



Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION 1147011
OIL & GAS CONSERVATION DIVISION

Form ACO-1

August 2013

Form must be Typed
Form must be Signed
All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # _____

Name: _____

Address 1: _____

Address 2: _____

City: _____ State: _____ Zip: _____ + _____

Contact Person: _____

Phone: (_____) _____

CONTRACTOR: License # _____

Name: _____

Wellsite Geologist: _____

Purchaser: _____

Designate Type of Completion:

- New Well Re-Entry Workover
- Oil WSW SWD SIOW
- Gas D&A ENHR SIGW
- OG GSW Temp. Abd.
- CM (Coal Bed Methane)
- Cathodic Other (Core, Expl., etc.): _____

If Workover/Re-entry: Old Well Info as follows:

Operator: _____

Well Name: _____

Original Comp. Date: _____ Original Total Depth: _____

- Deepening Re-perf. Conv. to ENHR Conv. to SWD
- Plug Back Conv. to GSW Conv. to Producer
- Commingled Permit #: _____
- Dual Completion Permit #: _____
- SWD Permit #: _____
- ENHR Permit #: _____
- GSW Permit #: _____

Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date
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API No. 15 - _____

Spot Description: _____

_____ - _____ - _____ Sec. _____ Twp. _____ S. R. _____ East West

_____ Feet from North / South Line of Section

_____ Feet from East / West Line of Section

Footages Calculated from Nearest Outside Section Corner:

- NE NW SE SW

GPS Location: Lat: _____, Long: _____
(e.g. xx.xxxxx) (e.g. -xxx.xxxxx)

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical Depth: _____ Plug Back Total Depth: _____

Amount of Surface Pipe Set and Cemented at: _____ Feet

Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set: _____ Feet

If Alternate II completion, cement circulated from: _____

feet depth to: _____ w/ _____ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: _____ ppm Fluid volume: _____ bbls

Dewatering method used: _____

Location of fluid disposal if hauled offsite: _____

Operator Name: _____

Lease Name: _____ License #: _____

Quarter _____ Sec. _____ Twp. _____ S. R. _____ East West

County: _____ Permit #: _____

AFFIDAVIT

I am the affiant and I hereby certify that all requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Submitted Electronically

KCC Office Use ONLY

- Confidentiality Requested
Date: _____
- Confidential Release Date: _____
- Wireline Log Received
- Geologist Report Received
- UIC Distribution
- ALT I II III Approved by: _____ Date: _____



1147011

Operator Name: _____ Lease Name: _____ Well #: _____

Sec. _____ Twp. _____ S. R. _____ East West County: _____

INSTRUCTIONS: Show important tops of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed.

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to kcc-well-logs@kcc.ks.gov. Digital electronic log files must be submitted in LAS version 2.0 or newer AND an image file (TIFF or PDF).

Drill Stem Tests Taken <i>(Attach Additional Sheets)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Log Formation (Top), Depth and Datum	<input type="checkbox"/> Sample
Samples Sent to Geological Survey	<input type="checkbox"/> Yes <input type="checkbox"/> No	Name	Top Datum
Cores Taken	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Electric Log Run	<input type="checkbox"/> Yes <input type="checkbox"/> No		
List All E. Logs Run:			

CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives

ADDITIONAL CEMENTING / SQUEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
<input type="checkbox"/> Perforate				
<input type="checkbox"/> Protect Casing				
<input type="checkbox"/> Plug Back TD				
<input type="checkbox"/> Plug Off Zone				

Did you perform a hydraulic fracturing treatment on this well? Yes No *(If No, skip questions 2 and 3)*

Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? Yes No *(If No, skip question 3)*

Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry? Yes No *(If No, fill out Page Three of the ACO-1)*

Shots Per Foot	PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated	Acid, Fracture, Shot, Cement Squeeze Record <i>(Amount and Kind of Material Used)</i>	Depth

TUBING RECORD: Size: _____ Set At: _____ Packer At: _____ Liner Run: Yes No

Date of First, Resumed Production, SWD or ENHR: _____ Producing Method: Flowing Pumping Gas Lift Other *(Explain)* _____

Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity

DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <input type="checkbox"/> Other <i>(Specify)</i> _____	PRODUCTION INTERVAL: _____ _____
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Form	ACO1 - Well Completion
Operator	Grand Mesa Operating Company
Well Name	HESS 1-22
Doc ID	1147011

