

**WELL COMPLETION FORM**
WELL HISTORY - DESCRIPTION OF WELL & LEASE

Confidentiality Requested:

 Yes No

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

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 SWGPS 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 DistributionALT I II III Approved by: _____ Date: _____

1234563

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 <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i> Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No 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: _____	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample Name Top Datum
--	---

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	Unit Petroleum Company
Well Name	Haw 15 #2H
Doc ID	1234563

Casing

Purpose Of String	Size Hole Drilled	Size Casing Set	Weight	Setting Depth	Type Of Cement	Number of Sacks Used	Type and Percent Additives
Surface	28	16	65	160	Common	144	
Intermediate	12.25	9.625	36	1523	A	605	2% CC + 1/4# celloflake
Intermediate	8.75	7	23	4335	A	160	5% Gyp + 10% salt
Production	6.125	4.50	11.6	8409	50/50 Poz	400	.2% SASL + 1/4# celloflake
Production	6.125	5.50	17	8409	50/50 Poz	400	.2% SASL + 1/4# celloflake

Summary of Changes

Lease Name and Number: Haw 15 #2H

API/Permit #: 15-155-21706-01-00

Doc ID: 1234563

Correction Number: 1

Approved By: NAOMI JAMES

Field Name	Previous Value	New Value
Approved Date	10/24/2014	12/09/2014
Save Link	../../../../kcc/detail/operatorEditDetail.cfm?docID=1227749	../../../../kcc/detail/operatorEditDetail.cfm?docID=1234563
Well Type	GAS	OIL



Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION 1227749
OIL & GAS CONSERVATION DIVISION

Form ACO-1
August 2013

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

CONFIDENTIAL 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:

- | | | |
|--|---|-------------------------------------|
| <input type="checkbox"/> New Well | <input type="checkbox"/> Re-Entry | <input type="checkbox"/> Workover |
| <input type="checkbox"/> Oil | <input type="checkbox"/> WSW | <input type="checkbox"/> SWD |
| <input type="checkbox"/> Gas | <input type="checkbox"/> D&A | <input type="checkbox"/> ENHR |
| <input type="checkbox"/> OG | <input type="checkbox"/> GSW | <input type="checkbox"/> Temp. Abd. |
| <input type="checkbox"/> CM (Coal Bed Methane) | | |
| <input type="checkbox"/> Cathodic | <input type="checkbox"/> Other (Core, Expl., etc.): _____ | |

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

Operator: _____

Well Name: _____

Original Comp. Date: _____ Original Total Depth: _____

- | | | | |
|--|---------------------------------------|--|---------------------------------------|
| <input type="checkbox"/> Deepening | <input type="checkbox"/> Re-perf. | <input type="checkbox"/> Conv. to ENHR | <input type="checkbox"/> Conv. to SWD |
| <input type="checkbox"/> Plug Back | <input type="checkbox"/> Conv. to GSW | <input type="checkbox"/> Conv. to Producer | |
| <input type="checkbox"/> Commingled | Permit #: _____ | | |
| <input type="checkbox"/> Dual Completion | Permit #: _____ | | |
| <input type="checkbox"/> SWD | Permit #: _____ | | |
| <input type="checkbox"/> ENHR | Permit #: _____ | | |
| <input type="checkbox"/> 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: _____

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

1. Did you perform a hydraulic fracturing treatment on this well? Yes No *(If No, skip questions 2 and 3)*
2. Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? Yes No *(If No, skip question 3)*
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)*

Date of first Production/Injection or Resumed Production/Injection:	Producing Method: <input type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other <i>(Explain)</i> _____				
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) (Submit ACO-4)</i>	PRODUCTION INTERVAL: Top Bottom
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Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record <i>(Amount and Kind of Material Used)</i>

