



“International Strategic Development”

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INTERNATIONAL STRATEGIC DEVELOPMENT

GREG LAMBERSON, INTERNATIONAL CONSTRUCTION CONSULTING, USA, DISCUSSES THE DEVELOPMENT OF CONTRACTING STRATEGIES FOR INTERNATIONAL OIL AND GAS PROJECTS.

The state of today's energy world provides an unprecedented opportunity for breakthrough performance, given the size and scale of post-merger industries, their broad project portfolios, the shifts in national oil company policies, volatile oil prices, and the challenges involved in bringing together highly skilled organisations. These challenges enable organisations to identify, develop and apply project design and execution learnings and new technology that will achieve further reductions in cycle time and development cost.

In the ever-changing environment of the energy industry, it is critical to develop prescriptive processes and tools to aid in the development of optimum contracting strategies for the planning of upstream projects worldwide. Project contracting and execution strategies should be based on fundamentals. An example set of strategies may include items such as:

- Best in class for Safety, Health, and Environmental.
- Lowest Barrel of Oil Equivalent (BOE) development cost possible.
- Less than four year cycle time for Major Capital Projects (MCPs).
- Quality/operability.

The fundamentals chosen in developing the contracting and execution strategies are then finalised around the associated drivers, which based on the above fundamentals, may include:

- Safety, Health, and Environmental performance.
- Cost at, or below, budget.
- Cycle time improvement and on-time delivery.
- Specifications and standards.
- Controls/procedures.

When developing contracting strategies for upstream oil and gas projects, there are many factors and

complexities that go into the decision. Figure 1 provides an overview of the contracting process. Deciding on a contracting strategy is probably the most important decision to be made with regards to project execution and has far reaching impacts. Therefore, it is a decision path not to be taken lightly.

There are a mind boggling number of factors to be taken into consideration. Below is an attempt to address some of the more key ones and are shown as a general listing, which is neither exhaustive nor prioritised.

Contracting strategy drivers

Market conditions

Market conditions determine what resources are available to support the project and often, due to host country requirements, what resources the project must utilise.

Owner company work scope

Often, the owner company keeps part of the work scope for itself due either to risk or economics. These may include long lead items or large impact materials that are readily purchased by the owner company, such as line pipe in the case of pipelines.

Contractor capabilities

The Work Breakdown Structure (WBS) packages should be formatted to allow available contractors to bid on the packages.

Host country contracting requirements

Host country requirements often influence the world market condition. The host country might state in its contract requirements (such as a PSA) that a certain percentage of local content be used.

Logistics

This is an activity normally shown on a large projects WBS that deals with the transport of people, materials, fuel, etc.

There are advantages and disadvantages to having a single contractor supply all logistics.

Infrastructure

Infrastructure is often part of a work package on a typical WBS. Infrastructure can be its own work package, but it is often included with other work packages, such as facilities. The existing infrastructure in the area must be evaluated to determine if it is sufficient to support construction and the needs of the entire labour force.

Schedule drivers

Schedule drivers can play a role in the way work packages and activities are distributed on a WBS. An example is that a project may face schedule windows and begin a scope of work, suspend work for a given time period, and then continue work when the next window of opportunity occurs.

Risk allocation

Often, the owner company wishes to transfer risk to the contractor to provide incentives to perform, but it does not help the company to transfer risk to a contractor who most likely cannot perform.

Cost estimating

As part of the contracting strategy development process, cost estimates for the work packages, and for the project, in general, should be generated based on the contracting strategy and WBS. Not only should cost be included for the work associated with each work package, estimates need to also be developed for the project management team, Construction All-Risk (CAR) insurance, other non-EPC costs, drilling, infrastructure support, contingency, etc.

Expectations for projects

The expectations developed by the owner company define a uniform approach to implement the key strategies selected across all owner team contracts. Some of these reflect fundamental policies and management controls, while others emphasise priorities and basic values. Some typical example key expectations have been outlined below.

