FTI CONSULTING
Critical thinking at the critical time™

CONSTRUCTION SOLUTIONS

WINTER 2011 ■ Issue 8

PERSPECTIVES ON…

GLOBAL PIPELINE CONSTRUCTION

Global pipeline projects are in full swing worldwide. This newsletter presents perspectives on best practices in pipeline construction and also addresses some of the challenges facing today's pipeline construction projects. With the ever-increasing energy, transportation, and water/ wastewater treatment needs of growing populations, countries look to feasible pipeline construction planning and implementation that realistically addresses costs, time, and scope. FTI Consulting has a team of construction professionals with exceptional expertise in global pipeline construction. We help companies, joint ventures, and planning commissions accurately optimize, assess and monitor the implementation of critical pipeline projects. ■

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IT'S THE NAME OF THE CLAIM… COMPARING THE DELAY ANALYSIS APPROACH FOR A CONTRACTOR'S CLAIM WITH THAT OF A DSU CLAIM

David Goodman, Managing Director – FTI Consulting, London, UK

INTRODUCTION

It is important to understand the approach that should be taken when carrying out a delay analysis of a construction project under a typical contractor Extension-of-Time (EoT) claim scenario as compared to a Delayed Start-Up (DSU) type claim.

Delayed Start-Up is a form of insurance policy that provides cover for actual losses that have occurred to an insured's project due to commercial operations being commenced later than planned. Such a policy is generally only taken out on very large projects, typically in the oil and gas industry, but it can also be seen on other major construction projects where financial losses due to the late commencement of commercial operations are deemed to be substantial.

CASE STUDY

To put the comparison of delay analysis approaches into context, FTI Consulting was recently retained by a consortium of insurers as the delay expert to analyse the DSU claim submitted by an owner/operator to recover its losses due to a six-month delay to the commencement of commercial operations. Such losses were estimated at approximately $500,000 per day. As part of the analysis, FTI Consulting recreated the entire as-built construction programme and had to consider whether each of the delay events claimed under the policy, if insurable, caused the commercial operation of the pipeline to commence later than it would have done had such events not occurred.

DISTINCTION BETWEEN CONTRACTOR'S EOT CLAIM AND DSU CLAIM

As noted, when carrying out such an analysis it is important to distinguish between the circumstances that might give rise to a claim for EoT under a typical construction type contract and the circumstances in which a DSU claim might arise.

CONTRACTOR'S EXTENSION OF TIME CLAIM

Under many standard forms of a construction contract, a contractor may be entitled to an EoT if it can demonstrate that a delay for which it was not liable was critical to the completion of the contract at the time at which it (the delay event) occurred. Whether the event was in the final analysis critical to contract completion may not be relevant. That is because the purpose of an EoT is to relieve the contractor from the burden of exposure to liquidated damages for a period of delay for which it was not liable. It is often the case that other delays, for which the contractor might be culpable, which are concurrent with (and possibly longer than) the delay for which an EoT has been granted, are ultimately critical to completion. That would not generally detract from the entitlement to an EoT and relief from damages under a construction contract.

(Continued on page 3)

MARKETWATCH

Sun rises on Marcellus - *http://ow.ly/874sg*

Gulf Coast gets linked - *http://ow.ly/874oB*

Welding commences on Phase II of Kazakhstan-China gas pipeline - *http://ow.ly/874lq*

MoU signed for Russia to North Korea pipelines - *http://ow.ly/874dJ*

Tapping into European support - *http://ow.ly/873ST*

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LETTER FROM PAUL FICCA

Practice Leader

Dear Readers,

Major pipeline projects are in the news in most major geographic regions. The growing demand for energy, transportation, and water/wastewater treatment facilities in some of the world's most populated areas has precipitated an increased demand for pipeline construction. Overall, this is a positive growth sector for the construction industry and contributes to the latest demand statistics for the construction market.

