Capital Project Risk Management in the Arctic Environment
The ConocoPhillips Way

SAFE
We will not compromise on our commitment to execute projects safely and deliver operating assets that are safe for people and for the environment.

TRANSPARENT
We will openly and frequently communicate project status, priority risks, and issues.

PREDICTABLE
We will consistently deliver on our promised AFD and AFE targets. We will consistently deliver operability at or above the AFE target.

COMPETITIVE
We will consistently deliver competitive projects from a safety, cost, schedule, and quality perspective that outperform our industry peers.
Topics We Will Cover….

• Project Risk Management Process & Evolution
• Risk Tools:
  - ConocoPhillips Risk Register
  - Contingency Breakdown Report (CBRs)
  - Procedures & Guidelines
• How Are We Doing?
• Q&A
Principles and Practices for Cost & Schedule Quantitative Risk Analysis

• “Goal: Recognize Risks”
  - Challenge the project team to consider all possible risks and their implications for the project.

• Good risk quantifications come from good risk descriptions
  • Risk = Cause + Effect + Mitigation

• “Follow the Plan, Manage the Risks”
  • Place an emphasis on Mitigations and Action
  • Focus efforts on the most Impactful Risks with the most Manageable Mitigations.
Risk Management is a Continuous Process

Aligns with Project Management Body of Knowledge’s six steps

Mitigation & Monitoring Plan
Documents the risks, mitigation plan, and updates. The (CBR) is key to risk communication

Risk Management Plan
Documents who, what, when, & how Risk Management will apply to each project

Identify

Assess

Four Steps

Four Products

Quantitative Assessment
Fit for purpose by stage & size. Primary product is Contingency Breakdown Report (CBR)

Plan

Implement

Key Tools: Risk Registers & Contingency Breakdown Reports (CBRs)
Risk Management Tools

- Risk Model
- Quantified Risk Details
- Risk Register
- Mitigation Action Report
- Contingency Drawdown Curve
- Modeling Results
- Schedule risking software
- CBR
Risk Category Definitions
(help to ensure risk listings are complete)

- **Internal**
  - **Strategic**
    - Organizational
      - “Degree of complexity”
      - What people, processes, or tools execute the project?
  - **Tactical**
    - Definition
      - “Degree of readiness”
      - What are we going to build?

- **External**
  - **Strategic**
    - Stakeholder
      - “Degree of control”
      - Who can influence what we build or how we build it?
  - **Tactical**
    - Technical
      - “Degree of difficulty”
      - How difficult will it be to build?
ConocoPhillips’ Risk Register

- Definition of risk events: cause, description & effects
- Has a “Quick Risks” enabling rapid population of common risks
- Facilitates easier Risk Management tracking and reporting
- For use on all projects at all stages from Business Development to Execution
Cost Estimate Breakdown and Definitions

The initial cost estimate is based on static parameters: a fixed schedule, a fixed basis of design, and other common assumptions.

Risk assessment layers in dynamic events: schedule delays, design basis changes, etc...

Escalation is the final layer

The initial cost estimate is based on static parameters: a fixed schedule, a fixed basis of design, and other common assumptions.

Premised Cost Estimate (no contingency)

Sources of Contingency

Total Cost Estimate
Contingency Breakdown Report

- Links the Project Risk Register to the Cost Estimate
- Organizes Risk: Variance, Cost Events, Schedule Events, Esc. & FX
- Promotes transparency of contingency estimate
Contingency Breakdown Report

### Cost Risk Events

<table>
<thead>
<tr>
<th>Event Description</th>
<th>Probability</th>
<th>Impact</th>
<th>Cost</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delays in Major Equipment Delivery</td>
<td>0.3</td>
<td>0.2</td>
<td>0.6</td>
<td>0.4</td>
</tr>
<tr>
<td>Repeated delays in major equipment delivery</td>
<td>0.2</td>
<td>0.1</td>
<td>0.3</td>
<td>0.2</td>
</tr>
<tr>
<td>Non-availability of skilled labor</td>
<td>0.2</td>
<td>0.2</td>
<td>0.4</td>
<td>0.5</td>
</tr>
<tr>
<td>Non-availability of materials</td>
<td>0.2</td>
<td>0.1</td>
<td>0.3</td>
<td>0.2</td>
</tr>
<tr>
<td>Schedule Risk Events Subtotal</td>
<td>0.9</td>
<td>0.3</td>
<td>1.2</td>
<td>0.7</td>
</tr>
</tbody>
</table>

### Schedule Risk Events

<table>
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- Linked to Risk Register
- Team input used to assess probability and impact
- Promotes discussion and understanding

Page Two

Cost Events

Schedule Events
**Contingency Breakdown Report**

- Escalation & FX are sensitivities only and are not risked in contingency
- The Total Installed Cost must tie to Funding Request FORM 2320
- Signatures from PD and the BU show alignment

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**Contingency Breakdown Report**

<table>
<thead>
<tr>
<th>Scenarios</th>
<th>Authority for FEED</th>
<th>Authority for Development</th>
<th>Authority for Expenditure</th>
<th>Supplement or Other Estimate</th>
</tr>
</thead>
</table>

