

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

MAR 16 2020

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018**SUNDRY NOTICES AND REPORTS ON WELLS**
Do not use this form for proposals to drill or re-enter an
abandoned well. Use form 3160-3 (APD) for such proposals.5. Lease Serial No.
NMNM138865

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

8. Well Name and No.
BOROS FEDERAL 223H9. API Well No.
30-015-46494-00-X110. Field and Pool or Exploratory Area
WOLFCAMP11. County or Parish, State
EDDY COUNTY, NM**SUBMIT IN TRIPLICATE - Other instructions on page 2**1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other2. Name of Operator Contact: NICKY FITZGERALD
MATADOR PRODUCTION COMPANY-Mail: nicky.fitzgerald@matadorresources.com3a. Address 3b. Phone No. (include area code)
ONE LINCOLN CENTER 5400 LBJ FREEWAY SUITE 1500 972-371-5448
DALLAS, TX 75240

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 15 T26S R31E NWNE 400FNL 2434FEL
32.049038 N Lat, 103.765274 W Lon**12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA**

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Change to Original A
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	PD

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleate horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleation in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

BLM Bond No.: NMB0001079
Surety Bond No.: RLB0015172

For the following well, Boros Federal #223H, API # 30-015-46494. Matador is proposing the option to deepen the intermediate casing for the 9-5/8" 40# J-55 casing with a planned set depth of 4180'. Matador plans to run 9-5/8" 40# L80-HC BTC (spec sheet attach) at a new casing set depth of 7,900'. Matador is also proposing to change the mud program for the intermediate hole section. The mud program would change to 9.5 to 10.2 PPG Saturated Brine to 8.6 to 8.8 OBM for the intermediate hole section.

14. I hereby certify that the foregoing is true and correct.

**Electronic Submission #502294 verified by the BLM Well Information System
For MATADOR PRODUCTION COMPANY, sent to the Carlsbad
Committed to AFMSS for processing by PRISCILLA PEREZ on 02/07/2020 (20PP1144SE)**

Name (Printed/Typed) JAMES LONG

Title SR. DRILLING ENGINEER

Signature (Electronic Submission)

Date 02/06/2020

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By NDUNGU KAMAU

Title PETROLEUM ENGINEER

Date 02/18/2020

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office Carlsbad

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****Accepted
RWR 2-28-20

Additional data for EC transaction #502294 that would not fit on the form

32. Additional remarks, continued

Please email all questions to James Long, jlong@matadorresources.com.

Revisions to Operator-Submitted EC Data for Sundry Notice #502294

	Operator Submitted	BLM Revised (AFMSS)
Sundry Type:	APDCH NOI	APDCH NOI
Lease:	NMNM138865	NMNM138865
Agreement:		
Operator:	MATADOR PRODUCTION COMPANY 5400 LBJ FREEWAY, SUITE 1500 DALLAS, TX 75240 Ph: 972-371-5448	MATADOR PRODUCTION COMPANY ONE LINCOLN CENTER 5400 LBJ FREEWAY SUITE 1500 DALLAS, TX 75240 Ph: 972.371.5200
Admin Contact:	NICKY FITZGERALD REGULATORY ANALYST E-Mail: nicky.fitzgerald@matadorresources.com Ph: 972-371-5448	NICKY FITZGERALD REGULATORY ANALYST E-Mail: nicky.fitzgerald@matadorresources.com Ph: 972-371-5448
Tech Contact:	JAMES LONG SR. DRILLING ENGINEER E-Mail: jlong@matadorresources.com Ph: 972-371-5449	JAMES LONG SR. DRILLING ENGINEER E-Mail: JLong@matadorresources.com Ph: 972-371-5449
Location:		
State:	NM	NM
County:	EDDY	EDDY
Field/Pool:	PURPLE SAGE;WOLFCAMP(GAS)	WOLFCAMP
Well/Facility:	BOROS FEDERAL 223H Sec 15 T26S R31E 400FNL 2434FEL 32.049036 N Lat, 103.765275 W Lon	BOROS FEDERAL 223H Sec 15 T26S R31E NWNE 400FNL 2434FEL 32.049038 N Lat, 103.765274 W Lon

PECOS DISTRICT

DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	MATADOR PRODUCTION COMPANY
LEASE NO.:	NMNM138865
WELL NAME & NO.:	BOROS FEDERAL 223H
SURFACE HOLE FOOTAGE:	400'/N & 2434'/E
BOTTOM HOLE FOOTAGE:	240'/S & 2310'/E
LOCATION:	Section 15, T.26 S., R.31 E., NMP
COUNTY:	Eddy County, New Mexico

COA

H2S	☐ Yes	☒ No	
Potash	☒ None	☐ Secretary	☐ R-111-P
Cave/Karst Potential	☐ Low	☒ Medium	☐ High
Cave/Karst Potential	☐ Critical		
Variance	☐ None	☒ Flex Hose	☐ Other
Wellhead	☐ Conventional	☐ Multibowl	☒ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP
Other	☐ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☒ COM	☐ Unit

ALL PREVIOUS COAs STILL APPLY.

A. CASING

Casing Design:

- The 9-5/8 inch intermediate casing shall be set at approximately 7900 feet. The minimum required fill of cement behind the Choose an item. inch intermediate casing is:

Option 1 (Single Stage):

- Cement to surface. If cement does not circulate see B.1.a, c-d above.
Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash. Excess calculates to negative 27% - additional cement might be required.

Option 2:

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
 - b. Second stage above DV tool:
 - Cement to surface. If cement does not circulate, contact the appropriate BLM office.
Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.
- ❖ In **Medium Cave/Karst Areas** if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.
2. The minimum required fill of cement behind the 7-5/8 inch 2nd intermediate casing is:

Option 1 (Single Stage):

- Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.

Option 2:

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
- b. Second stage above DV tool:
 - Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.

NMK02182020

Permitted Mud Program

Hole Section	Hole Size (in)	Mud Type	Interval MD (ft)	Density (lb/gal)	Viscosity	Fluid Loss
Intermediate 1	12.25	Brine Water	1431-4180	9.5 - 10.2	28-30	NC

Proposed Mud Program

Hole Section	Hole Size (in)	Mud Type	Interval MD (ft)	Density (lb/gal)	Viscosity	Fluid Loss
Intermediate 1	12.25	OBM	1431-7900	8.6- 8.8	28-30	NC

