“STATE OF THE EPC INDUSTRY”

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INTRODUCTION

Good Afternoon.

Thank you, Peter Lovie, for inviting me to speak at the 8th Annual Rice Global E&C Forum.

My objective in this presentation is to share with you up-to-date information on the State of the EPC Industry, as it relates to Global Oil, Gas and Petrochemicals.

This information comes from top executives in over 70 of the World's leading EPC firms, and most major operating companies.

I have 30 minutes to present what should take 4 hours. Therefore, I will present key items only – and not much support data. The full presentation will be found in Rice's handout material.

Steve Solomon, Retired Chairman of ABB Lummus Global summarized the feelings of many when he told me "This is one of the richest times for the EPC Industry in decades!"

~ Let's look at the facts and the State of the Industry ~

A. STATE OF EPC MARKETS: A QUICK OVERVIEW

- $10 Billion will be spent in the USA this year on just Refining projects – not counting the recent $4+ Billion new Shell Port Natchez Refinery.
- Southern California refiners alone are spending $350 million in 2005: $650 million in 2006 and almost $1 Billion in 2007.
- Environmental work is basically done – new work is in the areas of upgrading, modernization, increasing Refining & Petrochemical capacity, plus new facilities in the USA. Most independent small refiners are spending money for EPC.
- After 2008, the US Refiners' bubble could burst– as Synfuels did in the early 80s.
- U.S. Downstream projects "Exploding" starting to spend capital on many new projects over next 2 years. There are many discretionary projects: most are midsize $10 million to $50 million -- some $200 to 400 million.
- <u>Mid East</u> – UAE, Saudi – promoting "how to monetize Gas" to spend money to produce downstream products.

- $100 Billion to be spent on Gas Projects in North Africa and the Mid East in 2005.
- West Africa – investments on hold until "transparency exists relating to graft and corruption."
- Exxon/Mobil is currently investing $52 Billion in Projects worldwide.

– "Morris Foster" Sept 8, 2005 [President, ExxonMobil Development Corp.]

- Petrochemicals [ethylene] continue to grow in the Mid East and China.
- International project complexity and O&M Services will increase substantially.
- No threat of foreign construction firms penetrating the US construction markets is envisioned.
- Operating companies are basing most EPC project decisions on outdated $20/Barrel oil directives – the new norm of $50/Barrel is coming.
- Despite record oil prices – owners are still buying EPC services on price: this will change soon.
- During the last one and one-half years - the market for international EPC projects has tripled globally in upstream

and doubled in downstream: the US market has tripled in discretionary refinery work during this time frame.

- The Upstream & Downstream projects will continue to grow over the next several years as capital spending explodes - provided the manpower exists to execute projects.

B. HUMAN RESOURCES ARE LIMITED – THIS IS A MAJOR ISSUE

- Average age in the EPC industry is in the upper 50's.
- We are currently in an era of global technical management shortage that will double in five more years, according to the Bureau of Labor Statistics.
- The head of Marketing & Sales of one of the USA's top EPC firms said: "The whole Oil, Gas & Process EPC business is in dire straits" – like we were in the early to mid 1980's - our talent pool doesn't exist!
- Corporate Vice President of Research & Development of one of the World's largest Oil Gas & Petrochemical company's said: "<u>10 years ago</u> - we told corporate we should be hiring new people and recruiting from the best colleges - now we have a crisis."

- Randy Harl, Retired Group Vice President of KBR, in a speech in 2005 said: the EPC Industry is losing resources ‘cause good people won’t work without a decent salary and bonuses.
- Exxon & BP and other major operating companies are using over 40% outside independent “Consultants” to manage upstream Oil & Gas projects. These Consultants are not fulltime employees. They have a good base salary but no benefits – no insurance, pension or taxes; no investment. The downside? – no loyalty and no mentoring of younger “employees” for the future.
- Former employees have come back from retirement as Consultants - now they are retiring a second time, for good. Lost knowledge of retirees hurts organizations.
- Executive Transition: A larger number of traditional engineering and construction industry executives are leaving the contractor side and joining the operating companies in the USA and Europe as they rebuild. Many of the “best and brightest” have joined energy [power utility] companies, oil/gas companies, and pharmaceutical/biotech companies: others have joined forces with venture capital, finance and Merger & Acquisition groups and are not

looking back. As more and more of the largest EPC firms conduct their business overseas, they find it more difficult to offer meaningful careers to US citizens graduating from universities.

- <u>Concerns Globally</u>: Several of the major oil and gas operating companies building $1 billion plus international energy projects are finding more of their projects in trouble because of inadequate internal project and construction management. Some majors have even resorted to using inadequately experienced "contract construction management" to run projects. We are hearing more disaster stories every month, from issues of mental breakdowns to client joint venture and foreign government "performance litigation".
- One of the World's largest chemical company project directors said: "Guys my age [50] want out: we are being micromanaged by inexperienced executives. – Our company does lots of looking as to how to do things better, yet we see no change. Corporate has 'beaten up' downstream for a long time."