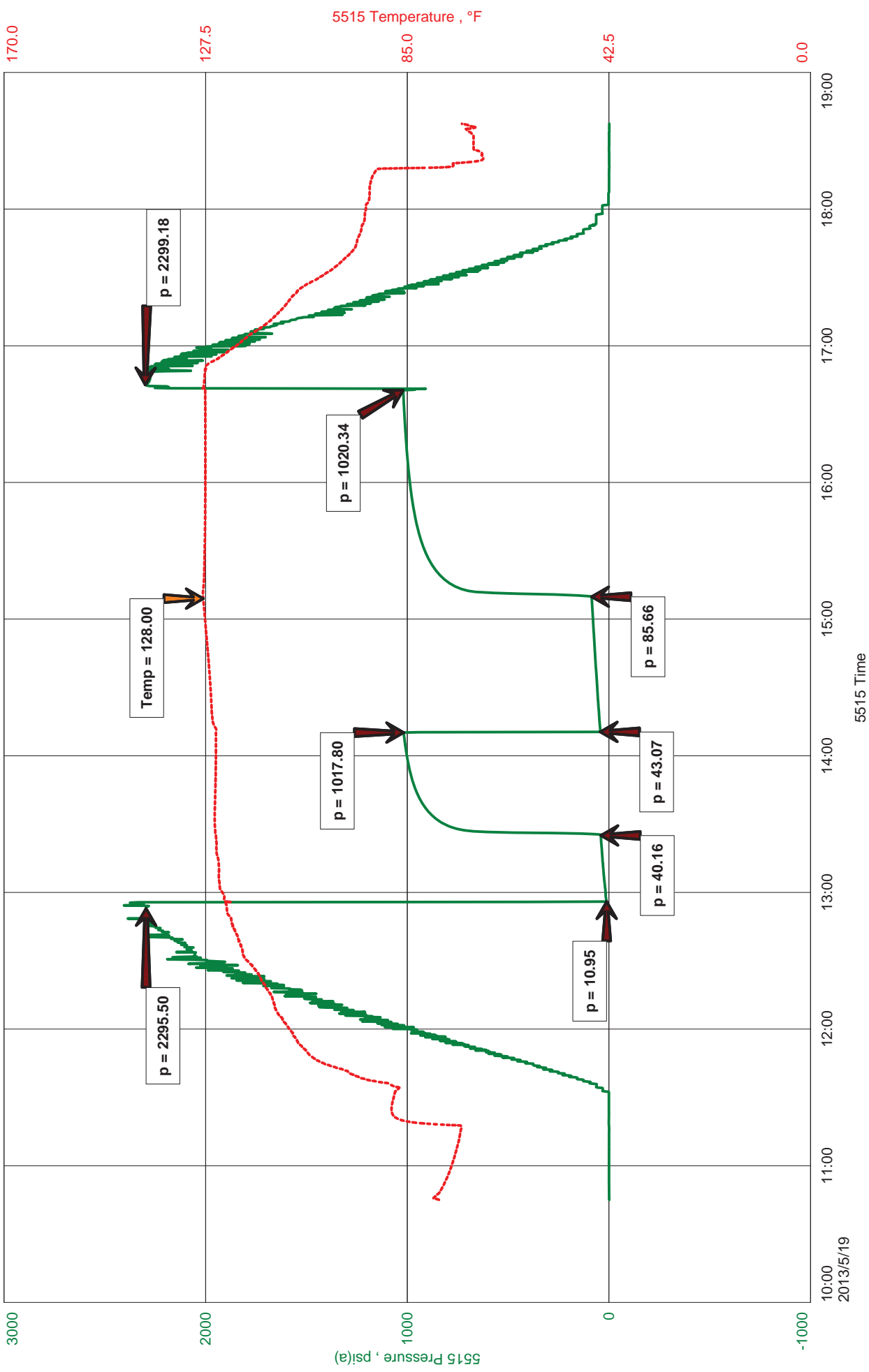
Tops

Name	Top	Datum
Bs/Stone Corral	2576	+451
Heebner	4011	-984
Lansing	4054	-1027
Muncie Creek	4200	-1173
Stark	4287	-1260
Marmaton	4380	-1353
Excello	4533	-1506
Mississippian	4659	-1632
LTD	4751	

GRAND MESA OPERATING COMPANY
DST #1 JOHNSON 4,585' - 4,626'
Start Test Date: 2013/05/19
Final Test Date: 2013/05/19

HESS #1-22
Formation: DST #1 JOHNSON 4,585' - 4,626'
Pool: WILDCAT
Job Number: BOO4

HESS #1-22



DIAMOND TESTING

ROGER D. FRIEDLY

CELL # 620-793-2043

General Information

Company Name	GRAND MESA OPERATING COMPANY	Job Number	BOO4
Contact	STEVE STRIBLING	Representative	BOB HAMEL
Well Name	HESS #1-22	Well Operator	GRAND MESA OPERATING COMPANY
Unique Well ID	DST #1 JOHNSON 4,585' - 4,626'	Prepared By	BOB HAMEL
Surface Location	SEC 22-12S-32W LOGAN CO., KS	Qualified By	JOHN GOLDSMITH
Field	WILDCAT	Test Unit	NO.6
Well Type	Vertical		

Test Information

Test Type	CONVENTIONAL	Representative	BOB HAMEL
Formation	DST #1 JOHNSON 4,585' - 4,626'	Well Operator	GRAND MESA OPERATING COMPANY
Well Fluid Type	01 Oil	Report Date	2013/05/19
Test Purpose (AEUB)	Initial Test	Prepared By	BOB HAMEL
Start Test Date	2013/05/19	Start Test Time	10:45:00
Final Test Date	2013/05/19	Final Test Time	

Test Results

RECOVERED: 16' OCWM 6% OIL, 20% WTR, 74% MUD
16' SLTWCMO 98% OIL, 1% WTR, 1% MUD
126' SLTO&MCW 1% OIL, 79% WTR, 20% MUD
158' TOTAL FLUID

