Proposal No: 215851063A

Devon Energy Corporation
Righthand Canyon 35 Federal #3

API # 30-015-33217-0000
Indian Basin Field
Sec. 35 - T21S - R24E
Eddy County, New Mexico
February 24, 2004

Well Recommendation

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Operator Name: Devon Energy Corporation
Well Name: Righthand Canyon 35 Federal #3
Job Description: Surface Casing Foamed
Date: February 24, 2004

Proposal No: 215851063A

JOB AT A GLANCE

Depth (TVD)	1,600 ft
Depth (MD)	1,600 ft
Hole Size	14.75 in
Casing Size/Weight :	9 5/8 in, 36 lbs/ft
Pump Via	9 5/8" O.D. (8.921" .I.D) 36
Total Mix Water Required	6,341 gals
Spacer	
Fresh Water	20 bbls
Density	8.3 ppg
N2 Total Volume	500 scf
Minimum N2 Rate	125 scfm
Maximum N2 Rate	125 scfm
Fluid Pump Rate	5.0 bpm
Lead Slurry	
Class C + 2% CaCl Foamed	792 sacks
Density	14.8 ppg
Yield	1.35 cf/sack
N2 Total Volume	13,183 scf
Minimum N2 Rate	119 scfm
Maximum N2 Rate	578 scfm
Fluid Pump Rate	5.0 bpm
Tail Slurry	
Class C	150 sacks
Density	14.8 ppg
Yield	1.35 cf/sack
Displacement	
Mud	121 bbls
Density	8.8 ppg
Top-Out Slurry	
Class C + Additives	75 sacks
Density	14.5 ppg
Yield	1.55 cf/sack

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WELL DATA

ANNULAR GEOMETRY

ANNULAR I.D. (in)	DEPTH(ft)	
	MEASURED	TRUE VERTICAL
14.750 HOLE	1,600	1,600

SUSPENDED PIPES

DIAMETER (in)		WEIGHT (lbs/ft)	DEPTH(ft)	
O.D.	I.D.		MEASURED	TRUE VERTICAL
9.625	8.921	36	1,600	1,600

Float Collar set @	1,560 ft
Mud Density	8.80 ppg
Est. Static Temp.	80 ° F
Est. Circ. Temp.	80 ° F
Back Pressure Held on Annulus	100 psi

VOLUME CALCULATIONS

1,419 ft	x	0.6813 cf/ft	with	50 % excess	=	1450.7 cf
181 ft	x	0.6813 cf/ft	with	50 % excess	=	185.1 cf
40 ft	x	0.4341 cf/ft	with	0 % excess	=	17.4 cf (inside pipe)
			TOTAL SLURRY VOLUME		=	1653.2 cf
					=	295 bbls

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FLUID SPECIFICATIONS

Spacer — 20.0 bbls Fresh Water + 500 scf N2 @ 8.34 ppg

FLUID	VOLUME CU-FT		VOLUME FACTOR	AMOUNT AND TYPE OF CEMENT
Lead Slurry	1451	/	1.83	= 792 sacks Class C Cement + 13183 scf N2 + 0.25 lbs/sack Cello Flake + 2% bwoc Calcium Chloride + 0.75% bwoc BA-10 + 0.2 gps FAW-20 + 54.2% Fresh Water
Tail Slurry	202	/	1.35	= 150 sacks Class C Cement + 2% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 0.75% bwoc BA-10 + 55.9% Fresh Water
Displacement				120.6 bbls Mud @ 8.8 ppg
Top-Out Slurry	116	/	1.55	= 75 sacks Class C Cement + 3% bwoc Calcium Chloride + 10% bwoc A-10 + 65.7% Fresh Water

BASE CEMENT PROPERTIES

	SLURRY NO. 1	SLURRY NO. 2	SLURRY NO. 3
Slurry Weight (ppg)	14.80	14.80	14.50
Slurry Yield (cf/sack)	1.35	1.35	1.55
Amount of Mix Water (gps)	6.11	6.31	7.41
Amount of Mix Fluid (gps)	6.31	6.31	7.41
Estimated Pumping Time - 70 BC (HH:MM)	4:45	2:30	
COMPRESSIVE STRENGTH			
12 hrs @ 80 ° F (psi)	100	1150	
24 hrs @ 80 ° F (psi)	250	2100	
72 hrs @ 80 ° F (psi)	450	2700	

