KOLAR Document ID: 1464478

Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION OIL & GAS CONSERVATION DIVISION

Form ACO-1
January 2018
Form must be Typed
Form must be Signed
All blanks must be Filled

WELL COMPLETION FORM WELL HISTORY - DESCRIPTION OF WELL & LEASE

Name:	
Feet from North / South Li	
City: State: Zip:	∃ast
Contact Person:	ne of Section
Phone: () NE NW SE SW CONTRACTOR: License #	ne of Section
CONTRACTOR: License #	
Name:	
Name:	
Wellsite Geologist:	xxx.xxxxx)
Purchaser:	
Designate Type of Completion:	_
New Well Re-Entry Workover Field Name:	
Producing Formation:	
Gas DH EOR	
OG GSW Total Vertical Depth: Plug Back Total Depth:	
CM (Coal Bed Methane) Amount of Surface Pipe Set and Cemented at:	Feet
☐ Cathodic ☐ Other (Core, Expl., etc.): Multiple Stage Cementing Collar Used? ☐ Yes ☐ No	
If Workover/Re-entry: Old Well Info as follows:	Feet
Operator: If Alternate II completion, cement circulated from:	
Well Name: feet depth to:w/	sx cmt.
Original Comp. Date: Original Total Depth:	
☐ Deepening ☐ Re-perf. ☐ Conv. to EOR ☐ Conv. to SWD ☐ Drilling Fluid Management Plan	
Plug Back Liner Conv. to GSW Conv. to Producer (Data must be collected from the Reserve Pit)	
Chloride content:ppm Fluid volume:	bbls
Commingled Permit #: Dewatering method used:	
SWD Permit #: Location of fluid disposal if hauled offsite:	
EOR Permit #:	
GSW Permit #: Operator Name:	
Lease Name: License #:	
Spud Date or Date Reached TD Completion Date or Quarter Sec. Twp. S. R	East West
Recompletion Date Recompletion Date Countv: 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 Drill Stem Tests Received							
Geologist Report / Mud Logs Received							
UIC Distribution							
ALT I III Approved by: Date:							

KOLAR Document ID: 1464478

Page Two

Operator Name:					Lease Nam	ne:			Well #:			
Sec Tw	pS. F	R [East	West	County:							
open and closed and flow rates if	, flowing and sh gas to surface t ty Log, Final Lo	nut-in pressurest, along wit	es, whe h final c ain Geo	ther shut-in pre hart(s). Attach physical Data a	essure reached extra sheet if r and Final Electr	station more : ric Loc	level, hydrosta space is needed	tic pressures, d.	bottom hole tempe	val tested, time tool erature, fluid recovery, Digital electronic log		
Drill Stem Tests (Attach Addit			Ye	es No		Lo	og Formatio	n (Top), Deptl	n and Datum	Sample		
Samples Sent to	Geological Sur	vey	Ye	es 🗌 No		Name)		Тор	Datum		
Cores Taken Electric Log Run Geologist Repor List All E. Logs F	t / Mud Logs		Y€ Y€	es No								
			Repo		RECORD [Nev	w Used rmediate, producti	on. etc.				
Purpose of St		ze Hole Orilled	Siz	e Casing (In O.D.)	Weight Lbs. / Ft.		Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives		
				ADDITIONAL	OF MENTING /							
Purpose:	[Depth	Typo	of Cement	# Sacks Use		EEZE RECORD	Typo a	nd Percent Additives			
Perforate Protect Ca Plug Back	Top	Bottom	туре	or cement	# Sacks Use	,u		туре а	and referring additives			
Plug Off Z												
Did you perform Does the volum Was the hydraul	e of the total base	fluid of the hyd	draulic fra	cturing treatmen		•	Yes ns? Yes	No (If No	, skip questions 2 an , skip question 3) , fill out Page Three o	,		
Date of first Produ	ction/Injection or	Resumed Produ	uction/	Producing Meth			Coolift 0	thor (Fundain)				
Estimated Produc	otion	Oil Bb	le.	Flowing Gas	Pumping Mcf	Wate		ther <i>(Explain)</i> bls.	Gas-Oil Ratio	Gravity		
Per 24 Hours		Oli Bb	15.	Gas	IVICI	vvale	ı Di	JIS.	Gas-Oil Hallo	Gravity		
DISPO	OSITION OF GAS	S:		N	METHOD OF CO	MPLE.	TION:		PRODUCTIO	N INTERVAL:		
Vented	Sold Use	d on Lease		Open Hole		Dually		nmingled	Тор	Bottom		
(If vente	ed, Submit ACO-18	.)			(5	SUDITIIL I	ACO-5) (Subi	mit ACO-4)				
Shots Per Foot	Perforation Top	Perforation Bottom	on	Bridge Plug Type	Bridge Plug Set At		Acid,		Cementing Squeeze Kind of Material Used)	Record		
TUBING RECOR	D: Size:		Set At:		Packer At:							

