

**Recommended Drilling Fluids Program
and
Cost Estimate**

JUL 17 2007
OCD-ARTESIA

For:

**Chesapeake Operating, Inc.
6100 North Western
Oklahoma City, OK 73118**

The

Beggs 21 State Com #1

Located in:

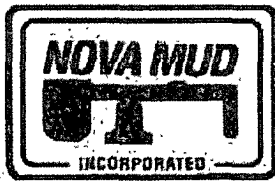
**Sec-21, T-25-S, R-27-E,
Eddy County, NM**

Prepared especially for:

**Mr. Randy Patterson
District Engineer**

"The Nova Difference"

A Commitment to Service and Quality



NOVA MUD, Inc.

P.O. Box 2703 Hobbs, New Mexico 88241 800-530-8786
1004 Big Spring, Ste. 215, Midland, Texas 79701 432-570-6663

6/27/2007

Mr. Randy Patterson
Chesapeake Operating, Inc.
6100 North Western
Oklahoma City, OK 73118

RE: Beggs 21 State Com #1 (13,200' - Morrow)

Dear Randy;

We appreciate the opportunity to present our ideas for your upcoming prospect, located in Sec-21, T-25-S, R-27-E, of Eddy County, NM.

This program has been designed to economically provide sufficient hole stability and adequate formation evaluation with minimum damage to your producing formation.

Our mud cost for this well under normal drilling conditions is approximately \$216,840 based on 63 drilling days. Severe lost circulation, water flows, fishing jobs, pressure or other unforeseen drilling hazards could alter this estimate.

Our stockpoint for this area is Hobbs/Lovington, NM. A price list and brief resume' of our personnel are enclosed in the miscellaneous section of the program.

We thank you for the opportunity to be of service to you on this well and we look forward to working with you in the future. Please don't hesitate to call should you have any questions or comments.

Sincerely,

Dale S. Welch
Sales/Tech Advisor

"The Nova Difference"
A Commitment to Service

INTERVAL: 0 - 450		26" hole	3 days	20" csg	2 drill bits		
Product	Function		Treatment	Unit Size	Usage	Unit Price	Total Price
Bentonite	Viscosifier		12-14 ppb	100 #	120	\$7.35	\$882.00
Cedar Fiber/Fiber Plug/Pluggit	LCM, sealant		As needed	40 #	10	\$6.46	\$64.60
CS Hulls	LCM, sealant		As needed	50 #	10	\$7.47	\$74.70
Ground Paper	seepage and sweeps		1-3 sacks per 100 feet	40 #	15	\$9.35	\$140.25
Lime	pH additive, flocculant		1 sack per 15 sacks of bentonite	50 #	10	\$5.35	\$53.50
Plastic	Storage aid		1 roll for tarp	1 roll	2	\$30.00	\$60.00
Shrink Wrap	Storage aid		Cover mud	1 each	10	\$22.00	\$220.00
Soda Ash	Calcium remover		1 sack per 15 sacks of bentonite	50 #	10	\$9.75	\$97.50
Interval Total:						<u>\$1,592.55</u>	

Projected Mud Properties

Depth	Mud Wt. - ppg	Viscosity	pH	Filtrate	Solids - % by vol.
0' - 450'	8.4-9.4	34-36	9-10	N/C	2.0-6.0

General Geological Data

Tops/Bases	Formation	Lithology	Notes/Challenges
0' - 100'	Tansill	Gypsum & Dolomite	Poss. Fractures and losses
100' - 450'	Yates	Dolomite	Vugular, fractured, heavy seepage, lost circulation

Interval Notes for 0 - 450

Drill surface with fresh water spud mud circulating working pits, jetting and diluting as needed to control solids, mud weight and wall cake. Mix spud mud using Fresh Water/Soda Ash/Bentonite and Ground Paper. Lime may be added for flocculation and added carrying capacity. For losses suggest mixing Cotton Seed Hulls and/or Cedar Fiber as needed. Should losses be severe, dry drill to total depth and sweep the hole with 60-70 bbl of a viscous(50-60) LCM pill containing 10-20 ppb of fibrous LCM to aid in hole cleaning and to help seal the zone prior to cementing.

NOTE: due to the large diameter hole, it may be necessary to drill with 17 ½" bits and then use a hole opener to accommodate the 20" casing.

INTERVAL: 450 - 2,100		17.5" hole	7 days	13.375" csg	2 drill bits		
Product	Function		Treatment	Unit Size	Usage	Unit Price	Total Price
Ground Paper	Seepage and sweeps		1-3 sacks per 200 feet	40 #	60	\$9.35	\$561.00
Lime	pH additive		5 ppb	50 #	70	\$5.35	\$374.50
MF-55/VisPlus(non-ionic)	Flocculant		1 qt in 50 gal water every 4 hr	5 gal.	8	\$83.60	\$668.80
Salt Gel	Hole sweep		14-16 ppb in sweeps	50 #	170	\$8.17	\$1,388.90
Shrink Wrap	Storage aid		Cover mud	1 each	7	\$22.00	\$154.00
Interval Total:							\$3,147.20

Projected Mud Properties

Depth	Mud Wt. - ppg	Viscosity	pH	Filtrate	Solids - % by vol.
450' - 2,100'	10-10.2	28-30	10-11	N/C	.5-1.0

General Geological Data

Tops/Bases	Formation	Lithology	Notes/Challenges
1,810' - 2,100'	Lamar	Limestone	Delaware mountain group

Interval Notes for 450 - 2,100

Drill the first intermediate with saturated Brine water, circulating inner reserve pit and working pits. Use Ground Paper for seepage control and to aid in hole cleaning. Maintain the pH with Lime additions. Use small amounts of MF-55 to aid in fine solids flocculation. Sweep the hole as often as necessary with viscous (50-60) Salt Gel pills to clean the hole. Should total loss of returns occur, dry drill to total depth periodically sweeping the hole with viscous(50-60) fibrous(10-20 ppb) pills to help seal loss zones and to promote hole cleaning prior to running casing.

INTERVAL: 2,100 - 8,950		12.25" hole	16 days	9.625" csg	4 drill bits		
Product	Function		Treatment	Unit Size	Usage	Unit Price	Total Price
Bentonite	Viscosifier		14-16 ppb in sweeps	100 #	200	\$7.35	\$1,470.00
Biocide (STC)	Biocide		1 gal./100 bbls.	5 gal.	15	\$70.52	\$1,057.80
Caustic Soda	pH additive		25 ppb	50 #	40	\$30.80	\$1,232.00
Cedar Fiber/Fiber Plug/Pluggit	LCM, sealant		3-10 ppb in sweeps	40 #	90	\$6.46	\$581.40
Defoamer	Defoamer		As needed	5 gal	5	\$63.75	\$318.75
Ground Paper	seepage and sweeps		1-3 sacks per 100 feet	40 #	110	\$9.35	\$1,028.50
H-120(H2S Scavenger)	Corrosion Inhibitor		as needed for H2S contamination	1 gal.	180	\$12.80	\$2,304.00
Lime	pH additive		5 ppb	50 #	120	\$5.35	\$642.00
Maxi-Seal/Fiber Seal/Chem Seal	LCM, sealant		3-10 ppb in sweeps	40 #	90	\$12.14	\$1,092.60
MF-55/VisPlus(non-ionic)	Flocculant		1 qt in 50 gal water every 4 hr	5 gal	15	\$83.60	\$1,254.00
Mica	LCM, sealant		3-10 ppb in sweeps	50 #	70	\$10.52	\$736.40
M-I-X II/Delta P/BaroFiber	LCM, sealant		3-10 ppb in sweeps	25 #	70	\$26.25	\$1,837.50
Shrink Wrap	Storage aid		Cover mud	1 each	20	\$22.00	\$440.00
White Starch	Filtrate control		3-4 ppb	50 #	60	\$22.75	\$1,365.00
Interval Total:						<u>\$15,359.95</u>	

Projected Mud Properties

Depth	Mud Wt. - ppg	Viscosity	pH	Filtrate	Chlorides - ppm
2,100' - 8,900'	8.6-10.0	28-30	10-11	N/C	20-186K
8,900' - 8,950'	10.0-10.1	30-32	10.0	10cc	186K

General Geological Data

Tops/Bases	Formation	Lithology	Notes/Challenges
2,100' - 2,150'	Lamar	Limestone	Losses
2,150' - 2,195'	Delaware	Limestone, sand	Seepage
2,195' - 2,985'	Bell Canyon	Sand, Limestone	
2,985' - 5,585'	Cherry Canyon	Shaly, sand	
5,585' - 5,695'	Basal Brushy Canyon		
5,695' - 6,615'	Bone Spring Lime	Limestone	Seepage
6,615' - 7,395'	1st Bone Spring		
7,395' - 8,445'	2nd Bone Spring	Sand, Limestone	Seepage
8,445' - 8,785'	3rd Bone Spring	Sand, Limestone	Seepage
8,785' - 8,950'	Wolfcamp	Limestone to limey shale	Possible sloughing, gas kick

Interval Notes for 2,100 - 8,950

Drill out from the first intermediate casing with Fresh to brackish water. Circulate the reserve. Use MF-55 to flocculate the fine solids. Use Ground Paper for seepage losses and to aid in hole cleaning. Mix Lime for 10-11 pH. Below 5,000' we recommend sweeping the hole periodically with 30 to 40 bbl of a viscous (50-60) pill to aid in hole cleaning. Adjust the weight as necessary with Brine or sack salt to control any flows that may occur. Should severe seepage or moderate losses occur, add 3-10 ppb of various LCM's to sweeps to regain returns. It is possible to encounter a sulfur water flow prior to drilling the Wolfcamp. We would recommend displacing the hole with 10.0 ppg Brine should the flow be severe. The corrosion program may need to be adjusted with an H₂S scavenger should the flow persist. We would suggest switching from Lime to control pH to Caustic Soda additions.

