IPA

Independent Project Analysis Newsletter

Independent Project Analysis, Inc. is the preeminent organization for quantitative analysis of capital project effectiveness worldwide. At IPA, we provide practices you can use to ensure your success.

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E&P Industry Finds Itself in a Non-Classical Cost/Price Squeeze

Upstream Asset Success Relies on Business, Project Team Collaboration

The exploration and production (E&P) Industry is faced with a challenging capital investment landscape in which to develop, plan, and execute oil and gas projects successfully.

Many E&P operators are canceling or recycling projects because of high project costs and undisciplined portfolio management practices. Unlike years past, the present oil and gas capital investment landscape is less forgiving of ill-defined business decisions and poor project planning.

The reason for this, according to IPA Founder and President Edward Merrow, is that the E&P Industry is caught in a "non-classical cost/price squeeze" where new sources of supply, especially in North America, are keeping prices in check. At the same time, already high project costs can be expected to climb higher for the foreseeable future, given the Industry-wide shortage of experienced engineers and because the oil and gas projects supply chain is "in tatters in some places." Notably, IPA E&P project data show that the average dollars per barrel of oil equivalent ($/BOE) asset cost for ongoing E&P projects authorized since 2008 has increased 300 percent.

According to IPA E&P Business Area Manager Neeraj Nandurdikar, in the current environment, companies need to adopt strategies that position and enable project teams to optimize and reduce project scope and costs, even at the risk of allowing some business opportunities to fall by the wayside. "Such cost saving strategies are most effective if they are used early in the project cycle," Nandurdikar said, adding that business involvement must be maintained throughout FEL. Business also should be sensitive to time and human resources constraints that project teams must contend with regularly, before they set unrealistic targets for teams.

Nandurdikar adds that the business and project teams should be joined at the hip starting in the Appraisal phase at FEL 1, and continuing through Concept Selection at FEL 2. However, the level of business involvement in project planning usually can be characterized in one of three ways: business is not involved at all from the beginning of the project; business is involved but is not an active participant in project planning; or business is actively involved in the project and yet it is not providing the project team with sufficient guidance and support to perform shaping, basic data acquisition, and scoping activities. Regardless of the level of business involvement later in project definition, clear business objectives must be fully defined and articulated to the project team at the start of the project. Otherwise, the project team is left on its own to devise the scope and technology approach it believes best fits the business need.

As a consequence, business and project teams miss opportunities to consider cost saving alternatives—standardization, for instance. Undefined and unclear business direction, ordinarily combined with limited project time and

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resources, also reinforces another cost driver, the delivery of poor engineering designs that necessitate pricey rework during subsequent project planning phases or execution.

All told, companies need to adopt new strategies and use new tools to prevent projects from getting caught in the price/cost vice that is squeezing value out of what should be profitable opportunities.—*Geoff Emeigh, IPA Staff Writer*

In This Issue:

This edition of the IPA Newsletter highlights recently completed and ongoing research work and services that IPA is developing in collaboration with its oil and gas clients to improve the planning and delivery of their E&P capital projects. By leveraging knowledge of Best Practices, IPA's clients can curb today's high rate of upstream projects being canceled or recycled.

- **A recently completed review of E&P portfolio management practices examines the reluctance of some businesses to remove from their portfolios projects that are struggling and have missed their opportunity for being successful.** ***(Page 4)***
- **IPA's new Asset Economics Simulator (AES) for E&P projects, featured in the September 2013 edition of the IPA Newsletter, is now ready for use as part of an IPA-client workshop offering.** ***(Page 12)***
- **Will the E&P Industry ever get serious about standardization?** ***(Page 12)***
- **A 2013 UIBC study led by IPA Institute Director Andrew Griffith looks at how slip in engineering has a compounding negative effect on E&P project first oil outcomes.** ***(Page 13)***
- **Finally, a recently launched joint IPA/Industry study examines the drivers behind rising owner's costs in the oil and gas Industry.** ***(Page 14)***

