

Case Study

Subsea Tieback Project and Start-Up Support



A two-well subsea tieback to an existing Central North Sea Installation has recently been commissioned and started up in 4th Qtr 2020.

The project had challenges due to the gas of the tieback being richer than the gas process on the host installation. This caused several control system challenges which had to be addressed.

Core was involved in addressing some of the more complicated control challenges and was also involved in the start-up phase.

BACKGROUND

A floating production facility was commissioned in 2017 in the Central North Sea. A nearby field was located and sanctioned for development in 2018 with the field development plan involving a two well tieback to the floating production facility using spare capacity within the production system.

THE CHALLENGE

The properties of the tieback field were found to include a much richer gas than the host production facility was currently processing. This required the modification of the production facility topsides to include a Natural Gas Liquid

(NGL) module to process and export these fluids. Although this approach provided a good solution to steady state operations, it left the residual issue of what would happen to the process in the event of a trip of the NGL module or a HP Gas export train.

If left unaddressed, this would result in a trip of the production facility and production from all fields.

A control solution was required to mitigate this risk and to keep the facility online in the event of unit trips of the gas or NGL plant.

Core was approached by the design team to review the issue and provide a design concept.

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CORE'S INVOLVEMENT

Core was requested to review the issues identified with the design, consider the options for addressing the problem and to present a recommended control solution concept to the various stakeholders.

The solution concept was essentially in two parts:-

- i) Automatically reducing the separator gas rate from the new field in the event of an NGL module or compressor trip.
- ii) Improving the operability of the existing gas compression system so that the trains were able to handle more significant gas rate changes caused by the introduction of i)

Several high level deliverables were produced which allowed the incumbent Project and Operations teams to progress the recommendations to completion.

Core's second area of involvement was to be part of the start-up team for several weeks to assist the project and operations teams with the commissioning of the process.

The intention was to achieve maximum rates as quickly as possible with minimal downtime. This involved working with the compressor vendors to commission the new controls together with a tune up of a large part of the process to achieve stable operation with much higher production.

The start-up of the project was delayed because of Covid-19 but once commissioning commenced, the project was quickly brought online and stabilised.

Press releases issued by the field owner reported the project as a success.