TUBING RECORD:	Size:	Set At:	Packer At:	
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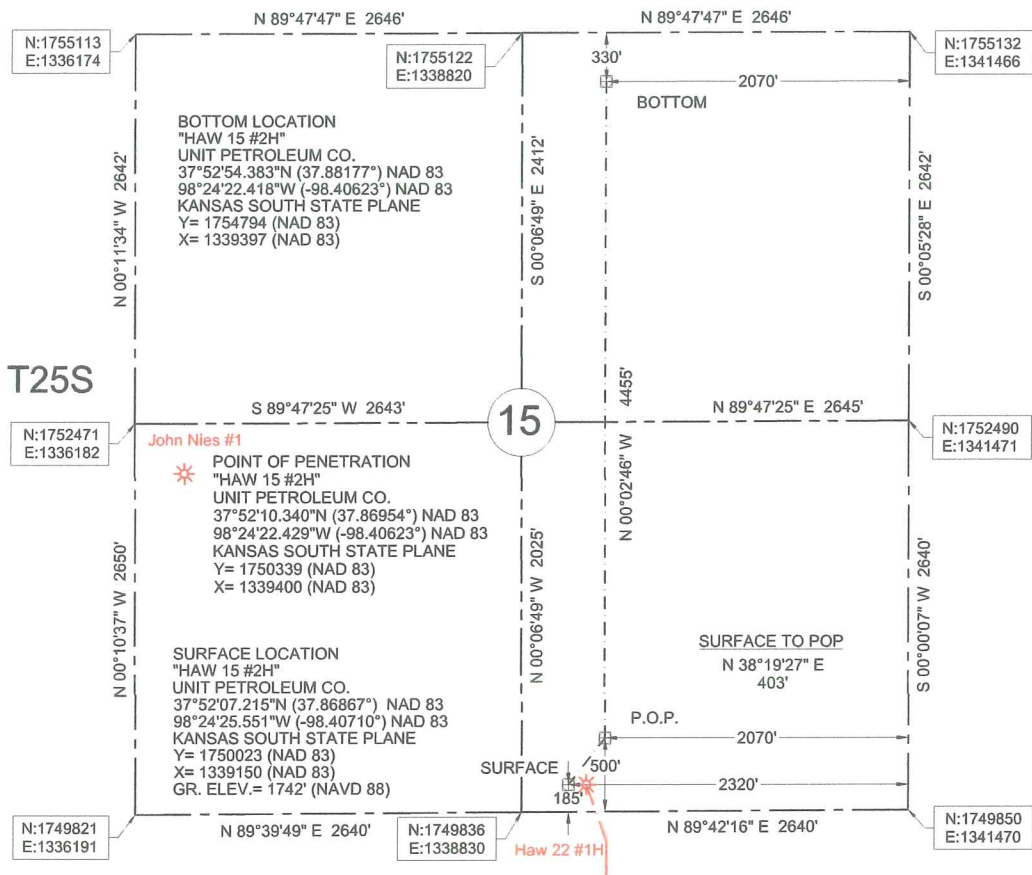
Form	ACO1 - Well Completion
Operator	Unit Petroleum Company
Well Name	Haw 15 #2H
Doc ID	1227749

Casing

Purpose Of String	Size Hole Drilled	Size Casing Set	Weight	Setting Depth	Type Of Cement	Number of Sacks Used	Type and Percent Additives
Surface	28	16	65	160	Common	144	
Intermediate	12.25	9.625	36	1523	A	605	2% CC + 1/4# celloflake
Intermediate	8.75	7	23	4335	A	160	5% Gyp + 10% salt
Production	6.125	4.50	11.6	8409	50/50 Poz	400	.2% SASL + 1/4# celloflake
Production	6.125	5.50	17	8409	50/50 Poz	400	.2% SASL + 1/4# celloflake

Section 15, T 25 S, R 10 W., Reno County, Kansas.

R10W



- LEGEND**
- SECTION LINE
 - - - 1/4 SECTION LINE
 - * EXISTING WELL
 - - - EXISTING LATERAL

Datum: NAD 83
Units: US Survey Feet
North: Grid
Coordinates: State Plane
Zone: 1502
State: Kansas
Region: South

Description: Surface Hole Location "Haw 15 #2H" situated 185 feet from the south section line and 2320 feet from the east section line of Section 15, T 25 S, R 10 W., Reno County, Kansas.

Description: Point of Penetration "Haw 15 #2H" situated 500 feet from the south section line and 2070 feet from the east section line of Section 15, T 25 S, R 10 W., Reno County, Kansas.

Description: Bottom Location "Haw 15 #2H" situated 330 feet from the north section line and 2070 feet from the east section line of Section 15, T 25 S, R 10 W., Reno County, Kansas.

ONE CALL
KANSAS
811
Know what's below.
Call before you dig.

Buried utilities are not necessarily shown. It is the contractor's responsibility to locate and preserve all utility services.



Survey is valid only if print has original seal and signature of surveyor present

<p>JVIDENS LAND SURVEY Co., Inc. 1210 19TH STREET / P.O. BOX 943 WOODWARD, OKLAHOMA 73802 Phone 580-256-7174 - Fax 580-256-3424 roger@jvidenslandsurvey.com mike@jvidenslandsurvey.com</p>	Survey For: Unit Petroleum Co. P.O. Box 2726 Woodward, OK 73802 Attn: Jason Rummery		JOB 391-14	DATE OF PLAT 06-25-2014	SCALE 1"=1000'	SHEET 1 OF 5
	DRAWN BY C.M.G.	OKLA. CA #2064, EXP. 06/30/2015 KANSAS CA #143, EXP. 12/31/2014				