TOOL SAMPLE: 2% GAS, 18% OIL, 45% WTR, 35% MUD

CHLORIDES: 32,000Ppm
PH: 7.0
RW: .21 @ 68 deg



DIAMOND TESTING
P.O. Box 157
HOISINGTON, KANSAS 67544
(800) 542-7313
DRILL-STEM TEST TICKET
FILE: hess1-22dst1

TIME ON: 10:45
TIME OFF: 18:38

Company GRAND MESA OPERATING COMPANY Lease & Well No. HESS #1-22
Contractor DUKE RIG #4 Charge to GRAND MESA OPERATING COMPANY
Elevation 3,027' KB Formation JOHNSON Effective Pay _____ Ft. Ticket No. B004
Date 5-19-2013 Sec. 22 Twp. _____ 12 S Range _____ 32 W County LOGAN State KANSAS
Test Approved By JOHN GOLDSMITH Diamond Representative BOB HAMEL

Formation Test No. 1 Interval Tested from 4,585 ft. to 4,626 ft. Total Depth 4,626 ft.
Packer Depth 4,580 ft. Size 6 3/4 in. Packer depth _____ ft. Size 6 3/4 in.
Packer Depth 4,585 ft. Size 6 3/4 in. Packer depth _____ ft. Size 6 3/4 in.

Depth of Selective Zone Set _____

Top Recorder Depth (Inside) 4,566 ft. Recorder Number 5513 Cap. 5,000 P.S.I.
Bottom Recorder Depth (Outside) 4,623 ft. Recorder Number 6249 Cap. 4,950 P.S.I.
Below Straddle Recorder Depth _____ ft. Recorder Number _____ Cap. _____ P.S.I.

Mud Type CHEMICAL Viscosity 54 Drill Collar Length 0 ft. I.D. 2 1/4 in.
Weight 9.4 Water Loss 7.2 cc. Weight Pipe Length 0 ft. I.D. 2 7/8 in.
Chlorides 2,200 P.P.M. Drill Pipe Length 4,452 ft. I.D. 3 1/2 in.
Jars: Make STERLING Serial Number #6 Test Tool Length 33 ft. Tool Size 3 1/2-IF in.
Did Well Flow? NO Reversed Out NO Anchor Length 41 ft. Size 4 1/2-FH in.
Main Hole Size 7 7/8 Tool Joint Size 4 1/2 XH in. Surface Choke Size 1 in. Bottom Choke Size 5/8 in.

Blow: 1st Open: WEAK 1/2" BLOW INCREASING TO 6 1/2" (NObb)
2nd Open: WEAK SURFACE BLOW AFTER 7 MIN. INCREASING TO 8" (NObb)

Recovered 16 ft. of OCWM 6% OIL, 20% WTR, 74% MUD
Recovered 16 ft. of SLTWCMO 98% OIL, 1% WTR, 1% MUD GRAVITY 25.8 @ 60 deg
Recovered 126 ft. of SLTO&MCW 1% OIL, 79% WTR, 20% MUD

Recovered <u>158</u> ft. of <u>TOTAL FLUID</u>	<u>CHLORIDES 32,000 Ppm</u>	
Recovered _____ ft. of _____	<u>PH 7.0</u>	Price Job
Recovered _____ ft. of _____	<u>RW .21 @ 68 deg</u>	Other Charges
Remarks: _____		Insurance
<u>TOOL SAMPLE: 2% GAS, 18% OIL, 45% WTR, 35% MUD</u>		Total

Time Set Packer(s) 12:56 P.M. ^{A.M.} P.M. Time Started Off Bottom 4:41 P.M. ^{A.M.} P.M. Maximum Temperature 128

Initial Hydrostatic Pressure..... (A) 2,296 P.S.I.
Initial Flow Period..... Minutes 30 (B) 11 P.S.I. to (C) 40 P.S.I.
Initial Closed In Period..... Minutes 45 (D) 1,018 P.S.I.
Final Flow Period..... Minutes 60 (E) 43 P.S.I. to (F) 86 P.S.I.
Final Closed In Period..... Minutes 90 (G) 1,020 P.S.I.
Final Hydrostatic Pressure..... (H) 2,299 P.S.I.

Diamond Testing shall not be liable for damages of any kind to the property or personnel of the one for whom a test is made or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statement or opinion concerning the result of any test. Tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



CONSOLIDATED
Oil Well Services, LLC

258764

TICKET NUMBER 39915
LOCATION Oakley, KS
FOREMAN Kelly Gabel

PO Box 884, Chanute, KS 66720
620-431-9210 or 800-467-8676

FIELD TICKET & TREATMENT REPORT
CEMENT

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY
5-13-13	3372	Hess 1-22	22	12	33	Logan ^{KS}
CUSTOMER			TRUCK #	DRIVER	TRUCK #	DRIVER
MAILING ADDRESS			463	Jerry		
CITY			466	Jordan		
STATE				Jack		
ZIP CODE						

