

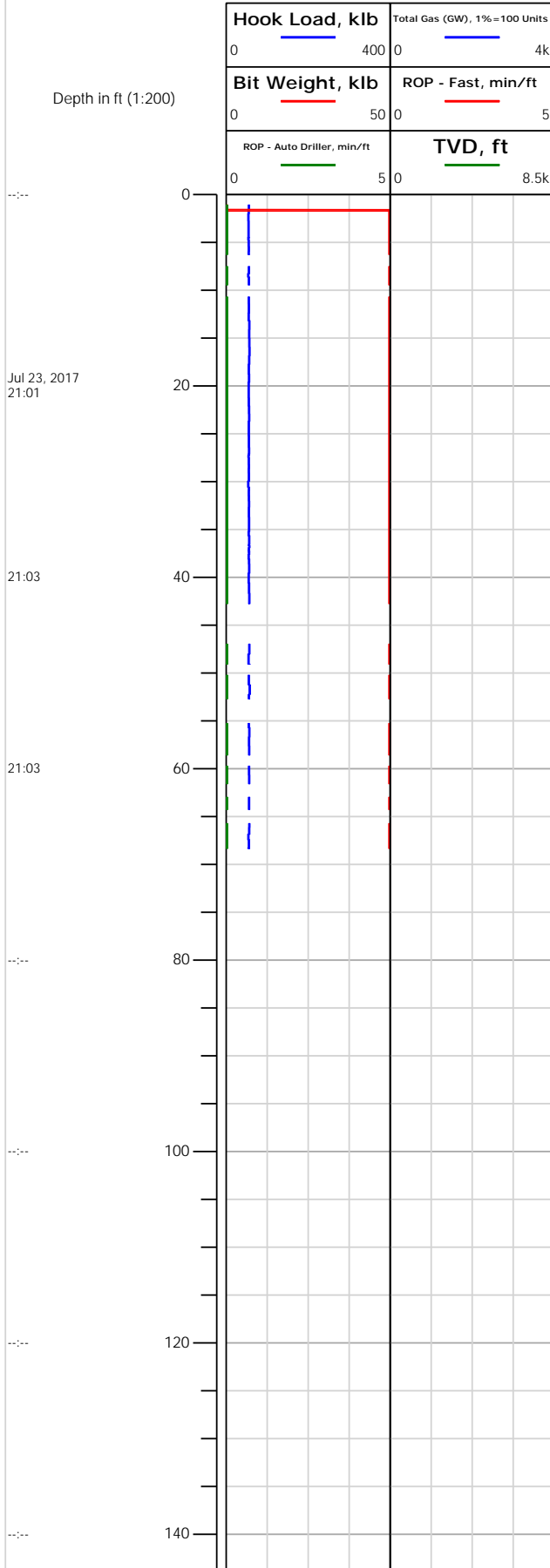


# Electronic Drilling Recorder

Operator: Laramie Energy  
Contractor: Helmerich & Payne Drlg Co

Well Name: Gunderson 20-09W  
Rig: 522

Location:





## Electronic Drilling Recorder

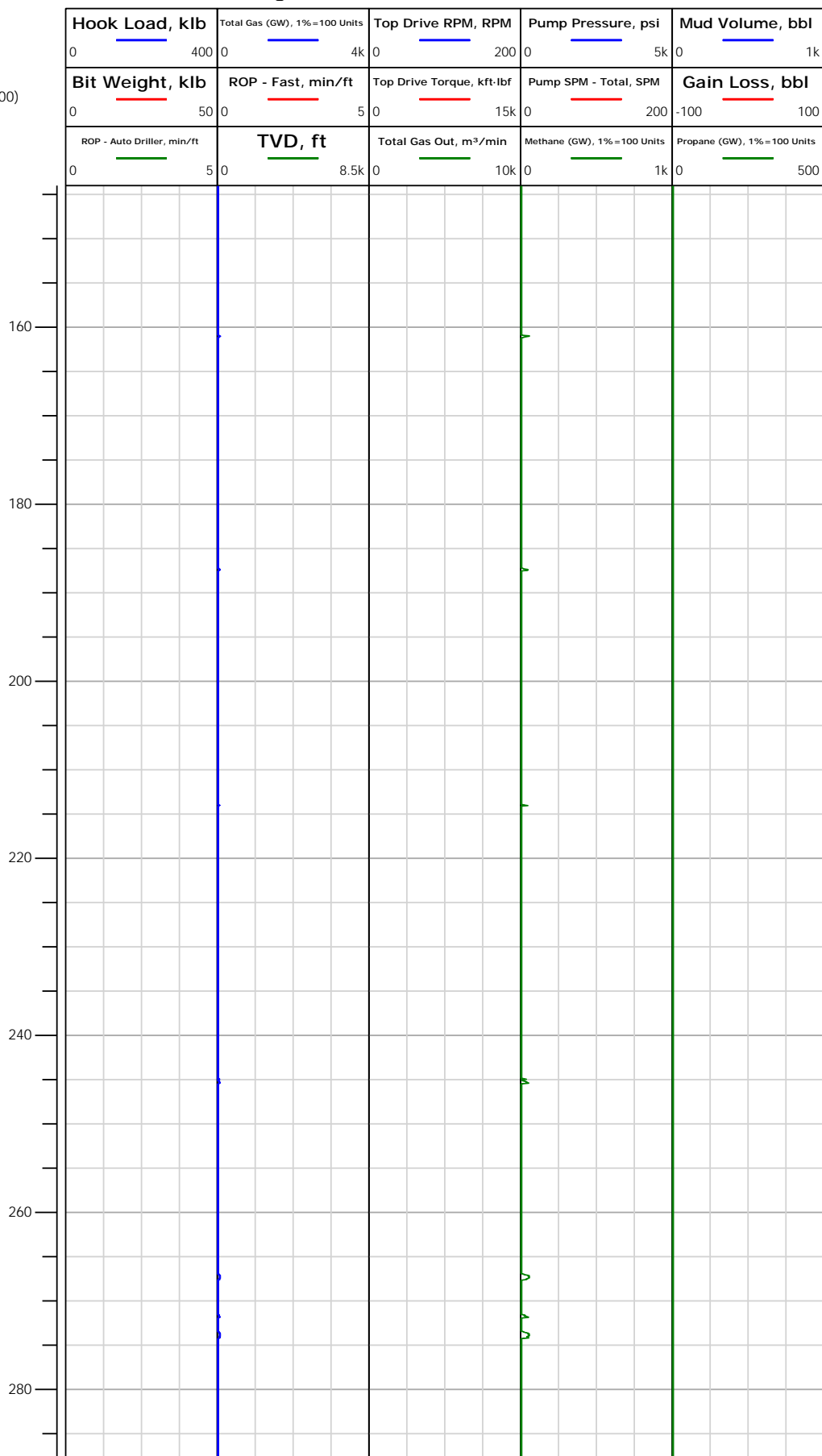
Operator: Laramie Energy  
Contractor: Helmerich & Payne Drlg Co

Well Name: Gunderson 20-09W  
Rig: 522

Location:

Notes

Depth in ft (1:200)



169.67: Connection @  
169.67 ft

200.00: Deviation Survey  
200.00 ft, Deviation 2 deg,  
Direction 232.5 deg

261.43: Connection @  
261.43 ft



**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drllg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Jul 27, 2017 7:42 AM

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drllg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

[illegible]

## Notes

443.73: Connection @  
443.73 ft

474.00: Deviation Survey  
474.00 ft, Deviation 2.7  
deg, Direction 225.2 deg

534.27: Connection @  
534.27 ft

566.00: Deviation Survey  
566.00 ft, Deviation 4.9  
deg, Direction 209.4 deg



# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes

Depth in ft (1:200)

Hook Load, klb	Total Gas (GW), 1%=100 Units	Top Drive RPM, RPM	Pump Pressure, psi	Mud Volume, bbl
0 400	0 4k	0 200	0 5k	0 1k
Bit Weight, klb	ROP - Fast, min/ft	Top Drive Torque, kft-lbf	Pump SPM - Total, SPM	Gain Loss, bbl
0 50	0 5	0 15k	0 200	-100 100
ROP - Auto Driller, min/ft	TVD, ft	Total Gas Out, m <sup>3</sup> /min	Methane (GW), 1%=100 Units	Propane (GW), 1%=100 Units
0 5	0 8.5k	0 10k	0 1k	0 500
580				
600				
620				
640				
660				
680				
700				
720				

625.50: Connection @  
625.50 ft

658.00: Deviation Survey  
658.00 ft, Deviation 5.8  
deg, Direction 205.3 deg

716.62: Connection @  
716.62 ft

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drllg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

[illegible]

## Notes

749.00: Deviation Survey  
749.00 ft, Deviation 8 deg,  
Direction 206.1 deg

807.33: Connection @  
807.33 ft

841.00: Deviation Survey  
841.00 ft, Deviation 11.2  
deg, Direction 211.6 deg

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

Depth in ft (1:200)

[illegible]

## Notes

898.56: Connection @  
898.57 ft

932.99: Deviation Survey  
933.00 ft, Deviation 11.9  
deg, Direction 210.7 deg

990.05: Connection @  
990.05 ft

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drllg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

Depth in ft (1:200)

[illegible]

## Notes

1024.00: Deviation Survey  
1024.00 ft, Deviation 11.6  
deg, Direction 206.7 deg

1081.22: Connection @  
1081.22 ft

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

## Notes

[illegible]



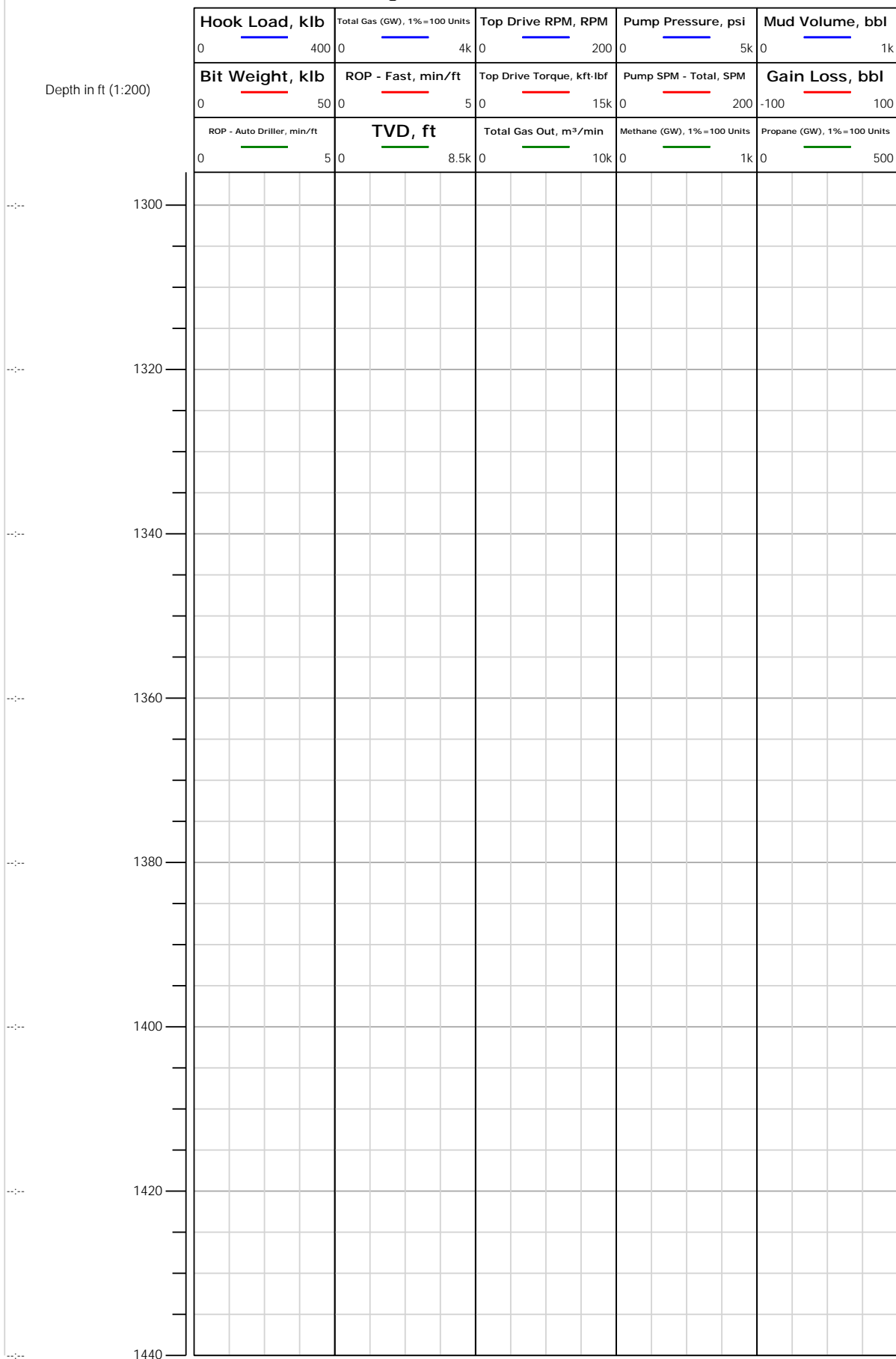
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes







# Electronic Drilling Recorder

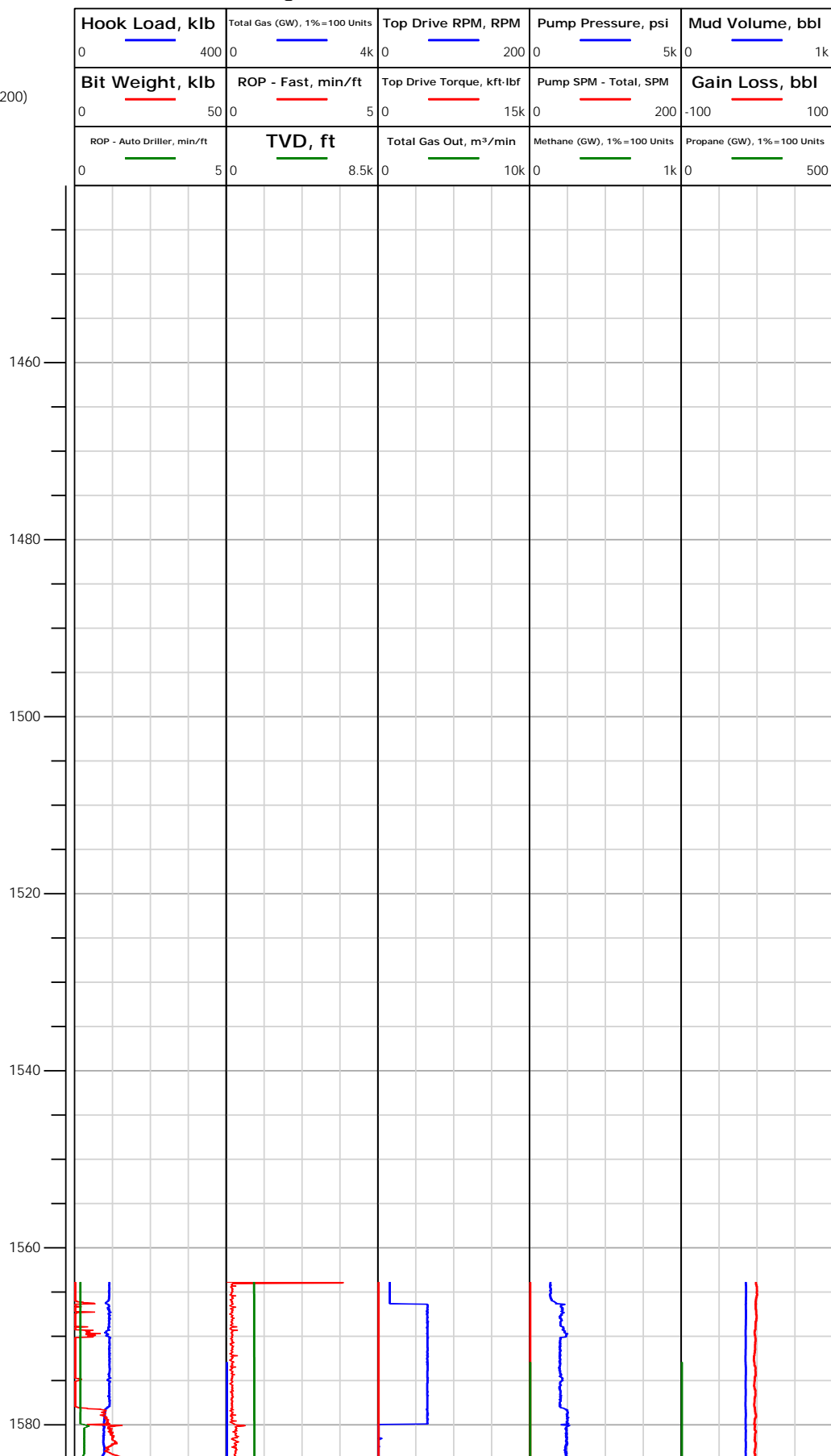
**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes

Depth in ft (1:200)



Jul 24, 2017  
 22:16

1564.00: Rig Floor set Bit  
 Position from 1456.39 ft to  
 1454.80 ft  
 1564.00: Rig Floor set Bit  
 Position from 1397.95 ft to  
 803.00 ft  
 1564.00: Rig Floor set Bit  
 Position from 1492.00 ft to  
 1518.00 ft  
 1564.00: Rig Floor set Bit  
 Position from 1564.00 ft to  
 1492.00 ft



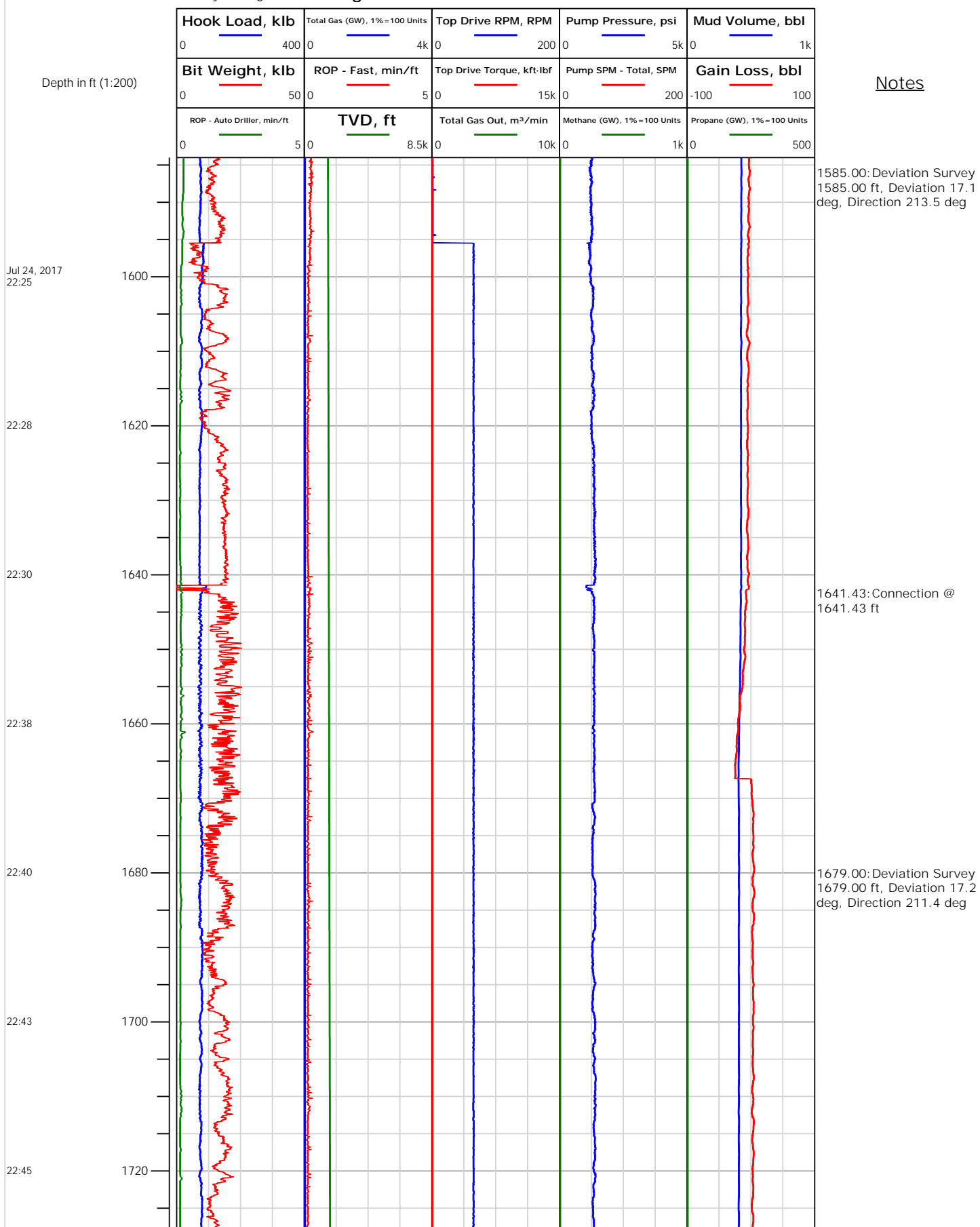
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