Construction market analysts report that global construction output will grow to $12 trillion USD by 2020. That's a 70% increase over the $7.2 trillion expected this year. Half of that growth is expected to come from China, India, and the U.S. Some markets will continue to be flat or grow modestly by comparison, but for construction professionals in general, this growth scenario is a welcome change from the slowing pace of construction over the past few years.

FTI Consulting has a diverse team of professionals who have key experience in pipeline construction projects. We provide complete advisory solutions before, during and after construction, to help companies minimize risk, optimize their investment, and assess project time, cost, and labor performance.

For this new year, we welcome the opportunity to help deliver effective *Construction Solutions* for your construction projects.

My very best regards,

PIPELINE CONSTRUCTION SERVICES

FTI Consulting has a global team of construction experts with experience in all areas of pipeline construction. Our professionals have worked with owners and contractors to provide live project support as well as dispute resolution, expert services, and testimony in litigation and arbitration.

We provide project control systems for live projects to ensure correct records and data are fully captured, to assist with the successful management of a project, and to provide accurate and relevant facts should a dispute arise.

To reduce risk and optimize project management with accurate and timely controls, contact us:

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PROJECT OBSERVATIONS

- With the **Keystone XL pipeline** currently awaiting regulatory approval from the US State Department, crude volumes are quickly becoming bottlenecked in the Midwestern United States. Increased pipeline capacity into Cushing, Oklahoma and the limited ability to move the arriving crude out, has resulted in more oil flowing into the region than the local refinery systems can handle. Conditions of oversupply restrain prices for Western Canadian and West Texas Intermediate crudes as they continue to trade at discounts to Brent and other comparable global crudes.
- **TransCanada's** decision to move ahead with plans to build its 150,000 barrels/day **MarketLink pipeline** between Cushing, Oklahoma and the Texas Gulf Coast[1] - in conjunction with **Enbridge and Enterprise's** commitment to reverse flow of the **Seaway pipeline** - will make excess crude volumes in the mid-continental region more readily available on the Gulf Coast. Enbridge has indicated that while the initial capacity of the reversed Seaway pipeline will be approximately 150,000 barrels/day, it will reach 400,000 barrels/day by early 2013.[2] TransCanada's MarketLink pipeline is not expected to be placed into service until mid-2013. The economic impact of these announcements is significant as discounts for Western Canadian and West Texas Intermediate crudes declined in the wake of disclosure.[3]
- **Enbridge** and **Enterprise** are also evaluating plans for a new 800,000 barrel/day **Wrangler pipeline**.[4] The Wrangler pipeline would originate at the existing Enbridge Cushing Terminal and extend southward, following existing pipeline corridors to Enterprise's ECHO crude oil storage terminal in southeast Harris County, Texas. In many respects this project will be similar to Phase 3 of the Keystone XL project which upon receipt of permit will originate in Cushing and terminate in Port Arthur and Houston, Texas. With both projects planning in-service dates during 2013 and currently pursuing regulatory approval, the race is on to ease oversupply conditions in the Midwestern US. Speed to market may ultimately prove to be the most important factor as alternate energy sources such as shale gas are being rapidly introduced into the marketplace and demand[5] is growing almost twice the pace of oil. The introduction of the competitively priced shale gas into the marketplace is certain to alter the financial landscape of current and future shipper commitments and pricing structures for oil.
- **FTI Consulting's Energy Group** delivers high-value solutions to all stakeholders in the Oil and Gas Industry, especially to pipeline owners, operators and developers facing challenges in bringing their product to market or completing mission critical projects to sustain competitive advantage. We offer:
  - Construction and Environmental Services
  - Economic Consulting
  - Strategic Communications
  - Transaction Advisory Services
  - Corporate Finance and Restructuring
  - Regulatory Advisory
  - Dispute Resolution

1 "Cushing MarketLink Oil Pipeline Moving Forward; Wrangler Under Evaluation". Oil & Gas Journal. November 18, 2011. By Christopher E. Smith.

2 Enbridge bought ConocoPhillips's share of Seaway earlier this month, joining with EPP in its ownership and jointly announcing that its flow would be reversed to deliver crude from Cushing to the Gulf Coast (Oil & Gas Journal Online, Nov. 16, 2011). Initial capacity of the reversed pipeline will be 150,000 b/d, but will reach 400,000 b/d by early 2013, according to EPP.