**Summary**

- Valuation Contribution
- Premium
- Contingency
- Total
- P50 Total Installed Net $MM USD

**Risks Excluded from the Assessment**

- Escalation Risk 1
- Escalation Risk 2
- Escalation Risk 3
- Escalation Risk 4

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**Page Three**

- Escalation
- Foreign Exchange
- Summary
- Risks Excluded
- Signature Block
We must be explicit and transparent

Results generated in a risk assessment must be owned by:
- the Risk Specialist
- the Project Team
- the Project Manager
- and Senior Management

That can not happen if it is a black box or relies on “miracle” assumptions
How are we doing?
Future Focus: Improve Risk Event Descriptions

Adequate Detail
- COP interface management issues - COP staff are required to conduct the onshore commissioning activities at a time where operational requirements may be significant. There is a risk that the staff with sufficient experience may not be available when required. This could lead to delays,…

- Project team or refinery experiences high level of staff or leadership turnover - Severe changes can cause both cost and schedule increases…

Opportunity for Improvement
- Partnership alignment issues
- Execution inefficiencies
- Change management approval process bottlenecks

Risk descriptions are ambiguous in some cases and will be a focus for 2011 standardization & improvement
Conclusions

• QRA process has evolved increasing time requirements to address new deliverables & rework of analysis
• Contingency is reducing through gates
• QRA process improvements are successful
  • Schedule variance & risk
  • Strategic risks through SQRAs
QUESTIONS?
Resources outside of Houston have a “dashed line” accountability to the Manager, Project Risks & Reviews.
## CBR Definitions

<table>
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<tr>
<th>Definition</th>
<th>Premise</th>
<th>Variance</th>
<th>Risk</th>
<th>Escalation</th>
<th>Foreign Exchange</th>
<th>Total Installed Cost (TIC)</th>
</tr>
</thead>
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<tr>
<td>Present day deterministic cost estimate generated for a single scope.</td>
<td>Represents the margin of error on the premise cost estimate, usually expressed as P10 – P90 range. Typically shows pricing variance given a fixed scope and schedule.</td>
<td>Risk drivers and events that impact cost and/or schedule positively or negatively.</td>
<td>Estimated future cost increase of the premise and contingency due to inflationary effects. Expected annual change in the cost of a fixed set of goods or services.</td>
<td>Represents the impact of potential variance from the corporate foreign exchange rate.</td>
<td>The total capital required to complete the project for the defined scope. TIC = Premise + Variance + Risk + Escalation* + Foreign Exchange*</td>
<td></td>
</tr>
<tr>
<td>Priced in the current year, e.g. $2003 USD.</td>
<td>Higher (calculated) contributions to contingency indicate less certainty in the estimate. Add comments that clearly and succinctly identify the source of the variances.</td>
<td>Schedule risks impacts are expressed in money terms and should reference burn rates and secondary impact to incremental escalation exposure. Explicitly risk labor hours, rates, and productivity. Include both pre- and post-AFE schedule impacts. Add comments that clearly and succinctly describe the risk outcomes and drivers.</td>
<td>Provided as a per annum effective rate given the mix of materials &amp; labor sourced in each year. The project team selects and proposes the escalation rates for different scenarios, including the corporate rates. A project team selecting other than the standard GPS rates must apply for an escalation exception.</td>
<td>The project team selects and proposes the foreign exchange rates for different scenarios, including the corporate rates.</td>
<td>Provided at the P50 (50th percentile) of the possible project's TIC based on variance and risk analysis. Contingency is expressed as a % of TIC. * Project teams may select alternative escalation and foreign exchange scenarios with management approval.</td>
<td></td>
</tr>
</tbody>
</table>

### Includes
- Equipment
- Etisk
- Construction
- Engineering
- Design Allowance
- Project Management Team (PMT)
- Owner's Costs

Material cost variation: Among a large sample of suppliers today, steel prices would vary by -X% to +Y%.

Uncertainty in estimate for major equipment due to location, timing of quote, etc...

Permit delays

Market risk (competition)

Negotiation outcomes Availability of labor or equipment

Cost impact of labor hours, all-in-rate, and productivity changes.

Three standard and one optional escalation scenarios...

1. GPS LRP rates
2. GPS Market
3. CERA Market
4. Alternative project escalation proposed.

Three foreign exchange scenarios...

1. Corporate FX rate
2. Current FX rate on the review date
3. Partner FX rate or other most likely FX rate.

AFD Capital funding

Premise

Variance Contribution

Contingency

Escalation

Foreign Exchange

### Excludes
- Contingency (embedded or explicit)
- Escalation
- Foreign Exchange risk

- Cost variance due to escalation
- Market risk
- Cost variance due to labor hour, all-i-rate, or productivity variance.

- Major scope change (e.g. FEED re-do)
- Force majeure
- Political Risk
- Undefined regulatory change

Market risk (or changes in competition levels) Escalation exposure caused by risks resulting in schedule slippage.

The foreign exchange section can be excluded for projects based only in $USD.

Expense funds (AFF) Capitalized interest