
DISCUSSION QUESTION:

Alberta Project Cost Assurance

As we come out of the major decline in capital spending and start to renew the planning and estimating of major capital projects in Alberta, one of the most important issues at hand is the assurance that the defined cost estimates are accurate and achievable for the scope of the venture. What are people doing today that defines the project cost commitment that is different from the past? How are issues like escalation and labor productivity being addressed for future projects? Some companies are executing more front end engineering prior to the final estimate as well as including more construction input into the front end planning, resulting in a more realistic overall cost estimate. Owner Management still needs to respect these estimates and not hide from reality.

Online (LinkedIn) Feedback

- Establish the basis of the estimate including Owner's risk parameters
- Allow for risk and manage the risk
- Establish reasonable business case using reasonable parameters
- Alignment of objectives of all parties – Owner, EPC, PM Contractor/Consultant, Vendor & Constructor
- Define currency exchange risk and mitigate impact
- Define scope and WBS to extent to support estimate quality required
- Ensure all costs are captured – i.e. Owner Costs
- Develop contracting strategies early
- Prompt and firm but fair Project Management, decisions & direction through project execution
- If no internal cost estimating capability is available to Owner, involve independent 3rd party to review estimates
- Validate that contingencies and allowances are calculated per Best Practices
- Use realistic Alberta cost data as basis for estimate

Feedback from Workshop

- Estimating methodology and tools need to be appropriate to the class – Estimating Plan
- Integrate Project Schedule & Execution Plan
- Estimating should be an iterative process
- Effort/Completion of Scope vs. Effort/Time of Estimate
- All projects cost must be integrated (Eng/Constr/Owner Cost) but estimate must be simple/quick
 - o clarity of process – WBS, etc.
- Owner requirements must be defined to match the accuracy of the estimate.
 - o definition of scope must be clear
 - o basis must be accurate/complete
- Develop estimate risk/range
 - o what is the probability of the estimate's accuracy
 - o Monte Carlo
 - o 3rd party review
 - o develop/use historical databases
- Early involvement of Construction & Vendors
- Test the market for availability & cost of major equipment and commodities
- Labor productivity & availability assumptions (accuracy of)
 - o test for practicality (evaluate historical data and realistic forecasts)
- Sufficient definition of scope & technical design
- Can scope really be frozen? Assign uncertainty to each element of the scope, rather than the whole
- Ensure you have good cost data – experienced estimators, good feedback from owners on actual vs. estimated
- Develop execution strategy early & build into estimate (i.e. module v. field). When changes occur, allow time to revise/review whole plan.

- Ensure schedule is “integrated” for EPC & Construction, use for estimating
- Stages of Estimates do not need to be done by one entity
- Site visit by estimator!
- Must have good basis first
 - o firm scope
 - o realistic schedule
- Scale of project – mega vs. small – requires different estimating approach
- Before project start you must translate % factors into physical quantities & WBS budgets.
- Basis of the estimate is the most important document – must be realistic before start of MTO

DISCUSSION QUESTION:

Key Risk Management Strategies and Ownership of Risks

We all have heard the term and many of us have attempted to apply the technique but do we truly gain value out of our Project Risk Management approach? Risk Management is the application of identifying potential project risks early, categorizing them in priority order and properly developing plans around each risk in order to minimize its potential project impact. The most important aspect is then acting on the plan. We find that many organizations carry out the identification, prioritization and planning but then do not implement the approved plan adjustments to mitigate the risk. Who should take ownership of these risks and how are companies addressing this issue?

Online (LinkedIn) Feedback

- Early in the project perform best efforts identification of risks that could impact the project
- Identify possible project impact if risk occurs
- Prioritize list with largest impact having highest priority
- Identify mitigation plans
- Identify ownership for risks depending on ability to influence
- Monitor and have formal reviews of risks identified and add additional risks that may be identified
- Ongoing process; Update routinely to ensure changes are current, group reviews periodically so the list is not forgotten and all are cognizant of implications to cost and schedule
- Treat risks as a project team not as individuals even if one party is assigned responsibility

Feedback from Workshop

- Ensuring the right participants are in the risk identification/mitigation process
 - o Construction Experience
 - o Operations Experience
 - o Regulatory Experience
 - o Environmental Experience
- Positive risks identified and pursued!
- Clear criteria to initiate the risk mitigation plans. What is the trigger point?
- At risk review. Also review the mitigation plans associated with those risks. Are they still appropriate? Projects are dynamic.
- Track risk history and mitigation effectiveness
 - o Pass as Lessons Learned
- Remove risks which are no longer risks.
 - o Can save \$ or free up budgeted \$ for other opportunities.
- Ensure historical risks are used as a starting point for the team.
- Don't be afraid to identify soft risks and PMP risks are identified.
- Ensure risks are assigned and tracked and reviewed
- Risk Review is ongoing process.
- Risk Register must be simple/easy to understand and follow up
- Use 3rd party (neutral) to validate risks
- Risk must be managed through contracting strategy... with Risk comes Reward.
- Timely implementation of risk mitigation actions
 - o specific individual assignment

