



Nuclear New Build Commercial and Contract Management

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A - Nuclear New Build – Risks

- High Overnight Capital Cost –
 - Long period between the commitment to build and the production of electricity can lead to financing problems in the event of any unforeseen circumstances arising during the construction period, such as:
 - increase in cost of finance and/or downgrading of credit rating
 - price escalation (materials and labour)
 - exchange rate fluctuations
 - new licensing requirements (leading to increased costs)
 - Any project execution delays and commercial disputes that exacerbate this situation can jeopardize the project. Delays can arise due to, e.g.:
 - Supply chain problems (e.g. component manufacturing difficulties)
 - Labour problems
(e.g. shortages, industrial action, quality problems, low productivity)
 - Material shortages
 - Detailed design difficulties
 - FOAK issues (typically, far greater time & cost to build than plants with established reference plants)

A - Nuclear New Build – Risks, cont'd

■ Programme and Coordination Issues –

The risk of delay tends to increase in line with project size and complexity. NPP projects are no exception:

- Delays can occur for multiple reasons; e.g. design delays, long/delayed lead times for components, manufacturing problems, civils difficulties, quality control issues, non-core plant issues (e.g. physical protection), technology advances during the project (e.g. I&C), late changes etc., therefore it is important to try to ensure that the project schedule(s) incorporate(s) reasonable float on critical items - failure to do so can lead to claims.
- Due to project complexity the consequence of programme change can be extremely disruptive. Every effort should be made to maintain schedule discipline. Changes, if any, should be introduced sufficiently early to avoid disruption. Multiple enforced late programme changes invariably leads to claims.
- The lack of a sufficiently detailed, logic linked, feasible and achievable schedule at the outset can result in inefficient working and irreversible delays.
- An unrealistic schedule and poor schedule reporting creates uncertainty and puts completion dates in jeopardy.

A - Nuclear New Build – Risks, cont'd

- **Conditions of Contract (not standard form)**
 - The nuclear plant contract is not standard because the financial, physical and experience risks are greater and more complex than those encountered in simpler projects, which would typically be anticipated by a standard form.
 - The lack of precedent and the greater propensity for the existence of ambiguities and discrepancies within non-standard forms typically leads to a higher incidence of claims.
 - The absence of clear and unambiguous risk allocation and commercial provisions is likely to exacerbate the scope and duration of disputes, e.g., in the following areas:
 - Extensions of time
 - Handling of concurrent delays
 - Quantum payments:
 - Is there a mechanism for valuing changes?
 - Is there a mechanism for handling claims for damages?
 - Dispute resolution
 - Is there a viable process that provides certainty?

A - Nuclear New Build – Risks, cont'd

■ Document Handling

- The creation, handling and review of the vast volume of technical documentation (e.g. system descriptions, construction plans) is a mammoth undertaking for the parties (supplier, owner, authorities).
- The schedule (or sub-critical parts thereof) is invariably driven at various points in time by document handling and approval, which leads to inevitable time pressures on the handling of the documents.
- Perceived “delays” in such document handling can lead to multiple claims and disputes.
- The absence of clear contractual provisions relating to handling periods and claim notification requirements is problematic.
- FOAK implications can make the licensing process uncertain.

A - Nuclear New Build – Risks, cont'd

- 3rd Party involvement & licensing (Authorities)
 - The involvement of the Authorities is, to an extent, beyond the control of the contracting parties.
 - Nuclear licensing is rightly stringent and, apart from the technical burden that this creates, can lead to contractual and commercial disputes. Typical areas where disputes can arise are:
 - Liability for “unforeseen” Authority decisions
 - Liability for Authority “changes”
 - Liability for “late” Authority decisions
 - Interpretation differences (e.g. regulator decisions are often expressed in performance terms rather than being technically prescriptive)

A - Nuclear New Build – Risks, cont'd

■ Other Risks

1. Turnkey dilution
2. Licensability dilution
3. Transfer of obligations
4. Constructive change orders
5. Delay and scope changes by authorities
6. Preferential engineering (i.e. by owner or authorities)
7. Constructive acceleration
9. FOAK challenges, other technical risks

B – Mitigation of Risk

- Risk Management

- Formal risk management procedures should be implemented, which may encompass:
 - *Supply chain risks*
 - *Labour risks*
 - *Construction risks*
 - *Schedule risks*
 - *Design risks*
- Potential risk should be closely (and regularly) monitored via a risk register in order that mitigation measures can be quickly implemented whenever possible. The risk register should be dynamic and not simply a list of unresolved issues.