## Notes





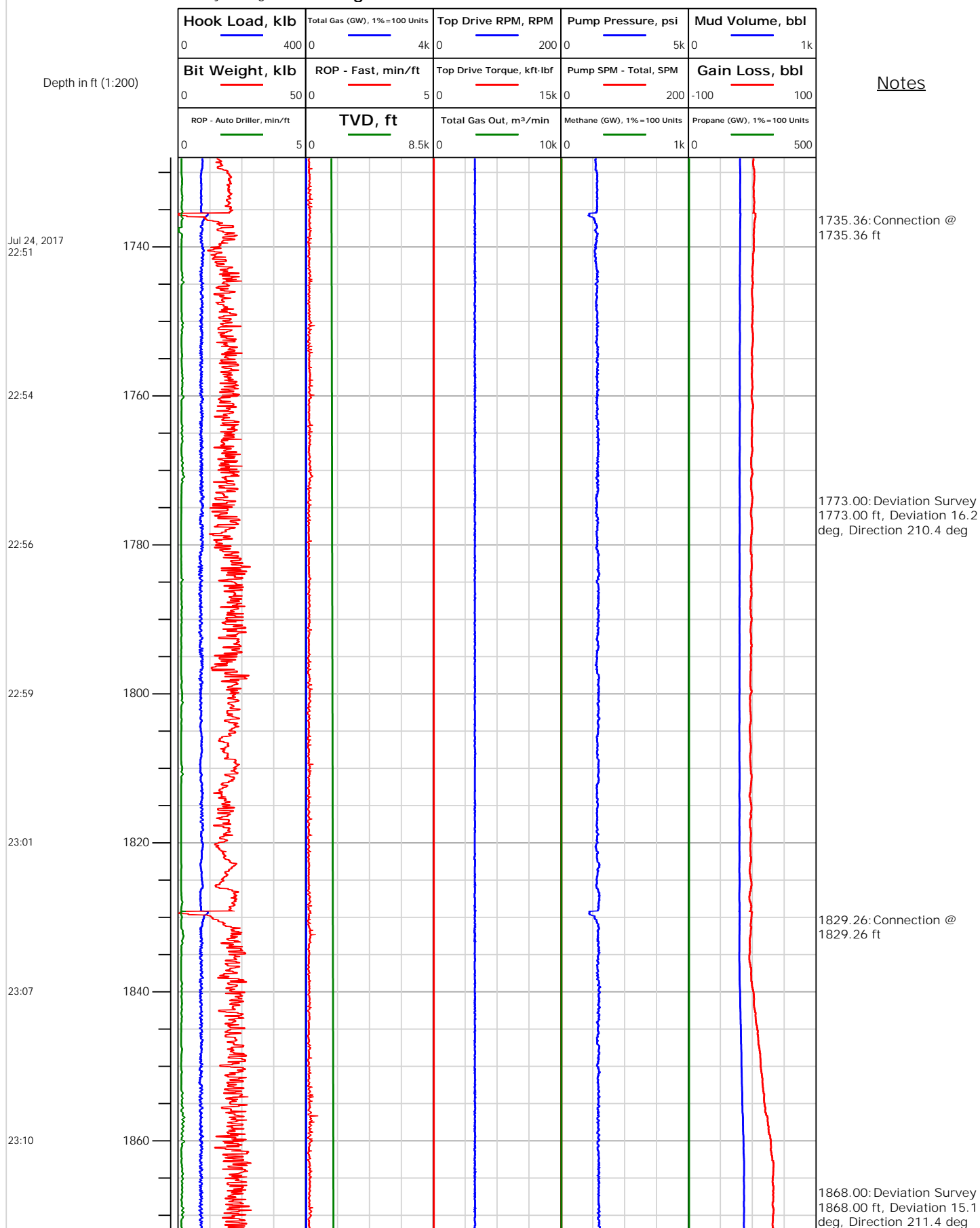
Operator: Laramie Energy  
Contractor: Helmerich & Payne Drlg Co

# Electronic Drilling Recorder

Well Name: Gunderson 20-09W  
Rig: 522

Location:

Notes





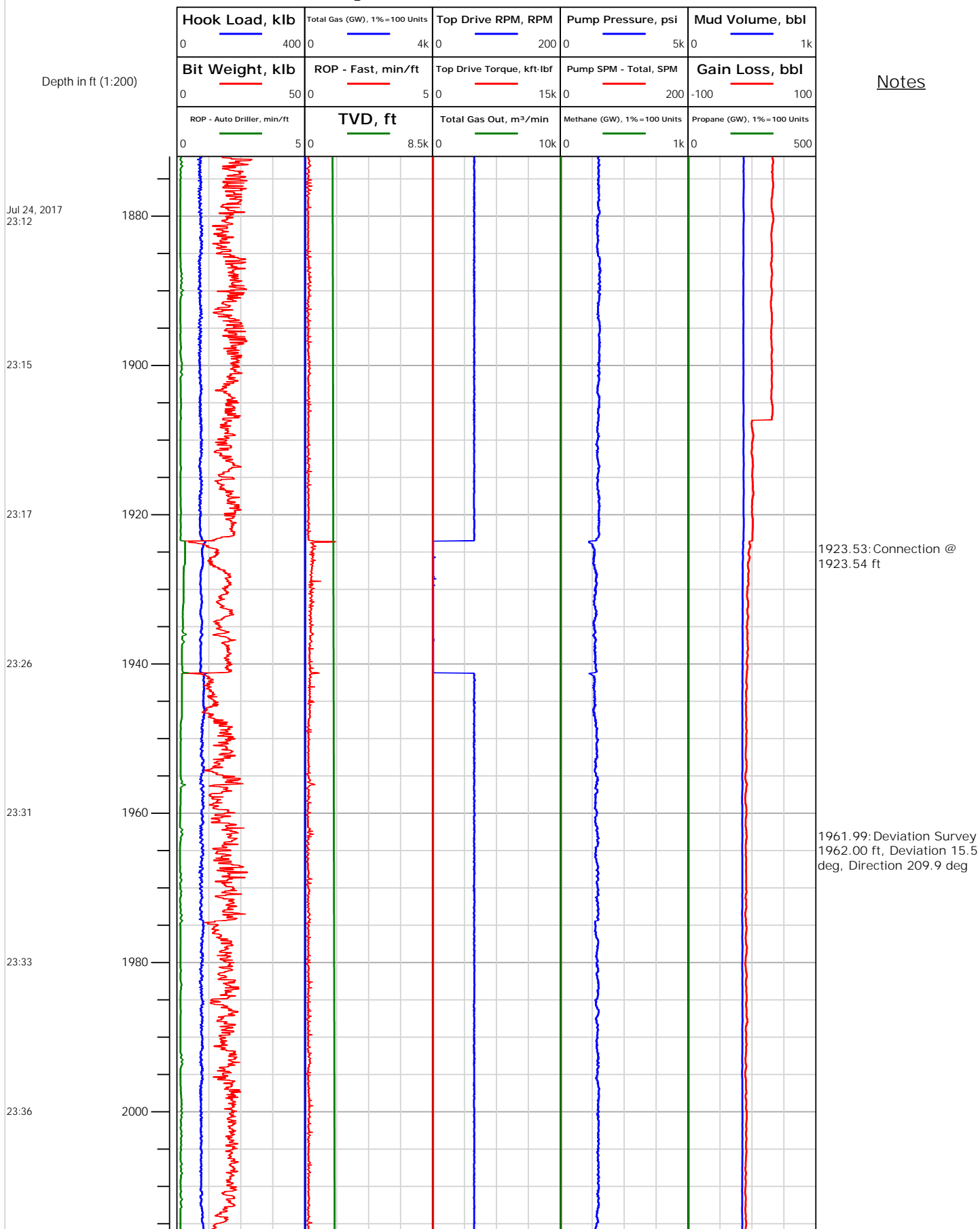
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes





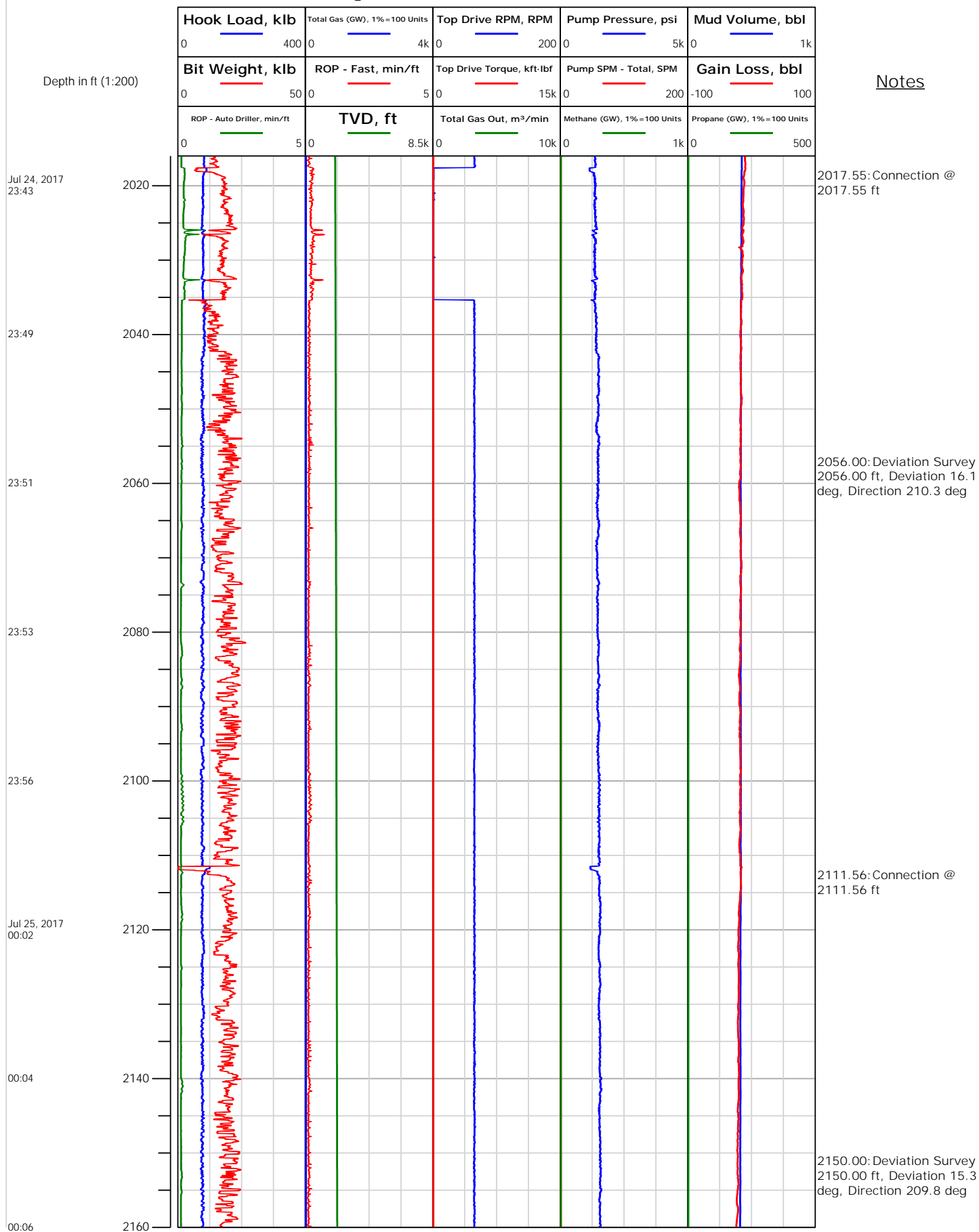
## Electronic Drilling Recorder

Operator: Laramie Energy  
Contractor: Helmerich & Payne Drlg Co

Well Name: Gunderson 20-09W  
Rig: 522

Location:

## Notes





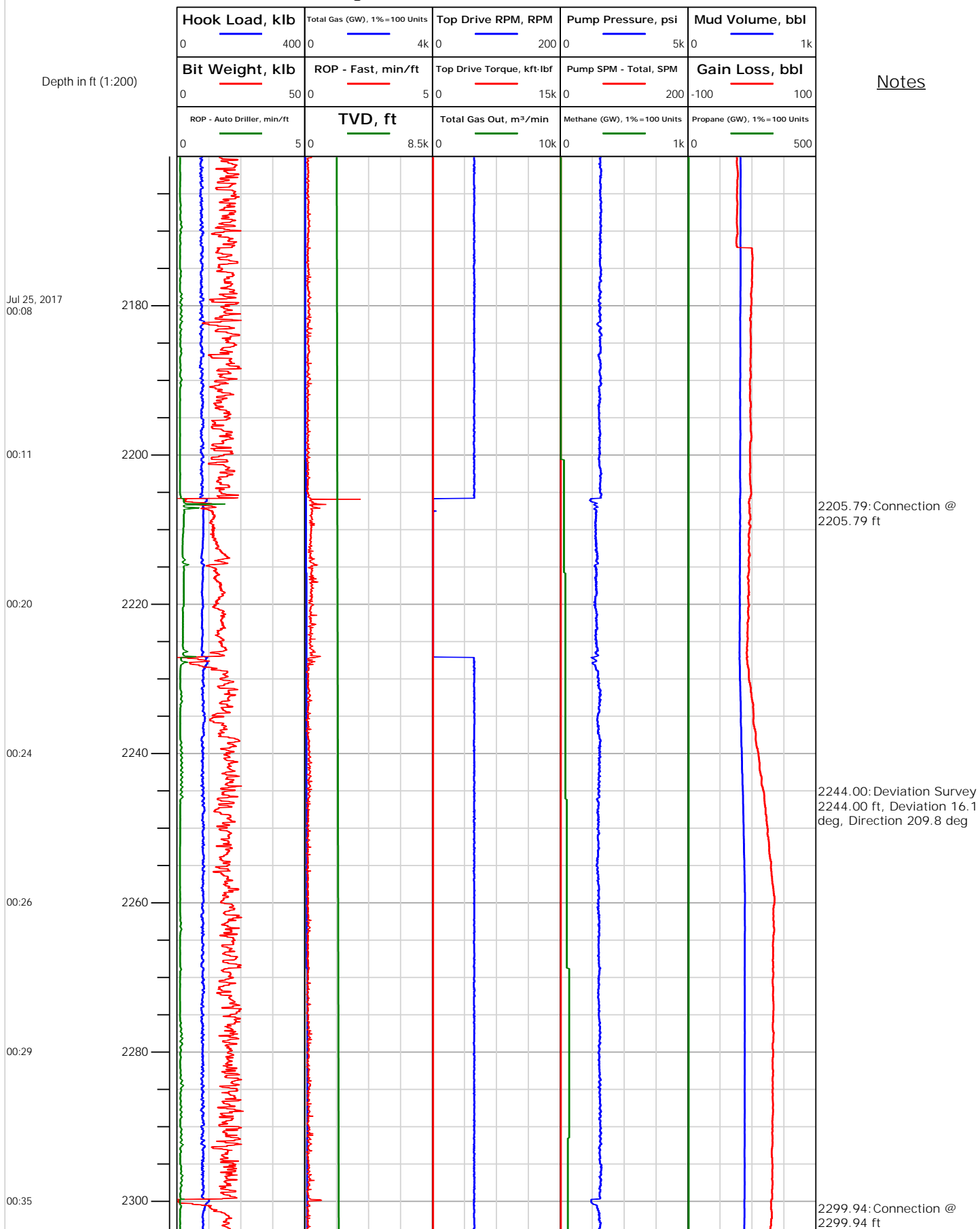
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes





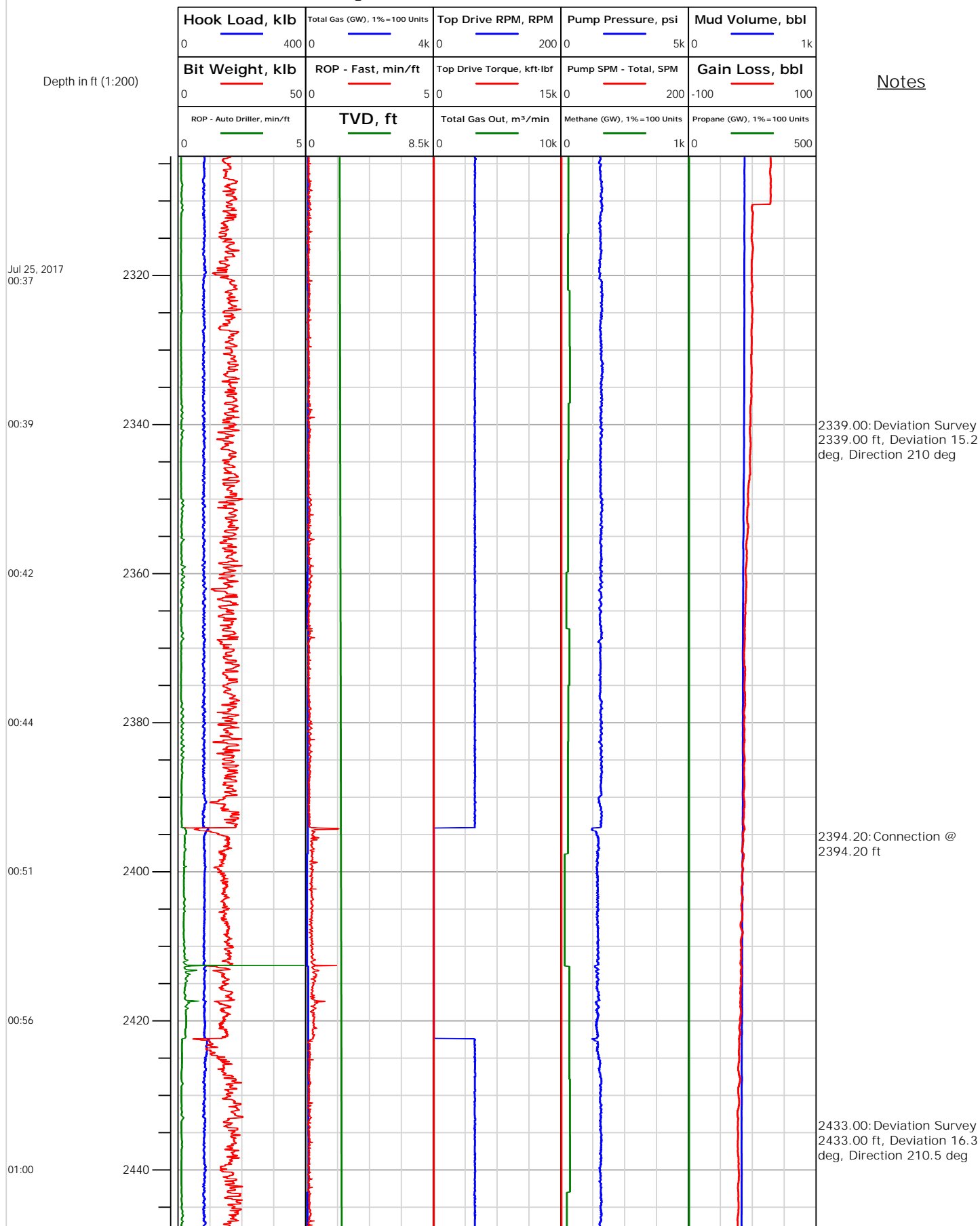
# Electronic Drilling Recorder

Operator: Laramie Energy  
Contractor: Helmerich & Payne Drlg Co

Well Name: Gunderson 20-09W  
Rig: 522

Location:

Notes





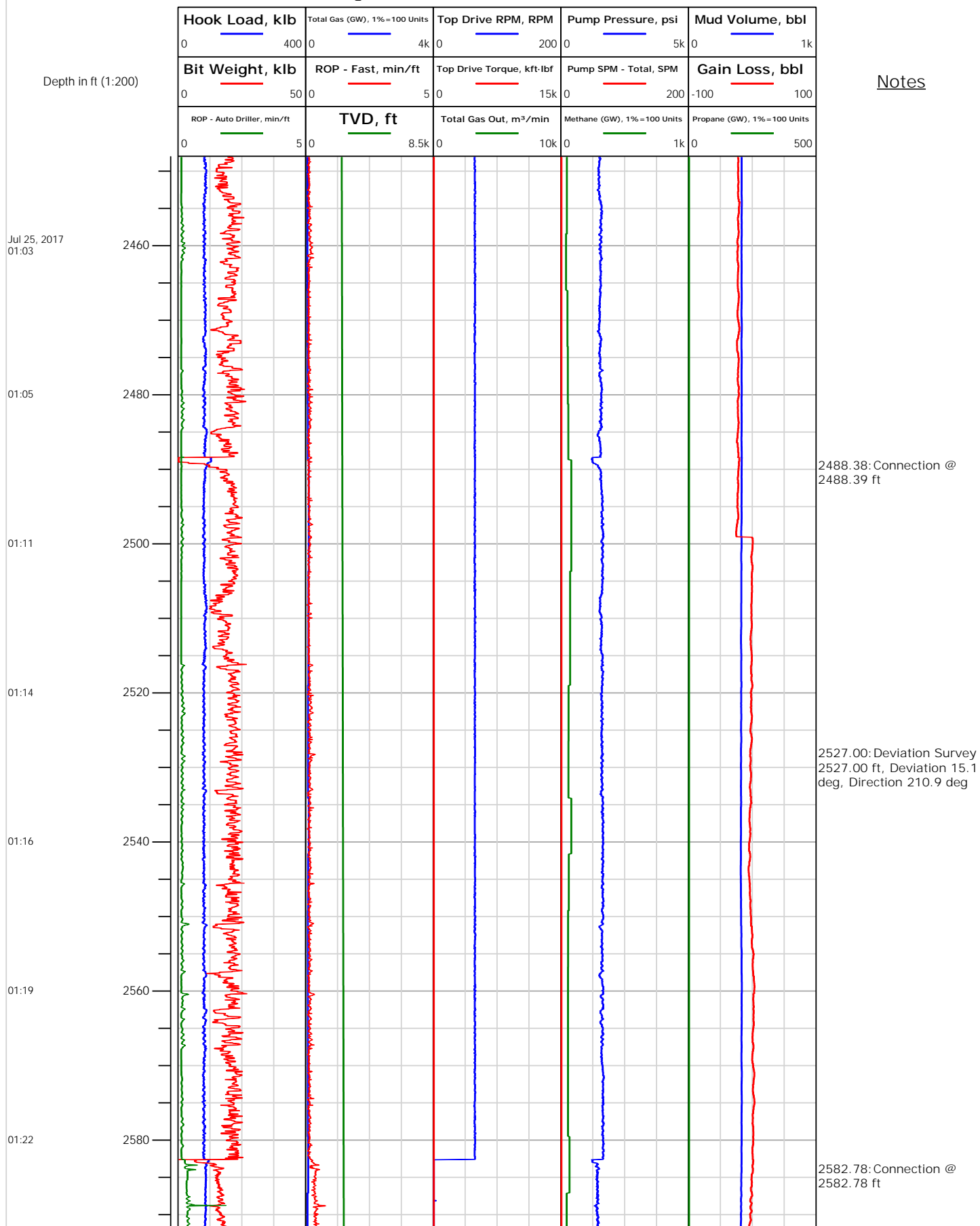
Operator: Laramie Energy  
Contractor: Helmerich & Payne Drlg Co

# Electronic Drilling Recorder

Well Name: Gunderson 20-09W  
Rig: 522

Location:

