



Trailblazer Analytics Driller Training

By Major Drilling
2024

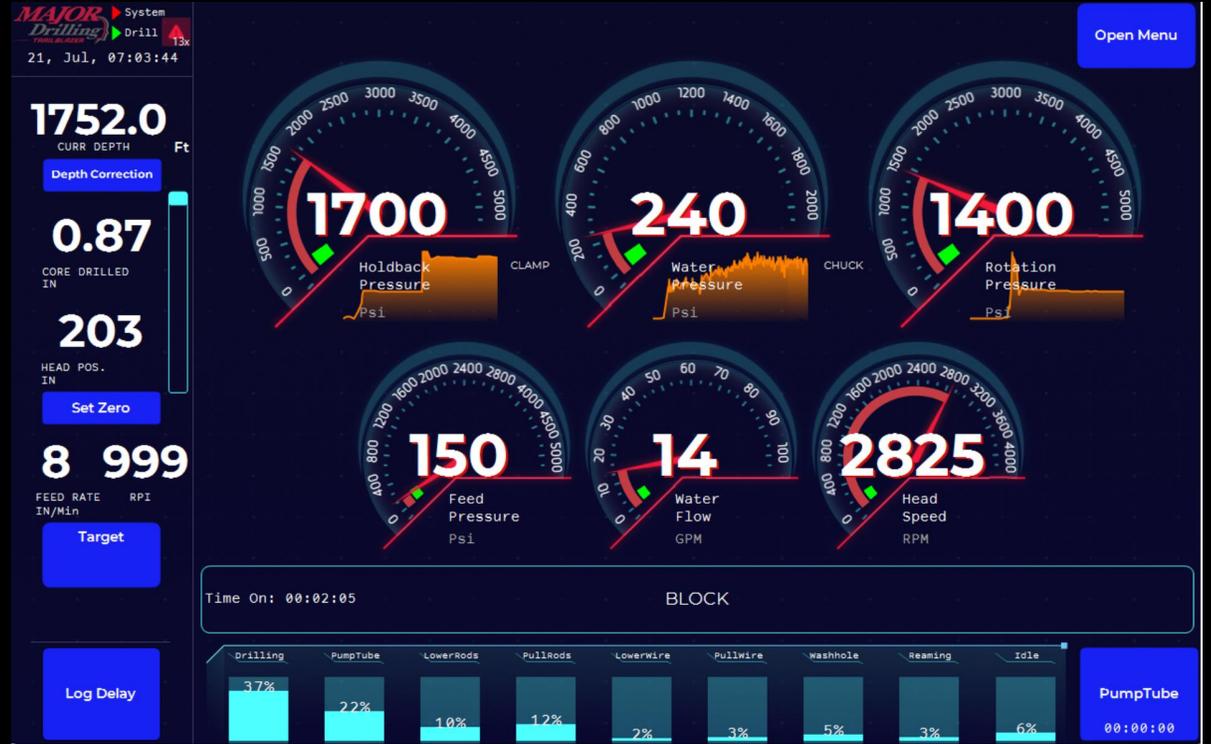
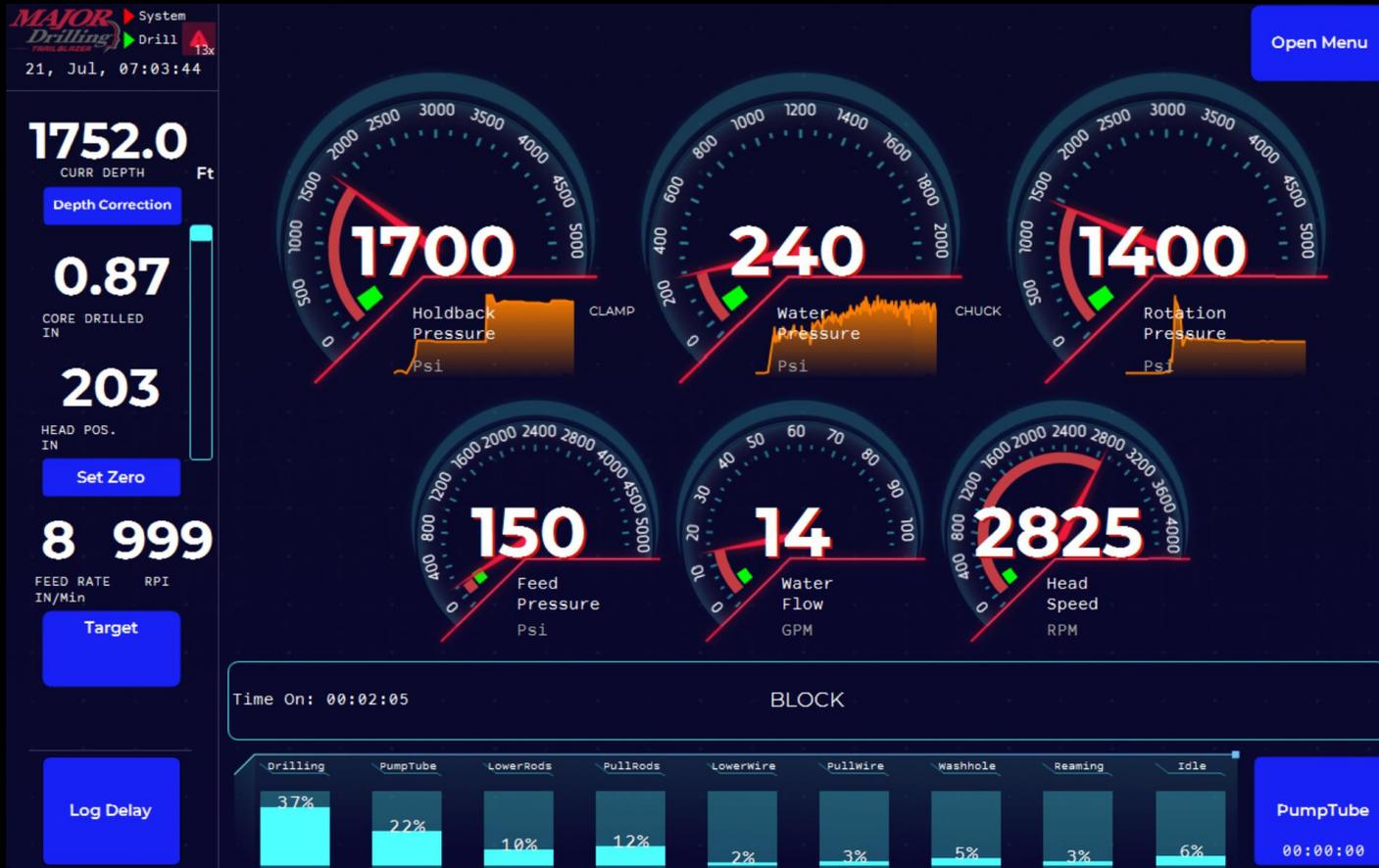