Prior to logging make sure that the hole is displaced with 10.0 ppg Brine. Return to the working pits and mud up with a White Starch system. Pre-treat the fluid with Biocide to prevent bacteria growth. Adjust the pH to 10.0 with Caustic and lower the filtrate to 10cc with White Starch. Some Defoamer may be needed while mixing to prevent aeration of the pumps. Pre-treat the system with Bi-Carb and SAPP prior to drilling any cement. Should contamination be severe, we suggest jetting the system and drilling out with a new fluid.

NOTE 1: It is recommended that an H₂S scavenger be used prior to drilling into possible H₂S bearing zones. Preventative maintenance is the only way to prevent damage to metals. Nova mud carries a full line of corrosion chemicals and can provide service as well.

INTERVAL: 8,950 - 11,150		8.75" hole	17 days	7" csg	4 drill bits		
Product	Function	Treatment	Unit Size	Usage	Unit Price	Total Price	
Barite-Bulk	Weighting agent	As needed	1 ton	250	\$195.00	\$48,750.00	
Bicarb of Soda	Cement treatment	As needed	100 #	30	\$36.90	\$1,107.00	
Biocide (STC)	Biocide	1 gal./100 bbls.	5 gal	35	\$70.52	\$2,468.20	
Caustic Soda	pH additive	25 ppb	50 #	30	\$30.80	\$924.00	
Desco	Thinner, dispersant	As needed	25 #	15	\$40.80	\$612.00	
Drispac/Poly Pac/StaFlo/Aquapac	Filtrate control, secondary viscosifier	5-.75 ppb	50 #	40	\$150.80	\$6,032.00	
EPL-50/Slider C-555	Lubricant	As needed	55 gal.	10	\$747.00	\$7,470.00	
Graphite	Lubricant	As needed	50 #	100	\$35.92	\$3,592.00	
K-Seal (coarse)	LCM, sealant	As needed	50 #	20	\$26.00	\$520.00	
K-Seal (fine)	LCM, sealant	As needed	25 #	50	\$26.25	\$1,312.50	
Mica	LCM, sealant	As needed	50 #	40	\$10.52	\$420.80	
M-I-X II/Delta P/BaroFiber	LCM, sealant	As needed	25 #	40	\$26.25	\$1,050.00	
SAPP	Cement treatment	As needed	100 #	10	\$85.02	\$850.20	
Shrink Wrap	Storage aid	Cover mud	1 each	15	\$22.00	\$330.00	
Silicone Defoamer	Defoamer	As needed	5 gal.	10	\$79.98	\$799.80	
Soda Ash	Calcium remover	5-.75 ppb	50 #	40	\$9.75	\$390.00	
Soltex/Baratrol	Shale stabilizer	1-2 ppb	50 #	90	\$93.75	\$8,437.50	
White Starch	Filtrate control	3.0-4.0 ppb	50 #	110	\$22.75	\$2,502.50	
XCD Polymer/Flozan/Optizan	Viscosifier	5- 75 ppb	25 #	70	\$158.76	\$11,113.20	

Interval Total: \$98,681.70**Projected Mud Properties**

Depth	Mud Wt. - ppG	Viscosity	pH	Filtrate	Chlorides - ppm
8,950' - 10,165'	10.0-10.1	30-33	9-10	10-8	186K
10,165' - 11,150'	10.0-12.5	36-50	9-10	8-6	186K

General Geological Data

Tops/Bases	Formation	Lithology	Notes/Challenges
8,950' - 9,445'	Wolfcamp	limestone to limey shale	Sloughing
9,445' - 9,565'	Upper Wolfcamp shale		
9,565' - 10,165'	Middle Wolfcamp shale		
10,165' - 10,470'	WFMP Hayhurst Debris Flow		
10,470' - 10,905'	Upper Penn shale	Shale	Sloughing
10,850' - 11,150'	Lower Strawn	Limestone	Possible gas kick
10,905' - 10,850'	Strawn Pay	Limestone, chert	Possible gas kick

Interval Notes for 8,950 - 11,150

Drill out from the second intermediate casing with the existing system. Prior to drilling out be sure the Brine weighs 10.0ppg. **Solids removal equipment, bar bins and gas handling equipment should be rigged up and ready to handle possible gas.** When mud up is necessary we suggest treating the hardness out with Soda Ash and mud up with White Starch/Drispac/XCD Polymer with a viscosity of 36-38, and a filtrate of 8 to 10cc. Add small amounts of Silicone Defoamer as needed to prevent aeration while mixing mud. Maintain 10 pH using Caustic Soda. Adjust the weight as necessary to control any gas. Before drilling into the Morrow lower the filtrate to 6 to 8cc and adjust the viscosity to 38 to 40 sec/1000cc viscosity. **Pre-treat the Penn Shale with 1-2 ppb of shale stabilizer prior to picking up the core barrel.**

NOTE: research of the area indicates that 12.0 ppg should be the maximum mud weights. **The Hayhurst well to the north had pressures in the Debris flow that calculated to 14.5 ppg. Returns were lost and 13.7 ppg was used to kill the well and get back to drilling.**

NOTE: The drilling program calls for coring the Penn Shale. The expected core depth is 10,450'-10,840'. We have included some lubricant in case jamming becomes a problem. Mica and MIX II should be used for seepage while the core barrel is in the hole. Descos may be added prior to running the cores to toughen the filter cake.

INTERVAL: 11,150 - 13,200		6.125" hole	20 days	4.5" csg	4 drill bits		
Product	Function		Treatment	Unit Size	Usage	Unit Price	Total Price
Bante-Bulk	Weighting agent		As needed	1 ton	150	\$195 00	\$29,250 00
Caustic Soda	pH additive		25 ppb	50 #	20	\$30 80	\$616 00
Desco	Thinner, dispersant		As needed	25 #	10	\$40 80	\$408.00
Drispac/Poly Pac/StaFlo/Aquapac	Filtrate control, secondary viscosifier		4- 5 ppb	50 #	25	\$150 80	\$3,770 00
Mica	LCM, sealant		As needed	50 #	50	\$10.52	\$526.00
M-I-X II/Delta P/BaroFiber	LCM, sealant		As needed	25 #	50	\$26.25	\$1,312.50
Shrink Wrap	Storage aid		Cover mud	1 each	10	\$22 00	\$220.00
Soda Ash	Calcium remover		.5-.75 ppb	50 #	70	\$9.75	\$682 50
Soltex/Baratrol	Shale stabilizer		1-2 ppb	50 #	20	\$93.75	\$1,875.00
White Starch	Filtrate control		3-4 ppb	50 #	110	\$22.75	\$2,502.50
XCD Polymer/Flozan/Optizan	Viscosifier		75 -1.0 ppb	25 #	50	\$158.76	\$7,938 00
Interval Total:						<u>\$49,100.50</u>	

Projected Mud Properties

Depth	Mud Wt. - ppg	Viscosity	Filtrate	pH	Chlorides - ppm
11,150' - 13,200'	12 0-12 5	50-55	6cc	10 0	186K

General Geological Data

Tops/Bases	Formation	Lithology	Notes/Challenges
11,150' - 11,170'	Strawn Pay		
11,170' - 11,235'	Atoka	Sandy shale	Poss gas kick
11,235' - 11,725'	Atoka Datum Lime	Limestone	
11,725' - 11,780'	Upper Morrow yellow sand	Sand	Water sensitive, possibly under pressured
11,780' - 11,915'	Upper Morrow Red Sand	Sand	Water sensitive, possibly under pressured
11,915' - 11,955'	Morrow Clastics	Shaly calcareous sand	
11,955' - 12,135'	Mid Morrow B Sand	Sand	Pay Zone
12,135' - 12,295'	Mid Morrow D Sand	Sand	Pay Zone
12,295' - 12,445'	Lower Morrow	Shaly calcareous sand	
12,445' - 12,895'	Barnett	Shale	Sloughing
12,895' - 13,025'	Chester	Limestone	
13,025' - 13,200'	Mississippian	Limestone	TD

Interval Notes for 11,150 - 13,200

If the pressure is the Wolfcamp Hayhurst Debris Flow is present and mud weights have exceeded 12.0 ppg, we suggest setting 7" casing prior to entering the Atoka. Should mud weight be 12.0 ppg or less, reduce the hole size to 6 1/8" and continue drilling.