Professional Profile:
Neeraj Nandurdikar, Manager, E&P Business Area

Neeraj currently serves as Manager of IPA's Exploration and Production (E&P) business managing the business globally. In this role, Neeraj provides strategic direction to the business area and oversees the global E&P business including customer relations, intellectual property development, research development, and project evaluation services. Neeraj has spent the past 15 years providing strategic advice to EVPs, VPs , heads of projects, and functional leaders of more than 30 different oil and gas operators around the world ranging in topics from reservoir and well construction Best Practices, to portfolio optimization, to organizational design and work process improvement to optimizing production performance.

Previous to taking on his current position, Neeraj held various positions within the E&P business area with focus on North America, Asia, and South America as well as the role of Senior Analyst involved in project evaluations, consulting engagements, work process reengineering, and key account manager for some of IPA's largest clients.

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Neeraj has authored various research studies presented at IPA's Upstream Industry Benchmark Consortium (UIBC) on well construction program optimization, reservoir appraisal, trade-off optimization between well programs and facilities, and production attainment in the E&P industry. Neeraj is also instrumental in shaping some of the most recent multi-client joint industry studies on topics as varied as "Controlling Rising Subsea Costs" and "Optimizing Owner's Cost Spend."

He has also authored several papers published in Society of Petroleum Engineers (SPE) conference proceedings, delivered keynote addresses, and served as a committee member on several SPE workshops and conferences. He also serves as an associate editor for *SPE Economics & Management* journal.

Prior to joining IPA in January 2000, Neeraj worked with an oil company with specific focus on improving performance of drilling fluids in deepwater environment.

Neeraj holds an M.S. in Petroleum Engineering from the University of Tulsa and an MBA in Strategy and Finance from the Wharton Business School of the University of Pennsylvania.

Professional Profile:
Rolando Gächter, Manager, E&P, IPA United Kingdom

Rolando joined IPA in January 1998. He currently serves as Manager, E&P, based in the United Kingdom. Rolando previously served as a Project Analyst and a Senior Project Analyst at IPA. He has evaluated hundreds of capital projects, specializing in energy and minerals extraction projects. He has performed large-scale project system benchmarkings for major oil and natural gas producers. Rolando has served as coordinator of IPA's annual meeting of the Upstream Industry Benchmarking Consortium (UIBC). He is also the Client Coordinator/Account Manager for one of IPA's most prominent clients. His responsibilities include validating that an $18 billion annual capital outlay is spent on projects that are well-defined, ready for execution, and likely to deliver positive economic results. Rolando has taught IPA Institute courses including Exploration and Production Best Practices and Small Project Best Practices.

Rolando's areas of expertise are E&P project evaluation, project system reengineering, project/strategy analysis and benchmarking evaluations, Front-End Loading (FEL) workshops, and business case analysis He has also conducted numerous special studies at IPA. They include FPSO Best Practices and Setting Realistic Targets for Project Definition.

Before joining IPA, Rolando was involved in energy industry analysis for the federal offshore oil and natural gas program; as a Staff Specialist, he studied oil and gas supply, demand, and corporate viability for the Federal Outer Continental Shelf Information Program of the U.S. Department of the Interior.

Rolando holds an M.B.A. degree (concentration in Finance) and B.S. degree in Mining and Minerals Engineering, both from Virginia Tech, Blacksburg, Virginia, USA. Rolando has authored several papers on gas and energy topics. He is a longstanding member of the Society of Mining Engineers, and is fluent in German and English.

Follow IPA on LinkedIn at *www.linkedin.com/company/independent-project-analysis*

The Portfolio Management Problem for E&P Companies

Exploration and production (E&P) companies need to manage their project portfolios better by strengthening the decision-making processes and criteria they use when deciding which projects to move through early Front-End Loading (FEL) gates.