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Active Drilling Screen



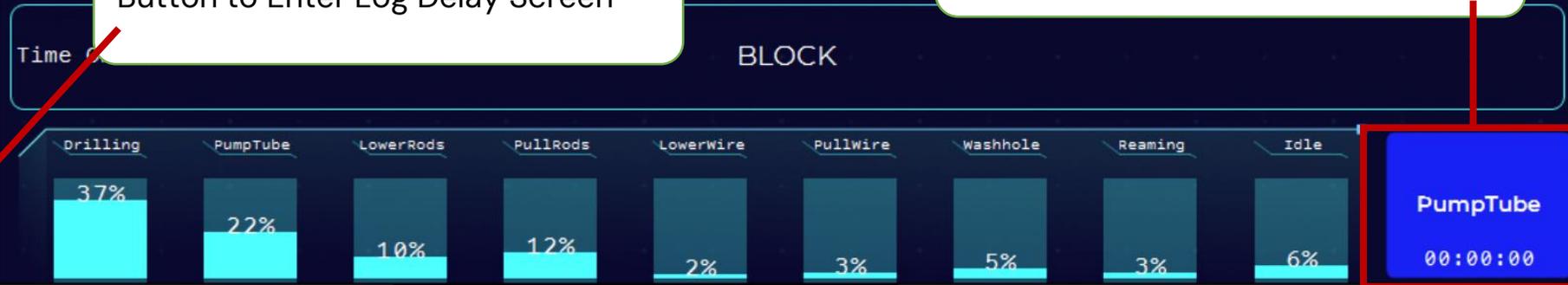
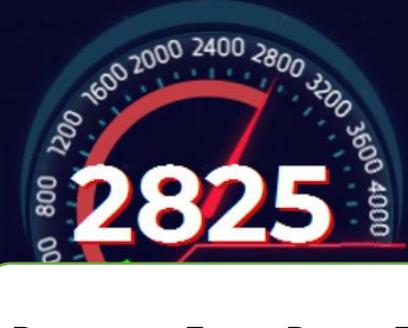
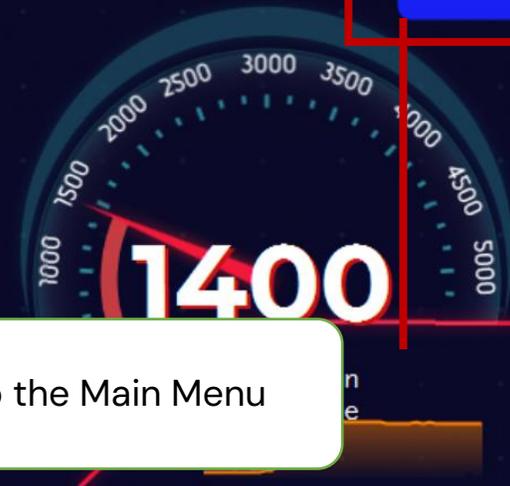
Operation of Drill

The active drilling screen will display gauges for the primary functions of the drill so the operator can easily see what the drill is doing to obtain the best drilling parameters.

The gauges will show the current value and a green "sweet spot" operating range for the operator to attain. This dynamic "sweet spot" operating range will be based on the values recorded during "best case" historical drilling data. The operator can use this information to adjust the drills controls to maintain the "sweet spot" operating values.