Form	ACO1 - Well Completion					
Operator	Voolsey Operating Company, LLC					
Well Name	HARDER 2					
Doc ID	1464478					

Casing

Purpose Of String	Size Hole Drilled	Size Casing Set	Weight	Setting Depth	Type Of Cement	Type and Percent Additives
Surface	12.25	8.625	23	268	60/40 POZ	SEE TICKET



TREATMENT REPORT

Jerls.	y ofern	gring 1	ompany	Lease No.					Date		-18-	_ 19	
aase H	ArDer	-3		Well #	2							t	
Field Order #	7 Station	10/41	4		Ca	sing 6			County	''' <i>J</i>		Sta	te W
Type Job	2-42	878	Surf	Ace		·····	Formation			Le	gal Descri <u>pt</u> io	<u>~</u> 305-	-06W
PIPE	E DATA	PER	FORATING	G DATA	l	UID U					ENT RESU	ME	
Casing Size/	Tubing Siz	ze Shots/	Ft		Acid Z	60	5MS B.	0/40	RATE	PRESS	ISIP		
Depth 768		From	To	**************************************	Pre Pad	3 %	, CC	Max			5 Min.	•	
Volume 7	Volume	From	То		Pad	,25	PPS	Min			10 Mi	n.	
Max Press	Max Press	From	To		Frac			Avg			15 Mi		
Well Sonnection	on Annulus V	ol. From	То					HHP Used				us Pressi	ıre
Plug Depthy	Packer De	epth From	То		Flush	15,		Gas Volur	za service en establica de la calca		Total	Load	
Customer Rep	oresentative	Allen	OICH	Station			54010	444	Treate	r MA	7741		
Service Units	ሄ 335ን		27463		709	59	21010						
	MATTAL		marque	2	B	rol	N n						
Time 🗚	Casing 1 Pressure	Tubing Pressure	Bbls. Pu	mped	Rate					Service L			
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7:40))	(_		csng						
7:50							HOUN	70	csny	/B~	tou	C W	. Kis
7:50			3	<u> </u>			pump	<u>3</u>	<u>bb(</u>	WH	, /	0	
8:00			5	5			mix	26	<u>0 '</u>	5US	60/40	PU	
87.18			-		3		STAM	dis	<i>P.</i>				
8:20							plug	down	15	hut	in we	/ (
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1024	4 NE Hiv	vay 61 •	P.O. Box	(8613 (Pratt,	KS 6	7124-86	13 • (62	0) 672	-1201	• Fax (62	0) 672	-5383



