

Split Estate

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Hobbs

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

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		7. If Unit or CA Agreement, Name and No.	
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☒ Multiple Zone		8. Lease Name and Well No. 313578 War Hammer 25 Federal COM W2 2H	
2. Name of Operator ConocoPhillips Company (217817)		9. API Well No. 70-025-42028	
3a. Address P.O. BOX 51810 Midland, Texas 79710		10. Field and Pool, or Exploratory WC-025 G-09 S263225A, UBER CAMP	
3b. Phone No. (include area code) (281)206-5282		11. Sec., T. R. M. or Blk. and Survey or Area Section 25-26S-32E	
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface 283 FNL & 125 FEL (NWNW) 25-26S-32E At proposed prod. zone 330 FSL & 380 FEL 36-26S-32E		12. County or Parish Lea	
14. Distance in miles and direction from nearest town or post office* 35.7 miles west of Jal, NM.		13. State NM	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 330'		16. No. of acres in lease 600	
17. Spacing Unit dedicated to this well 224.99		18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 33'	
19. Proposed Depth 19351' MD/12744' TVD		20. BLM/BIA Bond No. on file ES0085	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3139' GL		22. Approximate date work will start* 01/01/2015	
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. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the BLM. |

25. Signature Kristina Mickens	Name (Printed/Typed) KRISTINA MICKENS	Date 03/03/2014
Title REGULATORY SPECIALIST		
Approved by (Signature) Steve Caffey	Name (Printed/Typed)	AUG - 6 2014
Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

Application approval does not warrant or certify that the applicant holds Leasehold title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.Conditions of approval
E-PERMITTING -- New Well **K2**
Comp _____ P&A _____ TA _____
CSNG _____ Loc CHG _____
ReComp _____ Add New Pool _____
Cancl Well _____ Create Pool _____Title 18 U.S.C. Section
States any false, fictitious or fraudulent statement or information

(Continued on page 2)

person knowingly and willfully to make to any department or agency of the United States within its jurisdiction.

*(Instructions on page 2)

Carlsbad Controlled Water Basin

K2
08/08/14Approval Subject to General Requirements
& Special Stipulations AttachedSEE ATTACHED FOR
CONDITIONS OF APPROVAL**AUG 08 2014**

Drilling Program
ConocoPhillips Company
 War Hammer 25 Federal COM W2 2H
 283' FNL 125' FEL (SHL)
 330' FSL 380' FEL (BHL)
 Sec 25-T26S-R32E
 Lea County, New Mexico

HOBBS OCD

AUG 08 2014

RECEIVED

1. Estimated tops of geological formations:

Geologic Formation at surface: Quaternary

	Formation	TVD (ft)
	Base Fresh Water	300
	Rustler	600
	Top Salt	1050
	Base Salt	4689
*	Cherry Canyon	5671
*	Brushy Canyon	7368
*	Bone Spring Carb	8865
*	Avalon	9071
*	1st Bone Spring	9758
*	2nd Bone Spring	10141
*	3rd Bone Spring	10654
*	Wolfcamp	11835

2. Estimated depth/thickness of freshwater and/or hydrocarbons:

Water:

Fresh water is anticipated above the Rustler at 300' and will be protected by surface casing at 950' and cemented to surface.

Hydrocarbons:

Oil and gas are anticipated in the formations annotated above (*). These zones will be isolated as necessary.

3. Pressure Control Equipment:

*Please see attached BOPE and Choke Manifold Schematic for more detail.

A 13-5/8" BOP system will be installed and tested prior to drilling out of the surface casing shoe. The BOP system will be utilized to drill the intermediate and production hole sections, and will be tested per BLM Onshore Oil & Gas Order No. 2 per each hole section specified in the final column of the table in section four.

Pressure tests will be conducted at the initial installation of the BOPE and again if needed 30 days from the initial test as per BLM Onshore Oil and Gas Order No. 2. BOPE controls will be installed prior to drilling under the surface casing and will be used until the completion of drilling operations. Prior to drilling the intermediate 1 and intermediate 2 holes the BOPE will be tested per 5m working system requirements. Prior to drilling the production interval the BOPE will be tested per 10M system requirements.

ConocoPhillips Company requests a variance to use a flexible line between the BOP and the choke. The testing and manufacturing specifications for this equipment is attached. The line will be kept as straight as possible with minimum turns.

4. Proposed Casing Program

*All tubulars used for this design will be new.

Hole Size (in)	Casing (in)	Wt/Ft	Grade	Connection	Depth (ft)	Depth (ftTVD)	Depth (ftMD)
17 1/2	13 3/8	54.5	J-55	BTC	0-950	770 950	950
12 1/4	9 5/8	40	L-80	BTC	0-4825	4825	4825
8 3/4	7 5/8	33.7	P-110	Wedge 523	0-12250	12239	12250
6 5/8	4 1/2	15.1	P-110	BTC	0-19325	12744	19325

Minimum casing design factors: Burst 1.0, Collapse: 1.125, Tensile Strength 1.6 dry / 1.8 bouyant

Hole Size (in)	Casing (in)	Burst	Collapse	Tension
17 1/2	13 3/8	6.07	2.51	20.39
12 1/4	9 5/8	2.18	1.17	5.84
8 3/4	7 5/8	1.83	1.33	3.09
6 5/8	4 1/2	1.62	1.73	3.27

See COA

Drilling Program

ConocoPhillips Company

War Hammer 25 Federal COM W2 2H

283' FNL 125' FEL (SHL)

330' FSL 380' FEL (BHL)

Sec 25-T26S-R32E

Lea County, New Mexico

5. Proposed Cementing Program

		Volume (sx)	Type	Weight (ppg)	Yield (ft3/sx)	Water (Gal/sx)	Excess	Cement Top
Surface	Lead	530	Class C	13.5	1.73	9.14	100%	Surface
	Tail	310	Class C	14.8	1.35	6.39	100%	650ft
Additives (BWOB): 4% Extender, 2% CaCl ₂ , 0.125 lb/sx LCM, 0.2% Anti-Foam								
Intermediate 1	Lead	1430	Class C	12.9	1.97	10.88	100%	Surface
	Tail	380	Class C	14.8	1.35	6.19	100%	500ft
Additives (BWOB): 4% Extender, 2% CaCl ₂ , 0.125 lb/sx LCM, 0.2% Anti-Foam								
Intermediate 2	Lead	440	Tuned Light	9.5	3.45	14.38	100%	4325ft
	Tail	140	Class C	13.2	1.61	8.20	100%	11750ft
Additives (BWOB): 0.4% Dispersant, 1 lb/sx Salt, 0.1% Retarder, 0.5% Fluid Loss, 3 lb/sx LCM								
Production	Lead							
	Tail	530	Class C	15.0	2.61	6.00	30%	11750ft
Additives (BWOB): 0.4% Retarder, 0.2% Anti-foam, 0.7 Anti-gelling, 0.4% Fluid Loss, 2% Expanding Agent, 5.0% Silica								

6. Proposed Fluids Program

Depth (ft)			Type	Mud Weight (ppg)	Viscosity	Fluid Loss
0	to	850	Spud Mud	8.4 - 9.3	32-36	NC
850	to	4825	Brine	9.3 - 10.5	28-30	≤5
4825	to	12250	Cut Brine	8.6 - 9.1	30-40	≤5
12250	to	19350	Oil Based Mud	12.0 - 14.0	30-40	≤5

Sufficient fluid volume, weight material, and additives will be available onsite at all times. Visual and electronic mud monitoring equipment will be in place to indicate gain or loss.

7. Formation Evaluation Program

Samples: Dry samples taken 30' from intermediate casing point to TD. GC Tracers KOP to TD.
 Logging: GR/Neutron from base salt to surface. GR from 200' above KOP to TD. Shuttle log in the lateral.

8. Anticipated Wellbore Conditions

	Value	Comments
Bottom Hole Pressure (psi)	7137	Assumes 0.78psi/ft - 0.22psi/ft Partial Evacuation
Bottom Hole Temperature (°F)	199	Assumes 0.01deg/100ft
Abnormal Pressure / Potential Hazards	Losses below Delaware will be mitigated with lost circulation material. Potential overpressure below the top of Wolfcamp will be mitigated with mud weight. If H ₂ S is encountered the operator will comply with the provisions of Onshore Oil and Gas Order No. 6. All personnel will be familiar with all aspects of safe operation being used to drill this well.	

9. Directional Plan:

Kick off Point (ft)	Landing TVD (ft)	Landing MD (ft)	Total Measured Depth (ft)
12182	12744	13082	19350

*ConocoPhillips proposes to drill a vertical wellbore to kick off point and then drill horizontally to TD. Please see the attached directional plan for more detail.

10. Anticipated Start / Duration

ConocoPhillips Company intends to drill and complete this well approximately 90 days from spud.

March 05 2014



Size: 7.625 in.
Wall: 0.430 in.
Weight: 33.70 lbs/ft
Grade: P110
Min. Wall Thickness: 87.5 %

Connection: Wedge 523™
Casing/Tubing: CAS

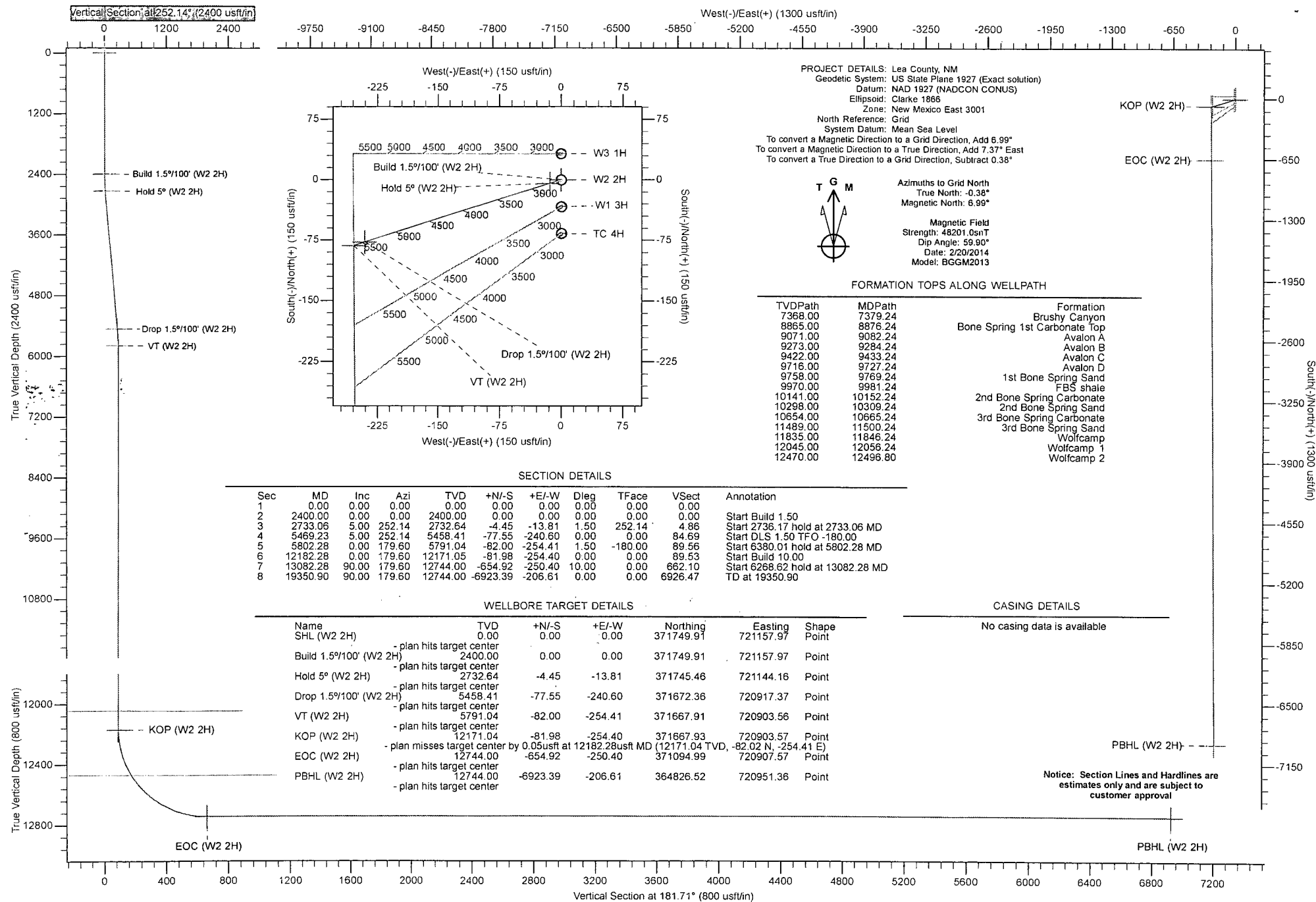
PIPE BODY DATA			
GEOMETRY			
Nominal OD	7.625 in.	Nominal Weight	33.70 lbs/ft
		Standard Drift Diameter	6.640 in.
Nominal ID	6.765 in.	Wall Thickness	0.430 in.
		Special Drift Diameter	N/A
Plain End Weight	33.07 lbs/ft		
PERFORMANCE			
Body Yield Strength	1069 x 1000 lbs	Internal Yield	10860 psi
		SMYS	110000 psi
Collapse	7870 psi		
WEDGE 523™ CONNECTION DATA			
GEOMETRY			
Connection OD	7.775 in.	Connection ID	6.675 in.
		Make-Up Loss	4.060 in.
Critical Section Area	7.057 sq. in.	Threads per in.	3.06
PERFORMANCE			
Tension Efficiency	72.6 %	Joint Yield Strength	776 x 1000 lbs
		Internal Pressure Capacity	10860 psi
Compression Strength	881 x 1000 lbs	Compression Efficiency	82.4 %
		Bending	48 °/100 ft
External Pressure Capacity	7870 psi		
MAKE-UP TORQUES			
Minimum	9900 ft-lbs	Target	11900 ft-lbs
		Maximum (2)	17300 ft-lbs
OPERATIONAL LIMIT TORQUES			
Operating Torque	42000 ft-lbs	Yield Torque	63000 ft-lbs
BLANKING DIMENSIONS			
Blanking Dimensions			

* If you need to use torque values that are higher than the maximum indicated, please contact a local Tenaris technical sales representative.