SHE

Ensure that safety, health and the environment (SHE) remains a top priority in the contracting/purchasing process, and is implemented by the Owner Teams contractors/vendors. Encourage and support key contractors in their actions to improve their performance.

Lessons learned

Capture and incorporate contracting/purchasing lessons learned and best practices into base documents.

Alignment

Achieve alignment between the owner team, host governments and co-venturers/stakeholders. Alignment with contractors and sub-contractors is accomplished through strategies, objectives, work processes, and contracts. Prime contractors, sub-contractors and vendors should be aligned with the owner team to achieve the Project Objectives. Incentives tied to safety, quality, cost, and schedule may be appropriate to promote alignment.

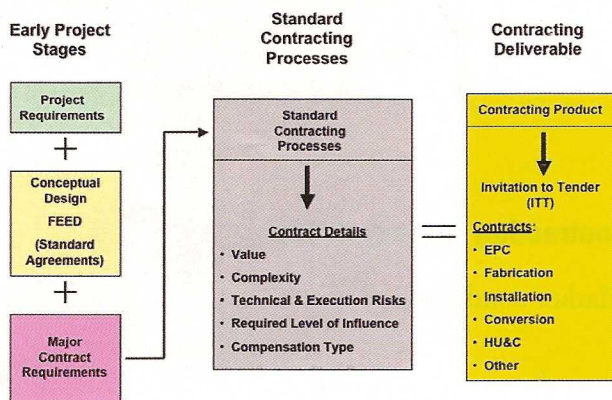


Figure 1. Key steps for developing optimum contracting strategies.

WORK BREAKDOWN STRUCTURE									
	MODU	OFFSHORE FACILITIES			ONSHORE FACILITIES				
	Modu	Topside	Jackets	Flowlines/Risers	Infrastructure	Power Plant	Compressor Station	Pipelines	Power Transmission Lines
Project Management	OWNER TEAM								
FEED	TBD	FEED CONTRACTOR							
Site Data Collection	N/A	ENVIRONMENTAL SITE CONTRACTOR						N/A	N/A
EIA Review	N/A	N/A	ENVIRONMENTAL MANAGEMENT CONTRACTOR						
Route Survey	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PL ENGINEERING SUBCONTRACTOR	
R.O.W. Acquisition	N/A	N/A	N/A	N/A	N/A	N/A	N/A	LS (ROW-RC)	
Detail Design	LEASE	EPC2-LS			EPC1-LS				
Equipment & Bulks Procurement Note 2		EPC2-LS			EPC1-LS				
Construction/Fabrication/		EPC2-LS			EPC1-LS				
Onshore HUC		N/A	N/A	N/A	EPC1-LS				
Transport to Site & Installation	EPC2-LS			EPC1-LS					
Offshore HUC	EPC2-LS			N/A	N/A	N/A	N/A	N/A	
O & M	OWNER O&M GROUP			EPC1-LS					

Notes: 1. Project Management Team (PMT) consists of Company, individual consultants and engineering contractor personnel, as required.
 2. PMT to procure long lead items, e.g., pipeline material, etc., and free issue to EPC for administration. Company Gas Turbine contract to be utilized by EPC1.
 3. Onshore infrastructure includes water wells, roads, construction material offloading facility, administration areas and other buildings.

Figure 2. A typical WBS for a major offshore/onshore project.

Resources

Use both owner teams' internal staff in key positions and develop strategies to leverage with external resources. Select, develop, and spend the energy to improve and maintain an appropriate number of key and capable contractors. This would include combinations of high performing contractors to provide full EPC services while accommodating local interests and specialised contractors. Utilise a contracting strategy (or WBS) that leverages the owner team and contractor resources.