Spacer

BASE FLUID VOLUME (bbls)	MIXING DENSITY (ppg)	FOAM DENSITY (ppg)	GAS RATIO (scf/bbl)	GAS TOTAL (scf N2)	FLUID PUMP RATE (bpm)	NITROGEN RATE (scfm)
10.00	8.34	5.27	25	250	5.0	125
10.00	8.34	5.27	25	250	5.0	125

Totals:

20.00 bbls Slurry
500 scf Nitrogen

FLUID SPECIFICATIONS (Continued)

Lead Slurry

BASE FLUID VOLUME (bbls)	MIXING DENSITY (ppg)	FOAM DENSITY (ppg)	GAS RATIO (scf/bbl)	GAS TOTAL (scf N2)	FLUID PUMP RATE (bpm)	NITROGEN RATE (scfm)
31.75	14.80	11.00	24	757	5.0	119
31.75	14.80	11.00	42	1318	5.0	208
31.75	14.80	11.00	60	1890	5.0	298
31.75	14.80	11.00	78	2477	5.0	390
31.75	14.80	11.00	97	3070	5.0	483
31.75	14.80	11.00	116	3672	5.0	578

Totals:

190.49 bbls Slurry		Top of Foam	0 ft
258.60 bbls Foam		Bottom of Foam	1419 ft
792 sacks Base Cement		Average Foam Yield	1.83 cf/sack
13183 scf Nitrogen			

JOB AT A GLANCE

Depth (TVD)	8,682 ft
Depth (MD)	8,808 ft
Hole Size	8.75 in
Casing Size/Weight :	7in, 23 lbs/ft
Pump Via	7" O.D. (6.366" .I.D) 23
Total Mix Water Required	8,219 gals

Spacer	
Nitrified Mud	50 bbls
Density	9.0 ppg
N2 Total Volume	12,500 scf
Minimum N2 Rate	1,250 scfm
Maximum N2 Rate	1,250 scfm
Fluid Pump Rate	5.0 bpm
Spacer	
Mud Clean II	2,000 gals
Density	8.5 ppg
N2 Total Volume	11,905 scf
Minimum N2 Rate	1,250 scfm
Maximum N2 Rate	1,250 scfm
Fluid Pump Rate	5.0 bpm
1st Lead Slurry	
60:40 Poz:Class C (MPA)	530 sacks
Density	13.8 ppg
Yield	1.33 cf/sack
N2 Total Volume	15,639 scf
Minimum N2 Rate	143 scfm
Maximum N2 Rate	1,125 scfm
Fluid Pump Rate	5.0 bpm
2nd Lead Slurry	
60:40 Poz:Class C (MPA)	520 sacks
Density	13.8 ppg
Yield	1.34 cf/sack
N2 Total Volume	42,426 scf
Minimum N2 Rate	1,310 scfm
Maximum N2 Rate	2,078 scfm
Fluid Pump Rate	5.0 bpm
Tail Slurry	
60:40 Poz:Class C (MPA)	200 sacks
Density	13.8 ppg
Yield	1.34 cf/sack

JOB AT A GLANCE (Continued)

Displacement	
Mud	344 bbls
Density	9.0 ppg
Top-Out Slurry	
Class C + 3% CaCl	100 sacks
Density	14.5 ppg
Yield	1.55 cf/sack

WELL DATA

ANNULAR GEOMETRY

ANNULAR I.D. (in)	DEPTH(ft)	
	MEASURED	TRUE VERTICAL
8.921 CASING	1,600	1,600
8.750 HOLE	8,808	8,682

SUSPENDED PIPES

DIAMETER (in)		WEIGHT (lbs/ft)	DEPTH(ft)	
O.D.	I.D.		MEASURED	TRUE VERTICAL
7.000	6.366	23	8,808	8,682

Float Collar set @	8,728 ft
Mud Density	9.00 ppg
Est. Static Temp.	152 ° F
Est. Circ. Temp.	126 ° F
Back Pressure Held on Annulus	100 psi

