
The Anticipated, The Abnormal!

Key Disciplines For Successful Power Projects

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Panelists



Robert C. McCue, P.E.,
President
MDCSystems®
Berwyn, PA

Shelly Gowen (Moderator)
Vice President
MDCSystems®
Berwyn, PA



Sheila S. Hollis, Esquire
Duane Morris LLP
Washington, D.C.



A. H. Gaede, Esquire
Bradley Arant Rose & White LLP
Birmingham, AL



Charles L. Brown, Solicitor
Dechert Price & Rhoads
London, UK

Key Disciplines for Successful Power Projects

- Contract Management
- Scope Management
- Schedule Management
- Procurement Management
- Cost Management
- Dispute Management

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Management

- Why so important today?
- Technical Complexity of the Projects
 - Efficiency, 58 % +
 - Reliability
 - Environmental Limits
- Delivery Cycle
- Capital Cost
- Risk vs. Reward (Peak Demand)
 - rcm

The New Rules of the Game

Challenges to Power Plan Developers in a Time of Stress, Change, and uncertainty

Massive Structural Assaults on Energy Industry and Financial Industry Leading to:

- Shortage of capital
- Scrutiny of all deal aspects with greater intensity
- New players with capital – seeing opportunities in different ways
- The possible intensification of regulatory oversight
- Litigious environment sh

Vulnerability Zones in Power Plant Development

Some Basic Concerns

- Unclear/unstable/underdeveloped legal system
- Nature of c-developers and other project participants
- Inadequately drafted project documents, including power purchase agreements
- Fluid, unpredictable political environment
- Plant design/construction/reliability
- Labor sh

Vulnerability Zones in Power Plant Development

Some Basic Concerns (cont.)

- Role of lenders/insurers
- Fuel supply/price/reliability/transportation
- Environmental issues of all sorts
- Surrounding countries political instability
- Demand shifts
- Transmission concerns/pricing/reliability/regulation
- Customer capabilities sh

Rules of Road

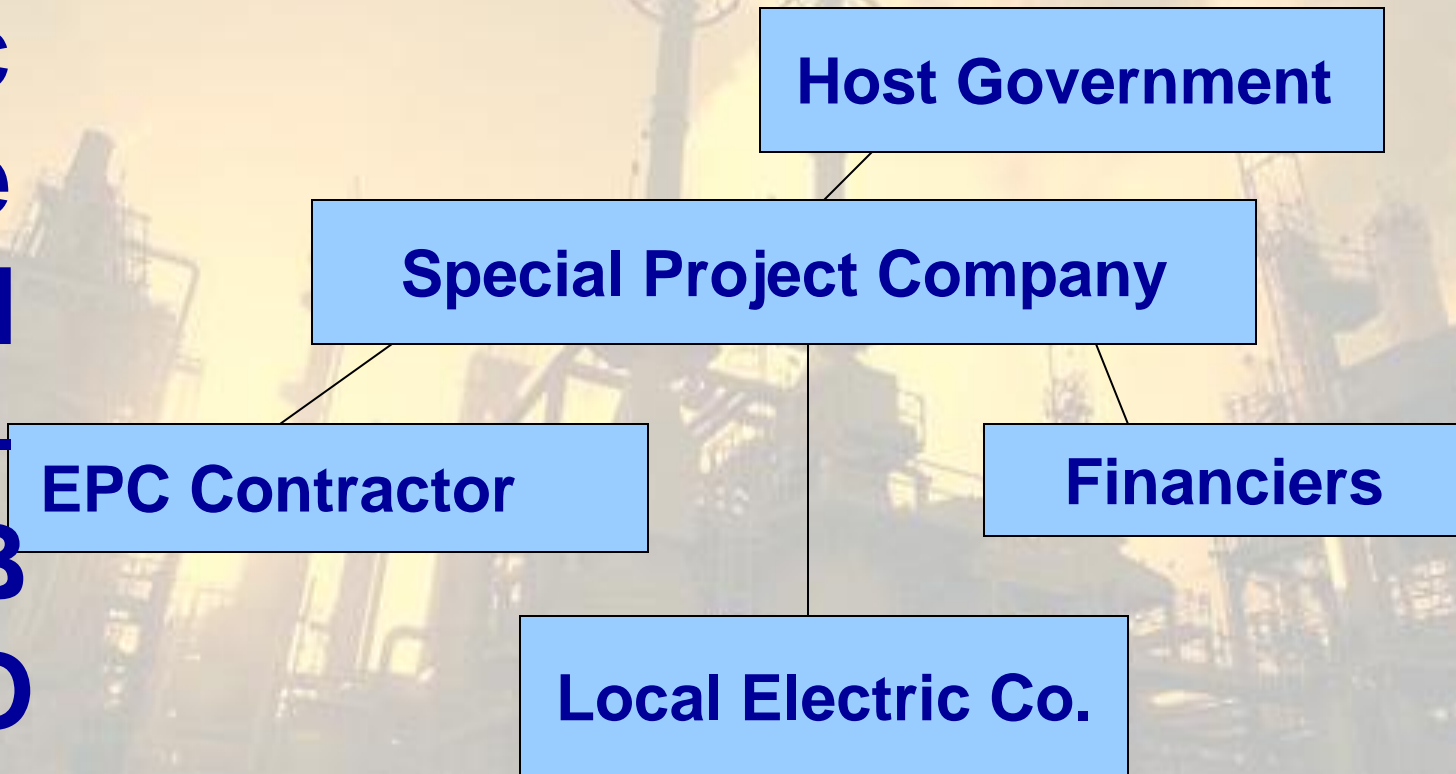
- Capital sources fully informed/well educated on risk/reward profile-strong foothold in marketplace
- Open communication with legislators and regulators
- Well crafted laws, regulations, and contracts
- Environmental sensitivities appropriately addressed
- Understanding of regulatory system and ability to have input into system or to address change sh

