

Mudlogging Unit Configuration

GC and Peripherals

1. Drill-Lab Data Acquisition System

- Electronics of DL-DAS in 19" rack mounted housing, 230V power supply, 5 V,
- 12V and 24 V output for the sensors.
- Standard configuration allows using 32 analog and 6 digital channels.

| | |
|----------|---|
| Quantity | 1 |
|----------|---|

2. Sensor Barrier box (with barrier, full equipped, ready to use)

| | |
|----------|---|
| Quantity | 1 |
|----------|---|

3. Micro GC 3000 Inficon

Include software to communicate to PeN-LAB

| | |
|----------|---|
| Quantity | 1 |
|----------|---|

4. Total Gas Detector Petron type (mounted on the wall)

| | |
|----------|---|
| Quantity | 1 |
|----------|---|

5. Gas Trap with air motor

| | |
|----------|---|
| Quantity | 1 |
|----------|---|

6. Gas sample pump

| | |
|----------|---|
| Quantity | 1 |
|----------|---|

7. Gas distribution drawer

| | |
|----------|---|
| Quantity | 1 |
|----------|---|

8. Mixed Gas

- METHANE 1.00%
- ETHANE 1.25%
- PROPANE 1.30%
- ISO-BUTANE 1.10%
- N-BUTANE 1.10%
- ISO-PENTANE 0.025%
- N-PENTANE 0.030%
- CO2 1.10%
- NITROGEN BALANCE

| | |
|----------|--|
| Quantity | 1 x 10 liter tube, CGA350 valve (this tube was used a couple of times) |
|----------|--|

9. Two-Stage Regulator

Suitable for CGA350 valve

| | |
|----------|---|
| Quantity | 1 |
|----------|---|

Sensors

| | |
|---|---|
| 10. Drawworks Sensor ROP/Depth/Bit position | |
| Depth Sensor Drill-Lab type 20 counts | |
| Quantity | 1 |
| 11. Depth Target Sensor ROP/Depth/Bit position | |
| Quantity | 1 |
| 12. Hookload/WOB Sensor (Plug in to Rig hydraulic system) | |
| Quantity | 1 |
| 13. Rotary RPM Sensor | |
| Revolutions measured by a proximity sensor which is attached by welded or bolted bracket to rotary table, kelly spinner, or rotary drive shaft housing | |
| Quantity | 1 |
| 14. Rotary torque Sensor (Hydraulic) | |
| Pressure in rig hydraulic torque system detected by measuring capacitance of detecting diaphragm | |
| Quantity | 1 |
| 15. Rotary torque Sensor (Hall Effect) | |
| Electrical pickup clamped onto the electrical supply line to the rotary drive motor. | |
| Quantity | 1 |
| 16. Stand Pipe Pressure Sensor 5,000 PSI | |
| Hydraulic Type of 5,000 PSI Sensor | |
| Quantity | 1 |
| 17. Sonic Pit Volume Sensors | |
| The sensor is an ultrasonic level monitor combining sensor and electronics in a single package. It is designed to measure liquid levels in open or closed vessels. The sensor houses the ultrasonic transducer and temperature sensing element. The probe emits a series of ultrasonic pulses from the transducer. Each pulse is reflected as an echo from the material and sensed by the transducer. Filtering is applied to help discriminate between the true echo from the material and false echoes from acoustical and electrical noises and agitator blades in motion. The time for the pulse to travel to the material and back is temperature compensated and then converted into distance for display, mA output. | |
| Quantity | 3 |
| 18. Pump Strokes, wand type | |
| Quantity | 2 |
| 19. Mud weight in sensor | |
| Quantity | 1 |
| 20. Mud weight out sensor | |
| Quantity | 1 |
| 21. Mud Temperature in sensor | |
| Quantity | 1 |
| 22. Mud Temperature out sensor | |
| Quantity | 1 |
| 23. CO₂ sensor | |
| Quantity | 1 |
| 24. H₂S sensor | |
| 0-100 ppm range, | |
| Quantity | 1 |
| 25. 36 core Multicore J-cable 100m from DL-DAS to j-box | |
| Quantity | 1 |
| 26. J-box Explosion proof | |
| Quantity | 1 |

Sample Preparation & Oil Show Monitoring

27. Nüve FN 055 Drying Oven

| | |
|----------|---|
| Quantity | 1 |
|----------|---|

28. Oil Fluoroscope, 220 V

Oil Fluoroscope, 220v. Size: 15 x 12 x 12" Weight: 16 lbs. Material: Heavy gauge stainless steel, welded construction. Light: One visible light incandescent bulb and 4 high-intensity, integral filter, long wave UV tubes (F8T5-BLB). Viewing port: 2x lens with soft rubber goggles. The Oil Fluoroscope is the most powerful ultraviolet viewing cabinet in our line. The light source is easily removable for hand-held applications. The high-intensity UV light this unit produces makes it possible to use it in situations where ambient light is usually too bright for UV examination. This proven design has been used for detection of hydrocarbons in drilled cuttings and cores - both in the laboratory and under the most severe oil field conditions. 220v.

| | |
|----------|---|
| Quantity | 1 |
|----------|---|

Software

29. PeN-LAB Full Package SCI

Real-time data acquisition and calculations, drilling monitoring, mud logging, data interpretation and log drawing package. Integrated support for receiving stream of data from the external data acquisition system, and support for other devices such as chromatographs and total gas detectors. Compatible with data stream from Drill-Lab acquisition.

| | |
|----------|---|
| Quantity | 1 |
|----------|---|

30. HARD-LOCK USB NETTIME 10 (Aladdin)

| | |
|----------|---|
| Quantity | 1 |
|----------|---|

Optionals

31. Cabin

Equipped with tables , shelf and AC

| | |
|----------|---|
| Quantity | 1 |
|----------|---|

32. HP Desktop Computer

Equipped with the software mentioned at item "28"

| | |
|----------|---|
| Quantity | 1 |
|----------|---|