3 WTI's discount to Brent reached less than $10/bbl in the wake of the announcement, from more than $25/bbl a few weeks ago (Oil & Gas Journal Online, Nov. 17, 2011).

4 "Wrangling a New Crude Oil Pipeline". Pipelines International. September 30, 2011.

5 "Farewell to cheap oil". Offshore Engineer October 2011.

(Continued from Cover)

IT'S THE NAME OF THE CLAIM...

In relation to the above approach, most standard forms of construction contract require the assessment of an EoT entitlement to be dealt with at the time that a delay event occurs (or as close thereafter as possible) and do not advocate that it should be left until the end of the project.

DSU CLAIM

As noted earlier, a DSU claim is directed to indemnify against loss suffered as the result of delay caused by particular types of events and, as such, it is only concerned with the determination of what caused the actual delay to completion. This is judged at the end of a project when it can be seen whether there has been delay to start-up and, if so, why. Events that may have seemed likely to have proved critical to completion in the early stages of a project, but that were not ultimately critical to actual completion, are not relevant.

Therefore, for a DSU approach, the argument is reversed to that of dealing with a contractor's EoT claim, i.e., whilst for the contractor's EoT claim the common approach is to establish the critical path of the project as at the time of the event such that, looking forward, the projected impact of the event on the completion of the project can be established for a DSU claim, we are only concerned with the final as-built critical path of the project and, looking back, whether the commencement of commercial operations would have been achieved any earlier had an alleged insurable delay event not occurred.

Following the above, on the issue of concurrency in the context of a DSU claim, as opposed to a contractor's EoT claim, the situation again differs between the two. For a contractor's EoT claim, it is generally accepted that entitlement for additional time to complete the work exists for delay caused by the employer, even if there is concurrent delay for which the contractor is culpable. This is not the case under a DSU claim where, if it is found that even with the insured delay events occurring, the commencement of commercial operations would not have started any earlier due to other concurrent delays, the insured is not indemnified under the policy.

CONCLUSION

When carrying out a delay analysis exercise under a DSU policy, consider that the approach to be taken may differ significantly to that taken when reviewing a standard contractor's EoT claim. As a recommendation, be sure to carefully assess both approaches. ■

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David Goodman is a managing director in the Forensic and Litigation Consulting practice and is based in London.

Mr. Goodman provides dispute resolution technical support including the assessment of contractor's extension of time claims and supporting documentation, critical path analysis, progressed and as-built programmes, the preparation of as-built programmes, and overall assessment of delays. Mr. Goodman has prepared expert witness reports and provided expert witness services including assisting solicitors and counsel.

In a recent case at the Technology and Construction Court in London in which Mr. Goodman acted as the planning expert for one of the parties, The Honourable Mr. Justice Akenhead said of Mr. Goodman in his Judgment *"...I found him to be particularly straight, keen and focused. He was an impressive expert whose views commanded respect."* ■

MANAGING THE RISKS ON PIPELINE PROJECTS FOR CONTRACTORS – A PIPEDREAM?

Colin Dodd, Partner – Clayton Utz, in association with Haley & Co., Hong Kong

A survey of recent pipeline projects throughout the world highlights the dominant contractual strategy adopted by owners in procuring the delivery of pipeline infrastructure – that being the Engineering, Procurement, and Construction, or EPC. Recent projects which have adopted this form of contract include the GLNG joint venture pipeline in Queensland Australia recently awarded to Saipem; the Maptaphut pipeline in Thailand, recently awarded to Punj Lloyd; and Abu Dhabi to Ruwais pipeline last year awarded to GS & Construction.

For owners, this contractual setup represents an attractive solution, allowing them a high degree of certainty as to time, cost, and performance of the project. For a contractor, the EPC represents a more difficult proposition, as the contractor will bear the lion's share of project risk. From a contractor's viewpoint, what are the key characteristics of this type of contracts and what are the traps for unwary players?