TREATMENT REPORT

Customer	ioolsey	· Ste	1ATITAL	Lease N	0.					Date		2	10.			
Lease	HAIDE	2/		Well # Z					1	5 ~	28-	-19				
Field Order #	- Station	n Prut	T	<u>'</u>		Casing		Depth	250	County	V	ingm.	An	Sta	ate \mathcal{U}_{I}	
Type Job -Z	-42	Plus F	o Abu	ndun				nation			Ť	Legal Des	scription			
	DATA		RFORATII			FLUID	USED			TF	REATI	MENT R	ESUME			
Casing Size	Tubing Si	ze Shots	/Ft		Ac	oid 180	541	00	409	BAJE I	PRESS ISIP					
Depth	Depth	From	-	Го	Pr	e Pad			Max		5 Min.					
Volume	Volume	From		Го	Pa	ad			Min				10 Min.	3		
Max Press	Max Pres	s From	<u> </u>	Го	Fr	ac			Avg				15 Min.			
Well Connectio	n Annulus \	/ol. From	1	Го					HHP Use	d			Annulus I	Press	ure	
Plug Depth	Packer De	epth From	7	Го	Flu	ush			Gas Volui	me			Total Loa	d		
Customer Rep	resentative	Alan Di	reu	Statio	on Mai	nager W	e stevi	MAR	1	Treate	1	ATT	AL			
Service Units	43753		84981	709	2ں											
Driver Names	MATTAI		MAI	auez			B	100	N M							
Time	Casing Pressure	Tubing Pressure	Bbls. F	Pumped		Rate				,	Service	Log				
8:00	(0	<u> </u>	luca	rival	5 A	+ Ktey	Me	eTi	rny	
								1	ST	Plug	@	128	50,			
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10:14	(_	200		7.5		4	~	nix	1 LUCATION SAFFEY MEETING 1 ST Pluy @ 1280 MP 15 bbl mare- ix 355ms 60/40 Puz							
10:17)	100		5.		4	P	un	1P	5 m	4784					
10:19		100		४		4										
									Pump 10 bbl napper MIX 355M 60/40PVZ							
10:39		کوں	-/	lo		4	PL	n Mp	1	0 16	h	400				
10:41		200		7.5		4	Mix 75543 60/40PUZ									
17.41		50		8		.4	70 Plug @ 318									
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Woolsey Operating Co

31-30S-6W Kingman

125 N Market Ste 1000 Wichita, KS 67202 Harder 2

Job Ticket: 64970 **DST#:1**

ATTN: Bill Klaver Test Start: 2019.05.25 @ 01:28:00

GENERAL INFORMATION:

Formation: Mississippi

Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Initial)

Time Tool Opened: 03:52:17 Tester: Leal Cason
Time Test Ended: 10:02:02 Unit No: 74

Interval: 4335.00 ft (KB) To 4345.00 ft (KB) (TVD)

Total Depth: 4345.00 ft (KB) (TVD)

Hole Diameter: 7.88 inchesHole Condition: Good

Reference Elevations: 1592.00 ft (KB)

KB to GR/CF: 12.00 ft

1580.00 ft (CF)

Serial #: 8672 Inside

Press@RunDepth: 44.86 psig @ 4336.00 ft (KB) Capacity: psig

 Start Date:
 2019.05.25
 End Date:
 2019.05.25
 Last Calib.:
 2019.05.25

 Start Time:
 01:28:01
 End Time:
 10:02:02
 Time On Btm:
 2019.05.25 @ 03:51:47

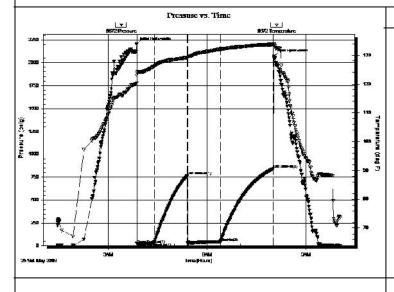
 Time Off Btm:
 2019.05.25 @ 08:01:17

TEST COMMENT: IF: Strong Blow , BOB in 90 seconds, Built to 49 inches

ISI: No Blow Back

FF: Strong Blow, BOB Immediate, Built to 73 inches

FSI: No Blow Back



PRESSURE SUMMARY Time Pressure Temp Annotation (Min) (psin) (deg F)