Mid-Continent Conductor, LLC

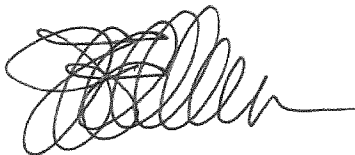
P.O. Box 1570, Woodward, OK 73802

Ph. 580-254-5400 Fax 580-254-3242

CEMENTING REPORT

Operator: Unit Corporation
Well Name: Haw 15-2H
Legal Description: Reno Cnty, KS

Cement Casing Data	
Cementing Date	7/9/14
Size of Drill Bit (Inches)	28
Size of Casing (Inches O.D.)	16
Setting Depth of Casing (ft.) from ground level	160
Type of Cement	Common Cement
Sacks of Cement Used	144
Was cement circulated?	Yes
Job witnessed by: Spencer Brownlee	



Jeff M. Owen

Mid-Continent Conductor, LLC

Customer UNIT Petroleum	Lease No.	Date 7-24-14
Lease HAW	Well # 15-2-A	
Field Order # 10862	Station PRATT KS	Casing
Type Job CNW 4 1/2 Lined	Formation	Depth
		County DeW
		State KS
		Legal Description 15-25-10

PIPE DATA		PERFORATING DATA		FLUID USED		TREATMENT RESUME		
Casing Size 4 1/2	Tube Size	Shots/Ft		Acid	RATE	PRESS	ISIP	
Depth 4372	Depth 4037	From	To	Pre Pad	Max		5 Min.	
Volume 67.7	Volume 93.6	From	To	Pad	Min		10 Min.	
Max Press	Max Press	From	To	Frac	Avg		15 Min.	
Well Connection Scott	Annulus Vol.	From	To		HHP Used		Annulus Pressure	
Plug Depth 161	Packer Depth	From	To	Flush	Gas Volume		Total Load	

Customer Representative	Station Manager DAVE SCOTT	Treater Robert Sullivan
Service Units 37900 33708 20920 70955 19918		
Driver Names Southward Epings Phye		

Time	Casing Pressure	Tube Pressure	Bbls. Pumped	Rate	Service Log
8:30					on loc
					Run 4372' 4 1/2 11.6 4037' 5 1/2 17 8409'
10:55					CASING ON BOTTOM
11:00					Plg circ csp.
12:00	430		5	3.5	RT SPACER
			12		ST MUD FLUSH
			5		SPACER
			108	5	mix emul 400 gal 50/50 per yield 1.52 7.17 gal/gal
					mixed @ 13.8 ppf = 108 BBL
					emul mixed pump ONE BBL Sugar water
					shut down Repair plug
			5		ST Disp w/ Sugar H ₂ O just 40 BBL
					AND 2% KCL
	500		44		Lift Ps.
	1350			3.5	Slow Rxte
1:30	2500		161		plug down HOPE HOLD
					JOB COMPLETE
					Thank you



energy services, L.P.

TREATMENT REPORT

Customer: **UNIT Petroleum** Lease No. _____ Date: _____
 Lease: **HAW** Well #: **15-2 #**
 Field Order #: **10899** Station: **PRATT KS** Casing: **9 5/8** Depth: **1523'** County: **RENO** State: **KS**
 Type Job: **CNW 9 5/8 Surface** Formation: _____ Legal Description: **15-25-10**

PIPE DATA		PERFORATING DATA		FLUID USED		TREATMENT RESUME		
Casing Size	Tubing Size	Shots/Ft		Acid	RATE	PRESS	ISIP	
9 5/8				Pre Pad	Max		5 Min.	
Depth 1523	Depth	From	To	Pad	Min		10 Min.	
Volume 118	Volume	From	To	Frac	Avg		15 Min.	
Max Press 1000	Max Press	From	To		HHP Used		Annulus Pressure	
Well Connection PC	Annulus Vol.	From	To	Flush	Gas Volume		Total Load	
Plug Depth 1523	Packer Depth	From	To					

Customer Representative: _____ Station Manager: **DAVE Seest** Treater: **Robert Sullivan**

Service Units	37900	33708	20920	19960	21010	19831	19862		
Driver Names	Sullivan	Erwin		D. B. Seest	HAW Seest				

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
10:20					ON LOC
11:45	150		3	3.5	At Spacer
			142	5	Mix cmf 325 sk A-CO ₂ -3%oc 1/4oc 1/4oc 2.17 yield, 1449 m/sk = 142 BBL cmf 12 PPG
			60		Mix sand 280 sk (common) - 2%oc 1/4oc 1.20 yield, 5.23 m/sk - 60 BBL @ 15.6 PPG cmf mixed @ shot down
					Release Plug
				5	At Pipe
12:50	1,000		118	4	plug down Work field
					NEED NOT circulate cmf HAW Returns 40% JOB

Unit Petroleum

Reno County, Kansas [NAD 83]

Section 15 T25S-R10W

Haw 15 #2H

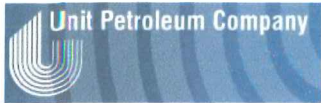
OH

Design: OH

Standard Survey Report

29 July, 2014





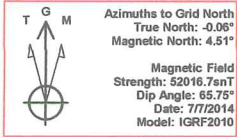
Unit Petroleum
 Project: Reno County, Kansas [NAD 83]
 Site: Section 15 T26S-R10W
 Well: Haw 15 #2H
 Wellbore: OH
 Design: Design #2
 Lat: 37° 52' 7.214 N
 Long: 98° 24' 25.556 W
 Pad GL: 1742.00
 KB: 14' KB @ 1756.00usft (UDI 331)