Continue to maintain the properties as needed for hole conditions. Add XCD Polymer for viscosity. Use Drispac/White Starch for filtrate control. Continue to use Caustic for pH and STC to prevent bacteria growth. Silicone Defoamer should be used while mixing and if gas is circulated out to prevent foaming and aeration of the pump. Barite addition should be used to control weight. Use LCM pills should any losses be encountered.

Recommended Drilling Fluids Program

Chesapeake Operating, Inc. * Beggs 21 State Com # 1 * Sec-21, T-25-S, R-27-E, Eddy, NM

INTERVAL: 0 - 450		26" hole	3 days	20" csg	2 drill bits		
Product	Function		Treatment	Unit Size	Usage	Unit Price	Total Price
Bentonite	Viscosifier		12-14 ppb	100 #	120	\$7.35	\$882.00
Cedar Fiber/Fiber Plug/Pluggit	LCM, sealant		As needed	40 #	10	\$6.46	\$64.60
CS Hulls	LCM, sealant		As needed	50 #	10	\$7.47	\$74.70
Ground Paper	seepage and sweeps		1-3 sacks per 100 feet	40 #	15	\$9.35	\$140.25
Lime	pH additive, flocculant		1 sack per 15 sacks of bentonite	50 #	10	\$5.35	\$53.50
Plastic	Storage aid		1 roll for tarp	1 roll	2	\$30.00	\$60.00
Shrink Wrap	Storage aid		Cover mud	1 each	10	\$22.00	\$220.00
Soda Ash	Calcium remover		1 sack per 15 sacks of bentonite	50 #	10	\$9.75	\$97.50

Interval Total: **\$1,592.55**

INTERVAL: 450 - 2,100		17.5" hole	7 days	13.375" csg	2 drill bits		
Product	Function		Treatment	Unit Size	Usage	Unit Price	Total Price
Ground Paper	Seepage and sweeps		1-3 sacks per 200 feet	40 #	60	\$9.35	\$561.00
Lime	pH additive		.5 ppb	50 #	70	\$5.35	\$374.50
MF-55/VisPlus(non-ionic)	Flocculant		1 qt in 50 gal water every 4 hr.	5 gal	8	\$83.60	\$668.80
Salt Gel	Hole sweep		14-16 ppb in sweeps	50 #	170	\$8.17	\$1,388.90
Shrink Wrap	Storage aid		Cover mud	1 each	7	\$22.00	\$154.00

Interval Total: **\$3,147.20**

INTERVAL: 2,100 - 8,950		12.25" hole	16 days	9.625" csg	4 drill bits		
Product	Function		Treatment	Unit Size	Usage	Unit Price	Total Price
Bentonite	Viscosifier		14-16 ppb in sweeps	100 #	200	\$7.35	\$1,470.00
Biocide (STC)	Biocide		1 gal /100 bbls	5 gal.	15	\$70.52	\$1,057.80
Caustic Soda	pH additive		25 ppb	50 #	40	\$30.80	\$1,232.00
Cedar Fiber/Fiber Plug/Pluggit	LCM, sealant		3-10 ppb in sweeps	40 #	90	\$6.46	\$581.40
Defoamer	Defoamer		As needed	5 gal.	5	\$63.75	\$318.75
Ground Paper	seepage and sweeps		1-3 sacks per 100 feet	40 #	110	\$9.35	\$1,028.50
H-120(H2S Scavenger)	Corrosion Inhibitor		as needed for H2S contamination	1 gal	180	\$12.80	\$2,304.00
Lime	pH additive		.5 ppb	50 #	120	\$5.35	\$642.00
Maxi-Seal/Fiber Seal/Chem Seal	LCM, sealant		3-10 ppb in sweeps	40 #	90	\$12.14	\$1,092.60
MF-55/VisPlus(non-ionic)	Flocculant		1 qt in 50 gal water every 4 hr	5 gal.	15	\$83.60	\$1,254.00
Mica	LCM, sealant		3-10 ppb in sweeps	50 #	70	\$10.52	\$736.40
M-I-X II/Delta P/BaroFiber	LCM, sealant		3-10 ppb in sweeps	25 #	70	\$26.25	\$1,837.50
Shrink Wrap	Storage aid		Cover mud	1 each	20	\$22.00	\$440.00
White Starch	Filtrate control		3-4 ppb	50 #	60	\$22.75	\$1,365.00

Interval Total: **\$15,359.95**

INTERVAL: 8,950 - 11,150		8.75" hole	17 days	7" csg	4 drill bits		
Product	Function		Treatment	Unit Size	Usage	Unit Price	Total Price
Barte-Bulk	Weighting agent		As needed	1 ton	250	\$195.00	\$48,750.00
Bicarb of Soda	Cement treatment		As needed	100 #	30	\$36.90	\$1,107.00
Biocide (STC)	Biocide		1 gal /100 bbls.	5 gal	35	\$70.52	\$2,468.20
Caustic Soda	pH additive		.25 ppb	50 #	30	\$30.80	\$924.00
Desco	Thinner, dispersant		As needed	25 #	15	\$40.80	\$612.00
Drispac/Poly Pac/StaFlo/Aquapac	Filtrate control, secondary viscosifier		.5-.75 ppb	50 #	40	\$150.80	\$6,032.00
EPL-50/Slider C-555	Lubricant		As needed	55 gal.	10	\$747.00	\$7,470.00
Graphite	Lubricant		As needed	50 #	100	\$35.92	\$3,592.00

Recommended Drilling Fluids Program

Chesapeake Operating, Inc. * Beggs 21 State Com # 1 * Sec-21, T-25-S, R-27-E, Eddy, NM

INTERVAL: 8,950 - 11,150		8.75" hole	17 days	7" csg	4 drill bits		
Product	Function		Treatment	Unit Size	Usage	Unit Price	Total Price
K-Seal (coarse)	LCM, sealant		As needed	50 #	20	\$26.00	\$520.00
K-Seal (fine)	LCM, sealant		As needed	25 #	50	\$26.25	\$1,312.50
Mica	LCM, sealant		As needed	50 #	40	\$10.52	\$420.80
M-I-X II/Delta P/BaroFiber	LCM, sealant		As needed	25 #	40	\$26.25	\$1,050.00
SAPP	Cement treatment		As needed	100 #	10	\$85.02	\$850.20
Shrink Wrap	Storage aid		Cover mud	1 each	15	\$22.00	\$330.00
Silicone Defoamer	Defoamer		As needed	5 gal.	10	\$79.98	\$799.80
Soda Ash	Calcium remover		5-75 ppb	50 #	40	\$9.75	\$390.00
Soltex/Baratrol	Shale stabilizer		1-2 ppb	50 #	90	\$93.75	\$8,437.50
White Starch	Filtrate control		3.0-4.0 ppb	50 #	110	\$22.75	\$2,502.50
XCD	Viscosifier		5-75 ppb	25 #	70	\$158.76	\$11,113.20
Polymer/Flozan/Optizan							

Interval Total: \$98,681.70

INTERVAL: 11,150 - 13,200		6.125" hole	20 days	4.5" csg	4 drill bits		
Product	Function		Treatment	Unit Size	Usage	Unit Price	Total Price
Barite-Bulk	Weighting agent		As needed	1 ton	150	\$195.00	\$29,250.00
Caustic Soda	pH additive		25 ppb	50 #	20	\$30.80	\$616.00
Desco	Thinner, dispersant		As needed	25 #	10	\$40.80	\$408.00
Drispac/Poly Pac/StaFlo/Aquapac	Filtrate control, secondary viscosifier		.4-.5 ppb	50 #	25	\$150.80	\$3,770.00
Mica	LCM, sealant		As needed	50 #	50	\$10.52	\$526.00
M-I-X II/Delta P/BaroFiber	LCM, sealant		As needed	25 #	50	\$26.25	\$1,312.50
Shrink Wrap	Storage aid		Cover mud	1 each	10	\$22.00	\$220.00
Soda Ash	Calcium remover		5-75 ppb	50 #	70	\$9.75	\$682.50
Soltex/Baratrol	Shale stabilizer		1-2 ppb	50 #	20	\$93.75	\$1,875.00
White Starch	Filtrate control		3-4 ppb	50 #	110	\$22.75	\$2,502.50
XCD	Viscosifier		75 -1.0 ppb	25 #	50	\$158.76	\$7,938.00
Polymer/Flozan/Optizan							

Interval Total: \$49,100.50

Totals

Bits 16
Days 63
Mud \$216,840

Materials Cost: \$167,882
Trucking Cost: \$35,000
Sales Tax/Product @ 6.88% \$11,550
Sales Tax/Trucking @ 6.88% \$2,408
Estimated Total Mud \$216,840

Chesapeake

Natural Gas.
Natural Advantages.