According to a recent IPA assessment of several E&P operators' portfolio management processes, too many large reservoir projects with severe contextual problems are sailing through the project development process all the way through to Select (FEL 2) or front-end engineering design (FEED). But rather than abandoning these opportunities or resolving these context issues early, before going through FEL 1 or FEL 2 gates, companies often decide to recycle these projects far too late, overburdening their project organizations and hurting project execution results. In other words, upstream projects are being set up for failure right from the FEL 1/2 gate.

Part of the problem is the absence of key reliable data necessary to measure the true value of opportunities. Instead, optimistic early estimates regarding the size and complexity of reservoirs, for instance, are entered into sophisticated tools used by decision-makers to evaluate opportunities in a portfolio during Appraisal – FEL 1. These tools, which lend an aura of precision and sophistication, calculate decision-making criteria such as net present value (NPV), based on P50 costs, schedule and production rate data. Given the uncertainty and inherent bias of the input data, these criteria are optimistic at best and misleading at worse. Consequently, few projects, if ever, are deselected in Appraise – FEL 1. [See IPA's solution to eliminating bias from E&P project planning and improving evaluations, *IPA's Asset Economics Simulator Reduces NPV Guesswork*, Page 12] Additionally, lack of transparency in communication of project risk between project managers and executives hampers portfolio management.

The reality is that portfolio management decisions should be based on a project's "directional indicators"—context and endowment measures. ***Figure 1*** illustrates the directional indicators for opportunity decision making in relation with context and endowment measures. For example, projects with positive context measures and positive endowment measures (denoted by "+") would obviously be attractive ventures. In contrast, projects with negative context and endowment measures ("-") should likely be abandoned. The more difficult decisions are when one measure is positive and the other is negative, with the most difficult ones being when endowment is hugely positive. This blinds decision makers into moving the opportunity forward in face of contextual difficulties.

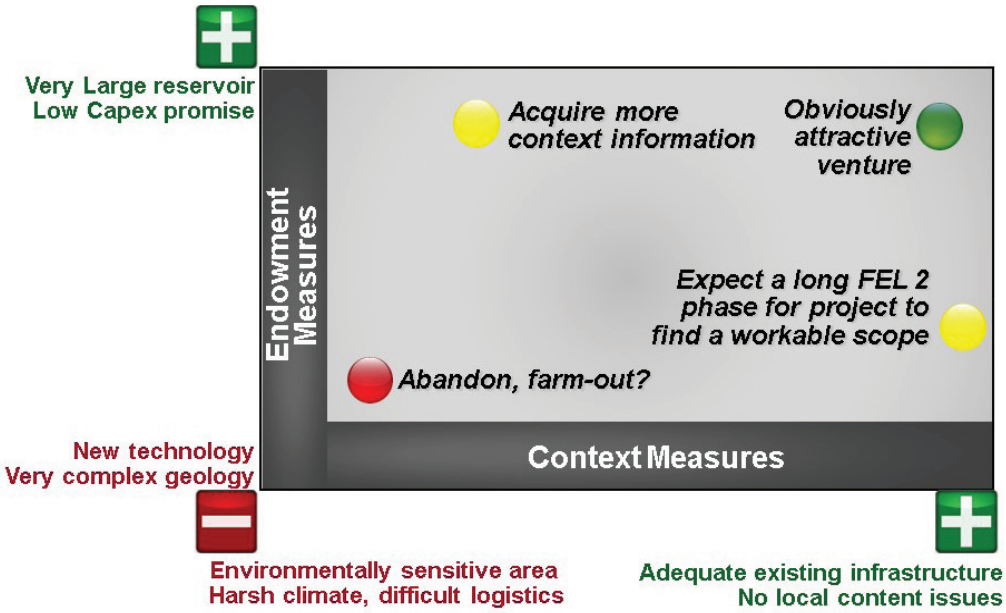

Figure 1. Directional Indicators Are Needed to Trend the Economics

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Unfortunately, oil and gas industry's biggest failure projects were all ones with huge positive endowment measures coupled with high contextual difficulties.