Permitted Casing Program

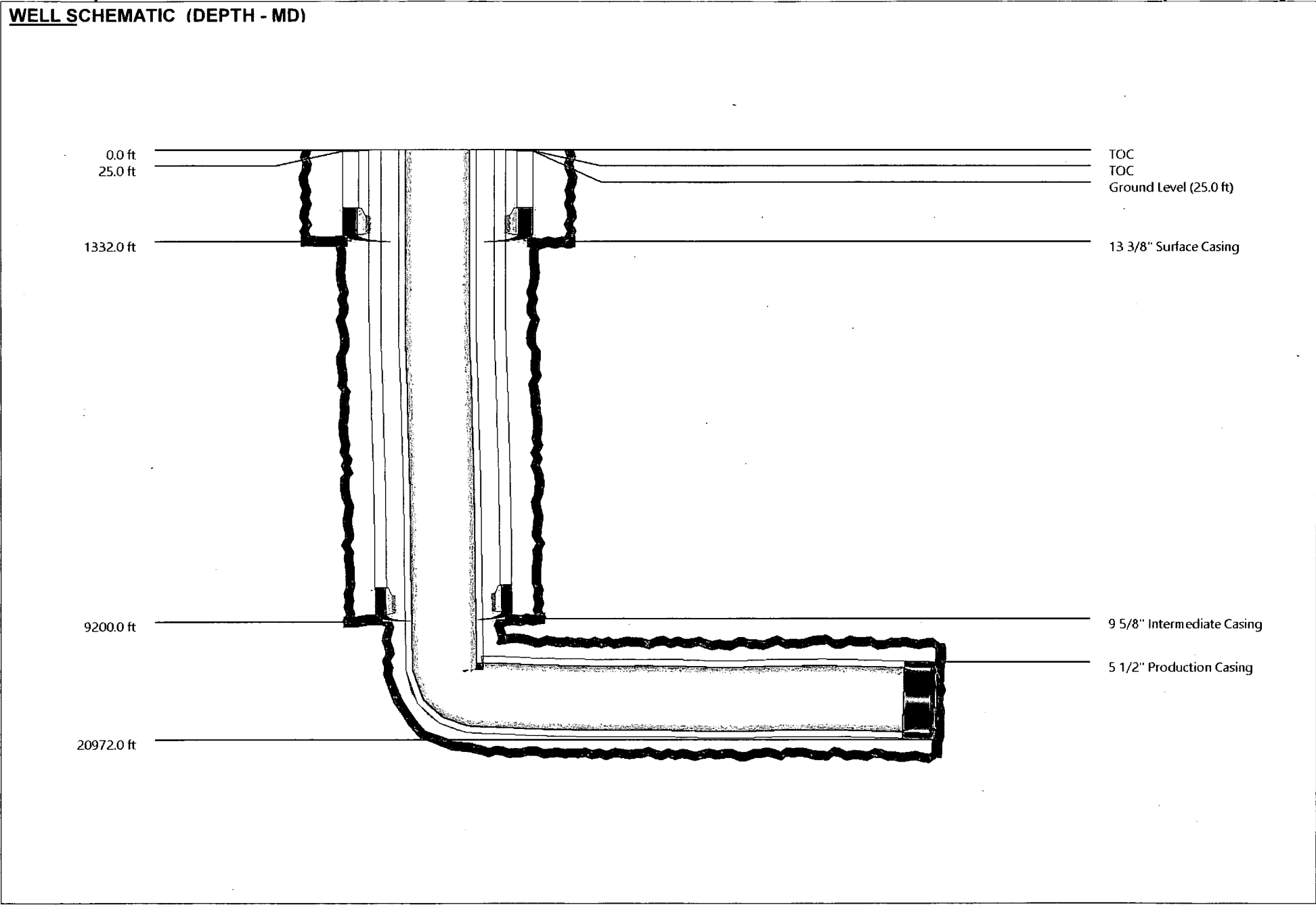
String	Hole Size (in)	Set MD (ft)	Set TVD (ft)	Casing Size (in)	Wt. (lb/ft)	Grade	Joint	Collapse	Burst	Tension
Intermediate 1	12.25	0 - 4180	0 - 4180	9.625	40	J-55	BUTT	1.125	1.125	1.8

Proposed Casing Program

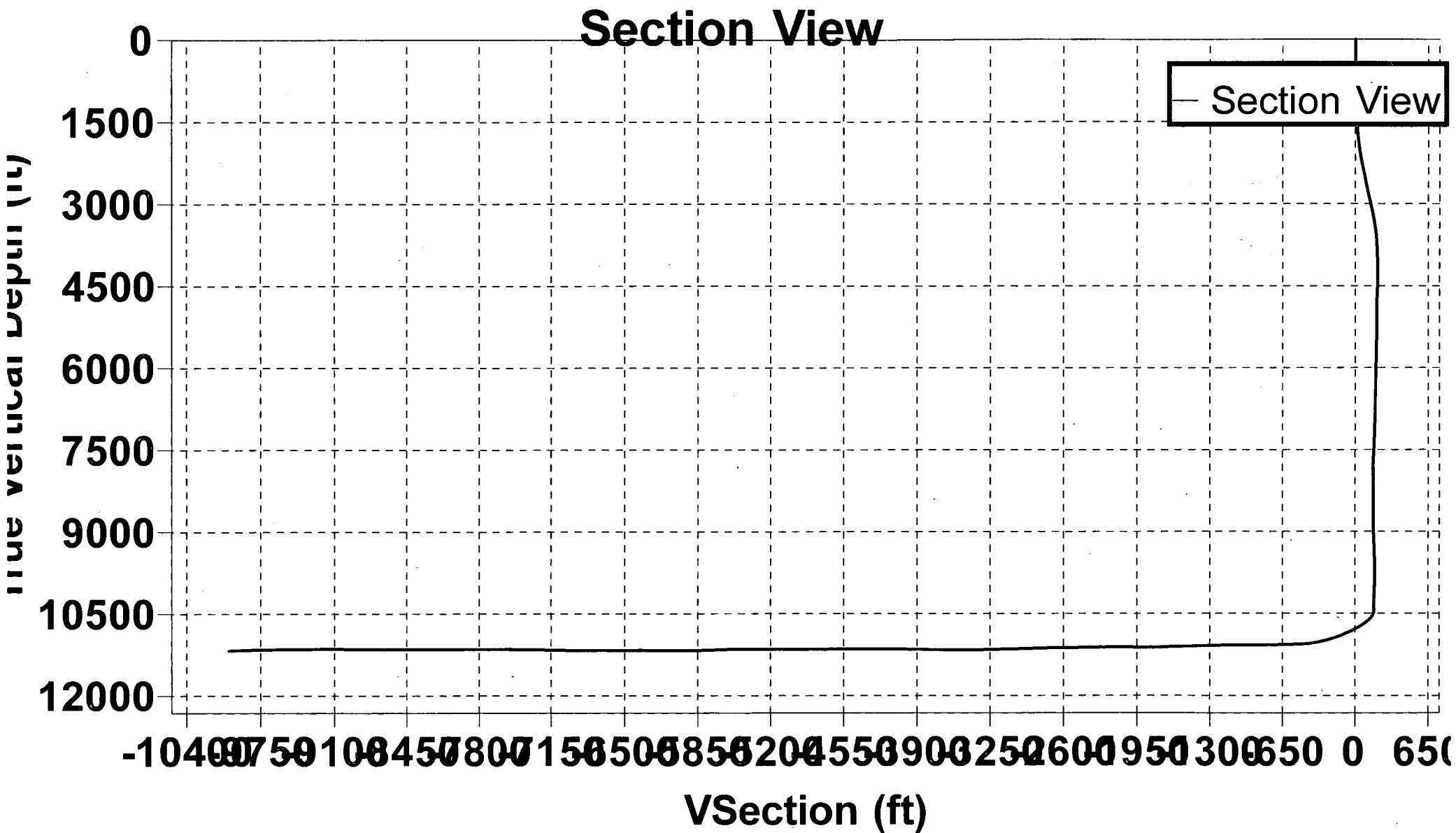
String	Hole Size (in)	Set MD (ft)	Set TVD (ft)	Casing Size (in)	Wt. (lb/ft)	Grade	Joint	Collapse	Burst	Tension
Intermediate 1	12.25	0 - 7900	0 - 7900	9.625	40	L80-HC	BUTT	1.125	1.125	1.8