Notes







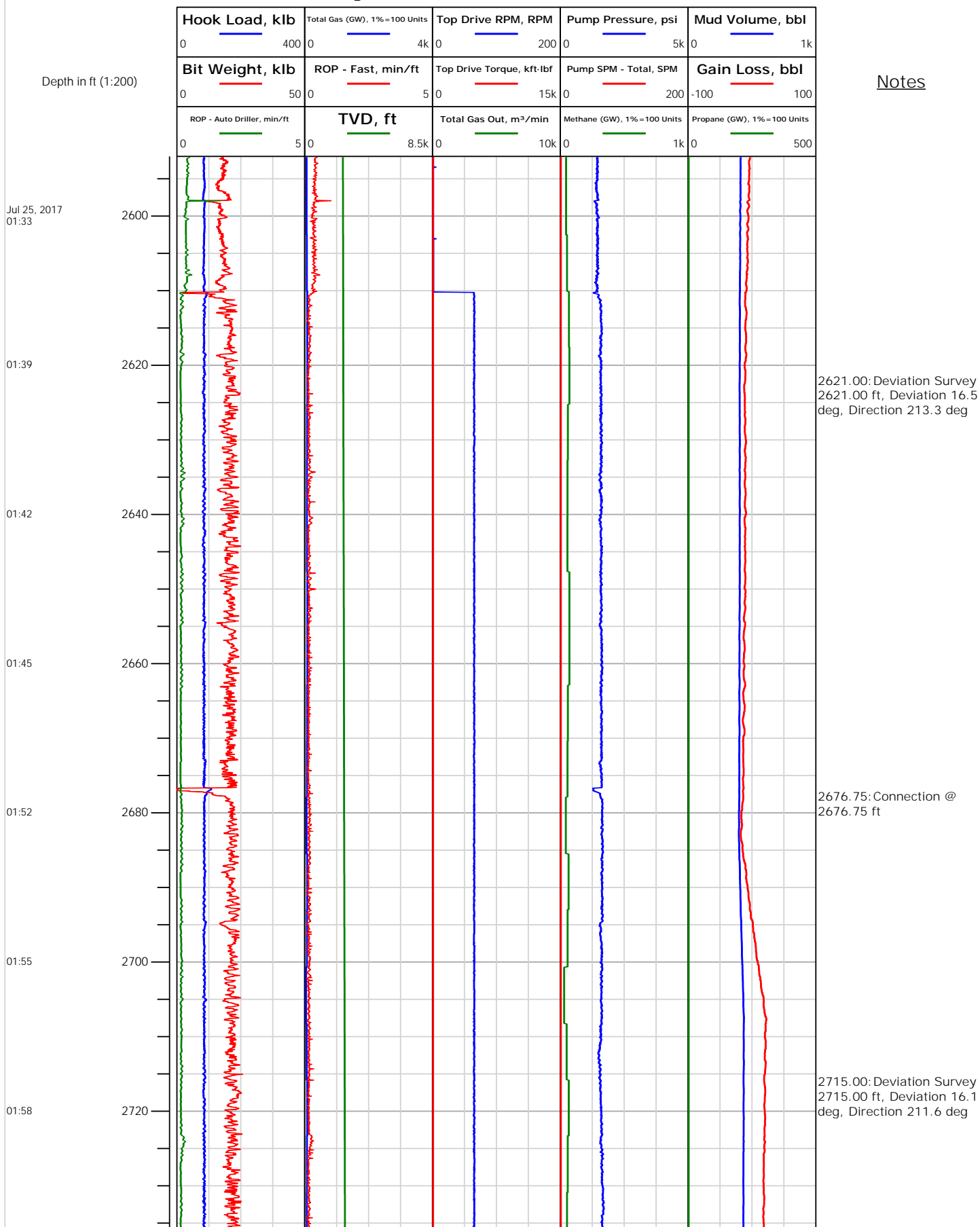
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes





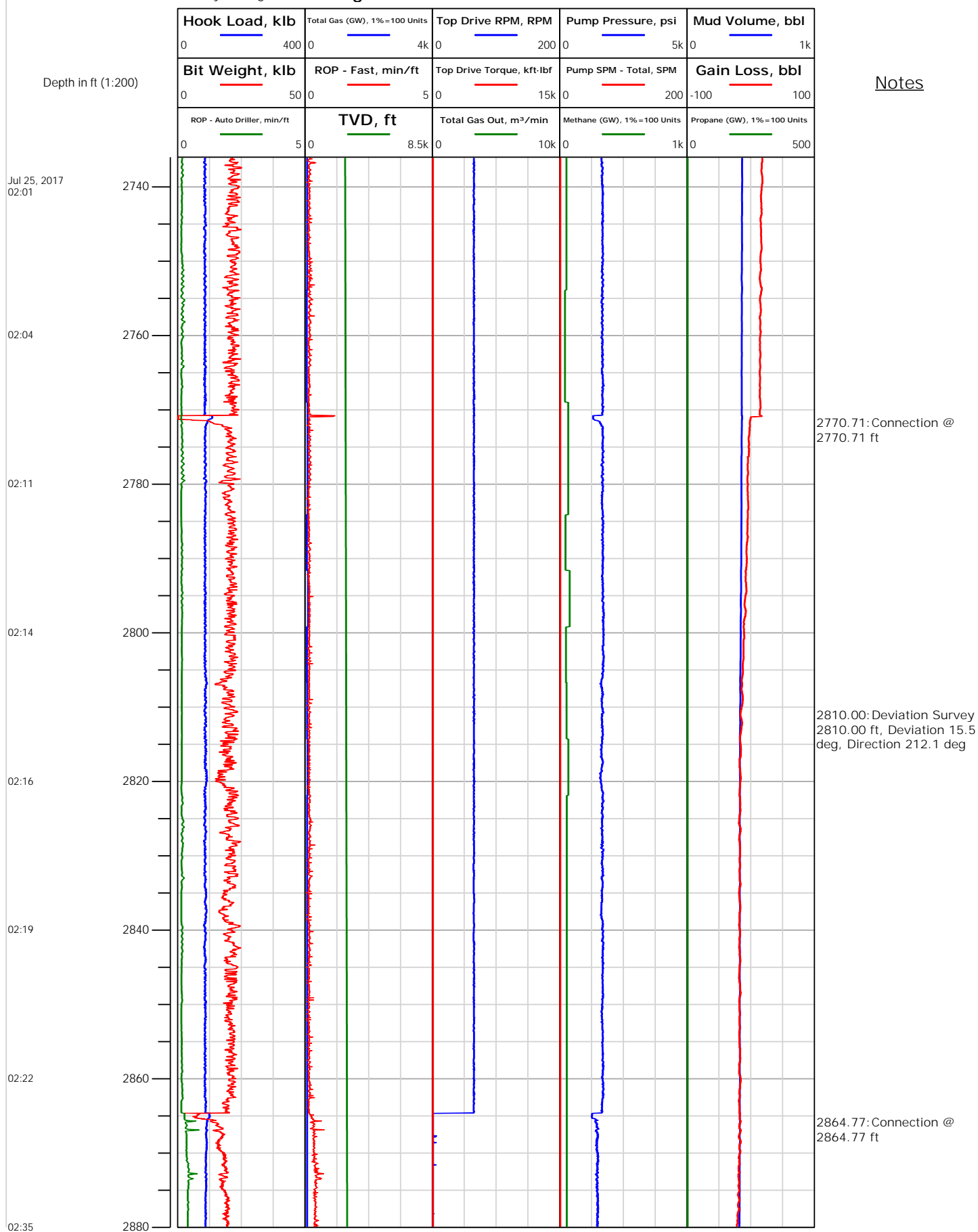
## Electronic Drilling Recorder

Operator: Laramie Energy  
Contractor: Helmerich & Payne Drlg Co

Well Name: Gunderson 20-09W  
Rig: 522

Location:

Notes





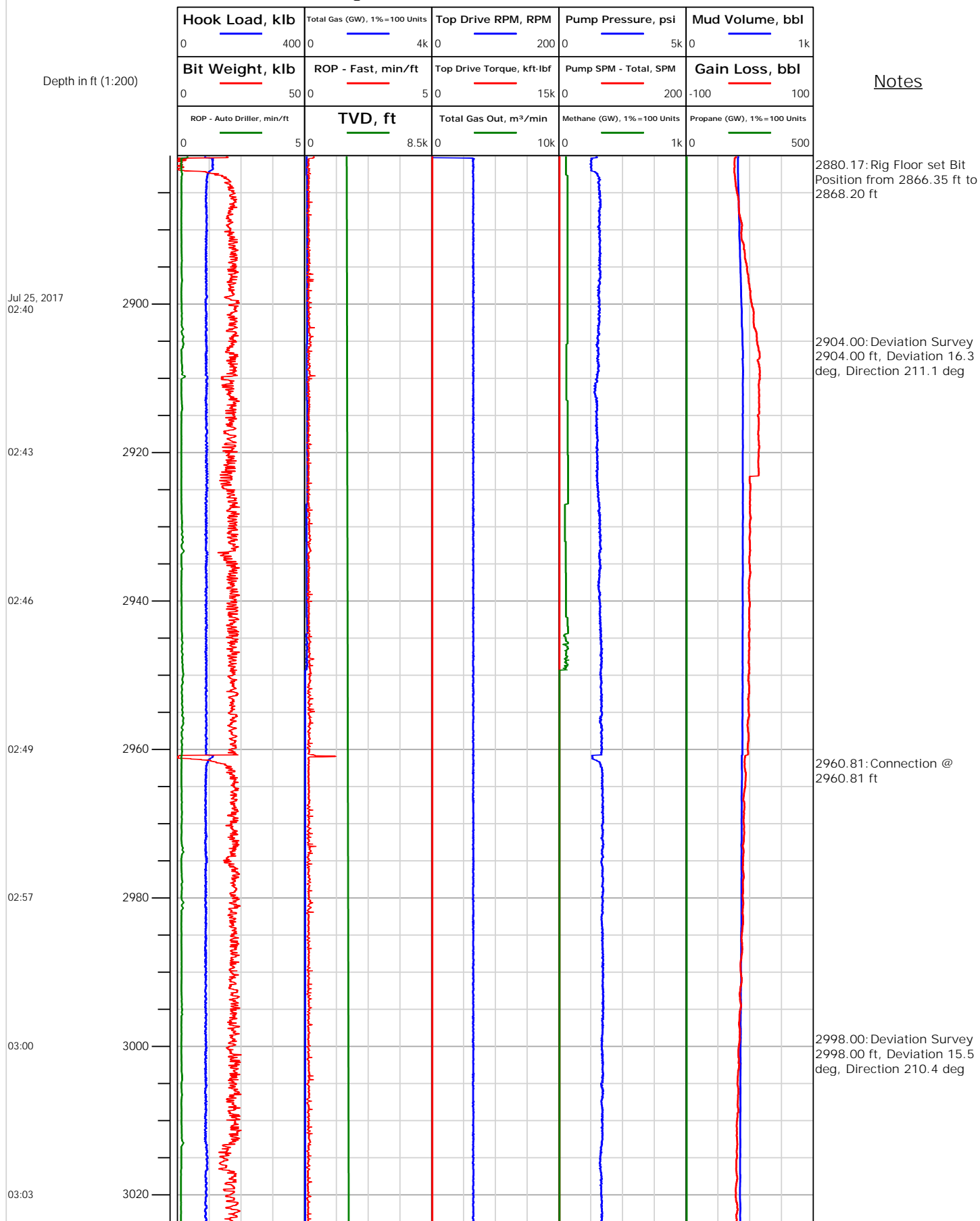
## Electronic Drilling Recorder

Operator: Laramie Energy  
Contractor: Helmerich & Payne Drlg Co

Well Name: Gunderson 20-09W  
Rig: 522

Location:

### Notes





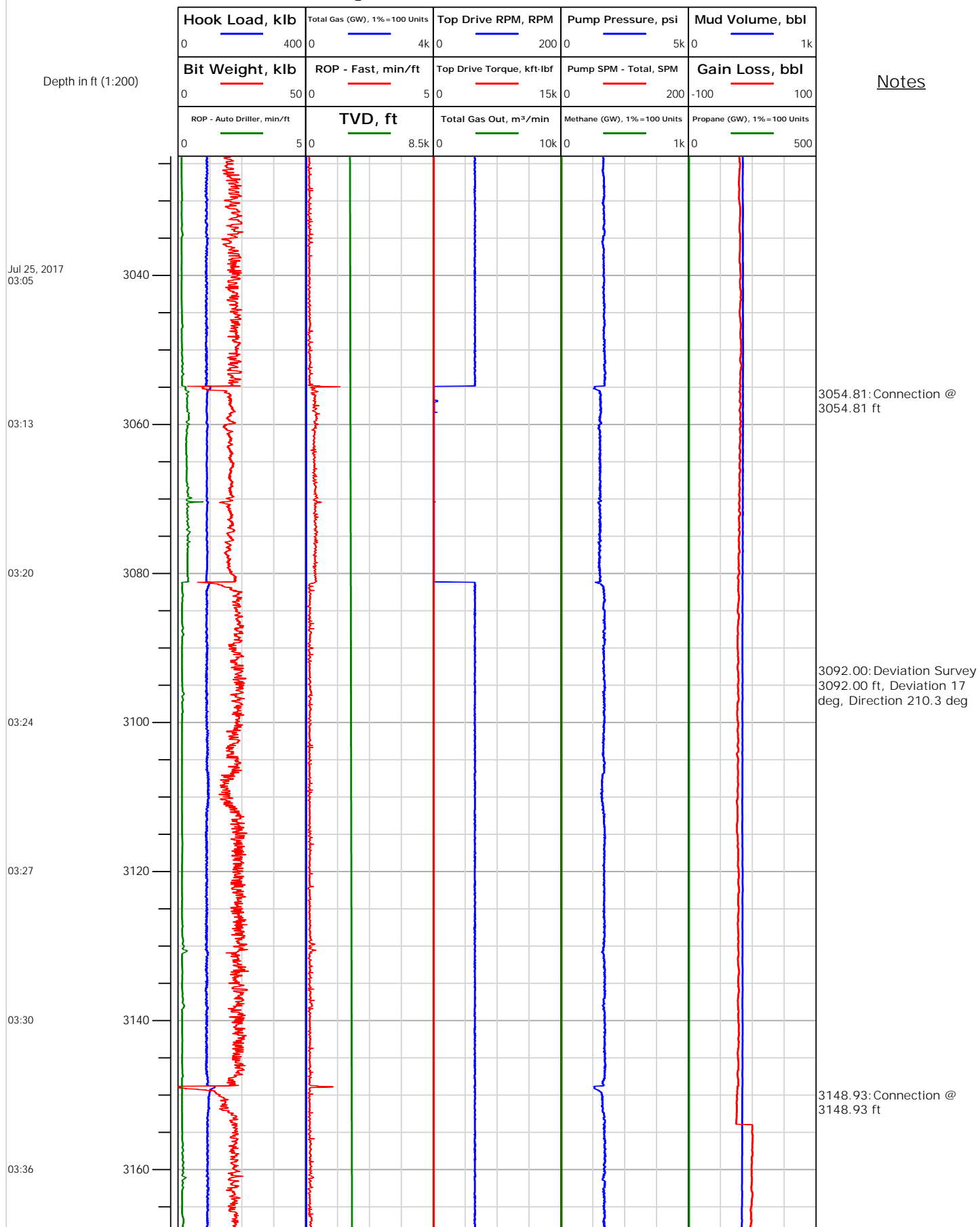
## Electronic Drilling Recorder

Operator: Laramie Energy  
Contractor: Helmerich & Payne Drlg Co

Well Name: Gunderson 20-09W  
Rig: 522

Location:

Notes





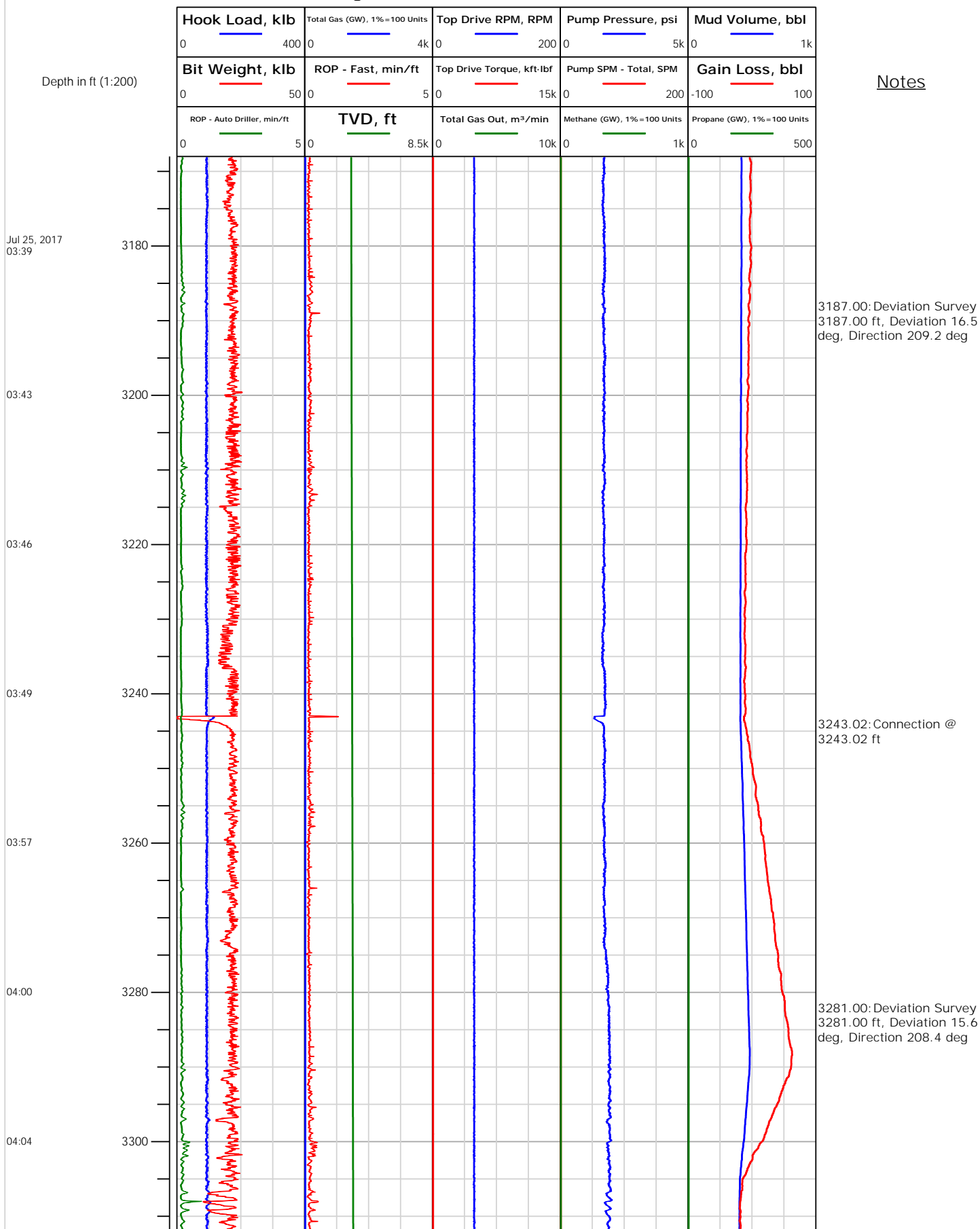
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes





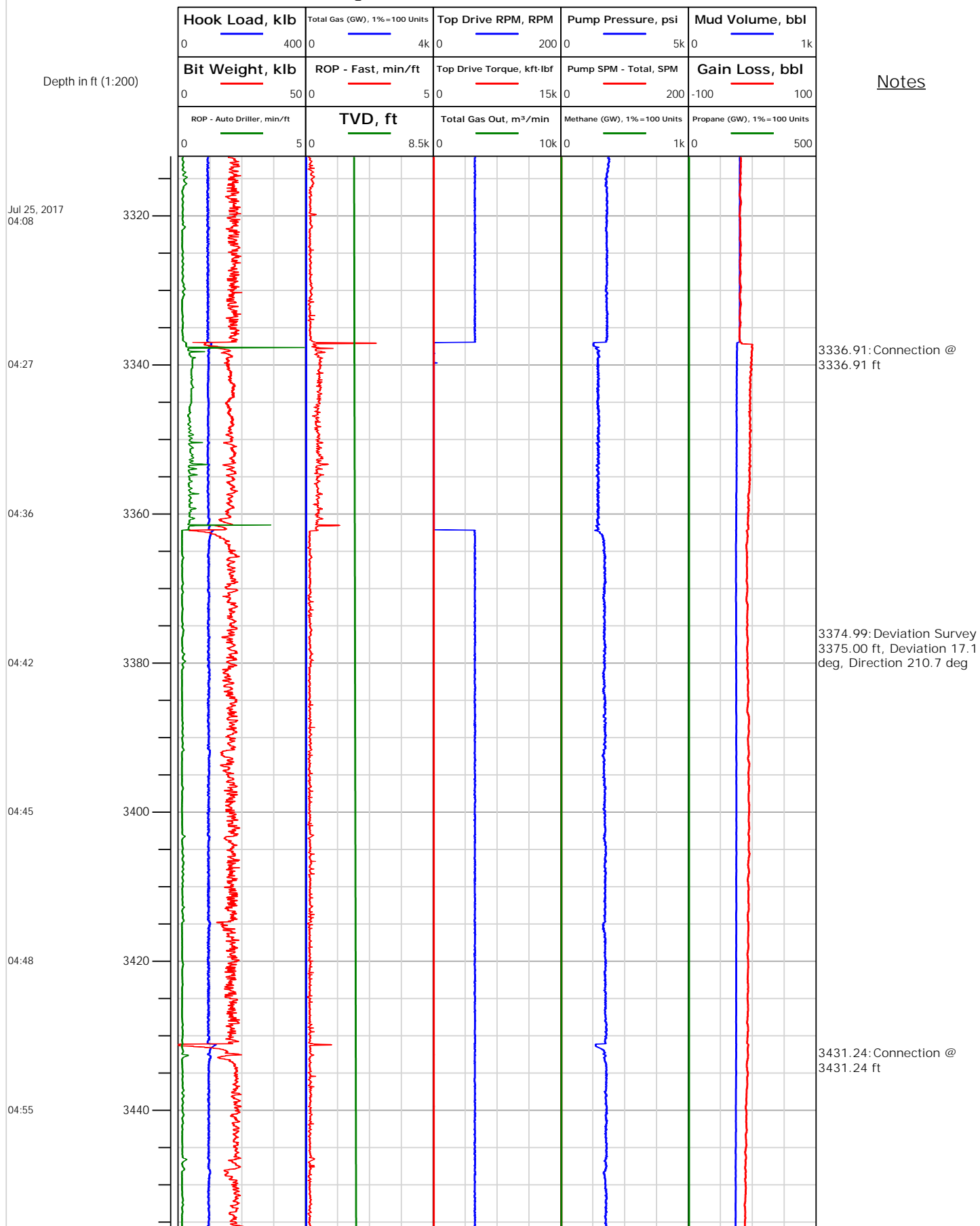
## Electronic Drilling Recorder

Operator: Laramie Energy  
Contractor: Helmerich & Payne Drlg Co

Well Name: Gunderson 20-09W  
Rig: 522

Location:

Notes





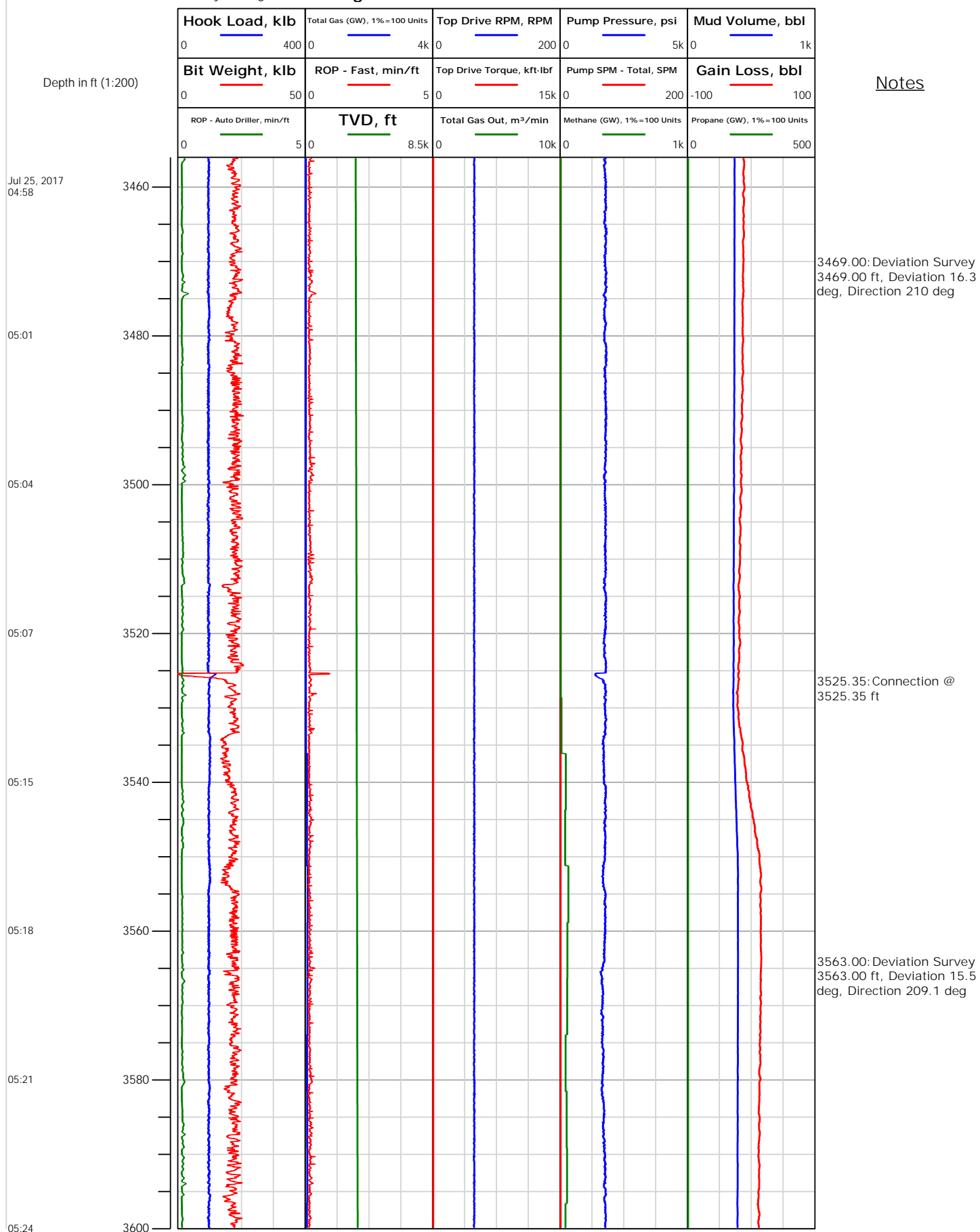
Operator: Laramie Energy  
Contractor: Helmerich & Payne Drlg Co

# Electronic Drilling Recorder

Well Name: Gunderson 20-09W  
Rig: 522

Location:

Notes





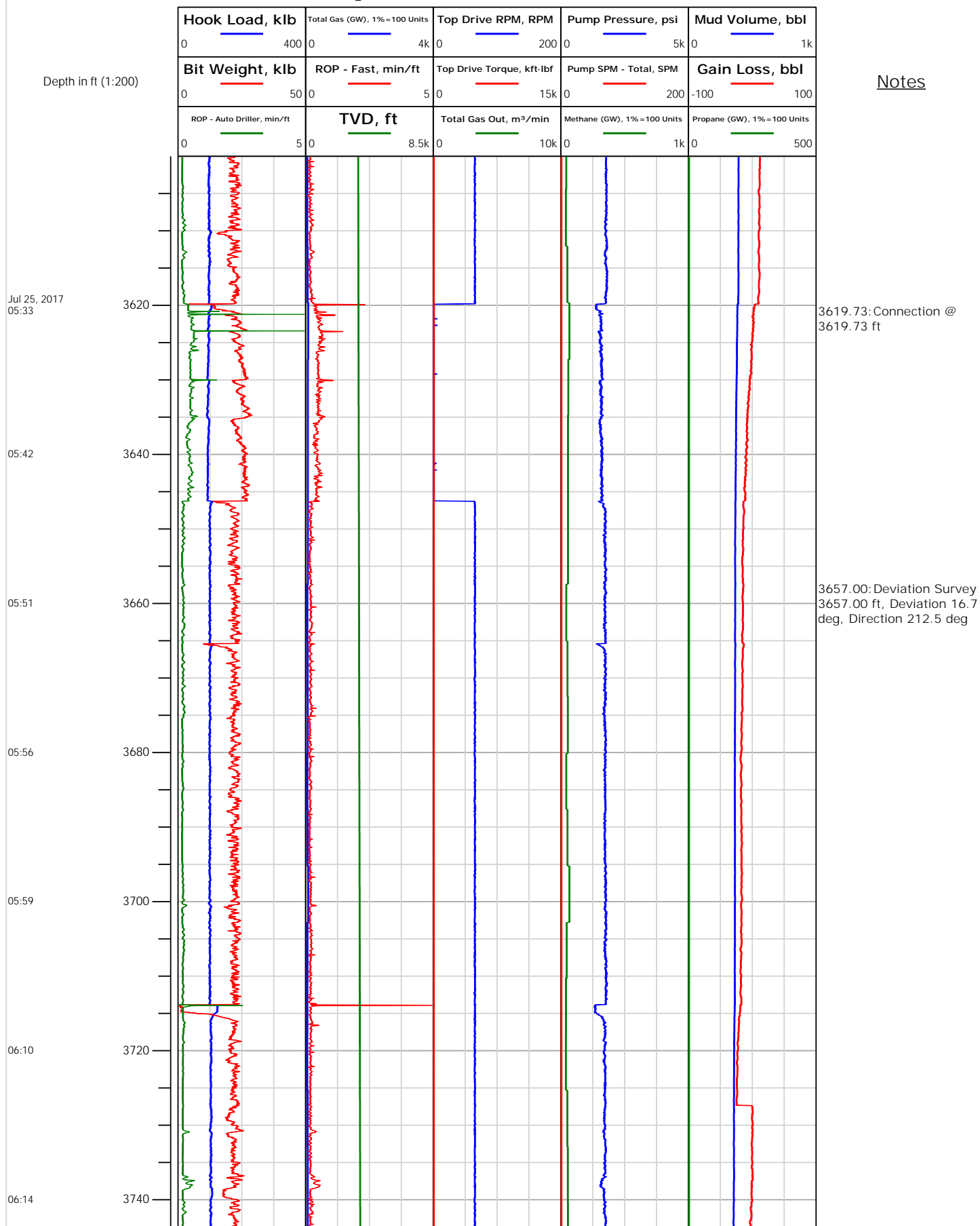
# Electronic Drilling Recorder

Operator: Laramie Energy  
Contractor: Helmerich & Payne Drlg Co

Well Name: Gunderson 20-09W  
Rig: 522

Location:

Notes







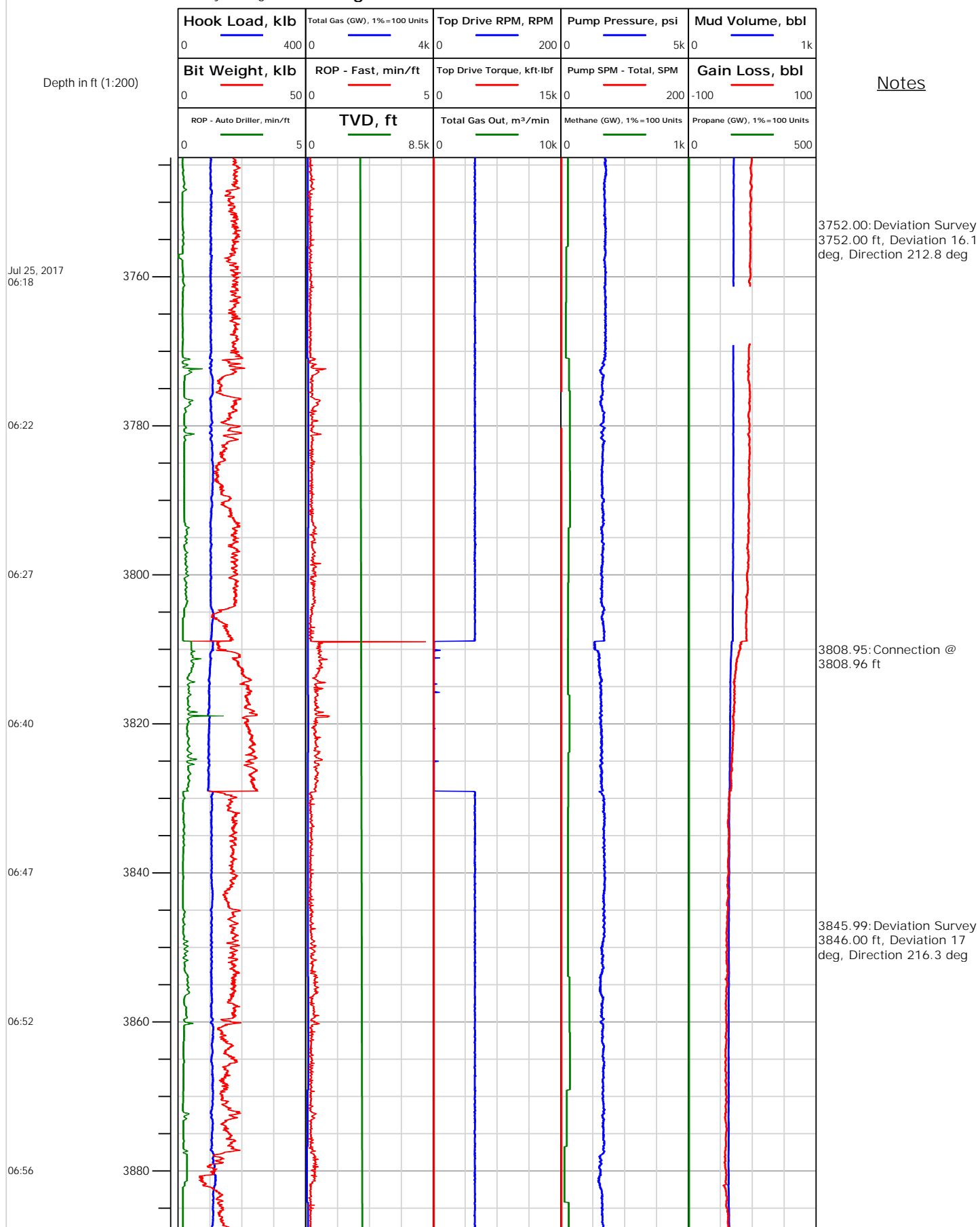
Operator: Laramie Energy  
Contractor: Helmerich & Payne Drlg Co

# Electronic Drilling Recorder

Well Name: Gunderson 20-09W  
Rig: 522

Location:

## Notes





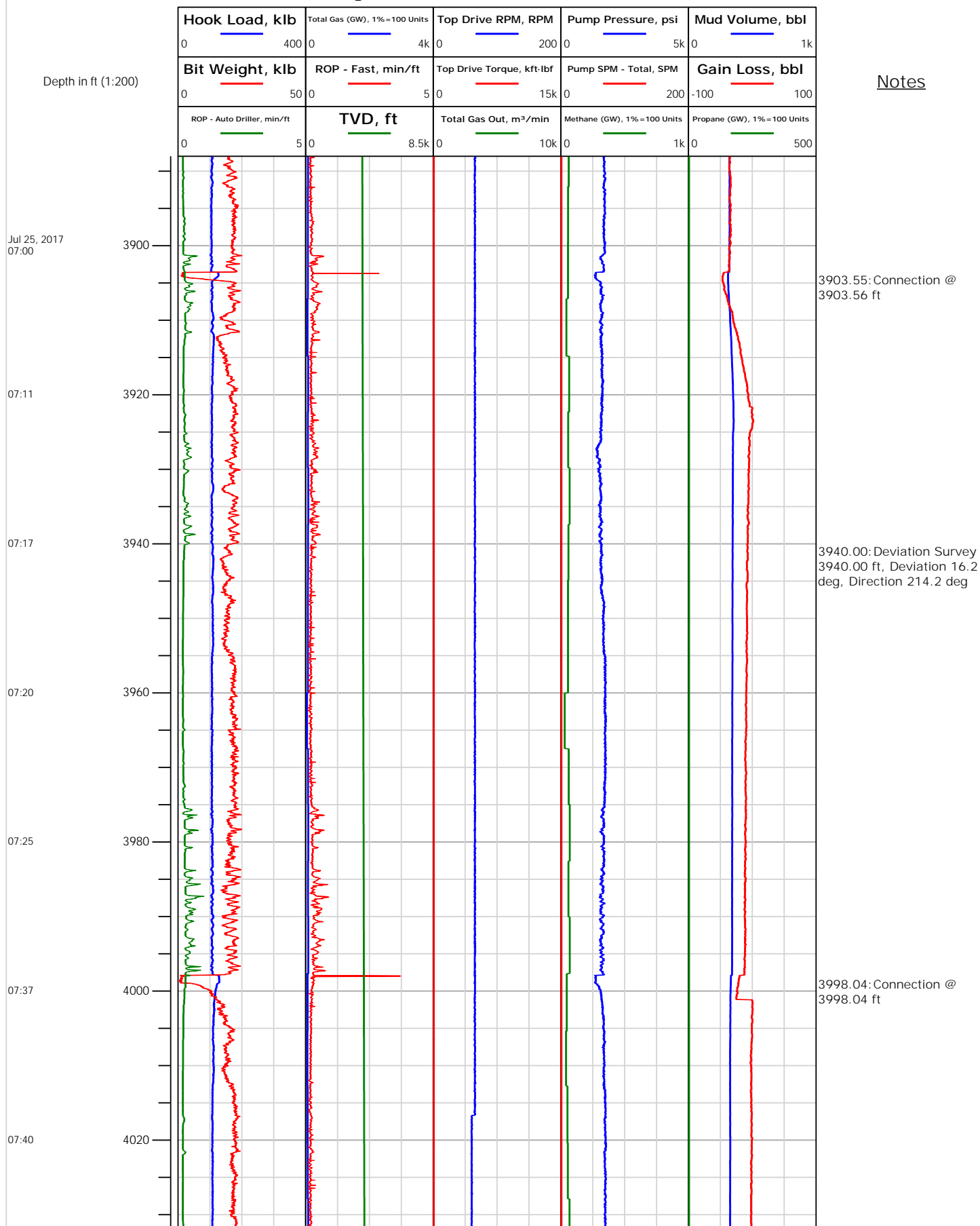
Operator: Laramie Energy  
Contractor: Helmerich & Payne Drlg Co

# Electronic Drilling Recorder

Well Name: Gunderson 20-09W  
Rig: 522

Location:

## Notes





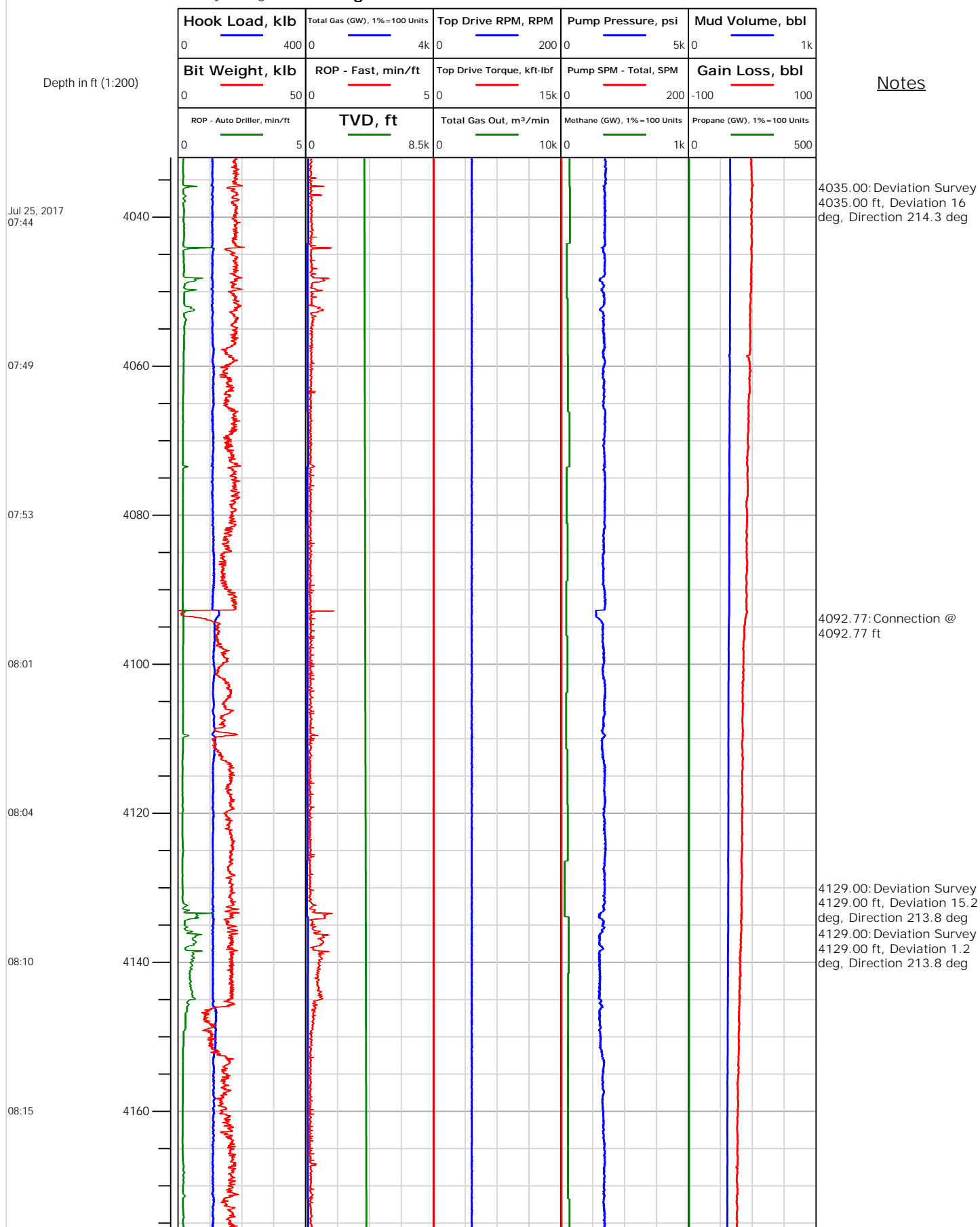
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Contractor: Helmerich & Payne Drlg Co

# Electronic Drilling Recorder

Well Name: Gunderson 20-09W  
Rig: 522

Location:

## Notes





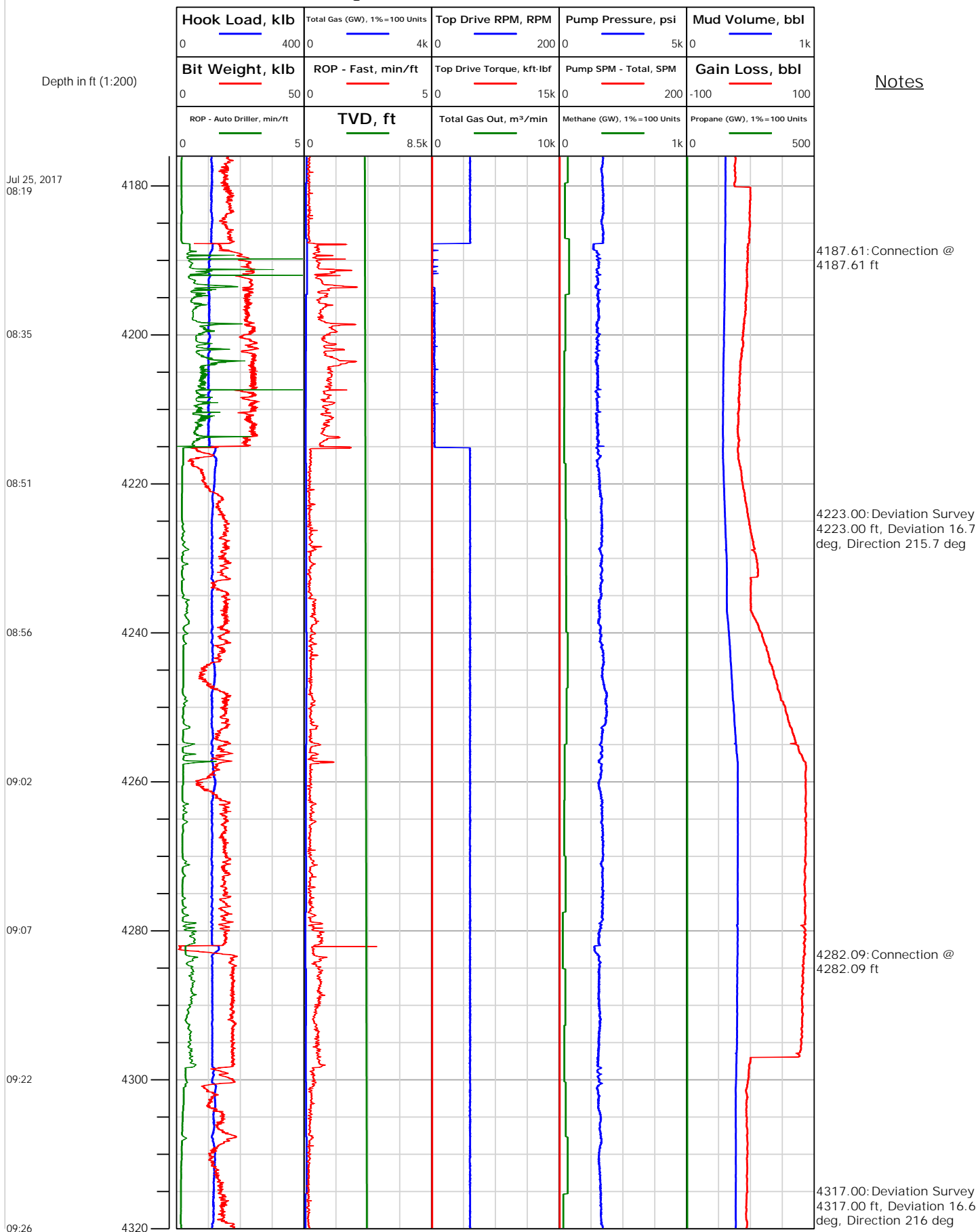
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes





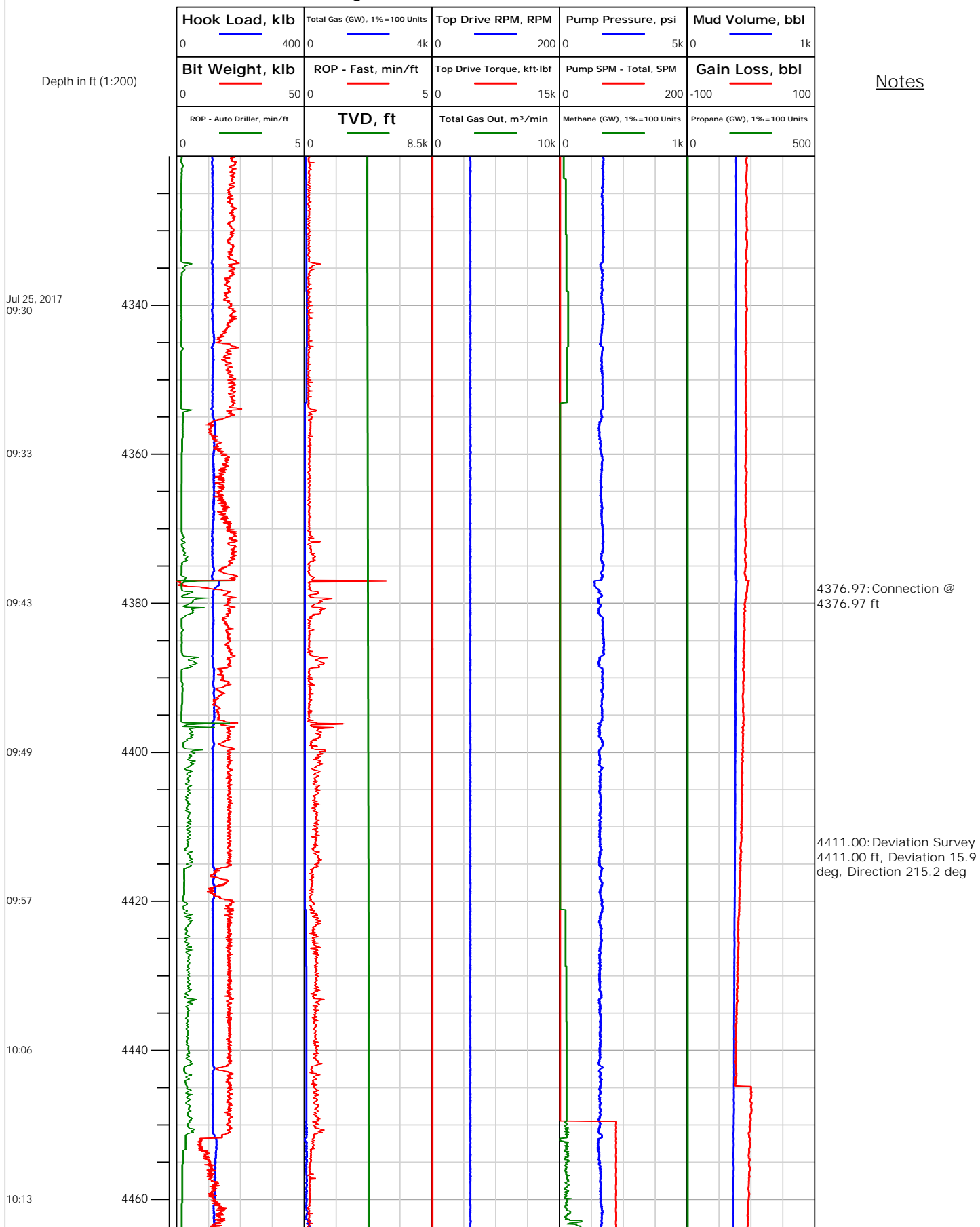
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes





# Electronic Drilling Recorder

Operator: Laramie Energy  
Contractor: Helmerich & Payne Drlg Co

Well Name: Gunderson 20-09W  
Rig: 522

Location:

Notes

Depth in ft (1:200)

Jul 25, 2017  
10:29

10:43

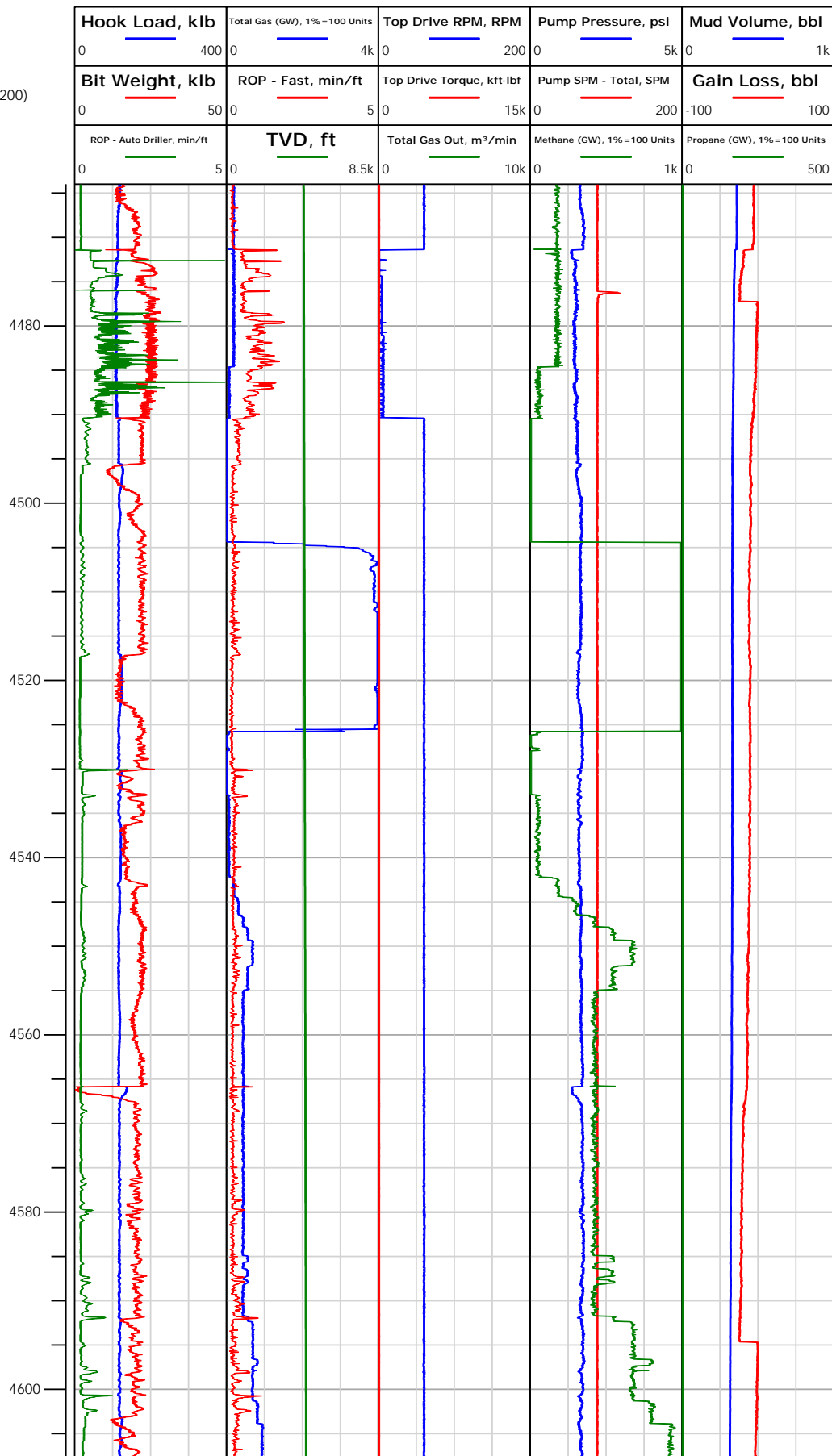
10:47

10:51

10:55

11:04

11:09



4505.00: Deviation Survey  
4505.00 ft, Deviation 16.5  
deg, Direction 217.4 deg

4600.00: Deviation Survey  
4600.00 ft, Deviation 15.9  
deg, Direction 216.3 deg



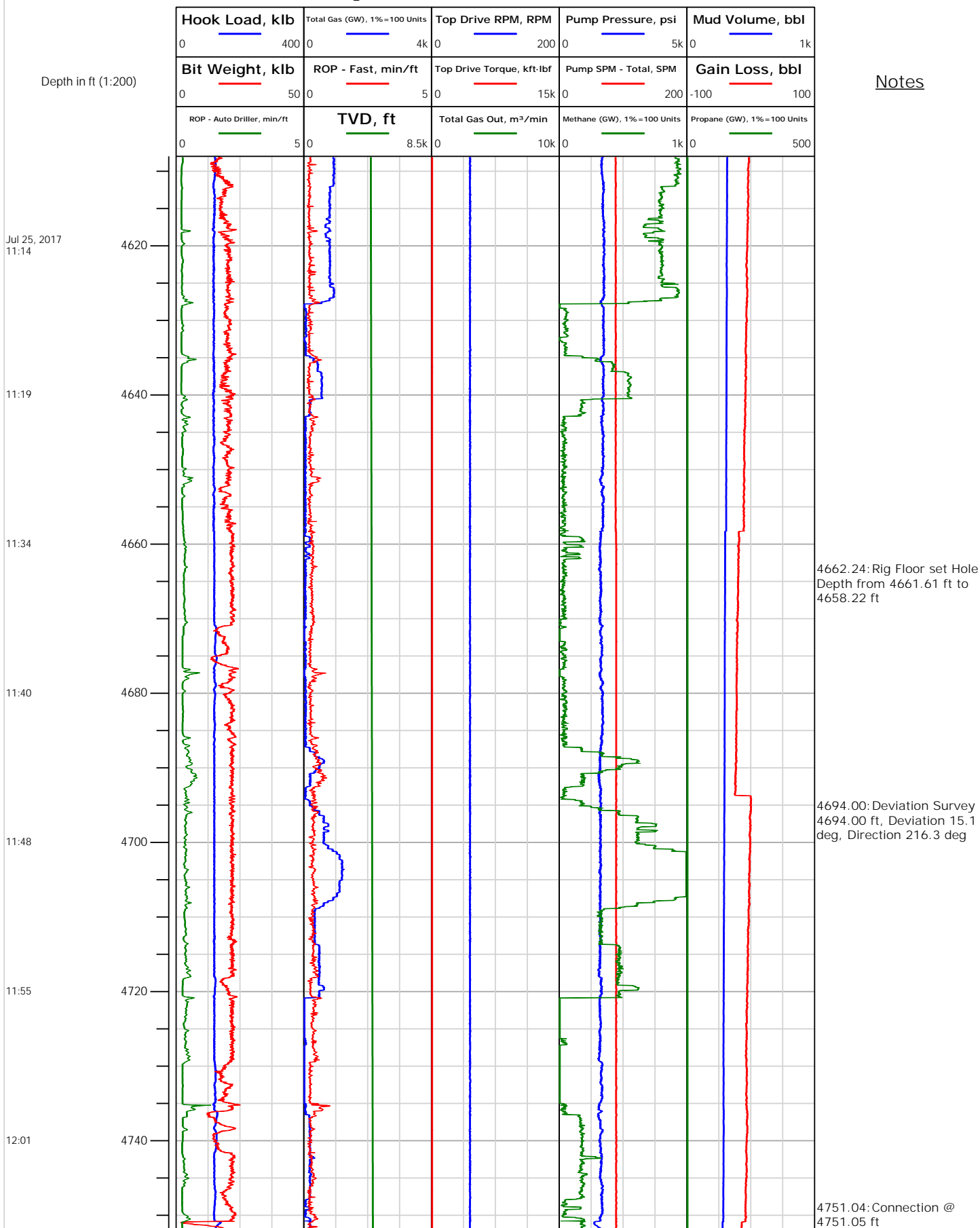
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes





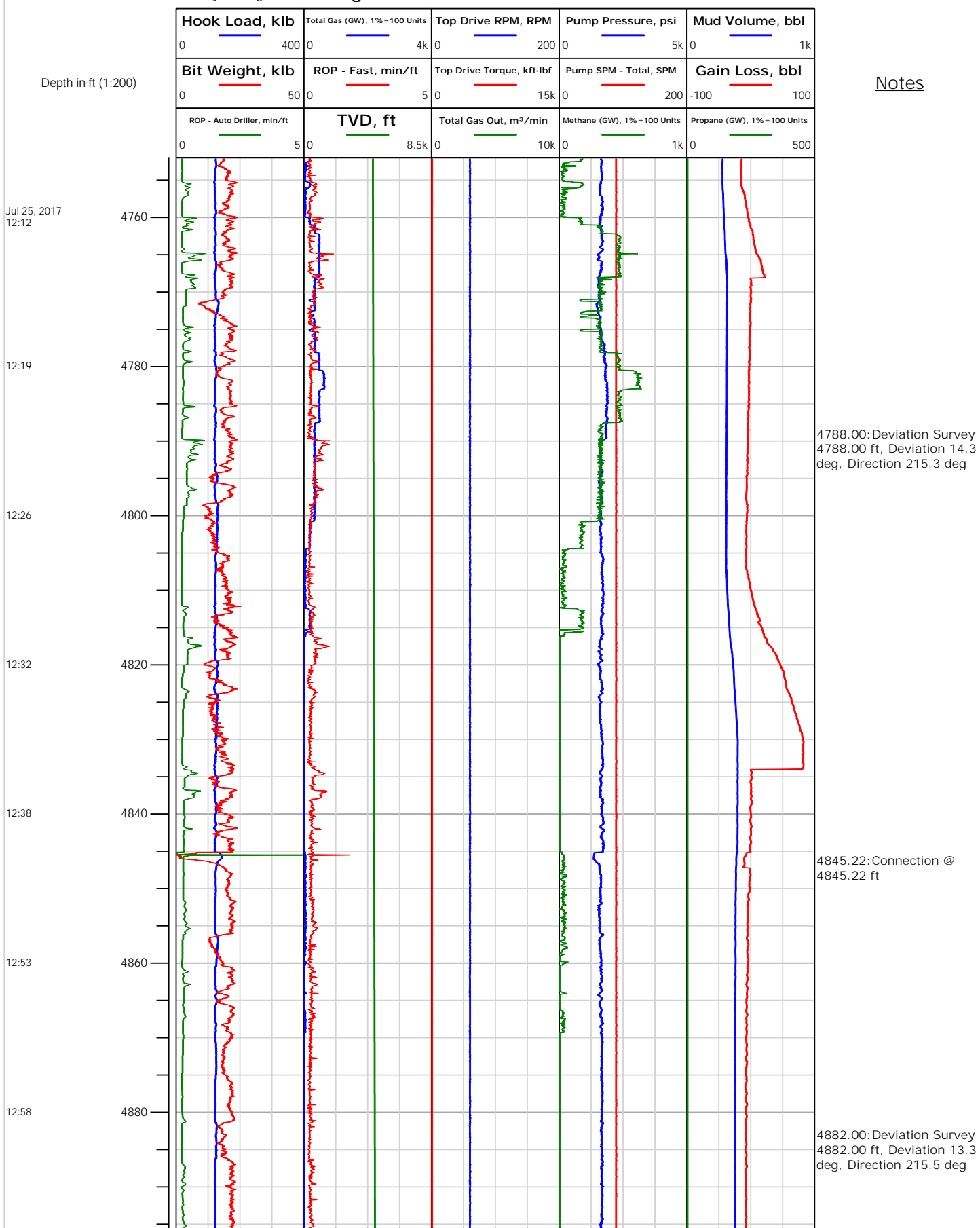
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes







## Electronic Drilling Recorder

Operator: Laramie Energy  
Contractor: Helmerich & Payne Drlg Co

Well Name: Gunderson 20-09W  
Rig: 522

Location:

Notes

Jul 25, 2017  
13:03

13:10

13:15

13:28

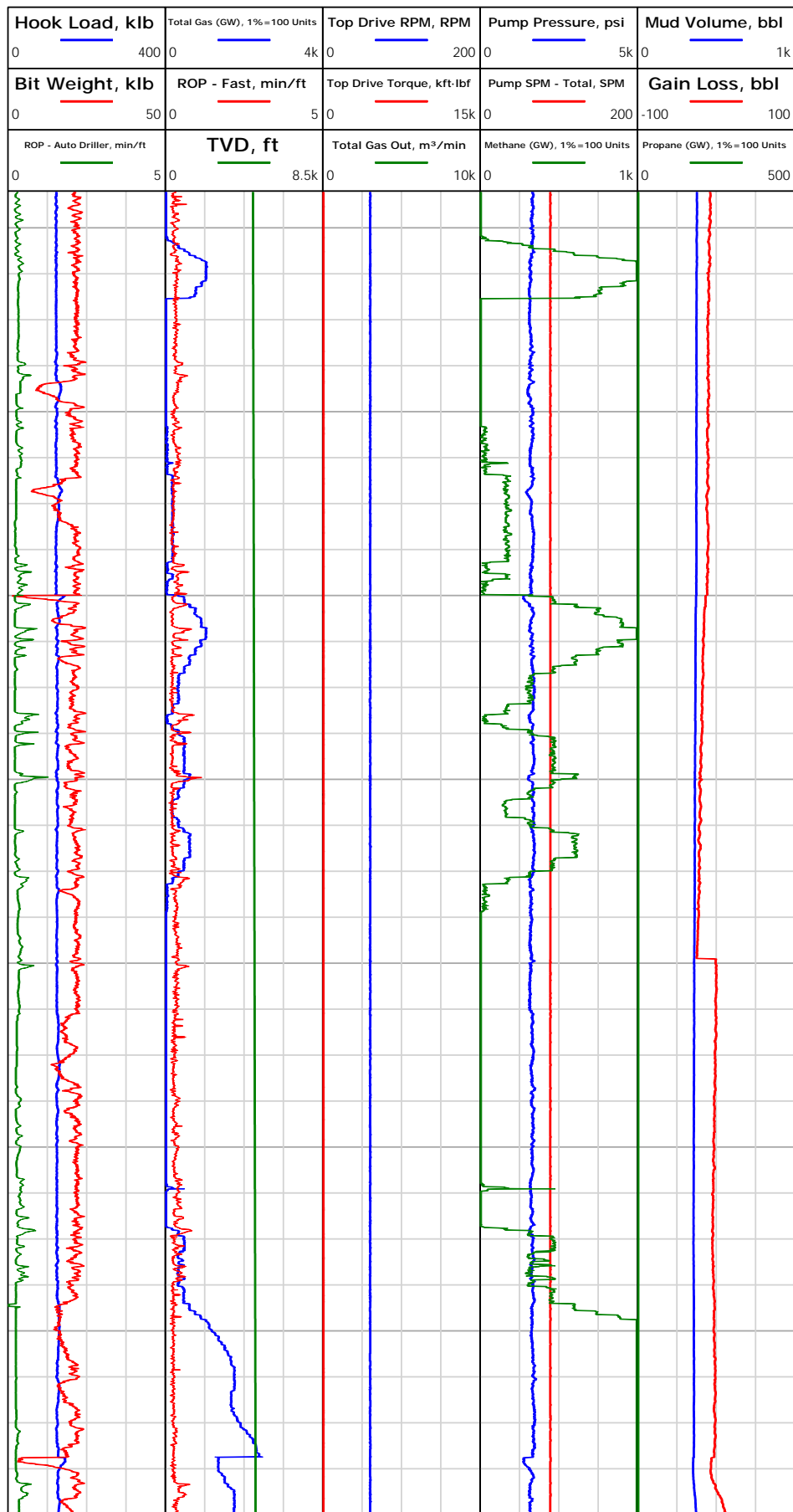
13:34

13:40

13:46

13:59

4900  
4920  
4940  
4960  
4980  
5000  
5020  
5040



4940.00: Connection @  
4940.00 ft

4977.00: Deviation Survey  
4977.00 ft, Deviation 12.4  
deg, Direction 213.6 deg