Another part of the portfolio management problem is timing. Since projects are rarely deselected moving to FEL 2 but struggle to advance out of the Select phase because of weak data and context understanding, FEL 2 usually becomes clogged with too many opportunities.

As a consequence, companies end up with bloated project portfolios. This in and of itself is a problem because project team resources are already strained. See ***Figure 2*** and ***Figure 3***.

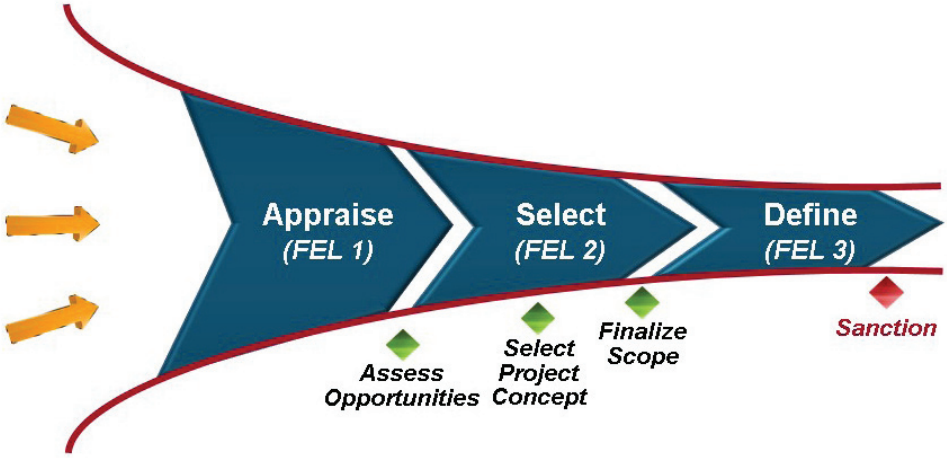

Figure 2. Optimal Stage-Gate Process Funnel

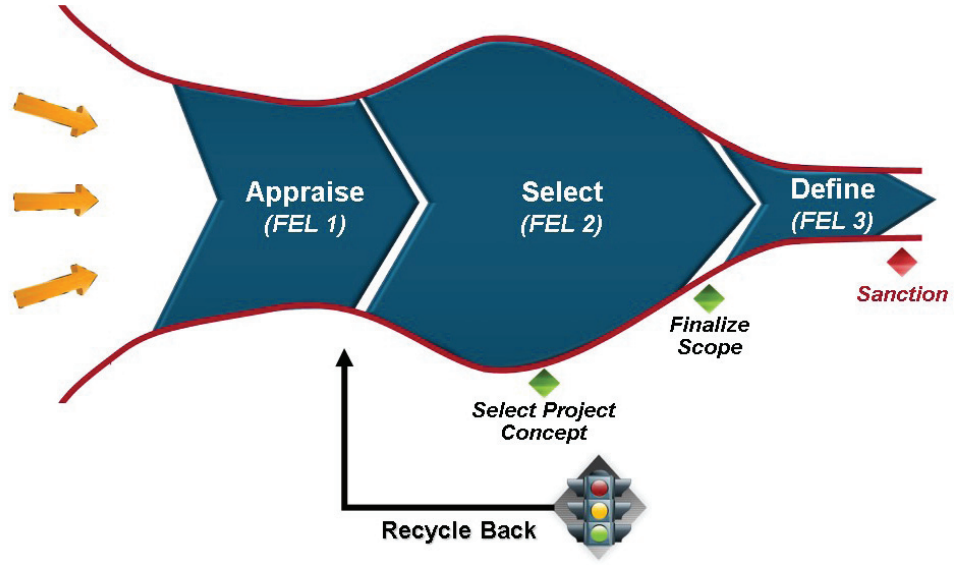

Figure 3. Frequent Recycling Further Inflates FEL 2 and Leads to Less Marginal Opportunities

Organizational effectiveness also factors into effective portfolio management, the IPA assessment found. Portfolio management is stymied when exploration and development teams are not aligned. The timing, process, and requirements for handover of project from exploration to development is often unclear since in the majority of cases there is no agreed upon definition of a project's appraisal maturity, a critical definition for a project to proceed to FEL 2.