STRING SUMMARY

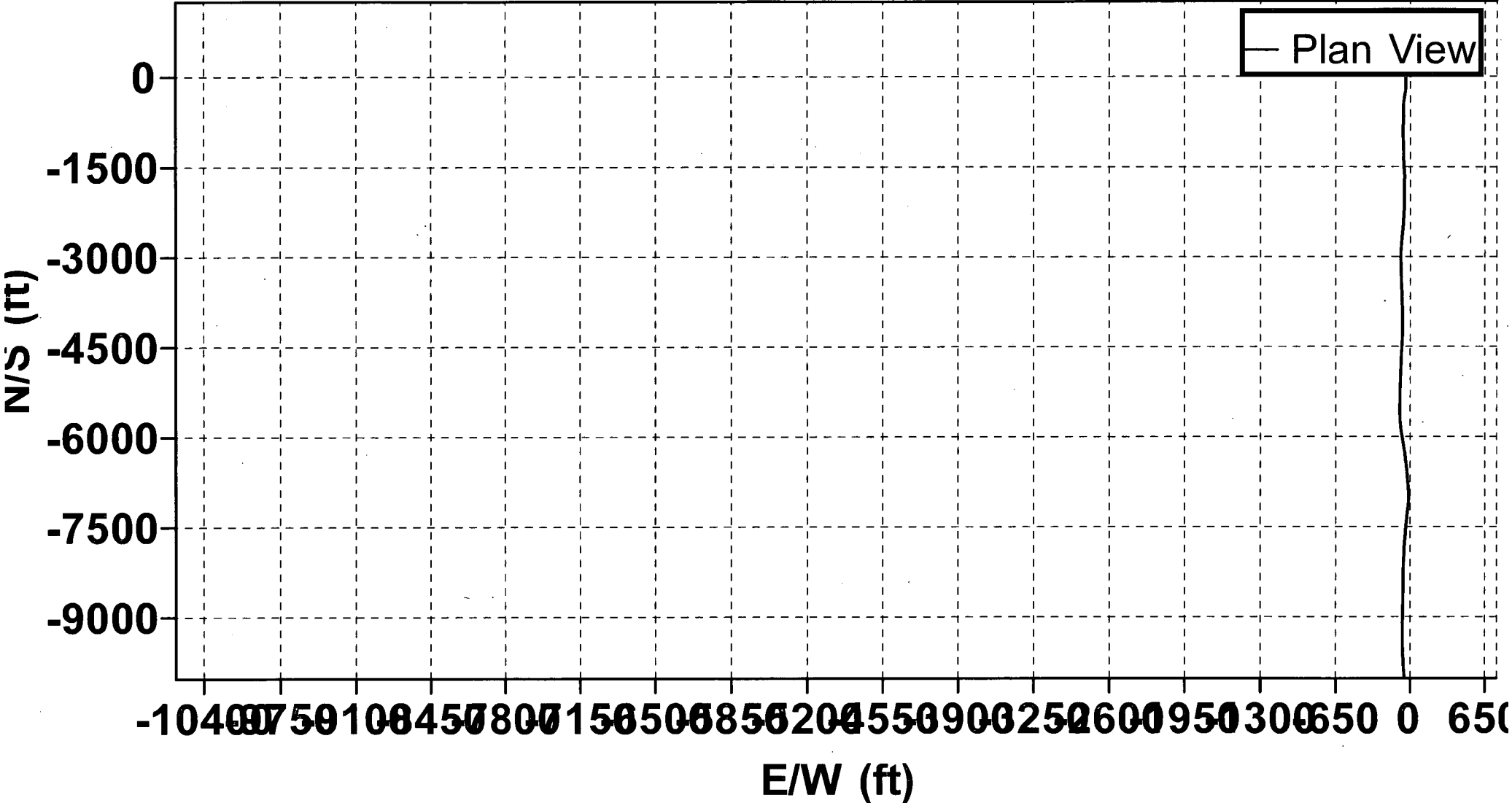
	String	OD/Weight/Grade	Connection	MD Interval (ft)	Drift Dia. (in)	Minimum Safety Factor (Abs)				Design Cost (\$)
						Burst	Collapse	Axial	Triaxial	
1	Intermediate Casing	9 5/8", 40,000 ppf, L80-IC	BTC, L80-IC	0.0-9200.0	8.750 A	1.32	1.15	2.18	1.47	282,853
2										Total = 282,853
3										
4	Alternate Drift									

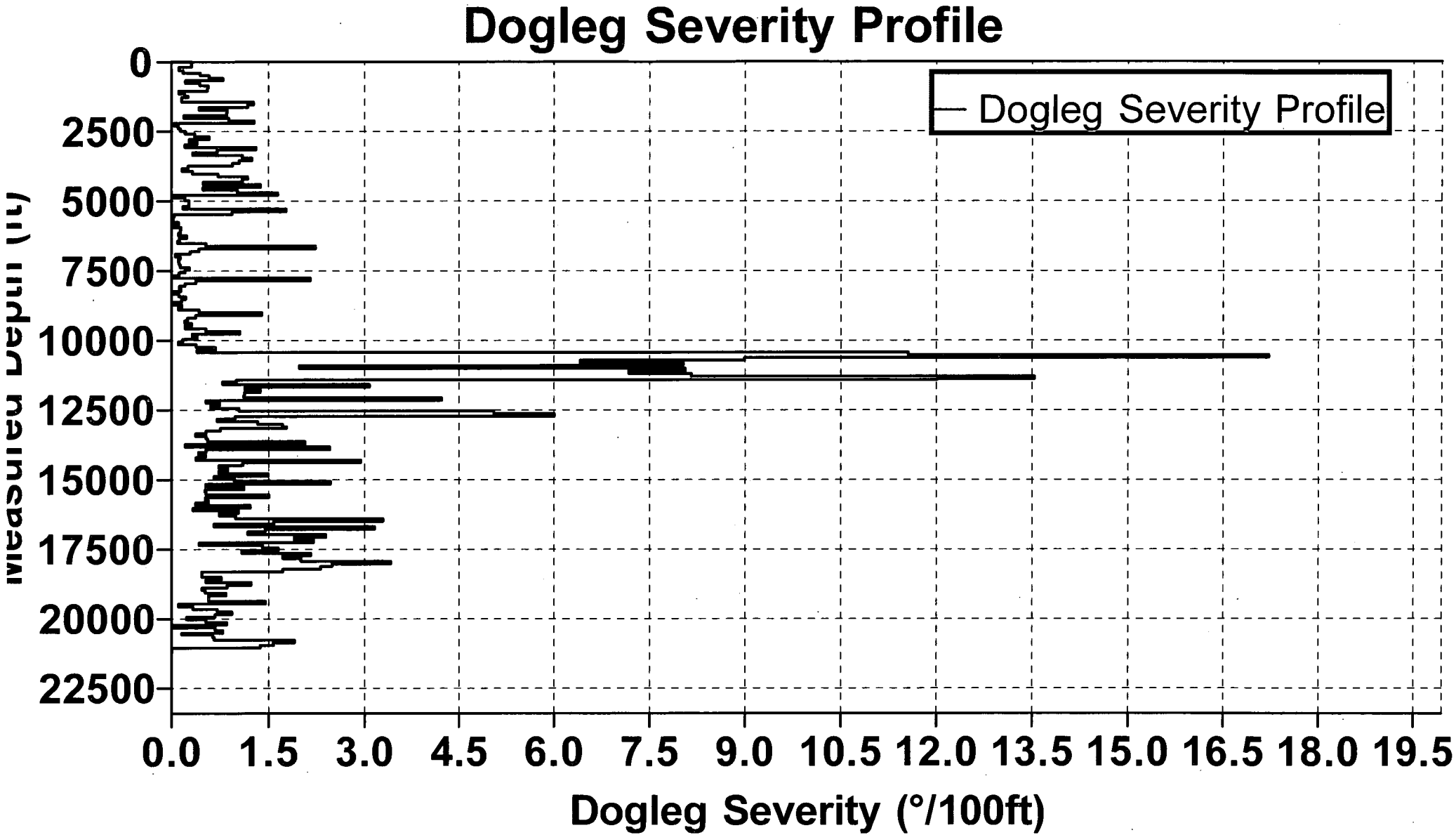


INITIAL CONDITIONS (9 5/8" Intermediate Casing)	
Mix-Water Density:	8.33 ppg
Lead Slurry Density:	12.60 ppg
Tail Slurry Density:	15.80 ppg
Tail Slurry Length:	1000.0 ft
Displacement Fluid Density:	10.00 ppg
Slackoff Force:	0 lbf
Temperatures:	Default
Vertical Depth (ft)	Temperature (°F)
0.0 ft	35.00 °F
25.0 ft	35.00 °F
193.0 ft	37.19 °F
2204.6 ft	63.36 °F
3631.9 ft	81.93 °F
9189.9 ft	154.23 °F



Plan View





BURST LOADS DATA (9 5/8" Intermediate Casing)**Drilling Load:**

Influx Depth, MD:
 Pore Pressure:
 Gas Gradient:
 Fracture at Shoe (MD= 9200.0 ft):
 Gas/Mud Interface, MD:
 Mud Weight:
 Assigned External Pressure:

