

State of West Virginia
Department of Environmental Protection
Office of Oil and Gas

Well Operator's Report of Well Work

Farm name: Kennith and Erika Mcclung Operator Well No.: HR 496
 LOCATION: Elevation: 855' Quadrangle: Burning Springs WV 7.5'
 District: Spring Creek County: Wirt
 Latitude: 3219' Feet South of 38 Deg. 55 Min. 00 Sec.
 Longitude 7351' Feet West of 81 Deg. 20 Min. 00 Sec.

Company: Hard Rock Exploration

	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
Address: <u>1244 Martins Branch Road</u> <u>Charleston WV, 25312</u>				
Agent: <u>Marc Scholl</u>	<u>13 3/8"</u>	<u>33'</u>	<u>33'</u>	<u>N/A</u>
Inspector: <u>Joe Taylor</u>	<u>9 5/8"</u>	<u>755'</u>	<u>755'</u>	<u>378ft3 CTS</u>
Date Permit Issued: <u>8/27/13</u>	<u>7"</u>	<u>2151'</u>	<u>2151'</u>	<u>484ft3 CTS</u>
Date Well Work Commenced: <u>3/22/14</u>	<u>4.5"</u>	<u>8150'</u>	<u>8150'</u>	<u>130 ft3</u>
Date Well Work Completed: <u>4/23/14</u>				
Verbal Plugging:	<u>Gamma Log from (3695' - 8198'MD) KOP- 3740'</u>			
Date Permission granted on:	<u>Gyro Log from 3683' - surface, Open hole 2185' -surface</u>			
Rotary x Cable Rig				
Total Depth (feet): <u>8250'TMD, 4404'TVD</u>				RECEIVED
Fresh Water Depth (ft.): <u>540'</u>				Office of Oil and Gas
Salt Water Depth (ft.): <u>1764'</u>				JUN 23 2014
Is coal being mined in area (N/Y)? <u>N</u>				
Coal Depths (ft.): <u>N/A</u>				WV Department of Environmental Protection

OPEN FLOW DATA

Producing formation Lower Huron Shale Pay zone depth (ft) 4297'MD- 8250'MD
4221'TVD - 4404' TVD

Gas: Initial open flow 150 MCF/d Oil: Initial open flow Bbl/d
 Final open flow >2 MMCF/d Final open flow Bbl/d
 Time of open flow between initial and final tests 48 Hours
 Static rock Pressure 1350 psig (surface pressure) after 72 Hours

Second producing formation Pay zone depth (ft)
 Gas: Initial open flow MCF/d Oil: Initial open flow Bbl/d
 Final open flow MCF/d Final open flow Bbl/d
 Time of open flow between initial and final tests Hours
 Static rock Pressure psig (surface pressure) after Hours

NOTE: ON BACK OF THIS FORM PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

Signed: [Signature]
 By: President
 Date: 6/18/2014

Formation:	Top:	Bottom:
Soil/Sand/Shale	0	1630
Salt Sand	1630	1994
Big Injun	1994	2055
shale	2055	4404
Lower Huron Section	4210	4404

All depths shown As TVD

03/31/14 Finish running casing to depth of 8150' KB at 11:00pm. RU frac valve and DSA. MIRU Universal Well Services. RU to set packers on N2. Pump 5 bbls water and drop ball for toe sub. Follow ball with N2 at 3500 scf/min and step up to 7000 scf/min. Land ball and pressure up to set packers – gas flow shut off. Pressure up to 3000 psi and hold pressure for 10 min. RU to cmt annular. Pump 12 bbls Type 1 2% CaCl mixed at 15 ppg. Shut down let air vent. Pump additional 11 bbls cmt with 2 bbls water behind for total of 23 bbls cmt.

NOTE: THERE ARE NO PERFORATED INTERVALS IN THIS STYLE OF COMPLETION. THE PACKERS WILL SERVE AS STAGE ISOLATION AND THE BALL ACTIVATED MECHANICAL SLEEVES SERVE AS THE MEANS OF COMMUNICATION FROM WELLBORE TO FORMATION. ALL DEPTHS ARE INDICATED BELOW.