- 15/06- SS currently dis

1752.0
CURR DEPTH Ft
0.87
CORE DRILLED IN
203
HEAD POS. IN
8 999
FEED RATE RPI IN/Min
Target



Open Menu

Button to Bring up the Main Menu

Button to Enter Log Delay Screen

Button to Enter Pump Tube Screen

Log Delay

PumpTube
00:00:00

Navigation

Next
Skip Active Drilling

1752.0

CURR DEPTH Ft

Depth Correction

0.87

CORE DRILLED IN

203

HEAD POS. IN

Set Zero

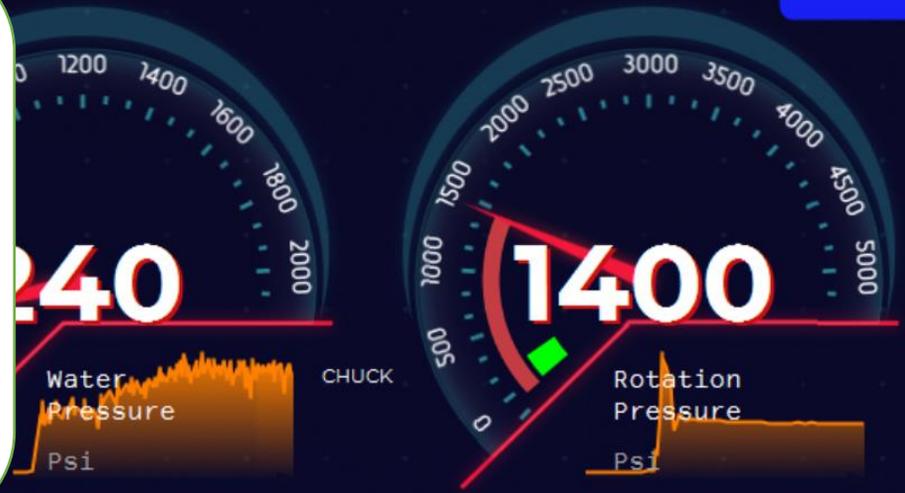
8 999

FEED RATE RPI IN/Min

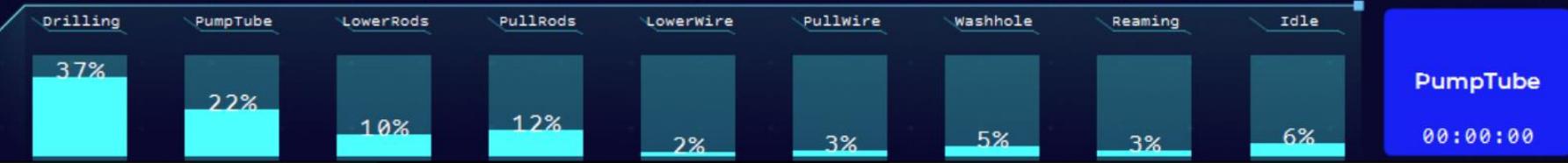
Target

Log Delay

Current depth in the current hole, configurable in Feet or Meters.
Press this button to bring up a Keypad. Use **depth correction** when the actual depth is different to the calculated depth.



Time On: 00:02:05 BLOCK



PumpTube
00:00:00

Depth Correction

Next
Skip Active Drilling

Core Drilled Display

1752.0
CURR DEPTH Ft

Depth Correction
0.87
CORE DRILLED IN

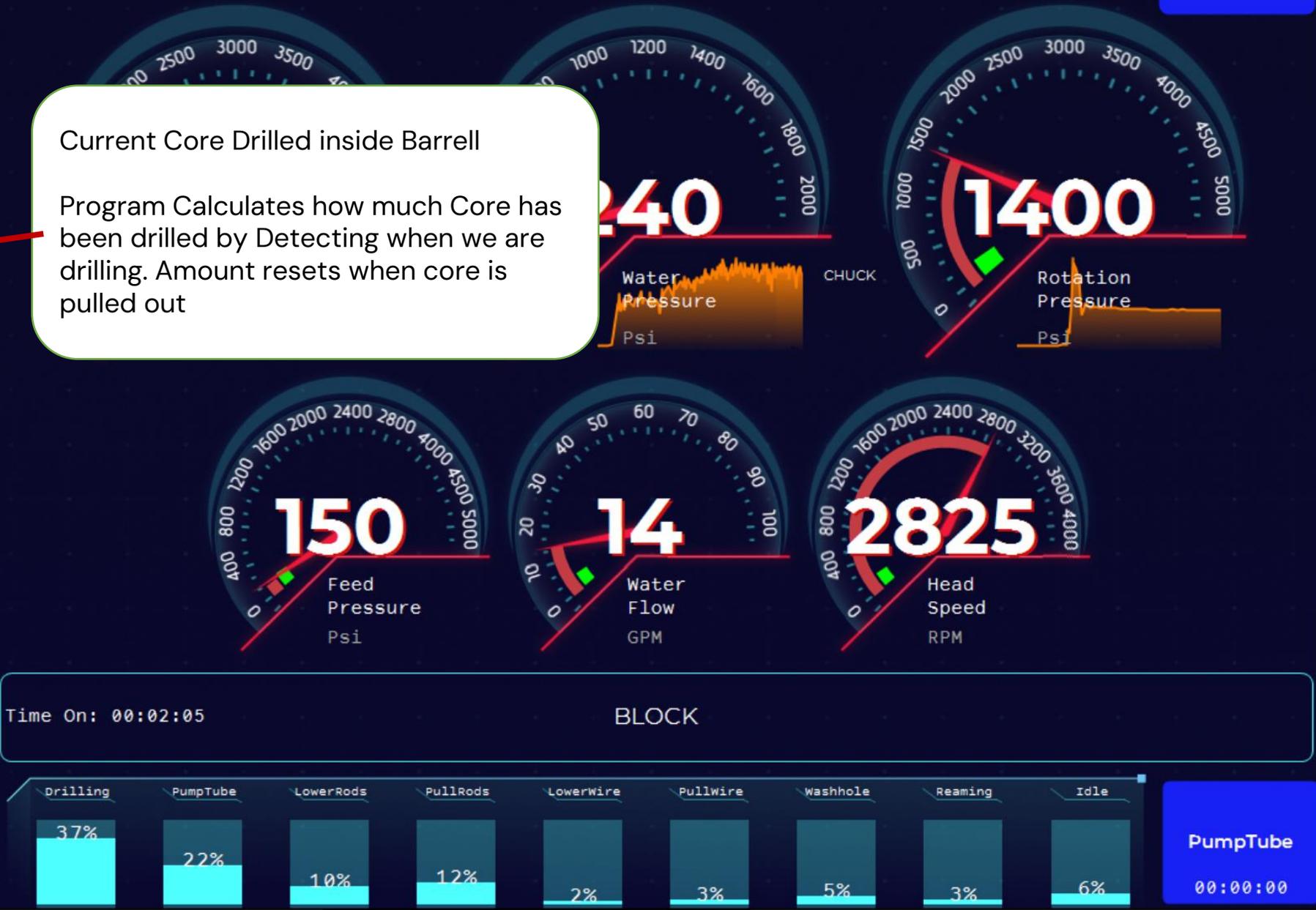
203
HEAD POS. IN

8 999
FEED RATE RPI IN/Min

Target

Log Delay

Current Core Drilled inside Barrell
Program Calculates how much Core has been drilled by Detecting when we are drilling. Amount resets when core is pulled out