Displacement to Gas

11641.0 ft
 6732.86 psi
 0.1000 psi/ft
 6736.72 psi
 3375.0 ft
 10.00 ppg

Fluid Gradients (w/ Pore Pressure)

Drilling Load:

Influx Depth, MD:
 Kick Volume:
 Kick Intensity
 Maximum Mud Weight:
 Kick Gas Gravity:
 Fracture at Shoe (MD= 9200.0 ft):
 Drill Pipe OD:
 Collar OD:
 Collar Length:
 Assigned External Pressure:

Gas Kick Profile

20972.0 ft
 50.0 bbl
 0.50 ppg
 9.90 ppg
 0.70 (0.1268 psi/ft @ 135.48 °F & 6034.94 psi)
 6736.72 psi
 5.000 in

Fluid Gradients (w/ Pore Pressure)

Drilling Load:

Test Pressure:
 Mud Weight:
 Plug Depth, MD:
 Assigned External Pressure:

Pressure Test

1500.00 psi
 9.90 ppg
 9200.0 ft

Fluid Gradients (w/ Pore Pressure)

Drilling Load:

Surface Pressure (1/3 * BHP):
 Shoe Depth, MD:
 Fracture Pressure at Shoe:
 Fracture Margin of Error:

Fracture @ Shoe w/ 1/3 BHP at Surface

2300.60 psi
 9200.0 ft
 6736.72 psi
 0.00 ppg

External Pressure:

TOC, MD:
 Prior Shoe, MD:
 Mud Weight Above TOC:
 Fluid Gradient Below TOC:
 Wellhead Pressure:

Fluid Gradients (w/ Pore Pressure)

0.0 ft
 1332.0 ft
 10.00 ppg
 8.33 ppg
 0.00 psi

BURST LOADS DATA (9 5/8" Intermediate Casing)

Wellhead Pressure:

0.00 psi

Pore Pressure In Open Hole:

Yes

BURST PRESSURE PROFILES (9 5/8" Intermediate Casing)

	Depth (MD) (ft)	Displacement To Gas (psi)	Gas Kick (psi)	Pressure Test (psi)	Fracture @ Shoe w/ 1/3 BHP at Surface (psi)	Fluid Gradients w/ Pore Press (psi)
1	0.0	4213.24	1448.99	1500.00	2300.60	0.00
2	25.0	4226.23	1455.80	1512.86	2312.67	10.82
3	193.0	4313.49	1501.53	1599.25	2393.76	83.51
4	193.0	4313.50	1501.53	1599.26	2393.77	83.52
5	1332.0	4905.11	1899.94	2184.95	2943.51	576.33
6	1332.0	4905.12	1899.94	2184.96	2943.52	691.88
7	2206.0	5358.46	2205.65	2633.77	3364.77	1145.22
8	2206.0	5358.47	2205.66	2633.78	3364.78	1145.23
9	3375.0	5962.59	2804.08	3231.85	3926.15	1749.35
10	3640.0	5989.02	2939.74	3367.85	4053.80	1886.72
11	3640.0	5989.03	2939.75	3367.86	4053.81	1886.73
12	4408.5	6065.81	3327.87	3762.85	4424.55	2285.71
13	4409.5	6065.91	3328.38	3763.37	4425.04	1920.80
14	9200.0	6544.69	5747.81	6226.22	6736.71	4411.60
15	9200.0	6544.69	5747.82	6226.23	6736.72	4411.61

COLLAPSE LOADS DATA (9 5/8" Intermediate Casing)**Drilling Load:**

Mud Weight:

Mud Level, MD:

Assigned External Pressure:

Full/Partial Evacuation

9.90 ppg

6380.0 ft

Fluid Gradients (w/ Pore Pressure)

Drilling Load:

Mud Weight at Shoe:

TOC, MD:

Lead Slurry Density:

Tail Slurry Density:

Tail Slurry Length:

Displacement Fluid Density:

Float Collar Depth, MD:

Assigned External Pressure:

Cementing

10.00 ppg

0.0 ft

12.60 ppg

15.80 ppg

1000.0 ft

10.00 ppg

9200.0 ft

Fluid Gradients (w/ Pore Pressure)

External Pressure:

TOC, MD:

Prior Shoe, MD:

Fluid Gradient Above TOC:

Fluid Gradient Below TOC:

Wellhead Pressure:

Pore Pressure In Open Hole Below TOC:

Fluid Gradients (w/ Pore Pressure)

0.0 ft

1332.0 ft

10.00 ppg

10.00 ppg

0.00 psi

No

COLLAPSE PRESSURE PROFILES (9 5/8" Intermediate Casing)

	Depth (MD) (ft)	Full/Partial Evacuation (psi)	Cementing (Int) (psi)	Cementing (Ext) (psi)	Fluid Gradients w/ Pore Press (psi)
1	0.0	0.00	0.00	0.00	0.00
2	25.0	0.01	12.99	16.36	12.99
3	193.0	0.11	100.25	126.32	100.25
4	193.0	0.11	100.26	126.33	100.26
5	1332.0	0.76	691.87	871.76	691.87
6	1332.0	0.76	691.88	871.77	691.88
7	2206.0	1.27	1145.22	1442.97	1145.22
8	2206.0	1.27	1145.23	1442.99	1145.23
9	3640.0	2.12	1886.72	2377.26	1886.72
10	3640.0	2.12	1886.73	2377.28	1886.73
11	6380.0	3.77	3309.34	4169.77	3309.34
12	8200.0	940.59	4254.54	5360.72	4254.54
13	9200.0	1455.42	4773.97	6181.42	4773.97

AXIAL LOADS DATA (9 5/8" Intermediate Casing)

Overpull Force:	100000 lbf
Post-Cement Static Load:	Yes
Service Loads:	Yes

AXIAL LOADS TABLE (9 5/8" Intermediate Casing)

	Depth (MD) (ft)	Overpull Force (lbf)		Post-Cement Static Load (lbf)		Service Loads (lbf)	
		Apparent (w/Bending)	Actual (w/o Bending)	Apparent (w/Bending)	Actual (w/o Bending)	Apparent (w/Bending)	Actual (w/o Bending)
1	0.0	420387	412916	217982	210510	273157	265686
2	25.0	419387	412065	216982	209510	272394	264923
3	193.0	413669	406346	210262	202791	267270	259798
4	193.0	413668	406345	205671	202790	262679	259798
5	225.0	412577	405255	204419	201509	260788	258821
6	225.0	412577	405255	204419	201509	260788	257878
7	1332.0	374889	367567	161144	157236	249236	245328
8	1332.0	374888	367566	161144	157236	244191	240283
9	2206.0	355337	337814	152932	122329	257686	227083
10	2206.0	355337	337813	123340	122328	228095	227083
11	3375.0	315537	298029	102180	75811	235861	209492
12	3640.0	306515	289011	90364	65233	226543	201412
13	3640.0	306514	289010	87911	65232	224090	201411
14	4408.5	280354	262848	67591	34510	211022	177942
15	4409.5	280320	262814	67551	34470	226945	193865
16	6380.0	213253	195863	-47303	-44309	136631	133637
17	7213.6	184900	167549	-80894	-77644	111395	108146
18	8200.0	151351	134045	-120641	-117090	81533	77981
19	8200.0	151351	134045	-120641	-117090	81533	-190697
20	8781.7	131650	114240	-147126	-140357	-213181	-206412
21	9193.0	117723	100238	-165848	-156806	-226564	-217522