7-5/8" Collapse Load Case Justification

Per conversation with Chris Walls on February 28th, for our intermediate casing program for the subject well, we feel that 7-5/8" 29.7# P-110 BTC would not be at risk of collapse when set as intermediate casing at approximately 12250'. Our reasons are as follows:

1. The 7-5/8" intermediate casing for this well would not be subject to the production collapse load case of being pumped off to zero pressure on the inside by beam pump or ESP production pumping the fluid level down. The 7-5/8" casing would be isolated from the beam pumping production collapse load case by the production casing that would be run subsequent to this string.
2. If loss of circulation occurs during the drilling phase while drilling below the 7-5/8" intermediate casing, we would expect the fluid level would fall no further than 5000' below the surface of ground before reaching hydrostatic balance with the pressure of the loss zone. Our anticipated maximum mud weight for drilling below the 7-5/8" intermediate casing is 14.0 ppg, and our experience has been that we have not had severe losses with this mud weight in our previous wells in this area.
3. The 7-5/8" casing will be filled with mud while running it by filling it at least once every 30 joints (1260').



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well W2 2H
Company:	ConocoPhillips	TVD Reference:	Well @ 3164.00usft (H&P 499 RKB: 25' + GL: 3139')
Project:	Lea County, NM	MD Reference:	Well @ 3164.00usft (H&P 499 RKB: 25' + GL: 3139')
Site:	War Hammer 25 Fed Com	North Reference:	Grid
Well:	W2 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Design #1		

Project	Lea County, NM		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	War Hammer 25 Fed Com				
Site Position:		Northing:	371,782.24 usft	Latitude:	32° 1' 12.490 N
From:	Map	Easting:	721,157.76 usft	Longitude:	103° 37' 11.140 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	0.38

Well	W2 2H				
Well Position	+N/-S	-32.33 usft	Northing:	371,749.91 usft	Latitude: 32° 1' 12.170 N
	+E/-W	0.21 usft	Easting:	721,157.97 usft	Longitude: 103° 37' 11.140 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level: 3,139.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	2/20/2014	7.37	59.90	48,201

Design	Design #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	181.71

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,733.06	5.00	252.14	2,732.64	-4.45	-13.81	1.50	1.50	0.00	252.14	
5,469.23	5.00	252.14	5,458.41	-77.55	-240.60	0.00	0.00	0.00	0.00	
5,802.28	0.00	179.60	5,791.04	-82.00	-254.41	1.50	-1.50	-21.78	-180.00	VT (W2 2H)
12,182.28	0.00	179.60	12,171.05	-81.98	-254.40	0.00	0.00	0.00	0.00	
13,082.28	90.00	179.60	12,744.00	-654.92	-250.40	10.00	10.00	0.00	0.00	EOC (W2 2H)
19,350.90	90.00	179.60	12,744.00	-6,923.39	-206.61	0.00	0.00	0.00	0.00	PBHL (W2 2H)

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well W2 2H
Company:	ConocoPhillips	TVD Reference:	Well @ 3164.00usft (H&P 499 RKB: 25' + GL: 3139')
Project:	Lea County, NM	MD Reference:	Well @ 3164.00usft (H&P 499 RKB: 25' + GL: 3139')
Site:	War Hammer 25 Fed Com	North Reference:	Grid
Well:	W2 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SHL (W2 2H)									
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 1.50 - Build 1.5°/100' (W2 2H)									
2,500.00	1.50	252.14	2,499.99	-0.40	-1.25	0.44	1.50	1.50	0.00
2,600.00	3.00	252.14	2,599.91	-1.61	-4.98	1.75	1.50	1.50	0.00
2,700.00	4.50	252.14	2,699.69	-3.61	-11.21	3.95	1.50	1.50	0.00
2,733.06	5.00	252.14	2,732.64	-4.45	-13.81	4.86	1.50	1.50	0.00
Start 2736.17 hold at 2733.06 MD - Hold 5° (W2 2H)									
2,800.00	5.00	252.14	2,799.32	-6.24	-19.36	6.81	0.00	0.00	0.00
2,900.00	5.00	252.14	2,898.94	-8.91	-27.65	9.73	0.00	0.00	0.00
3,000.00	5.00	252.14	2,998.56	-11.58	-35.94	12.65	0.00	0.00	0.00
3,100.00	5.00	252.14	3,098.18	-14.25	-44.23	15.57	0.00	0.00	0.00
3,200.00	5.00	252.14	3,197.80	-16.93	-52.51	18.49	0.00	0.00	0.00
3,300.00	5.00	252.14	3,297.42	-19.60	-60.80	21.40	0.00	0.00	0.00
3,400.00	5.00	252.14	3,397.04	-22.27	-69.09	24.32	0.00	0.00	0.00
3,500.00	5.00	252.14	3,496.66	-24.94	-77.38	27.24	0.00	0.00	0.00
3,600.00	5.00	252.14	3,596.28	-27.61	-85.67	30.16	0.00	0.00	0.00
3,700.00	5.00	252.14	3,695.90	-30.28	-93.96	33.07	0.00	0.00	0.00
3,800.00	5.00	252.14	3,795.52	-32.95	-102.24	35.99	0.00	0.00	0.00
3,900.00	5.00	252.14	3,895.14	-35.63	-110.53	38.91	0.00	0.00	0.00
4,000.00	5.00	252.14	3,994.77	-38.30	-118.82	41.83	0.00	0.00	0.00
4,100.00	5.00	252.14	4,094.39	-40.97	-127.11	44.74	0.00	0.00	0.00
4,200.00	5.00	252.14	4,194.01	-43.64	-135.40	47.66	0.00	0.00	0.00
4,300.00	5.00	252.14	4,293.63	-46.31	-143.69	50.58	0.00	0.00	0.00
4,400.00	5.00	252.14	4,393.25	-48.98	-151.98	53.50	0.00	0.00	0.00
4,500.00	5.00	252.14	4,492.87	-51.66	-160.26	56.41	0.00	0.00	0.00
4,600.00	5.00	252.14	4,592.49	-54.33	-168.55	59.33	0.00	0.00	0.00
4,700.00	5.00	252.14	4,692.11	-57.00	-176.84	62.25	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well W2 2H
Company:	ConocoPhillips	TVD Reference:	Well @ 3164.00usft (H&P 499 RKB: 25' + GL: 3139')
Project:	Lea County, NM	MD Reference:	Well @ 3164.00usft (H&P 499 RKB: 25' + GL: 3139')
Site:	War Hammer 25 Fed Com	North Reference:	Grid
Well:	W2 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,800.00	5.00	252.14	4,791.73	-59.67	-185.13	65.17	0.00	0.00	0.00
4,900.00	5.00	252.14	4,891.35	-62.34	-193.42	68.09	0.00	0.00	0.00
5,000.00	5.00	252.14	4,990.97	-65.01	-201.71	71.00	0.00	0.00	0.00
5,100.00	5.00	252.14	5,090.59	-67.68	-210.00	73.92	0.00	0.00	0.00
5,200.00	5.00	252.14	5,190.21	-70.36	-218.28	76.84	0.00	0.00	0.00
5,300.00	5.00	252.14	5,289.83	-73.03	-226.57	79.76	0.00	0.00	0.00
5,400.00	5.00	252.14	5,389.45	-75.70	-234.86	82.67	0.00	0.00	0.00
5,469.23	5.00	252.14	5,458.41	-77.55	-240.60	84.69	0.00	0.00	0.00
Start DLS 1.50 TFO -180.00 - Drop 1.5°/100' (W2 2H)									
5,500.00	4.53	252.14	5,489.08	-78.33	-243.03	85.55	1.50	-1.50	0.00
5,600.00	3.03	252.13	5,588.86	-80.36	-249.31	87.76	1.50	-1.50	0.00
5,700.00	1.53	252.13	5,688.77	-81.58	-253.11	89.10	1.50	-1.50	0.00
5,802.28	0.00	179.60	5,791.04	-82.00	-254.41	89.56	1.50	-1.50	-70.91
Start 6380.01 hold at 5802.28 MD - VT (W2 2H)									
5,900.00	0.00	179.60	5,888.76	-82.00	-254.41	89.56	0.00	0.00	0.00
6,000.00	0.00	179.60	5,988.76	-82.00	-254.41	89.56	0.00	0.00	0.00
6,100.00	0.00	179.60	6,088.76	-82.00	-254.41	89.56	0.00	0.00	0.00
6,200.00	0.00	179.60	6,188.76	-82.00	-254.41	89.56	0.00	0.00	0.00
6,300.00	0.00	179.60	6,288.76	-82.00	-254.41	89.56	0.00	0.00	0.00
6,400.00	0.00	179.60	6,388.76	-82.00	-254.41	89.56	0.00	0.00	0.00
6,500.00	0.00	179.60	6,488.76	-82.00	-254.41	89.56	0.00	0.00	0.00
6,600.00	0.00	179.60	6,588.76	-82.00	-254.41	89.56	0.00	0.00	0.00
6,700.00	0.00	179.60	6,688.76	-82.00	-254.41	89.56	0.00	0.00	0.00
6,800.00	0.00	179.60	6,788.76	-82.00	-254.41	89.56	0.00	0.00	0.00
6,900.00	0.00	179.60	6,888.76	-82.00	-254.41	89.56	0.00	0.00	0.00
7,000.00	0.00	179.60	6,988.76	-82.00	-254.41	89.56	0.00	0.00	0.00
7,100.00	0.00	179.60	7,088.76	-82.00	-254.41	89.56	0.00	0.00	0.00
7,200.00	0.00	179.60	7,188.76	-82.01	-254.41	89.56	0.00	0.00	0.00
7,300.00	0.00	179.60	7,288.76	-82.01	-254.41	89.56	0.00	0.00	0.00
7,379.24	0.00	179.60	7,368.00	-82.01	-254.41	89.56	0.00	0.00	0.00
Brushy Canyon									
7,400.00	0.00	179.60	7,388.76	-82.01	-254.41	89.56	0.00	0.00	0.00
7,500.00	0.00	179.60	7,488.76	-82.01	-254.41	89.56	0.00	0.00	0.00
7,600.00	0.00	179.60	7,588.76	-82.01	-254.41	89.56	0.00	0.00	0.00
7,700.00	0.00	179.60	7,688.76	-82.01	-254.41	89.56	0.00	0.00	0.00
7,800.00	0.00	179.60	7,788.76	-82.01	-254.41	89.56	0.00	0.00	0.00
7,900.00	0.00	179.60	7,888.76	-82.01	-254.41	89.56	0.00	0.00	0.00
8,000.00	0.00	179.60	7,988.76	-82.01	-254.41	89.56	0.00	0.00	0.00
8,100.00	0.00	179.60	8,088.76	-82.01	-254.41	89.56	0.00	0.00	0.00
8,200.00	0.00	179.60	8,188.76	-82.01	-254.41	89.56	0.00	0.00	0.00
8,300.00	0.00	179.60	8,288.76	-82.01	-254.41	89.56	0.00	0.00	0.00
8,400.00	0.00	179.60	8,388.76	-82.01	-254.41	89.56	0.00	0.00	0.00
8,500.00	0.00	179.60	8,488.76	-82.01	-254.41	89.57	0.00	0.00	0.00
8,600.00	0.00	179.60	8,588.76	-82.01	-254.41	89.57	0.00	0.00	0.00
8,700.00	0.00	179.60	8,688.76	-82.01	-254.41	89.57	0.00	0.00	0.00
8,800.00	0.00	179.60	8,788.76	-82.01	-254.41	89.57	0.00	0.00	0.00
8,876.24	0.00	179.60	8,865.00	-82.01	-254.41	89.57	0.00	0.00	0.00
Bone Spring 1st Carbonate Top									
8,900.00	0.00	179.60	8,888.76	-82.01	-254.41	89.57	0.00	0.00	0.00
9,000.00	0.00	179.60	8,988.76	-82.01	-254.41	89.57	0.00	0.00	0.00
9,082.24	0.00	179.60	9,071.00	-82.01	-254.41	89.57	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well W2 2H
Company:	ConocoPhillips	TVD Reference:	Well @ 3164.00usft (H&P 499 RKB: 25' + GL: 3139')
Project:	Lea County, NM	MD Reference:	Well @ 3164.00usft (H&P 499 RKB: 25' + GL: 3139')
Site:	War Hammer 25 Fed Com	North Reference:	Grid
Well:	W2 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Avalon A									
9,100.00	0.00	179.60	9,088.76	-82.01	-254.41	89.57	0.00	0.00	0.00
9,200.00	0.00	179.60	9,188.76	-82.01	-254.41	89.57	0.00	0.00	0.00
9,284.24	0.00	179.60	9,273.00	-82.01	-254.41	89.57	0.00	0.00	0.00
Avalon B									
9,300.00	0.00	179.60	9,288.76	-82.01	-254.41	89.57	0.00	0.00	0.00
9,400.00	0.00	179.60	9,388.76	-82.01	-254.41	89.57	0.00	0.00	0.00
9,433.24	0.00	179.60	9,422.00	-82.01	-254.41	89.57	0.00	0.00	0.00
Avalon C									
9,500.00	0.00	179.60	9,488.76	-82.01	-254.41	89.57	0.00	0.00	0.00
9,600.00	0.00	179.60	9,588.76	-82.01	-254.41	89.57	0.00	0.00	0.00
9,700.00	0.00	179.60	9,688.76	-82.01	-254.41	89.57	0.00	0.00	0.00
9,727.24	0.00	179.60	9,716.00	-82.01	-254.41	89.57	0.00	0.00	0.00
Avalon D									
9,769.24	0.00	179.60	9,758.00	-82.01	-254.41	89.57	0.00	0.00	0.00
1st Bone Spring Sand									
9,800.00	0.00	179.60	9,788.76	-82.01	-254.41	89.57	0.00	0.00	0.00
9,900.00	0.00	179.60	9,888.76	-82.02	-254.41	89.57	0.00	0.00	0.00
9,981.24	0.00	179.60	9,970.00	-82.02	-254.41	89.57	0.00	0.00	0.00
FBS shale									
10,000.00	0.00	179.60	9,988.76	-82.02	-254.41	89.57	0.00	0.00	0.00
10,100.00	0.00	179.60	10,088.76	-82.02	-254.41	89.57	0.00	0.00	0.00
10,152.24	0.00	179.60	10,141.00	-82.02	-254.41	89.57	0.00	0.00	0.00
2nd Bone Spring Carbonate									
10,200.00	0.00	179.60	10,188.76	-82.02	-254.41	89.57	0.00	0.00	0.00
10,300.00	0.00	179.60	10,288.76	-82.02	-254.41	89.57	0.00	0.00	0.00
10,309.24	0.00	179.60	10,298.00	-82.02	-254.41	89.57	0.00	0.00	0.00
2nd Bone Spring Sand									
10,400.00	0.00	179.60	10,388.76	-82.02	-254.41	89.57	0.00	0.00	0.00
10,500.00	0.00	179.60	10,488.76	-82.02	-254.41	89.57	0.00	0.00	0.00
10,600.00	0.00	179.60	10,588.76	-82.02	-254.41	89.57	0.00	0.00	0.00
10,665.24	0.00	179.60	10,654.00	-82.02	-254.41	89.57	0.00	0.00	0.00
3rd Bone Spring Carbonate									
10,700.00	0.00	179.60	10,688.76	-82.02	-254.41	89.57	0.00	0.00	0.00
10,800.00	0.00	179.60	10,788.76	-82.02	-254.41	89.57	0.00	0.00	0.00
10,900.00	0.00	179.60	10,888.76	-82.02	-254.41	89.57	0.00	0.00	0.00
11,000.00	0.00	179.60	10,988.76	-82.02	-254.41	89.57	0.00	0.00	0.00
11,100.00	0.00	179.60	11,088.76	-82.02	-254.41	89.58	0.00	0.00	0.00
11,200.00	0.00	179.60	11,188.76	-82.02	-254.41	89.58	0.00	0.00	0.00
11,300.00	0.00	179.60	11,288.76	-82.02	-254.41	89.58	0.00	0.00	0.00
11,400.00	0.00	179.60	11,388.76	-82.02	-254.41	89.58	0.00	0.00	0.00
11,500.00	0.00	179.60	11,488.76	-82.02	-254.41	89.58	0.00	0.00	0.00
11,500.24	0.00	179.60	11,489.00	-82.02	-254.41	89.58	0.00	0.00	0.00
3rd Bone Spring Sand									
11,600.00	0.00	179.60	11,588.76	-82.02	-254.41	89.58	0.00	0.00	0.00
11,700.00	0.00	179.60	11,688.76	-82.02	-254.41	89.58	0.00	0.00	0.00
11,800.00	0.00	179.60	11,788.76	-82.02	-254.41	89.58	0.00	0.00	0.00
11,846.24	0.00	179.60	11,835.00	-82.02	-254.41	89.58	0.00	0.00	0.00
Wolfcamp									
11,900.00	0.00	179.60	11,888.76	-82.02	-254.41	89.58	0.00	0.00	0.00
12,000.00	0.00	179.60	11,988.76	-82.02	-254.41	89.58	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well W2 2H
Company:	ConocoPhillips	TVD Reference:	Well @ 3164.00usft (H&P 499 RKB: 25' + GL: 3139')
Project:	Lea County, NM	MD Reference:	Well @ 3164.00usft (H&P 499 RKB: 25' + GL: 3139')
Site:	War Hammer 25 Fed Com	North Reference:	Grid
Well:	W2 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
12,056.24	0.00	179.60	12,045.00	-82.02	-254.41	89.58	0.00	0.00	0.00
Wolfcamp 1									
12,100.00	0.00	179.60	12,088.76	-82.02	-254.41	89.58	0.00	0.00	0.00
12,182.28	0.00	179.60	12,171.04	-82.02	-254.41	89.58	0.00	0.00	0.00
Start Build 10.00 - KOP (W2 2H)									
12,200.00	1.77	179.60	12,188.76	-82.25	-254.40	89.81	10.00	10.00	0.00
12,250.00	6.77	179.60	12,238.60	-85.97	-254.37	93.53	10.00	10.00	0.00
12,300.00	11.77	179.60	12,287.94	-94.03	-254.32	101.57	10.00	10.00	0.00
12,350.00	16.77	179.60	12,336.38	-106.35	-254.23	113.89	10.00	10.00	0.00
12,400.00	21.77	179.60	12,383.56	-122.85	-254.12	130.37	10.00	10.00	0.00
12,450.00	26.77	179.60	12,429.13	-143.39	-253.97	150.91	10.00	10.00	0.00
12,496.80	31.45	179.60	12,470.00	-166.15	-253.81	173.65	10.00	10.00	0.00
Wolfcamp 2									
12,500.00	31.77	179.60	12,472.73	-167.83	-253.80	175.33	10.00	10.00	0.00
12,550.00	36.77	179.60	12,514.03	-195.98	-253.61	203.46	10.00	10.00	0.00
12,600.00	41.77	179.60	12,552.73	-227.62	-253.39	235.08	10.00	10.00	0.00
12,650.00	46.77	179.60	12,588.52	-262.51	-253.14	269.95	10.00	10.00	0.00
12,700.00	51.77	179.60	12,621.13	-300.39	-252.88	307.80	10.00	10.00	0.00
12,750.00	56.77	179.60	12,650.32	-340.96	-252.59	348.35	10.00	10.00	0.00
12,800.00	61.77	179.60	12,675.86	-383.93	-252.29	391.29	10.00	10.00	0.00
12,850.00	66.77	179.60	12,697.56	-428.96	-251.98	436.28	10.00	10.00	0.00
12,900.00	71.77	179.60	12,715.25	-475.70	-251.65	483.00	10.00	10.00	0.00
12,950.00	76.77	179.60	12,728.80	-523.82	-251.32	531.08	10.00	10.00	0.00
13,000.00	81.77	179.60	12,738.10	-572.92	-250.97	580.16	10.00	10.00	0.00
13,050.00	86.77	179.60	12,743.09	-622.66	-250.63	629.86	10.00	10.00	0.00
13,082.28	90.00	179.60	12,744.00	-654.92	-250.40	662.10	10.00	10.00	0.00
Start 6268.62 hold at 13082.28 MD - EOC (W2 2H)									
13,100.00	90.00	179.60	12,744.00	-672.64	-250.28	679.81	0.00	0.00	0.00
13,200.00	90.00	179.60	12,744.00	-772.64	-249.58	779.74	0.00	0.00	0.00
13,300.00	90.00	179.60	12,744.00	-872.63	-248.88	879.67	0.00	0.00	0.00
13,400.00	90.00	179.60	12,744.00	-972.63	-248.18	979.60	0.00	0.00	0.00
13,500.00	90.00	179.60	12,744.00	-1,072.63	-247.48	1,079.54	0.00	0.00	0.00
13,600.00	90.00	179.60	12,744.00	-1,172.63	-246.78	1,179.47	0.00	0.00	0.00
13,700.00	90.00	179.60	12,744.00	-1,272.62	-246.08	1,279.40	0.00	0.00	0.00
13,800.00	90.00	179.60	12,744.00	-1,372.62	-245.39	1,379.33	0.00	0.00	0.00
13,900.00	90.00	179.60	12,744.00	-1,472.62	-244.69	1,479.27	0.00	0.00	0.00
14,000.00	90.00	179.60	12,744.00	-1,572.62	-243.99	1,579.20	0.00	0.00	0.00
14,100.00	90.00	179.60	12,744.00	-1,672.62	-243.29	1,679.13	0.00	0.00	0.00
14,200.00	90.00	179.60	12,744.00	-1,772.61	-242.59	1,779.06	0.00	0.00	0.00
14,300.00	90.00	179.60	12,744.00	-1,872.61	-241.89	1,878.99	0.00	0.00	0.00
14,400.00	90.00	179.60	12,744.00	-1,972.61	-241.19	1,978.93	0.00	0.00	0.00
14,500.00	90.00	179.60	12,744.00	-2,072.61	-240.50	2,078.86	0.00	0.00	0.00
14,600.00	90.00	179.60	12,744.00	-2,172.60	-239.80	2,178.79	0.00	0.00	0.00
14,700.00	90.00	179.60	12,744.00	-2,272.60	-239.10	2,278.72	0.00	0.00	0.00
14,800.00	90.00	179.60	12,744.00	-2,372.60	-238.40	2,378.66	0.00	0.00	0.00
14,900.00	90.00	179.60	12,744.00	-2,472.60	-237.70	2,478.59	0.00	0.00	0.00
15,000.00	90.00	179.60	12,744.00	-2,572.59	-237.00	2,578.52	0.00	0.00	0.00
15,100.00	90.00	179.60	12,744.00	-2,672.59	-236.31	2,678.45	0.00	0.00	0.00
15,200.00	90.00	179.60	12,744.00	-2,772.59	-235.61	2,778.38	0.00	0.00	0.00
15,300.00	90.00	179.60	12,744.00	-2,872.59	-234.91	2,878.32	0.00	0.00	0.00
15,400.00	90.00	179.60	12,744.00	-2,972.58	-234.21	2,978.25	0.00	0.00	0.00
15,500.00	90.00	179.60	12,744.00	-3,072.58	-233.51	3,078.18	0.00	0.00	0.00

