

Review

Built Environment Group



New to Nuclear

NUCLEAR NEW BUILD PROCUREMENT AND CONTRACT STRATEGY

With the supply chain gearing up for the development of new nuclear build, companies which are new to the industry are questioning whether the “nuclear” tag will make significant differences to the way the works are procured and the form of contract which will be used. More importantly, they need to know the risks they will be taking should they be awarded any contracts.

PROCUREMENT STRATEGY

The main options for the procurement strategy being discussed at the moment are:

- EPC Turnkey
- Multi-contract
- Hybrid or split EPC

EPC turnkey

EPC (engineer, procure, construct) contracts have been the traditional model used in the energy industry to deliver projects. EPC contracts have a single-point of responsibility, a fixed programme with a certain date for completion, a fixed price, guaranteed performance and reliability levels. The contractor is obliged to deliver a complete facility to the client on a ‘turnkey’ basis. Not surprisingly, such projects are more expensive, to reflect the risk taken on by the contractor. The Olkiluoto 3 project in Finland is being constructed on an EPC basis by a consortium formed by Areva and Siemens.

Since the EPC approach shifts all major risks (including but not limited to price, programme, design and construction) to the contractor, it is important that there is a realistic work schedule, a completed design before the start of work, a skilled and experienced workforce and a clear understanding of regulatory requirements.

Some of the reasons for the construction delay of Olkiluoto 3 were attributed to a lack of the above requirements. While not intended to serve as a warning against the EPC approach, the lessons learnt from Olkiluoto 3 may influence clients to explore other models.

Multi-contract

Where multi-contracting is used, the construction of the station is split into several distinct contractual packages. EDF used the multi-contract approach for the construction of Flamanville 3 in Normandy, France and it has indicated that it will repeat that approach for Hinkley Point in the UK.

Multi-contracting is less popular with funders as less risk is passed to the contractors and a greater risk remains with the client. It is more popular with clients such as EDF who are very experienced in developing nuclear power plants as it gives them much more influence over project management compared with a turnkey arrangement.

In multi-contracting, the client is responsible for co-ordinating the separate packages of work and ensuring effective communication and interfacing between them. The main disadvantage of multi-contracting is that a failure in co-ordination could lead to significant delays, cost overruns and performance issues. If any issues occur, it could also be difficult to disentangle and attribute the causes of delay and cost overruns, especially due to the technical complexity of nuclear power plants.

Some delay risk may also rest with the client. For example, one contractor’s delay may result in delay to later programmed packages. The client will then try to recover costs arising from the delay from the late contractor in the form of liquidated damages. However the client may not be able to recover such losses if the delay arose from an event entitling the contractor to an extension of time. Other contractors who have

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been subsequently delayed may also be entitled to claim corresponding extensions of time or additional costs, without the client being able to recover its losses.

These risks may be mitigated by limiting the cascade of subcontractors and reducing interfaces where possible. For some key items, a single contract package could be placed e.g. nuclear steam supply system (NSSS), turbine-generator set (TGS) and waste treatment processes, thereby ensuring that there is single-point responsibility for each of these key items.

Hybrid or Split EPC

The parties may decide to vary a traditional EPC contract procurement route. A common variation is to “split” an EPC contract into two or more separate contracts or contracts could be grouped into vertical workstreams.

There are some elements of this hybrid approach in EDF’s procurement strategy. The difference between a hybrid EPC and a multi-contract approach is that there are fewer contracts and less co-ordination risk in a hybrid EPC for the client to manage. Otherwise, the risks in this hybrid model are similar to the multi-contracting approach.

Wrap-around or Umbrella Guarantee

In other energy projects, to overcome the lack of single-point responsibility, another agreement is used often known as a wrap-around or “umbrella” guarantee. This creates single-point responsibility as a single entity will guarantee the obligations of all the contractors.

The contractors will then enter into a separate agreement to apportion liability between them. Given the relative novelty of nuclear new build construction and its technical complexity, it is questionable if this approach would be workable.

CONTRACT FORMS

The two main contenders are based on the FIDIC international engineering contracts and the NEC Engineering and Construction form.

FIDIC

FIDIC is short for the “Fédération Internationale des Ingénieurs – Conseils” (International Federation of Consulting Engineers), an international federation of associations of consulting engineers representing the profession in their respective countries. Its contracts committee has been responsible for producing the most commonly used standard forms of contract for international construction projects.

The current FIDIC suite of contracts contain contract forms for all types of construction including building/engineering works (Red Book), electrical and mechanical plant (Yellow Book) and EPC/turnkey contracts (Silver Book). The Yellow Book and Silver Book are potential options for the nuclear new build contracts where the main responsibility for design lies with the contractor.