Rules of Road (cont.)

- Partnership mentality to avoid us/them battles
- Reliable fuel supply/transport
- Clear insight into motivations and cultural sensitivities of other players
- Committed constituent support for projects
- Analysis of market/demand elasticity
- Reliable, predictable, physical plant sh

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The Project Financed–BOT-Model



Caveat: Only one of several possible delivery systems, but one that is also frequently. ng

Importance of EPC Contract

- EPC Contract the Largest Monetary Expenditure
- Availability and Viability of Project Financing Depends on EPC Contract Price
- Construction of Facility is the Area Where Cost Overruns Most Likely
- Facility Performance at Pro Forma Levels a Major Factor in Overall Project Financial Stability

The Employer/Contractor Contract

Standard forms for EPC Contract

- FIDIC “Yellow Book”- Conditions for Plant and Design Build

“...recommended for the provision of electrical and/or mechanical plant and for the design and execution of building and engineering works...{T}he Contractor designs and provides, in accordance with the Employer’s requirements, plant and or other works; which may include any combination of civil, mechanical, electrical and/or construction works”
- Based on principles of balanced risk sharing

The Employer/Contractor Contract

- FIDIC “Silver Book”- Conditions of Contract for EPC Turnkey Projects
- Silver Book Forward
 - Project-perhaps a BOT-requires greater certainty of price
- “...The Contractor should be given freedom to carry the work in his chosen manner, provided the end result meets the performance criteria specified by the Employer.” ng

The Employer/Contractor- Contractor

Employer will give Contractor time and opportunity to consider all relevant information before Contractor agrees to fixed price.

Employer willing to pay more, sometimes considerably more to gain price certainty.

Contractor takes total responsibility of the projects, with little involvement of the Employer.

- Not balanced risk sharing; shift risks to Contractor.ng

Key Employer/Contractor Clauses

- Employer's Performance Requirements/Criteria and Contractor's Design Responsibility
- Employer's Engineer-Role
- Nominated Assigned] Subcontractors/Vendors
- Payment
- Acceptance/Performance Testing and Guarantees

Key Employer/Contractor Clauses

- Changes-Extra Costs, Delays/Acceleration, etc
- Warranty (ies)
- Differing Site Conditions (Unforeseeable Physical Conditions)
- Dispute Resolution

Key Employer/Contractor Clauses

- Employer's Performance Requirements/Criteria and Contractors Design Responsibility:
 - clearly articulated
 - who is responsible for errors in Employer's Requirements/Criteria?
 - Yellow Book, Clause 1.9, if could not reasonably be discovered the Employer is responsible.
 - Silver Book, Clause 5.1, except in rare instances the Contractor is responsible for the Employer's errors.