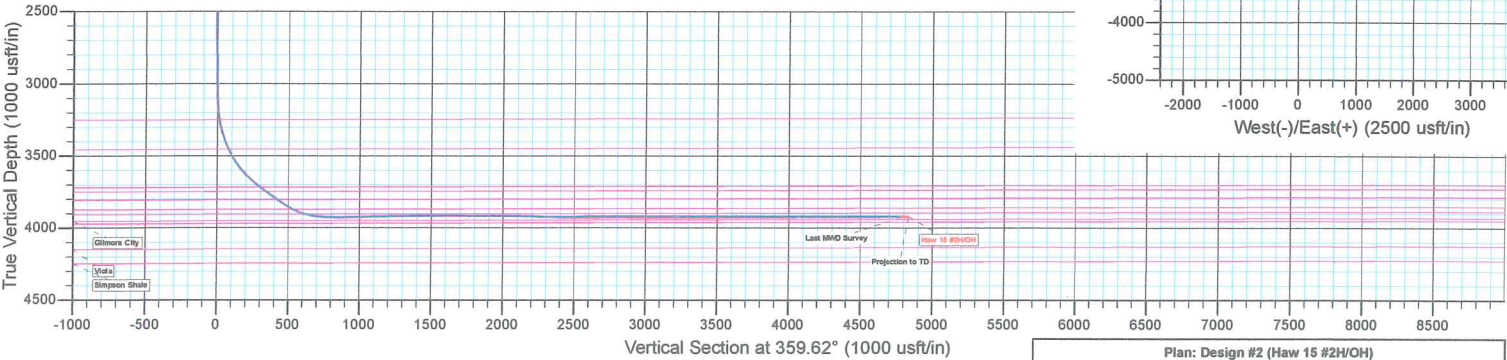
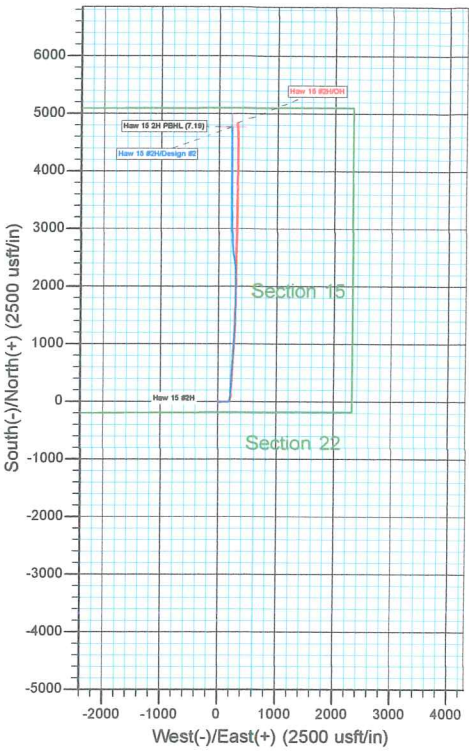
SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	
5773.00	87.80	0.00	3918.05	2189.63	293.31	0.00	0.00	2187.64	
5817.00	87.80	0.00	3919.74	2233.60	293.31	0.00	0.00	2231.60	
6040.09	91.05	349.33	3921.98	2455.36	272.59	5.00	-73.15	2453.49	
6150.36	91.05	349.33	3919.96	2563.70	252.17	0.00	0.00	2561.97	
6357.25	96.00	359.62	3918.05	2769.35	232.28	5.00	95.78	2767.75	
6357.25	96.00	359.62	3916.05	4769.30	219.01	0.00	0.00	4767.75	

WELL DETAILS: Haw 15 #2H						
+N/-S	+E/-W	Northing	Ground Level: Easting	1742.00 Latitude	Longitude	Slot
0.00	0.00	1750023.00	1339150.00	37° 52' 7.214 N	98° 24' 25.556 W	

PROJECT DETAILS: Reno County, Kansas [NAD 83]
 Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Kansas Southern Zone
 System Datum: Mean Sea Level



NOTE: All Lease lines and Hard lines are estimates only and are subject to the customers' approval.



