

# Engineering support

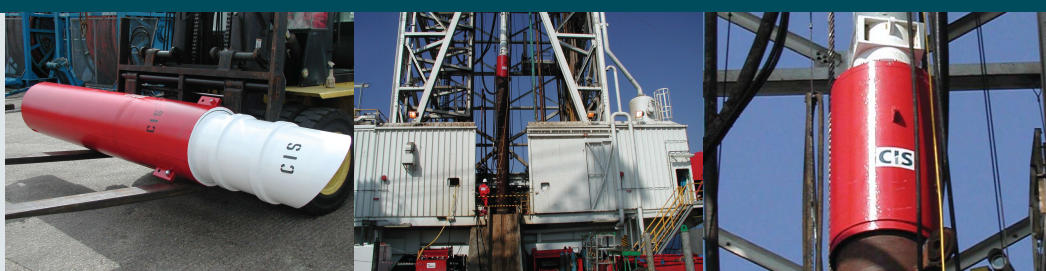
## Conductor driveability and fatigue studies, and slot-recovery analysis

Experience shows that there is a set of crucial questions that must be answered before operations can commence to set a conductor firmly in place. These questions include

- Can the selected hydraulic hammer achieve the desired penetration?
- Will a drill-out operation be needed to achieve the required depth of penetration?
- How much hardware can be hung from the conductor?
- Does the conductor have sufficient structural integrity to support the well throughout its life?

There is a similar situation for slot-recovery operations. Significant curvature will be imposed on the new conductor as it kicks off from the whipstock, and, without sufficient control, the forces generated during the driving process could destroy the existing well, whipstock or pipe. It is essential that the forces required to deflect the conductor be established.

To help operators address these issues, CIS – one of the world’s leading installers of oilfield conductors – offers driveability and conductor-fatigue studies, and full slot-recovery analysis.



### About the support

#### Driveability studies

A driveability study is a vital precursor to the conductor installation process. Analysis of the soil formation provides information on, for example, the stresses that the conductor will have to withstand during the driving operation and the penetration that can be achieved without drilling out the conductor. Ultimately, a study of this kind will indicate the depth of penetration required to achieve refusal under hammer blows of a defined force, which is essential for attaining the maximum possible structural integrity of the conductor.

CIS routinely carries out these studies, and in challenging cases often exploits its close links with fellow Acteon companies that possess specialist knowledge.

#### Conductor fatigue studies

A conductor fatigue study sits naturally alongside a driveability study, as it focuses on the ability of the conductor to withstand the forces applied to it during the driving operation and, more importantly, on its ability to provide sufficient structural integrity to support the well throughout its life. Essentially, a study of this kind will reveal whether the installed conductor will be fit for purpose in its intended role.

CIS works closely with engineers in 2H Offshore, another part of Acteon, on studies of this kind. This relationship enables CIS to extend its engineering-services offering to include wave-induced conductor fatigue analysis and structural analysis of platform conductor support frameworks.

#### Slot-recovery analysis

To provide a complete feasibility study for conductor slot-recovery projects, CIS undertakes analysis work in conjunction with Acteon company 2H Offshore. This includes site surveys. CIS can then advise on the most suitable conductor whipstock for achieving the best and most cost-effective solution for the operation.

*A conductor driveability study confirms that the selected hammer can achieve the desired penetration and how much driving time should be allowed; identifies whether a drill-out operation will be required to achieve the desired depth of penetration; and reveals the conductor's load-bearing capacity.*



**Please contact CIS for further information.**

#### **Conductor Installation Services Ltd**

CIS House  
Eurocentre  
North River Road  
Great Yarmouth  
Norfolk  
NR30 1TE  
United Kingdom

Tel: +44 (0)1493 849680  
Fax: +44 (0)1493 849681  
Email: [info@c-i-services.com](mailto:info@c-i-services.com)

[www.c-i-services.com](http://www.c-i-services.com)

#### **Adding value**

Where necessary, CIS draws on the technologies and capabilities of other Acteon group companies, recognised leaders in their fields, to uncover the data that can secure the success of an oil or gas development, or to access leading-edge tools and techniques.

#### **Project profile**

The operator of an offshore platform in India commissioned CIS to carry out a driveability study to determine load-bearing capacity and a fatigue study to forecast the lifespan of a conductor string that was to be driven into place by a CIS hydraulic hammer.

In particular, the client wanted CIS to answer a set of key questions:

- Is it possible to use a 20-in. conductor instead of the usual 30-in. conductor?
- How deep could a 20-in. conductor be driven, and would this depth be sufficient, given the potentially problematic soil formation?
- Once a 20-in. conductor is driven, will it have the bearing capacity to support the blowout preventer and 13 $\frac{3}{8}$ - and 9 $\frac{5}{8}$ -in. casing?
- Will drilling out be necessary to reach the desired setting depth?

The analysis was carried out by CIS and 2H Offshore, and then a full report was compiled that answered all of the customer's questions. The customer then submitted the report to its client. As a result, the project went ahead and CIS drove several 20-in. conductors into the seabed.

This initiative is an example of how CIS's analysis of foundation construction can justify reducing the conductor size and thus save customers significant costs. In some cases, these analyses have demonstrated that a whole casing string can be omitted.