Database: EDM 5000.1 Single User Db
 Company: ConocoPhillips
 Project: Lea County, NM
 Site: War Hammer 25 Fed Com
 Well: W2 2H
 Wellbore: Original Hole
 Design: Design #1

Local Co-ordinate Reference: Well W2 2H
 TVD Reference: Well @ 3164.00usft (H&P 499 RKB: 25' + GL: 3139')
 MD Reference: Well @ 3164.00usft (H&P 499 RKB: 25' + GL: 3139')
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
15,600.00	90.00	179.60	12,744.00	-3,172.58	-232.81	3,178.11	0.00	0.00	0.00
15,700.00	90.00	179.60	12,744.00	-3,272.58	-232.11	3,278.05	0.00	0.00	0.00
15,800.00	90.00	179.60	12,744.00	-3,372.57	-231.42	3,377.98	0.00	0.00	0.00
15,900.00	90.00	179.60	12,744.00	-3,472.57	-230.72	3,477.91	0.00	0.00	0.00
16,000.00	90.00	179.60	12,744.00	-3,572.57	-230.02	3,577.84	0.00	0.00	0.00
16,100.00	90.00	179.60	12,744.00	-3,672.57	-229.32	3,677.77	0.00	0.00	0.00
16,200.00	90.00	179.60	12,744.00	-3,772.56	-228.62	3,777.71	0.00	0.00	0.00
16,300.00	90.00	179.60	12,744.00	-3,872.56	-227.92	3,877.64	0.00	0.00	0.00
16,400.00	90.00	179.60	12,744.00	-3,972.56	-227.22	3,977.57	0.00	0.00	0.00
16,500.00	90.00	179.60	12,744.00	-4,072.56	-226.53	4,077.50	0.00	0.00	0.00
16,600.00	90.00	179.60	12,744.00	-4,172.55	-225.83	4,177.43	0.00	0.00	0.00
16,700.00	90.00	179.60	12,744.00	-4,272.55	-225.13	4,277.37	0.00	0.00	0.00
16,800.00	90.00	179.60	12,744.00	-4,372.55	-224.43	4,377.30	0.00	0.00	0.00
16,900.00	90.00	179.60	12,744.00	-4,472.55	-223.73	4,477.23	0.00	0.00	0.00
17,000.00	90.00	179.60	12,744.00	-4,572.54	-223.03	4,577.16	0.00	0.00	0.00
17,100.00	90.00	179.60	12,744.00	-4,672.54	-222.33	4,677.10	0.00	0.00	0.00
17,200.00	90.00	179.60	12,744.00	-4,772.54	-221.64	4,777.03	0.00	0.00	0.00
17,300.00	90.00	179.60	12,744.00	-4,872.54	-220.94	4,876.96	0.00	0.00	0.00
17,400.00	90.00	179.60	12,744.00	-4,972.53	-220.24	4,976.89	0.00	0.00	0.00
17,500.00	90.00	179.60	12,744.00	-5,072.53	-219.54	5,076.82	0.00	0.00	0.00
17,600.00	90.00	179.60	12,744.00	-5,172.53	-218.84	5,176.76	0.00	0.00	0.00
17,700.00	90.00	179.60	12,744.00	-5,272.53	-218.14	5,276.69	0.00	0.00	0.00
17,800.00	90.00	179.60	12,744.00	-5,372.52	-217.44	5,376.62	0.00	0.00	0.00
17,900.00	90.00	179.60	12,744.00	-5,472.52	-216.75	5,476.55	0.00	0.00	0.00
18,000.00	90.00	179.60	12,744.00	-5,572.52	-216.05	5,576.49	0.00	0.00	0.00
18,100.00	90.00	179.60	12,744.00	-5,672.52	-215.35	5,676.42	0.00	0.00	0.00
18,200.00	90.00	179.60	12,744.00	-5,772.52	-214.65	5,776.35	0.00	0.00	0.00
18,300.00	90.00	179.60	12,744.00	-5,872.51	-213.95	5,876.28	0.00	0.00	0.00
18,400.00	90.00	179.60	12,744.00	-5,972.51	-213.25	5,976.21	0.00	0.00	0.00
18,500.00	90.00	179.60	12,744.00	-6,072.51	-212.55	6,076.15	0.00	0.00	0.00
18,600.00	90.00	179.60	12,744.00	-6,172.51	-211.86	6,176.08	0.00	0.00	0.00
18,700.00	90.00	179.60	12,744.00	-6,272.50	-211.16	6,276.01	0.00	0.00	0.00
18,800.00	90.00	179.60	12,744.00	-6,372.50	-210.46	6,375.94	0.00	0.00	0.00
18,900.00	90.00	179.60	12,744.00	-6,472.50	-209.76	6,475.88	0.00	0.00	0.00
19,000.00	90.00	179.60	12,744.00	-6,572.50	-209.06	6,575.81	0.00	0.00	0.00
19,100.00	90.00	179.60	12,744.00	-6,672.49	-208.36	6,675.74	0.00	0.00	0.00
19,200.00	90.00	179.60	12,744.00	-6,772.49	-207.66	6,775.67	0.00	0.00	0.00
19,300.00	90.00	179.60	12,744.00	-6,872.49	-206.97	6,875.60	0.00	0.00	0.00
19,350.90	90.00	179.60	12,744.00	-6,923.39	-206.61	6,926.47	0.00	0.00	0.00

TD at 19350.90 - PBHL (W2 2H)

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well W2 2H
Company:	ConocoPhillips	TVD Reference:	Well @ 3164.00usft (H&P 499 RKB: 25' + GL: 3139')
Project:	Lea County, NM	MD Reference:	Well @ 3164.00usft (H&P 499 RKB: 25' + GL: 3139')
Site:	War Hammer 25 Fed Com	North Reference:	Grid
Well:	W2 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Design #1		