rime	Pressure	remp	Annotation
(Min.)	(psig)	(deg F)	
0	2203.72	120.24	Initial Hydro-static
1	22.29	123.00	Open To Flow (1)
33	31.34	126.23	Shut-In(1)
92	765.87	129.15	End Shut-In(1)
93	22.56	129.16	Open To Flow (2)
153	44.86	132.10	Shut-In(2)
249	843.30	133.75	End Shut-In(2)
250	2069.18	133.75	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
0.00	682 GIP	0.00
62.00	GOWCM 20%G 10%O 24%W 36%M	0.30
1		

Gas Rates

Choke (inches)	Pressure (psig)	Gas Rate (MMcf/d)	ı

Trilobite Testing, Inc Ref. No: 64970 Printed: 2019.05.25 @ 23:42:05



Woolsey Operating Co

31-30S-6W Kingman

125 N Market Ste 1000 Wichita, KS 67202

Harder 2

Job Ticket: 64970

DST#: 1

ATTN: Bill Klaver

Test Start: 2019.05.25 @ 01:28:00

GENERAL INFORMATION:

Formation: Mississippi

Time Tool Opened: 03:52:17

Time Test Ended: 10:02:02

Deviated: Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Initial) Tester: Leal Cason

Unit No: 74

Interval: 4335.00 ft (KB) To 4345.00 ft (KB) (TVD)

Reference Elevations:

1592.00 ft (KB) 1580.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

4345.00 ft (KB) (TVD)

KB to GR/CF: 12.00 ft

Serial #: 6751 Press@RunDepth: Outside

psig @

4336.00 ft (KB)

Capacity: 2019.05.25 Last Calib.: psig

Start Date: 2019.05.25 End Date:

Time On Btm: 10:02:02

2019.05.25

Start Time:

Total Depth:

01:28:01

End Time:

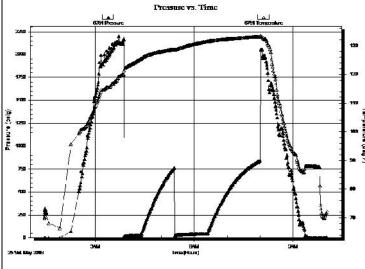
Time Off Btm:

TEST COMMENT: IF: Strong Blow , BOB in 90 seconds, Built to 49 inches

ISI: No Blow Back

FF: Strong Blow, BOB Immediate, Built to 73 inches

FSI: No Blow Back



PRESSURE SUMMARY

			(LCCC)	L OOMMIN (I C)
	Time	Pressure	Temp	Annotation
	(Min.)	(psig)	(deg F)	
2				
2				
Temperature (dag F)				
il a				
3				
		1		

Recovery

Length (ft)	Description	Volume (bbl)
0.00	682 GIP	0.00
62.00	GOWCM 20%G 10%O 24%W 36%M	0.30

Gas Rates

Choke (inches) Pressure (psig) Gas Rate (MMcf/d)

Ref. No: 64970 Printed: 2019.05.25 @ 23:42:05 Trilobite Testing, Inc.



FLUID SUMMARY

Woolsey Operating Co

31-30S-6W Kingman

125 N Market Ste 1000 Wichita, KS 67202 Harder 2

Job Ticket: 64970

DST#: 1

ATTN: Bill Klaver

Test Start: 2019.05.25 @ 01:28:00

Mud and Cushion Information

Mud Type:Gel ChemCushion Type:Oil A Pl:deg A PlMud Weight:9.00 lb/galCushion Length:ftWater Salinity:68000 ppm

Mud Weight: 9.00 lb/gal Cushion Length: ft
Viscosity: 62.00 sec/qt Cushion Volume: bbl

Water Loss: 8.79 in³ Gas Cushion Type:

Resistivity: ohm.m Gas Cushion Pressure: psig

Salinity: 4000.00 ppm Filter Cake: 0.02 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
0.00	682 GIP	0.000
62.00	GOWCM 20%G 10%O 24%W 36%M	0.305

