

Introduction

LIM completed an installation on a Geoprobe 3126GT to record the drilling parameters but also with an optional drill fleet management.

The Geoprobe 3126GT is a multipurpose hydraulic geotechnical drill rig: SPT, CPT, Auger Drilling and Coring.

It has been requested to record the following parameters vs depth:

- Penetration rate (in/min);
- Feed pressure (psi) and Crowd (lb);
- Torque pressure (psi) and True Torque (lb-ft);
- Mud pressure (psi);
- Holdback pressure (psi);
- Mud Flow (gal/min);
- Rotation speed (rpm).

LIM installed its newest device PocketLIM 6G. With SIM Card or WiFi, it has the capability to transfer the data automatically to the cloud and email address. It is also offering mirroring on phone, tablet and laptop. Finally, it can be serviced/maintained remotely by LIM engineers.

No sensor has been installed by LIM. We got all the information directly from the Geoprobe communication; which made the installation extremely quick and easy.



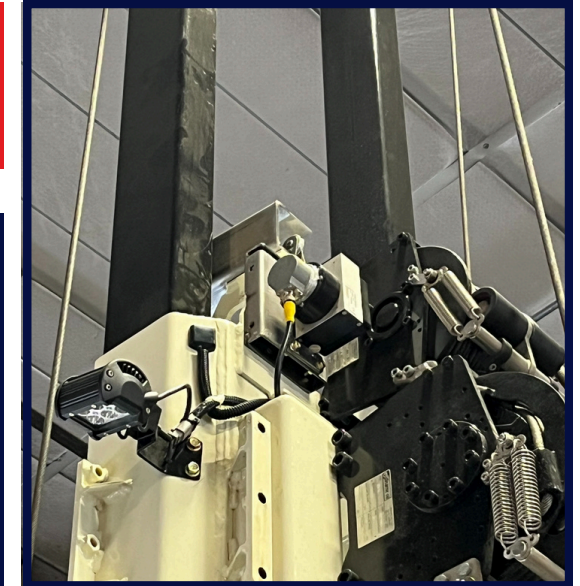
Set up



Depth encoder installed by Geoprobe: This is the front of the mast. There is a string attached to the drilling head. When the drilling head is moving down, we are recording the depth and penetration.

Depth installed by Geoprobe: This is the back of the mast. We can see the depth encoder. We only record when we are in drilling phase. The PocketLIM acquisition unit has a button for rod adding event.

GPS antenna: We also installed a GPS positioning antenna for the drill fleet management application. Usually we install it at the top of the mast for better accuracy.

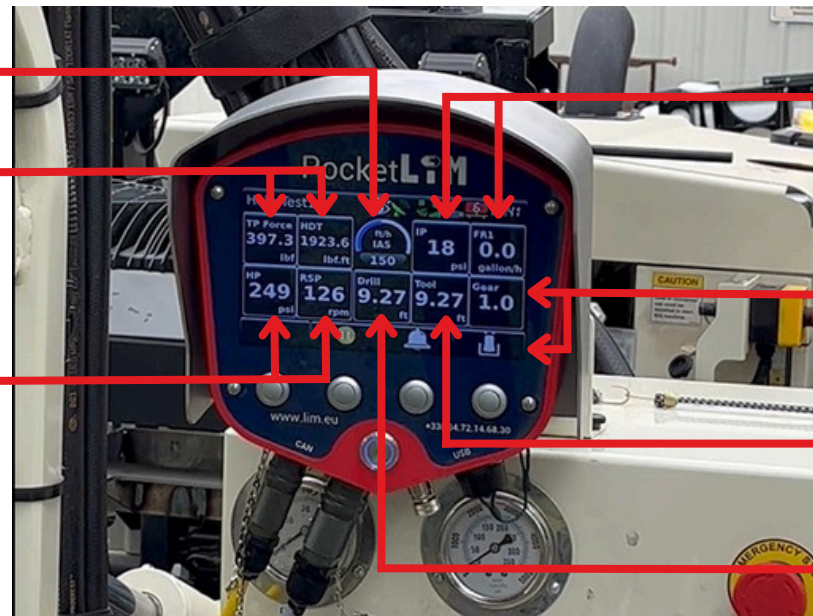


Penetration Rate (ft/hr)

Crowd (lb) and True Torque (lb-ft)

Holdback Pressure (psi) and Rotation Speed (rpm)

Please note the screen can also display the **graph vs depth** instead of the digital values.