Plan: Design #2 (Haw 15 #2H/OH)
 Created By: Derek Stephens Date: 6:26, July 29 2014

Survey Report



Company:	Unit Petroleum	Local Co-ordinate Reference:	Well Haw 15 #2H
Project:	Reno County, Kansas [NAD 83]	TVD Reference:	14' KB @ 1756.00usft (UDI 331)
Site:	Section 15 T25S-R10W	MD Reference:	14' KB @ 1756.00usft (UDI 331)
Well:	Haw 15 #2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project	Reno County, Kansas [NAD 83]		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Kansas Southern Zone		Using geodetic scale factor

Site	Section 15 T25S-R10W				
Site Position:		Northing:	1,750,023.00 usft	Latitude:	37° 52' 7.214 N
From:	Map	Easting:	1,339,150.00 usft	Longitude:	98° 24' 25.556 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.06 °

Well	Haw 15 #2H					
Well Position	+N/-S	0.00 usft	Northing:	1,750,023.00 usft	Latitude:	37° 52' 7.214 N
	+E/-W	0.00 usft	Easting:	1,339,150.00 usft	Longitude:	98° 24' 25.556 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	1,742.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/7/2014	4.57	65.75	52,017

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	359.62	

Survey Program	Date	7/29/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	1,472.00	Gyro (OH)	CB-GYRO-MS	Camera based gyro multishot	
1,565.00	8,420.00	MWD (OH)	MWD	MWD - Standard	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.36	263.33	100.00	-0.04	-0.31	-0.03	0.36	0.36	0.00	0.00
200.00	0.28	251.22	200.00	-0.15	-0.86	-0.15	0.10	-0.08	-12.11	
300.00	0.30	247.61	300.00	-0.33	-1.33	-0.32	0.03	0.02	-3.61	
400.00	0.29	230.85	400.00	-0.59	-1.77	-0.58	0.09	-0.01	-16.76	
500.00	0.43	223.24	499.99	-1.02	-2.22	-1.01	0.15	0.14	-7.61	
600.00	0.34	224.83	599.99	-1.51	-2.69	-1.49	0.09	-0.09	1.59	
700.00	0.35	230.84	699.99	-1.91	-3.13	-1.89	0.04	0.01	6.01	
800.00	0.33	195.79	799.99	-2.38	-3.45	-2.36	0.21	-0.02	-35.05	
900.00	0.29	179.93	899.99	-2.91	-3.53	-2.89	0.09	-0.04	-15.86	



Company:	Unit Petroleum	Local Co-ordinate Reference:	Well Haw 15 #2H
Project:	Reno County, Kansas [NAD 83]	TVD Reference:	14' KB @ 1756.00usft (UDI 331)
Site:	Section 15 T25S-R10W	MD Reference:	14' KB @ 1756.00usft (UDI 331)
Well:	Haw 15 #2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
3,766.00	49.40	2.70	3,679.07	253.14	217.46	251.70	7.68	7.50	2.19	
3,798.00	51.90	3.50	3,699.36	277.85	218.81	276.39	8.05	7.81	2.50	
3,830.00	53.20	3.70	3,718.82	303.20	220.40	301.73	4.09	4.06	0.63	
3,871.00	54.20	3.70	3,743.09	336.18	222.53	334.69	2.44	2.44	0.00	
3,892.00	54.40	3.50	3,755.34	353.20	223.60	351.71	1.23	0.95	-0.95	
3,924.00	54.70	3.50	3,773.90	379.22	225.20	377.71	0.94	0.94	0.00	