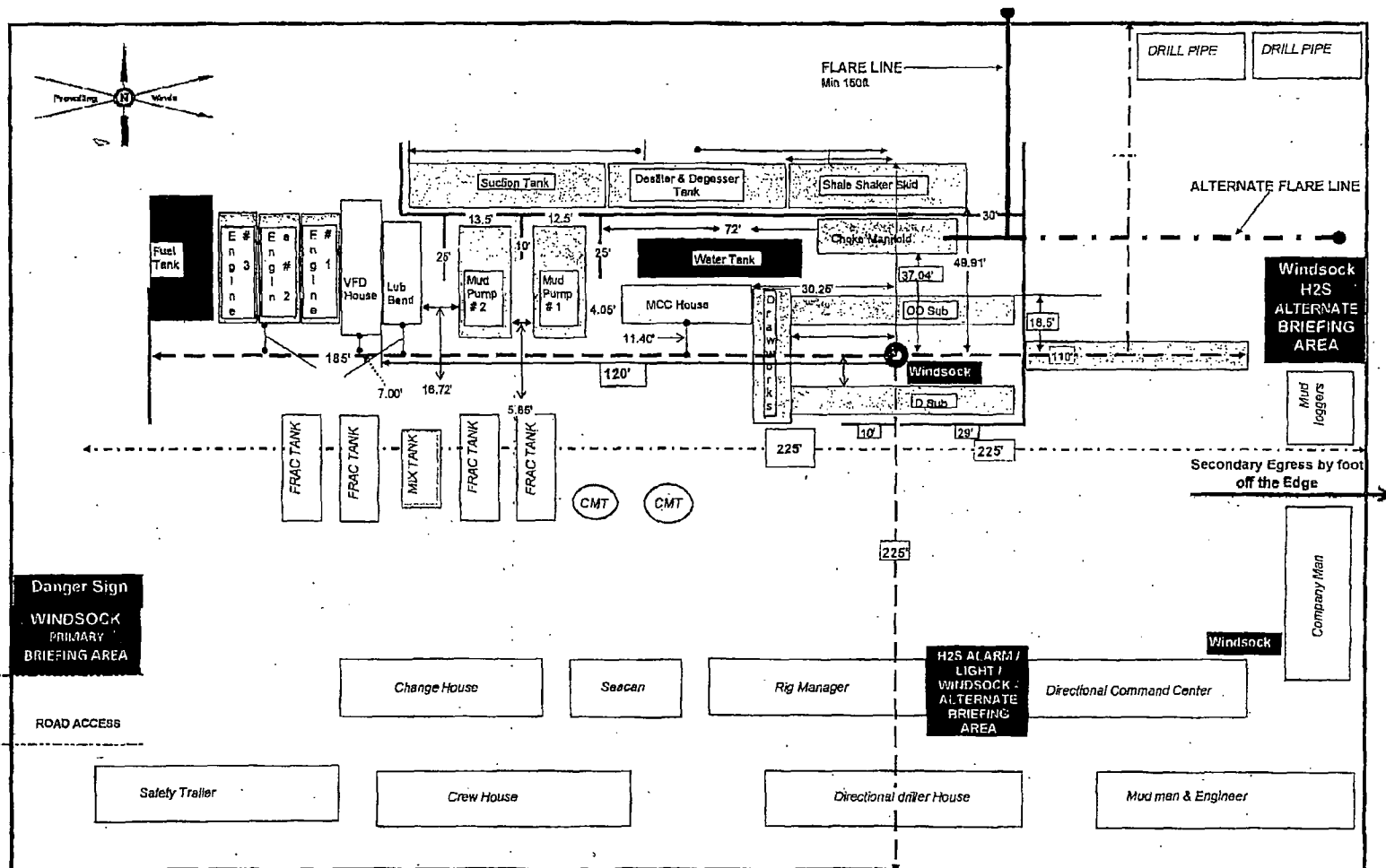
Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
SHL (W2 2H)	0.00	0.00	0.00	0.00	0.00	371,749.91	721,157.97	32° 1' 12.170 N	103° 37' 11.140 W
- plan hits target center									
- Point									
Build 1.5°/100' (W2 2H)	0.00	0.00	2,400.00	0.00	0.00	371,749.91	721,157.97	32° 1' 12.170 N	103° 37' 11.140 W
- plan hits target center									
- Point									
Hold 5° (W2 2H)	0.00	0.00	2,732.64	-4.45	-13.81	371,745.46	721,144.15	32° 1' 12.127 N	103° 37' 11.301 W
- plan hits target center									
- Point									
Drop 1.5°/100' (W2 2H)	0.00	0.00	5,458.41	-77.55	-240.60	371,672.36	720,917.37	32° 1' 11.418 N	103° 37' 13.940 W
- plan hits target center									
- Point									
VT (W2 2H)	0.00	0.00	5,791.04	-82.00	-254.41	371,667.91	720,903.56	32° 1' 11.375 N	103° 37' 14.101 W
- plan hits target center									
- Point									
KOP (W2 2H)	0.00	0.00	12,171.04	-81.98	-254.40	371,667.93	720,903.56	32° 1' 11.375 N	103° 37' 14.101 W
- plan misses target center by 0.05usft at 12182.28usft MD (12171.04 TVD, -82.02 N, -254.41 E)									
- Point									
EOC (W2 2H)	0.00	0.00	12,744.00	-654.92	-250.40	371,094.99	720,907.57	32° 1' 5.705 N	103° 37' 14.099 W
- plan hits target center									
- Point									
PBHL (W2 2H)	0.00	0.00	12,744.00	-6,923.39	-206.61	364,826.52	720,951.36	32° 0' 3.670 N	103° 37' 14.070 W
- plan hits target center									
- Point									

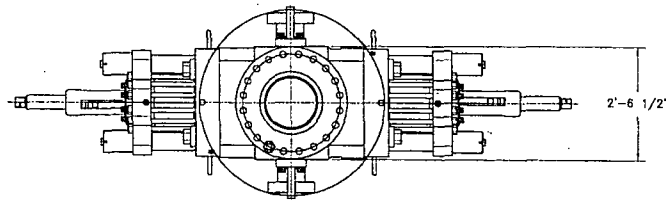
Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(usft)	(usft)			(°)	(°)	
7,379.24	7,368.00	Brushy Canyon		0.00	0.00	
8,876.24	8,865.00	Bone Spring 1st Carbonate Top		0.00	0.00	
9,082.24	9,071.00	Avalon A		0.00	0.00	
9,284.24	9,273.00	Avalon B		0.00	0.00	
9,433.24	9,422.00	Avalon C		0.00	0.00	
9,727.24	9,716.00	Avalon D		0.00	0.00	
9,769.24	9,758.00	1st Bone Spring Sand		0.00	0.00	
9,981.24	9,970.00	FBS shale		0.00	0.00	
10,152.24	10,141.00	2nd Bone Spring Carbonate		0.00	0.00	
10,309.24	10,298.00	2nd Bone Spring Sand		0.00	0.00	
10,665.24	10,654.00	3rd Bone Spring Carbonate		0.00	0.00	
11,500.24	11,489.00	3rd Bone Spring Sand		0.00	0.00	
11,846.24	11,835.00	Wolfcamp		0.00	0.00	
12,056.24	12,045.00	Wolfcamp 1		0.00	0.00	
12,496.80	12,470.00	Wolfcamp 2		0.00	0.00	

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well W2 2H
Company:	ConocoPhillips	TVD Reference:	Well @ 3164.00usft (H&P 499 RKB: 25' + GL: 3139')
Project:	Lea County, NM	MD Reference:	Well @ 3164.00usft (H&P 499 RKB: 25' + GL: 3139')
Site:	War Hammer 25 Fed Com	North Reference:	Grid
Well:	W2 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Design #1		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,400.00	2,400.00	0.00	0.00	Start Build 1.50
2,733.06	2,732.64	-4.45	-13.81	Start 2736.17 hold at 2733.06 MD
5,469.23	5,458.41	-77.55	-240.60	Start DLS 1.50 TFO -180.00
5,802.28	5,791.04	-82.00	-254.41	Start 6380.01 hold at 5802.28 MD
12,182.28	12,171.05	-81.98	-254.40	Start Build 10.00
13,082.28	12,744.00	-654.92	-250.40	Start 6268.62 hold at 13082.28 MD
19,350.90	12,744.00	-6,923.39	-206.61	TD at 19350.90





- 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

See COA
10M Required
below 7'-5/8" csg

SHAFFER BOLTED-COVER SPHERICAL
ANNULAR PREVENTER (API 16A
MONOGRAMMED, 13 5/8"-10M WP)
10M BOTTOM FLANGE x 5" (PA)
STUDDED TOP (WEIGHT 14,500
LBS WITH SHAFFER API 16A HOT
OIL RESISTANT ACRYLONITRILE
ELEMENT)

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

SEE LIFT LUG DETAIL

3'-11 7/8"

4'-3 7/8"

12'-7 1/2"

1'-8 7/8"

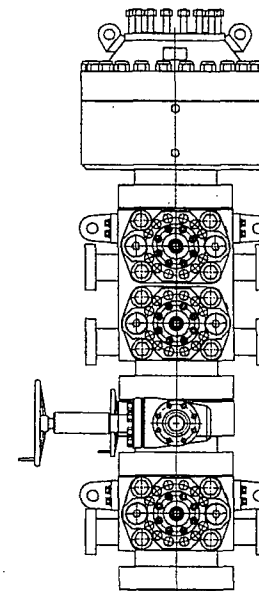
2'-8 7/8"

11'-1 5/8" CLOSED

12'-5 3/8" OPERATING

16'-5" OPENED

13 5/8-10M STACK



CAMERON LIFT EYES,
2 PER PREVENTER, 50
SHORT TON RATED
CAPACITY EACH.

PRELIMINARY
APRIL-14-2011
DRAFTSMAN
ENGINEER

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

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

PROPRIETARY

THIS DRAWING AND THE IDEAS AND INFORMATION INCLUDED
IN THIS DRAWING ARE PROPRIETARY AND ARE NOT TO BE
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RIZED OFFICER OF HELMERICH & PAYNE INT'L DRILLING CO.



HELMERICH & PAYNE
INTERNATIONAL DRILLING CO.

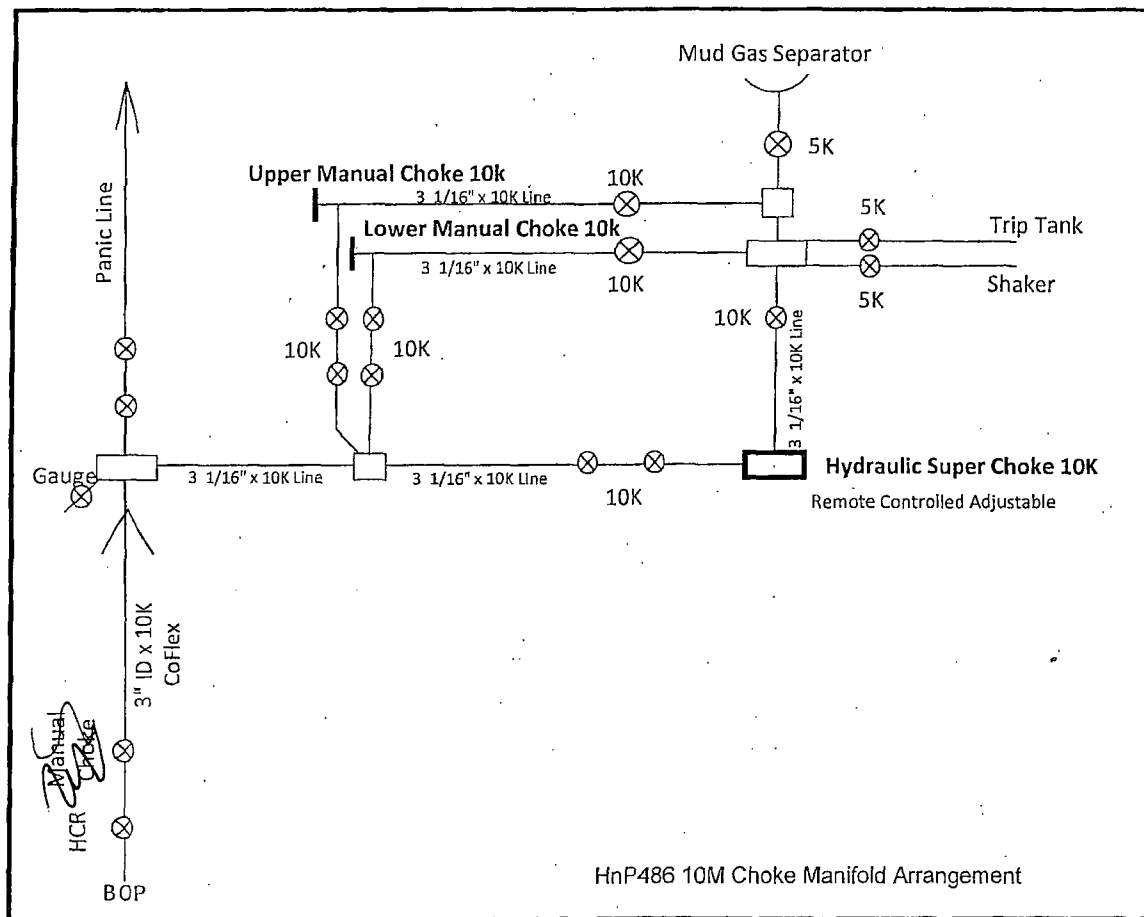
13 5/8"-10M BOP 3 RAM STACK
FLEXRIG3

CUSTOMER: H&P

PROJECT: FLEXRIG3

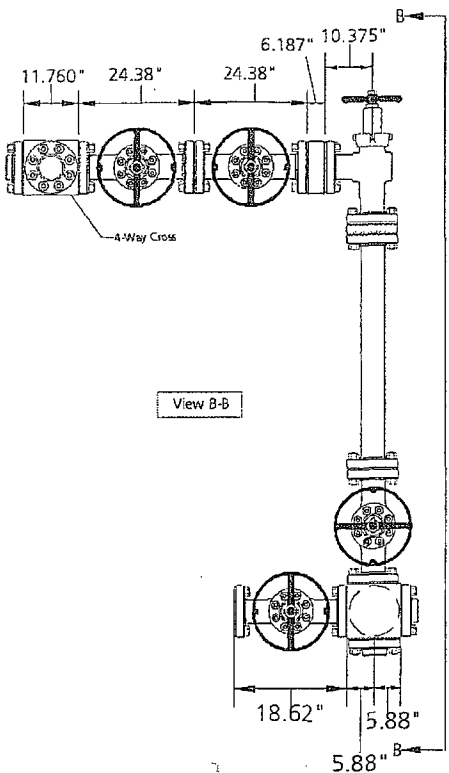
DRAWN: MTS DATE: 6-5-02 DWG. NO.: 210-P1-07
SCALE: 3/4"=1' SHEET: 1 OF 1 REV: E

REV	DATE	DESCRIPTION	BY
1	12/18/07	ADDED SHEET 03	JAV
2	4-10-07	ORIENTATION REVISED: DOUBLE STUDDED ADAPTER VALVES 1, 2, 3, 4 AND 4S CHECK VALVE ADDED	JBG
3	4-04-07	ADDED TO SPACER ADAPTER SPOOL	JBG
4	02-07-07	ADDED ADAPTER SPOOL	WWL
5	08-13-02	CORRECTED BOP STACK	WWL

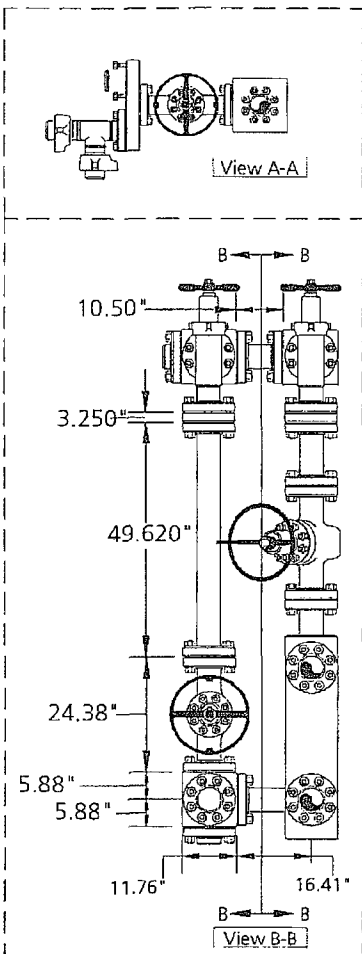


Note: Dimensional information reflected on this drawing are estimated measurements only.