JUL 17 2007
OCD-ARTESIA

H₂S Contingency Plan

Beggs 21 State Com 1

Section 21, T25S R27E
Eddy County, New Mexico

July 2007

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 - B. Objective
 - C. Discussion of Plan
- II. Emergency Procedures Section
 - A. Emergency Procedures
 - B. Emergency Reaction Steps
 - C. Simulated Blowout Control Drills
- III. Ignition Procedures Section
 - A. Responsibility
 - B. Instructions
- IV. Training Program Section
 - A. Training Requirements
- V. Emergency Equipment Section
 - A. Emergency Equipment Requirements
- VI. Check Lists Section
 - A. Status Check List
 - B. Procedural Check List
- VII. Briefing Procedure Section
 - A. Briefing Procedures
- VIII. Evacuation Plan Section
 - A. General Plan
 - B. Emergency Assistance Telephone List
- IX. Maps and Plats Section
 - A. Map Showing Wellsite
 - B. Map showing Public within Radius of Exposure and Excavation Routes
 - B. Emergency Call List of Residents and Businesses
- X. General Information Section
 - A. Radius of Exposure Calculations
 - B. Toxic Effects of Hydrogen Sulfide Poisoning
 - C. Use of Self-Contained Breathing Apparatus
 - D. Rescue-First Aid for Hydrogen Sulfide Poisoning

I. H₂S CONTINGENCY PLAN SECTION

Scope

This contingency plan establishes guidelines for all company employees and contract employees whose work activities may involve exposure to Hydrogen Sulfide gas (H₂S).

Objective

1. Prevent any and all accidents, and prevent the uncontrolled release of H₂S into the atmosphere.
2. Provide proper evacuation procedures to cope with emergencies.
3. Provide immediate and adequate medical attention should an injury occur.

Discussion of Plan

The Delaware and Bone springs sections are capable of producing H₂S, but not probable in this area. However monitoring of H₂S and readiness will be started at surface and continue to TD.

Implementation: This plan, with all details, is to be fully implemented before spudding the well.

Emergency Response Procedure: This section outlines the conditions and denotes steps to be taken in the event of an emergency.

Emergency Equipment and Procedure: This section outlines the safety and emergency equipment that will be required for the drilling of this well.

Training Provisions: This section outlines the training provisions that must be adhered to prior to drilling.

Emergency Call Lists: Included are the telephone numbers of all persons that would need to be contacted should an emergency exists.

Briefing: This section deals with the briefing of all people involved in the drilling operation.

Public Safety: Public Safety Personnel will be made aware of the drilling of this well.

CheckLists: Status Check Lists and Procedural Check Lists have been included to insure adherence to the plan.

General Information: A general information section has been included to supply support information.

II. EMERGENCY PROCEDURES SECTION

Emergency Procedures

- I. In the event of any evidence of H₂S level above 10 ppm, take the following steps immediately:
 - A. Secure breathing apparatus.
 - B. Order non-essential personnel out of the danger zone.
 - C. Take steps to determine if the H₂S level can be corrected or suppressed, and if so, proceed with normal operations.
- II. If uncontrollable conditions occur, proceed with the following:
 - A. Take steps to protect and/or remove any public downwind of the rig including partial evacuation or isolation. Notify necessary public safety personnel and the Texas Railroad Commission of the situation.
 - B. Remove all personnel to the Safe Briefing Area.
 - C. Notify public safety personnel for help with maintaining roadblocks and implementing evacuation.
 - D. Determine and proceed with the best possible plan to regain control of the well. Maintain tight security and safety procedures.
- III. Responsibility
 - A. The Company Approved Supervisor shall be responsible for the total implementation of the plan.
 - B. The Company Approved Supervisor shall be in complete command during any emergency.
 - C. The Company Approved Supervisor shall designate a back up Supervisor in the event that he/she is not available.

Emergency Procedure Implementation

I. Drilling or Tripping

A. All Personnel

1. When alarm sounds, don escape unit and report to upwind Safe Briefing Area.
2. Check status of other personnel (buddy system).
3. Secure breathing apparatus.
4. Await orders from Supervisor.

B. Drilling Foreman

1. Report to the upwind Safe Briefing Area.
2. Don Breathing Apparatus and return to the point of release with the Tool Pusher or Driller (buddy system).
3. Determine the concentration of H₂S.
4. Assess the situation and take appropriate control measures.

C. Tool Pusher

1. Report to the upwind Safe Briefing Area.
2. Don Breathing Apparatus and return to the point of release with the Drilling Foreman or Driller (buddy system).
3. Determine the concentration of H₂S.
4. Assess the situation and take appropriate control measures.

D. Driller

1. Don escape unit.
2. Check monitor for point of release.
3. Report to the Safe Briefing Area.
4. Check the status of other personnel (in a rescue attempt, always use the buddy system).
5. Assign the least essential person to notify the Drilling Foreman and Tool Pusher, in the event of their absence.
6. Assume the responsibility of the Drilling Foreman and Tool Pusher until they arrive, in the event of their absence.

E. Derrick Man

1. Remain in the Safe Briefing Area until otherwise instructed by Supervisor.

F. Mud Engineer

1. Report to Safe Briefing Area.
2. When instructed, begin check of mud for pH level and H₂S level.

G. Safety Personnel

1. Don appropriate breathing apparatus.

2. Check status of all personnel
3. Await instructions from Drilling Foreman or Tool Pusher.

II. Taking a Kick

- A. All personnel report to Safe Briefing Area.
- B. Follow standard BOP procedures.

III. Open Hole Logging

- A. All unnecessary personnel should leave the rig floor.
- B. Drilling Foreman and Safety personnel should monitor the conditions and make necessary safety equipment recommendations.

IV. Running Casing or Plugging

- A. Follow "Drilling or Tripping" procedures.
- B. Assure that all personnel have access to protective equipment.

Simulated Blowout Control Drills

All drills will be initiated by activating alarm devices (air horn). One long blast, on air horn, for ACTUAL and SIMULATED Blowout Control Drills. This operation will be performed by the Drilling Foreman or Tool Pusher at least one time per week for each of the following conditions, with each crew:

- | | |
|---------|---------------------|
| Drill 1 | Bottom Drilling |
| Drill 2 | Tripping Drill Pipe |

In each of these drills, the initial reaction time to shutting in the well shall be timed as well as the total time for the crew to complete its entire pit drill assignment. The times must be recorded on the IADC Driller's Log as "Blowout Control Drill".

Drill No.: _____
Reaction Time to Shut-In: _____ minutes, _____ seconds.
Total Time to Complete Assignment: _____ minutes, _____ seconds.

I. Drill Overviews

A. Drill No. 1--Bottom Drilling

1. Sound the alarm immediately.
2. Stop the rotary and hoist kelly joint above the rotary table.
3. Stop the circulatory pump.
4. Close drill pipe rams.
5. Record casing and drill pipe shut-in pressures and pit volume increases.

B. Drill No. 2--Tripping Drill Pipe

1. Sound the alarm immediately.
2. Position the upper tool joint just above the rotary table and set slips.
3. Install a full opening valve or inside blowout preventor tool in order to close the drill pipe.
4. Close the drill pipe rams.
5. Record the shut-in annular pressure.

II. Crew Assignments

A. Drill No. 1--Bottom Drilling

1. Driller
 - a. Stop the rotary and hoist kelly joint above the rotary table.
 - b. Stop the circulatory pump.
 - c. Check flow.
 - d. If flowing, sound the alarm immediately.
 - e. Record the shut-in drill pipe pressure.
 - f. Record all data reported by the crew.
 - g. Determine the mud weight increase needed or other courses of action.
2. Derrickman
 - a. Open choke line valve at BOP.
 - b. Signal Floor Man #1 at accumulator that choke line is open.
 - c. Close choke and upstream valve after pipe tams have been closed.
 - d. Read the shut-in annular pressure and report readings to Driller.
3. Floor Man #1
 - a. Close the pipe tams after receiving the signal from the Derrickman.
 - b. Report to Driller for further instructions.
4. Floor Man #2
 - a. Notify the Tool Pusher and Operator Representative of the H₂S alarms.
 - b. Check for open fires and, if safe to do so, extinguish them.
 - c. Stop all welding operations.
 - d. Turn-off all non-explosion proof lights and instruments.
 - e. Report to Driller for further instructions.
5. Tool Pusher
 - a. Report to the rig floor.
 - b. Have a meeting with all crews.
 - c. Compile and summarize all information.
 - d. Calculate the proper kill weight.
 - e. Ensure that proper well procedures are put into action.
6. Operator Representative
 - a. Notify the Drilling Superintendent.
 - b. Determine if an emergency exists and if so, activate the contingency plan.