TRIAxIAL RESULTS (9 5/8" Intermediate Casing) - Displacement to Gas

	Depth (MD) (ft)	Axial Force (lbf)		Bending Stress at OD (psi)	Absolute Safety Factor				Temperature (°F)	Pressure (psi)		Add'l Pickup To Prevent Buck. (lbf)	Buckled Length (ft)
		Apparent (w/Bending)	Actual (w/o Bending)		Triaxial	Burst	Collapse	Axial		Internal	External		
1	0	261200	261200	0.0	1.51	1.36	N/A	3.50	78.99	4213.24	0.00	N/A	N/A
2	25	267617	260146	652.3	1.51	1.36	N/A	3.41	79.11	4226.23	10.82		
3	193	265712	258241	652.3	1.51	1.35	N/A	3.44	79.95	4313.49	83.51		
4	193	261122	258241	251.5	1.51	1.35	N/A	3.50	79.95	4313.50	83.52		
5	1332	249236	245328	341.2	1.47	1.32	N/A	3.66	85.65	4905.11	576.33		
6	1332	244191	240283	341.2	1.51	1.36	N/A	3.73	85.65	4905.12	691.88		
7	2206	257686	227083	2671.9	1.50	1.36	N/A	3.53	90.02	5358.46	1145.22		
8	2206	228095	227083	88.4	1.51	1.36	N/A	3.99	90.02	5358.47	1145.23		
9	3375	235861	209492	2302.2	1.50	1.35	N/A	3.85	95.84	5962.59	1749.35		
10	3640	226543	201412	2194.1	1.54	1.39	N/A	4.01	97.17	5989.02	1886.72		
11	3640	224090	201411	1980.0	1.54	1.39	N/A	4.05	97.17	5989.03	1886.73		
12	4408	211022	177942	2888.1	1.66	1.51	N/A	4.30	101.01	6065.81	2285.71		
13	4409	226945	193865	2888.1	1.51	1.37	N/A	4.00	101.02	6065.91	1920.80		
14	6380	136631	133637	261.4	1.89	1.71	N/A	6.62	110.87	6262.82	2944.96		
15	8200	81533	77981	310.1	2.44	2.22	N/A	11.06	119.98	6444.73	3891.46		
16	9193	63858	54816	789.5	2.91	2.65	N/A	14.10	124.95	6543.99	4407.97		
17	9200	60545	54653	514.4	2.92	2.65	N/A	14.87	124.99	6544.69	4411.60		
18	9200	60544	54653	514.4	2.92	2.65	N/A	14.87	124.99	6544.69	4411.61		
19													

TRIAxIAL RESULTS (9 5/8" Intermediate Casing) - Gas Kick Profile

	Depth (MD) (ft)	Axial Force (lbf)		Bending Stress at OD (psi)	Absolute Safety Factor				Temperature (°F)	Pressure (psi)		Add'l Pickup To Prevent Buck. (lbf)	Buckled Length (ft)
		Apparent (w/Bending)	Actual (w/o Bending)		Triaxial	Burst	Collapse	Axial		Internal	External		
1	0	159037	159037	0.0	4.12	3.95	N/A	5.74	79.19	1448.99	0.00	N/A	N/A
2	25	165224	157753	652.3	4.09	3.97	N/A	5.53	79.32	1455.80	10.82		
3	193	161778	154307	652.3	4.17	4.04	N/A	5.64	80.16	1501.53	83.51		
4	193	157187	154306	251.5	4.20	4.04	N/A	5.81	80.16	1501.53	83.52		
5	1332	138103	134195	341.2	4.52	4.32	N/A	6.60	85.90	1899.94	576.33		
6	1332	133058	129150	341.2	4.86	4.73	N/A	6.85	85.90	1899.94	691.88		
7	2206	141053	110449	2671.9	5.13	5.39	N/A	6.45	90.30	2205.65	1145.22		
8	2206	111461	110449	88.4	5.52	5.39	N/A	8.17	90.30	2205.66	1145.23		
9	3375	118924	92555	2302.2	5.39	5.41	N/A	7.64	96.16	2804.08	1749.35		
10	3640	113602	88471	2194.1	5.45	5.41	N/A	7.99	97.49	2939.74	1886.72		
11	3640	111149	88470	1980.0	5.49	5.41	N/A	8.17	97.49	2939.75	1886.73		
12	4408	109472	76392	2888.1	5.51	5.46	N/A	8.29	101.36	3327.87	2285.71		
13	4409	125409	92329	2888.1	4.33	4.04	N/A	7.23	101.37	3328.38	1920.80		
14	6380	64301	61308	261.4	4.58	4.12	N/A	14.06	111.29	4323.58	2944.96		
15	8200	36177	32625	310.1	4.64	4.19	N/A	24.93	120.46	5242.77	3891.46		
16	9193	33218	24176	789.5	4.66	4.23	N/A	27.11	125.47	5744.29	4407.97		
17	9200	30008	24117	514.4	4.67	4.23	N/A	30.01	125.50	5747.81	4411.60		
18	9200	30008	24116	514.4	4.67	4.23	N/A	30.01	125.50	5747.82	4411.61		
19													

TRIAxIAL RESULTS (9 5/8" Intermediate Casing) - Pressure Test

	Depth (MD) (ft)	Axial Force (lbf)		Bending Stress at OD (psi)	Absolute Safety Factor				Temperature (°F)	Pressure (psi)		Add'l Pickup To Prevent Buck. (lbf)	Buckled Length (ft)
		Apparent (w/Bending)	Actual (w/o Bending)		Triaxial	Burst	Collapse	Axial		Internal	External		
1	0	273157	265686	652.3	3.11	3.83	N/A	3.35	35.00	1500.00	0.00	N/A	N/A
2	25	272394	264923	652.3	3.11	3.83	N/A	3.36	35.00	1512.86	10.82		
3	193	267270	259798	652.3	3.14	3.79	N/A	3.43	37.19	1599.25	83.51		
4	193	262679	259798	251.5	3.17	3.79	N/A	3.49	37.19	1599.26	83.52		
5	1332	228962	225054	341.2	3.32	3.57	N/A	4.00	52.00	2184.95	576.33		
6	1332	223918	220010	341.2	3.47	3.85	N/A	4.09	52.00	2184.96	691.88		
7	2206	220685	190081	2671.9	3.50	3.86	N/A	4.15	63.36	2633.77	1145.22		
8	2206	191093	190081	88.4	3.71	3.86	N/A	4.80	63.36	2633.78	1145.23		
9	3375	176567	150199	2302.2	3.82	3.87	N/A	5.17	78.49	3231.85	1749.35		
10	3640	166261	141130	2194.1	3.89	3.87	N/A	5.49	81.93	3367.85	1886.72		
11	3640	163808	141129	1980.0	3.91	3.87	N/A	5.57	81.93	3367.86	1886.73		
12	4408	147869	114789	2888.1	4.01	3.86	N/A	6.15	91.92	3762.85	2285.71		
13	4409	163788	130708	2888.1	3.33	3.10	N/A	5.55	91.93	3763.37	1920.80		
14	6380	66113	63119	261.4	3.42	3.09	N/A	13.65	117.55	4776.25	2944.96		
15	8200	4214	663	310.1	3.26	3.09	N/A	+ 100.00	141.22	5712.00	3891.46		
16	8224	3552	0	310.1	3.25	3.09	N/A	+ 100.00	141.54	5724.58	3904.19		
17	8224	-3552	-0	310.1	3.25	3.09	N/A	(+ 100.00)	141.54	5724.59	3904.20		
18	9193	-35257	-26214	789.5	3.13	3.09	N/A	(25.32)	154.14	6222.63	4407.97		
19	9200	-32295	-26403	514.4	3.14	3.09	N/A	(27.64)	154.23	6226.22	4411.60		
20	9200	-32295	-26404	514.4	3.14	3.09	N/A	(27.64)	154.23	6226.23	4411.61		
21													
22	()	Compression											

TRIAXIAL RESULTS (9 5/8" Intermediate Casing) - Fracture @ Shoe w/ 1/3 BHP at Surface

