



BOLIVIA

Tacobo 1003

Cabeza de Pozo

Enero 2011

a) Diseño de Cabeza de Pozo

Condiciones de pozo

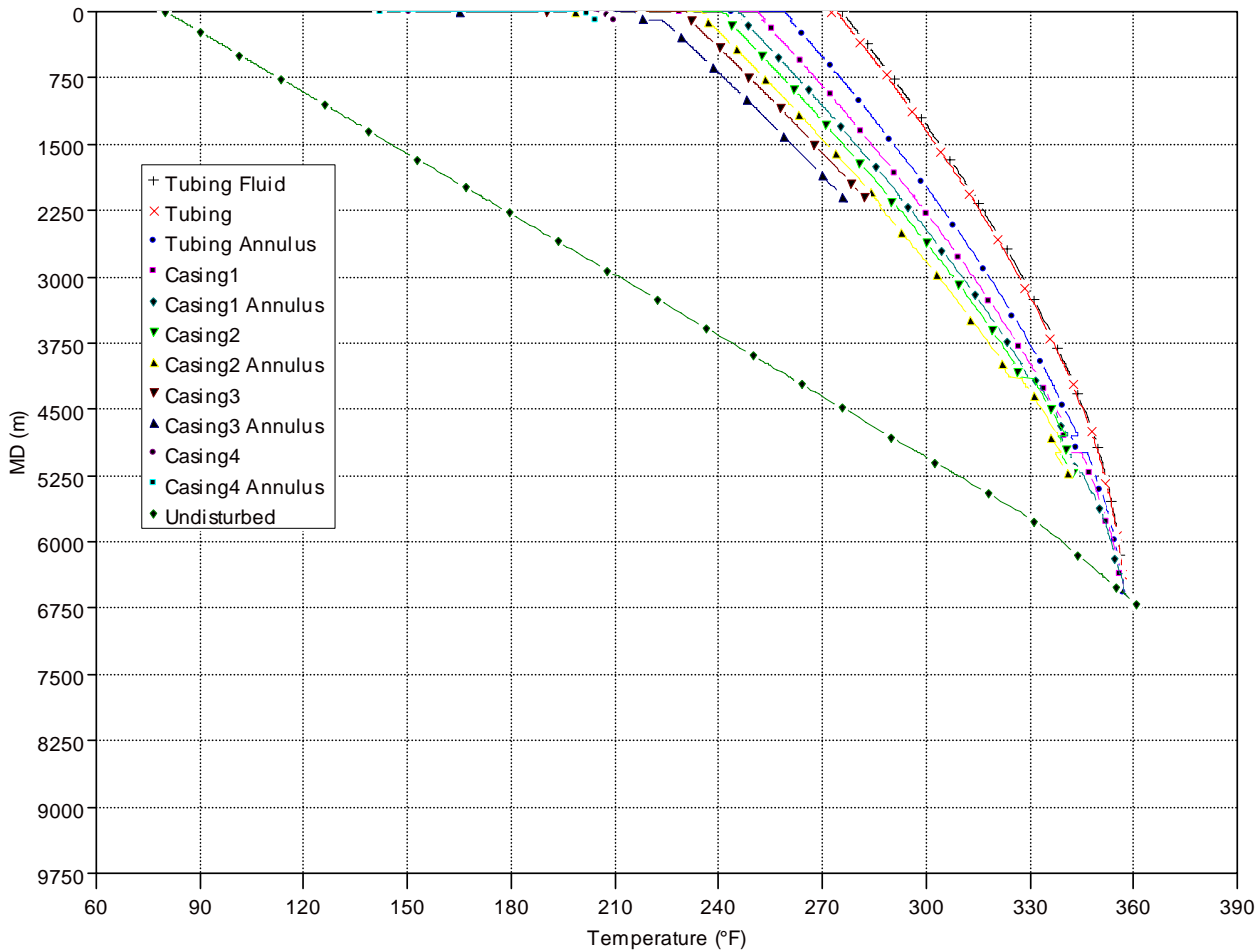
DATOS DE POZO			COMENTARIOS
Production	?	Hydrocarbon Gas MMscf/day	Estimado
Water Production	?	Bbls/day	Estimado
Condensate Production	?	Bbls/day	Estimado
Estimated gas composition	?		
H ₂ S	0	Ppm	
CO ₂	2	%	
Methane		%	
C2		%	
C3+		%	
N2		%	
Water salinity		mg/l NaCl Equivalente	
Sand Production		~ micron	
Sand free estimated production		Mmscf/d	
Expected Maximum Shut in Surface Pressure	13,500 / 14000	psi	
Expected Maximum Temperatura during production	280 (138)	°F (°C)	Dato preliminar
Anticipated completion, future workover recovery operations which can affect pressure, temperature or fluid content	No frac or programmed high pressure operations		
Temperatura ambiente minima	(-10)	(°C)	
Packer fluid	14.0	Ppg (oil base)	
Geothermal Gradient	1.33	°F/ 100 ft	
Pore pressure Gradient	15.4	SR – ppg	