Stage	Sleeve	Sleeve Size	Ball Size	Packer
1	8040.46	HP	N/A	7937.71
2	7802.56	1.750	1.875	7699.91
3	7564.66	1.875	2.000	7418.01
4	7282.86	2.000	2.125	7136.01
5	6956.56	2.125	2.250	6809.81
6	6674.66	2.375	2.500	6527.91
7	6389.83	2.500	2.750	6249.10
8	6111.12	2.750	2.875	5970.49
9	5832.41	2.875	3.000	5691.68
10	5553.70	3.000	3.125	5412.97
11	5274.99	3.125	3.250	5134.16
12	4996.08	3.250	3.375	4855.35
13	4717.27	3.375	3.500	4576.49
14	4438.36	3.500	3.625	4297.58
Anchor				2524.40

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04/23/14 MIRU Nabors Stim crew. Pressure test lines. Casing pressure at 806 psi. Start pumping N2 on Stg 1 and open hydroport sleeve at 5137 psi. Increase rate and pump total of 1MM scf N2. Shut down and drop 1.875" ball for Stg 2. Follow ball with N2 at 20k scf/min. Had to increase rate to land ball. Land ball at 200-250k scf N2 and open seat at 4507 psi. Continue to increase rate and pump total of 1MM scf N2. Back rate down and drop 2" ball for Stg 3. Follow ball with N2 at 20k scf/min. Land ball with 175k scf. Open sleeve at 4272 psi. Increase rate and pump total of 1MM scf N2. Shut down to load balls. Drop 2.125" ball for Stg 4. Repeat Stimulation process for Stgs 4 – 14.

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	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7
Max P	5215	5552	4438	4512	4229	5005	5903
Avg P	5115	5358	4410	4412	4127	4934	5867
Max R	104.5	105.4	104.2	106.2	103.8	103.9	101.3
Avg R	102.5	103.1	103.0	103.3	101.9	102.4	97.3
Shut In	2471-2min	N/A	2183-5min	N/A	N/A	N/A	2524-5min
	Stage 8	Stage 9	Stage 10	Stage 11	Stage 12	Stage 13	Stage 14
Max P	5986	5869	5981	5928	5918	5649	5059
Avg P	5948	5856	5942	5906	5887	5538	4986
Max R	95.4	103.2	93.9	102.3	102.1	102.5	102.5
Avg R	94.0	101.2	92.7	100.4	100.9	101.3	101.5
Shut In	N/A	N/A	2632-5min	N/A	N/A	N/A	2373-5min