	Depth (MD) (ft)	Axial Force (lbf)		Bending Stress at OD (psi)	Absolute Safety Factor				Temperature (°F)	Pressure (psi)		Add'l Pickup To Prevent Buck. (lbf)	Buckled Length (ft)
		Apparent (w/Bending)	Actual (w/o Bending)		Triaxial	Burst	Collapse	Axial		Internal	External		
1	0	190362	190362	0.0	2.74	2.49	N/A	4.80	79.19	2300.60	0.00	N/A	N/A
2	25	196743	189272	652.3	2.73	2.49	N/A	4.64	79.32	2312.67	10.82		
3	193	194597	187126	652.3	2.72	2.48	N/A	4.69	80.16	2393.76	83.51		
4	193	190007	187126	251.5	2.73	2.48	N/A	4.80	80.16	2393.77	83.52		
5	1332	176489	172581	341.2	2.67	2.42	N/A	5.16	85.90	2943.51	576.33		
6	1332	171444	167536	341.2	2.80	2.54	N/A	5.32	85.90	2943.52	691.88		
7	2206	183689	153086	2671.9	2.82	2.57	N/A	4.95	90.30	3364.77	1145.22		
8	2206	154097	153086	88.4	2.85	2.57	N/A	5.91	90.30	3364.78	1145.23		
9	3375	160198	133829	2302.2	2.89	2.62	N/A	5.67	96.16	3926.15	1749.35		
10	3640	154581	129450	2194.1	2.90	2.63	N/A	5.88	97.49	4053.80	1886.72		
11	3640	152128	129450	1980.0	2.91	2.63	N/A	5.97	97.49	4053.81	1886.73		
12	4408	149812	116732	2888.1	2.94	2.66	N/A	6.05	101.36	4424.55	2285.71		
13	4409	165748	132668	2888.1	2.52	2.27	N/A	5.47	101.37	4425.04	1920.80		
14	6380	103004	100010	261.4	2.59	2.33	N/A	8.78	111.29	5375.75	2944.96		
15	8200	73376	69824	310.1	2.64	2.40	N/A	12.29	120.46	6254.05	3891.46		
16	9193	69599	60557	789.5	2.67	2.43	N/A	12.94	125.47	6733.35	4407.97		
17	9200	66384	60492	514.4	2.67	2.43	N/A	13.56	125.50	6736.71	4411.60		
18	9200	66383	60492	514.4	2.67	2.43	N/A	13.56	125.50	6736.72	4411.61		
19													

TRIAxIAL RESULTS (9 5/8" Intermediate Casing) - Full/Partial Evacuation

	Depth (MD) (ft)	Axial Force (lbf)		Bending Stress at OD (psi)	Absolute Safety Factor				Temperature (°F)	Pressure (psi)		Addtl Pickup To Prevent Buck. (lbf)	Buckled Length (ft)
		Apparent (w/Bending)	Actual (w/o Bending)		Triaxial	Burst	Collapse	Axial		Internal	External		
1	0	210510	210510	0.0	3.83	N/A	5.46	4.35	35.00	0.00	0.00	N/A	N/A
2	25	216652	209181	652.3	3.72	N/A	5.49	4.23	35.00	0.01	12.99		
3	193	207717	200245	652.3	3.76	N/A	5.74	4.41	37.19	0.11	100.25		
4	193	203125	200244	251.5	3.83	N/A	5.74	4.51	37.19	0.11	100.26		
5	1332	143576	139668	341.2	3.80	N/A	4.45	6.38	52.00	0.76	691.87		
6	1332	143575	139667	341.2	3.80	N/A	4.45	6.38	52.00	0.76	691.88		
7	2206	123852	93249	2671.9	3.25	N/A	3.11	7.40	63.36	1.27	1145.22		
8	2206	94260	93248	88.4	3.53	N/A	3.11	9.72	63.36	1.27	1145.23		
9	3375	57760	31391	2302.2	2.82	N/A	2.18	15.81	78.49	1.96	1749.35		
10	3640	42457	17326	2194.1	2.72	N/A	2.03	21.49	81.93	2.12	1886.72		
11	3640	40003	17325	1980.0	2.73	N/A	2.03	22.81	81.93	2.12	1886.73		
12	3966	-7796	-3	680.4	2.65	N/A	1.88	(+ 100.00)	86.16	2.31	2055.96		
13	3966	-7797	-4	680.4	2.65	N/A	1.88	(+ 100.00)	86.16	2.31	2055.97		
14	4408	-56608	-23528	2888.1	2.40	N/A	1.69	(16.07)	91.92	2.57	2285.71		
15	4409	-56661	-23581	2888.1	2.40	N/A	1.69	(16.06)	91.93	2.58	2286.23		
16	6380	-131331	-128337	261.4	1.84	N/A	1.16	(6.87)	117.55	3.77	3309.34		
17	8200	-194249	-190697	310.1	1.87	N/A	1.16	(4.61)	141.22	940.59	4254.54		
18	9193	-226564	-217522	789.5	1.87	N/A	1.15	(3.94)	154.14	1451.82	4770.34		
19	9200	-223602	-217710	514.4	1.87	N/A	1.15	(3.99)	154.23	1455.41	4773.96		
20	9200	-223602	-217711	514.4	1.87	N/A	1.15	(3.99)	154.23	1455.42	4773.97		
21													
22	()	Compression											

TRIAXIAL RESULTS (9 5/8" Intermediate Casing) - Cementing

	Depth (MD) (ft)	Axial Force (lbf)		Bending Stress at OD (psi)	Absolute Safety Factor				Temperature (°F)	Pressure (psi)		Add'l Pickup To Prevent Buck. (lbf)	Buckled Length (ft)
		Apparent (w/Bending)	Actual (w/o Bending)		Triaxial	Burst	Collapse	Axial		Internal	External		
1	0	217982	210510	0.0	3.70	N/A	5.27	4.20	35.00	0.00	0.00	N/A	N/A
2	25	216982	209510	652.3	3.71	N/A	5.48	4.22	35.00	12.99	16.36		
3	193	210262	202791	652.3	3.78	N/A	5.63	4.36	37.19	100.25	126.32		
4	193	205671	202790	251.5	3.86	N/A	5.63	4.46	37.19	100.26	126.33		
5	1332	161144	157236	341.2	4.42	N/A	6.40	5.69	52.00	691.87	871.76		
6	1332	161144	157236	341.2	4.42	N/A	6.40	5.69	52.00	691.88	871.77		
7	2206	152932	122329	2671.9	4.27	N/A	6.97	5.99	63.36	1145.22	1442.97		
8	2206	123340	122328	88.4	5.01	N/A	6.97	7.43	63.36	1145.23	1442.99		
9	3375	102180	75811	2302.2	4.97	N/A	6.67	8.94	78.49	1749.35	2204.18		
10	3640	90364	65233	2194.1	5.14	N/A	6.46	10.10	81.93	1886.72	2377.26		
11	3640	87911	65232	1980.0	5.21	N/A	6.46	10.38	81.93	1886.73	2377.28		
12	4408	67591	34510	2888.1	5.28	N/A	5.80	13.46	91.92	2285.71	2880.00		
13	4409	67551	34470	2888.1	5.28	N/A	5.80	13.47	91.93	2286.23	2880.65		
14	5272	4334	5	378.0	6.52	N/A	5.19	+ 100.00	103.14	2733.84	3444.64		
15	5272	-4347	-18	378.0	6.84	N/A	5.26	(+ 100.00)	103.15	2734.13	3445.00		
16	6380	-47303	-44309	261.4	6.69	N/A	4.46	(19.08)	117.55	3309.34	4169.77		
17	8200	-120641	-117090	310.1	5.65	N/A	3.46	(7.43)	141.22	4254.54	5360.72		
18	9193	-165848	-156806	789.5	4.42	N/A	2.72	(5.38)	154.14	4770.34	6175.68		
19	9200	-162977	-157085	514.4	4.41	N/A	2.71	(5.48)	154.23	4773.96	6181.40		
20	9200	-162978	-157086	514.4	4.41	N/A	2.71	(5.48)	154.23	4773.97	6181.42		
21													
22	()	Compression											