- Engineers in the Chemical {EPC & OP] should be paid as well as engineers in Upstream – or few will enter or stay in the EPC/Petrochem business.
    - "Former Mobil Executive"

- Upstream & Downstream Oil & Gas will lose 60% of their employees by 2010. As labor shortages grow – projects will not start – some will be abandoned.

- Project management problems are worldwide & growing due to lack of competent talent.

- EPC and operating companies need to rapidly develop more Project Managers.

- EPC firms must develop very competent estimators and GRC {Governance, Risk & Compliance} teams.

- Prediction: Soon the industry will bid up wages/salaries - raid competitors - outsource projects and retain older employees.

C. STATE OF EPC PROJECTS

- Half of the EPC industry lost money in 2004 in Upstream Offshore Projects – much due to poor bids. – Profits will improve from 2005 on.
- There is substantial new project opportunity now and in the future for the EPC industry.
- New projects are getting very large - $5 to 8 Billion USD
- Major international projects may require a $1 to 10 Million USD proposal cost. Exxon UK recently offered $5million USD to EPC firms to bid on $1 billion LNG3&4 Qatar Projects. Many vendors will not quote due to high proposals costs– unless compensated.
- More LNG operating companies will pay for proposals because they need highly qualified EPC firms and cannot depend on many others ~ i.e., Koreans.
- 90% of the EPC project work is performed outside the USA and growing.
- EPC firms are now more selective on which projects to go after and requiring LSTK shared risks.
- More EPC firms will take on projects that are cost reimbursable and include meaningful risk sharing.

- Owners who stay focused on "all risk avoidance" will end up with low quality managers, engineers, poor subcontractor performance, and in litigation with subcontractors.
- There will be excellent <u>program management</u> opportunities for EPC firms capable of managing major international projects.
- EPC companies need to <u>develop and hold</u> on to quality project and construction management talent:
  - Lock on to your best & brightest through deferred stock ownership, deferred compensation programs, and
  - Have No Raid agreements with operating companies.

D. STATE OF COMPETITION

- Today, EPC is a sellers market worldwide.
- Up until recently, several major engineering contractors in the Process industry were on the decline in the USA, Japan, and Europe. Half of the US based EPC firms were struggling to stay afloat. Some, such as Fluor, Jacobs, Mustang, and Bechtel continue to do well due to solid management leadership. Others, including Kvaerner, KBR and Paragon are picking up: Jacobs is talking about adding 1200 people in Houston. Kiewit and WGI are opening offices in Houston. Top international contractors revenues' rose 40%: Chinese and Japanese revenues grew 16% in international projects sold outside of their Country.
- Divestitures, mergers, and acquisitions continue internationally, impacting the industry. These include firms such as TriOcean, KBR, Jacobs/Babtie, Sumitomo Mitsui Construction and Grupo Dragados/Skanska.

- Major Oil & Gas corporations and governments want EPC <u>program management leadership</u>, led by Western EPC firms

- Western EPC management tends to deal better with client relationships than other cultures – more openness, truth, and trust in the Western Style.
- Internationally, most LNG and major Refining/Petrochem work will go to major EPC firms such as Bechtel, JGC, and Technip: much of the engineering will be done in developing countries.
- The international EPC industry overall must learn to deal better with globalization.
- EPC firms with international interest are facing a global disconnect – that is most Mid East countries only do lump sum, which is why most of the work is going to Chiyoda, Technip, JGC, and Snamprogetti. Other countries that won't do lump sum projects are ideal for US EPC firms experienced in Cost Plus contracting.
- Japan is losing EPC ground – they're too rigid. Because of major Japanese financial losses over past 10 years, the "New Era" Management was forced out and a more conservative management has taken over.
- In Country, China is doing well, however, internationally Chinese contractors are still using old culture and rules –

not communicating effectively. In several countries as in Kuwait – Chinese contractors did not work out.

- China has lowest cost but will have trouble "Bonding" their work.
- China cannot manage multiple subcontractors well.
- China has limited experienced in commercial deal structuring.
- South Korean Contractors are a real threat – lowest cost, strong work ethic – 6 days week, take more risks, and get government support.
- Non-Western EPC firms will continue to do more commodity engineering and construction, i.e., China and India.
- India and China will continue to promote EPC offerings globally - with limited success.
- International constructors - such as CCC - doing well with oil concession clients in Mid East as in Yemen. [*Consolidated Contractors International (UK) Ltd. – CCC*]
- Russian engineers are competent – yet not good in economical design/construct.
- Several EPC firms are pulling out of South America and Russia, due to economic and political instability.