Key Employer/Contractor Clauses

- Employer's Engineer Role:
 - Define carefully
 - Yellow Book: Clause 3.5 Responsible to make "Determination" on a host of matters including changes and claims for extra costs and delays and the parties "shall give effect to each determination unless and until revised under Clause 20..."
 - Attempt to have Engineer representative with authority on site
 - Silver Book: There is no Employer's Engineer

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Key Employer/Contractors Clauses

- Disputes: The Engineer is not the final decision maker before arbitration. *Now a Dispute Adjudication Board*

Key Employer/Contractor Clauses

- Acceptance/Performance Testing and Guarantees
 - By systems or for entire facility
 - Define carefully. In particular, address Employer furnished equipment, Employer's nominated equipment vendors, and Employer's obligations for fuel, back feed power, etc.
- Amount of LD's and buy down; how they are tied to time and performance.
- Performance Trigger - Substantial Completion or failures thereof. ng

Key Employer/Contractor Clauses

- Differing Site Conditions (Unforeseeable Physical Conditions)
 - Who bear the risk and to what extent?
 - Yellow Book-The Employer, but....
 - Silver Book-The Contractor- Clauses 4.10, .11 and .12.
 - * Must verify and interpret Employer supplied data
 - * “Employer shall have no responsibility for the accuracy...or completion of such data” (Clause 4.10)
 - * “Contract Price shall not be adjusted to take account of any unforeseen difficulties or costs” (Clause 4.12)ng

Contract Management

- Selection of Contract Delivery System:
EPC/Turnkey, DB, DBOM
- Integration of all Project Contracts
- Reality Check – Side Issues
- Contract Administration
 - Notice
 - Changes
 - Performance
 - Reporting/Monitoring rcm

Change Management

- Increased Design Complexity leads to more Changes that create Significant Impacts to Projects
- Build Recognition Systems into Contract
- Recognize that Change is Occurring
- Minimize Negatives and Maximize Positives of Change on the Overall Project rcm

Scope Management

- Assumptions
 - “Its going to be just like the project.”
- Codes and Standards
- Interfaces
- Work by Others
- Global Economy rcm

Planning Assumptions

- What's the Deal?
- Site Access and Suitability
- Labor Availability and Skill Levels
- Boundary Conditions
- Related Work by Others
- Procurement Schedules
- Testing and Operation rcm

Schedule (Programme) Management

- Why have a Schedule ?
- “Games” Schedulers play
- Scheduler Qualifications
- What is driving the Schedule?
- Progress Reporting or CYA?
- Mission Impossible? Or just Improbable?
- Effect of Change Integration rcm

Schedule (Programme) Management

- Floating Completion Dates or Negative Float?
- Dual Units → Linked Impacts
- Recovering from Problems
 - Working smarter rather than harder
 - Re-planning the work vs. schedule games
- Resource Constraints
- When Desire Meets Reality rcm

Procurement Management

- Specifications
- Shipping
- Inspection
- Acceptance
- Global Standard
- Whose Standard?
- Inspection Protocol
- Testing Protocol
- Spare Parts
- Warranty rcm

Cost Management

- Reality vs. Project Management
- Cost Estimate → Budget
 - Understanding Assumptions
 - Arbitrary?
 - How Identical are 2 Projects?
- Timeliness and Availability
- Measurement & Monitoring
- Integration with Scope & Schedule rcm

Labor Utilization

- Skill Levels: Requirements vs. Reality
- Availability
- Portability
- Actual Work Efficiency Compared to Bid Assumptions
- Living Arrangements rcm

Effective Dispute Management Keys to Success

- **Fairness**
- **Efficiency/Timing**
- **Flexibility**
- **Contemporaneous Decisions**
- **Executive Level Involvement**
- **Consistent with Applicable Legal Framework** cb

Disputes: Levels of Engagement

- Abandonment/Termination
- Project Management Decisions
- Early Neutral Technical Evaluation
- Executive Level Involvement
- When is a Dispute a Dispute?
- Obligatory Cooling-Off Period cb

Disputes: Levels of Engagement

- Formal Dispute Resolution
 - Mediation/Conciliation
 - Adjudication
 - Arbitration
- Parties' Contract Obligations Continue cb

Contact Us!

MDCSystems®
300 Berwyn Park
Suite 115
Berwyn, PA 19312-1179
610-640-9600
MDCSystems.com

Bradley Arant Rose & White
2001 Park Place
Suite 1400
Birmingham, AL 35203
205-521-8323
Bradleyarant.com

Duane Morris LLP
1667 K Street NW
Suite 700
Washington, DC 20006-1608
202-776-7810
Duanemorris.com

Dechert Price & Rhoads
2 Serjeant's Inn
London, UK EC4Y 1LT
020-7583-5353
Dechert.com

<http://www.mdcsystems.com>