Case Study

Safety System Upgrade

CLIENT: Confidential

PROJECT: ESD System Upgrade

BACKGROUND

The original ESD system on the offshore installation was supplied by Wormald in 1993. An obsolescence status review had determined that spare parts for the system were no longer available and support of the system in its present form was no longer available from the OEM.

THE PROJECT

Core were requested to carry out a FEED to review the options available to remove the risks to the asset from obsolescence.

The FEED would present a recommended solution which would be followed through by Core into design and implementation.

The existing ESD system was based on a Modicon PLC with hardwired matrix for indication of I/O status, inhibit/override and reset facilities. The ESD system hardware was contained in a suite of cabinets with separate cabinets for system and marshalling. The ESD system had a serial interface to the topside DeltaV PCS for event logging.

The FEED reviewed the options for upgrading the system with the main concern to minimise the shutdown time, optimise available space and minimise disruption to operations during implementation.

The recommendation from the FEED was to replace the ESD system with Emerson DeltaV SIS logic solver hardware and integrate this with the DeltaV PCS to provide an integrated system for topside process control & shutdown. The project was sanctioned based on the FEED report.

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CORE

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CORE'S SOLUTION

Core were engaged to act as project technical lead. During the design phase this role would involve the preparation of all technical specifications, management of the technical interface with the control system supplier and client, approval of all 3rd party documents and lead and approve the FAT.

For system implementation, Core prepared the migration strategy to minimise the impact on operations, prepared all commissioning documentation and led the implementation and commissioning activities on site.

The ESD system was successfully migrated to the new DeltaV SIS during the project lifecycle and all building was completed on target.

Challenges

The existing legacy Cause & Effect drawings were lacking cohesion due to modifications over the years.

This resulted in associated logical functions being split over different sheets making the functionality difficult to follow.

Core carried out a review and rationalisation of the logic and prepared a new set of master Cause & Effects which the project used to build the new system.

The project was implemented during a planned plant shutdown which reduced the impact to operations during the migration to the new system.

However careful planning was required to reduce the impact to live utility and electrical systems which would still be in service during the migration.

Core carried out impact assessments to all systems and in co-ordination with operations prepared the optimal sequence of migration and mitigation requirements for each system to minimise the impact.

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