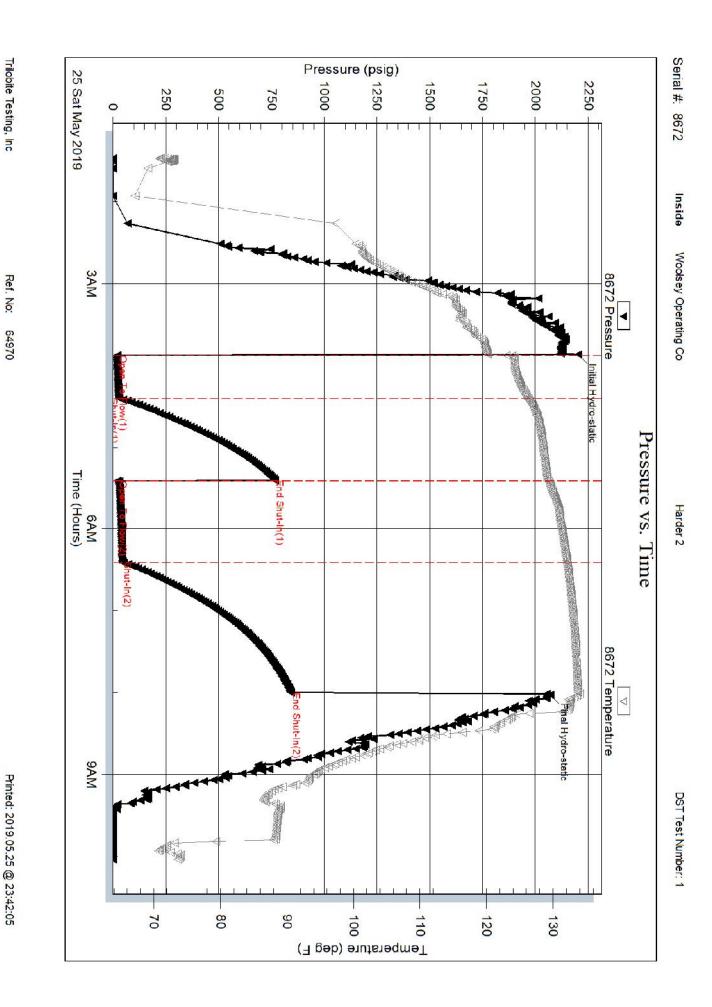
Total Length: 62.00 ft Total Volume: 0.305 bbl

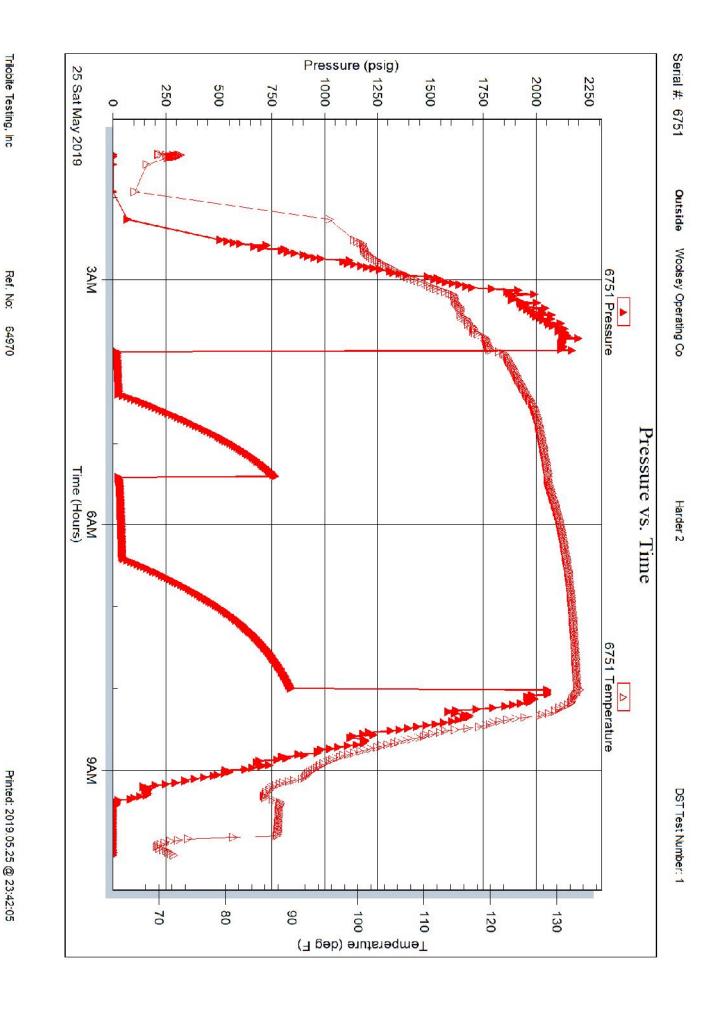
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