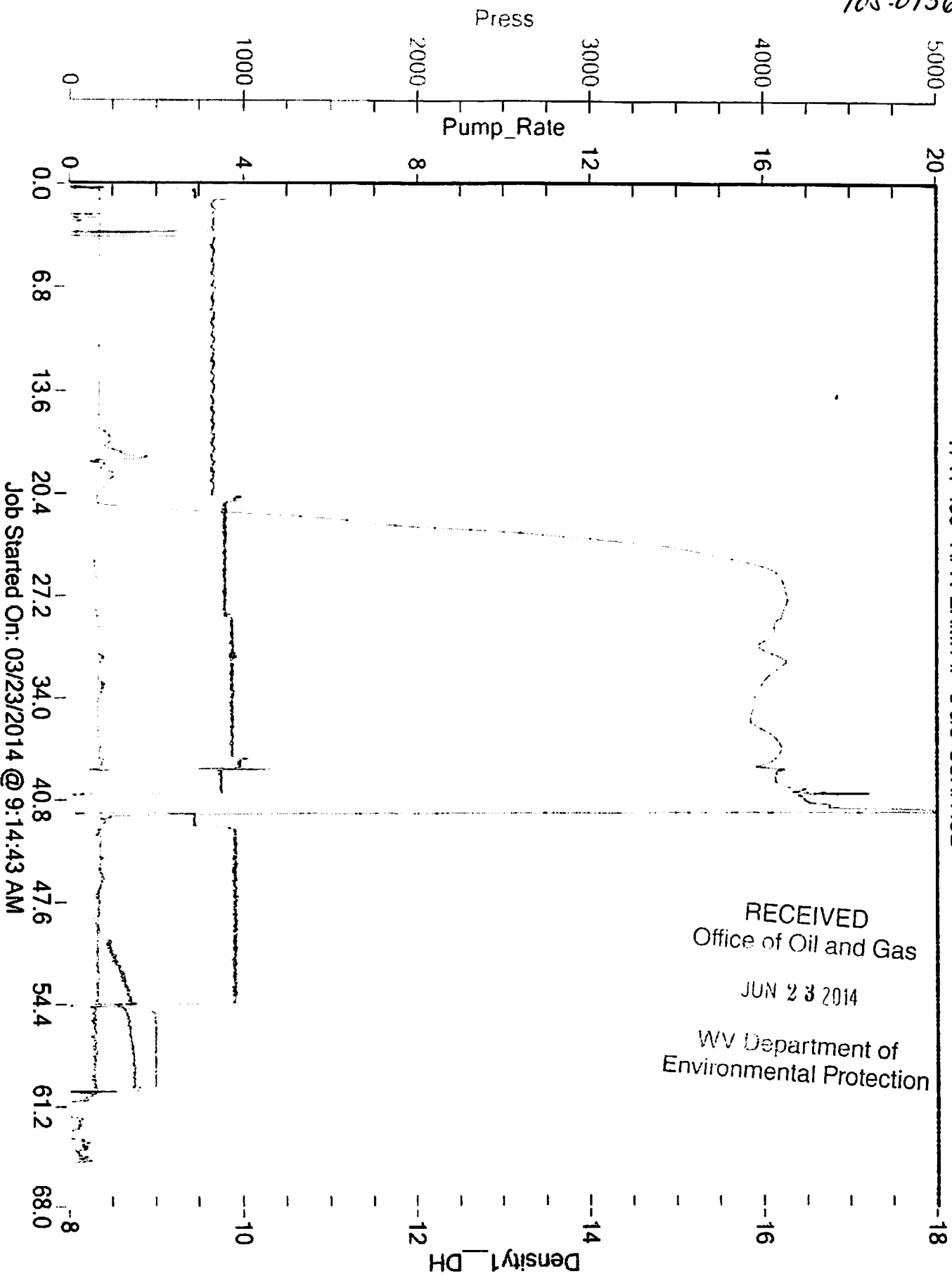
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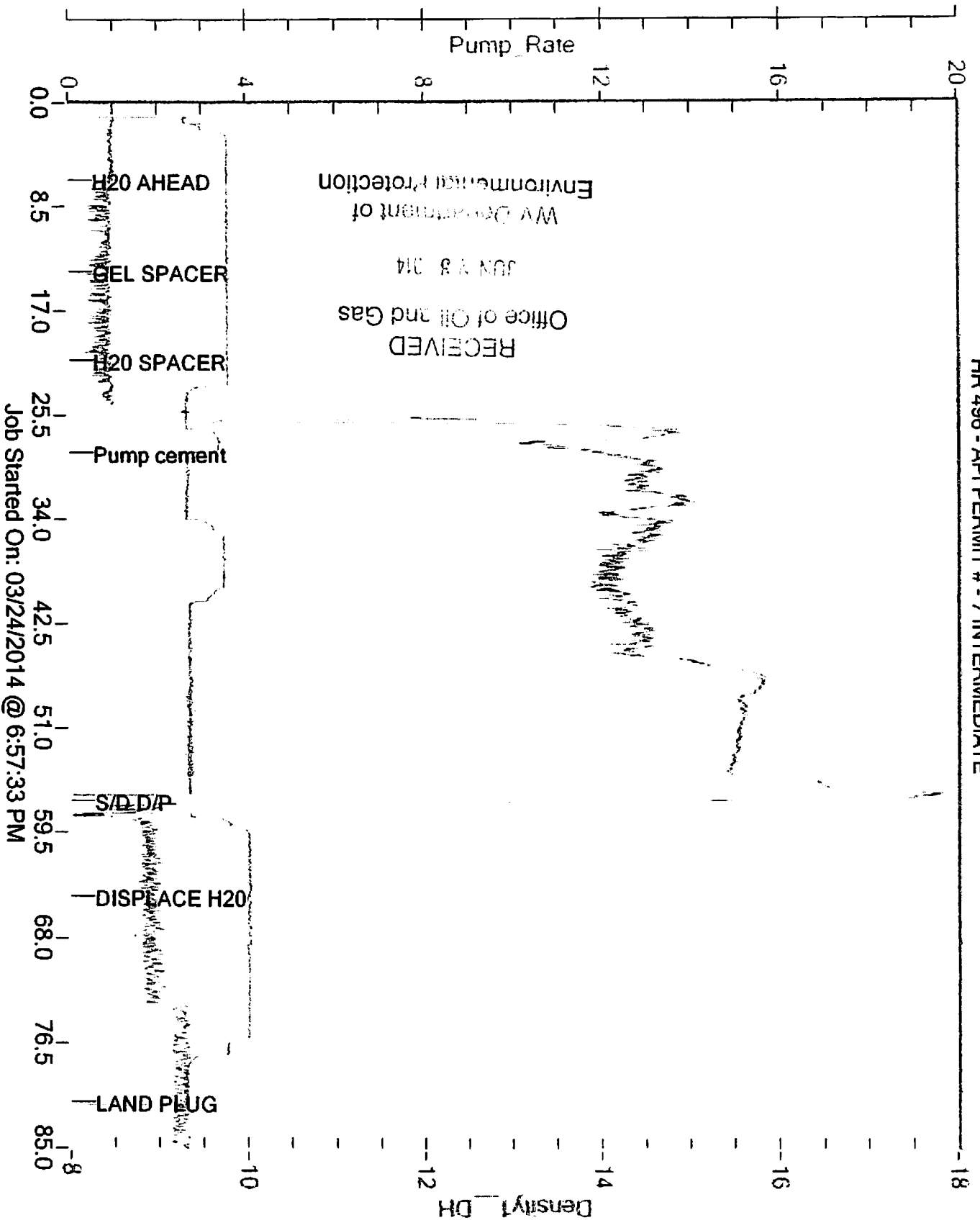
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08/15/2014

