TI15 EXPERIENCE

Client: NNB **Value: circa £50m**

Project title: HPC Switch Room **Duration: 4 years**

Key Facts

1. Approximately 100 million hours worked by 85 personnel over 4 years

2. Zero LTIs / Number of incidents

3. Delivered on time

4. Delivered on budget

Challenge

As part of Hinkley Point C two new nuclear reactors are being built, the first in a new generation of nuclear power stations in the UK providing low-carbon electricity for around six million homes. As a team we have been on HPC for four years, installing the HV network as part of the Construction Electrical Supplies (CES).

Marking a significant milestone in the revitalisation of our nuclear power industry, Hinkley Point C will make a major contribution to the UK's move to reduce carbon emissions. The electricity generated by its two reactors will offset 9 million tonnes of carbon dioxide emissions a year over its 60-year lifespan.

Approach and innovation

The scope was to bring electrical supplies onto the HPC construction site from the National Grid 275kV Substation on Hinkley Point A (HPA).

These works included the erection of two number bases which housed the 275/11kV transformers (Tx) (transformer installed by CG Power) and all 11kV terminations and cabling from the transformers to separate Intermediate Switch Houses for each Tx. As part of the works we also carried out protection wiring modifications and relay changes for National Grid.

Within the National Grid compound we installed ducting and cabling for the HV, LV & control circuits, during this installation we encountered over 300 services with a vast majority of these not being recorded on site records and all were safely worked around. This earned us the HPC Award for "Best Safety Performance" for a Tier 1 Contractor.

The cabling route from National Grid had to pass through Hinkley Point B land and was therefore governed by a fully operational nuclear site. The works on HPB was to excavate across their main access road and install a duct bank, a barrier joint pit and the installation of eighteen number 630mm single cores, to the CES switch room on HPC.

Resourcing

We transferred some existing staff to the project before building the multi skilled core team using local resources. The resources peaked at 85 during the project.

We were able to use our experience from other environments including Network Rail, London Underground, and Heathrow Airport to design and install a system with flexibility to help minimise costs when cables were inevitably diverted.

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Delivery and collaboration

The project has been challenging due to the number of contractors on site and each having their own priorities. Working closely with the client and other contractors we have been able to deliver our targets.

All works were managed through Primavera P6 resource loaded programmes. Key milestones were shared with other contractors on site to ensure there was an overall joined up programme with dependencies clearly articulated.

The project demanded a strong commitment to flexible working, with our systems interfacing with the client's and other contractors, resulting with us able and willing to respond to changes in both work load and scope.

Daily 15-minute meetings were held with the client to capture progress and identify any coordination and potential issues.

We are accredited to ISO 44001 Business Collaboration and have worked closely with other Tier 1s on site applying these techniques to add value. This close relationship has led to us being asked to carry out elements of other Tier 1's work for them as a Tier 2.

Quality and safety

Nuclear safety is our overriding priority and we continually work to ensure that all staff have the necessary knowledge and skills to maintain nuclear safety standards. As part of our commitment to safety, we have introduced Nuclear Quality Inductions for all new starters. This aims to improve nuclear behaviours throughout the team and measures understanding through tests before and after training sessions. We are pleased to have high achievers within our team, scoring between 85–100% on the tests.

Using our 'Stay Safe' programme, we are constantly looking to keep safety at the front of our staff and subcontractors minds. We pride ourselves on our achievements to date with an excellent safety record with 1,380 continuous lost time injury free days for both our employees and subcontractors. We are proud to be able to state that we had the best safety record of any Tier 1 on site and we shared our safety culture with others at Hinkley point C, ensuring a safe delivery, in collaboration with all stakeholders involved in the project.

Whilst at Hinkley we have won three health and safety awards in our four years on site. The most prestigious being the 'Best Safety Performance - Tier 1 and Tier 2' at the Hinkley Point C Excellence Awards.

The quality of our work has remained at a high level as is expected on a nuclear site. We have received praise for the quality of our handback information.

Outcome

The networks we constructed supplied 37MW of power for the site construction crane, tunnel boring machines, the various contractors laydown areas along with the main temporary offices, catering facilities, accommodation various temporary buildings, welfare units and the temporary accommodation blocks.

We installed successfully and without incident supplies from the National Grid yard to three primary switchboards. The protection and control and SCADA system for the new network.

We also installed the 11kV rings within the construction site installing twenty five 11kV substations, fifteen LV pillars, LV supplies to various buildings, 15 km of HV and 4 km of LV cable and fibre cabling.

Due to the ever-changing nature of the sites, the supplies had to be designed and constructed to provide flexibility for the various phases of the work.

The greatest challenge on the site was acquiring access to the work area in a timely manner to ensure continuity of work.

Figure 1: Work in progress during Hinkley Point C

Due to the more than 60 year lift time of operation the project was innovative from the beginning, the quality aspect of the works was at the top of the list of requirements from the client, but due to the client not fully comprehending what they required we produced lots of the documentation that they are still using with other contractors on site now.

We all had a learning curve as this type of project had not been completed for over 50 years and they had started the project from the start under Nuclear licence. Which meant lots of protocols had to be adhered to even though it in theory was just a building site as no nuclear equipment was on site and will not be for another 4 or 5 years.

All of these works have been completed within the HPA, HPB, HPC & N/G Safety Rules and there hasn't been this cross site collaboration in over 40 years and was final commissioned in house, with all handover documentation completed prior to energisation.

All work was completed safely to NNB standards and handed over to the client with full hand back documentation.