B. Drill No.2--Tripping Pipe

1. Driller

- a. Sound the alarm immediately when mud volume increase has been detected.
- b. Position the upper tool joint just above the rotary table and set slips.
- c. Install a full opening valve or inside blowout preventor tool to close the drill pipe.
- d. Check flow.
- e. Record all data reported by the crew.
- f. Determine the course of action.

2. Derrickman

- a. Come down out of derrick.
- b. Notify Tool Pusher and Operator Representative
- c. Check for open fires and, if safe to do so, extinguish them.
- d. Stop all welding operations.
- e. Report to Driller for further instructions.

3. Floor Man #1

- a. Pick up full opening valve or inside blowout preventors and stab into tool joint above rotary table (with Floor Man #2).
- b. Tighten valve with back-up tongs.
- c. Close pipe rams after signal from Floor Man #2.
- d. Read accumulator pressure and check for possible high pressure fluid leaks in valves or piping.
- e. Report to Driller for further instructions.

4. Floor Man #2

- a. Pick-up full opening valve or inside blowout preventors and stab into tool joint above rotary table (with Floor Man #1).
- b. Position back-up tongs on drill pipe.
- c. Open choke line valve at BOP.
- d. Signal Floor Man #1 at accumulator that choke line is open.
- e. Close choke and upstream valve after pipe rams have been closed.
- f. Check for leaks on BOP stack and choke manifold.
- g. Read annular pressure.
- h. Report readings to the Driller.

5. Tool Pusher

- a. Report to rig floor.
- b. Have a meeting with all crews.
- c. Compile and summarize all information.
- d. Calculate proper kill weight.
- e. See that proper well kill procedures are put into action.

6. Operator Representative

- a. Notify Drilling Superintendent.
- b. Determine if an emergency exists, and if so, activate the contingency plans.

III. IGNITION PROCEDURES SECTION

Responsibility

The decision to ignite the well is the responsibility of the DRILLING FOREMAN in concurrence with the STATE POLICE. In the event the Drilling Foreman is incapacitated, it becomes the responsibility of the RIG TOOL PUSHER. This decision should be made only as a last resort and in a situation where it is clear that:

1. Human life and property are endangered.
2. There is no hope of controlling the blowout under the prevailing conditions.

If time permits, notify the main office, but do not delay if human life is in danger. Initiate the first phase of the evacuation plan.

Instructions for Igniting the Well

1. Two people are required for the actual igniting operation. Both men must wear self-contained breathing apparatus and attach a safety rope. One man must monitor the atmosphere for explosive gases with the Explosimeter, while the Drilling Foreman is responsible for igniting the well.
2. The primary method to ignite is a 25mm flare gun with a range of approximately 500 feet.
3. Ignite from upwind and do not approach any closer than is warranted.
4. Select the ignition site best suited for protection and which offers an easy escape route.
5. Before igniting, check for the presence of combustible gases.
6. After igniting, continue emergency actions and procedures as before.
7. All unassigned personnel will limit their actions to those directed by the Drilling Foreman.

NOTE: After the well is ignited, burning Hydrogen Sulfide will convert to Sulfur Dioxide, which is also highly toxic. Do not assume the area is safe after the well is ignited.

IV. TRAINING PROGRAM SECTION

Training Requirements

When working in an area where Hydrogen Sulfide gas (H_2S) might be encountered, definite training requirements must be carried out. The Company Supervisor will insure that all personnel, at the well site, have had adequate training in the following:

1. Hazards and characteristics of H_2S .
2. Physical effects of Hydrogen Sulfide on the human body.
3. Toxicity of Hydrogen Sulfide and Sulfur Dioxide.
4. H_2S detection.
5. Emergency rescue.
6. Resuscitators.
7. First aid and artificial resuscitation.
8. The effects of H_2S on metals.
9. Location safety.

Service company personnel and visiting personnel must be notified if the zone contains H_2S , and each service company must provide adequate training and equipment for their employees before they arrive at the well site.

V. EMERGENCY EQUIPMENT SECTION

Emergency Equipment Requirements

I. Signs

- A. Located at the location entrance with the following information:

(Lease)
CAUTION-POTENTIAL POISON GAS
HYDROGEN SULFIDE
NO ADMITTANCE WITHOUT AUTHORIZATION

II. * Fresh air breathing equipment

- A. Air line units for all rig personnel on location.
B. Cascade system with hose lines to rig floor and one to the derrick man and other operation areas. Spare cascade (trailer) on location

III. Wind socks or wind streamers

- A. Two 10" windsocks located at strategic locations at a height visible from the rig floor.
B. Wind streamers (if preferred) to be placed at various locations on the well site to ensure wind consciousness at all times. (Corners of location).

IV. Hydrogen Sulfide detector and alarms.

- A. 1-four channel H₂S monitor with alarms.
B. 4 sensors located at floor, bell nipple, shale shaker, and pits
* C. Hand operated detectors with tubes.
* D. H₂S monitor tester.

V. Condition sign and flags

- A. One each of green, yellow, and red condition flags to be displayed to denote conditions:
GREEN--Normal Conditions
YELLOW--Potential Danger
RED--Danger, H₂S Present
B. The condition flag shall be posted at the location entrance.

VI. * Auxiliary rescue equipment

- A. Stretcher
B. Two 100' lengths of 5/8" nylon rope.

VII. * Mud inspection devices

- A. Garrett Gas Train or Hach Tester for inspection of Hydrogen Sulfide concentration in the mud system.

VIII. Fire extinguishers

- A. Adequate fire extinguishers shall be located at strategic locations.

IX. Blowout prevention equipment

- A. The well shall have hydraulic BOP equipment for the anticipated BHP.
- B. Equipment must be tested upon installation.

X. * Combustible gas detectors

- A. There shall be one combustible gas detector on location at all times.

XI. BOP testing

- A. BOP, Choke Line and Kill Line will be tested as specified by operator.

XII. Audio system

- A. Radio communication shall be available at the rig.
- B. Radio communication shall be available at the rig floor or trailer.
- C. Radio communication shall be available on vehicles.

XIII. Special control equipment

- A. Hydraulic BOP equipment with remote control on ground.
- B. Rotating head at surface casing point.

XIV. Evacuation Plan

- A. Evacuation routes should be established prior to spudding each well.
- B. Should be discussed with all rig personnel.

XV. Designated Areas

- A. Parking and visitor area.
 - 1. All vehicles are to be parked at a pre-determined safe distance from the wellhead.
 - 2. Designated smoking area.
- B. Safe Briefing Area
 - 1. Two Safe Briefing Areas shall be designated on either side of the location at the maximum allowable distance from the well bore so

they offset prevailing winds or they are at a 180 degree angle if wind directions tend to shift in the area.

2. Personal protective equipment should be stored in both protection centers or if a moveable trailer is used, it should be kept upwind of existing winds. When wind is from the prevailing direction, both protection centers should be accessible.

- *Additional equipment will be available at Callaway Safety Midland, Texas.
- Additional personnel hydrogen sulfide monitors on location for all hands.
- Automatic flare ignitor installed on rig

VI. CHECK LIST SECTION

Status Check List

Note: Date each item as they are implemented.

1. Sign at location entrance. _____
2. Two (2) wind socks (in required locations). _____
3. Wind streamers (if required). _____
4. 30 minute pressure demand air packs on location
for all rig personnel and mud loggers. _____
5. Air packs, inspected and ready for use. _____
6. Spare bottles for each air pack (if required). _____
7. Cascade system and hose line hook up. _____
8. Cascade system for refilling air bottles. _____
9. Choke manifold hooked-up and tested.
(Before drilling out surface casing.) _____
10. Remote Hydraulic BOP control (hooked-up and
tested before drilling out surface casing.) _____
11. BOP Preventor tested (before drilling out
surface casing.) _____
12. Mud engineer on location with equipment to test
mud for Hydrogen Sulfide. _____
13. Safe Briefing Areas set-up. _____
14. Condition sign and flags on location and ready. _____
15. Hydrogen Sulfide detection system hooked-up. _____
16. Hydrogen Sulfide alarm system hooked-up. _____
17. Stretcher on location at Safe Briefing Area. _____
18. 1-100' length of 5/8" nylon rope on location. _____
19. 1-20 # or 30# ABC fire extinguisher in safety _____

- trailer in addition to those on rig. _____
20. Combustible gas detector on location and tested. _____
21. All rig crews and supervisors trained (as required). _____
22. Access restricted for unauthorized personnel. _____
23. Drills on H₂S and well control procedures. _____
24. All outside service contractors advised of potential
Hydrogen Sulfide on the well. _____
25. NO SMOKING sign posted. _____
26. Hand operated H₂S detector with tubes on location. _____
27. 25mm flare gun with flares. _____
28. Automatic Flare ignitor installed on rig _____

Procedural Check List

Perform the following on each tour:

1. Check fire extinguishers to see that they have the proper charge.
2. Check breathing equipment to insure that it has not been tampered with.
3. Check pressure on supply air bottles to see that they are capable of recharging.
4. Make sure all of the Hydrogen Sulfide detection systems are operative.

