

Risks and Roles for “EPC” Firms

© **Bob Andrew**

April 27th, 2007

EPC Firms located in Houston

- ❑ Fluor Enterprises (*in Sugarland*)
- ❑ Kellogg, Brown & Root (*downtown*)
- ❑ Jacobs Engineering (*West Tollway*)
- ❑ Shaw Energy&Chem (*Energy Corr*)
- ❑ S& B Engineers (*West Beltway*)
- ❑ Mustang Engineering (*Park 10*)
- ❑ Foster-Wheeler (*Dairy-Ashford*)

Example of Major EPC Projects

- ❑ Refinery “Clean Fuels” Units in U.S.
- ❑ Petrochemical complexes (globally)
- ❑ Offshore Platforms and LNG Plants
- ❑ Synthetic Fuel(s) from natural gas
- ❑ “Clean” Power: coal, gas & nuclear
- ❑ Refinery revamp for alternate crude
- ❑ SynCrude extraction, get to market
- ❑ Pipeline, Dock, & Terminal Facilities

Example of EPC contracts

- ❑ Process Scoping Study (“Feasibility”)
- ❑ FEED = Front-End Engineering Design
- ❑ FEL3 = Detailed Engineering Design
- ❑ Detailed Design & Procurement only
- ❑ Design, Procurement and Logistics
- ❑ EPC= Engineer, Procure & Construct
- ❑ Construction only (E&P is by others)
- ❑ PMC = Project Management Contract

EPC Client's Risk Assessments

- Formal PHA Process Hazard Analysis use methodologies such as "HazOp"
- SIL & SIS (cause-&-effect, controls)
- EPC staff typically have minor role: i.e. Rep attends, but client decides

An EPC's Project/Financial Risk

- ❑ Risk of unworkable or unsafe design:
i.e. professional engineering liability
- ❑ Risk components do not fit together:
i.e. cost/schedule overrun to rework
- ❑ Commercial Contract type important:
i.e. is it Cost plus a Fee (% or fixed)?
or Fee based on Milestones & Rating?
or Cost-Plus with Not-to-Exceed cap?
or Lump-Sum e.g. Licensed designs?

Consider Project “Risk-Sharing”

- ❑ More difficult during “PSS” or “FEED”
- ❑ Consider for FEL3 Detail Design phase
- ❑ Agree upon Milestones/Measurements
- ❑ Shared-risk typically financial (today)
- ❑ Define workflow between EPC & Client
High-level: Timely decisions, Rework?