The FIDIC contracts are well known to international contractors working on large infrastructure projects and are also approved by funders. The FIDIC contracts are popular as they are generally considered to be a balanced set of contracts with fair allocations of risk between employer and contractor.

New Engineering Contract (NEC)

The NEC is a very different set of standard form contracts, compared to the FIDIC contracts. Its differences from traditional construction contracts range from the simple and brief language, less detailed terms and conditions, clause numbering, absence of numbered cross-references to the use of the present tense.

The intention of the NEC is to shift from the old-fashioned, adversarial forms of contract and to establish a new, collaborative model based on modern principles of project management. Clients who do not have sufficient in-house resources or are used to a more “hands off” approach as seen in the EPC/turnkey contracts may have difficulties with using NEC as it requires them to have a more proactive role in risk management and problem-solving. The project manager has a pivotal role in the efficient administration and management of a successful NEC contract and it is crucial for the employer to ensure that the right person or organisation is appointed for the job.

When assembling the contract documents, the works information is vital and must contain more information than a typical bills of quantities or employer’s requirements document. In order for the contract to work properly, the works information must also include, among other things, details of the extent to which the Contractor is responsible for design, works to be carried out by the Employer or third parties and procedures for submission and review of information.

The latest form of NEC contracts, NEC3, are approved by the Office of Government Commerce and used in government and public sector contracts e.g. the London Olympics 2012, Terminal 5 and the Channel Tunnel High Speed Link. In the UK nuclear decommissioning market, the Nuclear Decommissioning Authority (NDA) and many of its site license companies also use the NEC3.

Whatever the choice of contract form, extensive amendments will be required to make it project specific and also reflect the regulatory regime.

The NEC is not widely-used internationally and is perceived to have largely untested and unusual legal language. Clients will need to ensure that they have sufficient resources to effectively administer and manage the project. Their supply chain could also be provided with training so that they too will become familiar with working under an NEC contract. Significantly, EDF has used NEC3 for the enabling works on Hinkley Point so it looks like NEC3 could be the contract of choice for new nuclear build in the UK.

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NUCLEAR LIABILITY

One important example of such a project specific amendment is the issue of nuclear liability which can be an intimidating concept for suppliers. However, a study released by the Nuclear Industry Association entitled "The UK capability to deliver a new nuclear build programme 2008 Update" suggests that "approximately 80% of nuclear new build is not nuclear, but is similar to other major construction projects". Examples of such works are the preliminary site investigation or site preparation works before the main construction of the power station can begin e.g. construction of bypass roads, jetties to handle construction materials transported by sea and temporary workers accommodation.

In the UK, nuclear liability is governed by the Nuclear Installations Act 1965 which reflects international treaties. The UK abides by a system of almost globally accepted conventions (the Paris and Brussels Conventions) sharing the following main principles:

- (a) Liability is channeled exclusively to the operator of the nuclear installation;
- (b) Liability of the operator is absolute i.e. the operator is held liable irrespective of fault, except for acts of armed conflict, hostilities, civil war or insurrection;
- (c) Liability is limited in amount and time;
- (d) The operator must maintain insurance or other financial security for an amount corresponding to its liability or the limit set by the government. Beyond this level, the government can provide public funds but can also have recourse to the operator;
- (e) Jurisdiction over actions lie exclusively with the courts of the contracting party in whose territory the nuclear incident occurred;
- (f) Non-discrimination of victims on the grounds of nationality, domicile or residence.

The liability limits of the conventions are reviewed from time to time. The operator's liability is currently €360 million and the next review is proposed to increase liability for each site to approximately €620 million at current exchange rates.

In practice this means that with limited exceptions, even if a supplier's action resulted in a nuclear incident causing injury or damage to a third party, liability would nevertheless be channeled solely to the operator. The operator may in turn claim against the supplier under its contract but this risk could be capped by negotiation. It is common for nuclear suppliers to limit their liability to the contract price and this could also be followed for new build contracting.

Summary

With companies such as EDF driving the new nuclear build programme in the UK, it would appear that the procurement route is likely to be multi-contracting using the NEC standard form incorporating significant amendments to make it project specific and comply with the regulatory regime.

This is good news for the UK supply chain which is well-versed with this form of contract having already used it on major projects such as the Olympics 2012. Other good news is that nuclear risk under a contract, which may appear daunting in the first instance, can be managed through a combination of the nuclear regulatory regime and contractual negotiation.

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FURTHER INFORMATION

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