Helmerich & Payne
Rig Flex 3 Manifold with 3rd Choke Run

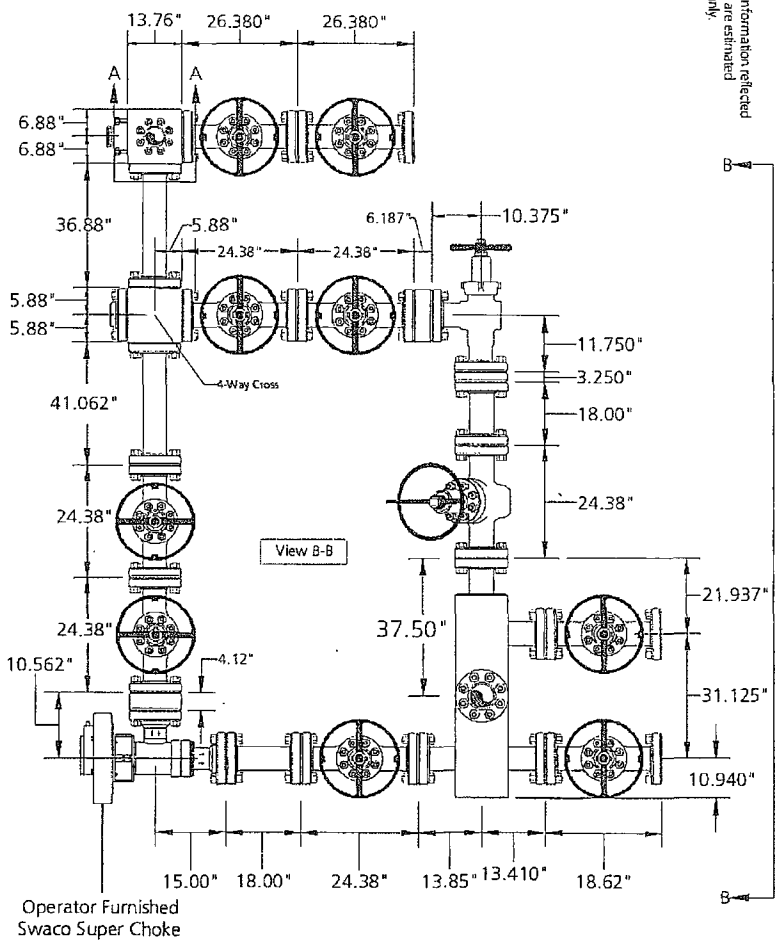


View B-B



View A-A

View B-B



Operator Furnished
Swaco Super Choke

Name: Jeanette

Date: 9-9-08

Working Title: X

#

J-3737-3

CAMERON



QC-UB- 45/2012

Page: 7/50

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	
				Heat N°	
				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/EU					
Date:		Inspector		Quality Control	
30. January 2012.				ContiTech Rubber Industrial Kft. Quality Control Dept. (1) <i>[Signature]</i>	

Continental Rubber Industrial Kft.
 Budapesti út 10., Szeged 6720
 P.O. Box 152 Szeged 6720
 Hungary

Phone: +36 62 565 737
 Fax: +36 62 565 736
 e-mail: h120108@continentalrubber.com
 Internet: www.contitech-hungary.com

The Court of Original Entry at
 Registry Court
 Registry Court No. HU 65-05 020502
 Budapest Hungary

Bank data
 ContiTech Zrt.
 Budapest
 H120108 20030003 00000000

No: 182, 184, 185


 David A. Smith
 Certified Rubber
 Industrial Kit
 Quality Control Dept.
 40

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Attachment # 1

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



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

Request for Variance

ConocoPhillips Company

Lease Number: NMLC 069515

Well: War Hammer 25 Federal COM W2 2H

Location: Sec. 25, T26S, R32E

Rig: If drilled with H&P 486

Date: 3/3/2014

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



Fluid Technology

Quality Document

453.369-001

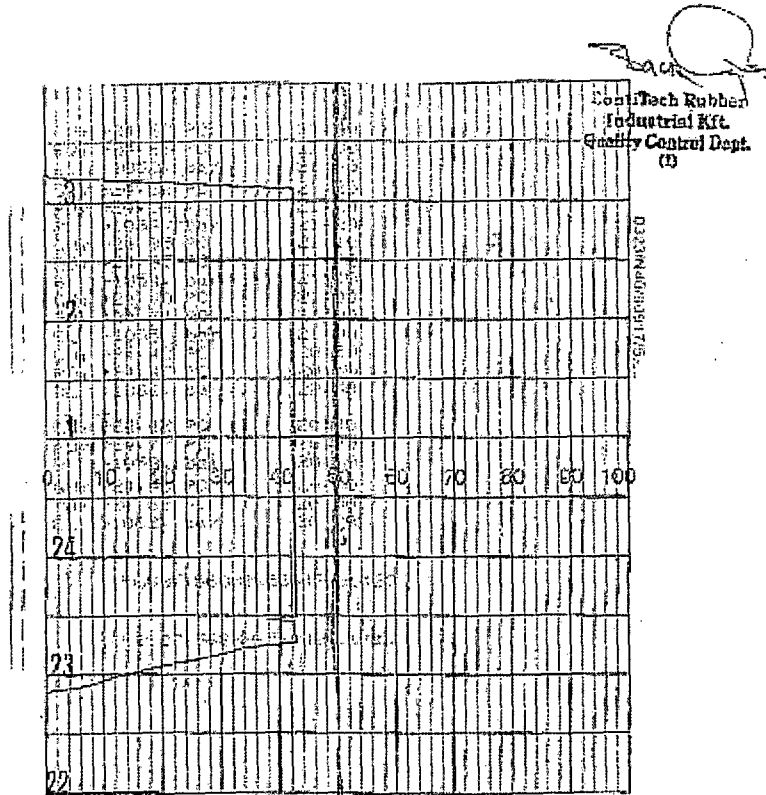
QUALITY CONTROL INSPECTION AND TEST CERTIFICATE				CERT. N°: 1098	
PURCHASER: ContiTech Beattie Co.				P.O. N°: 004452	
CONTITECH ORDER N°: 482598		HOSE TYPE: 3" ID Choke and Kill Hose			
HOSE SERIAL N°: 56839		NOMINAL / ACTUAL LENGTH: 10,67 m / 10,69 m			
W.P. 68,9 MPa 10000 psi		T.P. 103,4 MPa 15000 psi		Duration: 60 min.	
Pressure test with water at ambient temperature See attachment. (1 page) ↑ 10 min = 10 Min. → 10 min = 25 MPa					
COUPLINGS Type		Serial N°		Quality	
3" coupling with		8436 1682		AISI 4130	
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: 02. November 2010.		Inspector		Quality Control	
				ContiTech Rubber Industrial Kft. Quality Control Dept. (1) <i>[Signature]</i>	

Continental Rubber Industrial Kft.

Phone: +36 62 558 797

E-mail: ContiTech@continentalrubber.com

Fax: +36 62 558 797



Attachment # 1

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



Hose Data Sheet

CRI Order No.	516273
Customer	ContiTech Beattie Co.
Customer Order No	PO5438 STOCK
Item No.	3
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Inside dia in inches	3
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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

Request for Variance

ConocoPhillips Company

Lease Number: NMLC 069515

Well: War Hammer 25 Federal COM W2 2H

Location: Sec. 25, T26S, R32E

Rig: If drilled with H&P 453

Date: 3/3/2014

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

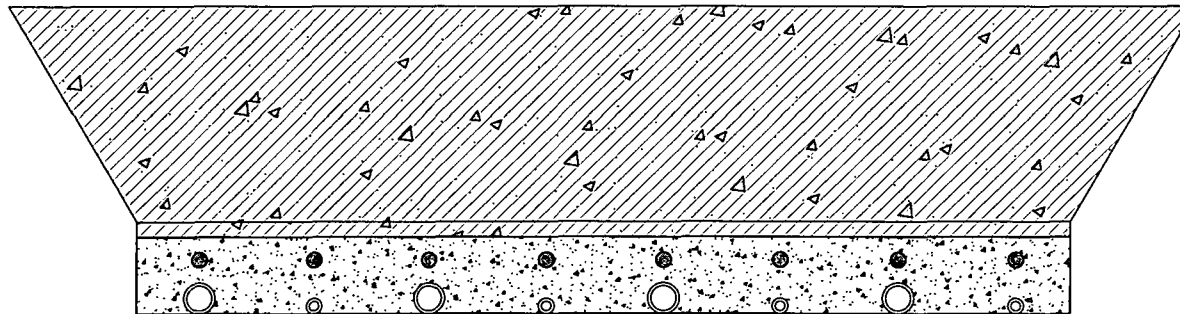
Drilling Engineer, ConocoPhillips Company

