Weight at 9.5 ppg
    - Mud level drops to 714.3'
- Cementing
    - Lead Slurry Density at 12.9 ppg
    - Tail Slurry Density at 14.8 ppg
    - Tail Slurry Length of 500'
    - TOC at surface
    - Mud Weight at shoe 10.2 ppg
    - Displacement fluid density at 8.33 ppg

External Profile

- Fluid Gradients w/ Pore Pressure
    - Fluid Gradient Above TOC is 10.2 ppg
    - Fluid Gradient Below TOC is 10.2 ppg

Axial Loads

- Average Running in hole speed at 2.0 ft/s
- Overpull of 100,000 lbf
- 2300 psi Green Cement Pressure Test
- Service Loads from Burst and Collapse

Black and Tan 27 Federal COM 304H Production Casing Design Assumptions

Pore Pressure

Vertical Depth (ft)	Pore Pressure/EMW		Permeable Zones
Depth (ft)	(psi)	(ppg)	Zones
20	0	0	No
1700	748	8.47	No
3900	1621	8	No
5800	2552	8.47	No
8586	3970	8.9	No
11352	5661	9.6	No

Fracture Pressure

Vertical Depth (ft)	Fracture Pressure/EMW	
Depth (ft)	(psi)	(ppg)
20	9	9
1700	1189	13.46
3900	2026	10
5800	4055	13.46
8586	6004	13.46
11352	8551	14.5

Temperature Gradient

Ambient Temperature is 80° F

Temperature gradient of 0.75°/100' TVD

Analysis Options

- Single External Pressure Profile
- Temperature Deration
- Buckling

Production Casing Loads

Burst Loads

Internal Profile

Drilling Loads

- Pressure Test
  - 8000 psi with 8.33 ppg fresh water
- Green Cement Pressure Test
  - 3800 psi put on casing when bumping the plug with 8.33 ppg displacement

Production Loads

- Tubing Leak
  - Packer Fluid Density at 8.6 ppg
  - Packer Depth of 10,479.1'
  - Perf Depth at 15,619.6' MD
  - Gas/Oil Gradient 0.35 psi/ft
  - Reservoir pressure at 5122 psi
- Injection Down Casing
  - Injection pressure of 8000 psi
  - Injection density of 9.4 ppg

External Profile

- Fluid Gradients w/ Pore Pressure
  - 9.5 ppg mud weight above TOC
  - 8.33 ppg below TOC
  - Pore pressure applied in the openhole

Collapse Loads

Internal Profile

Drilling Loads

- Cementing
  - Mud weight at shoe is 9.5 ppg
  - TOC at surface
  - Lead Slurry Density is 11.9 ppg
  - Tail Slurry Density is 12.8 ppg
  - Tail Slurry Length at 5590.5'.
  - Displacement fluid density is 8.33 ppg

Production Loads

- Full Evacuation
- Above/Below Packer
    - Reservoir pressure at 4853 psi
    - Density Above Packer at 8.6 ppg
    - Density Below Packer at 6.0 ppg
    - Assuming a fluid drop above the packer

External Profile

- Fluid Gradients w/ Pore Pressure
    - Fluid Gradient Above TOC is 9.5 ppg
    - Fluid Gradient Below TOC is 9.5 ppg

Axial Loads

- Average Running in hole speed at 2.0 ft/s
- Overpull of 100,000 lbf
- 3800 psi Green Cement Pressure Test
- Service Loads from Burst and Collapse