Mud Pressure (psi) and Flow (gal/hr)

Gear and Rod adding button

Tool tracking depth (ft)

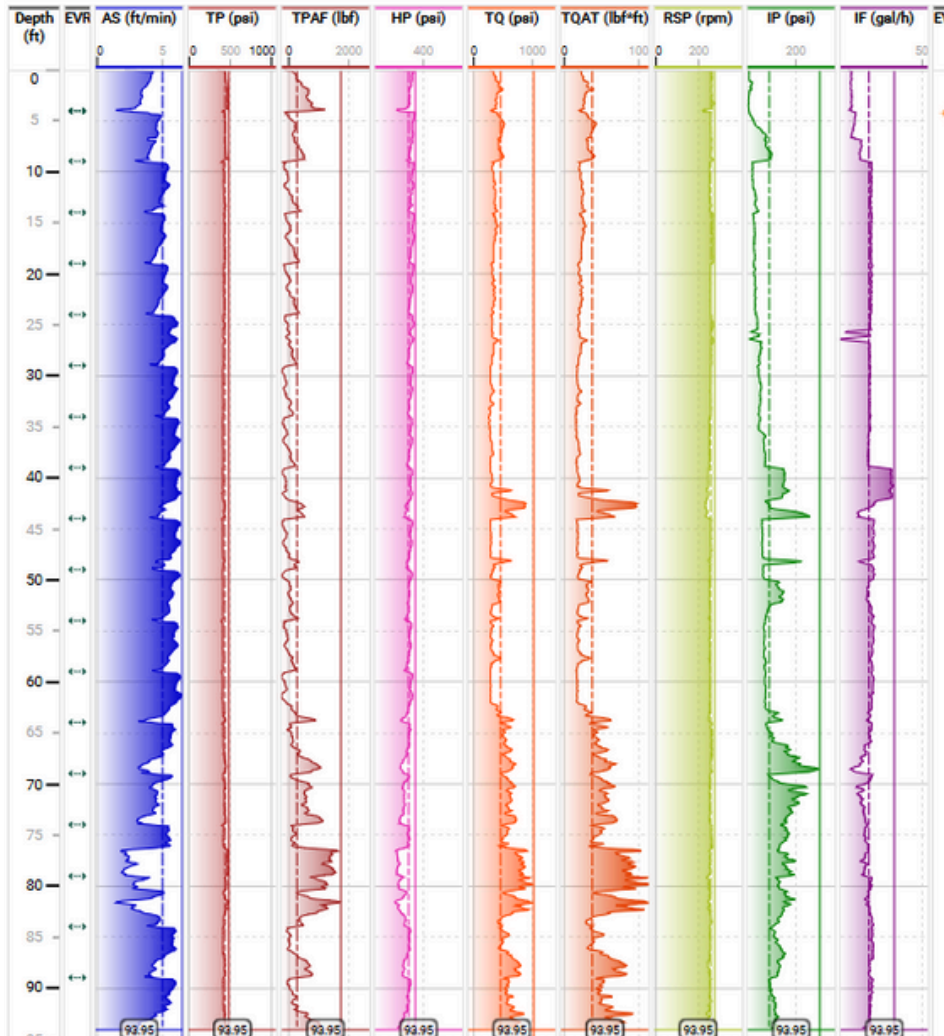
Down the hole depth (ft)

Geotechnical report



The header gathers the information entered by the driller before starting the project: info related to the drill rig (brand, tool, etc) and to the borehole itself (length, GPS location, time, etc).