Temperatura en los diferentes casing y anulares

Dato de entrada: Producción Gas 30 mmscf/day Agua 18 bbl/day

En superficie

Temperatures (°F)											
Tubing Fluid	Tubing	Tubing Annulus	Casing1	Casing1 Annulus	Casing2	Casing2 Annulus	Casing3	Casing3 Annulus	Casing4	Casing4 Annulus	Undisturbed
275.86	272.8	243.84	229.05	218.36	210.03	198.98	190.57	165.24	150.58	142.21	80



Temperatura / Presión de operación

Sección A

Connexión inferior 20"

Casing a colgar 14" **Maxima carga 1,421 klbs** (de este casing)

Pasaje mínimo (bore) 17 1/2"

Máxima presión de superficie 3800 psi (gas a superficie)

Presión de Trabajo 5000 psi

Carga máxima en esta sección con todas las cañerías colgadas: **2700 klbs**

Sección B

Casing a colgar 9 5/8" **Maxima carga 1,245 klbs** (de este casing)

Máxima presión de superficie 11300 psi (gas a superficie)

Pasaje mínimo (bore) 12.8"

Presión de Trabajo 15,000 psi

Carga máxima en esta sección con todas las cañerías colgadas: **1550 klbs**

Sección D

Tubing a colgar 4 1/2" **Maxima carga 220 klbs**

Máxima presión de superficie 13,500 / 14,000 psi (gas a superficie)

Pasaje mínimo (bore) 8.01"