Next
Skip Active Drilling

PumpTube
00:00:00

Head Position

1752.0
CURR DEPTH Ft

Depth Correction

0.87

CORE DRILLED IN

203

HEAD POS. IN

Set Zero

8 999

FEED RATE RPI
IN/Min

Target

Log Delay



Current Head Position in Mast. Measured from Bottom of Mast

Press **Set Zero** when Head is at the bottom of the mast to calibrate



Time On: 00:02:05 BLOCK



PumpTube
00:00:00

Next

Skip Active Drilling

Head Position

1752.0
CURR DEPTH Ft

Depth Correction

0.87
CORE DRILLED IN

203
HEAD POS. IN

Set Zero

8 999
FEED RATE RPI
IN/Min

Target



Head RPI
Program calculates how many times the rods rotate for each inch of penetration



Time On: 00:02:05 BLOCK



Log Delay

PumpTube
00:00:00

Next

Skip Active Drilling

1752.0
CURR DEPTH Ft

Depth Correction

0.87
CORE DRILLED IN

203
HEAD POS. IN

Set Zero

8 999
FEED RATE IN/Min

Target

Log Delay



Feed Rate
Program calculates the speed of the head advancing downwards



Time On: 00:02:05 BLOCK



PumpTube
00:00:00

Feed Rate

Next

Skip Active Drilling

1752.0
CURR DEPTH Ft

Depth Correction

0.87
CORE DRILLED IN

203
HEAD POS. IN

Set Zero

8 999
FEED RATE RPI IN/Min

Target

Log Delay



Current Shift Activity Summary Displayed in a Bar graph.
Bar Graph Value is Percentage Time of Shift

Time On: 00:02:05 BLOCK



PumpTube
00:00:00

Activity Statistics

Next
Skip Active Drilling

Gauge Trend Display

1752.0
CURR DEPTH Ft
Depth Correction

0.8
CORE DRILL IN

20
HEAD POS. IN
Set 2

8
FEED RATE IN/Min
Targ



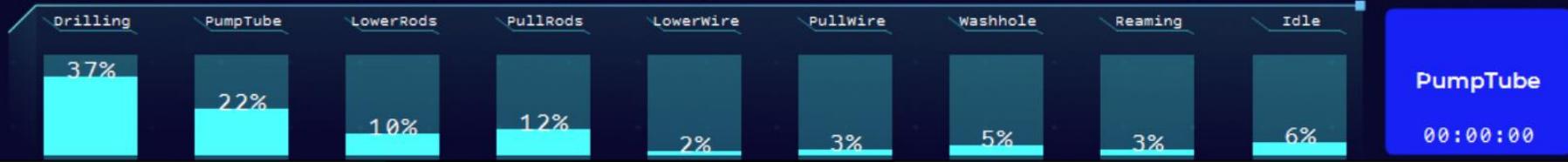
Gauge Trends

Displayed Value of how the currents current readings compare against time

In this example we can see the rotation pressure is gradually dropping with time

Time On: 00:02:05

BLOCK



Log Delay

Next

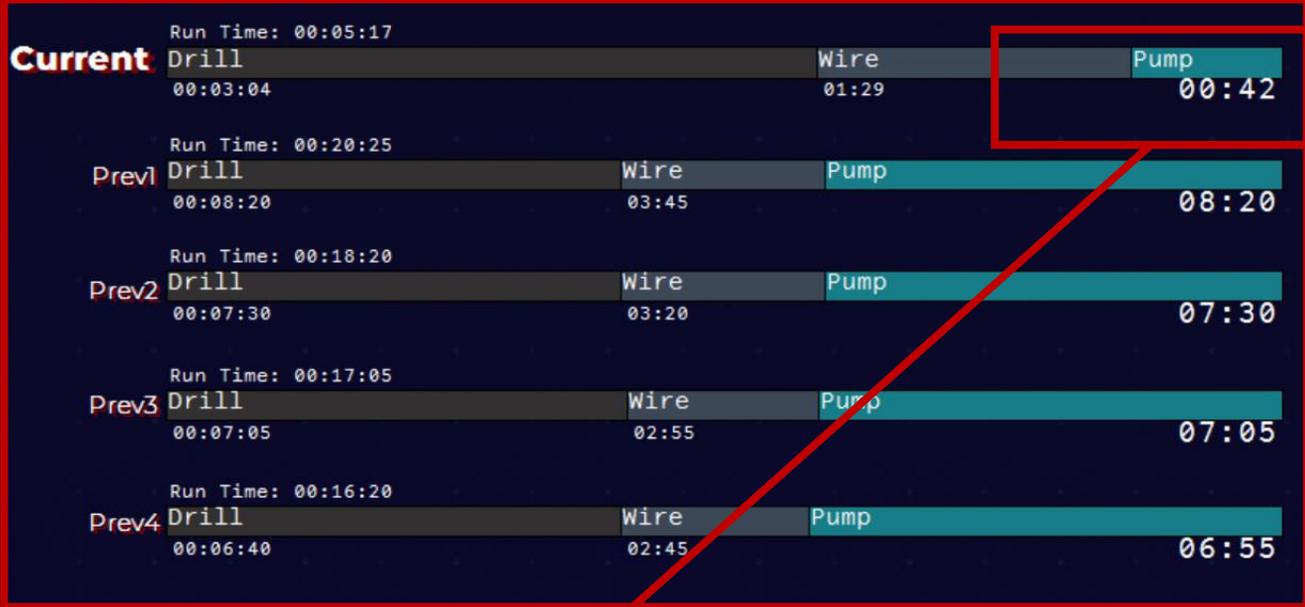
Skip Active Drilling

Pump Tube



the real-time Pump Pressure enhanced Display.