THE EPC CONTRACT

Under a typical EPC contract, the contractor is responsible for all design, engineering, procurement, construction, and installation work for the project. It is for this reason that these contracts are often referred to as "turnkey" arrangements. The contractor is a single point of communication for the owner. In most contracts of this nature, almost all project risk is assumed by the contractor. Indeed, it is common in this contractual form to see risks which in other contractual forms are traditionally handled by the owner (such as sub-surface conditions) being transferred to the contractor.

The payment structure normally associated with an EPC is the lump sum payment. This payment structure imposes further risk to the contractor, as there is reduced flexibility for the contractor to increase recovery. While EPC contractors may be tempted to underbid in order to win the job, contractors bidding for this type of contract should be sure to seek a price which matches the risk it is assuming, and to seek alternative mechanisms to either reduce that risk or provide legitimate avenues for additional recovery.

KEY RISKS

As with any contract, contractors should ensure that the division of risk is well detailed and clearly made. Unclear risk allocation, where the owner may seek to push unexpected costs onto the contractor, will involve the contractor in significant risk, particularly if it is working for a lump sum payment.

Given the nature of the contract, the key risk for the contractor is the occurrence of a disconnect between the owner's and the contractor's understanding of the project requirements. As the contractor is responsible for all aspects of design and delivery, it is important to ensure that the scope provided by the owner is sufficiently detailed. The contractor should ensure that the owner and contractor have shared expectations for the project, with such expectations to be developed in as much detail as possible. This approach should start during the pre-negotiation period. The contractor should also ensure that both parties jointly attend regular scope reviews throughout the life of the project. In addition, the contractor should ensure that there is an agreed process for clarification of any inconsistencies or differing interpretations of the owner's scope, and seek to mitigate the extent to which it bears the risk for any such differences.

The contractor should also consider the inclusion of a net contribution clause which will limit the proportion of any loss or damage payable by the contractor to that share which would be "just and equitable" in the circumstances. Such a clause may go some way to mitigating risk in circumstances where the contractor is accused of not delivering according to the owner's (possibly insufficiently detailed) scope. It is equally important to ensure that the contract provides an adequate claim procedure and a fair dispute resolution process, so that a fair resolution may be achieved in the event of any intractable disagreement.

On the payment side, the contractor should request the integration of early completion, performance bonuses, and value engineering incentives into the contract.

Of course, the contractual risks involved in an EPC contract go significantly beyond the overview provided here. As always, the best protection that a contractor can get is to obtain full and frank advice from suitable professionals before entering into any detailed contractual arrangement of this nature. Like it or not we live in a litigious society, and the construction industry is a major contributor of disputes. However, contrary to popular belief, the word "claim" is not an expletive. ■

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Colin Dodd has over 25 years' experience in the construction and engineering industry and has acted for developers, contractors and other professionals involved in major projects throughout many parts of the world. Mr. Dodd's particular expertise lies in dispute resolution, where he has conducted large-scale arbitrations in Europe and Asia, including Thailand, Malaysia, Brunei, the ROC and the PRC, involving power plants, hospitals, railways and airports. Based in the Clayton Utz Hong Kong office, Mr. Dodd undertakes assignments on projects throughout Asia and co-ordinates the work of the Major Projects Group in the region. ■

CONTRACTING FOR SUCCESS–PRICE CERTAINTY OR BEST VALUE?

Todd Mohr, Managing Director – FTI Consulting, Denver, Colorado

On a global basis, pipeline developers have exhibited preference for lump sum EPC contracts for development and delivery of their capital projects. While this approach seemingly transfers scope, performance and price risk to the selected contractors (see article *Managing the Risks on Pipeline Projects for Contractor – A Pipedream?*), from a developer's perspective, it is not always the right choice for project delivery. Factors such as desired speed to market, variability of product chemistry, uncertainty around site access or right of way, and state of supply for labor, materials and equipment may obviate alternative contract models for effective risk management and optimizing project value.

