Bapco’s Project Development Methodology

An Overview

by

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Presentation Outline

1. The Oil Industry in Bahrain
2. Bapco’s SIP
3. The Bapco Modernization Program (BMP)
4. Bapco’s Project Development Process
5. Typical Project Management Strategies of Bapco
   - *The ‘Front End Loading’ Strategy
   - *The ‘Execution’ Strategy
   - *The ‘People’ Strategy
   - *The ‘Contracting’ Strategy
   - *The ‘Monitoring’ Strategy
The Bahrain Oil Field was discovered in 1932.

The Refinery was built in 1936. Numerous expansions and modifications were made to meet changing market requirements.

Under the guidance and leadership of His Majesty, King Hamad Bin Isa Al Khalifa, we have gone from strength to strength providing major contributions to the Kingdom.
Bapco has completed a US$ 1.2 billion Strategic Investment Programme (SIP) recently which was undertaken to transform itself into an integrated Refinery.

- We have now embarked on the Bapco Modernization Program (BMP).
**BMP Objectives**

- **Refinery Configuration and Gross Margin**
  - A revised configuration shall allow for higher throughput, improve the product slate and increase the gross margin with the objective to remain competitive under a wide range of prices and market scenarios.

- **Environmental Compliance**
  - All new units shall function in compliance with applicable local environmental regulations.

- **Energy Efficiency**
  - The BMP shall improve energy efficiency and lower the Energy Intensity Index (EII) of the Refinery.
The ‘Preliminary Assessment’ carried out for the BMP to meet project objectives and modernize Bapco has established that the most effective way of improving gross margin is to concentrate on middle distillates production at an increased refinery capacity with resid conversion units to reduce or eliminate fuel oil.

The world’s best technology providers have been identified for various new processing units.

Latest state-of-the-art technologies will be used for the following units:

(a) Resid Hydrocracker
(b) Vacuum Gas Oil Hydrocracker
(c) Diesel Hydrotreater
(d) Sulphur Recovery
(e) Delayed Coker
The conceptualization of ‘Work Packages’ or ‘Projects’ under the BMP umbrella is indicated below:
A Project Management Contractor (PMC) will be engaged by Bapco in Q2 2014 to help in meeting the short-term resource requirements.

In the current phase of development, expected to be concluded in 2015, Engineering Design Packages (EDPs) will be prepared by selected Technology Licensors and Front End Engineering Design (FEED) work will be carried out by the FEED Contractor in an overlapping manner.

The Engineering, Procurement and Construction (EPC) work is expected to commence in 2016. The Contracting Strategy for this cost-intensive phase will be finalized shortly in consultation with stakeholders and financial advisors.

The project schedule, as per current development plan, is to have all the new units commissioned and operational sequentially by end of 2020.
Bapco’s Project Development Process
Bapco, which has a Technical Services Agreement with Chevron, uses the **Chevron Project Development and Execution Process** (CPDEP) for management of its projects.

CPDEP is a process designed to improve decision making and execution of projects by fostering better planning, collaboration and communication. CPDEP helps guide team efforts in selecting the right opportunities through improved decision making and improve the overall outcomes by excelling in the execution of the business driven decision.

CPDEP has five phases:

- Phase 1 – Identify and Assess Opportunities
- Phase 2 – Generate and Select Alternative(s)
- Phase 3 – Develop Preferred Alternative
- Phase 4 – Execute
- Phase 5 – Operate and Evaluate.
Due to confidentiality and proprietary clauses related to Bapco’s agreement with Chevron, the details of the process cannot be divulged. However, a brief outline is as follows:

1. **WHERE ARE WE NOW?**
   - Opportunity Statement
   - Boundary Conditions

2. **WHERE DO WE WANT TO BE?**
   - CPDEP Roadmap
   - Contingency, Action & Execution Plans
   - Implementation Tracking
   - Definition of Success

3. **HOW DO WE GET THERE?**
Project Management Strategies

- *The ‘Front End Loading’ Strategy
- *The ‘Execution’ Strategy
- *The ‘People’ Strategy
- *The ‘Contracting’ Strategy
- *The ‘Monitoring’ Strategy
*The ‘Front End Loading’ Strategy

The importance of front end loading
Front end loading benefits

Value Identification

Value Realization

Phase 1
Opportunity Identified

Phase 2
Generate & Select Alternatives

Phase 3
Develop Preferred Alternative

Phase 4
Execute

Phase 5
Operate

A

Good Project Definition

B

Poor Project Definition

Good Project Execution

C

Poor Project Execution

D

VALUE
FEL - All the activities done in CPDEP phases 1, 2 and 3 defining the business opportunity, alternatives and developing a good understanding of the selected alternative.
*The ‘Execution’ Strategy

The Project Execution Plan (PEP)
A cornerstone in any project development and execution process is in the early development of a Project Execution Plan (PEP).

This document describes the strategy by which the project will be directed throughout its existence. The PEP is a dynamic document that requires updating when significant changes or developments occur in the project.

The PEP represents the contributions and expertise of a full spectrum of project participants and interests. At any given point in time, the PEP represents the current "game plan" of Bapco for the project. By definition, the PEP constantly undergoes improvement in specifics, consistent with project development and definition, and as such, requires careful maintenance and attention.