Effective portfolio management is also hindered by differing business unit and corporate office portfolio management goals. A business unit may be willing to pile on work on a project organization that is already overburdened, but execution results ordinarily suffer when project organizations are stretched thin working on multiple assignments. Corporate office leaders must be attuned to the politics that accompany business unit efforts to lock up project funding at the risk of taking on too many projects simultaneously.—*Geoff Emeigh, IPA Staff Writer*

IPA is developing a toolkit that can be used by businesses early in FEL 1 to improve project portfolio management practices. For more information, contact *Neeraj Nandurdikar*, IPA E&P Business Area Manager, at: *nnandurdikar@ipaglobal.com*.

Research Corner: Updates for IPA's Current Research Initiatives

Understanding the Drivers of Rising Owner's Cost in the Oil & Gas Industry

Today's landscape in which oil and gas projects are executed is a difficult one. Projects are complex, much larger, executed in frontier regions, and done against a backdrop of demographic and supply chain constraints. Yet, the number of projects continues to increase, leading to significant sector inflation. One such area of inflation is owner's costs. At the request of several clients, IPA launched a study to determine what is driving owner's costs in the oil and gas industry. This study will establish a common basis for comparing owner's costs, identify trends and drivers, and test correlations between higher owner's costs—either in its entirety or by category—and project outcomes. IPA is currently assessing the data provided by the participants and identifying the potential drivers of owner's costs to further evaluate. Companies are welcome to join the seven operators already participating in this effort.

Jonathan Walker, Study Principal Investigator: ***jewalker@ipaglobal.com***

Global Equipment Procurement for Capital Projects

IPA is soliciting interest in a study that aims to advance Industry's understanding of the current trends and practices in equipment procurement for capital projects. A key focus is to evaluate the total cost of procurement in various global regions, taking into account equipment prices, the costs associated with transportation and setting up and maintaining regional procurement organizations, and other costs tied to addressing potential quality problems. IPA will also assess how companies' organizational structures, procurement approaches, contracting strategies, and other purchasing practices and strategies affect procurement effectiveness. The study results will help companies devise more effective equipment sourcing strategies. IPA is currently forming the study group. Interested companies can still request the study prospectus.

Natalia Zwart, Business Manager for Chemicals, Life Sciences and Nutrition: ***nzwart@ipaglobal.com***

Gulf of Mexico (GOM) Decommissioning

The purpose of the GOM Decommissioning study is to pool the learnings of decommissioning projects in the GOM from several operators and benchmark company performance against Industry as a whole to guide later projects on cost and schedule planning. The analysis phase of the study has been completed on the removal of intact platforms and well abandonments, with the results recently presented to the participating clients. Additional phases of the study may include additional decommissioning activities and expansion to other regions of the world. The first phase of the study remains open to additional participants.

Tom Mead, Deputy Manager of E&P Research Development: ***tmead@ipaglobal.com***

Benchmarking Allocation of Sustaining Capital to Mining/Minerals/Metals Sites

IPA is pleased to announce the completion of this ground-breaking joint industry study. By pooling industry data from a number of operating sites, IPA has generated benchmarks for sustaining capital spend relative to such site indicators as depreciation, gross book value, project manager full time equivalents, and others. The benchmarks are available both by commodity (iron ore, copper, coal, and more) and by facility type (mine, mine + process facility, and refinery/smelter). The study also examined the practices that companies use to assign sustaining capital across their sites. The study remains open to new participants.