B – Mitigation of Risk, cont'd

■ Effective Communication

- Effective lines of communication within and between the client and supplier organisations promotes efficient execution of the works and mitigates against the risk of time and cost overruns versus planned.
- Communication processes should be optimised through the implementation of electronic systems and databases, encompassing:
 - letters
 - technical transmittals
 - meetings
 - reports
 - regulator decisions, etc.
- Regular discussion with counterparts and negotiated resolution of site level conflicts similarly minimises the risk of unnecessary escalation.
- Diligent and inclusive internal briefings and training minimises risks arising due to lack of knowledge or understanding (e.g. preferential engineering and constructive change orders).

B – Mitigation of Risk, cont'd

■ Programme control & oversight

- It is essential that the baseline programme contains realistic activity durations and is fully logic linked, since this will form the basis of all future project programmes.
 - This is especially true for nuclear new build projects, which involve thousands of activities with complex inter-relationships covering many years (e.g. the design, manufacture, testing, inspection, transport, installation, inspection of a main component is a project in itself lasting some years).
- Programmes should be regularly updated in order that as-built status is recorded and realistic future activity durations are planned.
- Delays should be quickly diagnosed in order that timely and effective mitigation measures can be introduced (e.g. re-sequencing, adding additional shifts etc).
- Contractual implications of any change and/ or modifications to the works schedule need to be identified.
- Proper programme management and reporting mitigates the risk of time and cost overruns and allows the implementation of effective mitigation measures.

B – Mitigation of Risk, cont'd

- Commercial management & oversight

Prerequisites:

- Cost control, forecasting and reporting - clear procedures should be established.
- Interim / partial payment control (inc. price escalation).

[Pre-contract note: ensure that criteria for payment including definition of milestones is clear; avoid ambiguity; e.g.– “completion of RPV” – does this mean end of manufacture? or, manufacture + factory inspection (if so, inspection by supplier, by owner, by authorities?) or, delivery to site? or, installation? or, installation + inspection? etc. If there is uncertainty, major disputes can arise on nuclear projects due to the huge sums of money involved]

- Change management – implement procedures, consider and manage time and money impact contemporaneously.
- Cost mitigation –identify actual or future cost overruns early and introduce mitigation measures whenever possible.
- Regular liaison internally and externally.
- Reporting systems.
 - Effective commercial management and control provides the opportunity to mitigate potential loss and optimise project finances.

B – Mitigation of Risk, cont'd

■ Claim Management

■ Why to expect claims

- Ambiguities and uncertainties can arise in contract documents, especially on large and complex projects such as nuclear new build.
- Evolutionary and first of a kind projects have a steep learning curve and unforeseen or unplanned circumstances often arise leading to conflict between the parties.
- Not every risk can be mitigated – this creates financial pressures resulting in liability arguments
- When detailed design is developed post contract such as in nuclear new build, tends to generate scope liability arguments.

■ How to avoid claims

- Fair and reasonable allocation of risk where possible should help minimise claims
- Clear and unambiguous contract should help minimise claims
- Resolution of issues contemporaneously prevents uncertainty and claim escalation

■ What if that's not enough?

- High CAPEX means that values in dispute could be high, and possibly disproportionate to the disputed event.
- Fair settlement of valid formal claims is good for the project and important for morale.
- If claims cannot be settled by agreement, effective ADR proceedings should be implemented to ensure early resolution.
- Proactive actions and handling of disputes can greatly mitigate potential losses of both parties.

B – Mitigation of Risk, cont'd

■ Dispute Resolution

- Ensure that viable dispute resolution provisions are included in the contract, typically a tiered process; e.g. negotiation, dispute board or adjudication, arbitration.

[Due to limited world wide experience in nuclear new build and the big learning curve on any nuclear new build project, dispute boards should be strongly considered in order not to have to repeat the learning curve for each case handled]

- Ensure that there is a working default appointment mechanism, in the event that the parties cannot agree on adjudicators or arbitrators.
- Use the dispute resolution mechanism in a proactive way to encourage early resolution.
- Avoid positional bargaining.
- Negotiate - consider your own needs and objectives and those of the other side, which may not be merely monetary (e.g. supplier may provide improved technology as compensation for delivery delays).
- Avoid unnecessary delays and expense in the dispute resolution process.
- Proactive dispute resolution undertaken in good faith provides the opportunity for equitable risk share and the maintaining of relationships.

C – Conclusions

- Minimise risk through preventive planning and the implementation of mitigation measures.
- Schedule and commercial optimisation does not arise by chance, but rather is created through the implementation of effective systems and procedures, e.g.
 - Risk Management
 - Communications
 - Project Controls (schedule & costs)
 - Commercial Management
 - Claim Management
 - Dispute Resolution



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