TRIAxIAL RESULTS (9 5/8" Intermediate Casing) - Overpull Force

	Depth (MD) (ft)	Axial Force (lbf)		Bending Stress at OD (psi)	Absolute Safety Factor				Temperature (°F)	Pressure (psi)		Add'l Pickup To Prevent Buck. (lbf)	Buckled Length (ft)
		Apparent (w/Bending)	Actual (w/o Bending)		Triaxial	Burst	Collapse	Axial		Internal	External		
1	0	420387	412916	0.0	1.91	N/A	N/A	2.18	74.67	0.00	0.00	N/A	N/A
2	25	419387	412065	652.3	1.92	N/A	N/A	2.18	74.77	12.99	12.99		
3	193	413669	406346	652.3	1.94	N/A	N/A	2.21	75.50	100.25	100.25		
4	193	413668	406345	251.5	1.94	N/A	N/A	2.21	75.50	100.26	100.26		
5	1332	374889	367567	341.2	2.10	N/A	N/A	2.44	80.40	691.87	691.87		
6	1332	374888	367566	341.2	2.10	N/A	N/A	2.44	80.40	691.88	691.88		
7	2206	355337	337814	2671.9	2.19	N/A	N/A	2.57	84.16	1145.22	1145.22		
8	2206	355337	337813	88.4	2.19	N/A	N/A	2.57	84.16	1145.23	1145.23		
9	3375	315537	298029	2302.2	2.40	N/A	N/A	2.89	89.17	1749.35	1749.35		
10	3640	306515	289011	2194.1	2.46	N/A	N/A	2.97	90.31	1886.72	1886.72		
11	3640	306514	289010	1980.0	2.46	N/A	N/A	2.97	90.31	1886.73	1886.73		
12	4408	280354	262848	2888.1	2.64	N/A	N/A	3.24	93.61	2285.71	2285.71		
13	4409	280320	262814	2888.1	2.64	N/A	N/A	3.24	93.62	2286.23	2286.23		
14	6380	213253	195863	261.4	3.24	N/A	N/A	4.25	102.10	3309.34	3309.34		
15	8200	151351	134045	310.1	4.10	N/A	N/A	5.98	109.94	4254.54	4254.54		
16	9193	117723	100238	789.5	4.79	N/A	N/A	7.68	114.21	4770.34	4770.34		
17	9199	117505	100019	514.4	4.80	N/A	N/A	7.69	114.24	4773.68	4773.68		
18	9200	117487	100001	514.4	4.80	N/A	N/A	7.69	114.24	4773.96	4773.96		
19	9200	117486	100000	514.4	4.80	N/A	N/A	7.69	114.24	4773.97	4773.97		
20													

TRIAXIAL RESULTS (9 5/8" Intermediate Casing) - Post-Cement Static Load

	Depth (MD) (ft)	Axial Force (lbf)		Bending Stress at OD (psi)	Absolute Safety Factor				Temperature (°F)	Pressure (psi)		Add'l Pickup To Prevent Buck. (lbf)	Buckled Length (ft)
		Apparent (w/Bending)	Actual (w/o Bending)		Triaxial	Burst	Collapse	Axial		Internal	External		
1	0	217982	210510	0.0	3.70	N/A	N/A	4.20	35.00	0.00	0.00	N/A	N/A
2	25	216982	209510	652.3	3.71	N/A	N/A	4.22	35.00	12.99	16.36		
3	193	210262	202791	652.3	3.78	N/A	N/A	4.36	37.19	100.25	126.32		
4	193	205671	202790	251.5	3.86	N/A	N/A	4.46	37.19	100.26	126.33		
5	1332	161144	157236	341.2	4.42	N/A	N/A	5.69	52.00	691.87	871.76		
6	1332	161144	157236	341.2	4.42	N/A	N/A	5.69	52.00	691.88	871.77		
7	2206	152932	122329	2671.9	4.27	N/A	N/A	5.99	63.36	1145.22	1442.97		
8	2206	123340	122328	88.4	5.01	N/A	N/A	7.43	63.36	1145.23	1442.99		
9	3375	102180	75811	2302.2	4.97	N/A	N/A	8.94	78.49	1749.35	2204.18		
10	3640	90364	65233	2194.1	5.14	N/A	N/A	10.10	81.93	1886.72	2377.26		
11	3640	87911	65232	1980.0	5.21	N/A	N/A	10.38	81.93	1886.73	2377.28		
12	4408	67591	34510	2888.1	5.28	N/A	N/A	13.46	91.92	2285.71	2880.00		
13	4409	67551	34470	2888.1	5.28	N/A	N/A	13.47	91.93	2286.23	2880.65		
14	5272	4334	5	378.0	6.52	N/A	N/A	+ 100.00	103.14	2733.84	3444.64		
15	5272	-4347	-18	378.0	6.84	N/A	N/A	(+ 100.00)	103.15	2734.13	3445.00		
16	6380	-47303	-44309	261.4	6.69	N/A	N/A	(19.08)	117.55	3309.34	4169.77		
17	8200	-120641	-117090	310.1	5.65	N/A	N/A	(7.43)	141.22	4254.54	5360.72		
18	9193	-165848	-156806	789.5	4.42	N/A	N/A	(5.38)	154.14	4770.34	6175.68		
19	9200	-162977	-157085	514.4	4.41	N/A	N/A	(5.48)	154.23	4773.96	6181.40		
20	9200	-162978	-157086	514.4	4.41	N/A	N/A	(5.48)	154.23	4773.97	6181.42		
21													
22	()	Compression											

LOAD MINIMUM SAFETY FACTORS (9 5/8" Intermediate Casing) - Displacement to Gas

	OD/Weight/Grade	Connection	MD Interval (ft)	Drift Dia. (in)	Minimum Safety Factor (Abs)			
					Burst	Collapse	Axial	Triaxial
1	9 5/8", 40,000 ppf, L80-IC	BTC, 10 5/8", L80-IC	0.0-9200.0	8.750 A	1.32	N/A	3.41	1.47
2								
3	A Alternate Drift							
4								

LOAD MINIMUM SAFETY FACTORS (9 5/8" Intermediate Casing) - Gas Kick Profile

	OD/Weight/Grade	Connection	MD Interval (ft)	Drift Dia. (in)	Minimum Safety Factor (Abs)			
					Burst	Collapse	Axial	Triaxial
1	9 5/8", 40,000 ppf, L80-IC	BTC, 10 5/8", L80-IC	0.0-9200.0	8.750 A	3.95	N/A	5.53	4.09
2								
3	A Alternate Drift							
4								

LOAD MINIMUM SAFETY FACTORS (9 5/8" Intermediate Casing) - Pressure Test

	OD/Weight/Grade	Connection	MD Interval (ft)	Drift Dia. (in)	Minimum Safety Factor (Abs)			
					Burst	Collapse	Axial	Triaxial
1	9 5/8", 40,000 ppf, L80-IC	BTC, 10 5/8", L80-IC	0.0-9200.0	8.750 A	3.09	N/A	3.35	3.11
2	A Alternate Drift							
3								
4								

LOAD MINIMUM SAFETY FACTORS (9 5/8" Intermediate Casing) - Fracture @ Shoe w/ 1/3 BHP at Surface

	OD/Weight/Grade	Connection	MD Interval (ft)	Drift Dia. (in)	Minimum Safety Factor (Abs)			
					Burst	Collapse	Axial	Triaxial
1	9 5/8", 40,000 ppf, L80-IC	BTC, 10 5/8", L80-IC	0.0-9200.0	8.750 A	2.27	N/A	4.64*	2.52
2	A Alternate Drift							
3								
4								

LOAD MINIMUM SAFETY FACTORS (9 5/8" Intermediate Casing) - Full/Partial Evacuation

	OD/Weight/Grade	Connection	MD Interval (ft)	Drift Dia. (in)	Minimum Safety Factor (Abs)			
					Burst	Collapse	Axial	Triaxial
1	9 5/8", 40,000 ppf, L80-IC	BTC, 10 5/8", L80-IC	0.0-9200.0	8.750 A	N/A	1.15	(3.94)	1.84
2	A Alternate Drift () Compression							
3								
4								
5								