The graph represents pressure over time for pump tube with the Record of pressure and time of last pump tube event.



Pump Tube Statistics

Time for current pump tube event

Past Drill Runs
Users can view their run times to break down where they spend their time and anticipate their next drill runs

Go Back

Confirm Lock

No Lock Indication

Next

Skip Pump Tube

Current Run Time: 00:00:00



Tube Lock Detection

Run Time	Drill	Wire	Pump	Total
00:06:32	00:03:04	01:29	01:57	00:00
00:08:20	00:08:20			08:20
00:07:30	00:07:30			07:30
00:06:40	00:06:40			06:55

Lock Detection
Users will be prompted when the tube has seated
Users can see the Pressure spike via the graph

False Detect

13549	00:01:37AM
Peak Pressure	Duration
Psi	
Lock Detected	



Go Back

Confirm Lock

No Lock Indication

Next

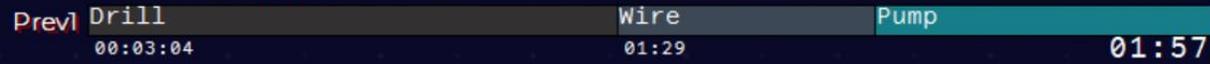
Skip Pump Tube

Current

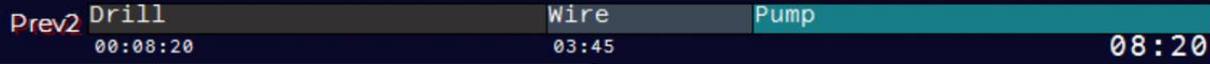
Run Time: 00:00:00

00:00

Run Time: 00:06:32



Run Time: 00:20:25



Go Back
User can Navigate back to the Active Drilling screen.

Confirm Lock Button
Users can Press Confirm Lock once the tube has been detected to seat.

No Lock Indication
Users can Press No Indication Lock if the tube has in fact seated but there was no detected indication.