Laboratory Name: Laboratory Location:

Recovery Comments: RW was .1 @ 80 degrees

Trilobite Testing, Inc Ref. No: 64970 Printed: 2019.05.25 @ 23:42:05







Woolsey Operating Co

31-30S-6W Kingman

125 N Market Ste 1000 Wichita, KS 67202

ATTN: Bill Klaver

Reference Elevations:

Harder 2

Job Ticket: 64971 DST#: 2

Test Start: 2019.05.25 @ 17:15:00

GENERAL INFORMATION:

Formation: Mississippi

Deviated: Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Reset)

Time Tool Opened: 19:07:32 Tester: Leal Cason Time Test Ended: 01:55:02 Unit No: 74

Interval: 4343.00 ft (KB) To 4355.00 ft (KB) (TVD)

Total Depth: 4355.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 12.00 ft

1592.00 ft (KB)

1580.00 ft (CF)

Serial #: 8672 Inside

Press@RunDepth: 94.72 psig @ 4344.00 ft (KB) Capacity: psig

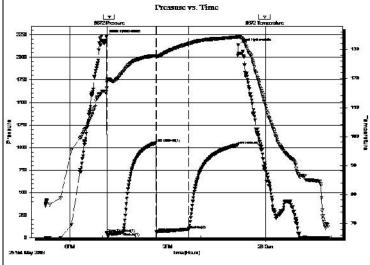
Start Date: 2019.05.25 End Date: 2019.05.26 Last Calib.: 2019.05.26 17:15:01 Start Time: End Time: 01:55:02 Time On Btm: 2019.05.25 @ 19:06:47 Time Off Btm: 2019.05.25 @ 23:09:02

TEST COMMENT: IF: Fair Blow, BOB in 8 minutes, Built to 27 inches

ISI: No Blow Back

FF: Fair Blow, BOB in 24 minutes, Built to 34 inches

FSI: No Blow Back



Ī	Time	Pressure	Temp	Annotation
	(Min.)	(psig)	(deg F)	
	0	2224.64	115.23	Initial Hydro-static
	1	51.79	116.61	Open To Flow (1)
	31	61.41	122.33	Shut-In(1)
	92	1052.92	127.86	End Shut-In(1)
!	92	66.19	127.64	Open To Flow (2)
	152	94.72	132.01	Shut-In(2)
	242	1029.63	134.28	End Shut-In(2)
	243	2134.67	134.56	Final Hydro-static
				-

PRESSURE SUMMARY

Recovery

Length (ft)	Description	Volume (bbl)	
0.00	209 GIP	0.00	
121.00	MCW 10%M 90%W	0.60	
40.00 SOCM 2%O 98%M		0.56	
* Recovery from multiple tests			

Gas Rates			
Choke (inches)	Pressure (psig)	Gas Rate (MMcf/d)	

Ref. No: 64971 Printed: 2019.05.26 @ 08:24:39 Trilobite Testing, Inc.