While EPC contracts provide certain protection around project price, forms of agreement based on cost plus a fixed fee, target pricing, or unit rates offer other compelling advantages to pipeline developers when project variables remain indeterminate at the time of contract formation. Whether using an EPC contract or not, a pipeline developer's degree of project success ultimately depends as much on administration of the contract and project controls as the actual form of agreement.

PRICE CERTAINTY NOT NECESSARILY BEST VALUE

When an owner selects a lump sum contracting strategy, EPC contractors like most prudent businesses, add contingencies and increased fee requirements to their tenders to address potential risks of ambiguity and lack of project definition at the time of contract. While this may produce price clarity for pipeline developers at the outset of a project, it will not likely provide for the lowest overall cost of the work.

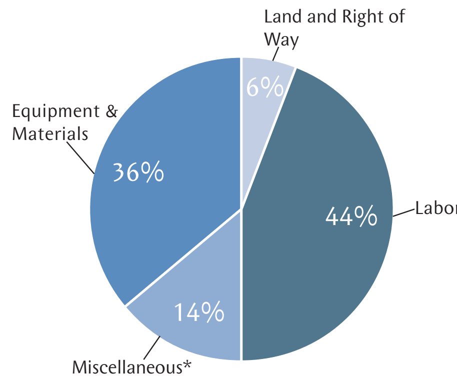
Insistence on using lump sum EPC agreements often comes with a 10-15% price premium to cover the contractor's exposure to prospective scope evolution, escalation of material/ equipment cost, and variations in right of way conditions. Moreover, as project requirements become refined and pipeline developers modify the agreed-upon scope of work, EPC contractors are forced to pursue price increases through the contract's changes clause in order to preserve their financial margins. Keeping this in check requires pipeline developers to carefully plan and control project scope and be diligent with the analysis and administration of extra work leading to contractor change orders and time extensions.

ALTERNATIVE FORMS OF CONTRACT FOR PIPELINE DEVELOPERS

Striking balance between project price certainty and best value is a routine challenge for pipeline developers. Overzealous allocation of price risk to the EPC service provider through use of lump sum contracts usually translates into inflated offers and a plethora of change order requests from engineers and construction contractors seeking to protect their financial interests. On the other hand, developers retaining all cost risk through cost plus arrangements also end up with a higher price for pipeline delivery as service providers are incited to run up project costs to increase their margins. The key to achieving best value for a pipeline project is to align the delivery model with project objectives and implementing a contract strategy which apportions risk to the stakeholder most able to manage or control the risk.

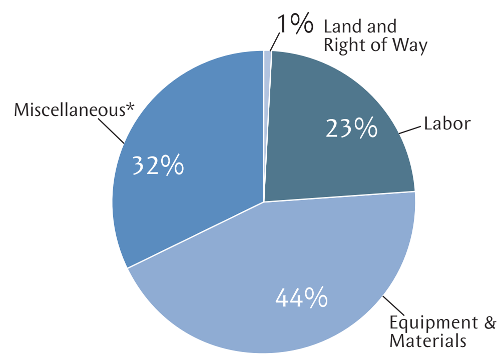
As illustrated by the figures below, the composition of project costs differ greatly by project type. Accordingly so do the relative risks and their prospect for influencing project outcome. For pipeline projects, developers will want to select a contract strategy which limits exposure to labor costs since these comprise the largest percentage of total project cost and are most easily managed by the contractor. For compressor and pump station projects, equipment, materials and other miscellaneous costs are more prevalent. Since these costs can be effectively managed by the pipeline developer, a form of contract which allocates procurement risks for these items would likely be more suitable.

Pipeline Construction Costs



*Generally includes surveying, engineering, supervision, administration and overhead, interest, contingencies and allowances for funds used during cosntruction (AFUDC) and regulatory filing fees. Source: US FERC construction permit filings July 1, 2010 to June 30, 2011.

Compressor Construction Costs



*Generally includes surveying, engineering, supervision, administration and overhead, interest, contingencies and allowances for funds used during cosntruction (AFUDC) and regulatory filing fees. Source: US FERC construction permit filings July 1, 2010 to June 30, 2011.