Phone (281) 206-5335

Cell (281) 682-2783

Date: 05 February 2014

BACKFILL AROUND PIPE

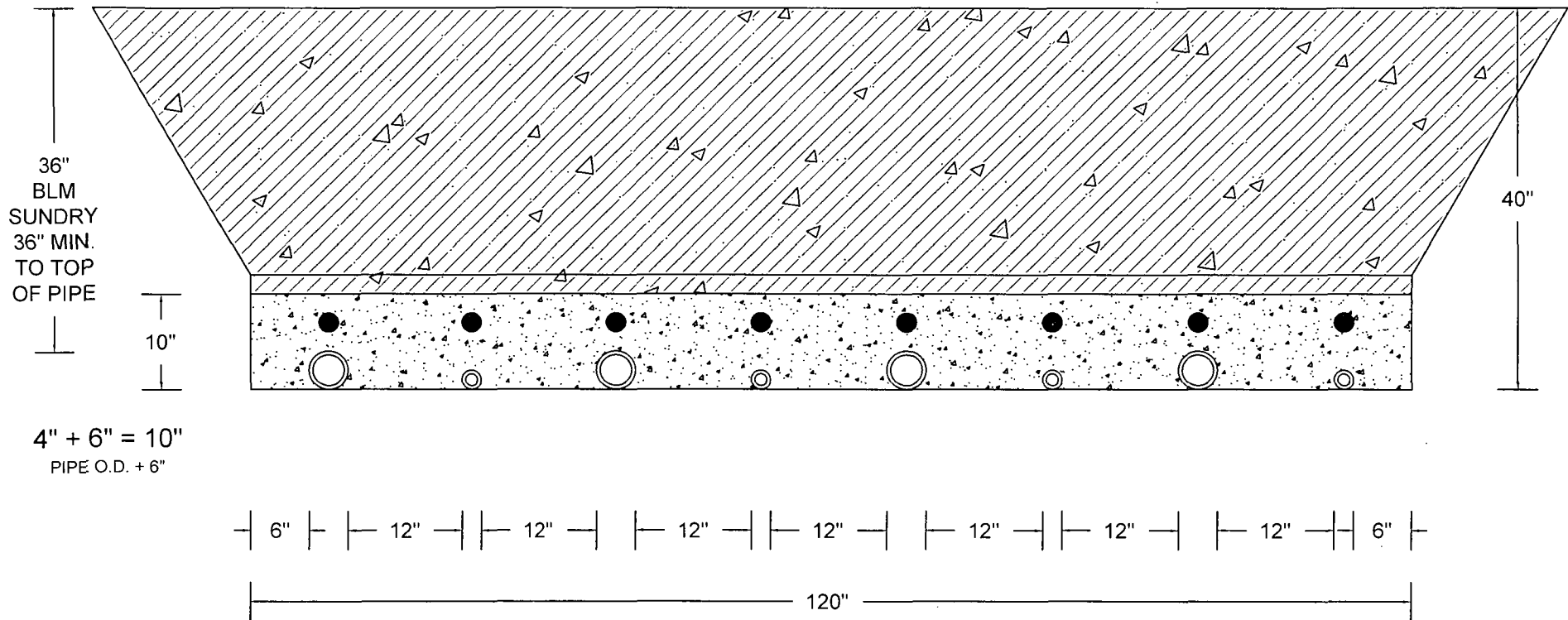


BACKFILL DIRT TO BE AS
FREE OF ROCKS AND LARGE
PARTICLES AS POSSIBLE

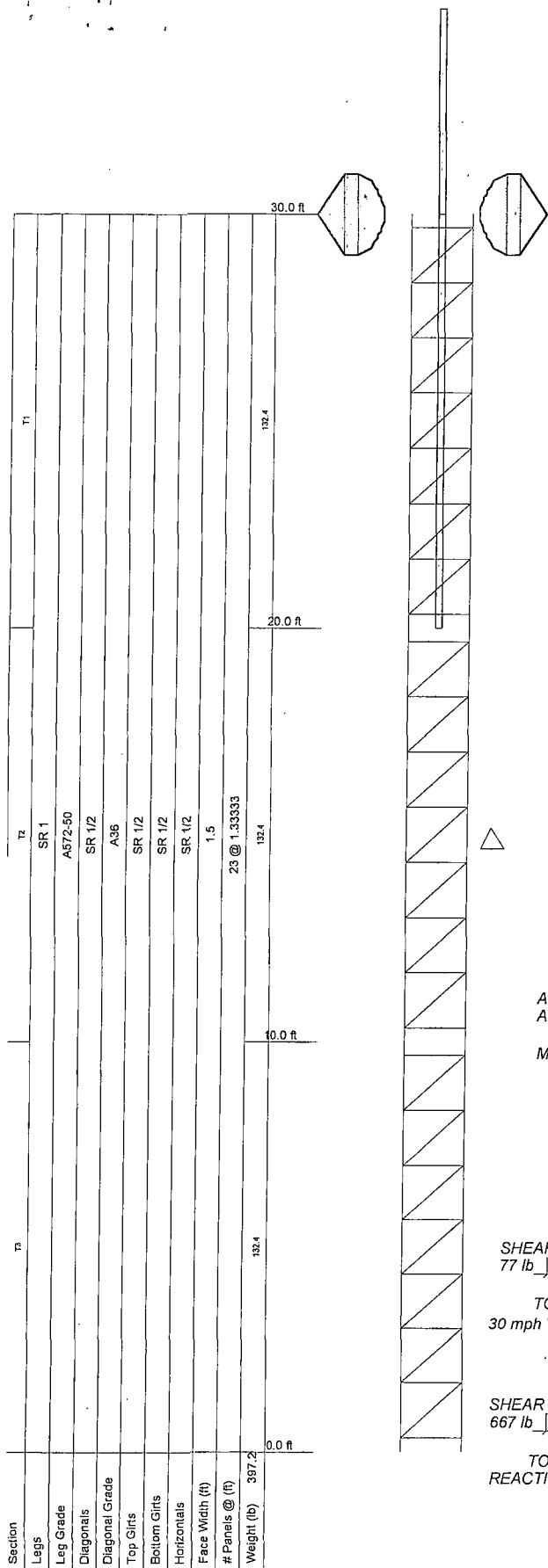
TRACER WIRE INSTALLED
2" ABOVE NON-METALLIC

SOFT FILL DIRT OR SAND
WITH NO ROCKS OR SOLID
PARTICLES GREATER THAN
1" IN CIRCUMFERENCE

BACKFILL AROUND PIPE



(4 QTY) 4" PIPE + (4 QTY) 2" PIPE
 *4" AND 2" PIPE ALTERNATING FOR TOTAL OF 8
 PIPES*
 6" CLEARANCE AT BOTH ENDS
 12" CLEARANCE BETWEEN EACH PIPE



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
5000# Fall Load	50	12ft x 2.5" dia. Whip Antenna	30
Andrew 2' w/Radome	30	12ft x 2.5" dia. Whip Antenna	25
Andrew 2' w/Radome	30		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-G Standard.
2. Tower designed for a 90 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 30 mph basic wind with 0.25 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 41.1%

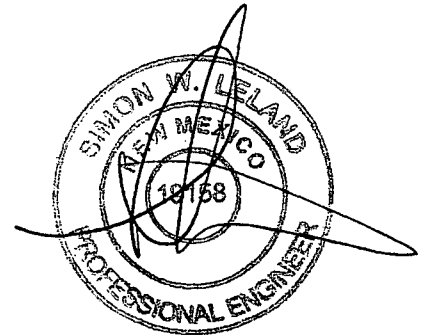
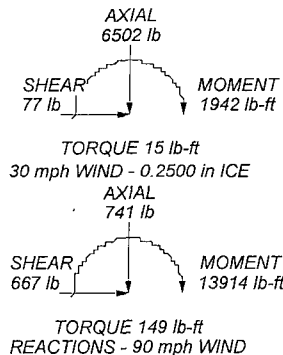
This engineering document is intended to be used as a sales tool. The engineering judgments herein are general in nature and are not intended to be site specific. Per section 107 of the International Building Code site specific drawings are required. Therefore, if or when this equipment is to be installed, a site specific analysis including site specific conditions (antenna equipment loading, elevations, wind speed, topographic factors, exposure coefficients, structure class, and soil strengths, ect) should be considered. DaVinci can provide site specific documents to meet the requirements of the building code and to ensure that the mounts, tower & foundation has sufficient structural capacity to support the proposed loading.

ALL REACTIONS
ARE FACTORED

MAX. CORNER REACTIONS AT BASE:

DOWN: 10768 lb
SHEAR: 182 lb

UPLIFT: -10132 lb
SHEAR: 271 lb



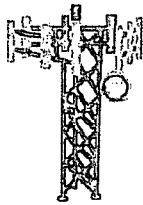
1/21/2014

DaVinci Engineering, Inc.

PO Box 1966
Santa Maria, CA 93456
Phone: (805) 922-5221
FAX: (805) 880-0402

Job: 9914267-011

Project: 30-ft Light Duty Tower
Client: Lea County, New Mexico
Code: TIA-222-G
Path: R:\Engineering Documents\TOWER FILES\Drawn by: Simon Leland
Date: 01/21/14
Scale: NTS
Dwg No. E-1



DALEY TOWER SERVICE, INC.

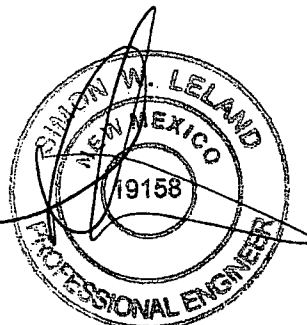
DaVinci Engineering, Inc.

PO BOX 1966 SANTA MARIA, CALIFORNIA 93456
PHONE: (805) 922-5221 FAX: (805) 880-0402
Project # 9914267-011

THIS ENGINEERING DOCUMENT IS INTENDED TO BE USED AS A SALES TOOL. THE ENGINEERING JUDGMENTS HEREIN ARE GENERAL IN NATURE AND ARE NOT INTENDED TO BE SITE SPECIFIC. PER SECTION 107 OF THE INTERNATIONAL BUILDING CODE SITE SPECIFIC DRAWINGS ARE REQUIRED. THEREFORE, IF OR WHEN THIS EQUIPMENT IS TO BE INSTALLED, A SITE SPECIFIC ANALYSIS INCLUDING SITE SPECIFIC CONDITIONS (ANTENNA EQUIPMENT LOADING, ELEVATIONS, WIND SPEED, TOPOGRAPHIC FACTORS, EXPOSURE COEFFICIENTS, STRUCTURE CLASS, AND SOIL STRENGTHS, ECT) SHOULD BE CONSIDERED. DAVINCI CAN PROVIDE SITE SPECIFIC DOCUMENTS TO MEET THE REQUIREMENTS OF THE BUILDING CODE AND TO ENSURE THAT THE FOUNDATION HAS SUFFICIENT STRUCTURAL CAPACITY TO SUPPORT THE PROPOSED LOADING.

4000 PSI CONCRETE

CL OF EMBEDDED TOWER SECTION LOCATED AT THE CL OF THE FOUNDATION



1/21/2014

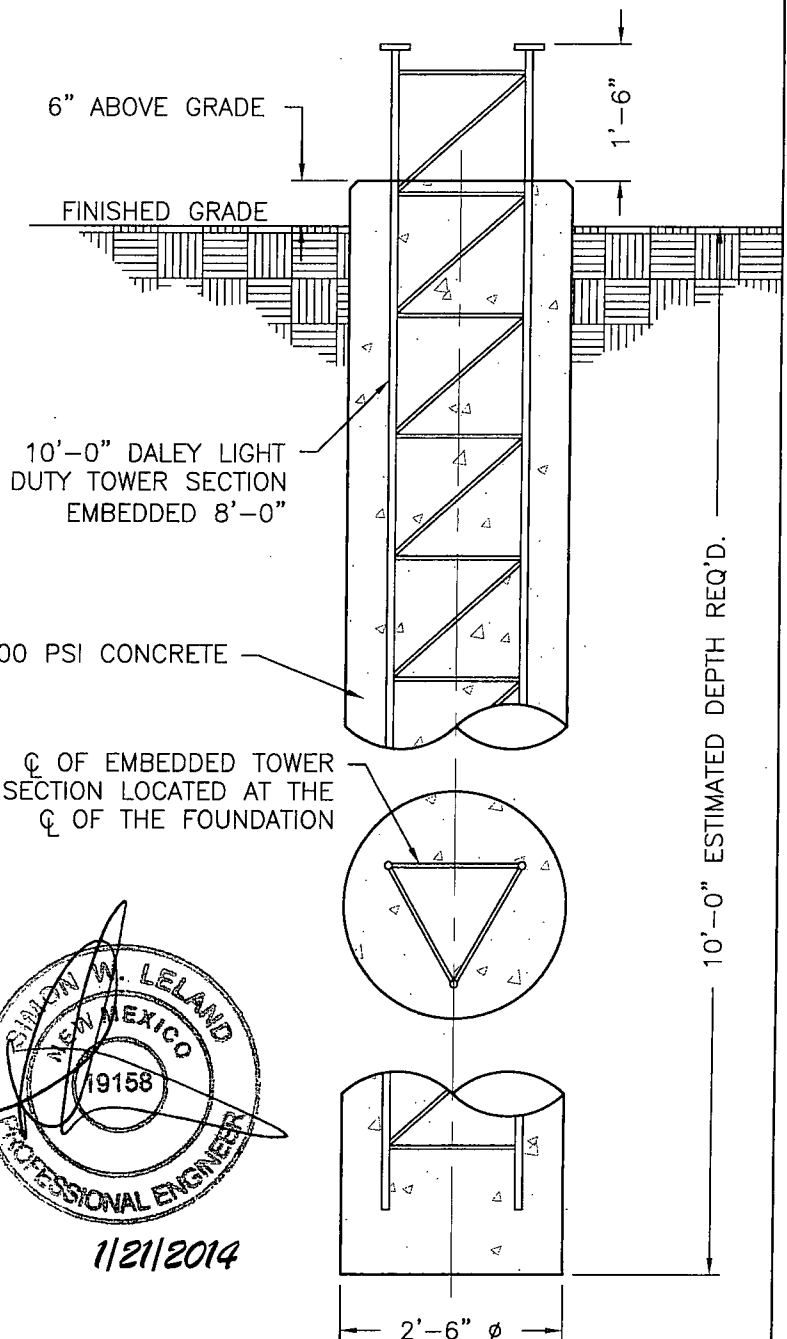
TYPICAL FOUNDATION NOTES:

1. FOUNDATION DESIGN IS BASED ON THE FOLLOWING ASSUMED SOIL VALUES:
UNIT WEIGHT OF SOIL: 100 PCF
ALLOWABLE BEARING CAPACITY: 2000 PSF
ALLOWABLE LATERAL LOAD: 200 PSF/FT DEPTH
GROUND WATER BELOW THE DEPTH OF THE CAISSON

2. ALL FOUNDATION CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI WITHIN 28 DAYS OF PLACEMENT. PROPORTIONING OF THE CONCRETE MIX SHALL BE DESIGNED BY AN APPROVED LABORATORY. ALL CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH ACI 318, "THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", LATEST EDITION. CEMENT SHALL BE TYPE II, LOW ALKALI, CONFORMING TO ASTM C-150. ALL AGGREGATE USED IN THE CONCRETE SHALL CONFORM TO ASTM C-33. USE ONLY AGGREGATES KNOWN NOT TO CAUSE EXCESSIVE SHRINKAGE.

3. ESTIMATED CONCRETE VOLUME = 2 CUBIC YARDS.

4. THE FOUNDATION HAS BEEN DESIGNED TO RESIST THE FOLLOWING FACTORED LOADS:
OVERTURNING MOMENT: 26,000 FT*LBS; SHEAR: 750 LBS; AXIAL: 1200 LBS.



CAISSON FOUNDATION

SCALE: NTS

tnxTower DaVinci Engineering, Inc. PO Box 1966 Santa Maria, CA 93456 Phone: (805) 922-5221 FAX: (805) 880-0402	Job	9914267-011	Page 1 of 11
	Project	30-ft Light Duty Tower	Date 16:20:09 01/21/14
	Client	Lea County, New Mexico	Designed by Simon Leland

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 30.00 ft above the ground line.

The base of the tower is set at an elevation of 0.00 ft above the ground line.

The face width of the tower is 1.50 ft at the top and 1.50 ft at the base.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

Basic wind speed of 90 mph.

Structure Class II.

Exposure Category C.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 0.2500 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 30 mph is used in combination with ice.

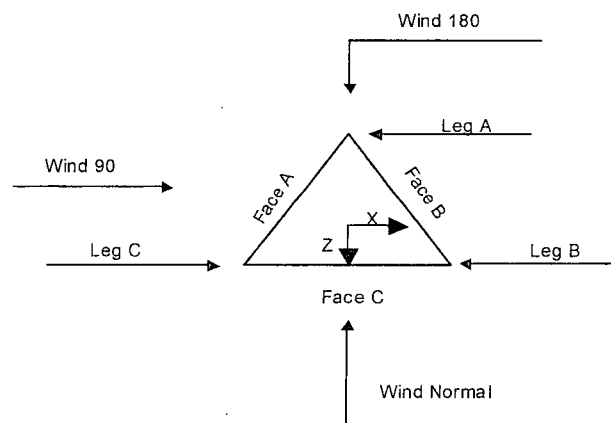
Deflections calculated using a wind speed of 60 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in tower member design is 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.