3,956.00	55.00	3.30	3,792.33	405.33	226.75	403.82	1.07	0.94	-0.63	
3,988.00	55.20	3.00	3,810.63	431.54	228.19	430.02	0.99	0.63	-0.94	
4,025.00	56.60	3.00	3,831.38	462.14	229.79	460.60	3.78	3.78	0.00	
4,050.00	58.80	3.50	3,844.74	483.23	230.99	481.69	8.96	8.80	2.00	
4,082.00	61.90	3.70	3,860.56	510.98	232.74	509.43	9.70	9.69	0.63	
4,114.00	65.20	3.60	3,874.82	539.57	234.56	538.00	10.32	10.31	-0.31	
4,145.00	68.70	3.60	3,886.95	568.04	236.35	566.46	11.29	11.29	0.00	
4,177.00	72.20	3.80	3,897.66	598.12	238.30	596.53	10.95	10.94	0.63	
4,209.00	75.50	3.80	3,906.56	628.79	240.34	627.18	10.31	10.31	0.00	
4,241.00	78.80	4.00	3,913.67	659.91	242.46	658.29	10.33	10.31	0.63	
4,272.00	82.20	4.00	3,918.79	690.41	244.59	688.77	10.97	10.97	0.00	
4,287.00	83.80	3.90	3,920.62	705.26	245.62	703.61	10.69	10.67	-0.67	
4,349.00	88.20	3.60	3,924.94	766.96	249.66	765.29	7.11	7.10	-0.48	
4,411.00	90.00	3.50	3,925.91	828.83	253.50	827.13	2.91	2.90	-0.16	
4,474.00	90.80	3.50	3,925.47	891.71	257.34	889.99	1.27	1.27	0.00	
4,535.00	91.70	3.50	3,924.14	952.58	261.07	950.83	1.48	1.48	0.00	
4,597.00	90.80	3.40	3,922.79	1,014.46	264.80	1,012.68	1.46	-1.45	-0.16	
4,660.00	91.70	3.50	3,921.42	1,077.33	268.59	1,075.52	1.44	1.43	0.16	
4,722.00	90.90	3.10	3,920.01	1,139.21	272.15	1,137.38	1.44	-1.29	-0.65	
4,784.00	92.00	2.90	3,918.44	1,201.10	275.40	1,199.25	1.80	1.77	-0.32	
4,846.00	91.00	2.80	3,916.82	1,263.00	278.48	1,261.13	1.62	-1.61	-0.16	
4,908.00	90.80	2.00	3,915.85	1,324.94	281.08	1,323.05	1.33	-0.32	-1.29	
4,971.00	90.10	2.80	3,915.35	1,387.88	283.71	1,385.97	1.69	-1.11	1.27	
5,033.00	90.20	2.10	3,915.19	1,449.82	286.36	1,447.89	1.14	0.16	-1.13	
5,096.00	90.70	1.50	3,914.69	1,512.79	288.34	1,510.84	1.24	0.79	-0.95	
5,157.00	89.40	1.40	3,914.64	1,573.77	289.89	1,571.81	2.14	-2.13	-0.16	
5,219.00	89.30	1.50	3,915.34	1,635.75	291.46	1,633.78	0.23	-0.16	0.16	
5,280.00	89.80	1.00	3,915.82	1,696.73	292.79	1,694.75	1.16	0.82	-0.82	
5,342.00	89.90	1.10	3,915.98	1,758.72	293.92	1,756.73	0.23	0.16	0.16	
5,402.00	89.80	0.40	3,916.14	1,818.71	294.71	1,816.72	1.18	-0.17	-1.17	
5,464.00	90.30	359.80	3,916.09	1,880.71	294.82	1,878.71	1.26	0.81	-0.97	
5,525.00	91.30	0.10	3,915.24	1,941.70	294.76	1,939.71	1.71	1.64	0.49	
5,588.00	90.50	359.60	3,914.25	2,004.70	294.60	2,002.70	1.50	-1.27	-0.79	
5,650.00	89.30	359.80	3,914.35	2,066.69	294.27	2,064.70	1.96	-1.94	0.32	
5,712.00	88.00	359.20	3,915.82	2,128.67	293.73	2,126.68	2.31	-2.10	-0.97	
5,773.00	87.80	0.00	3,918.05	2,189.63	293.31	2,187.64	1.35	-0.33	1.31	
5,835.00	86.70	359.40	3,921.03	2,251.56	292.98	2,249.56	2.02	-1.77	-0.97	