HARDROCK
HR 496 - API PERMIT # - 7 INTERMEDIATE



105-01369

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105-01369

API Permit #:

Customer: Hardrock

Lease and Well Name: HR 496

A.F.E. #:



Job Type: N2 packer set

Cement Operator: Shannon Bailey

Date Cemented: 3/31/2014

Drilling Contractor: Gas Co.

Cement Slurry Information

No. of Sacks	Cement Blend Composition	Yield (ft ³ /sk)	Mix Water (gal/sk)	Density (lb/gal)	(bb) Mix Water	(ft ³) of Slurry	(bb) of Slurry
	n/a						
					Totals		

Wellbore Information

	New/Used	Diameter (in)	Weight (lb/ft)	Top (ft)	Bottom (ft)	Collapse/Burst Pressures (psi)	Requested TOC (ft)	n/a
Casing	New	4.500	11.6	0	8,152		TVD (ft)	4,400
Previous Casing		7.000	20.0	0	2,151			
Tubing or Drill pipe							Displacement Depth (ft)	8,152
Open Hole		6.250		8,152	8,250			
Open Hole								

Pumping Returns

Cement Slurry Temperature Record (°F)

Fluid Information

Spacer or Gel Sweep Return Seen at Surface	Cement Returns Seen at Surface	Amount of Cement Returns (bb)	Cement Blend 1	Reading 1	Reading 2	Reading 3	Average	Mix Water Temp (°F)	n/a
			Blend 2					Displacement Fluid Type	
			Blend 3					Displacement Fluid Temp (°F)	n/a
								Displacement Fluid Density (lb/gal)	n/a

Time	Rate (bpm)	Volume (bb)	Pressure (psi)	Event or Stage Description
12:30				Arrive on loc. / safety meeting / spot trucks
12:40				Hook up
1:35			3500	press test
1:49		5		H2O
1:52				Drop ball
1:52				start N2
1:56			500	Pumping / 500 lb
2:06	6877 SCFM	64,455	1000	1000 lb
2:10	6868 SCFM	93,012	1500	1500 lb
2:14	6876 SCFM	117,585	2000	2000 lb
2:17	6856 SCFM	139,982	2500	2500 lb
2:20	6859 SCFM	161,478	3000	3000 lb
2:20				hold press for 20 mins
2:43				release press
3:01				rack up
3:20				leave loc.

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Comments:

Thank you for your business.

UWS Cement Operator Signature:

[Handwritten Signature]

Customer Representative Signature:

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