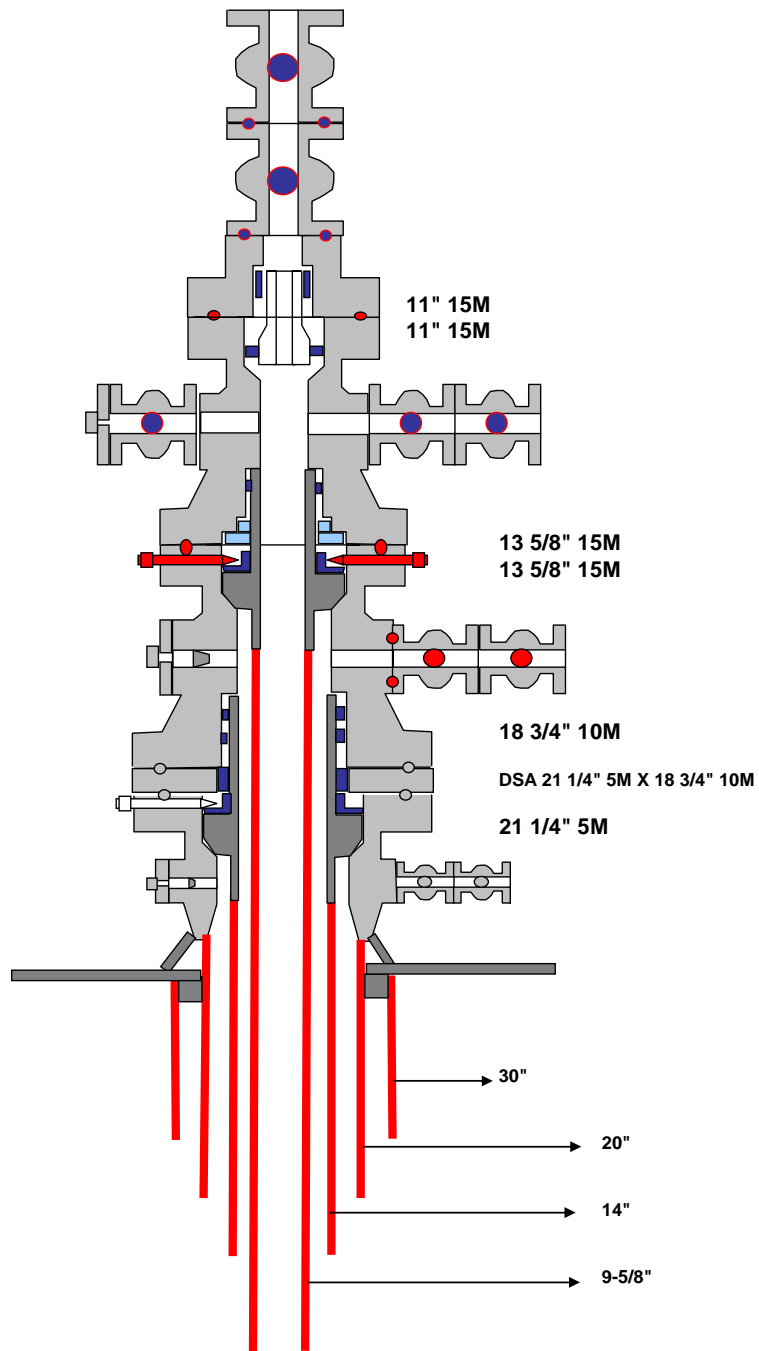
Cañerías

Diam Ext	Peso Met	Acero	Extremo	wall	id	Drift	OD conex
pulg	lbs/pie			Inch	Inch	Inch	Inch
30	196.10	X56	Coupling	0.625	28.75	28.75	
20	147.00	P-110	Coupling	0.709	18.582	18.394	21
14	94.80	TN 140 DW	Coupling	0.656	12.688	12.501	15
14	86.00	TN 140 DW	Coupling	0.6	12.8	12.613	14.846
11 3/4	71.00	TN 125 HC	Flush or NF Coupling	0.582	10.586	10.43	11.75 / 12.024
9 5/8	70.30	TN140DW	Coupling	0.734	8.157	8.001	10.827
9 5/8	70.30	TN140DW	Flush	0.734	8.157	8.001	9.625
7	38.00	TN140	Integral NF o Flush	0.54	5.92	5.875	7.243
5	21.40	Q125	Flush	0.437	4.126	4.01	5

Nota:  Special Drift

Arquitectura de la cabeza de pozo

CONJUNTO CABEZAS DE POZO TCB-X1003



Especificación de la cabeza de pozo

	Section A	X-O Pack off flange	Section B	Section D
Tipo	Casing Head System		Casing Spool	Tubing Spool
Top Flange	21 1/4" 5000 psi	18 3/4" 10000 psi	13 5/8" 15000 psi	11" 15000 psi
Retention Method	Lock Screw		Lock Screw	No lock screw – Retainer ring type
Bottom Flange	20" Slip lock 5000 psi	21 1/4" 5000 psi	18 3/4" 10000 psi	13 5/8" 15000 psi
Outlets	2	N/A	2	2
Trheaded	No	N/A	No	No
Flanged	2" 5000 psi	N/A	1 13/16" 15000 psi	1 13/16" 15000 psi
VR THD 1 1/2"	Yes	N/A	Yes	Yes
TemperatureC°	U:-18° to 121°	U:-18° to 121°	U:-18° to 121°	X:-18° to 180°
API material class	AA	AA	AA	AA
PSL	PSL2	PSL2	PSL3	PSL3G
PR	2	2	2	2
Casing Hanger	21 1/4" nom x 14" OD casing – Connexion to be confirmed		13 5/8" Nom x 9 5/8" OD casing - Connexion to be confirmed	Tubing Hanger?
Type	Mandrel Hanger – contingency slip type hanger		Mandrel Hanger– contingency slip type hanger	
Hung capacity	80% hanging capacity - 1500 klbs minimum		80% hanging capacity - 1500 klbs minimum	
Temperature °C	U:-18° to 121°		U:-18° to 121°	
Material class	AA		AA/DD	
Sealing Method	Pack off Assy for Casing hanger Mandrel		Pack off Assy for Casing hanger Mandrel	
PSL	3		3	
Working pressure on top of hanger	5000 psi		15000 psi	
Working pressure bottom of hanger	5000 psi		15000 psi	
Secondary Seals	N/A			
Type		Doble P Seals P Seals for mandrel Hanger – contingency for 14" Casing – 10000 psi	Doble P Seals for mandrel Hanger – contingency seal for 14" Casing – 15000 psi	Metal to metal seals for for mandrel Hanger with one P seal as back up – contingency seal for 9 5/8" casing - 15000 psi
Temperatura C		T: -18° to 82°	U:-18° to 121°	X:-18° to 180°
PSL		2	3	3G
Valves	Two - 2-1/16" 5000 psi		Two- 1 13/16" 15000 psi	Three - 1 13/16" 15000 psi
Temperatura C°	U:-18° to 121°		U:-18° to 121°"	X:-18° to 180°
Material class	AA		AA	AA
PSL	2		3	3G
PR	1		2	2
Flange Blind	For outlet: 2-1/16" 5M With recessed for control plug		For outlet: 1-13/16" 15M With recessed for control plug	For outlet: 1-1/16" 5M With recessed for control plug
Temperatura C°	U:-18° to 121°		U:-18° to 121°"	X:-18° to 180°
Material class	AA		AA	X
PSL	2		3	3
PR	1		2	2
Accesorios	Test plug		Test plug	Test plug
	Wear bushing		Wear bushing	Wear bushing
	Landing Base to fit on 30" 0.625" WT for 2000 klbs			
			Mandrel Hanger running tool for 2000 klbs tension	Mandrel Hanger running tool for 2000 klbs tension
	Needle valve and pressure gauge		Needle valve and pressure gauge	Needle valve and pressure gauge
	VR plug		VR plug	VR plug