5033.96: Connection @  
5033.96 ft



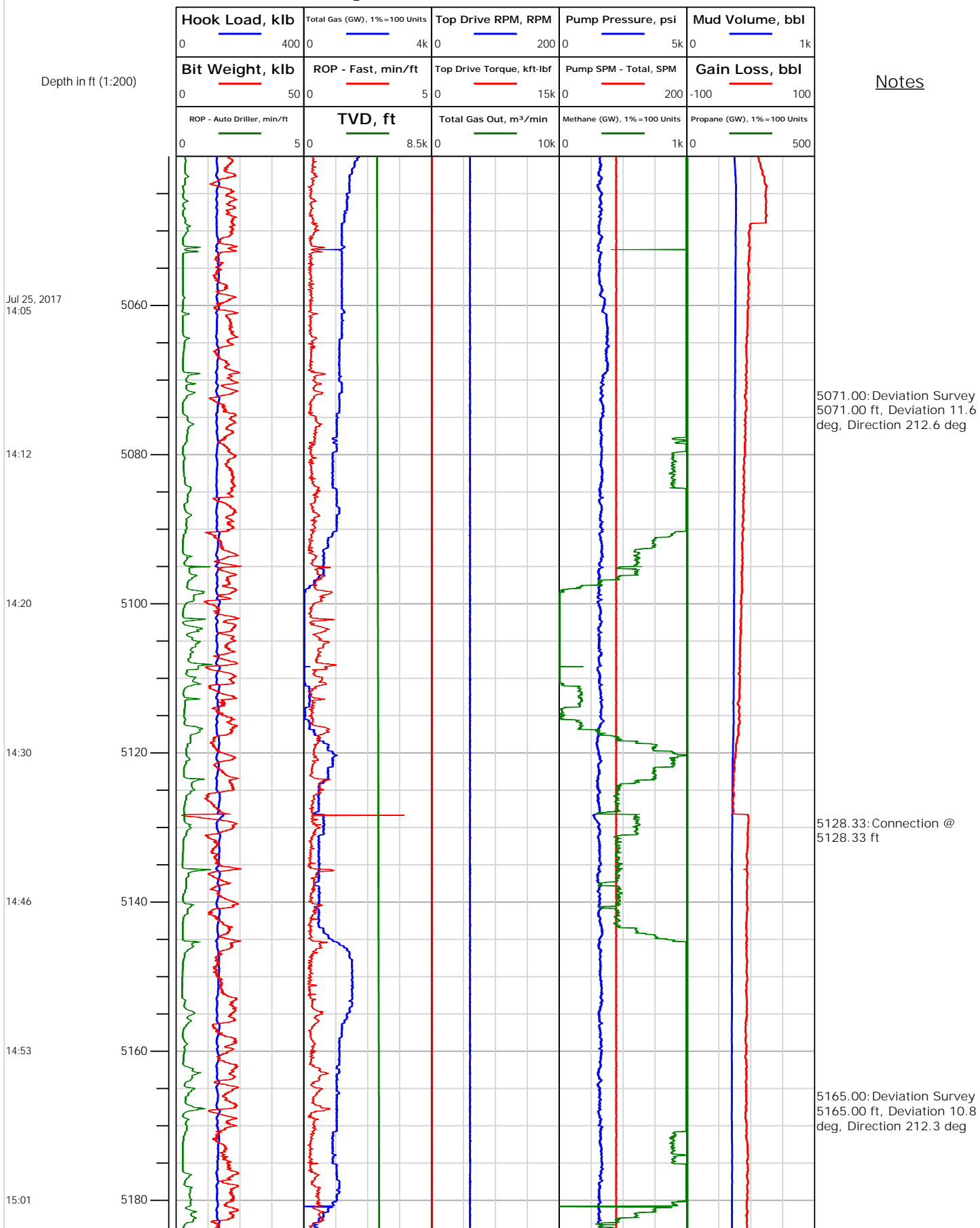
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes





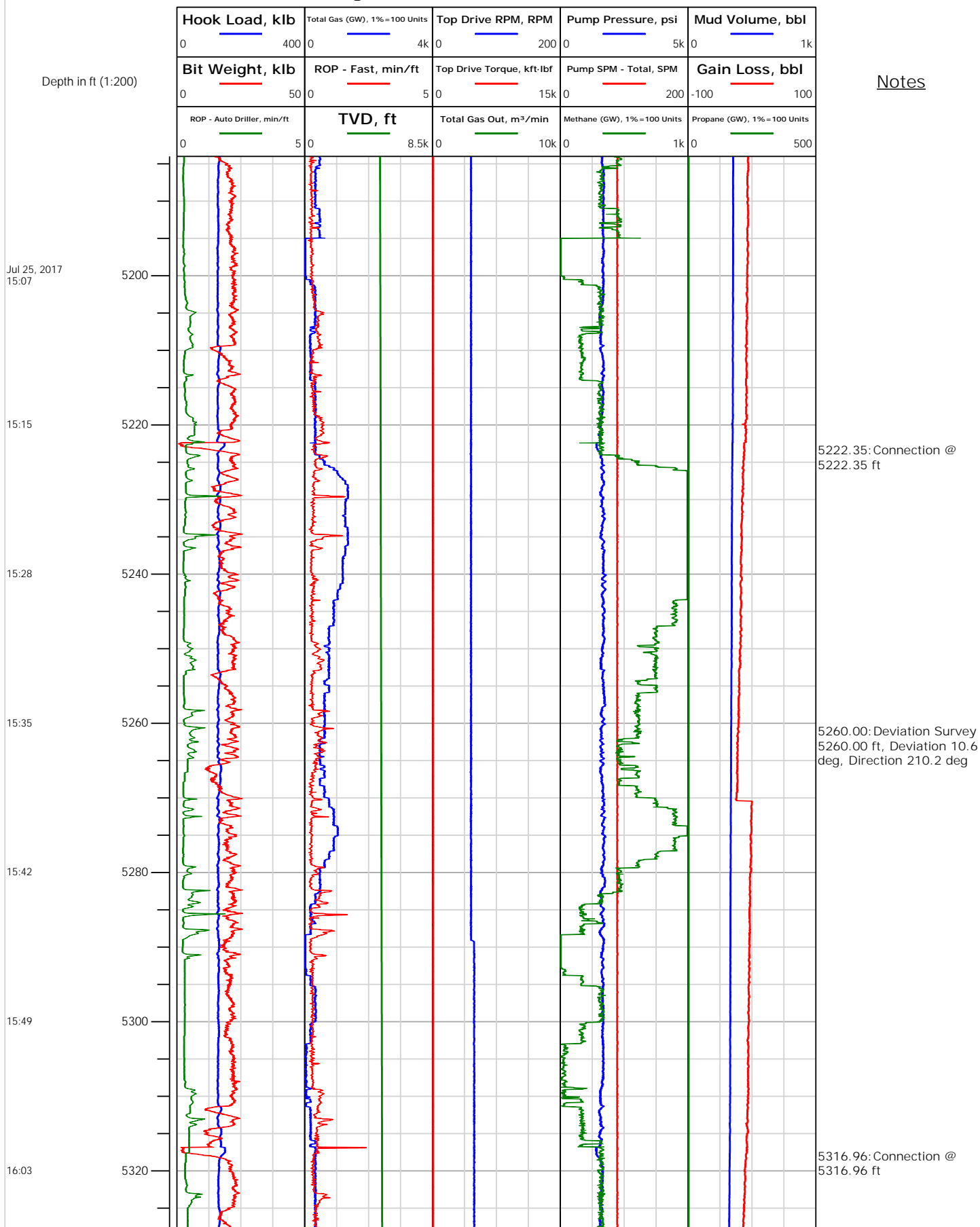
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes





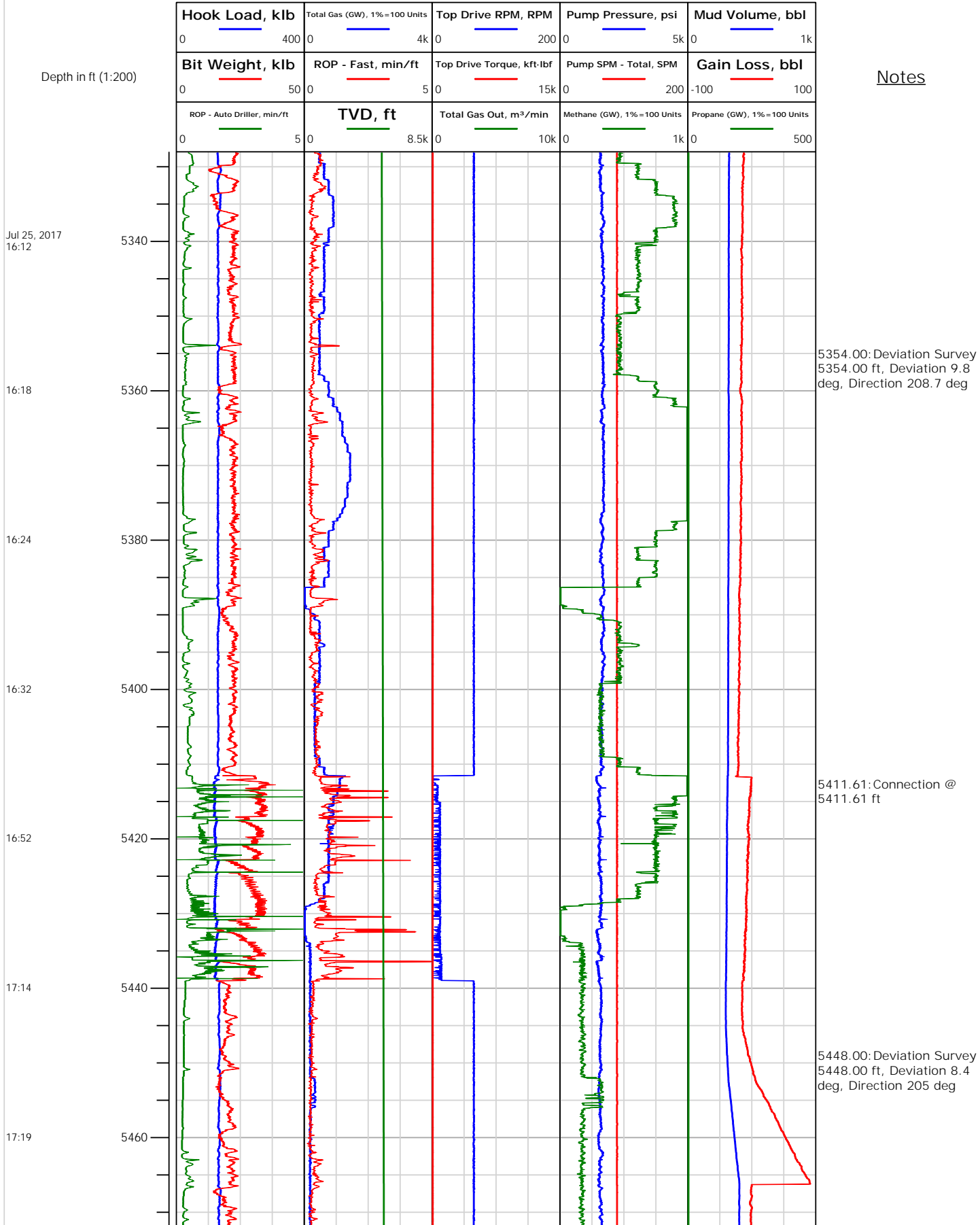
# Electronic Drilling Recorder

Operator: Laramie Energy  
Contractor: Helmerich & Payne Drlg Co

Well Name: Gunderson 20-09W  
Rig: 522

Location:

Notes





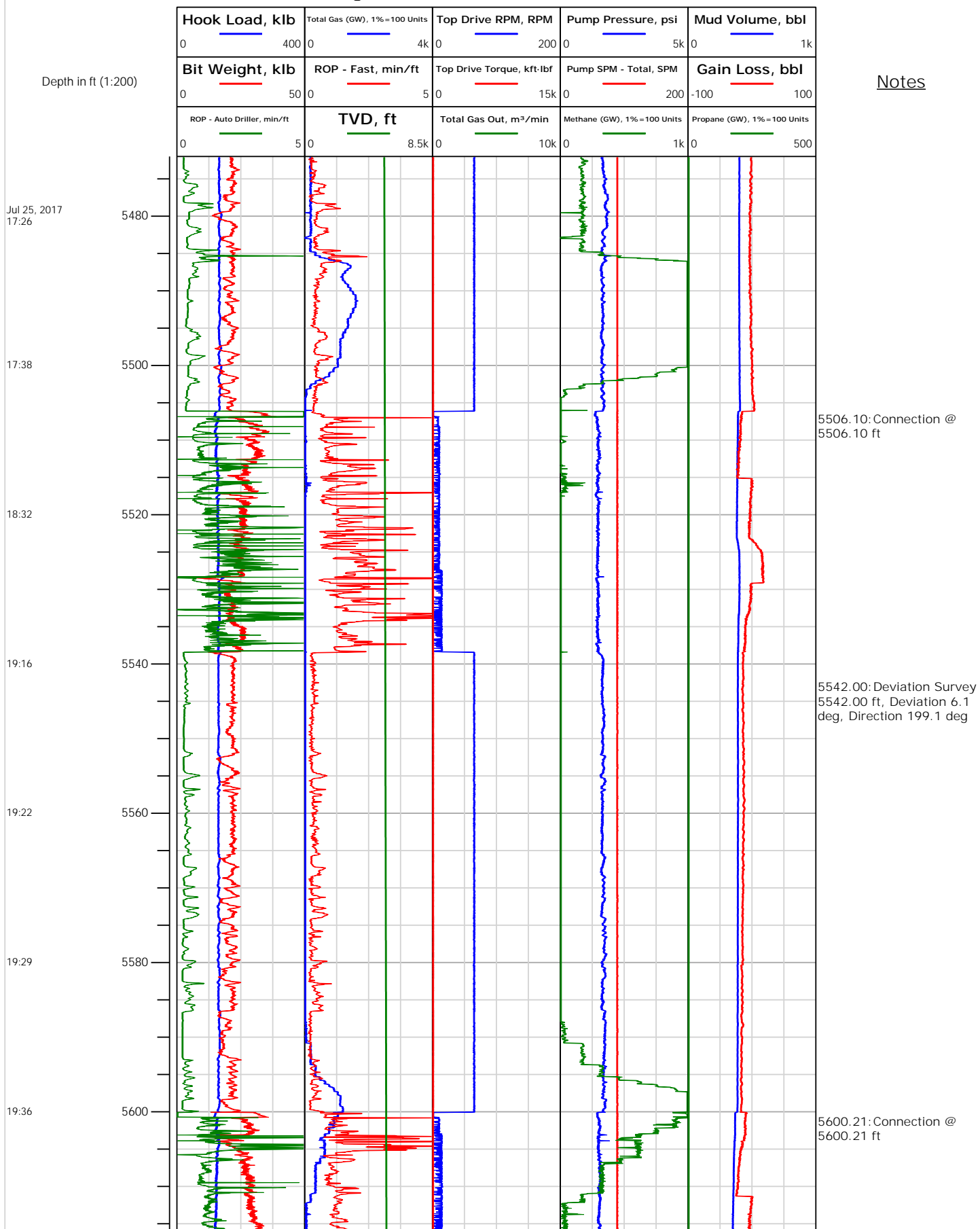
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes





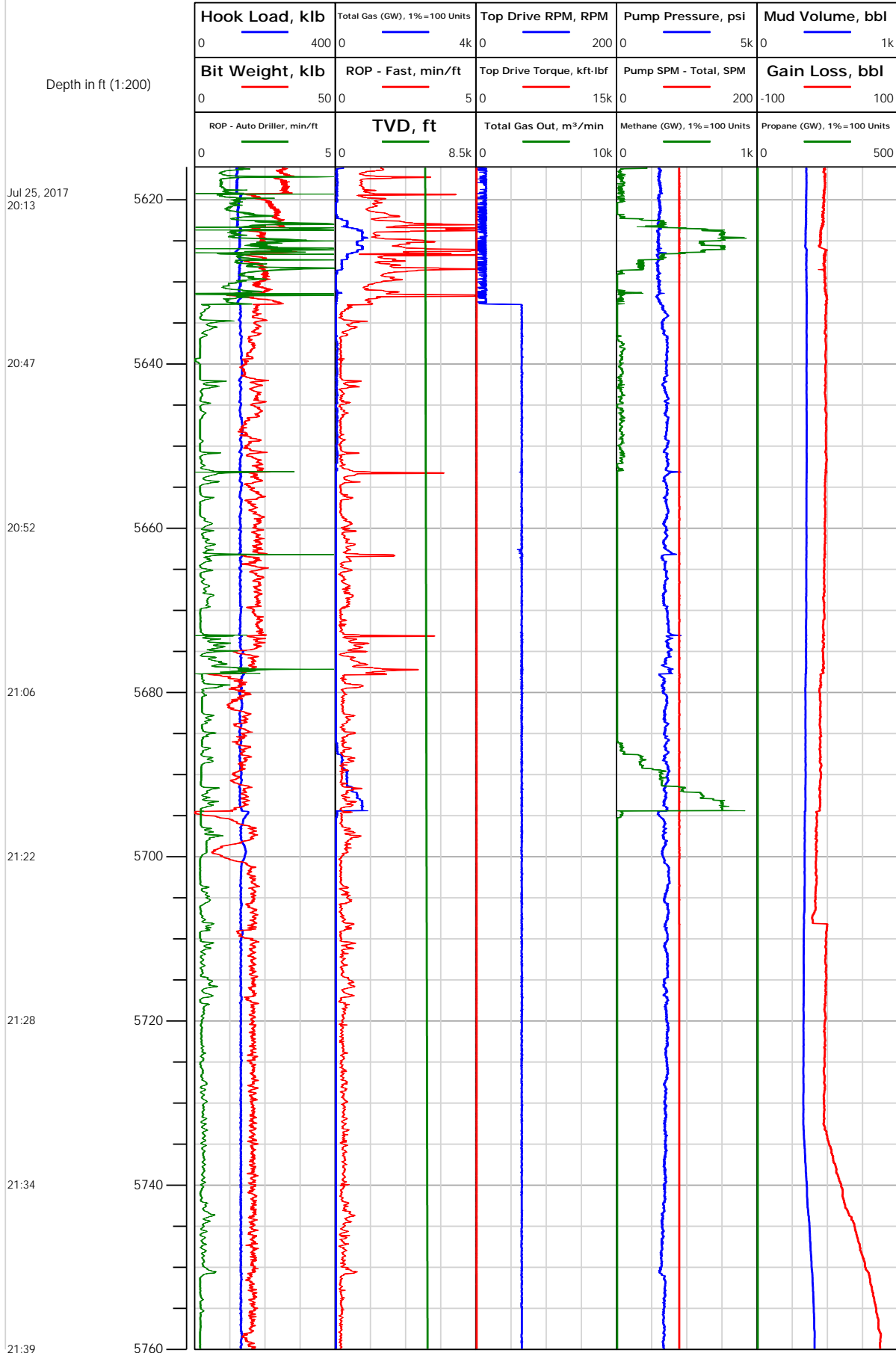
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes





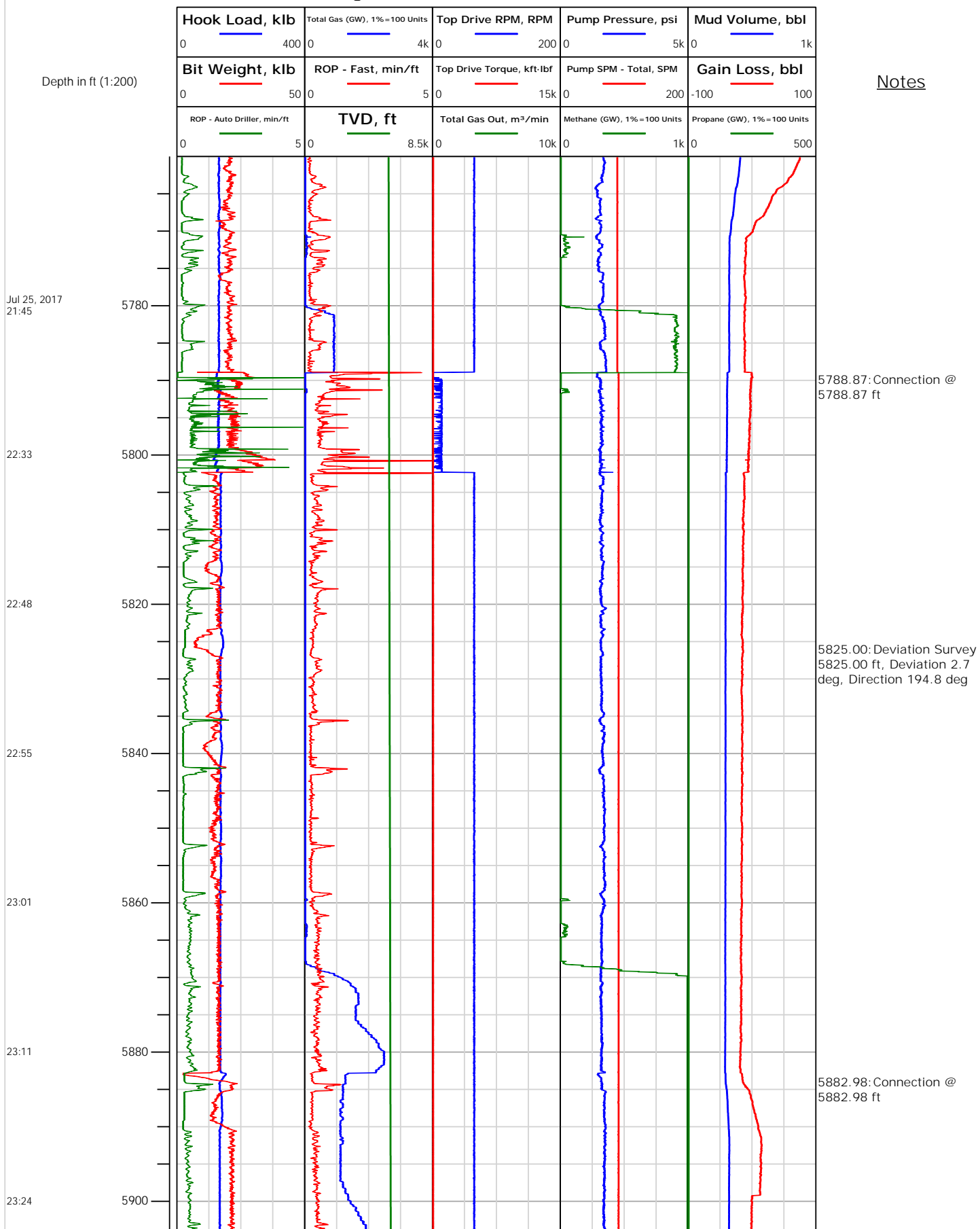
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes





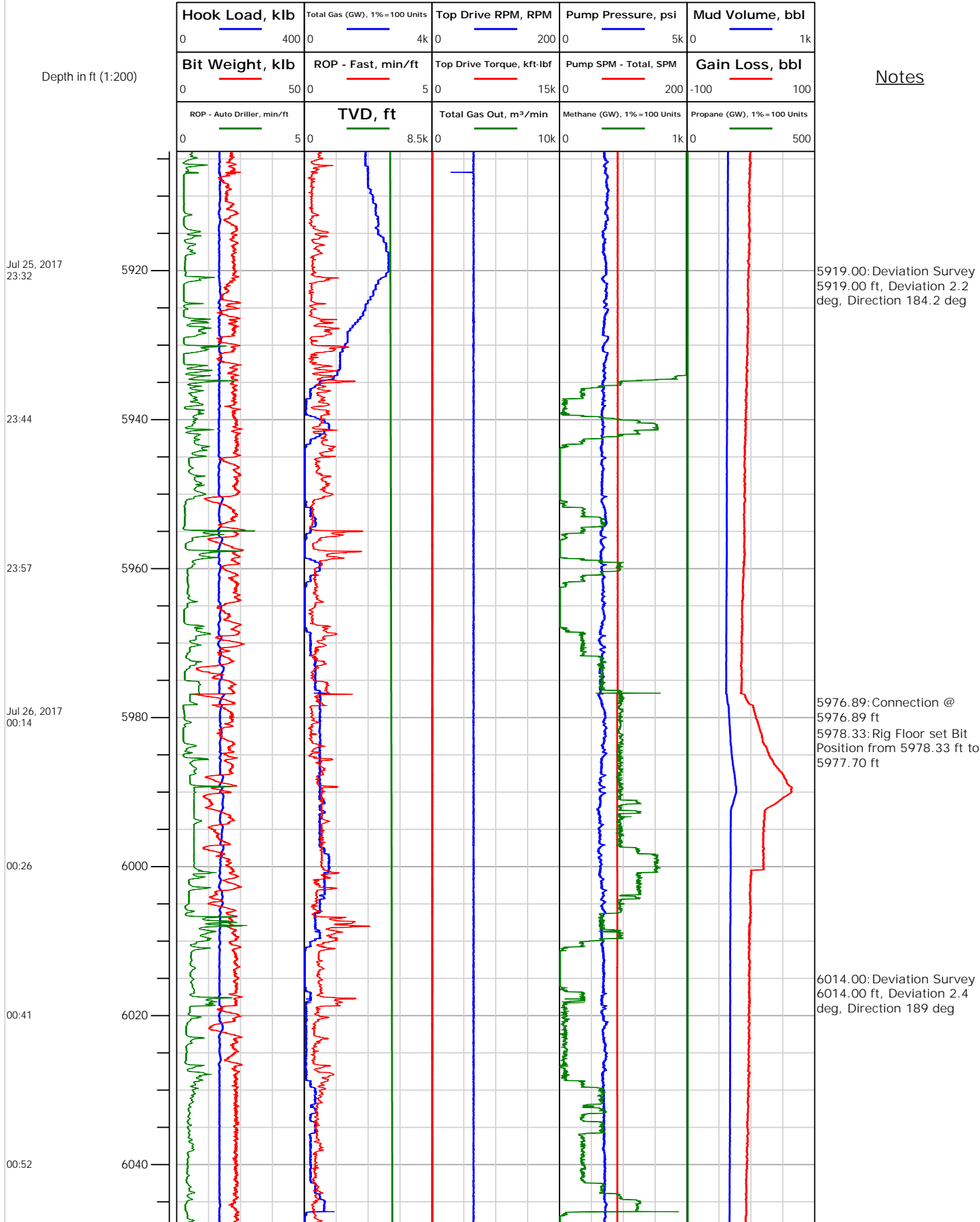
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

## Notes







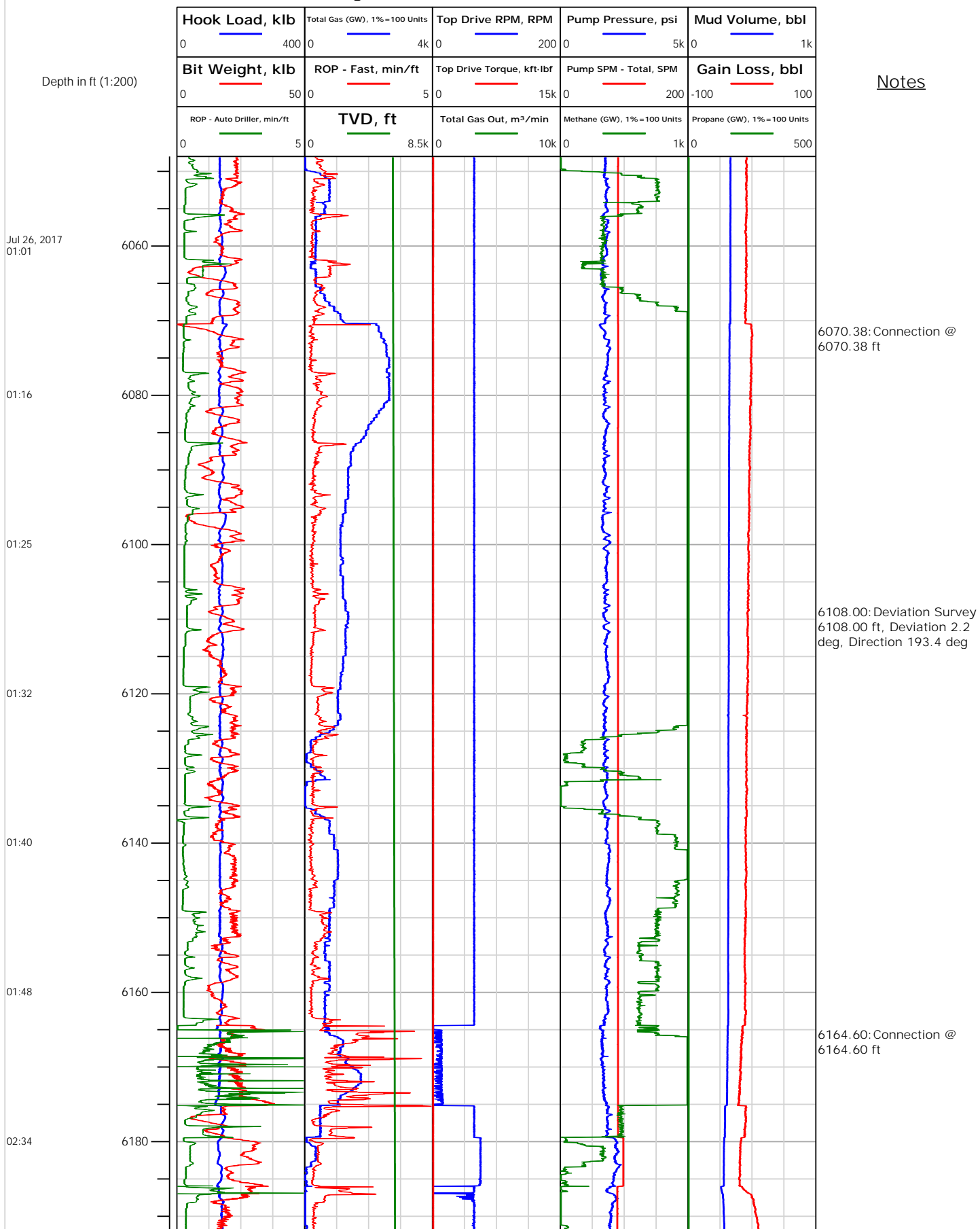
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes





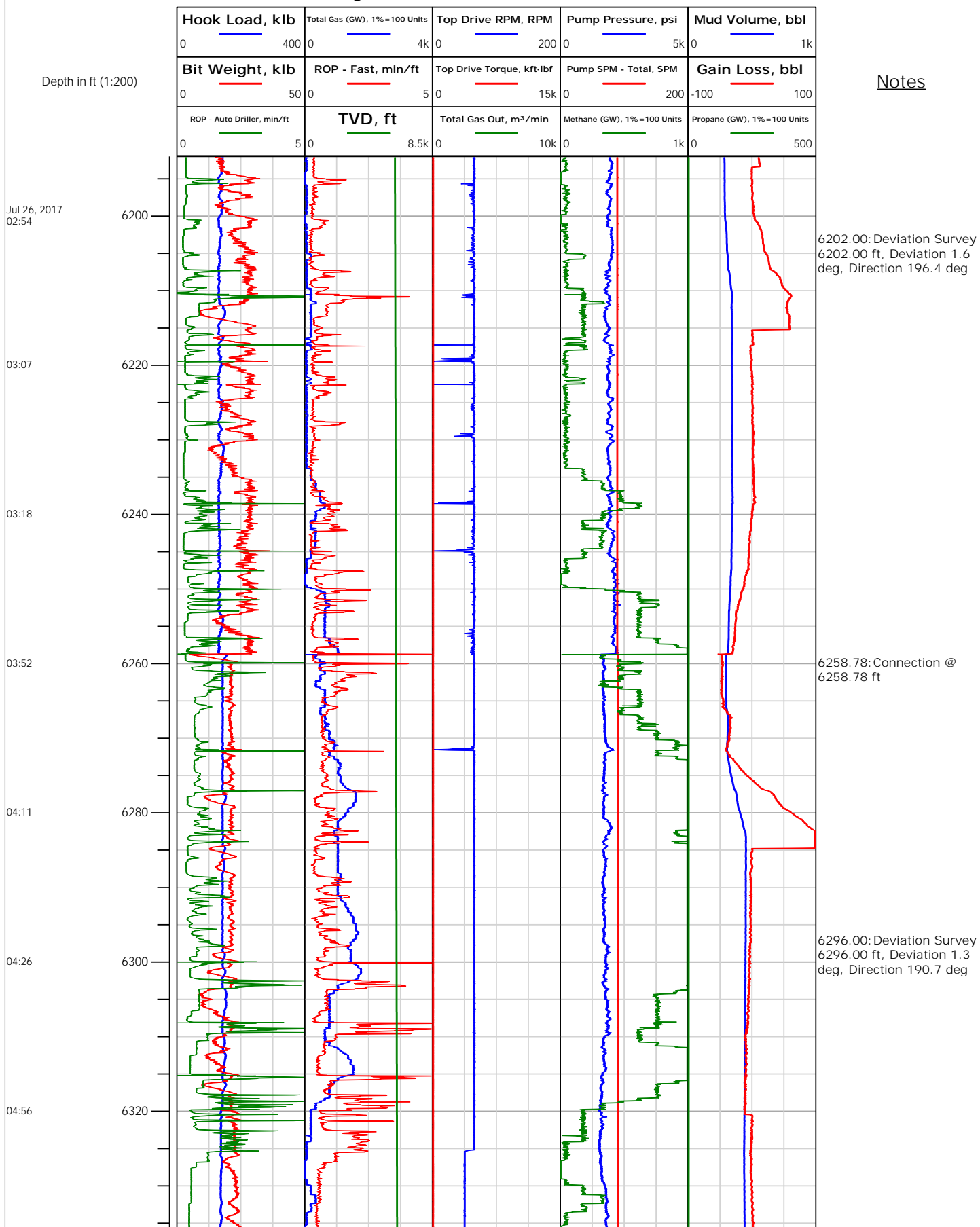
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes





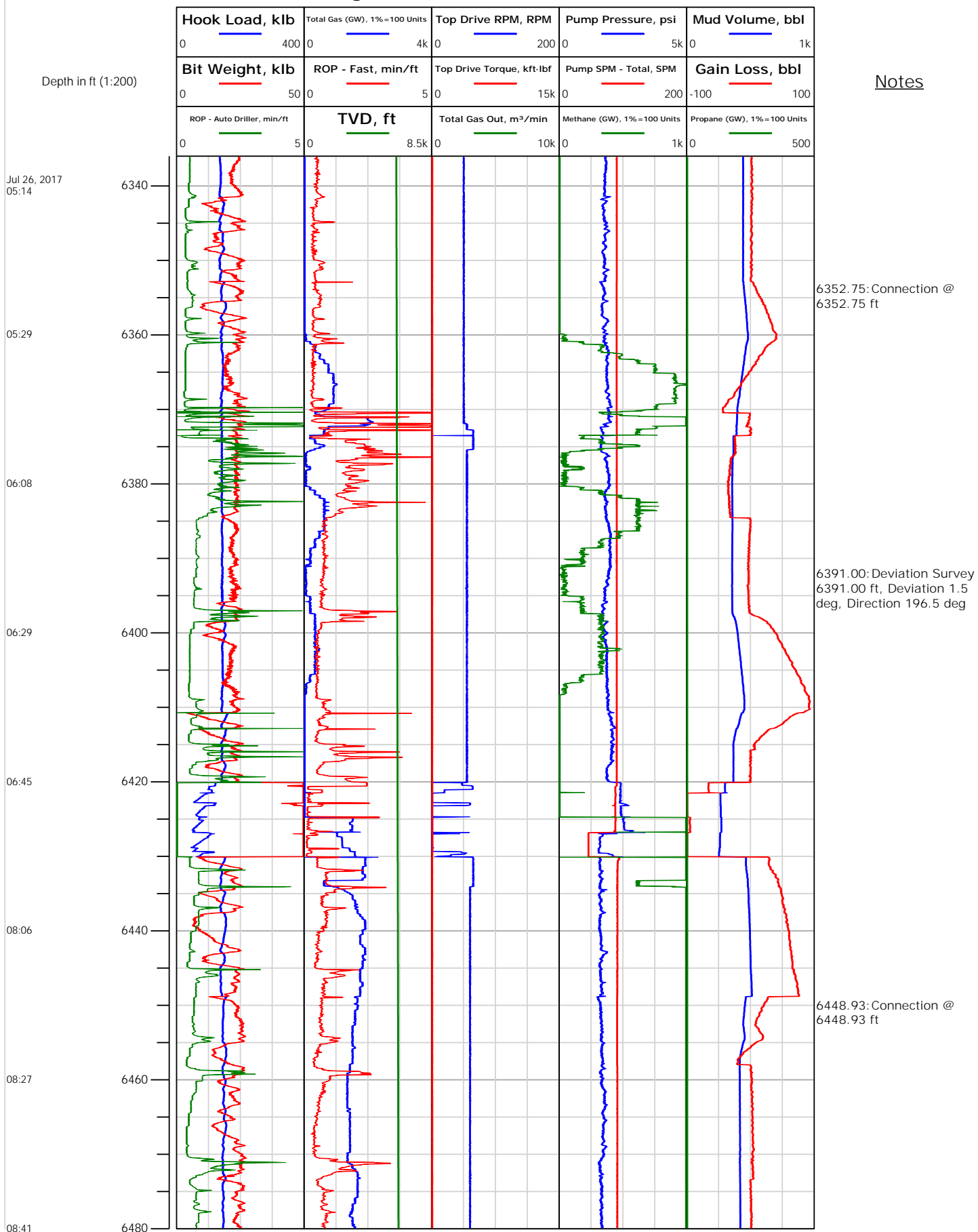
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes





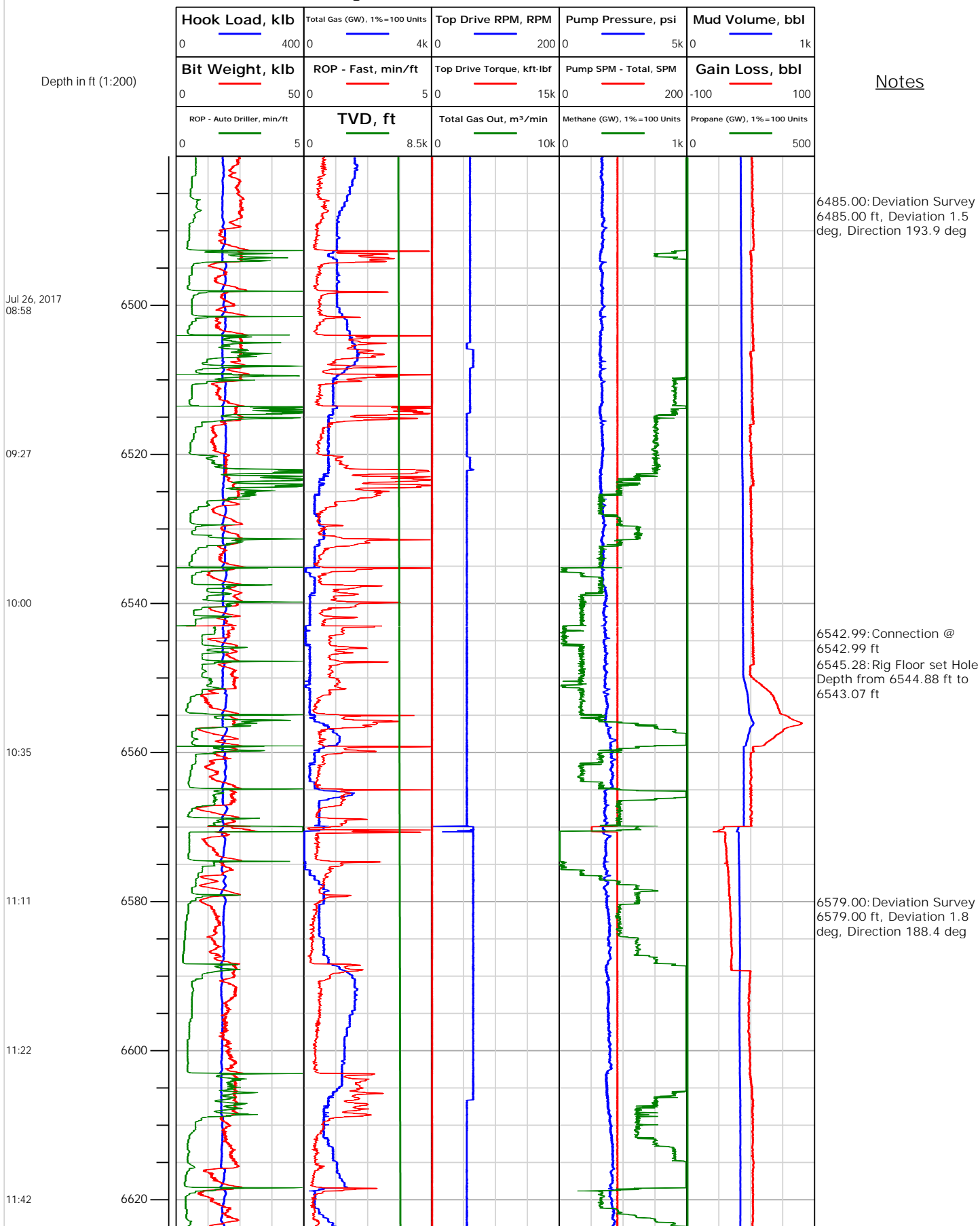
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

## Notes





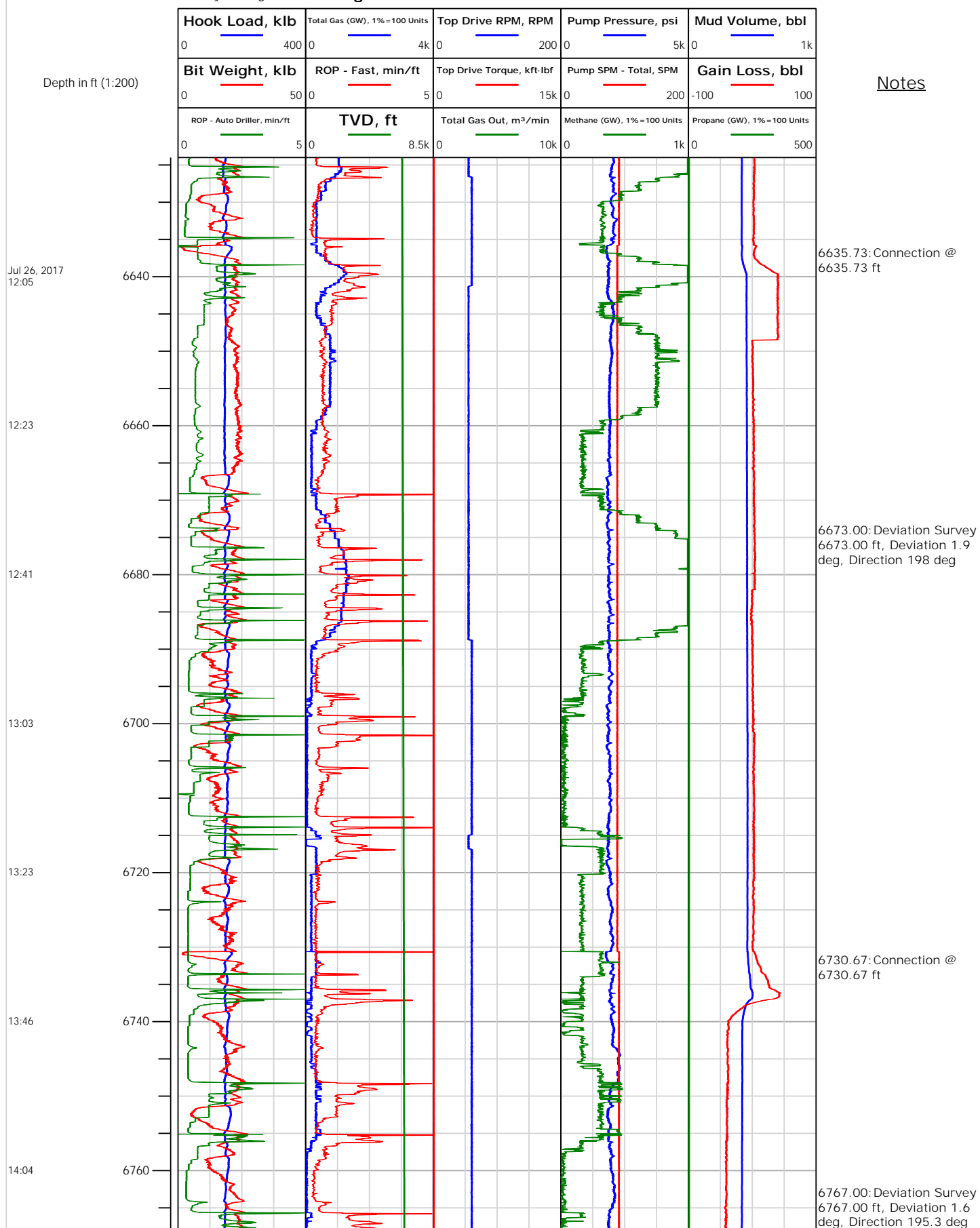
Operator: Laramie Energy  
Contractor: Helmerich & Payne Drlg Co

# Electronic Drilling Recorder

Well Name: Gunderson 20-09W  
Rig: 522

Location:

Notes





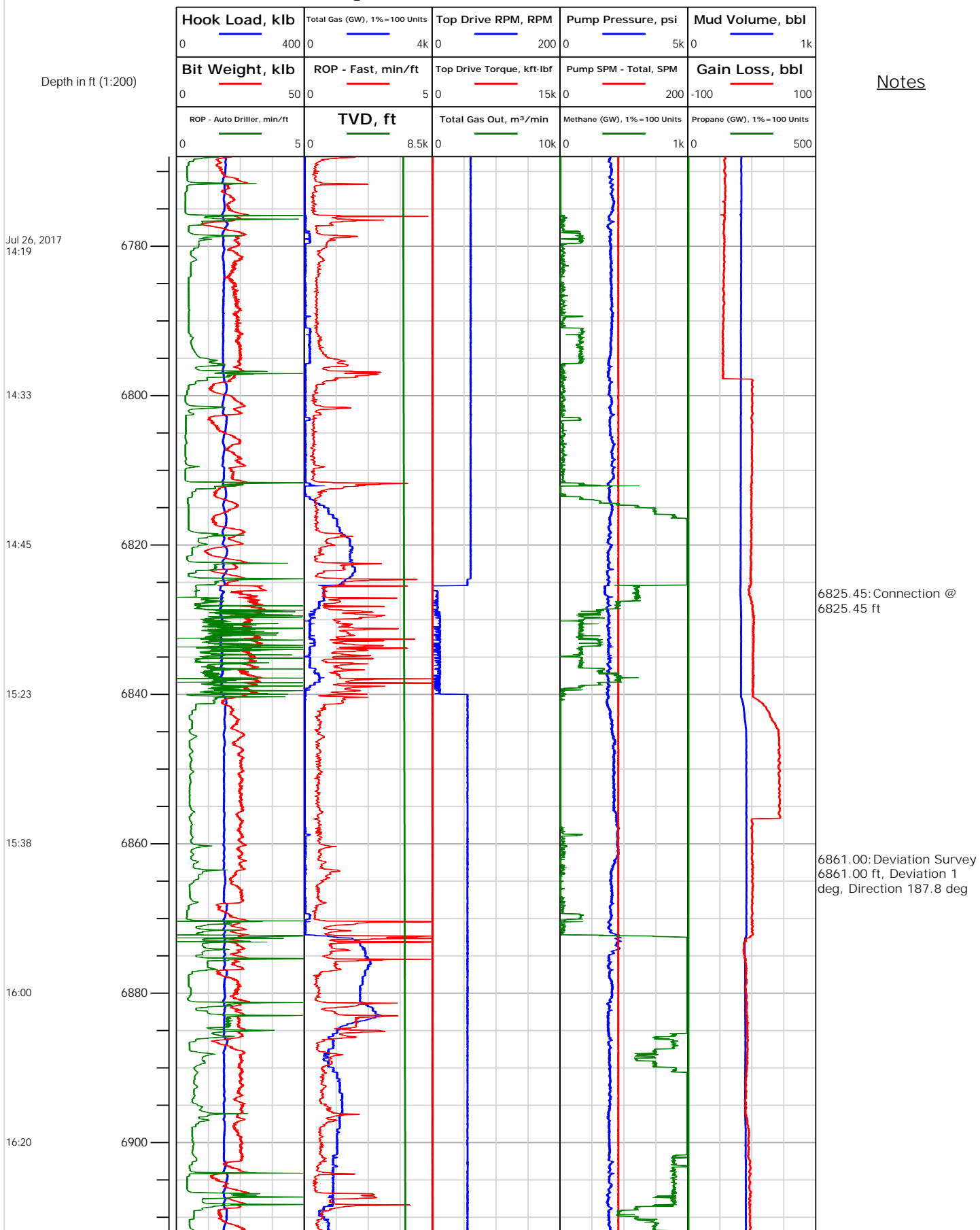
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes





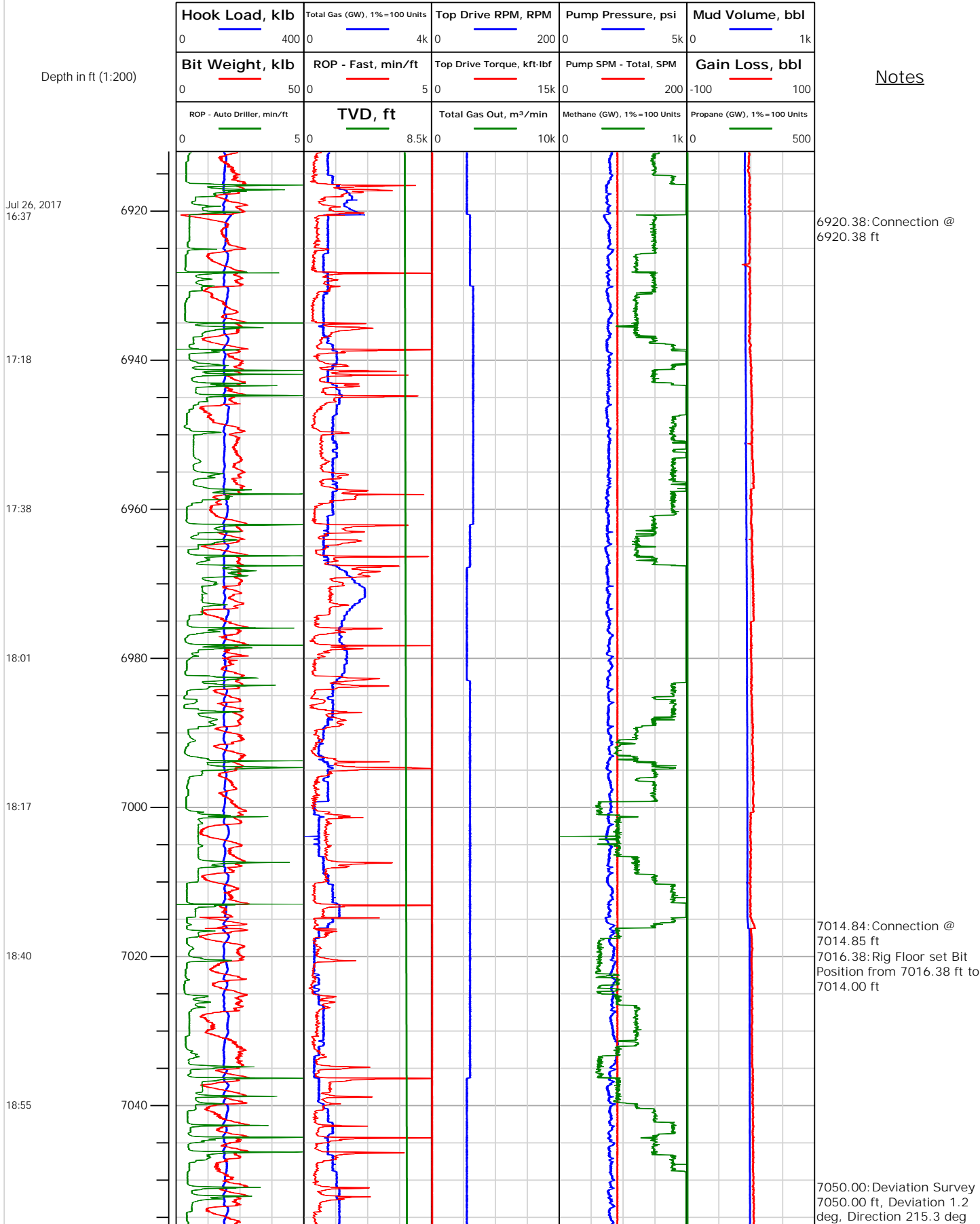
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

## Notes





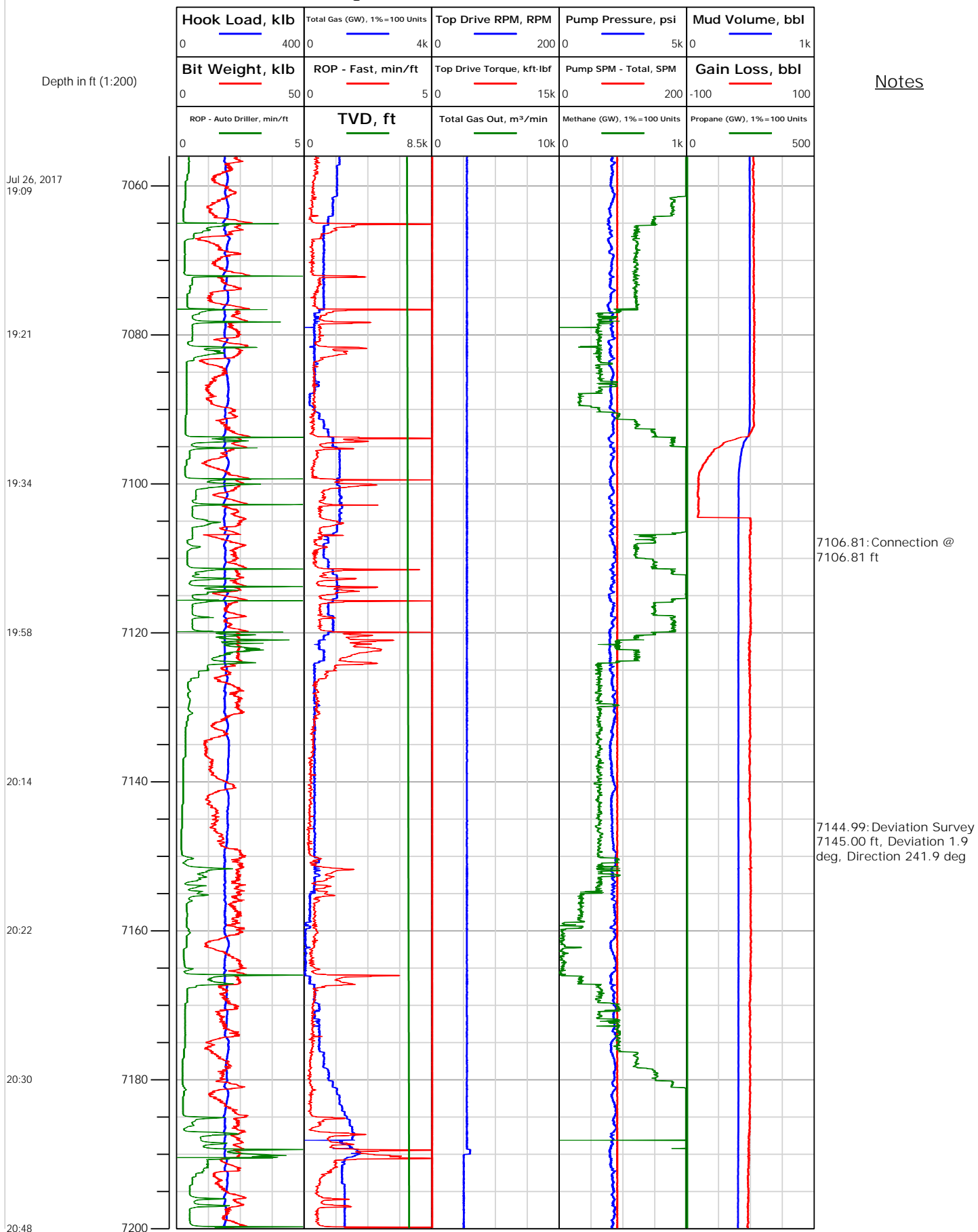
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes







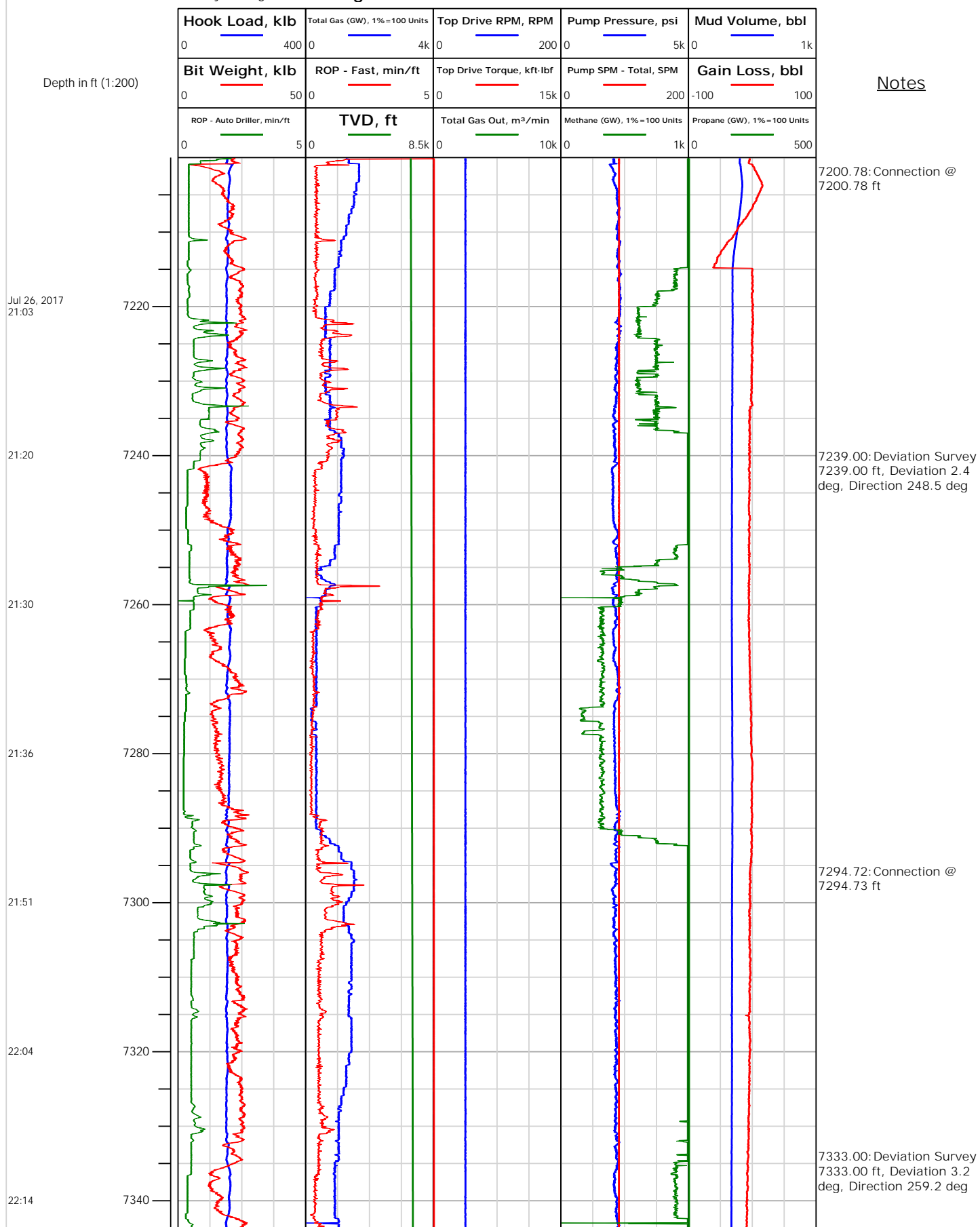
## Electronic Drilling Recorder

Operator: Laramie Energy  
Contractor: Helmerich & Payne Drlg Co

Well Name: Gunderson 20-09W  
Rig: 522

Location:

Notes





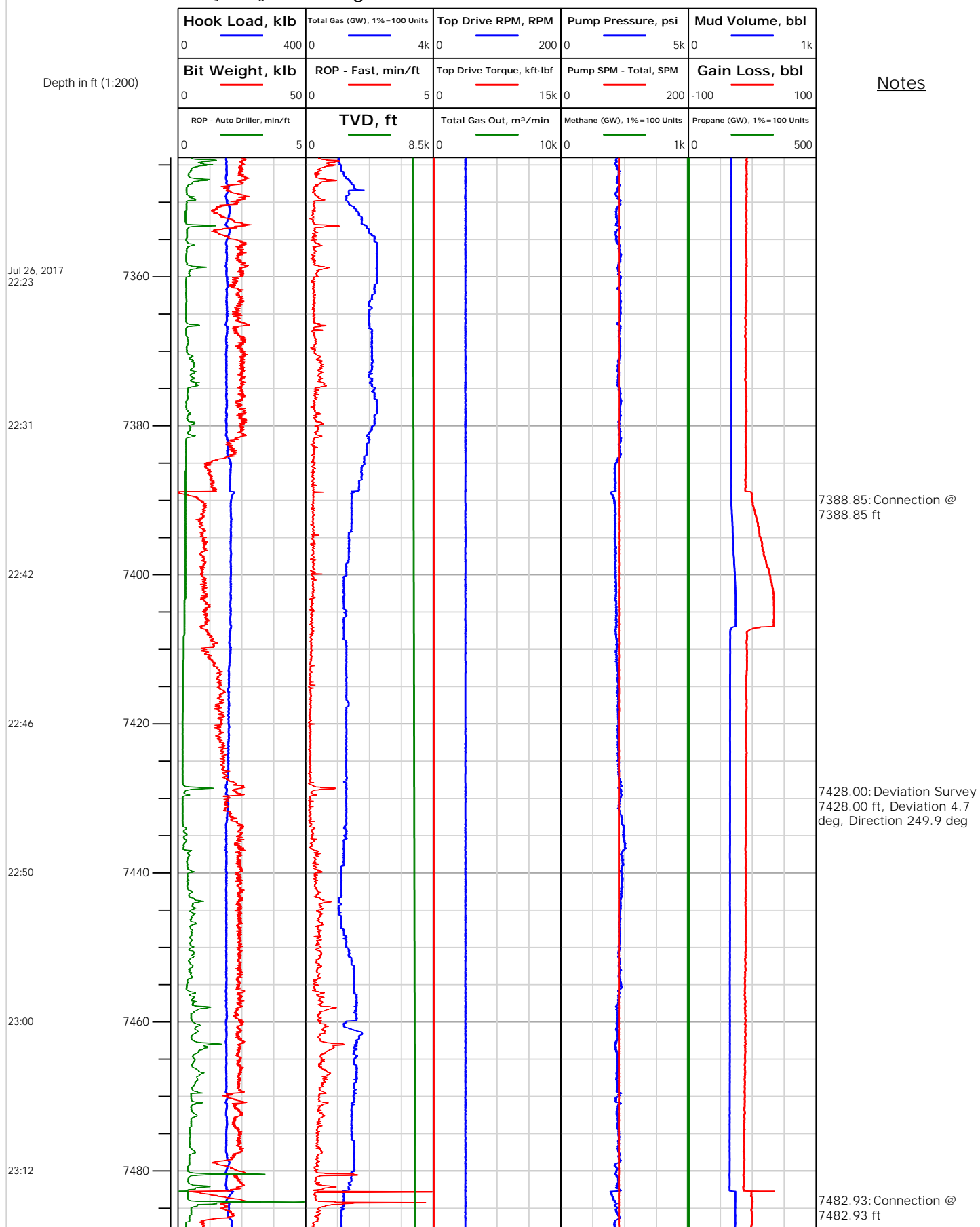
# Electronic Drilling Recorder

Operator: Laramie Energy  
Contractor: Helmerich & Payne Drlg Co

Well Name: Gunderson 20-09W  
Rig: 522

Location:

Notes





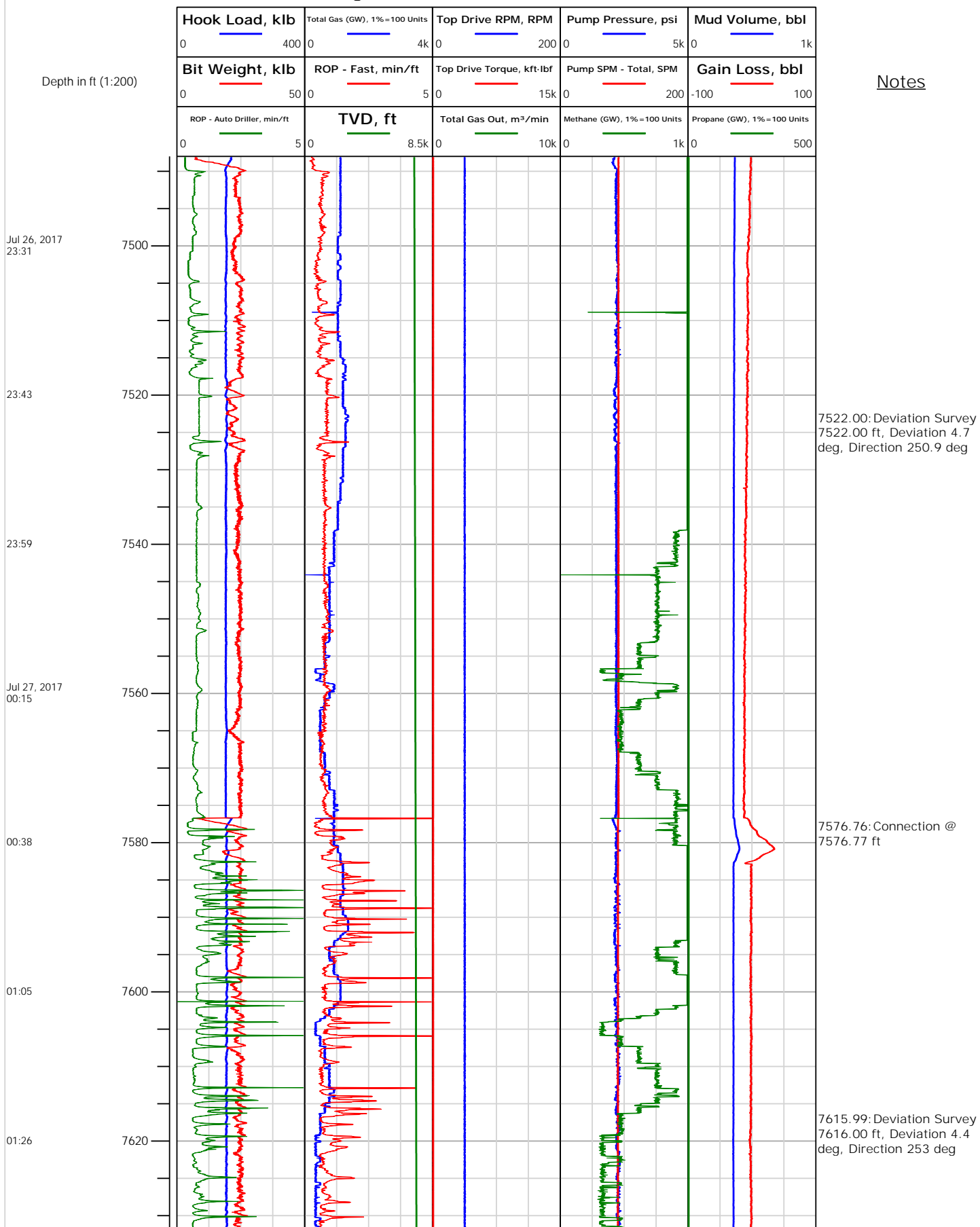
# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

Notes





# Electronic Drilling Recorder

**Operator:** Laramie Energy  
**Contractor:** Helmerich & Payne Drlg Co

**Well Name:** Gunderson 20-09W  
**Rig:** 522

**Location:**

## Notes