JOB TYPE Surface HOLE SIZE 12 1/4 HOLE DEPTH 225 CASING SIZE & WEIGHT 8 5/8 24 #
 CASING DEPTH 225 DRILL PIPE _____ TUBING _____ OTHER _____
 SLURRY WEIGHT 14 # SLURRY VOL _____ WATER gal/sk _____ CEMENT LEFT in CASING 30'
 DISPLACEMENT 13 bbl DISPLACEMENT PSI _____ MIX PSI _____ RATE _____

REMARKS: safety meeting, Rigged up on duke #4, hooked up to circulate, mixed 165 sks com 3% cc 2% gel, released plug & displaced with 13 bbl water, shut in, washed out pump & lines, rigged down.
Cement did circulate

Approx 5 bbl to pit

Thank you Kelly & crew

ACCOUNT CODE	QUANTITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
5405	1	PUMP CHARGE	1150.00	1150.00
5400	10	MILEAGE	52.50	525.00
11045	165	C1955 A cement	18.55	3060.75
1102	465 #	Calcium chloride	.94	437.10
1188	310 #	Bentonite	.27	83.70
5407	7.75	Ten mileage delivery	175	430.00
				5214.05
				521.41
				4692.64
			SALES TAX	251.42
			ESTIMATED TOTAL	4944.06

Completed

Revin 3737

AUTHORIZATION Roh Wheeler TITLE TP

DATE 5-13-13

I acknowledge that the payment terms, unless specifically amended in writing on the front of the form or in the customer's account records, at our office, and conditions of service on the back of this form are in effect for services identified on this form.



CONSOLIDATED
Oil Well Services, LLC

258984

TICKET NUMBER 39983

LOCATION Oakley 125

FOREMAN Fuzz4

PO Box 884, Chanute, KS 66720
620-431-9210 or 800-467-8676

FIELD TICKET & TREATMENT REPORT
CEMENT

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY												
5-20-13	3372	Hess 1-22	22	12	32	LOGAN												
CUSTOMER Grand Mesa Operating			<table border="1"> <thead> <tr> <th>TRUCK #</th> <th>DRIVER</th> <th>TRUCK #</th> <th>DRIVER</th> </tr> </thead> <tbody> <tr> <td>463</td> <td>Corey D</td> <td></td> <td></td> </tr> <tr> <td>529</td> <td>Toddan L</td> <td></td> <td></td> </tr> </tbody> </table>				TRUCK #	DRIVER	TRUCK #	DRIVER	463	Corey D			529	Toddan L		
TRUCK #	DRIVER	TRUCK #	DRIVER															
463	Corey D																	
529	Toddan L																	
MAILING ADDRESS			OAKLEY S-UTE Rd 1/2 W W.M.															
CITY		STATE	ZIP CODE															

JOB TYPE PTA HOLE SIZE 7 7/8 HOLE DEPTH 4750' CASING SIZE & WEIGHT _____
 CASING DEPTH _____ DRILL PIPE 4 1/2 TUBING _____ OTHER _____
 SLURRY WEIGHT 14.1 SLURRY VOL 1.42 WATER gal/sk _____ CEMENT LEFT in CASING _____
 DISPLACEMENT _____ DISPLACEMENT PSI _____ MIX PSI _____ RATE _____

REMARKS: Safety meeting on Duke #4. Rig up and plug as ordered
25 SKS @ 2545'
100 SKS @ 1750' 205 SKS 60/40 pos 49 gal 1 1/4" class
40 SKS @ 275'
10 SKS @ 40' w/ plug
30 SKS RH

Thanks Fuzz4 + Crew

ACCOUNT CODE	QUANTITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
5405N	1	PUMP CHARGE	1395.00	1395.00
5406	10	MILEAGE	52.50	525.00
5407	8.8 tons	Tow mileage Delivery (min)	135.00	430.00
1131	205 SKS	60/40 pos	15.85	3251.30
1118B	705 #	Bentonite	.27	190.35
1107	51 #	Flow seal	2.92	151.42
4432	1	8 5/8 wood cup plug	100.25	100.25
			Subtotal	5571.37
			Less 1090	5571.14
			Subtotal	5014.23
			SALES TAX	259.31
			ESTIMATED TOTAL	5273.54

Completed

AUTHORIZATION Rich Wheeler TITLE T.P. DATE _____

I acknowledge that the payment terms, unless specifically amended in writing on the front of the form or in the customer's account records, at our office, and conditions of service on the back of this form are in effect for services identified on this form.