Triangular Tower

tnxTower DaVinci Engineering, Inc. PO Box 1966 Santa Maria, CA 93456 Phone: (805) 922-5221 FAX: (805) 880-0402	Job	9914267-011	Page	2 of 11
	Project	30-ft Light Duty Tower	Date	16:20:09 01/21/14
	Client	Lea County, New Mexico	Designed by	Simon Leland

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1-T3	30.00-0.00			1.50	3	10.00

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1-T3	30.00-0.00	1.33	Z Brace	No	Yes	4.0000	4.0000

Tower Section Geometry (cont'd)

Tower Elevation	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
ft						
T1-T3 30.00-0.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1/2	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
ft						
T1-T3 30.00-0.00	Solid Round	1/2	A36 (36 ksi)	Solid Round	1/2	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
ft							
T1-T3 30.00-0.00	None	Solid Round		A36 (36 ksi)	Solid Round	1/2	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft ²	in					in	in
T1-T3 30.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000

tnxTower DaVinci Engineering, Inc. PO Box 1966 Santa Maria, CA 93456 Phone: (805) 922-5221 FAX: (805) 880-0402	Job	9914267-011	Page	3 of 11
	Project	30-ft Light Duty Tower	Date	16:20:09 01/21/14
	Client	Lea County, New Mexico	Designed by	Simon Leland

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1-T3 30.00-0.00	Flange	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	25.00 - 3.00	-3.0000	0.25	4	2	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	30.00 - 25.00	-1.5000	0.25	3	2	1.0900	1.0900		0.33

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
T1	30.00-20.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.815	0.000	11.55
T2	20.00-10.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	4.360	0.000	13.20
T3	10.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.052	0.000	9.24

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	1	LDF5-50A (7/8 FOAM)	20.00 - 25.00	0.6000	0.6000
T1	2	LDF5-50A (7/8 FOAM)	25.00 - 30.00	0.6000	0.6000
T2	1	LDF5-50A (7/8 FOAM)	10.00 - 20.00	0.6000	0.6000
T3	1	LDF5-50A (7/8 FOAM)	3.00 - 10.00	0.6000	0.6000

User Defined Loads

Description	Elevation ft	Offset From Centroid ft	Azimuth Angle °	Weight lb	F _x lb	F _z lb	Wind Force lb	C _A A _c ft ²
5000# Fall Load	50.00	0.00	0.0000	No Ice	0.00	0.00	0.00	0.00
				Ice	5000.00	0.00	0.00	0.00
				Service	5000.00	0.00	0.00	0.00

tnxTower DaVinci Engineering, Inc. PO Box 1966 Santa Maria, CA 93456 Phone: (805) 922-5221 FAX: (805) 880-0402	Job	9914267-011	Page	4 of 11
	Project	30-ft Light Duty Tower	Date	16:20:09 01/21/14
	Client	Lea County, New Mexico	Designed by	Simon Leland

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb
12ft x 2.5" dia. Whip Antenna	A	From Leg	0.50	0.0000	30.00	No Ice 3.34 1/2" Ice 4.70	3.34 4.70	23.30 51.07
12ft x 2.5" dia. Whip Antenna	A	From Leg	0.50	0.0000	25.00	No Ice 3.34 1/2" Ice 4.70	3.34 4.70	23.30 51.07

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft ²	Weight lb
Andrew 2' w/Radome	B	Paraboloid w/Radome	From Leg	0.50 0.50 0.00	0.0000		30.00	2.00	No Ice 3.14 1/2" Ice 3.41	70.00 282.00
Andrew 2' w/Radome	C	Paraboloid w/Radome	From Leg	0.50 0.50 0.00	0.0000		30.00	2.00	No Ice 3.14 1/2" Ice 3.41	70.00 282.00

Discrete Appurtenance Pressures - No Ice $G_H = 0.850$

Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _A Ac Front ft ²	C _A Ac Side ft ²
12ft x 2.5" dia. Whip Antenna	0.0000	23.30	0.00	-1.37	30.00	0.982	17	3.34	3.34
12ft x 2.5" dia. Whip Antenna	0.0000	23.30	0.00	-1.37	25.00	0.945	17	3.34	3.34
Sum Weight:		46.60							

Dish Pressures - No Ice

Elevation ft	Dish Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	K _z	A _A ft ²	q _z psf
30.00	Andrew 2' w/Radome	120.0000	70.00	1.18	0.68	0.982	3.14	17
30.00	Andrew 2' w/Radome	240.0000	70.00	-1.18	0.68	0.982	3.14	17
	Sum Weight:		140.00					

tnxTower DaVinci Engineering, Inc. PO Box 1966 Santa Maria, CA 93456 Phone: (805) 922-5221 FAX: (805) 880-0402	Job	9914267-011	Page	5 of 11
	Project	30-ft Light Duty Tower	Date	16:20:09 01/21/14
	Client	Lea County, New Mexico	Designed by	Simon Leland

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

tnxTower DaVinci Engineering, Inc. PO Box 1966 Santa Maria, CA 93456 Phone: (805) 922-5221 FAX: (805) 880-0402	Job	9914267-011	Page	6 of 11
	Project	30-ft Light Duty Tower	Date	16:20:09 01/21/14
	Client	Lea County, New Mexico	Designed by	Simon Leland

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	18	10768.40	134.62	-123.19
	Max. H _x	21	9452.26	167.49	-40.24
	Max. H _z	4	-8573.09	-108.95	258.59
	Min. Vert	7	-10074.48	-201.14	183.85
	Min. H _x	8	-8935.86	-236.86	53.90
	Min. H _z	15	4968.00	-4.87	-188.64
Leg B	Max. Vert	10	10691.46	-137.04	-123.88
	Max. H _x	20	-9012.30	232.85	53.58
	Max. H _z	24	-8650.09	131.09	232.95
	Min. Vert	23	-10131.87	213.76	167.35
	Min. H _x	9	9394.53	-158.06	-54.45
	Min. H _z	15	4910.40	-13.42	-177.22
Leg A	Max. Vert	2	10589.11	-24.14	179.66
	Max. H _x	20	214.21	266.61	-13.22
	Max. H _z	3	10524.42	-24.07	179.72
	Min. Vert	15	-9322.42	18.29	-250.31
	Min. H _x	9	162.46	-271.99	0.70
	Min. H _z	14	-9281.26	18.37	-250.45

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead Only	617.75	0.00	0.00	40.35	47.75	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	741.31	-0.00	-654.46	-13434.66	57.94	-51.18
0.9 Dead+1.6 Wind 0 deg - No Ice	555.98	-0.00	-654.46	-13430.87	43.43	-51.12
1.2 Dead+1.6 Wind 30 deg - No Ice	741.31	319.89	-569.91	-11722.96	-6462.03	-111.30
0.9 Dead+1.6 Wind 30 deg - No Ice	555.98	319.89	-569.91	-11721.15	-6468.86	-111.27
1.2 Dead+1.6 Wind 60 deg - No Ice	741.31	563.20	-327.87	-6713.09	-11510.69	-148.62
0.9 Dead+1.6 Wind 60 deg - No Ice	555.98	563.20	-327.87	-6717.22	-11511.53	-148.65
1.2 Dead+1.6 Wind 90 deg - No Ice	741.31	666.84	-0.20	41.85	-13798.61	-145.80
0.9 Dead+1.6 Wind 90 deg - No Ice	555.98	666.84	-0.20	29.71	-13796.66	-145.88
1.2 Dead+1.6 Wind 120 deg - No Ice	741.31	574.08	321.89	6628.70	-11839.46	-100.43
0.9 Dead+1.6 Wind 120 deg - No Ice	555.98	574.08	321.89	6608.73	-11839.82	-100.54
1.2 Dead+1.6 Wind 150 deg - No Ice	741.31	326.44	542.38	10989.72	-6660.33	-38.60
0.9 Dead+1.6 Wind 150 deg - No Ice	555.98	326.44	542.38	10964.59	-6666.84	-38.71
1.2 Dead+1.6 Wind 180 deg - No Ice	741.31	-0.00	616.18	12377.70	57.65	32.41
0.9 Dead+1.6 Wind 180 deg - No Ice	555.98	-0.00	616.18	12350.93	43.19	32.33
1.2 Dead+1.6 Wind 210 deg - No Ice	741.31	-326.44	542.38	10989.98	6775.54	102.31

tnxTower DaVinci Engineering, Inc. PO Box 1966 Santa Maria, CA 93456 Phone: (805) 922-5221 FAX: (805) 880-0402	Job	9914267-011	Page	7 of 11
	Project	30-ft Light Duty Tower	Date	16:20:09 01/21/14
	Client	Lea County, New Mexico	Designed by	Simon Leland

Load Combination	Vertical lb	Shear _x lb	Shear _y lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _y lb-ft	Torque lb-ft
0.9 Dead+1.6 Wind 210 deg - No Ice	555.98	-326.44	542.38	10964.75	6753.16	102.28
1.2 Dead+1.6 Wind 240 deg - No Ice	741.31	-574.08	321.88	6629.26	11954.54	140.92
0.9 Dead+1.6 Wind 240 deg - No Ice	555.98	-574.08	321.88	6609.10	11926.00	140.95
1.2 Dead+1.6 Wind 270 deg - No Ice	741.31	-666.84	-0.20	42.73	13913.76	127.89
0.9 Dead+1.6 Wind 270 deg - No Ice	555.98	-666.84	-0.20	30.38	13882.86	127.97
1.2 Dead+1.6 Wind 300 deg - No Ice	741.31	-563.20	-327.87	-6712.22	11626.17	76.63
0.9 Dead+1.6 Wind 300 deg - No Ice	555.98	-563.20	-327.87	-6716.50	11598.01	76.74
1.2 Dead+1.6 Wind 330 deg - No Ice	741.31	-319.89	-569.91	-11722.47	6577.82	10.01
0.9 Dead+1.6 Wind 330 deg - No Ice	555.98	-319.89	-569.91	-11720.74	6555.63	10.12
1.2 Dead+1.0 Ice	6502.00	-0.00	-0.00	316.34	213.84	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	6502.00	0.00	-75.93	-1268.42	213.61	-4.62
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	6502.00	37.41	-65.99	-1063.42	-560.89	-11.03
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	6502.00	65.49	-38.01	-476.38	-1150.03	-15.04
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	6502.00	76.86	-0.01	316.36	-1400.66	-14.94
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	6502.00	66.31	37.56	1095.87	-1175.80	-10.62
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	6502.00	37.90	63.92	1629.29	-575.63	-4.23
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	6502.00	-0.00	73.04	1807.15	215.09	3.20
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	6502.00	-37.90	63.92	1628.69	1005.12	10.34
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	6502.00	-66.31	37.56	1095.21	1604.30	14.46
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	6502.00	-76.86	-0.02	315.13	1828.72	13.59
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	6502.00	-65.49	-38.01	-478.22	1577.03	8.81
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	6502.00	-37.41	-65.99	-1064.49	987.33	2.07
Dead+Wind 0 deg - Service	617.75	-0.00	-181.79	-3701.87	48.02	-14.21
Dead+Wind 30 deg - Service	617.75	88.86	-158.31	-3226.73	-1761.71	-30.91
Dead+Wind 60 deg - Service	617.75	156.44	-91.08	-1836.13	-3162.99	-41.29
Dead+Wind 90 deg - Service	617.75	185.23	-0.06	38.79	-3797.96	-40.52
Dead+Wind 120 deg - Service	617.75	159.47	89.41	1867.00	-3254.15	-27.93
Dead+Wind 150 deg - Service	617.75	90.68	150.66	3077.41	-1816.64	-10.74
Dead+Wind 180 deg - Service	617.75	-0.00	171.16	3462.64	47.97	8.98
Dead+Wind 210 deg - Service	617.75	-90.68	150.66	3077.47	1912.56	28.42
Dead+Wind 240 deg - Service	617.75	-159.47	89.41	1867.15	3350.07	39.16
Dead+Wind 270 deg - Service	617.75	-185.23	-0.06	38.98	3893.92	35.55
Dead+Wind 300 deg - Service	617.75	-156.44	-91.08	-1835.96	3259.00	21.31
Dead+Wind 330 deg - Service	617.75	-88.86	-158.31	-3226.63	1857.74	2.80

tnxTower DaVinci Engineering, Inc. PO Box 1966 Santa Maria, CA 93456 Phone: (805) 922-5221 FAX: (805) 880-0402	Job	9914267-011	Page	8 of 11
	Project	30-ft Light Duty Tower	Date	16:20:09 01/21/14
	Client	Lea County, New Mexico	Designed by	Simon Leland

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-617.75	0.00	0.00	617.75	0.00	0.000%
2	-0.00	-741.31	-654.46	0.00	741.31	654.46	0.000%
3	-0.00	-555.98	-654.46	0.00	555.98	654.46	0.000%
4	319.89	-741.31	-569.91	-319.89	741.31	569.91	0.000%
5	319.89	-555.98	-569.91	-319.89	555.98	569.91	0.000%
6	563.20	-741.31	-327.87	-563.20	741.31	327.87	0.000%
7	563.20	-555.98	-327.87	-563.20	555.98	327.87	0.000%
8	666.84	-741.31	-0.20	-666.84	741.31	0.20	0.000%
9	666.84	-555.98	-0.20	-666.84	555.98	0.20	0.000%
10	574.08	-741.31	321.89	-574.08	741.31	-321.89	0.000%
11	574.08	-555.98	321.89	-574.08	555.98	-321.89	0.000%
12	326.44	-741.31	542.38	-326.44	741.31	-542.38	0.000%
13	326.44	-555.98	542.38	-326.44	555.98	-542.38	0.000%
14	0.00	-741.31	616.18	0.00	741.31	-616.18	0.000%
15	0.00	-555.98	616.18	0.00	555.98	-616.18	0.000%
16	-326.44	-741.31	542.38	326.44	741.31	-542.38	0.000%
17	-326.44	-555.98	542.38	326.44	555.98	-542.38	0.000%
18	-574.08	-741.31	321.89	574.08	741.31	-321.88	0.000%
19	-574.08	-555.98	321.89	574.08	555.98	-321.88	0.000%
20	-666.84	-741.31	-0.20	666.84	741.31	0.20	0.000%
21	-666.84	-555.98	-0.20	666.84	555.98	0.20	0.000%
22	-563.20	-741.31	-327.87	563.20	741.31	327.87	0.000%
23	-563.20	-555.98	-327.87	563.20	555.98	327.87	0.000%
24	-319.89	-741.31	-569.91	319.89	741.31	569.91	0.000%
25	-319.89	-555.98	-569.91	319.89	555.98	569.91	0.000%
26	0.00	-6502.00	0.00	0.00	6502.00	0.00	0.000%
27	-0.00	-6502.00	-75.93	-0.00	6502.00	75.93	0.000%
28	37.41	-6502.00	-65.99	-37.41	6502.00	65.99	0.000%
29	65.49	-6502.00	-38.01	-65.49	6502.00	38.01	0.000%
30	76.86	-6502.00	-0.01	-76.86	6502.00	0.01	0.000%
31	66.31	-6502.00	37.56	-66.31	6502.00	-37.56	0.000%
32	37.90	-6502.00	63.92	-37.90	6502.00	-63.92	0.000%
33	0.00	-6502.00	73.04	0.00	6502.00	-73.04	0.000%
34	-37.90	-6502.00	63.92	37.90	6502.00	-63.92	0.000%
35	-66.31	-6502.00	37.56	66.31	6502.00	-37.56	0.000%
36	-76.86	-6502.00	-0.01	76.86	6502.00	0.02	0.000%
37	-65.49	-6502.00	-38.01	65.49	6502.00	38.01	0.000%
38	-37.41	-6502.00	-65.99	37.41	6502.00	65.99	0.000%
39	0.00	-617.75	-181.79	0.00	617.75	181.79	0.000%
40	88.86	-617.75	-158.31	-88.86	617.75	158.31	0.000%
41	156.44	-617.75	-91.08	-156.44	617.75	91.08	0.000%
42	185.23	-617.75	-0.06	-185.23	617.75	0.06	0.000%
43	159.47	-617.75	89.41	-159.47	617.75	-89.41	0.000%
44	90.68	-617.75	150.66	-90.68	617.75	-150.66	0.000%
45	-0.00	-617.75	171.16	0.00	617.75	-171.16	0.000%
46	-90.68	-617.75	150.66	90.68	617.75	-150.66	0.000%
47	-159.47	-617.75	89.41	159.47	617.75	-89.41	0.000%
48	-185.23	-617.75	-0.06	185.23	617.75	0.06	0.000%
49	-156.44	-617.75	-91.08	156.44	617.75	91.08	0.000%
50	-88.86	-617.75	-158.31	88.86	617.75	158.31	0.000%

tnxTower DaVinci Engineering, Inc. PO Box 1966 Santa Maria, CA 93456 Phone: (805) 922-5221 FAX: (805) 880-0402	Job	9914267-011	Page	9 of 11
	Project	30-ft Light Duty Tower	Date	16:20:09 01/21/14
	Client	Lea County, New Mexico	Designed by	Simon Leland