Woolsey Operating Co

31-30S-6W Kingman

125 N Market Ste 1000 Wichita, KS 67202

Harder 2

Job Ticket: 64971

DST#: 2

ATTN: Bill Klaver

Test Start: 2019.05.25 @ 17:15:00

GENERAL INFORMATION:

Formation: Mississippi

Time Tool Opened: 19:07:32

Time Test Ended: 01:55:02

Deviated: Whipstock: ft (KB)

Test Type: Conventional Bottom Hole (Reset) Tester: Leal Cason

Unit No: 74

1592.00 ft (KB)

Reference Elevations:

1580.00 ft (CF)

4355.00 ft (KB) (TVD) 7.88 inches Hole Condition: Good

KB to GR/CF: 12.00 ft

Serial #: 6751 Press@RunDepth: Outside

psig @

4343.00 ft (KB) To 4355.00 ft (KB) (TVD)

4344.00 ft (KB)

Capacity: 2019.05.26 Last Calib.: psig

Start Date: 2019.05.25 End Date:

01:55:02 Time On Btm: 2019.05.26

Start Time:

Interval:

Total Depth:

Hole Diameter:

17:15:01

End Time:

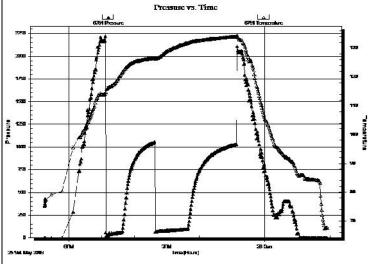
Time Off Btm:

TEST COMMENT: IF: Fair Blow, BOB in 8 minutes, Built to 27 inches

ISI: No Blow Back

FF: Fair Blow, BOB in 24 minutes, Built to 34 inches

FSI: No Blow Back



PRESSURE	SUMMARY
----------	---------

	FILESSUIL SUMMANT			
•	Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
,				

Recovery

Length (ft)	Description	Volume (bbl)	
0.00	0.00 209 GIP 121.00 MCW 10%M 90%W		
121.00			
40.00	SOCM 2%O 98%M	0.56	
* Recovery from multiple tests			

Gas Rates

Choke (inches) Pressure (psig) Gas Rate (MMcf/d)

Ref. No: 64971 Printed: 2019.05.26 @ 08:24:40 Trilobite Testing, Inc.



FLUID SUMMARY

Woolsey Operating Co

31-30S-6W Kingman

125 N Market Ste 1000 Wichita, KS 67202

Harder 2

Job Ticket: 64971

DST#: 2

ATTN: Bill Klaver

Test Start: 2019.05.25 @ 17:15:00

Mud and Cushion Information

Oil API: Mud Type: Gel Chem Cushion Type: deg API 72000 ppm

Mud Weight: 9.00 lb/gal Cushion Length: ft Water Salinity:

Viscosity: 69.00 sec/qt Cushion Volume: bbl

8.79 in³ Gas Cushion Type:

Gas Cushion Pressure: Resistivity: ohm.m psig

Salinity: 4000.00 ppm 0.02 inches Filter Cake:

Recovery Information

Water Loss:

Recovery Table

Length ft	Description	Volume bbl
0.00	209 GIP	0.000
121.00	MCW 10%M 90%W	0.595
40.00	SOCM 2%O 98%M	0.561

Total Length: 161.00 ft Total Volume: 1.156 bbl

Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

Laboratory Name: Laboratory Location:

Recovery Comments: RW was .12 @ 64 degrees

Trilobite Testing, Inc Ref. No: 64971 Printed: 2019.05.26 @ 08:24:40 Trilobite Testing, Inc

Ref. No: 64971

Printed: 2019.05.26 @ 08:24:40

Trilobite Testing, Inc

Ref. No: 64971

Printed: 2019.05.26 @ 08:24:40