Petros Kapoulitsas, Study Principal Investigator: ***pkapoulitsas@ipaglobal.com***

Phyllis Kulkarni, Manager, Plant-Based Systems: ***pkulkarni@ipaglobal.com***

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Achieving Better Project Outcomes in West Africa

The group of coastal countries stretching from Guinea to Angola is home to vast mineral wealth and 35 percent (>350 million) of Africa's total population. It is also very possibly the single most difficult region in the world in which to develop and execute successful industrial capital projects. The motivation for this joint industry study is to find ways to reduce project risks in this uncertain region. It is the goal of this study to find the commonalities in the successful projects from this region as well as catalog the practices to avoid to minimize risks by addressing the following: characteristics and frequency of successful projects in West Africa; nature and capability of the local supplier markets; key risks that contractors price most aggressively; possible strategies for reducing risk premiums; and effective approaches for using expatriates. The study is currently in the early framing phase, and the analysis is expected to start in July 2014, with completion targeted for April 2015. The study is open to owners and contractors.

Edward Merrow, IPA Founder and President: ***emerrow@ipaglobal.com***

Supply Chain Risks to Large Projects in the United States

In recent years natural gas has become increasingly competitive in the United States, leading to a glut of announced capital projects. These projects are likely to strain capital project supply chain resources, notably engineering services, equipment vendors, and construction services, as well as regulatory agency permitting bandwidth. IPA has now completed its "hot market" study of U.S. capital investments, which consists of two phases. Phase I consists of a historical look back at the previous hot market in the United States and the challenges it created for capital projects. The recently completed Phase II looks forward to the upcoming capital market, exploring projected spending levels in each of the supply chain elements as well as their ability to react to this increased capital spend. In addition, we provide strategies for owners to mitigate their risks in effectively managing each element of the supply chain. The study is open to additional participants and available for delivery.

Kristin Lewis, Study Principal Investigator: ***klewis@ipaglobal.com***

Evaluating the Performance of In Situ Oil Sands Development Projects

Industry currently faces substantial capital cost challenges for in situ oil sands developments. As it currently stands, the majority of the future oil sands development will involve some form of the in situ process. Recently, projects in Alberta have had highly unpredictable costs, schedules, and production attainment. In addition, a comparison of the in situ oil sands project costs from IPA's proprietary database of owner information with those publicly reported shows a dramatic difference. The public source SAGD data underreport the project costs by about 30 percent. There is an urgent need to better understand what success looks like for in situ oil sands developments in Alberta and the practices that drive better cost, schedule, safety, and production attainment performance. The purpose of this study is to pool the learnings and data from in situ oil sands development projects in Alberta from multiple owner companies to aggregate the practices and outcomes from these projects into the industry metrics. In addition, these data will be used to benchmark the performance of individual companies against Industry as a whole and to guide the later projects on cost and schedule planning. We are targeting oil companies that currently have in situ oil sands projects in operation or are planning to in the future. IPA is currently in the study framing phase and intends to issue a formal prospectus in early March 2014. IPA will begin collecting data for the study in Q2 2014. The study is open to additional participants.

Keith Mayo, Study Principal Investigator: ***kmayo@ipaglobal.com***

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Oil Sands Tailings Study

Industry currently faces substantial challenges in managing tailings. Both regulatory as well as evolving technologies often make these very capital-intensive projects increasingly problematic, and the industry will spend billions of dollars over the next few years in response to these requirements. As the ongoing operations grow and mature, the capital costs associated with tailings management are also expected to increase. The costs for tailings management projects, which are often significant only years after the start of operations, are often underestimated. Further, tailings projects have unique challenges and risks that differ from those of process projects and need to be understood and mitigated to succeed. IPA is currently in the framing phase of a study that targets the learnings from past and current tailings projects in Alberta so that they can be applied to future activities for continuous project improvement. The study is open to additional participants.