13549
Peak Pressure
Psi
Lock D

12:33:30

12:34:00

12:34:30

Go Back

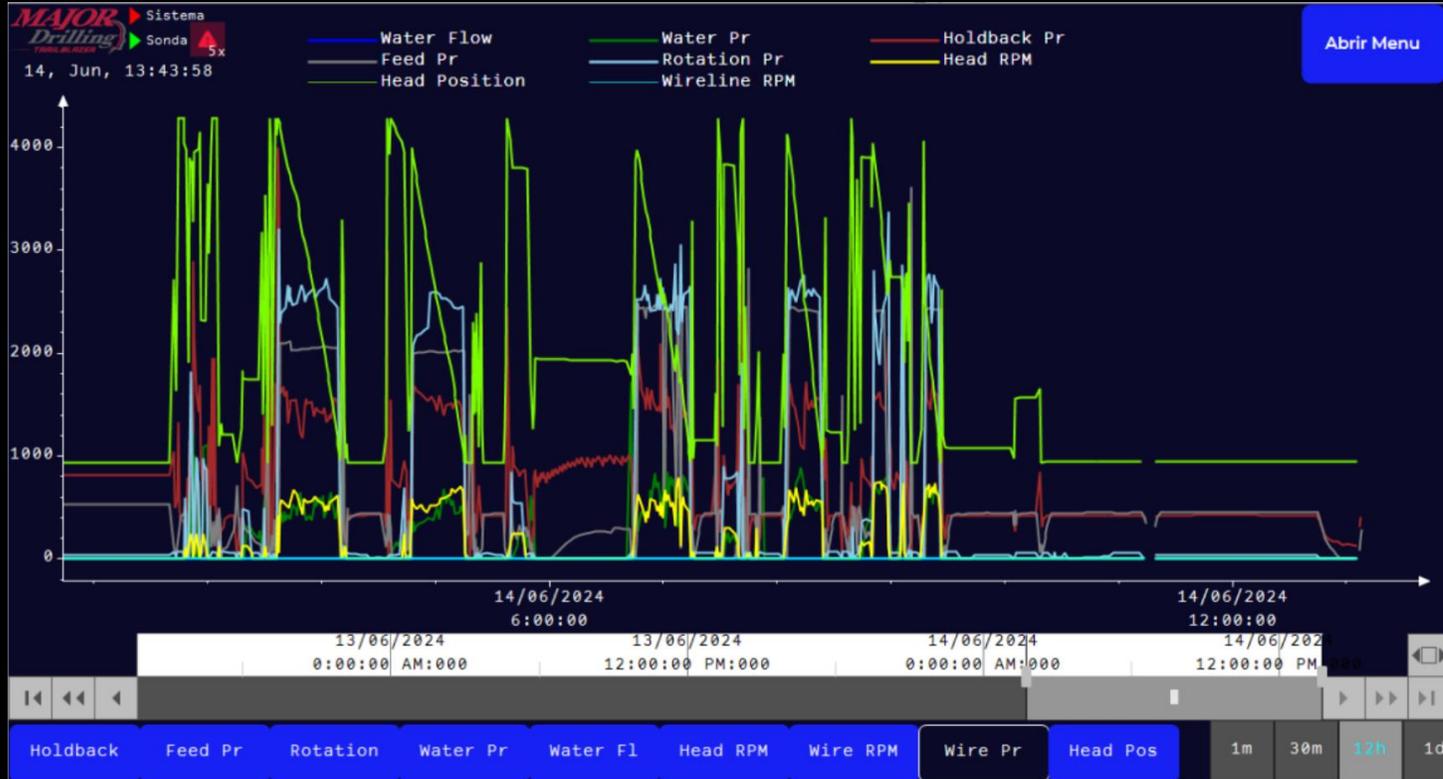
Confirm Lock

No Lock Indication

Next

Skip Pump Tube

View System Activities



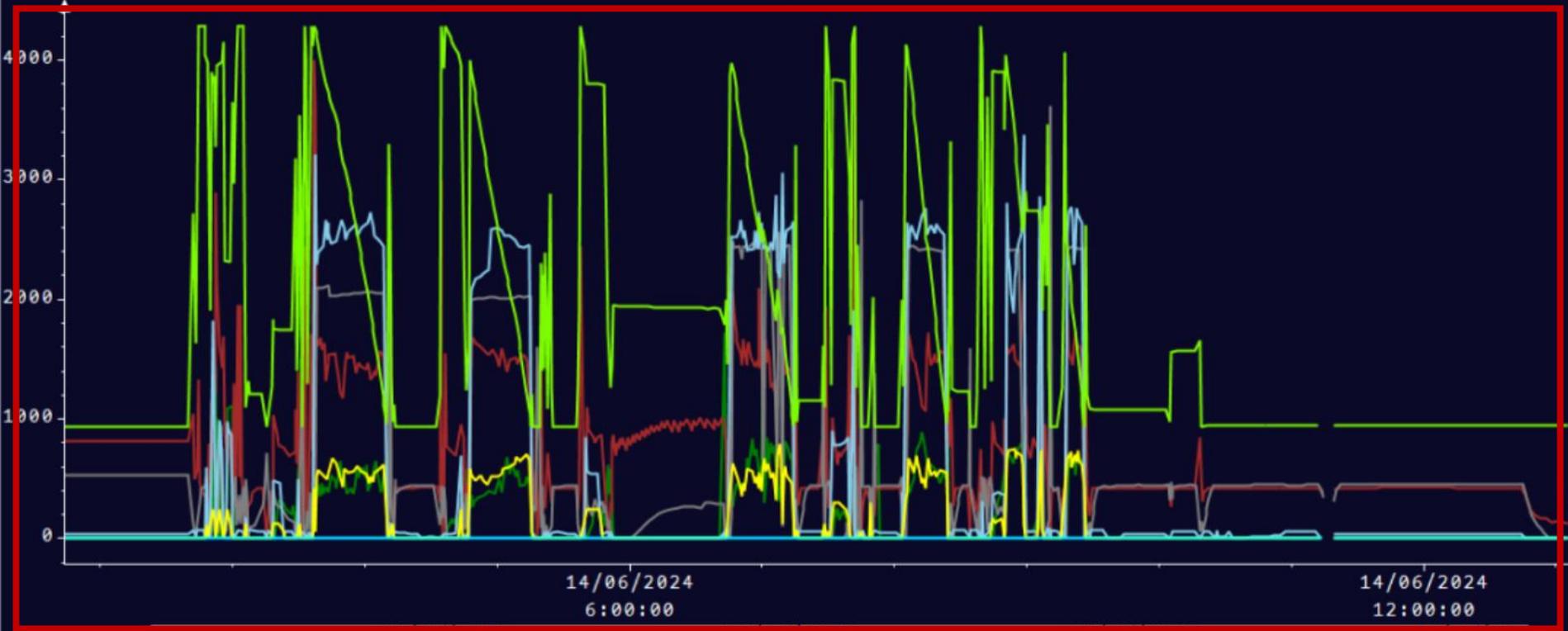
Users can use this screen to view historical data of the drill

More statistics coming in the next few months

- Water Flow
- Water Pr
- Holdback Pr
- Feed Pr
- Rotation Pr
- Head RPM
- Head Position
- Wireline RPM

Abrir Menu

Statistics – Day View

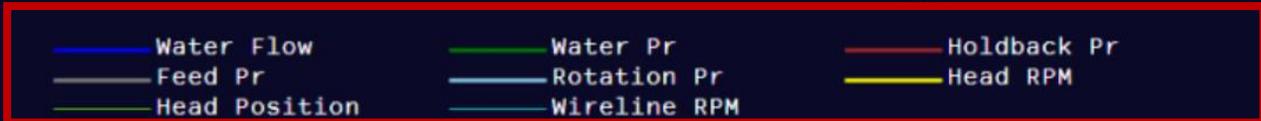


Navigation controls including back, forward, and search buttons. A menu bar at the bottom contains the following items: Holdback, Feed Pr, Rotation, Water Pr, Water Fl, Head RPM, Wire RPM, Wire Pr (highlighted), Head Pos, 1m, 30m, 12h (highlighted), 1d.