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Todd Mohr is a managing director in the FTI Consulting Forensic and Litigation practice and is based in Denver. Mr. Mohr has over 24 years of construction industry experience in planning, design, procurement, construction, management and dispute resolution of large complex construction projects. He has created over $1 billion in value for clients through construction revenue growth, cost reductions, improved operational efficiency and risk mitigation.

Mr. Mohr is responsible for managing and performing construction company/project restructuring and turnaround, project risk management, capital program/construction advisory, strategic planning, business process improvement, performance evaluation, construction cost assessment/auditing, project control (cost and schedule) implementation, contract management and dispute resolution. ■

FROM THE ASIA DESK

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In 2010, China became the world's largest construction market. This was due in large part to the Chinese government's stimulus spending plan which boosted construction spending. China has set the stage for construction to grow exponentially and double in size by 2020 to $2.5 trillion (USD).

For 2011, the Asia-Pacific construction market had 41,525 miles of new or planned pipelines in the works. To meet growing energy demands, several countries began massive construction projects, with 12,453 miles of pipeline projects in various stages of construction, mainly in China, India, and Australia. Additionally, China's largest natural gas company launched plans for 24,850 miles of gas pipelines between 2011 and 2015.

Generally speaking, construction in the Asia-Pacific region is optimistic with the continuing positive impact of stimulus spending and significant infrastructure projects. Risk management continues to be a growing priority, with a focus on establishing quality improvement efforts through formalized risk analysis.

Despite global financial uncertainty, the Asia market forges ahead of the pack with an eye toward future development. The Construction Solutions practice, with lead practitioners in Hong Kong and Singapore, are continuing to make significant inroads. ■

FROM THE EMEA DESK

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As we move into 2012, the European construction industry looks to an uncertain future. The Eurozone debt crisis rumbles on, unresolved. European governments are committed to higher taxation and deeper cuts in public spending, but faltering predictions for growth appear to indicate a need for stimulus to the economies of the region.

One might expect this to provide a considerable boost to the construction sector, revitalising investment in an ailing infrastructure across the region. In the UK we have heard of multi-billion pound plans for high speed rail, offshore wind power and a new generation of nuclear power projects. But as the New Civil Engineer magazine commented recently, political backing for such projects counts for nothing without hard cash. And of hard cash, little is being said. At a recent major conference in London to review the infrastructure market, industry leaders were darkly predicting a stagnation of the civil engineering sector over the next two to three years.

There is however renewed optimism elsewhere. In certain parts of the Middle East, the construction sector is buoyant. The Construction Solutions practice is now firmly established in Qatar. This is certainly an exciting place to work at this time. The construction industry plays a significant role in contributing to Qatar's economic growth, which rose to an astonishing 28% in the first quarter of 2011 alone. Numerous major infrastructure projects have recently been announced as part of Qatar's "National Vision" programme to build a new landscape in time for the Qatar 2022 FIFA World Cup. Hard cash, that's not an issue here.

Elsewhere in the Middle East the signs are encouraging. In Dubai, where the construction sector ground to a halt in 2008 as funding dried up and confidence evaporated, the market is starting to move again. There is a shift away from residential and commercial construction in favour of large scale infrastructure projects in the power, water, highways, and rail sectors.

Busy times lie ahead for our people in the EMEA region. ■

FROM PARIS TO DAMASCUS, THE HONG KONG CONSTRUCTION SOLUTIONS TEAM WEIGHS IN

In October, **Steve Huyghe** and **Graham McNeill**, the respective head and managing director of Construction Solutions Asia, testified at the International Centre for Settlement of Investment Disputes Arbitration in Paris, France. Our colleagues represented the Lebanese government in a dispute over the construction of the tallest pre-cast bridge and highway project ever undertaken in the Middle East.