	Borehole	MUD ROTARY 12202023 BROADWAY	
	Machine	3126GT	
Project	Drilling Bit	3-blade bit	
North Broadway	Drilling Bit Diameter	3.63 in	
		Creation date	12/20/2023
		Starting Position	0 ft
		GPS location (lat, lon)	38.8499489, -97.6205902
		Ending date	12/20/2023
		Ending Position	93.95 ft
		GPS altitude	381 m
		Drilling Duration	1 h 26 min 7 s
		Length	93.95 ft
		Inclination X/Y	/



Parameters displayed:

- Depth (ft);
- EVR: rod added;
- AS: Penetration Rate (ft/min);
- TP: Feed pressure (psi)
- TQ: Torque Pressure (psi)
- HP: Holdback pressure (psi)
- TPAF: Feed as a force or Crowd (lbf);
- TQAT: Torque as force or True torque (lbf*ft);
- RSP: Rotation Speed (rpm);
- IF: Injection Flow (gal/h);
- IP: Injection Pressure (psi);
- EVP: Event recorded by the driller.

This report is generated automatically, pre-processed with the parameters the customer requested and sent to your email address. You can modify it with our software, Geo-Log 4 and 5.

This report is key to make the geotechnical analysis of the ground. The correlation of the parameters recorded and the qualitative analysis will lead to a good interpretation of the data. For example, here from this report this is what we can read:

- Between 0 and 65ft: we are in soil. The parameters are very steady: quite competent soil.
- However, between 40 and 45ft, we probably detect some clayey area with an increase into the torque and Injection pressure.
- From 65ft to the end, we are getting into shale. There is a lot of variation. It is very irregular area.



Drill@LIM offers drill fleet management. On the Geoprobe, we gather information from the engine of the drill rig for production and maintenance purposes. It allows to the drilling operations manager to verify efficiency and productivity of its drill fleet. It also provides information in real time if there is a fault on the engine. Note that is also possible to get information proper to the drill rig (for example: emergency button, emergency alerts, compressor temperature, etc)

From	Until	Machines	Devices	Faults	Operator	GPS position	Engine Speed (rpm)	Engine Hours Total	Fuel consumption total (L)	Drilled length total (m)	Hole count total
∞	∞	3126GT									
06/16/2023, 9:58 PM GMT+0		3126GT	59629		GEOPROBE	38.8499794 -97.6202011	1200	164:24:00	482	270.3	61
06/16/2023, 9:48 PM GMT+0		3126GT	59629		GEOPROBE	38.8501205 -97.6202164	1201	164:15:00	482	270.3	61
06/16/2023, 9:38 PM GMT+0		3126GT	59629		GEOPROBE	38.8500748 -97.6203156	1200	164:03:00	481.5	270.3	61
06/16/2023, 9:28 PM GMT+0		3126GT	59629		GEOPROBE	38.8503342 -97.6202164	1200	163:54:00	481.5	270.3	61
06/16/2023, 9:18 PM GMT+0		3126GT	59629		GEOPROBE	38.8500977 -97.6202774	1201	163:45:00	481.5	258.23	60
06/16/2023, 9:08 PM GMT+0		3126GT	59629		GEOPROBE	38.8501167 -97.6202774	1197	163:33:00	481	258.23	60

Date and Time of the information: Received every 10min when there is no critical fault	Drill Rig model	PocketLIM Data Acquisition serial number	Fault recorded: There is no fault on the engine here	Operator/Driller: Each driller can access to the ProcketLIM with a password	GPS position of the drill rig	Engine RPM	Total Engine working hours	Total Fuel consumption	Total drill depth	Number of holes drilled
---	-----------------	--	---	--	-------------------------------	------------	----------------------------	------------------------	-------------------	-------------------------

The level of criticality can be changed in the settings. In that case, you will receive an alert on your phone or email to take care of the issue. Those parameters are adjustable and also available in a excel sheet. The application send a daily and monthly report automatically.