- Good construction is being provided by Philippine contractors - in addition to those from Pakistan, Thailand, Turkey and Korea.
- Houston Texas is the low cost engineering center in the USA - where knowledge transfer and competition is best in the World – AND where man-hours are lower cost than in Japan or Continental Europe.
- Most US LNG work will go to union constructors
- Competitive EPC advantage will come from Technical Innovation over Cost Cutting.
- EPC business is still cutthroat – to date, don’t see major EPC players making a lot of money - BUT this will improve over the next 3 years.

E. STRATEGIC ISSUES

- Many of us are not impressed with operating company management. What is missing**?** Creative methods of working with the EPC industry. Lots of talk - no action.
- Develop relationships with the Exxons, BP and Shells, as well as smaller corporations where they must be more of a partner: operating companies need competent EPC firms more than ever.
- Develop business relationships with operating companies that have "best" proprietary technologies and be licensor or contractor of choice – such as what used to exist with CFBraun/Mobil, and Badger/Monsanto, etc.
- Special alliances continue to allow better-managed firms to excel – such as Bechtel/Conoco LNG Technology, and the Bechtel/GE Coal Gas Power.
- Convert your "salesman" into businessmen.
- On very large projects – most successful owner/EPC contractors have the following relationship:
  - Open Book Policy
  - Client & EPC work on cost estimate at the start
  - Both develop estimate and risk contingencies.
  - Client buys equipment, etc.

- With growing material and labor costs, firms may benefit from Open Book Relationships and developing cost estimates with clients at the start.
- EPC Contractor selection Options still include:
  - Owners negotiate with a preferred EPC contractor
  - Owners conduct front-end design competition and lump sum bid process.
  - Owners competitively bid each phase.
  - Owners retain third party overall project management organization.
- Owner/operators will use more specialty consulting firms.
- Established EPC firms may be required to buy specialty companies, in markets such as Project Controls or Contract Management.
- Like start-up airlines, market opportunities abound in the USA for startup specialty EPC organizations over the next 7 years.
- Partnering with application Software companies will help specialized EPC firms.
- "Successful EPC firms of the future will have computerized a large amount of proprietary technologies – even LNG terminal packages."

Martin Van Sickels, Retired Senior Vice President Technology, M. W. Kellogg [KBR]

- Leadership in use of information technology will be most important in winning future EPC work.
- Knowledge management systems will be mandatory EPC offerings in the near future.
- If your markets are predominantly international, then hire a proven internationalist to run your HR organization. Poor administration of HR is <u>the</u> cause for many of today's operating company and international EPC Personnel and recruitment problems.
- Except for US Projects - <u>engineering is leaving the USA</u> for most international projects – <u>so plan on teaming with foreign "low cost" engineers</u>.
- Construction Industry Institute – CII - must get involved in training of US construction managers to work overseas.

F. RECAP

- **<u>In Conclusion</u>:** The A/E/C Industry is in a turn around position and, although having gone through considerable change over the last 10 years, is poised to do much better in the future.
- The EPC Industry in Oil, Gas and Process has been beaten down by operating companies, to a point where there are fewer competent firms to provide services that will be in great demand. The EPC Industry has less competition running the world-class projects and is becoming much more client selective.
- EPC firms of the future will be more oriented toward consulting engineering and program management – not commodity EPC activities – exception US only.
- US and international EPC Oil, Gas & Petrochem markets should be excellent, over the next several years.
- These markets should have dramatic growth for a minimum of 3 to 4 years AND possibly as long as 10 years.
- Most International projects are getting very large - opening major program management opportunities for Western EPC firms.

- On major World Class projects, EPC firms will have to be paid to bid.
- As the President of one of the world's major EPC firms stated: "we will only bid on large projects on our terms and conditions – otherwise, we state, the potential client pays for our proposal".
- Non-Western engineering firms will continue to improve technically.
- Human Resources will be the major factor restraining EPC firms [and operating companies] – now and in the future. – Lock in your best people now.
- More engineering work will be performed outside the USA.
- <u>Operating companies</u> must address and improve their business relationships with the engineering contractor before they "burn out" their experienced internal EPC talent – half of which will be retiring over the next 5 years.
- EPC firms' top management need to understand macroeconomic impacts on each segment of the industry they serve, in the USA and / internationally.
- EPC organizations must look at their true capabilities and strategically evaluate segments of the rapidly changing Oil, Gas, and Petrochemicals industry - to determine a good

course for success. If in doubt, conduct a professional survey of customers, lost customers, and potential customers to determine their true needs for EPC Services – their concerns and their buying factors.

- An EPC Market strategic plan must be developed based on real customer needs and relationships of clients or Joint Venture partners.
- EPC firms must decide on what works and how to focus on being successful.
- The future is bright for the EPC industry – BUT each EPC Company must develop <u>its own strategy</u> for best profitability and success. This strategy should reflect on comments emerging from my recent discussions with many of the industry's top executives and shared with you today.

We all want the US EPC Industry

to be the world's best

– it's up to you to make it happen!