The project involved the building of a highway that links the cities of Saoufar and Mdeirij. The specific highway section is 5.5 km long and it is part of the larger highway system connecting Beirut to Damascus. The dispute was between an Italian Contractor (the claimant) and our client, the Republic of Lebanon (the Respondent), arising from construction of said portion of the Arab Highway in Lebanon. The claimant alleged that the Respondent was late in expropriating and handing over parts of the site. Syrian troops occupied the site and the independent land owner purportedly prohibited the claimant from entering the property where work was to be performed, thereby delaying the project. FTI Consulting provided supporting analysis and testimony to the Respondent, our client. ■

RECENT AND UPCOMING PIPELINE, OIL & GAS EVENTS

Jan 23-24, 2012
20th Annual Western Canadian Construction Superconference
Hyatt Regency, Calgary, Alberta
FTI Consulting will be sponsoring this conference. Todd Mohr, managing director for FTI Consulting, will be a featured speaker at this event.

Feb 6-9, 2012
PPIM - Pipeline Pigging & Integrity ManagementConference
Houston, Texas, USA

Mar 6-7, 2012
Offshore Pipeline Technology Conference
Krasnapolsky Hotel,
Amsterdam, Netherlands

March 19-21, 2012
Best Practices in Pipeline Operations and Integrity Management
Conference and Exhibition — Gulf International Convention & Exhibition Centre (GICEC),
Manama, Kingdom of Bahrain

Apr 11, 2012
ENR 2012 Global Construction Summit
New York, NY

Jun 4-8, 2012
World Gas Conference 2012
Kuala Lumpur, Malaysia

Sep 24-28, 2012
International Pipeline Conference & Exposition 2012
Calgary, Canada

Oct 22-26, 2012
Evaluation, Rehabilitation and Repair of Pipelines Conference and Exhibition, TBA, Europe

CONTRACTING FOR SUCCESS – PRICE CERTAINTY OR BEST VALUE?

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When pipeline design has advanced sufficiently, use of cost plus contracts with a guaranteed maximum price or target price and fixed fee can provide appropriate price protection on the top end when combined with incentive and penalty terms which align interests of the pipeline developer and contractor. To the extent that project definition has not advanced to the point where a guaranteed maximum price or target price and fixed fee contract price can be agreed upon, establishing a contract based on fixed unit prices for each element comprising the work can be effective. Both forms of contract offer assurance to the pipeline developer through limitations in contract price or unit rates which comprise the cost of the work. This model also assures the contractor that its costs and fee will be covered to the extent that they work in accordance with agreed-upon standard of care.

CONTRACT ADMINISTRATION AND PROJECT CONTROLS – THE KEY TO SUCCESS

Achieving best value using these alternative contracting strategies places additional administrative and control responsibilities on the pipeline developer's staff that are not similarly present with the use of a lump sum EPC contract. For example, cost plus and unit rate arrangements require audits of the contractor's rate structure for labor, material, equipment and overhead at project commencement such that unwarranted margins are not hidden within the individual cost components. With unit rate type arrangements, the developer must evaluate the spread of each bidder's unit prices in consideration of planned quantities to determine the optimum rate mix and bidder.

Ensuring that the project costs are reasonable and necessary, whether contracting on a cost plus a fixed fee or unit rate basis obligates the pipeline developer's staff to implement systems for measurement of the work, progress validation, and inspection for quality. ■

FOCUS FORWARD

We sincerely hope that you have enjoyed reading this issue of *Construction Solutions*. Your feedback is welcome any time. Send your comments and inquiries to: *constructionsolutions@fticonsulting.com.* Our next issue will be focused on **healthcare construction.**

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About FTI Consulting

FTI Consulting, Inc. is a global business advisory firm dedicated to helping organizations protect and enhance enterprise value in an increasingly complex legal, regulatory and economic environment. With more than 3,800 employees located in 23 countries, FTI Consulting professionals work closely with clients to anticipate, illuminate and overcome complex business challenges in areas such as investigations, litigation, mergers and acquisitions, regulatory issues, reputation management, strategic communications and restructuring. The company generated $1.4 billion in revenues during fiscal year 2010. More information can be found at www.fticonsulting.com.

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