LOAD MINIMUM SAFETY FACTORS (9 5/8" Intermediate Casing) - Cementing

	OD/Weight/Grade	Connection	MD Interval (ft)	Drift Dia. (in)	Minimum Safety Factor (Abs)			
					Burst	Collapse	Axial	Triaxial
1	9 5/8", 40,000 ppf, L80-IC	BTC, 10 5/8", L80-IC	0.0-9200.0	8.750 A	N/A	2.71	4.20	3.70
2	A Alternate Drift							
3								
4								

LOAD MINIMUM SAFETY FACTORS (9 5/8" Intermediate Casing) - Overpull Force

	OD/Weight/Grade	Connection	MD Interval (ft)	Drift Dia. (in)	Minimum Safety Factor (Abs)			
					Burst	Collapse	Axial	Triaxial
1	9 5/8", 40,000 ppf, L80-IC	BTC, 10 5/8", L80-IC	0.0-9200.0	8.750 A	N/A	N/A	2.18	1.91
2	A Alternate Drift							
3								
4								

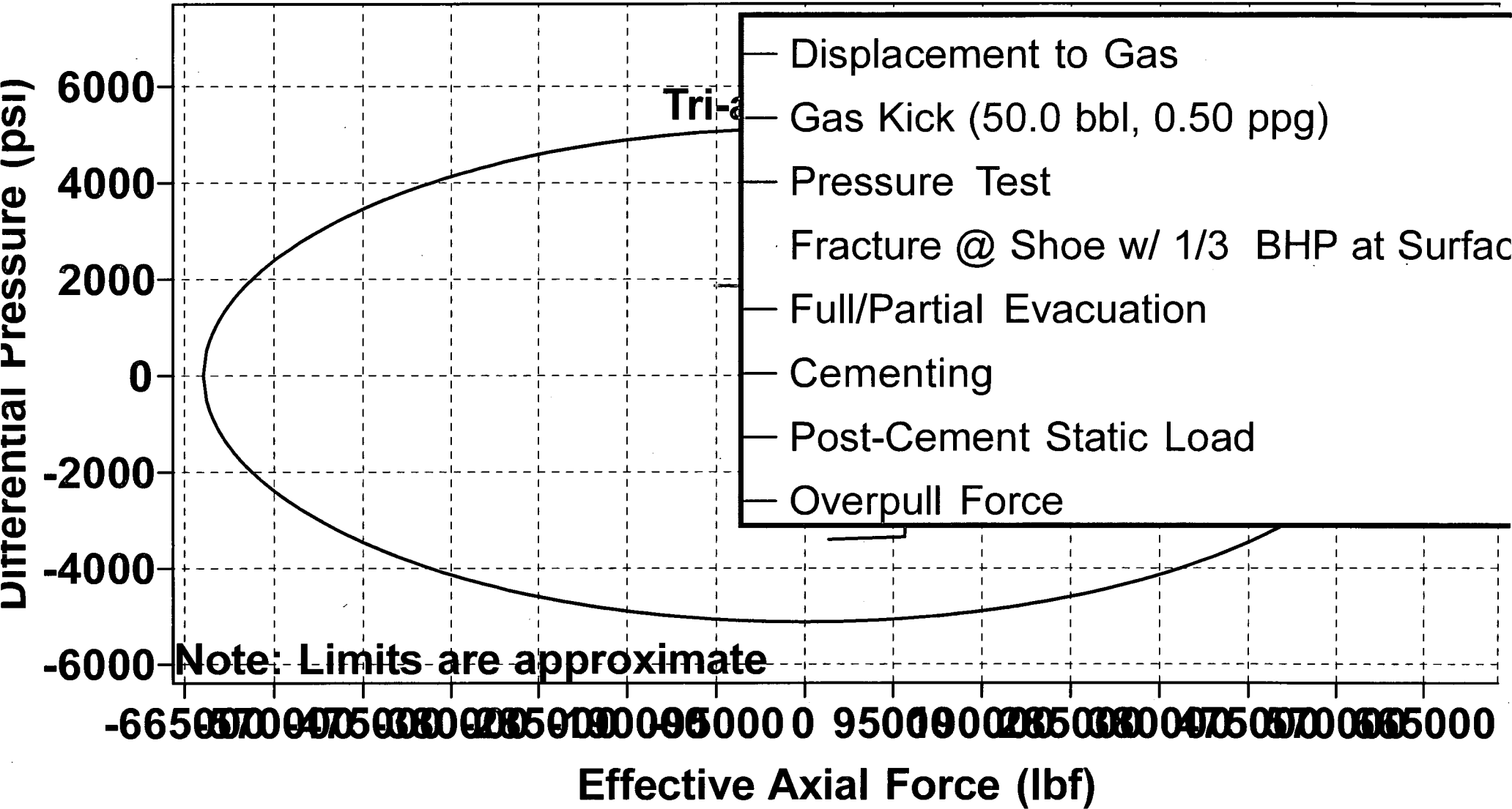
LOAD MINIMUM SAFETY FACTORS (9 5/8" Intermediate Casing) - Post-Cement Static Load

	OD/Weight/Grade	Connection	MD Interval (ft)	Drift Dia. (in)	Minimum Safety Factor (Abs)			
					Burst	Collapse	Axial	Triaxial
1	9 5/8", 40.000 ppf, L80-IC	BTC, 10 5/8", L80-IC	0.0-9200.0	8.750 A	N/A	N/A	4.20	3.70
2	A Alternate Drift							
3								
4								

MINIMUM SAFETY FACTORS (9 5/8" Intermediate Casing)

	Depth (MD) (ft)	OD/Weight/Grade	Connection	Minimum Safety Factor (Abs)			
				Burst	Collapse	Axial	Triaxial
1	0	9 5/8", 40.000 ppf, L80-IC	BTC, L80-IC	1.36 B1	5.27 C2	2.18 A4	1.51 B1
2	25			1.36 B1	5.48 C2	2.18 A4	1.51 B1
3	193			1.35 B1	5.63 C2	2.21 A4	1.51 B1
4	1332			1.32 B1	4.45 C1	2.44 A4	1.47 B1
5	1332			1.36 B1	4.45 C1	2.44 A4	1.51 B1
6	2206			1.36 B1	3.11 C1	2.57 A4	1.50 B1
7	2206			1.36 B1	3.11 C1	2.57 A4	1.51 B1
8	3375			1.35 B1	2.18 C1	2.89 A4	1.50 B1
9	3640			1.39 B1	2.03 C1	2.97 A4	1.54 B1
10	4408			1.51 B1	1.69 C1	3.24 A4	1.66 B1
11	4409			1.37 B1	1.69 C1	3.24 A4	1.51 B1
12	6380			1.71 B1	1.16 C1	4.25 A4	1.84 C1
13	8200			2.22 B1	1.16 C1	5.98 A4	1.87 C1
14	8497			2.33 B1	1.15 C1	(4.39) C1	1.87 C1
15	8523			2.34 B1	1.15 C1	(4.37) C1	1.87 C1
16	8697			2.41 B11	1.15 C1	(4.25) C1	1.87 C1
17	8698			2.41 B11	1.15 C1	(4.25) C1	1.87 C1
18	8782			2.42 B11	1.15 C1	(4.19) C1	1.87 C1
19	8783			2.42 B11	1.15 C1	(4.19) C1	1.87 C1
20	9193			2.43 B11	1.15 C1	(3.94) C1	1.87 C1
21	9199			2.43 B11	1.15 C1	(3.99) C1	1.87 C1
22	9200			2.43 B11	1.15 C1	(4.00) C1	1.87 C1
23							
24		B1 Displacement to Gas					
25		B11 Fracture @ Shoe w/ 1/3 BHP at Surface					
26		C1 Full/Partial Evacuation					
27		C2 Cementing					
28		A4 Overpull Force					
29		() Compression					

1 Mises Equivalent Stress (9 5/8" Intermediate Casing - Section



Design Limits (9 5/8" Intermediate Casing - Section 1)