Perform the following each week:

1. Check each piece of breathing equipment to make sure that the demand regulator is working. This requires that the bottle be opened and the mask assembly be put on tight enough so that when you inhale, you get air.
2. Blowout preventor skills.
3. Check supply pressure on BOP accumulator stand-by source.
4. Check all work/escape units for operation: demand regulator, escape bottle air volumes, supply bottle of air volume.
5. Check breathing equipment mask assembly to see that straps are loosened and turned back, ready to put on.
6. Check pressure on breathing equipment air bottles to make sure they are charged to full volume.
7. Check breathing equipment air bottles to make sure all demand regulators are working. This requires that the bottles be opened and the mask assembly be put on tight enough so that when you inhale, you get air
8. Confirm pressure on all supply air bottles.
9. Perform breathing equipment drills with on-site personnel.
10. Check the following supplies for availability:
 - a. Stretcher
 - b. Safety belts and ropes
 - c. Emergency telephone lists
 - d. Spare air bottles
 - e. Spare oxygen bottles (if resuscitator required)
 - f. Hand operated H₂S detectors and tubes
11. Test the Explosimeter to verify batteries are good.

VII. BRIEFING PROCEDURES SECTION

Briefing Procedures

The following scheduled briefings will be held to ensure the effective drilling and operation of this project:

Pre-Spud Meeting

Date: Prior to spudding the well.

Attendance: Drilling Supervisor
Drilling Superintendent
Drilling Engineer
Rig Pushers
Rig Driller
Mud Engineer
All Safety Personnel
Service Companies

Purpose: Review and discuss the well program, step-by-step, to insure complete understanding of assignments and responsibilities.

VIII. EVACUATION PLAN SECTION

General Plan

The direct lines of action prepared by CALLAWAY SAFETY EQUIPMENT CO., INC. to protect the public from hazardous gas situations are as follows:

1. When the company approved supervisor (Drilling Foreman, Tool Pusher, Driller) determine Hydrogen Sulfide gas cannot be limited to the well location, and the public will be involved, he will activate the evacuation plan. Escape routes are noted on the Area Map.
2. Company safety personnel or designee will notify the appropriate local government agency that a hazardous condition exists and evacuation needs to be implemented.
3. Company approved safety personnel that have been trained in the use of Hydrogen Sulfide detection equipment and self-contained breathing equipment will be utilized.
4. Law enforcement personnel (State Police, Local Police Department, Fire Department, and the Sheriff's Department) will be called to aid in setting up and maintaining road blocks. Also, they will aid in evacuation of the public if necessary.
NOTE: Law enforcement personnel will not be asked to come into a contaminated area. Their assistance will be limited to uncontaminated areas. Constant radio contact will be maintained with them.
5. After the discharge of gas has been controlled, "Company" safety personnel will determine when the area is safe for re-entry.

See Emergency Reaction Plan

Emergency Assistance Telephone List

PUBLIC SAFETY:

911 or

Eddy Co. Sheriff	(505) 887-7551
Fire Department	(505) 887-3820
Ambulatory Service (Carlsbad)	(505) 885-2111

Prior to starting project – Verify 911

Life Flight:

Arrow Care-Lubbock	(806) 744-5055
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Southwest Air-Med E Vac.	(800) 242-6199
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Elev. 3112'

Lat: 32.120612° N

Long: 104.321666° W

New Mexico D.O.T.	(505) 827-5100
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Bureau of Land Management	(505) 393-3612
---------------------------	----------------

U. S. Dept. of Labor	(505) 248-5302
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New Mexico OCD	(505) 393-6161
----------------	----------------

New Mexico OCD/After Hours	(505) 370-7106
----------------------------	----------------

Chesapeake

Hobbs Office	Office (505) 391-1462
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Midland Office	Office (432) 687-2992
----------------	-----------------------

Drilling Superintendent

Stacey Tubbs	Office (505) 391-1462 Ext. 6215
--------------	------------------------------------

Cell	(505) 631-8271
------	----------------

Drilling Engineer

Randy Patterson	Office (405) 767-4056
-----------------	-----------------------

Cell	(405) 388-9002
------	----------------

Drilling Company

Latshaw Drilling

918-355-4380 (office)

Latshaw Rig 6

Latshaw Rig Trailer	Cell 432-556-8559
---------------------	-------------------

Jason Simmons, Tool Pusher	Cell 505-200-5202
----------------------------	-------------------

Carl Lightner, Superintendent	Cell 432-556-4008
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Home	432-368-2041
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Trent Latshaw, President	Cell 918-671-8612
--------------------------	-------------------

Callaway Safety Equipment

Odessa	Office (432) 561-5049
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Hobbs	Office (877) 422-6345
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Affected Public Notification List
(within a 24' radius of exposure at 100ppm)

Certain geologic zones will be encountered during drilling that may possibly contain hazardous quantities of H₂S. The well is located in an area with no residents and/or public roadways. ROE calculations show that H₂S will affect the immediate area (location). Therefore, the plan is to carefully monitor hazards associated with H₂S as previously mentioned in this document.

Should these conditions change prior to starting the project; the residents within the affected radius will be notified via a hand delivered written notice describing the activities, potential hazards, conditions of evacuation, evacuation drill siren alarms, and other precautionary measures.

Evacuee Description:

Residents and/or

Notification Process:

A continuous siren audible to all residence will be activated, signaling evacuation of previously notified and informed residents.

Evacuation Plan:

All evacuees will migrate lateral to the wind direction.

Chesapeake will identify all home bound or highly susceptible individuals and make special evacuation preparations, interfacing with the local fire and emergency medical service as necessary.

IX. MAPS AND PLATS SECTION

DISTRICT I
1220 N. FRANKLIN DR., SANTA FE, NM 87505

DISTRICT II
1220 N. FRANKLIN DR., SANTA FE, NM 87505

DISTRICT III
1220 N. FRANKLIN DR., SANTA FE, NM 87505

DISTRICT IV
1220 N. FRANKLIN DR., SANTA FE, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION 1220 SOUTH ST. FRANCIS DR. Santa Fe, New Mexico 87505

Form C-108
Revised October 18, 2006
Submit to Appropriate District Office
State Issues - 4 Copies
Fee Issues - 3 Copies

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

APN Number	Pool Code	Pool Name
Property Code	Property Name HRGGS 21 STATE COM	Well Number 1
CGED No.	Operator Name CHESAPEAKE OPERATING, INC.	Elevation 3112'

Surface Location

UL or Lot No.	Section	Township	Range	Lot No.	Feet from the	North/South Line	Feet from the	East/West Line	County
A	21	25-S	27-E		760	NORTH	760	EAST	EDDY