Survey Report



Company:	Unit Petroleum	Local Co-ordinate Reference:	Well Haw 15 #2H
Project:	Reno County, Kansas [NAD 83]	TVD Reference:	14' KB @ 1756.00usft (UDI 331)
Site:	Section 15 T25S-R10W	MD Reference:	14' KB @ 1756.00usft (UDI 331)
Well:	Haw 15 #2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,000.00	0.27	196.07	999.98	-3.39	-3.59	-3.37	0.08	-0.02	16.14
1,100.00	0.24	150.52	1,099.98	-3.80	-3.55	-3.77	0.20	-0.03	-45.55
1,200.00	0.23	195.26	1,199.98	-4.17	-3.50	-4.15	0.18	-0.01	44.74
1,300.00	0.14	212.10	1,299.98	-4.47	-3.62	-4.45	0.10	-0.09	16.84
1,400.00	0.12	207.67	1,399.98	-4.67	-3.73	-4.64	0.02	-0.02	-4.43
1,472.00	0.16	230.97	1,471.98	-4.80	-3.85	-4.77	0.10	0.06	32.36
1,565.00	0.30	202.10	1,564.98	-5.10	-4.04	-5.08	0.19	0.15	-31.04
1,660.00	0.10	187.80	1,659.98	-5.42	-4.14	-5.39	0.22	-0.21	-15.05
1,755.00	2.20	104.00	1,754.96	-5.94	-2.39	-5.92	2.31	2.21	-88.21
1,850.00	4.80	97.60	1,849.77	-6.91	3.32	-6.93	2.76	2.74	-6.74
1,943.00	5.00	100.00	1,942.43	-8.13	11.17	-8.20	0.31	0.22	2.58
2,038.00	6.40	87.30	2,036.96	-8.60	20.54	-8.73	1.98	1.47	-13.37
2,134.00	8.00	86.10	2,132.20	-7.89	32.55	-8.10	1.67	1.67	-1.25
2,229.00	8.00	86.90	2,226.28	-7.08	45.75	-7.39	0.12	0.00	0.84
2,321.00	8.00	88.30	2,317.38	-6.55	58.54	-6.93	0.21	0.00	1.52
2,416.00	8.80	89.60	2,411.36	-6.30	72.41	-6.78	0.87	0.84	1.37
2,511.00	8.50	91.20	2,505.28	-6.40	86.70	-6.97	0.40	-0.32	1.68
2,606.00	8.60	85.80	2,599.23	-6.02	100.80	-6.69	0.85	0.11	-5.68
2,703.00	8.60	85.80	2,695.14	-4.96	115.27	-5.72	0.00	0.00	0.00
2,798.00	8.30	84.80	2,789.11	-3.82	129.18	-4.67	0.35	-0.32	-1.05
2,892.00	8.40	86.50	2,882.11	-2.78	142.79	-3.73	0.28	0.11	1.81
2,987.00	8.30	83.60	2,976.10	-1.60	156.53	-2.63	0.46	-0.11	-3.05
3,082.00	7.90	82.30	3,070.16	0.04	169.81	-1.08	0.46	-0.42	-1.37
3,131.00	7.90	80.50	3,118.69	1.05	176.47	-0.12	0.50	0.00	-3.67
3,162.00	8.50	69.50	3,149.38	2.20	180.72	1.01	5.41	1.94	-35.48
3,194.00	9.30	55.10	3,181.00	4.51	185.06	3.28	7.37	2.50	-45.00
3,226.00	10.10	39.90	3,212.54	8.14	188.98	6.89	8.36	2.50	-47.50
3,258.00	11.60	29.60	3,243.97	13.10	192.37	11.82	7.64	4.69	-32.19
3,290.00	13.60	23.20	3,275.20	19.35	195.44	18.05	7.61	6.25	-20.00
3,322.00	15.40	17.80	3,306.18	26.86	198.22	25.54	7.03	5.63	-16.88
3,353.00	17.20	13.10	3,335.94	35.24	200.52	33.91	7.19	5.81	-15.16
3,385.00	19.10	9.50	3,366.34	45.01	202.45	43.67	6.89	5.94	-11.25
3,417.00	20.70	7.80	3,396.43	55.78	204.09	54.43	5.32	5.00	-5.31
3,449.00	22.50	6.20	3,426.18	67.47	205.51	66.11	5.92	5.63	-5.00
3,481.00	25.00	5.30	3,455.47	80.29	206.80	78.92	7.89	7.81	-2.81
3,513.00	28.00	4.70	3,484.11	94.52	208.04	93.14	9.41	9.38	-1.88
3,544.00	30.90	4.90	3,511.10	109.70	209.32	108.31	9.36	9.35	0.65
3,575.00	34.00	4.90	3,537.26	126.27	210.74	124.87	10.00	10.00	0.00
3,607.00	36.40	4.40	3,563.40	144.66	212.23	143.25	7.55	7.50	-1.56
3,639.00	39.40	3.60	3,588.65	164.27	213.60	162.84	9.50	9.38	-2.50
3,670.00	42.40	2.90	3,612.08	184.53	214.74	183.10	9.79	9.68	-2.26
3,703.00	44.30	2.00	3,636.07	207.16	215.71	205.72	6.05	5.76	-2.73
3,734.00	47.00	2.00	3,657.74	229.31	216.48	227.87	8.71	8.71	0.00