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	30 - 20	0.523	48	0.1098	0.1310
T2	20 - 10	0.290	48	0.1011	0.0986
T3	10 - 0	0.095	48	0.0675	0.0506

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	30 - 20	1.862	20	0.3891	0.4243
T2	20 - 10	1.036	20	0.3595	0.3177
T3	10 - 0	0.340	20	0.2407	0.1610

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	30 - 20	1	10.00	1.33	64.0 K=1.00	0.7854	-2472.09	26196.10	0.094 ¹ ✓
T2	20 - 10	1	10.00	1.33	64.0 K=1.00	0.7854	-6088.07	26196.10	0.232 ¹ ✓
T3	10 - 0	1	10.00	1.33	64.0 K=1.00	0.7854	-10767.40	26196.10	0.411 ¹ ✓

¹ P_u / φP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	30 - 20	1/2	2.01	2.01	134.9 K=0.70	0.1963	-595.88	2438.74	0.244 ¹ ✓
T2	20 - 10	1/2	2.01	2.01	134.9 K=0.70	0.1963	-761.58	2438.74	0.312 ¹ ✓
T3	10 - 0	1/2	2.01	2.01	134.9 K=0.70	0.1963	-920.27	2438.74	0.377 ¹ ✓

¹ P_u / φP_n controls

tnxTower DaVinci Engineering, Inc. PO Box 1966 Santa Maria, CA 93456 Phone: (805) 922-5221 FAX: (805) 880-0402	Job	9914267-011	Page	10 of 11
	Project	30-ft Light Duty Tower	Date	16:20:09 01/21/14
	Client	Lea County, New Mexico	Designed by	Simon Leland

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	30 - 20	1/2	1.50	1.50	100.8 K=0.70	0.1963	-378.33	3726.24	0.102 ¹ ✓
T2	20 - 10	1/2	1.50	1.50	100.8 K=0.70	0.1963	-474.17	3726.24	0.127 ¹ ✓
T3	10 - 0	1/2	1.50	1.50	100.8 K=0.70	0.1963	-568.53	3726.24	0.153 ¹ ✓

¹ P_u / φP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	30 - 20	1/2	1.50	1.50	100.8 K=0.70	0.1963	-120.42	3726.24	0.032 ¹ ✓
T2	20 - 10	1/2	1.50	1.50	100.8 K=0.70	0.1963	-279.78	3726.24	0.075 ¹ ✓
T3	10 - 0	1/2	1.50	1.50	100.8 K=0.70	0.1963	-358.07	3726.24	0.096 ¹ ✓

¹ P_u / φP_n controls

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	30 - 20	1/2	1.50	1.50	100.8 K=0.70	0.1963	-239.23	3726.24	0.064 ¹ ✓
T2	20 - 10	1/2	1.50	1.50	100.8 K=0.70	0.1963	-294.32	3726.24	0.079 ¹ ✓
T3	10 - 0	1/2	1.50	1.50	100.8 K=0.70	0.1963	-342.11	3726.24	0.092 ¹ ✓

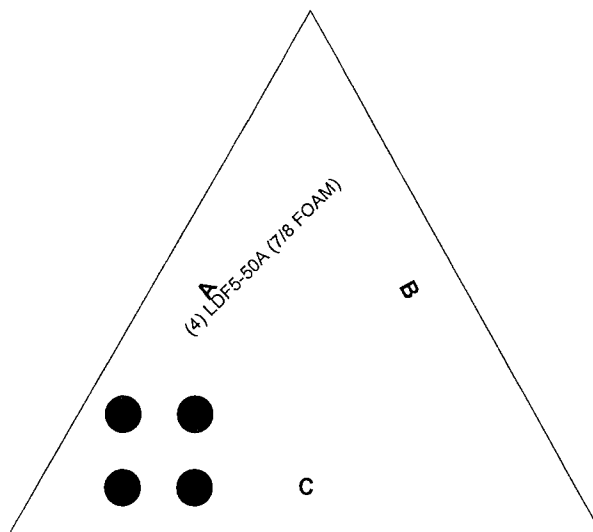
¹ P_u / φP_n controls

tnxTower DaVinci Engineering, Inc. PO Box 1966 Santa Maria, CA 93456 Phone: (805) 922-5221 FAX: (805) 880-0402	Job	9914267-011	Page	11 of 11
	Project	30-ft Light Duty Tower	Date	16:20:09 01/21/14
	Client	Lea County, New Mexico	Designed by	Simon Leland

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	30 - 20	Leg	1	1	-2472.09	26196.10	9.4	Pass
		Diagonal	1/2	12	-595.88	2438.74	24.4	Pass
		Horizontal	1/2	15	-378.33	3726.24	10.2	Pass
		Top Girt	1/2	6	-120.42	3726.24	3.2	Pass
		Bottom Girt	1/2	8	-239.23	3726.24	6.4	Pass
T2	20 - 10	Leg	1	49	-6088.07	26196.10	23.2	Pass
		Diagonal	1/2	60	-761.58	2438.74	31.2	Pass
		Horizontal	1/2	63	-474.17	3726.24	12.7	Pass
		Top Girt	1/2	54	-279.78	3726.24	7.5	Pass
		Bottom Girt	1/2	56	-294.32	3726.24	7.9	Pass
T3	10 - 0	Leg	1	97	-10767.40	26196.10	41.1	Pass
		Diagonal	1/2	108	-920.27	2438.74	37.7	Pass
		Horizontal	1/2	111	-568.53	3726.24	15.3	Pass
		Top Girt	1/2	102	-358.07	3726.24	9.6	Pass
		Bottom Girt	1/2	104	-342.11	3726.24	9.2	Pass
Summary								
						Leg (T3)	41.1	Pass
						Diagonal (T3)	37.7	Pass
						Horizontal (T3)	15.3	Pass
						Top Girt (T3)	9.6	Pass
						Bottom Girt (T3)	9.2	Pass
						Bolt Checks	18.8	Pass
						RATING =	41.1	Pass

Feed Line Plan



DaVinci Engineering, Inc.		Job: 9914267-011	
PO Box 1966		Project: 30-ft Light Duty Tower	
Santa Maria, CA 93456		Client: Lea County, New Mexico	Drawn by: Simon Leland
Phone: (805) 922-5221		Code: TIA-222-G	Date: 01/21/14
FAX: (805) 880-0402		Path: R:\Engineering Documents\TINX TOWER Files\Delay Tower 2672014\14267-011.dwg	Scale: NTS
		Dwg No. E-7	

Closed Loop System Design, Operating and Maintenance, and Closure Plan

ConocoPhillips Company

Well: WAR HAMMER 25 FEDERAL COM W2 2H

Location: Sec. 25, T26S, R32E

Date: 3/3/2014

ConocoPhillips proposes the following plan for design, operating and maintenance, and closure of our proposed closed loop system for the above named well:

1. We propose to use a closed loop system with steel pits, haul-off bins, and frac tanks for containing all cuttings, solids, mud, water, brine, and liquids. We will not dig a pit, nor will we use a drying pad, nor will we build an earth pit above ground level, nor will we dispose of or bury any waste on location.

All drilling waste and all drilling fluids (fresh water, brine, mud, cuttings, drill solids, cement returns, and any other liquid or solid that may be involved) will be contained on location in the rig's steel pits or in haul-off bins or in frac tanks as needed. The intent is as follows:

- We propose to use the rigs' steel pits for containing and maintaining the drilling fluids.
- We propose to remove cuttings and drilled solids from the mud by using solids control equipment and to contain such cuttings and drilled solids on location in haul-off bins.
- We propose that any excess water that may need to be stored on location will be stored in tanks.

The closed loop system components will be inspected daily by each tour and any needed repairs will be made immediately. Any leak in the system will be repaired immediately, and any spilled liquids and/or solids will be cleaned immediately, and the area where any such spill occurred will be remediated immediately.

2. Cuttings and solids will be removed from location in haul-off bins by an authorized contractor and disposed of at an authorized facility. For this well, we propose the following disposal facility:

R-360 Inc.

4507 West Carlsbad Hwy, Hobbs, NM 88240,

P.O. Box 388; Hobbs, New Mexico 88241

Toll Free Phone: 877.505.4274, Local Phone Number: 432.638.4076

The physical address for the plant where the disposal facility is located is Highway 62/180 at mile marker 66 (33 miles East of Hobbs, NM and 32 miles West of Carlsbad, NM).

The Permit Number for R-360 is NM-01-0006.

A photograph showing the type of haul-off bins that will be used is attached.

3. Mud will be transported by vacuum truck and disposed of at R-360 Inc. at the facility described above.
4. Fresh Water and Brine will be hauled off by vacuum truck and disposed of at an authorized salt water disposal well. We propose the following for disposal of fresh water and brine as needed:
 - Nabors Well Services Company, 3221 NW County Rd; Hobbs, NM 88240, PO 5208 Hobbs, NM, 88241, Permit SWD 092. (Well Location: **Section 3, T19S R37E**)
 - Basic Energy Services, P.O. Box 1869; Eunice, NM 88231 Phone Number: 575.394.2545, Facility located at Hwy 18, Mile Marker 19; Eunice, NM.

Jason Levinson

Drilling Engineer

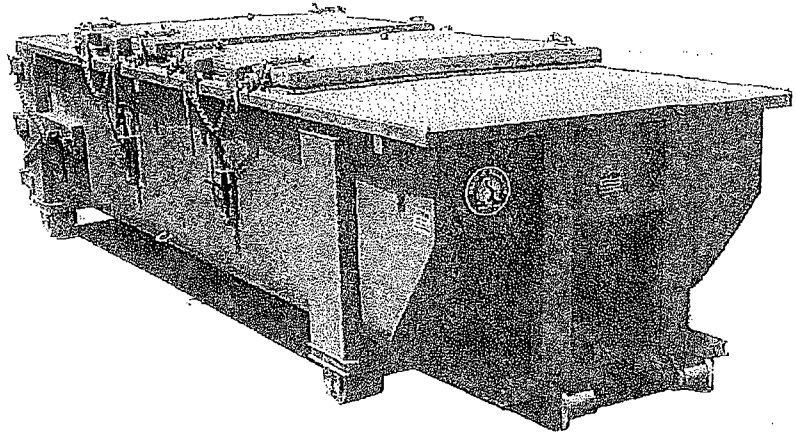
Office: 281-206-5334

Cell: 281-682-2783

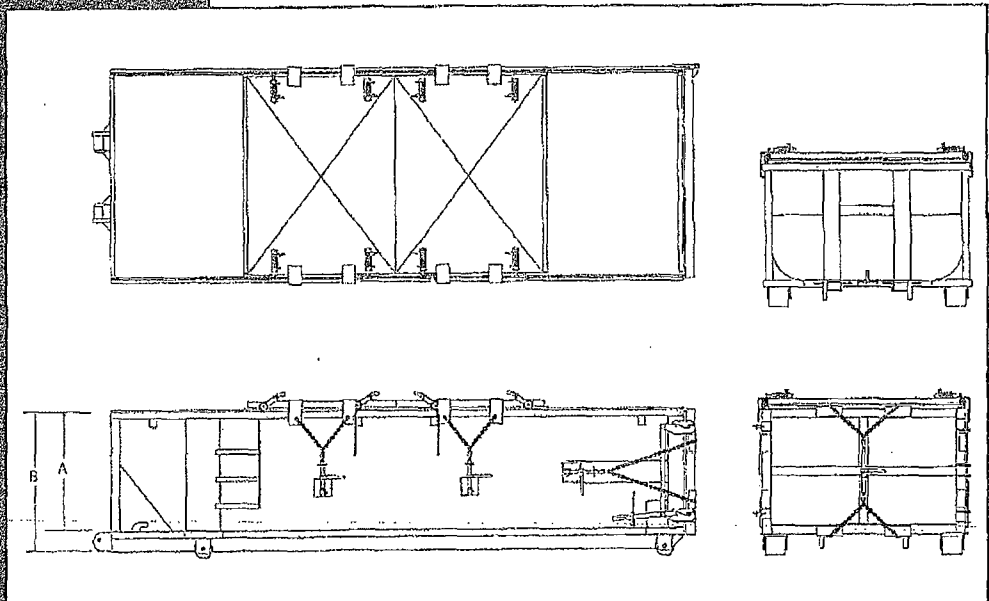
SPECIFICATIONS

Heavy Duty Split Metal Rolling Lid

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
 PICKUP: 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



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



Operator Certification

HOBBS OGD

AUG 08

CONOCOPHILLIPS COMPANY

CERTIFICATION:

RECEIVED

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application with bond coverage provided by Nationwide Bond ES0085. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.



Date: 03/03/2014

Kristina Mickens
Regulatory Specialist