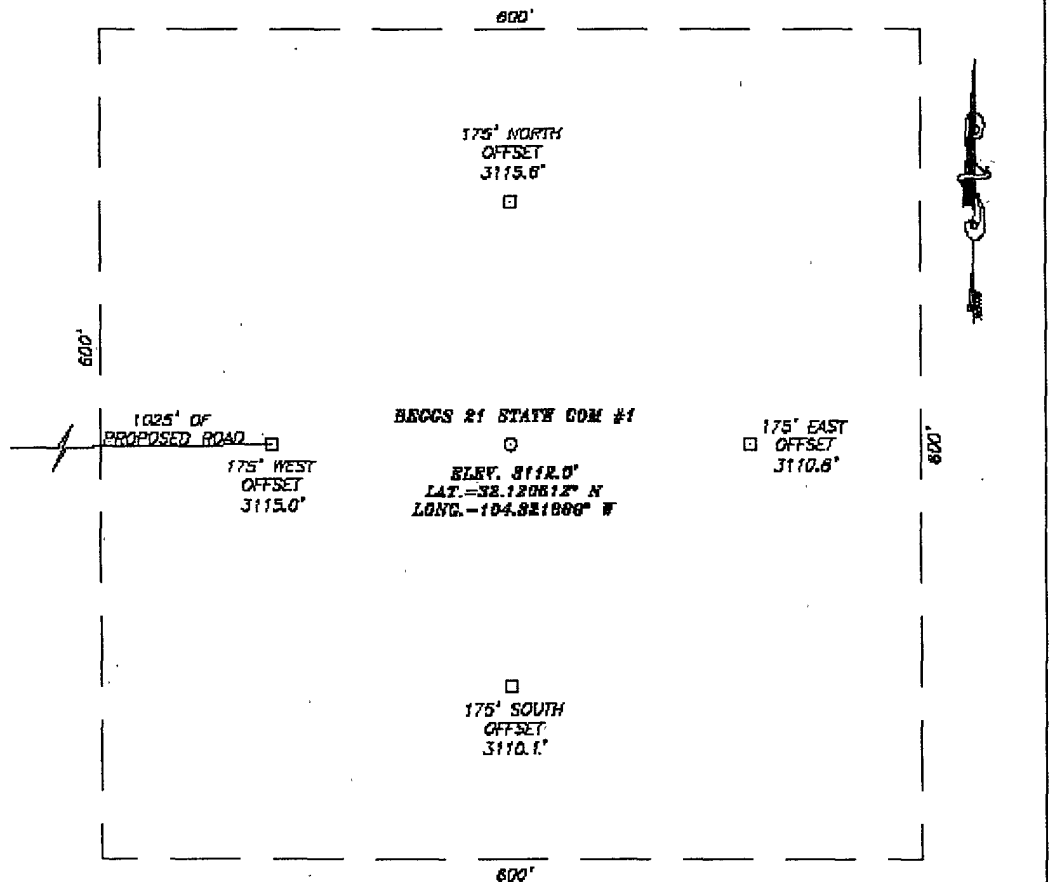
Bottom Hole Location If Different From Surface

UL or Lot No.	Section	Township	Range	Lot No.	Feet from the	North/South Line	Feet from the	East/West Line	County
Dedicated Acres	Joint or Inter	Conservation Code	Order No.						

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

	<p>GEODETIC COORDINATES NAD 27 NME</p> <p>Y=407858.2 N X=544794.9 E</p> <p>LAT.=32.120612° N LONG.=104.321656° W</p>	<p>OPERATOR CERTIFICATION</p> <p>I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this representation shall serve as a binding contract of interest in the land including the proposed bottom hole location or any right to drill this well at this location pursuant to a contract with an owner of such interest or working interest, or to a voluntary pooling agreement or a compulsory pooling order hereafter entered by the state.</p> <p>Signature _____ Date _____</p> <p>Printed Name _____</p>
		<p>SURVEYOR CERTIFICATION</p> <p>I hereby certify that the well location shown on this plat was placed from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>MARCH 26, 2007</p> <p>Date Surveyed _____ LA</p> <p>Signature & Seal of Professional Surveyor _____</p>
		<p>07.11.0378</p>
		<p>Certificate No. GARY ZIMMER 19841 BOGALIS J. EIDSON 8888</p>

SECTION 21, TOWNSHIP 25 SOUTH, RANGE 27 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO



DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF U.S. HWY. #285 AND
CO. RD. #720 (BLACK RIVER VILLAGE), GO WEST
ON 720 APPROX. 2.5 MILES. TURN LEFT AND GO
SOUTHWEST ON CO. RD. #774 (ROAD RUNNER
RD.) APPROX. 8.2 MILES TO A PROPOSED ROAD
SURVEY. FOLLOW ROAD SURVEY EAST APPROX.
1100 FEET TO THIS LOCATION.



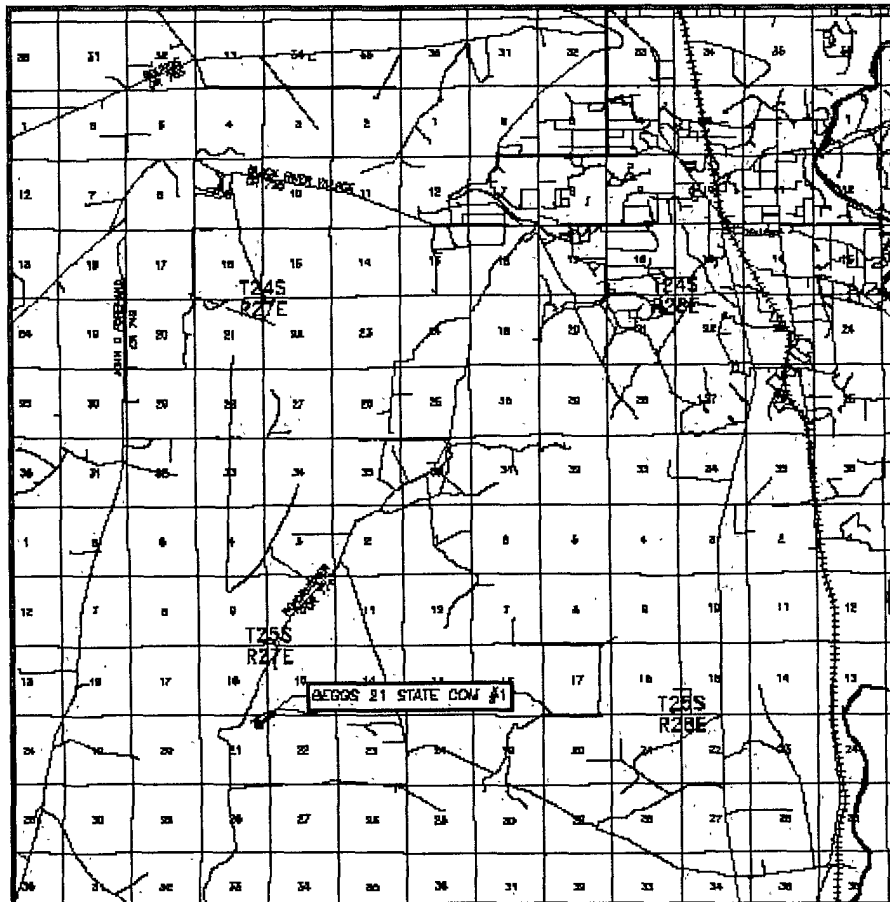
CHESAPEAKE OPERATING, INC.

BEGGS 21 STATE COM #1
LOCATED 780 FEET FROM THE NORTH LINE
AND 780 FEET FROM THE EAST LINE OF SECTION 21,
TOWNSHIP 25 SOUTH, RANGE 27 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.

Survey Date: 3/28/07	Sheet 1 of 1 Sheets
W.O. Number: 07.11.0376	Or By: LA
Date: 3/30/07	Desk: CD#8
07110376	Scale: 1"=100'

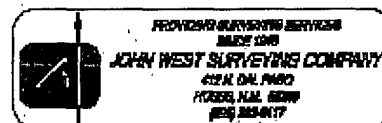


VICINITY MAP

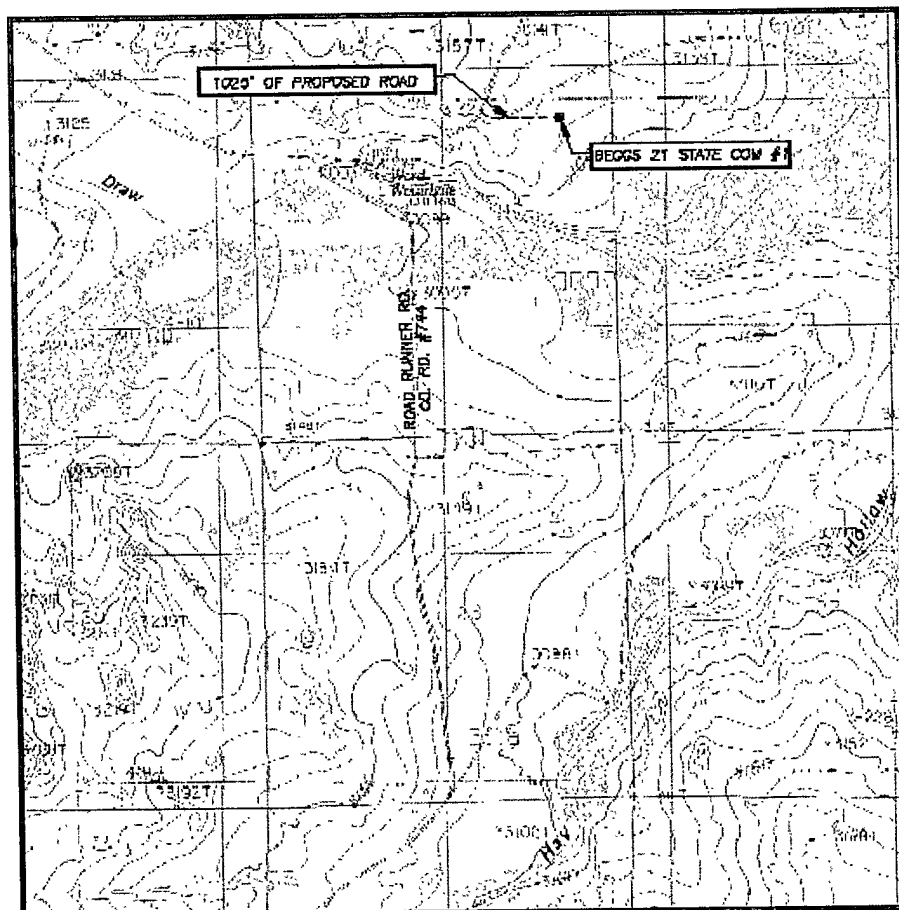


SCALE: 1" = 2 MILES

SEC. 21 TWP. 25-S RGE. 27-E
 SURVEY N.M.P.M.
 COUNTY EDDY STATE NEW MEXICO
 DESCRIPTION 780' ENL & 760' FEL
 ELEVATION 3112'
 OPERATOR CHESAPEAKE
 OPERATING, INC.
 LEASE BEGGS 21 STATE COM