Line Graph displaying Rig Measurements over time

Next

Skip Statistics



Abrir Menu

Day View Display

Legend displaying what line each represents and the exact value of a certain time

Present Time Selector to get a specific Time Range to View

Time Selector with Slidable Controls

Measurement Selector to toggle what to view

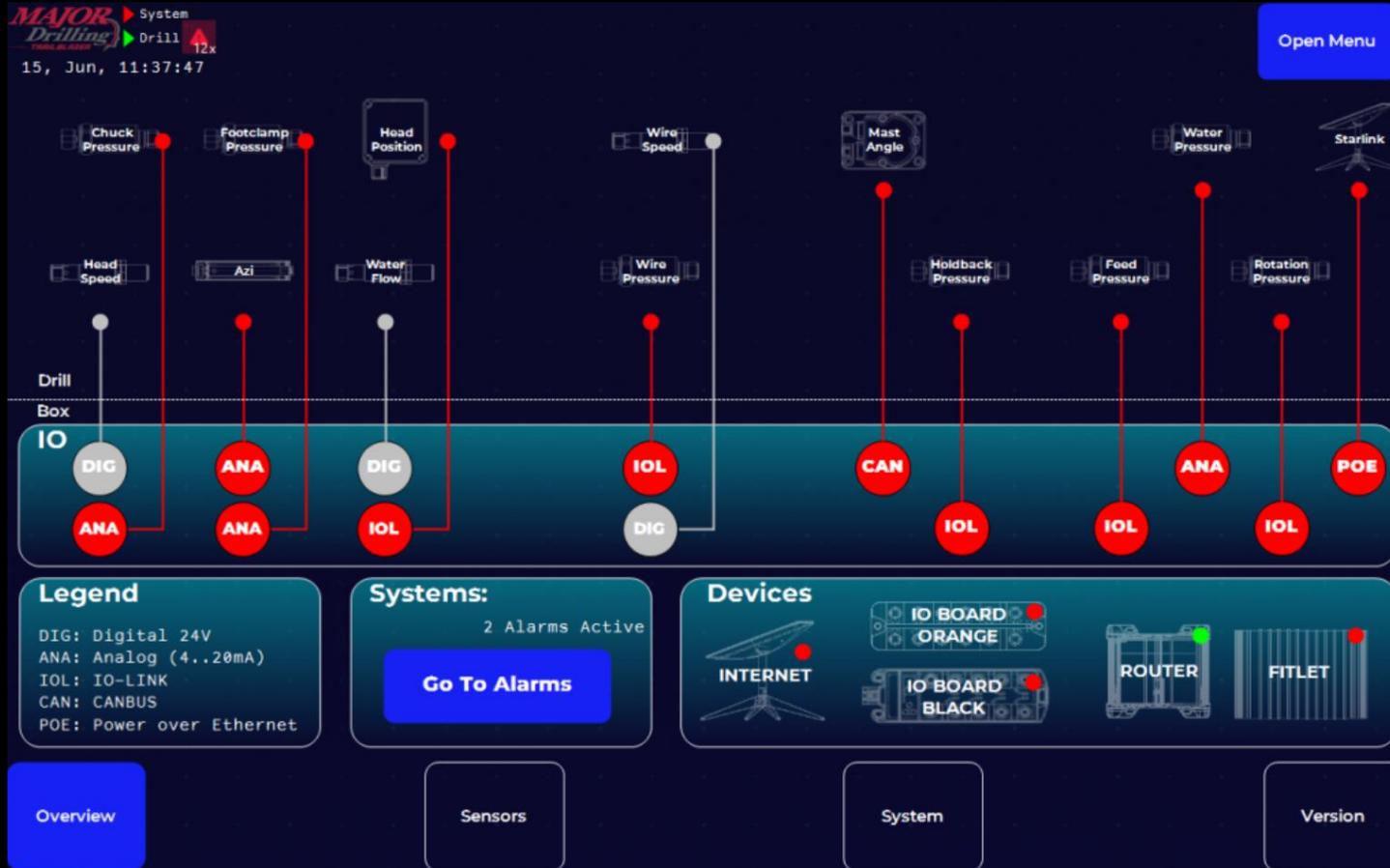
Timeline: 13/06/2024 0:00:00 AM:000, 12:00:00 PM:000, 14/06/2024 0:00:00 AM:000, 12:00:00 PM:000