- follow through
- Priority given by Sr. Mgmt/Executives
- Be preventative and proactive
- Frame risks very specifically and mitigation actions – definitive
- Structured approach:
 - Risk Management Plan
 - Right people on team
 - Right level of authority on team re: risk acceptance/transfer/what is unacceptable risk
 - Maintain Risk Register throughout project
 - Plan to measure risk/mitigation
- Ownership of risk? – Not just client!
- Identify risk at PEP
- Risk Planning at Initiation Phase
- Mentoring and coaching lacking in industry. Therefore optimistic view.
- Recognition of risk by all stakeholders!
- Better communication between all stakeholders
- Cultural differences of parties involved.
- Different levels of risk management between stakeholders.
- Break risks into two types
 - external – weather, product
 - internal – project can correct
- Keep risk log to address only major items. 300 items log is too large!
- Risk must be managed throughout entire EPC.
 - external – quarterly meetings
 - internal – monthly meetings
- Contract T&Cs do not transfer risk as much as owners think.

DISCUSSION QUESTION:

Techniques for earlier operations involvement

One of the issues related to recent cost overruns on Alberta mega projects was the limited attention to operations input during project development. Project teams need to make sure operations is fully involved in the initial conceptual through detailed design in order to ensure total buy-in and alignment of operator requirements. Many projects have experienced huge delays at commissioning and start-up due to late input from operations. It is also imperative that this input comes from those who will actually be operating the facility and can speak for the other operations resources not just an available resource that has time to provide input.

In addition, operator training should be conceptually planned during FEED with more detailed plans occurring during early project execution. If there are delays in the project for other reasons the operator training plan needs to be adjusted as well. This training must be in place so that when commissioning and Start-up activities are underway the operators are ready to take control of the systems as they are turned over.

What strategies have your companies used to ensure this critical activity is executed well?

Online (LinkedIn) Feedback

- Ensure Operations & Maintenance is fully involved
- Assign appropriate Operations Rep to the project
- Operations Rep has authority/resources to influence project direction and design details
- Manage hand-off to operations from Construction to Commissioning
- Plan, re-plan and execute Commissioning effort with same rigor applied to Design and Construction Phases
- Implement a formal process for accurately understanding and utilizing lessons learned into the next phase of the project

- Include operations involvement in Project Execution in their personal performance criteria
- Respect Operations & Maintenance ability to visualize Engineering deliverables
- Continuous Operations input during FEED
- Involve Operations at office and on-site
- Life-Cycle Cost Analysis needs to be reviewed on all projects.

Feedback from Workshop

- Operations input needs to be at System Level as well as Site Level
- May want to think of Ops Reps as client type stakeholders.
- A type of Code of Conduct to evaluate wish list items for capital projects vs. Ops/Maintenance Budget Appropriate
- Want Operations brainstorming ideas early, but not direct access to design. Utilize Change Management approach (although not actually a change until project sanction)
- Create a framework for how to engage and leverage expertise with an appropriate authority.
- Ensure Ops understands the intended deliverables.
- In order to manage hand over you need to know what it looks like.
- Contract signing time v. Punchlist Time
- Must have the right people
 - o define required competencies, roles & responsibilities
- They must understand and buy-in business drivers
- Ensure adequate access to project info (eg: Design Basis)
- Input is time sensitive so must be integrated into the planning process (eg: 30% review)
- Input is best on an ongoing basis.
- Changes need to be flagged in order to help all involved know what has happened since their last review.
- Cost associated with input must be factored into estimate.
- Set standards and stick to them (if it makes sense)
- Must be a stronger team culture to ensure we communicate changes and their effect on other stakeholders.
- Clear economic analysis used to approve operational "preferences"
- Dedicate Op's staff to team
 - o must be supported by Sr. Mgmt.
 - o Must be right guy; Sr, dedicated
 - o Can be hard to motivate (less \$ when not at plant; giving them a second job too)
 - o Make it part of their career.
 - o Plan to move out of the plant, be a lead in the new plant
 - o Nice title for their job.
- If no dedicated Op's staff in the plan, identify up front where Op's involvement will be
 - o P&ID Review
 - o Model Review
 - o HAZOP
 - ⇒ Ensure any changes in these reviews follow the M.O.C. process (not design-it-in-the-meeting)
- In "brownfield environment" site visits imperative!
- Operations/Maintenance involved at Conceptual/Feasibility Phase
- Sign-off and acceptance of DBM & EDS by Operation and Maintenance
- Update current Industry EDS to meet Operations/Maintenance Requirements
- Audit trail with authority operations included on RACI
- O&M Rep must have correct level of authority
- O&M provides input to project not direction. Project decides to incorporate or not.
- Projects do not give feedback on decisions to O&M very well.
- O&M input must occur at correct time. FEED basis must stay firm in detail
- Rules of Engagement must be set upfront.
 - o cost vs. schedule vs. availability
- If Owner standards good? O&M input required is reduced.