Project Management	Onshore Processing Facilities				Pipeline & Export Terminal Facilities				Offshore				Drilling Rigs		Housing & Offices
	Onshore Processing Facilities				Pipelines & Export Terminal				Platform & Drill Rig				Offshore	Land Drill Rigs - 2	Housing / Offices & Offsite Infrastructure
	OPF & Pads	OPF 1	OPF 2	SCADA & Telecoms	Export Terminal	Export Pipeline	Gathering Lines (Onshore)	Flowlines (Onshore)	Potential Early	Production Modules	Structural Upgrades /	Drill Rig (DC1)	Offshore Flowlines	Company Drilling	
Regulatory (EIA, Jol, TEOC)	Company & Integrated PMT														
FEED	Company & EIA Contractor														
Detailed Engineering	FEED Contractors														
Equipment & Bulk Material Procurement	Long Lead Items				Pipe by Company				Long Lead Items				DRILLING SUB		EPC4
Fabrication / Construction	EPC1				EPC2				EPC3				EPC2		EPC4
Transport to Site	DC1 Contractor provides Management and Supervision														
Installation															
Hook-up & Commissioning															
Operate, Maintain & Train															

Figure 3. Typical WBS for a mega-project.

Synergies and economies of scale

Fully utilise scale and size of project portfolio in developing relationships with a few key contractors, and to provide leverage when negotiating cost and schedule. Look for opportunities for repeat business and to transfer work products to other projects (e.g. design one, build many). Achieving synergies and economies of scale must always be balanced against maintaining a competitive environment.

Project controls

Implement essential business practices and controls, including:

- Compliance with Delegation of Authority (DOA).
- Competitive pricing (combination of competitive bids, benchmarking, and periodic re-negotiations).
- Securing bid evaluation data and preventing information brokering.

Efficiency

Streamline and standardise the contracting processes, documents and systems. Where possible, key major contractors should be involved early. Execution efficiency can be gained by maximising the use of reference designs, standardised purchasing and effective engineering/construction interfacing.

There are circumstances, such as proprietary technology, sole source, similar locations, synergy with past projects, design one-build many, etc when it is prudent to strive for negotiating contracts rather than competitive bidding.

Work Breakdown Structure (WBS) templates

In order to promote consistency across an owner company, it is imperative to develop standard WBSs for a variety of project types and the associated phases. Once developed, these WBSs should then be used as the starting point for developing a project's contracting strategy. The WBS should represent a leveraged approach that places more day-to-day execution responsibility (management systems and resources) on the main EPC contractors. The owner team will generally place a Project Management Team (PMT) to manage the overall job and integrate the efforts of the EPC contractors. Figure 2 gives an example of a WBS that includes both onshore and offshore components.

The first step in developing the WBS is to identify and distribute the main project components and tasks into EPC subprojects in order to achieve manageable work packages. For example, offshore and onshore work will generally be separated. A typical EPC contract would be an LNG plant, FPSO, production platform, GTL plant, or subsea tie-back job. The WBS

must accommodate (or adapt to) local content issues, local government considerations, contractor capabilities, commercial considerations, construction or manufacturing market conditions, schedule considerations, proprietary technology restrictions, and the management of execution risk. Fixed pricing compensation bases such as lump sum or fixed Unit Prices are preferred for EPC contracts. A detailed discussion of compensation is beyond this article, suffice to say, the compensation basis can vary from EPC to EPC or from component to component within a given EPC contract. Local requirements will strongly influence selection of the compensation basis in some countries. Figure 3 provides an example WBS for a mega-project.

Owner team resources may be augmented by a project services contractor (resources, systems) or by a project management contractor. Ratios of owner personnel to third-party personnel will vary and could be as high as 1:3 to meet the resource demands of their respective project portfolios. Strategies should be developed by each Owner Team to source contractor and third-party personnel for this purpose.

Conceptual engineering and FEED execution

As a general rule, conceptual engineering should be completed as a part of the development planning and is typically completed prior to Front End Engineering Design (FEED). This work should include conceptual design, preparation of PDM, cost reduction and optimisation, economic trade-off studies, and concept safety evaluation.