Company:	Unit Petroleum	Local Co-ordinate Reference:	Well Haw 15 #2H
Project:	Reno County, Kansas [NAD 83]	TVD Reference:	14' KB @ 1756.00usft (UDI 331)
Site:	Section 15 T25S-R10W	MD Reference:	14' KB @ 1756.00usft (UDI 331)
Well:	Haw 15 #2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
5,896.00	87.80	0.30	3,923.95	2,312.48	292.82	2,310.49	2.33	1.80	1.48	
5,959.00	89.20	0.90	3,925.60	2,375.46	293.48	2,373.46	2.42	2.22	0.95	
6,019.00	88.80	0.90	3,926.65	2,435.44	294.42	2,433.43	0.67	-0.67	0.00	
6,081.00	90.00	1.50	3,927.30	2,497.42	295.72	2,495.41	2.16	1.94	0.97	
6,142.00	91.40	1.60	3,926.55	2,558.39	297.37	2,556.37	2.30	2.30	0.16	
6,204.00	90.90	1.90	3,925.31	2,620.35	299.27	2,618.31	0.94	-0.81	0.48	
6,265.00	89.80	1.80	3,924.94	2,681.32	301.24	2,679.26	1.81	-1.80	-0.16	
6,326.00	89.50	2.20	3,925.31	2,742.28	303.36	2,740.21	0.82	-0.49	0.66	
6,387.00	89.70	2.10	3,925.73	2,803.24	305.65	2,801.15	0.37	0.33	-0.16	
6,449.00	89.30	2.60	3,926.27	2,865.18	308.19	2,863.07	1.03	-0.65	0.81	
6,510.00	89.20	2.30	3,927.07	2,926.12	310.80	2,923.99	0.52	-0.16	-0.49	
6,573.00	90.20	1.90	3,927.40	2,989.08	313.11	2,986.93	1.71	1.59	-0.63	
6,636.00	90.10	1.70	3,927.24	3,052.04	315.09	3,049.89	0.35	-0.16	-0.32	
6,699.00	89.80	1.40	3,927.29	3,115.02	316.79	3,112.85	0.67	-0.48	-0.48	
6,763.00	89.90	0.80	3,927.46	3,179.01	318.02	3,176.83	0.95	0.16	-0.94	
6,827.00	90.20	359.90	3,927.40	3,243.01	318.41	3,240.82	1.48	0.47	-1.41	
6,889.00	89.40	359.40	3,927.62	3,305.00	318.03	3,302.82	1.52	-1.29	-0.81	
6,952.00	89.70	359.60	3,928.12	3,368.00	317.48	3,365.82	0.57	0.48	0.32	
7,016.00	90.40	359.40	3,928.06	3,432.00	316.93	3,429.82	1.14	1.09	-0.31	
7,078.00	91.70	359.90	3,926.92	3,493.98	316.55	3,491.81	2.25	2.10	0.81	
7,143.00	89.80	1.10	3,926.07	3,558.97	317.11	3,556.79	3.46	-2.92	1.85	
7,206.00	90.80	1.00	3,925.74	3,621.96	318.27	3,619.77	1.60	1.59	-0.16	
7,268.00	89.50	1.00	3,925.58	3,683.95	319.35	3,681.75	2.10	-2.10	0.00	
7,332.00	90.40	0.50	3,925.64	3,747.94	320.19	3,745.74	1.61	1.41	-0.78	
7,395.00	91.00	0.60	3,924.87	3,810.93	320.79	3,808.72	0.97	0.95	0.16	
7,459.00	90.40	1.50	3,924.09	3,874.92	321.97	3,872.70	1.69	-0.94	1.41	
7,522.00	91.30	1.30	3,923.15	3,937.89	323.51	3,935.66	1.46	1.43	-0.32	
7,585.00	89.80	1.40	3,922.55	4,000.87	324.99	3,998.63	2.39	-2.38	0.16	
7,649.00	90.00	1.90	3,922.66	4,064.84	326.83	4,062.59	0.84	0.31	0.78	
7,712.00	90.60	1.20	3,922.33	4,127.82	328.54	4,125.55	1.46	0.95	-1.11	
7,776.00	88.80	359.70	3,922.66	4,191.81	329.04	4,189.54	3.66	-2.81	-2.34	
7,840.00	89.60	359.70	3,923.56	4,255.80	328.70	4,253.53	1.25	1.25	0.00	
7,904.00	90.20	0.00	3,923.67	4,319.80	328.54	4,317.53	1.05	0.94	0.47	
7,965.00	90.90	359.40	3,923.08	4,380.80	328.22	4,378.52	1.51	1.15	-0.98	
8,028.00	90.30	358.90	3,922.42	4,443.79	327.28	4,441.52	1.24	-0.95	-0.79	
8,091.00	90.10	358.50	3,922.20	4,506.77	325.85	4,504.51	0.71	-0.32	-0.63	
8,155.00	90.80	358.30	3,921.70	4,570.74	324.07	4,568.49	1.14	1.09	-0.31	
8,217.00	89.70	358.00	3,921.43	4,632.71	322.06	4,630.47	1.84	-1.77	-0.48	
8,280.00	89.70	358.10	3,921.76	4,695.67	319.92	4,693.45	0.16	0.00	0.16	
8,344.00	90.20	357.60	3,921.82	4,759.63	317.52	4,757.42	1.10	0.78	-0.78	
8,357.14	90.36	357.93	3,921.75	4,772.75	317.01	4,770.54	2.80	1.25	2.50	
Haw 15 2H PBHL (7.19)										
8,376.00	90.60	358.40	3,921.59	4,791.61	316.40	4,789.40	2.80	1.25	2.50	
Last MWD Survey										



Company:	Unit Petroleum	Local Co-ordinate Reference:	Well Haw 15 #2H
Project:	Reno County, Kansas [NAD 83]	TVD Reference:	14' KB @ 1756.00usft (UDI 331)
Site:	Section 15 T25S-R10W	MD Reference:	14' KB @ 1756.00usft (UDI 331)
Well:	Haw 15 #2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,420.00	90.60	358.40	3,921.13	4,835.59	315.17	4,833.39	0.00	0.00	0.00	
Projection to TD										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
8,376.00	3,921.59	4,791.61	316.40	Last MWD Survey	
8,420.00	3,921.13	4,835.59	315.17	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____



Unit Petroleum Company

Date of Last Revision:
14-Oct-14

Well: Haw 15 #2H
Location: 15-25S-10W
County, State: Reno County, KS
Surface Location: 185' FSL & 2,320' FEL

API No.: 1515521706
Rig: Unit Drilling #331
Engineer: Tom Carrington (918) 477-4535
Geology: Rob Wilson (918) 477-5728

OH Size