Conservation Division
Finney State Office Building
130 S. Market, Rm. 2078
Wichita, KS 67202-3802



Phone: 316-337-6200
Fax: 316-337-6211
<http://kcc.ks.gov/>

Mark Sievers, Chairman
Thomas E. Wright, Commissioner
Shari Feist Albrecht, Commissioner

Sam Brownback, Governor

June 12, 2013

Michael J. Reilly
Grand Mesa Operating Company
1700 N WATERFRONT PKWY BLDG 600
WICHITA, KS 67206-5514

Re: ACO1
API 15-109-21176-00-00
HESS 1-22
SE/4 Sec.22-12S-32W
Logan County, Kansas

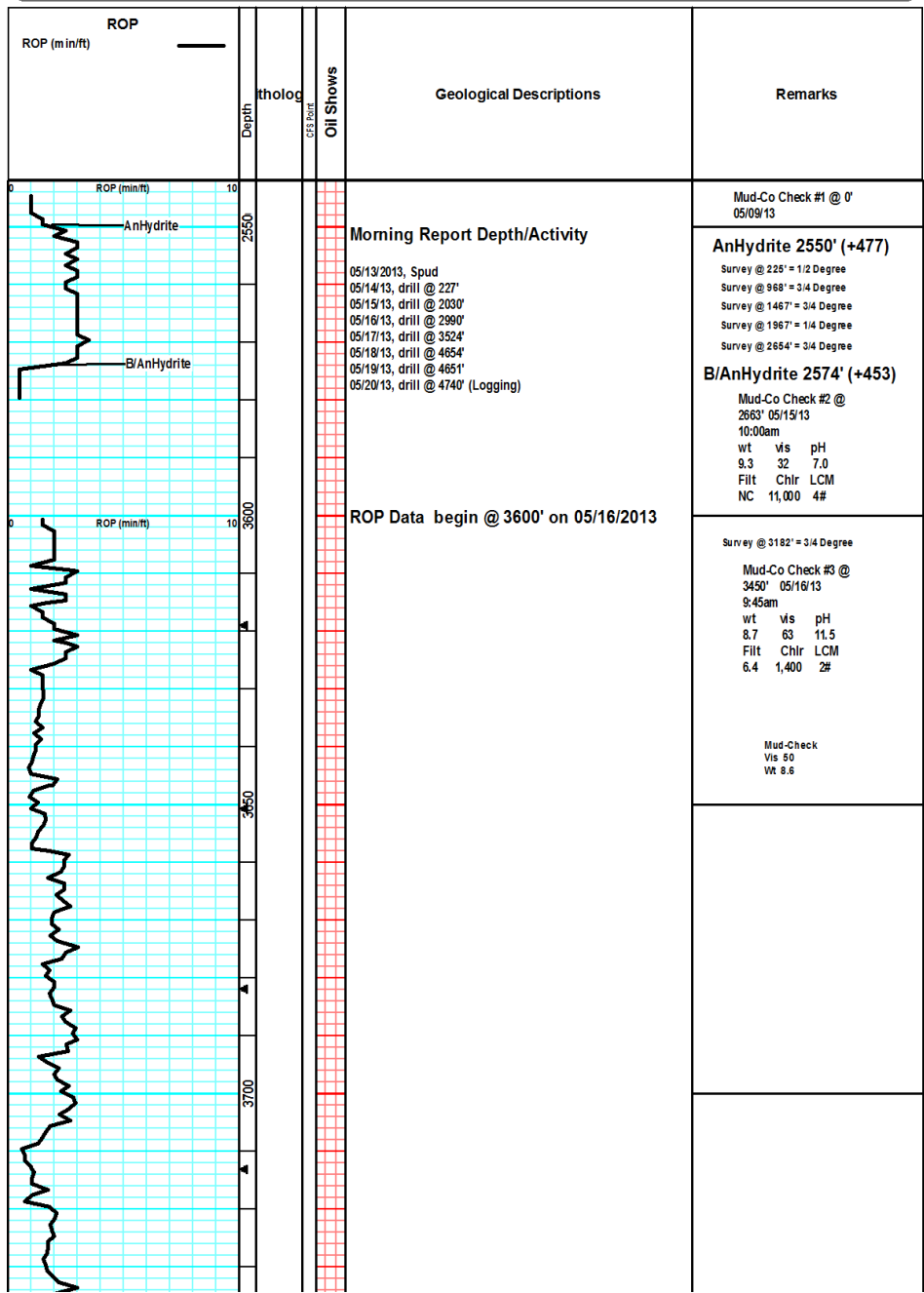
Dear Production Department:

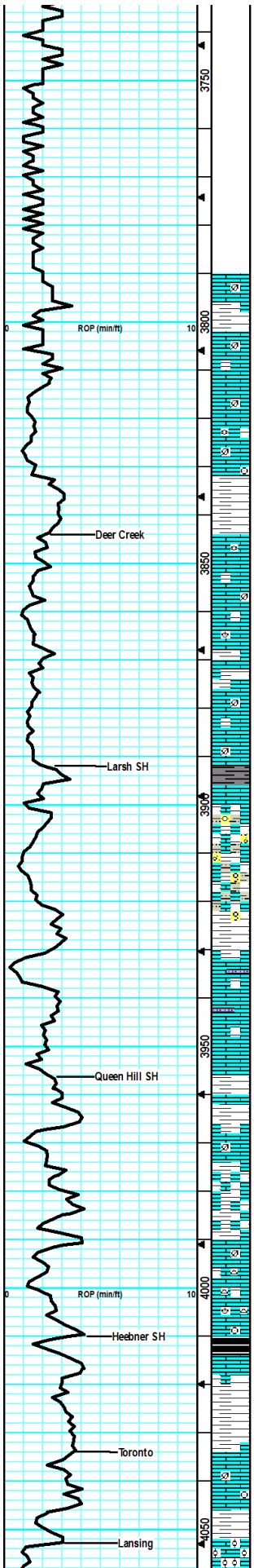
We are herewith requesting that the Well Completion Form ACO-1 and attached information for the subject well be held confidential for a period of two years.