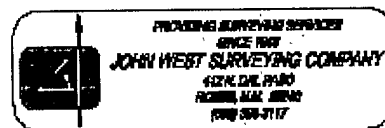
LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:
COTTONWOOD HILLS, N.M. - 10'

SEC. 21 TWP. 25-S RGE. 27-E
 SURVEY N.M.P.M.
 COUNTY EDDY STATE NEW MEXICO
 DESCRIPTION 780' FNL & 780' FEL
 ELEVATION 3112'
 OPERATOR CHESAPEAKE
 OPERATING, INC.
 LEASE BEGGS 21 STATE COM
 U.S.G.S. TOPOGRAPHIC MAP
 COTTONWOOD HILLS, N.M.



X. GENERAL INFORMATION SECTION

Beggs 21 State Com 1

Chesapeake Drilling

H2S

Radius of Exposure Calculations

Expected H2S ROE that could be encountered while drilling.

Example: 100 PPM ROE = $0.001589 \times 250 \text{ PPM} \times 275 \text{ MCF}^{0.6258}$ =

Example: 500 PPM ROE = $0.0004546 \times 250 \text{ PPM} \times 275 \text{ MCF}^{0.6258}$ =



Denotes input data

Enter H2S Concentration: PPM

Enter Max. Escape Volume: MCF/D

100 PPM Radius of Exposure: Feet

500 PPM Radius of Exposure: Feet

H2S in lbs/day: lb./day

H2S in lbs/hr: lb./hr

SO2 in lbs/hr: lb./hr

SO2 in 2000-lb tons/day: tons/day

SO2 in 2000-lb tons/yr: tons/yr

These radius of exposures are possible only if the well bore is evacuated of fluid and there is an uncontrolled release of gas at the surface!!!!!!

Calculations generated from production test of offset wells.

Toxic Effects of Hydrogen Sulfide Poisoning

Hydrogen Sulfide is extremely toxic. The acceptable ceiling concentration for eight-hour exposure is 20 ppm, which is .002% by volume. Hydrogen Sulfide is heavier than air (specific gravity-1.192) and colorless. It forms an explosive mixture with air between 4.3 and 46.0 percent by volume. Hydrogen Sulfide is almost as toxic as Hydrogen Cyanide and is between five and six times more toxic than Carbon Monoxide. Toxicity data for Hydrogen Sulfide and various other gases are compared below in Table I. Physical effects at various Hydrogen Sulfide levels are shown in Table II.

Table I
Toxicity of Various Gases

Common Name	Chemical Formula	Specific Gravity	Threshold Limit (A)	Hazardous Limit (B)	Lethal Concentration C)
Hydrogen Cyanide	HCN	0.94	10 ppm	150 ppm/hr	300 ppm
Hydrogen Sulfide	H ₂ S	1.18	10 ppm (D) 20 ppm (E)	250 ppm/hr	600 ppm
Sulfur Dioxide	SO ₂	2.21	5 ppm		1000 ppm
Chlorine	CL ₂	2.45	1 ppm	4 ppm/hr	1000 ppm
Carbon Monoxide	CO	0.97	50 ppm	400 ppm/hr	1000 ppm
Carbon Dioxide	CO ₂	1.52	5000 ppm	5%	10%
Methane	CH ₄	0.55	90,000 ppm	(9%)	Combustible above 5% in air

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- A. Threshold Limit--Concentration at which it is believed that all workers may be repeatedly exposed day after day without adverse effects.
 - B. Hazardous Limit--Concentration that may cause death.
 - C. Lethal Concentration--Concentration that will cause death with short-term exposure.
 - D. Threshold Limit--10 ppm, 1972 ACGIH (American Conference of Governmental industrial Hygienists)
 - E. Threshold Limit--20 ppm, 1966 ANSI acceptable ceiling concentration for eight-hour exposure (based on 40-hour week) is 20 ppm. OSHA Rules and Regulations (Federal Register, Volume 37, No. 202, Part II, dated 10/18/72).

Table II

Physical Effects of Hydrogen Sulfide

Percent %	ppm	Physical Effects
0.001	10	Obvious and unpleasant odor.
0.002	20	Safe for 8 hrs. exposure
0.01	100	Kills smell in 3 to 5 minutes; may sting eyes and throat.
0.02	200	Kills smell shortly; stings eyes and throat.
0.03	300	IDLH (Immediately Dangerous to Life & Health) Level
0.05	500	Dizziness; breathing ceases in a few minutes
0.07	700	Unconscious quickly; death will result if not rescued.
0.10	1000	Unconscious at once; followed by death within minutes.

*Caution: Hydrogen Sulfide is a colorless and transparent gas and is highly flammable. It is heavier than air and may accumulate in low places.

Use of Self-Contained Breathing Apparatus

- I. Written procedures shall be prepared covering safe use of respirators in dangerous atmospheric situations which might be encountered in normal operations or in emergencies. Personnel shall be familiar with these procedures and the available respirators.
- II. Respirators shall be inspected frequently, at random, to insure that they are properly used, cleaned, and maintained.
- III. Anyone who may use respirators shall be trained in how to properly seal the face piece. They shall wear respirators in normal air and then in a test atmosphere. (Note: Such items as facial hair (beard or sideburns) and eyeglass temple pieces will not allow a proper seal.) Anyone that may be expected to wear respirators should have these items removed before entering a toxic atmosphere. A special mask must be obtained for anyone who must wear eyeglasses. Contact lenses should not be allowed.
- IV. Maintenance and care of respirators
 - A. A program of maintenance and care of respirators shall include the following:
 1. Inspection for defects, including leak checks.
 2. Cleaning and disinfecting.
 3. Repair.
 4. Storage.
 - B. Inspection: Self-Contained Breathing Apparatus for emergency use shall be inspected monthly, and records maintained, for the following:
 1. Fully charged cylinders.
 2. Regulator and warning device operation.
 3. Condition of face piece and connection.
 4. Elastomer or rubber parts shall be stretched or massaged to keep them pliable and prevent deterioration.
 - C. Routinely used respirators shall be collected, cleaned, and disinfected as frequently as necessary to insure proper protection is provided.
- V. Persons assigned tasks that require the use of Self-Contained Breathing Equipment shall be certified physically fit for breathing equipment usage by the local company physician at least annually.
- VI. Respirators should be worn during the following conditions:
 - A. Any employee who works near the top or on the top of any tank unless tests reveal less than 20 ppm of H₂S.
 - B. When breaking out any line where H₂S can reasonably be expected.
 - C. When sampling air in areas to determine if toxic concentrations of H₂S exist.
 - D. When working in areas where over 20 ppm H₂S has been detected.
 - E. At any time where there is a doubt as to the H₂S level in the area to be entered.

Rescue-First Aid for Hydrogen Sulfide Poisoning

Do Not Panic!!!

Remain Calm--THINK

1. Hold your breath (Do not inhale; stop breathing.) and go to Briefing area.
2. Put on breathing apparatus.
3. Remove victim(s) to fresh air as quickly as possible. (Go upwind from the source or at right angles to the wind; NOT downwind.)
4. Briefly apply chest pressure--arm lift method of artificial respiration to clear the victim's lungs and to avoid inhaling any toxic gas directly from the victim's lungs
5. Provide for prompt transportation to the hospital, and continue giving artificial respiration if needed.
6. Hospital(s) or medical facilities need to be informed, beforehand, of the possibility of H₂S gas poisoning, no matter how remote the possibility.
7. Notify emergency room personnel that the victim(s) have been exposed to H₂S gas.

Besides basic first aid, everyone on location should have a good working knowledge of artificial respiration, as well as first aid for eyes and skin contact with liquid H₂S. Everyone needs to master these necessary skills.