FEED develops the engineering packages to be included in the Invitations To Tender (ITT) for the EPC contracts. The FEED scope of work must include sufficient engineering definition suitable for the compensation basis (Lump Sum, Unit Price, reimbursable etc). This will generally include functional requirements, design basis, documents and drawings, specifications, EPC contract scopes of work, interface definition, cost reduction, and safety studies.

The use of reference designs from previous projects and other types of standardised deliverables and equipment will reduce cost and cycle time for FEED activities.

There are several basic execution approaches to this phase of the project that include:

- EPC contractors used for FEED deliverables.
- In-house integrated owner team - contractor design team.

- In-house design team (depending on Owner Team's organisational structure).

It is important to match contractor strengths and capabilities to the type of work and concept being developed or engineered.

Standard contracts should be in-place to facilitate a rapid start of conceptual engineering or FEED work when conditions allow. The use of pre-negotiated contract terms and rates, or competitive bidding against outline agreements can reduce start-up time. Direct assignment of the FEED contractor is another acceptable way to establish this contract. Strategic relationships with preferred contractors will further facilitate the efficiency of front end engineering activities.

It is critical to engage and gain alignment with host governments early to ensure that local procurement and content requirements are met during the early engineering phases, and that necessary approvals are received to execute the work.

Another important consideration and decision that needs to be made is the concept of placing, not only the EPC responsibilities, but also the commissioning and start-up within the responsibility of the EPC contractor. This concept can create possibilities for efficiencies and synergies between the various project phases. It can also simplify the lines of responsibilities and reduces interfaces and hand-overs. An example is that by having a contractor hook-up and commission their own fabrication can mitigate the consequences of 'hidden carry-over work'.

In addition to these general considerations, there are a few specific points, which should be noted:

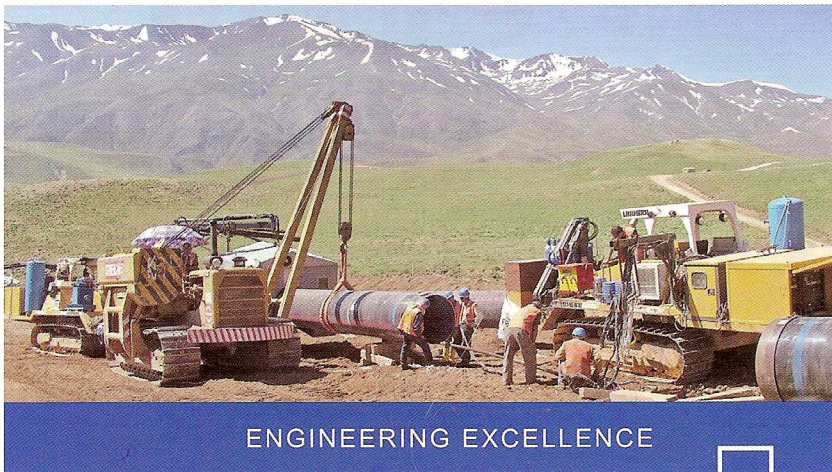
- Procurement is generally the responsibility of the EPC contractor. Certain strategic items such as line pipe or long lead items may be purchased by the owner company and free-issued to the EPC contractor.
- Commissioning and start-up, regardless if it is assigned to the EPC contractor or performed by a specialty contractor is a joint effort between the C&SU contractor and the owner teams operations group. The contract must spell out the specific scope of work, roles and responsibilities for each party in the integrated C&SU team.

Conclusion

Owner companies should have a prescriptive and comprehensive guiding document that outlines its project contracting and execution strategies that supports its business model. This document should be based on multifunctional input and it should identify the key core strategies and tactics as defined by senior management that should set the direction for the procurement and project contracting efforts. It should also retain sufficient flexibility to meet local needs as well as the addition of project or business unit strategies that may be local or regionally driven.

The strategies should be developed to create alignment between the project, functional and procurement organisations. These strategies will be focused to achieve reductions in cycle time and overall development cost. **WP**

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