Should you have any questions or need additional information regarding subject well, please contact our office.

Respectfully,
Michael J. Reilly

ACCESSORIES			
FOSSIL	<input type="checkbox"/> Plant	<input type="checkbox"/> Glau	STRINGER
<input type="checkbox"/> Algae	<input type="checkbox"/> Strom	<input type="checkbox"/> Gyp	Anhy
<input type="checkbox"/> Amph	<input type="checkbox"/> Fuss	<input type="checkbox"/> Hvymin	Arg
<input type="checkbox"/> Belm	<input type="checkbox"/> Oomold	<input type="checkbox"/> Kaol	Bent
<input type="checkbox"/> Bioclst	MINERAL	<input type="checkbox"/> Marl	Coal
<input type="checkbox"/> Brach	<input type="checkbox"/> Anhy	<input type="checkbox"/> Minxl	Dol
<input type="checkbox"/> Bryozoa	<input type="checkbox"/> Arggrn	<input type="checkbox"/> Nodule	Gyp
<input type="checkbox"/> Cephal	<input type="checkbox"/> Arg	<input type="checkbox"/> Phos	Ls
<input type="checkbox"/> Coral	<input type="checkbox"/> Bent	<input type="checkbox"/> Pyr	Mrst
<input type="checkbox"/> Crin	<input type="checkbox"/> Bit	<input type="checkbox"/> Salt	Sltstrg
<input type="checkbox"/> Echin	<input type="checkbox"/> Brefracg	<input type="checkbox"/> Sandy	Ssstrg
<input type="checkbox"/> Fish	<input type="checkbox"/> Calc	<input type="checkbox"/> Silt	Carbsh
<input type="checkbox"/> Foram	<input type="checkbox"/> Carb	<input type="checkbox"/> Sil	Clystn
<input type="checkbox"/> Fossil	<input type="checkbox"/> Chtdk	<input type="checkbox"/> Sulphur	Dol
<input type="checkbox"/> Gastro	<input type="checkbox"/> Chtit	<input type="checkbox"/> Tuff	Grysh
<input type="checkbox"/> Oolite	<input type="checkbox"/> Dol	<input type="checkbox"/> Chlorite	Gryslt
<input type="checkbox"/> Ostra	<input type="checkbox"/> Feldspar	<input type="checkbox"/> Dol	Lms
<input type="checkbox"/> Pelec	<input type="checkbox"/> Ferrpel	<input type="checkbox"/> Sand	Sandylms
<input type="checkbox"/> Pellet	<input type="checkbox"/> Ferr	<input type="checkbox"/> Silt	Sh
<input type="checkbox"/> Pisolite			Sltstn





Drilling Samples began @ 3800' on 05/16/2013

LS: lt tan/lt gry, fn xln, v fw foss frags, m ostly dense, sm brittle, fw sandy/gritty, tr-nvp, fw SH: gry, silty, no cup odr, ns.

LS: tan/lt gry, fn xln, fw foss frags, sm dense, mostly brittle, sm chiky, tr-nvp, fw pcs pur chik, fw SH: gry, silty, no cup odr, ns.

LS: tan/lt gry, fn xln, fw foss frags, mostly brittle, sm dense, fw chiky, tr-nvp, fw pcs pur chik, fw SH: gry, silty, no cup odr, ns.

LS: tan/lt gry, fn xln, fw foss frags, fw dense, mostly brittle, fw chiky, tr-nvp, fw pcs pur chik, fw SH: gry, silty, no cup odr, ns.

LS: tan/lt gry, fn xln, sm foss crin/frags, fw dense, m ostly brittle, fw chiky, tr-? infoss por in fw, fw pcs pur chik, no cup odr, ns.

LS: tan/lt gry, fn xln, fw foss frags, fw dense, sm brittle, sm chiky, tr-nvp, fw pcs pur chik, fw SH: drk gry/grn, silty, no cup odr, ns.

LS: tan/lt gry, fn xln, fw foss frags, mostly brittle, fw dense, fw chiky, tr-nvp, sm SH: gry/grn, silty, no cup odr, ns.

LS: tan/gry, fn xln, v fw foss brach/frags, fw dense, m ostly brittle, fw sandy/gritty, tr-nvp, sm SH: gry/grn, silty, fw SltStn: brn, soft, gritty, fw muddy, no cup odr, ns.

LS: tan/gry, fn xln, v fw foss frags, sm brittle, fw dense, fw sandy/gritty, tr-nvp, fw pcs pur chik, sm SH: gry, silty, no cup odr, ns.

LS: gry/tan, fn xln, v fw foss frags, sm dense, sm brittle, fw flakey/mealy, fw sandy/gritty, tr-nvp, fw pcs pur chik, fw SH: gry, silty, no cup odr, ns.

