

Application note

Offshore LANs Mud resistant cable



LAN cables and drilling fluids

The deployment of LANs onboard offshore units has been fuelled by the integration of IT services to automation and monitoring systems.

The structured cabling is nowadays used to support numerous services such as, Vessel Management Systems (VMS), Web-based services, Industrial Ethernet, IP services (voice, video etc.), ERP systems, monitoring and surveillance.

This has led to a mechanical and transmission enhancements of the cabling in order to perform according to the current and forthcoming needs:

- Ruggedised products to support environmental condition (i.e. drilling and exposed areas).
- Higher bandwidth to support backup systems and modern LAN communication, industrial systems (cyber chairs, etc.).
- EMC compliant products to withstand Electromagnetically noisy environments and installation in EMC zones (motors, pumps, radio equipment etc.).
- Mud resistant cable to withstand conditions onboard Drilling vessels.

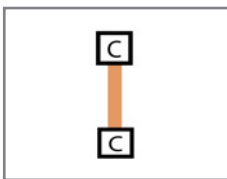
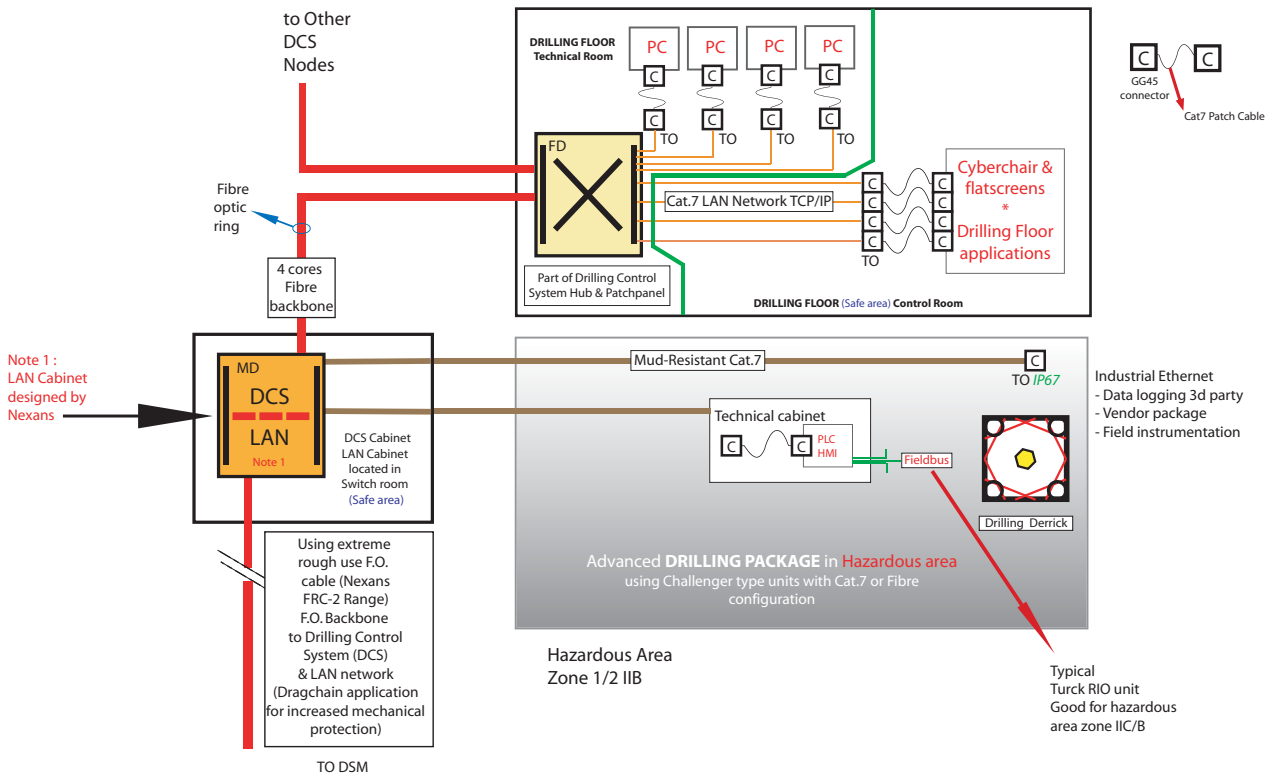
Drilling area

The drilling area represents a major challenge for the structured cabling. Drilling fluids (muds) are indeed of such chemical composition that standard LAN cables wouldn't withstand long-lasting exposures to these fluids. In case of exposure the cable outer-sheath would simply swell, break and open. This would lead to a loss of data transmission and possible hazards.

The LANmark Oil&Gas cabling systems includes two "mud resistant" cables designed to withstand exposure to drilling fluids and still perform to the latest international standards for data transmission.

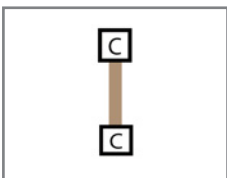
Fixed Offshore Platform Drilling Equipment Set (DES)

- Reduced cables
- Rough use
- 1000 MHz performance



Indoor Installation

- LANmark-7 1000MHz cable
- End to end individual shielding
- SHF1 cable for indoor installation such as control room, bridge, administration offices and accommodation



Drilling / Exposed Areas

- LANmark-7 1000MHz cable
- End to end individual shielding
- Mud resistant cable for installation in areas exposed to aqueous drilling muds and raw oil
- HMI interfacing

LANmark
Oil & Gas

Evaluation tests

Tests have been conducted by the Nexans Research Center in Lyon to verify the stability of the mud resistant cables under the given chemical constraints.

The tests have been performed according to the NEK606 (Norsk Elektroteknisk Komité) and another selected test procedure. The reference documents define the mechanical and physical characteristic that the samples of "mud resistant" material should demonstrate after exposure to the drilling fluids.

Because several types of drilling fluids are used across the world, four representative fluids have been selected to the tests:

- **Mineral Oil** IRM 903
- **Water based** drilling fluid
- **Oil based** drilling fluid
- **Linear Alpha Olefin** (LAO) synthetic drilling fluid

The tests have been conducted over a 56 days period according to the appropriate sampling and testing procedures.

The results shown in the summary table below, confirm that the two LANmark-Oil&Gas Mud-resistant cables are withstanding exposure to drilling muds and are therefore suitable for installation onboard drilling vessels.

Reference: Test reports - NRC-XL/ELA/YG/06-050
- NRC-XL/ELA/YG/06-210

Test Matrix

Cable / Fluid	Mineral Oil IRM903	Water based mud	Oil Based mud	LAO synthetic	Characteristics	Recommended Application areas
LANmark Oil & Gas type N10g.003	NEK606 100°C/7days	NEK606 70°C/56days	NEK606 70°C/56days	Other 70°C/56days	Outstanding chemical resistance. Halogen free + IEC60332-3-24 fire performance without Mud resistant sheath	General North sea
LANmark Oil & Gas type N10g.002	NEK606 100°C/7days	NEK606 70°C/56days	NEK606 70°C/56days	Other 70°C/56days	Outstanding chemical resistance.	North sea
LANmark Oil & Gas type N10g.001	NEK606 100°C/7days	NEK606 70°C/56days	NEK606 70°C/56days	Other 70°C/56days	Good chemical resistance. Very flexible cable	Caspian sea

Remark : Because of the nature of data cables (I.E. small diameter, reduced outer sheath thickness etc.) full compliance to mechanical test can't be checked.