The PEP is structured to embrace the three major parts of a project, namely: (i) Project Charter (ii) Project Basis (iii) Execution and Control
*The ‘People’ Strategy

Owner PMT and the use of a PMC
Owner PMT and the use of a PMC

- It is extremely important to get the ‘People’ strategy right as this is the main driver for any project. The ‘right’ people must be in the ‘right’ place!

- The Owner’s resources assigned to the project i.e. the Project Management Team (PMT), must be up to the task; they must be:
  - Willing to do the work – have the right motivation to fully participate in project activities and contribute to production of deliverables
  - Able to do the work – have the aptitude for the work being performed, and be able to dedicate their full attention to the task at hand
  - Skilled for the work – have the right combination of knowledge and skills to perform the assigned tasks

- Sometimes, due to size and complexity of a project, the resources to manage it exceed the capacity of Bapco to do-it-alone. In such cases, a Project Management Contractor (PMC) is engaged for short-term resource requirements.
1) An “Integrated Mixed” Organization wherein parties of each organization would fill individual roles throughout the PMT, fully performing the duties of their assigned role.
2) A “Layered Supervisory” Organization which would be similar to an “Integrated Mixed” Organization, except that the Owner roles would only be supervisory positions throughout the Organization. Under this arrangement, the Owner would provide day-to-day work direction directly to PMC Personnel within the PMT.

Full-fledged team from PMC comprising multi-disciplinary engineers reporting to Owner’s Lead Engineers

Technology Licensor / FEED Contractor / EPC Contractor
3) A “Layered Owner’s Representative” Organization which is more traditional and assigns oversight roles to the Owner, while the daily management responsibilities are assigned to the PMC within prescribed decision making authority guidelines. Bapco prefers this approach.
*The ‘Contracting’ Strategy

Fit-for-purpose contract types
There is no ‘one’ right strategy!

- The right contracting strategy at different phases of the project development cycle is required to fulfill the project objectives.

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<th>Typical project objectives during various development phases</th>
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<tr>
<td><strong>EDP Phase</strong></td>
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<td>- Meet business requirements</td>
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<td>- Achieve customer satisfaction</td>
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<tr>
<td>- Meet schedule performance</td>
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<tr>
<td><strong>FEED Phase</strong></td>
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<td><strong>EPC Phase</strong></td>
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<td>- Achieve cost performance</td>
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<tr>
<td>- Meet schedule performance</td>
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<tr>
<td>- Minimize Contractor scope changes</td>
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<tr>
<td>- Maximize reliability</td>
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<tr>
<td>- Minimize risk to Owner</td>
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<tr>
<td>- Attain high quality of construction works</td>
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<tr>
<td>- Achieve customer satisfaction</td>
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1. **Firm Fixed Price or Lump Sum Turn Key Contracts**
   Well defined deliverables for a set price; high risk to the Contractor

2. **Fixed Price Plus Incentive Contracts**
   Owner adds some bonus for early completion; early completion criteria is clearly stated; some risk is now transferred to the Owner

3. **Unit Rate Contracts**
   Contractor sets a price for a pre-defined unit of a product; these rates are mutually agreed by the Contractor and the Owner

4. **Cost Reimbursable Contracts**
   Used when there is uncertainty about the scope of work; all costs incurred by Contractor are charged to the Owner; highest risk to the Owner

5. **Cost Plus Fixed Fee Contracts**
   All costs are charged to the Owner + a fixed sum; Contractor’s fee is fixed while costs are variable; Contractor has no motivation for saving

6. **Cost Plus Incentive Fee Contracts**
   Incentive is %age of cost and is riskiest to the Owner; Contractor’s profit increases with increased cost
The Bapco way for an EPC Strategy

**STEP # 1**

- **Is there good technical definition?**
  - **Yes**
    - Lump sum E only
    - P & C to be decided
  - **No**
    - Lump sum E, P & C: All reimbursable

**STEP # 2**

- **Is the equipment industry standard?**
  - **Yes**
    - Lump sum E & P
    - C to be decided
  - **No**
    - Lump sum E, P & C: reimbursable

**STEP # 3**

- **Are there specific local circumstances?**
  - **Yes**
    - Lump sum E & P, C reimbursable
  - **No**
    - Lump sum E, P & C

**REIMBURSABLE +**
Integration of EPC

Successful project implementation requires integration of E, P and C activities.

- **Engineering (E)**: 10 - 20% of Total Cost
- **Procurement (P)**: 50 - 55%
- **Construction (C)**: 40 - 45%

**PROJECT IMPLEMENTATION ROUTE**

- **Construction approach/phasing**
- **Equipment/material specifications**
- **Equipment/Materials delivered to site**
- **Final bulk material quantities**
- **Vendor information**
- **Constructability/“As Built”**
*The ‘Monitoring’ Strategy

Project monitoring @ management level
Review of Priority Outputs

- As custodians of a level of investment that typically fall in the range of several hundred millions of dollars, we face significant challenges. This presents many opportunities for us to look at the way we conduct our business and identify areas of improvement.

- To remain focused, Bapco periodically (every 5 years) develops a Corporate Strategic Plan that reflect its priorities.

- At a step lower, Divisional and Departmental priorities are set annually that complement Bapco’s Corporate Strategic Plan.

- Besides the regular monitoring and control mechanisms applied during project implementation, Bapco’s major projects (categorized as Strategic Priority Outputs) are monitored by the top management on a quarterly basis.
Q & A

Thank you!