LS: tan/lt gry, fn xln, v fw foss frags, sm dense, sm brittle, fw sandy/gritty, tr-nvp, fw pcs pur chik, sm SH: gry, silty, no cup odr, ns.

LS: tan/lt gry, fn xln, v fw foss frags, mostly brittle, fw dense, sm sandy/gritty, tr-nvp, fw pcs pur chik, no cup odr, ns.

LS: tan/lt gry, fn xln, sm brittle, fw dense, sm sandy/gritty, tr-nvp, fw SS: gry/brn, fn grn, brittle, fw arg, tr-nvp, fw SH: gry, silty, no cup odr, ns.

SH: gry/brn, silty, fw fissile, fw SS: gry/brn, fn grn, brittle, fw arg, tr-? ppt-intgrn por, fw LS: tan/gry, sm mott, fn xln, sm dense, sm brittle, tr-nvp, no cup odr, ns.

LS: lt tan/lt gry, fn xln, sm dense, sm brittle, fw sandy/gritty, tr-nvp, svrl SH: gry/grn/brn, silty, fw gritty, no cup odr, ns.

LS: lt tan/lt gry, fn xln, mostly brittle, fw dense, fw sandy/gritty, fw chiky, tr-nvp, fw SH: gry/grn, silty, fw gritty, no cup odr, ns.

LS: lt tan/lt gry, fn xln, sm dense, mostly brittle, fw chiky, tr-nvp, fw pcs pur chik, fw SH: gry/brn, silty, no cup odr, ns.

LS: lt tan/lt gry, fn xln, fw foss frags, sm dense, m ostly brittle, fw chiky, tr-nvp, fw SS: gry, fn grn, brittle, tr-? intgrn por in fw, fw SH: gry/brn, silty, no cup odr, ns.

LS: tan/lt gry, fn xln, fw foss frags, sm dense, mostly brittle, tr-nvp, fw pcs pur chik, fw SH: gry/brn, silty, no cup odr, ns.

LS: tan/lt gry, fn xln, sm foss brach/frags, sm vool, mostly brittle, fw dense, sm pr-fr infoss/intool por, fw Chert: wht/opaque, foss, sharp, no cup odr, ns.

LS: tan/lt gry, fn xln, sm foss frags, sm dense, sm brittle, fw pcs w/ pr infoss por, fw Chert: wht/gry, sharp, fw SH: gry/brn, silty, no cup odr, ns.

LS: tan/lt gry, fn xln, sm foss brach/crin/frags, sm dense, sm brittle, fw chiky, tr-nvp, fw Chert: tan/gry, sharp, fw SH: gry/brn, silty, no cup odr, ns.

LS: lt gry/tan, fn xln, mostly dense, sm brittle, sm chiky, tr-nvp, fw pcs pur chik, sm SH: gry/blk, silty, sm carb, no cup odr, ns.

LS: gry/tan, fn xln, sm dense, sm brittle, fw sandy/gritty, tr-nvp, sm SH: gry/brn/grn, silty, fw waxy, no cup odr, ns.

LS: crm/lt tan, fn xln, m ostly dense, sm brittle, sm chiky, tr-nvp, fw pcs pur chik, fw SH: gry/grn/brn, silty, fw waxy, no cup odr, ns.

LS: lt tan/lt gry, fn xln, fw foss crin/frags, mostly brittle, sm dense, fw pcs w/ pr intxln por, fw pcs pur chik, fw SH: grn/brn, silty, no cup odr, ns.

LS: tan/lt gry, fn xln, fw foss frags, profus ool, sm dense, mostly brittle, sm pr intool por in fw pcs, svrl pcs pur chik, sm SH: arv/brn. siltv. no cup odr. ns.

Mud-Check
Vis 48
Wt 8.8

Deer Creek @ 3844' (-817)

Mud-Check
Vis 51
Wt 8.9

Larsh @ 3892' (-865)

Queen Hill @ 3956' (-929)