Holdback Feed Pr Rotation Water Pr Water Fl Head RPM Wire RPM Wire Pr Head Pos

1m 30m 12h 1d

Next

Skip Statistics



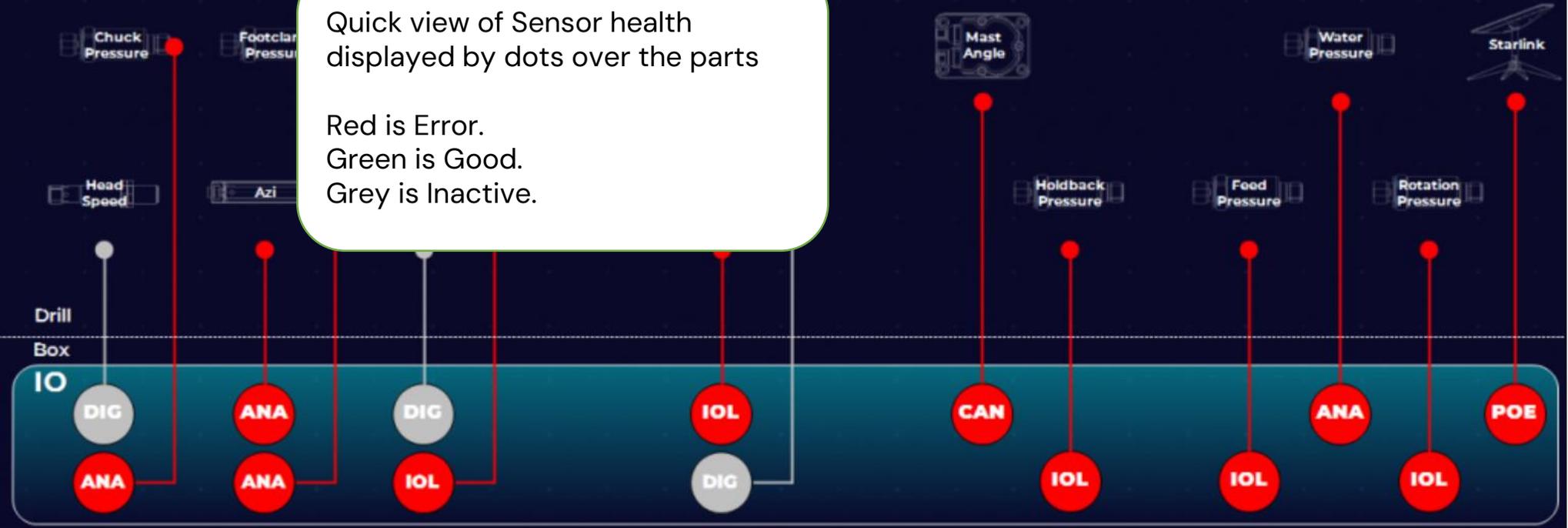
Diagnostics to keep the system ticking

Users can use this screen to diagnose problems with the system

Diagnostics - Overview

Quick view of Sensor health displayed by dots over the parts

Red is Error.
Green is Good.
Grey is Inactive.



Legend

- DIG: Digital 24V
- ANA: Analog (4..20mA)
- IOL: IO-LINK
- CAN: CANBUS
- POE: Power over Ethernet

Systems:

2 Alarms Active

[Go To Alarms](#)

Devices

- INTERNET
- IO BOARD ORANGE
- IO BOARD BLACK
- ROUTER
- FITLET

Diagnostics - Overview

MAST ANGLE

Tap on an IO Board to get more detail in the IO Board's specific screen

Quick view of Sensor health displayed by dots over the ports

Green is no errors active
Red is more than 1 error active

IOB-1

OK	Pulldown Pressure		OK
OK	Holdback Pressure	Head Laser	OK
OK	Wireline Pressure		OK
OK	Rotation Pressure		OK

Connection Time On 00:00:00:00

IOB-2

OK	Water Pressure	Head RPM	OK
OK		Wire RPM	OK
OK	Azimuth	Footclamp Pressure	OK
OK	Chuck Pressure	Water Flow	OK

Connection Time On 00:00:00:00

Diagnostics – IO Board

Sensor	Status	Raw Data	Process Data	Part Number
Pulldown Pressure	Sensor OK	0	0	PV7000
Holdback Pressure	Sensor OK	0	0	PV7000
Wireline Pressure	Sensor OK	0		
Head Laser	Sensor OK	0	5155	DT-50
(Other ports)	Spare			

Each sensor belongs to a port of an IO Board

Red Lights indicate errors and are labelled what each error is means

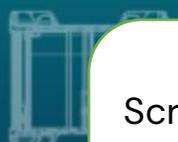
The position on the screen is accurate to the position of the IO

Next

Skip Diagnostics

Diagnostics – IO Board

Router



Connection **OK**

Internet **OK**

GPS

Lat: 0.0

Lng: 0.0

Alt: 0.0

Connection On: 0:00:01:33

Screen



Connection **OK**

Internet **OK**

CPU Temp 0 °C

Board Temp 0 °C

CPU Load 0 %

RAM Usage 0 %

Internet On: 0:00:00:00

System Time On: 0:00:01:33

Update Board



Connection **OK**

Internet **OK**

CPU Temp 0 °C

Board Temp 0 °C

CPU Load 0 %

RAM Usage 0 %

Connection On: 0:00:00:00

Screen displays all information for supporting devices
More important for technicians

Actions

Start IO Commission

Start Rig Commission

Drill

Drill Type: Major 50

Drill Type: ED-123

Drill Type: ROCK5_20245232

Overview

Sensors

System

Version

Next

Skip Diagnostics

● System
● Drill
13x

Open Menu

	Timestamp	Message	Priority
0	15.06.2023 16:30:16	Head RPM Error, Replace Sensor or Change Cable. If Problem persists, Call Tech Support	30
1	15.06.2023 16:30:16	Head Position Error, Replace Sensor or Change Cable. If Problem persists, Call Tech Support	30
2	15.06.2023 16:30:16	Water Flow Error, Replace Sensor or Change Cable. If Problem persists, Call Tech Support	30
3	15.06.2023 16:30:16	Wireline RPM Error, Replace Sensor or Change Cable. If Problem persists, Call Tech Support	30
4	15.06.2023 16:30:16	Water Pressure Error, Replace Sensor or Change Cable. If Problem persists, Call Tech Support	30
5	15.06.2023 16:30:16	Holdback Pressure Error, Replace Sensor or Change Cable. If Problem persists, Call Tech Support	30
6	15.06.2023 16:30:16	Rotation Pressure Error, Replace Sensor or Change Cable. If Problem persists, Call Tech Support	30
7	15.06.2023 16:30:16	Feed Pressure Error, Replace Sensor or Change Cable. If Problem persists, Call Tech Support	30
8	15.06.2023 16:30:16	Wireline Pressure Error, Replace Sensor or Change Cable. If Problem persists, Call Tech Support	30
9	15.06.2023 16:30:16	Foot Clamp Pressure Error, Replace Sensor or Change Cable. If Problem persists, Call Tech Support	30
10	15.06.2023 16:30:16	Chuck Pressure Error, Replace Sensor or Change Cable. If Problem persists, Call Tech Support	30
11	15.06.2023 16:30:16	Node 2 Communication Lost	30
12	15.06.2023 16:30:16	Node 1 Communication Lost	30

Active Alerts

When the system detects errors, we use this screen to display each error and corrective actions to solve the problem