Risk Allocation in Construction Contracting

Patrick Lamarre
President & CEO
SNC-Lavalin Nuclear Inc.
Sources of Construction Contract Risk

Construction Contracts will generally need to identify and assign risks in the following areas:

- **Project Execution**
  - Quality
  - Schedule
  - Cost

- **Financial Factors**
  - Escalation
  - Foreign exchange
  - Cost of money

- **“Market” Factors**
  - Supply – demand in local and global pricing as distinct from escalation

- **Regulatory Factors**
Increased Contract Risk in the Nuclear Industry

The contract risks are compounded in the nuclear industry:

- Extremely long project durations – typically 10 years
  - 3 year licensing period before substantial construction starts
  - 10 year exposure to escalation and foreign currency fluctuation

- Limited number of qualified suppliers of critical commodities and equipment
  - Demand driven pricing out of step with inflation/escalation

- Nuclear Regulatory Environment
  - Interpretation and application of EA, site license and CNSC requirements
  - Regulatory requirement for Owner/Operator intervention in design process
Contract Risk Allocation is Critical

With the magnitude of Nuclear plant costs and potential steep cost escalation contract risk allocation must:

- Allocate the risk factor to the party best able to manage the risk
  - Excessive contractor risk will result in un-economic levels of contingency and risk costs
  - Excessive owner risk may make the project un-financeable

- Balance risk allocation to ensure alignment between the Owner and Contractor on project objectives

- Reflect the reality of the regulatory environment and associated impact on project scope and schedule
Different Contracting Methodologies
Different Risk Allocation

- EPC Reimbursable with a Mark-up on the total TIC
- Lump Sum (LS) for some aspects of E or P or both
- LS for full EPC
- LS from FEED estimate for the complete project or Converted Lump Sum (CLS) from FEED
Who has the risk?

RISK ALLOCATION OPTIONS
## Cost Reimbursable

<table>
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<tr>
<th>+ Advantages</th>
<th>- Disadvantages</th>
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<tbody>
<tr>
<td><strong>Owner</strong></td>
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<tr>
<td>• Maximum flexibility on project scope and schedule</td>
<td>• Full risk exposure</td>
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<tr>
<td>• Avoids excessive contingency and risk in contractor’s hands</td>
<td>• Lack of cost certainty until late stages of project</td>
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<td>• Avoids confrontational change order environment</td>
<td>• Limits financing options</td>
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<th><strong>Contractor</strong></th>
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<td>• Minimal risk exposure and certainty of cost recovery</td>
<td>• Low margin and low value-added work</td>
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<td>• Predictable revenues and earnings</td>
<td>• Competitive bidding shaving margins further</td>
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## Lump Sum EPC

### + Advantages

**Owner**
- Early cost certainty
- Minimizes owner risk
- Flexible financing options

**Contractor**
- High margins commensurate with the risk
- Reduced competition due to limited number of contractors who can assume the risk
- Avoids Owner intervention in project execution

### - Disadvantages

**Owner**
- Premium cost due to contractor’s contingency and risk
- Limited ability to make design changes without onerous change order process
- Limited ability to intervene or influence the contractor’s project execution performance

**Contractor**
- Maximum risk strategy
- Exposure to market demand and escalation which is difficult to predict and outside of the contractor’s control
Converted Lump Sum – CLS Model

Open Book Estimate (OBE)

Advantages over LSTK:
- Schedule savings omitting EPC LS bid cycle
- Late changes can be incorporated at minimal cost
- Conversion when material quantities are known, lowering risk premium for material (escalation) and field costs
- Potentially lower risk premiums

~ 12-15 months

60% Engineering

Converted LS
Converted Lump Sum – Staged Contract Approach

The converted lump sum or staged contract approach is well suited to the nuclear industry:

- Takes advantage of the 3 year licensing period to complete a majority of engineering so that material quantities are known and equipment pricing is firm.

- Allows the Owner flexibility during the licensing period to implement design changes necessitated by regulatory requirements.

- Shortens the forward window on construction to 5-6 years allowing more confidence in escalation forecasts and pricing.

- If some scopes are still undefined at conversion, leave them as T&M until adequate scoping is done.
CONCLUSION

• Successful “Fast Track” projects don’t exist

• “ABC” of projects;
  ▪ FEED
  ▪ Engineering
  ▪ Procurement
  ▪ Construction

  DON’T CHANGE THE SEQUENCE OF THOSE ACTIVITIES!!!

• Planning
• Alignment of interest
Thank You