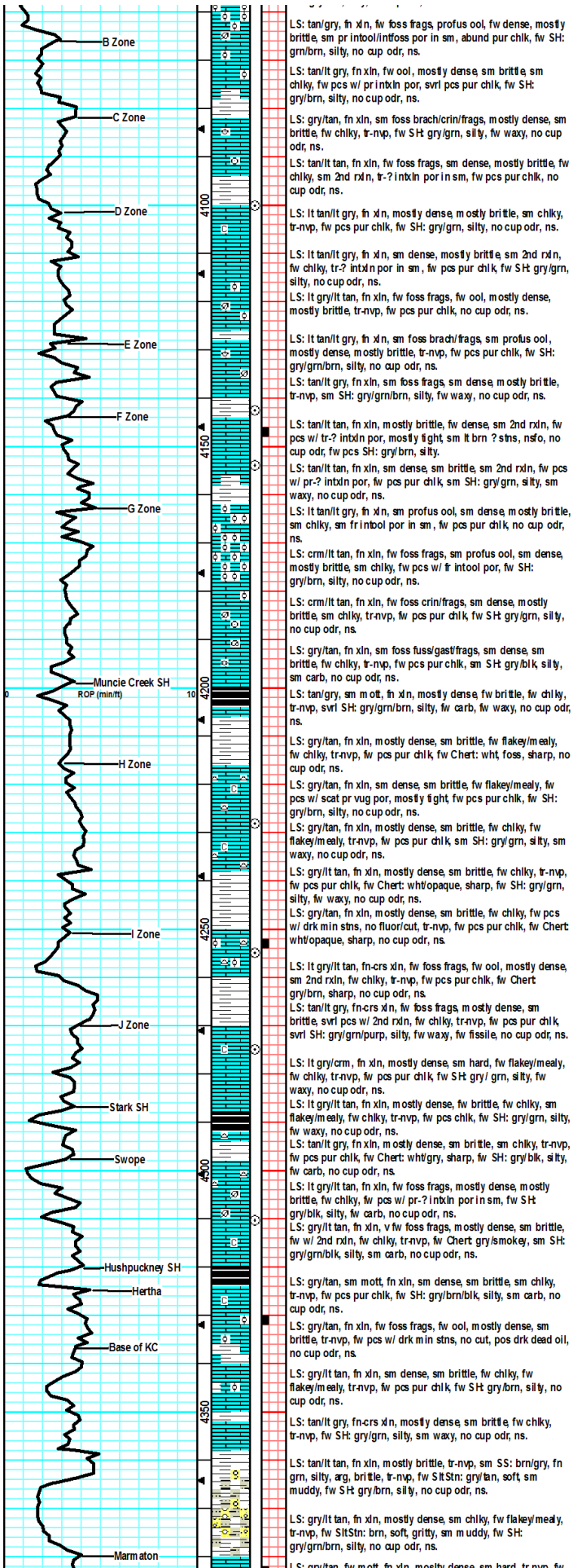
Mud-Check
Vis 52
Wt 8.9

Heebner @ 4010' (-983)

Mud-Co Check #4 @
4039' 05/17/13
9:45am
wt vis pH
9.0 49 10.5
Filt Chlr LCM
6.4 1,500 1#

Toronto @ 4034' (-1007)

Lansing @ 4053' (-1026)



Mud-Check
Vis 52
Wt 8.8

CFS @ 4100'
(30"/60")

CFS @ 4142'
(30"/60")

Mud-Check
Vis 48
Wt 9.3

**Muncie Creek @
4199' (-1172)**

Mud-Check
Vis 55
Wt 9.1

CFS @ 4228'
(30"/60")

CFS @ 4255'
(30"/60")

CFS @ 4275'
(30"/60")

Mud-Check
Vis 50
Wt 9.2

Stark SH @ 4287' (-1260)

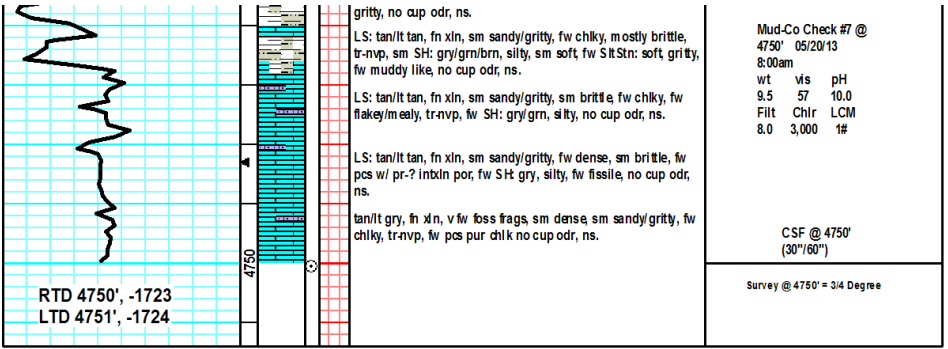
CFS @ 4310'
(30"/60")

**Hushpuckney @
4320' (-1293)**

B/KC @ 4337' (-1310)

Mud-Co Check #5 @
4332' 05/18/13
8:30am
wt vis pH
9.2 51 10.5
Flt Chlr LCM
6.2 2,000 1#

Marmaton @ 4380' (-1353)



gritty, no cup odr, ns.

LS: tan/lt tan, fn xln, sm sandy/gritty, fw chky, mostly brittle, tr-nvp, sm SH: gry/grn/brn, silty, sm soft, fw SltStn: soft, gritty, fw muddy like, no cup odr, ns.

LS: tan/lt tan, fn xln, sm sandy/gritty, sm brittle, fw chky, fw flakey/mealy, tr-nvp, fw SH: gry/grn, silty, no cup odr, ns.

LS: tan/lt tan, fn xln, sm sandy/gritty, fw dense, sm brittle, fw pcs w/ pr-? intxn por, fw SH gry, silty, fw fissile, no cup odr, ns.

tan/lt gry, fn xln, v fw foss frags, sm dense, sm sandy/gritty, fw chky, tr-nvp, fw pos pur chl k no cup odr, ns.

Mud-Co Check #7 @
 4750' 05/20/13
 8:00am
 wt vis pH
 9.5 57 10.0
 Flt Chir LCM
 8.0 3,000 1#

CSF @ 4750'
 (30"/60")

Survey @ 4750' = 3/4 Degree

RTD 4750', -1723
 LTD 4751', -1724