VOLUME CALCULATIONS

1,600 ft	x	0.1668 cf/ft	with	0 % excess	=	266.9 cf
2,538 ft	x	0.1503 cf/ft	with	66 % excess	=	633.7 cf
3,665 ft	x	0.1503 cf/ft	with	66 % excess	=	914.5 cf
1,006 ft	x	0.1503 cf/ft	with	66 % excess	=	251.0 cf
80 ft	x	0.2210 cf/ft	with	0 % excess	=	17.7 cf (inside pipe)
				TOTAL SLURRY VOLUME	=	2083.7 cf
					=	371 bbls

Operator Name: Devon Energy Corporation
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Job Description: Foamed Long String to Surface
Date: February 24, 2004

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FLUID SPECIFICATIONS

Spacer — 50.0 bbls Nitrified Mud + 12500 scf N2 @ 9 ppg

Spacer — 2,000.0 gals Mud Clean II + 11905 scf N2 @ 8.5 ppg

FLUID	VOLUME CU-FT		VOLUME FACTOR	AMOUNT AND TYPE OF CEMENT
1st Lead Slurry	901	/	1.7	= 530 sacks (60:40) Poz (Fly Ash):Class C Cement + 15639 scf N2 + 0.5% bwow Sodium Chloride + 0.75% bwoc BA-10 + 0.25 lbs/sack Cello Flake + 0.2 gps FAW-20 + 4% bwoc MPA-1 + 60.1% Fresh Water
2nd Lead Slurry	915	/	1.76	= 520 sacks (60:40) Poz (Fly Ash):Class C Cement + 42426 scf N2 + 2% bwow Sodium Chloride + 0.75% bwoc BA-10 + 0.25 lbs/sack Cello Flake + 0.2 gps FAW-20 + 4% bwoc MPA-1 + 60.8% Fresh Water
Tail Slurry	269	/	1.34	= 200 sacks (60:40) Poz (Fly Ash):Class C Cement + 2% bwow Sodium Chloride + 0.75% bwoc BA-10 + 0.25 lbs/sack Cello Flake + 4% bwoc MPA-1 + 62.8% Fresh Water
Displacement				343.6 bbls Mud @ 9 ppg
Top-Out Slurry	155	/	1.55	= 100 sacks Class C Cement + 3% bwoc Calcium Chloride + 10% bwoc A-10 + 65.7% Fresh Water

BASE CEMENT PROPERTIES

	SLURRY NO. 1	SLURRY NO. 2	SLURRY NO. 3	SLURRY NO. 4
Slurry Weight (ppg)	13.80	13.80	13.80	14.50
Slurry Yield (cf/sack)	1.33	1.34	1.34	1.55
Amount of Mix Water (gps)	5.91	5.98	6.18	7.41
Amount of Mix Fluid (gps)	6.11	6.18	6.18	7.41
Estimated Pumping Time - 70 BC (HH:MM)	3:00	2:15	2:15	
Free Water (mls) @ 152 ° F @ 90 ° angle			0.0	
Fluid Loss (cc/30min) at 1000 psi and 152 ° F			56.0	
COMPRESSIVE STRENGTH				
12 hrs @ 152 ° F (psi)			1450	
24 hrs @ 152 ° F (psi)			2300	
72 hrs @ 152 ° F (psi)			3000	

Spacer

BASE FLUID VOLUME (bbls)	MIXING DENSITY (ppg)	FOAM DENSITY (ppg)	GAS RATIO (scf/bbl)	GAS TOTAL (scf N2)	FLUID PUMP RATE (bpm)	NITROGEN RATE (scfm)
50.00	9.00	0.00	250	12500	5.0	1250

Totals:

50.00 bbls Slurry
12500 scf Nitrogen

Spacer

BASE FLUID VOLUME (bbls)	MIXING DENSITY (ppg)	FOAM DENSITY (ppg)	GAS RATIO (scf/bbl)	GAS TOTAL (scf N2)	FLUID PUMP RATE (bpm)	NITROGEN RATE (scfm)
23.81	8.50	0.00	250	5952	5.0	1250
23.81	8.50	0.00	250	5952	5.0	1250

Totals:

47.62 bbls Slurry
11905 scf Nitrogen

1st Lead Slurry

BASE FLUID VOLUME (bbls)	MIXING DENSITY (ppg)	FOAM DENSITY (ppg)	GAS RATIO (scf/bbl)	GAS TOTAL (scf N2)	FLUID PUMP RATE (bpm)	NITROGEN RATE (scfm)
20.94	13.80	11.00	29	600	5.0	143
20.94	13.80	11.00	65	1355	5.0	323
20.94	13.80	11.00	102	2137	5.0	510
20.94	13.80	11.00	143	2986	5.0	713
20.94	13.80	11.00	184	3850	5.0	919
20.94	13.80	11.00	225	4711	5.0	1125

Totals:

125.65 bbls Slurry
160.53 bbls Foam
530 sacks Base Cement
15639 scf Nitrogen

Top of Foam	0 ft
Bottom of Foam	4138 ft
Average Foam Yield	1.70 cf/sack

FLUID SPECIFICATIONS (Continued)

2nd Lead Slurry

BASE FLUID VOLUME (bbls)	MIXING DENSITY (ppg)	FOAM DENSITY (ppg)	GAS RATIO (scf/bbl)	GAS TOTAL (scf N2)	FLUID PUMP RATE (bpm)	NITROGEN RATE (scfm)
20.74	13.80	11.00	262	5436	5.0	1310
20.74	13.80	11.00	295	6118	5.0	1475
20.74	13.80	11.00	327	6783	5.0	1635
20.74	13.80	11.00	358	7426	5.0	1790
20.74	13.80	11.00	388	8041	5.0	1938
20.74	13.80	11.00	416	8622	5.0	2078

Totals:

124.45 bbls Slurry		Top of Foam	4138 ft
163.02 bbls Foam		Bottom of Foam	7802 ft
520 sacks Base Cement		Average Foam Yield	1.76 cf/sack
42426 scf Nitrogen			

Displace cement with both pumps @ +/- 10 BPM

PRODUCT DESCRIPTIONS

A-10
An additive used for fast setting, thixotropic cements or cement systems to seal off a lost circulation zone. It has thixotropic properties and develops early high compressive strength.

BA-10
Improves cement bonding and acts as a matrix flow control agent. It can be used in lightweight, standard and densified slurries at moderate temperatures.

Calcium Chloride
A powdered, flaked or pelletized material used to decrease thickening time and increase the rate of strength development.

Cello Flake
Graded (3/8 to 3/4 inch) cellophane flakes used as a lost circulation material.

Class C Cement
Intended for use from surface to 6000 ft., and for conditions requiring high early strength and/or sulfate resistance.

FAW-20
A biodegradable foaming agent designed to foam water with nitrogen.

MPA-1
MPA-1 is a fine white pozzolanic type powder used to enhance various cement properties. These properties include: Enhanced Compressive Strength Development, Improved Sulfate Resistance, Increased Tensile and Flexural Strength, and Gas Control. MPA-1 is functional over a broad temperature range, and can be used in foamed lightweight, normal, and heavyweight cement designs. Concentrations range from 1 to 30% BWOC.

Mud Clean II
A water-base mud wash designed for use ahead of cement slurries to aid in mud and drilling debris removal and to prevent contamination of the cement slurry. It should be used only when water-base mud is used.

Poz (Fly Ash)
A synthetic pozzolan, (primarily Silicon Dioxide). When blended with cement, Pozzolan can be used to create lightweight cement slurries used as either a filler slurry or a sulfate resistant completion cement.

Sodium Chloride
At low concentrations, it is used to protect against clay swelling. At high concentrations, it is used to increase the density of water for well control purposes and as a carrier fluid for rock salt divertor stages.