Maggie Stewart, Study Principal Investigator: ***mstewart@ipaglobal.com***

Improving Mining, Minerals, and Metals Operating Cost Estimates

IPA's recent experience with Mining, Minerals, and Metals (MMM) sector projects is that operating expenditure (OPEX) costs are volatile and commonly higher than anticipated at project sanction. This underestimation of OPEX costs heavily erodes net present value (NPV) and ultimately undermines the selection of the right scope to achieve the business case. The scope of this multi-client study is to investigate the OPEX estimating practices employed on large capital projects during Feasibility and link these with the operating cost line items that commonly overrun and do not meet expectations at project completion. The study objective is to enable participating MMM companies to achieve greater capital effectiveness through the implementation of improved OPEX estimating practices. The results of the study will be reported to participating companies. We are currently seeking commitment to allow the study to proceed.

Tim Mumford, Study Principal Investigator: ***tmumford@ipaglobal.com***

Standardized Cost Coding Structure for the Mining and Mineral Processing Industry

The global mining and mineral processing industry currently uses a variety of company-, region-, and project-specific cost coding structures for major projects. As a result, making comparisons, collecting and collating historic data, and benchmarking are difficult. A standard cost coding structure for the industry could provide significant benefits in estimate preparation, estimate validation and comparison, and project control development and execution. The value of implementing a common coding structure has already been proven with the availability and use of the NORSOK uniform coding structure in the oil and gas sector. Over the past several months, several major mining and mineral processing companies and engineering contractors have expressed an interest in working together with IPA to establish a common cost coding structure. The study kicked off in December 2013, and the first industry study steering committee meeting is planned for April 2014. The study remains open to additional participants.

Christina Yip, Study Facilitator: ***cyip@ipaglobal.com***

Line Pipe Procurement Best Practices for Pipeline Projects

The purpose of this study is to understand the causal relationship between line pipe procurement practices that, without sacrificing quality, yield faster procurement durations and lower total line pipe procurement costs for pipeline projects. Line pipe constitutes a significant portion of the capital spend on pipeline projects, and IPA research shows that there is a wide range in the price that pipeline projects pay for that line pipe. Although line

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pipe prices have stabilized over the past few years, increased capital project activity is likely to put upward pressure on pricing and delivery times for line pipe suppliers. The study will provide decision makers with the appropriate information to support and validate current procurement practices and develop (or maintain) a competitive advantage on their pipeline projects. IPA is currently forming the study group. Tthe study is open to owners and contractors.

René Klerian-Ramírez, DEP Manager, Hydrocarbon Processing & Transportation: ***rklerian@ipaglobal.com***

Permitting in the United States

Companies can expect already complex and time-consuming U.S. permitting requirements to become even more burdensome, especially with the implementation of new environmental regulations. As a consequence, companies are being forced to disrupt well-established engineering work processes to ensure that sufficient engineering design is done early in a project's life cycle. IPA plans to examine the effect the changing U.S. permitting landscape has on a project's Front-End Loading (FEL) engineering work processes. The study will also identify ways to alleviate permitting headaches. IPA is currently soliciting additional client input, and plans to hold a roundtable discussion of the topic at the 2014 annual meeting of the Industry Benchmarking Consortium (IBC 2014). The study and research work will begin in summer 2014.

Andras Marton, Business Manager for Hydrocarbon Processing & Transportation: ***amarton@ipaglobal.com***

Getting the Best Performance From a Project Management Contractor (PMC)

For many companies and for a variety of reasons, owners rely on PMCs to successfully deliver their capital projects. In some cases, the project portfolio has grown faster than the owner staff can reasonably manage. In other cases, the owner strategy is to maintain an owner organization geared to a contracting strategy where the PMC approach is a primary vehicle for delivering the projects. The outcomes from PMC-led projects are highly varied. IPA is proposing to conduct a multi-client study on the practices that deliver top performance in projects that are executed with a PMC. IPA will analyze projects from the oil and gas, chemicals, power, and mining and minerals sectors from all over the world. In addition, IPA will conduct surveys of both owner companies who employ PMCs as well as contractors who have either themselves acted as PMC or have been an EPC contractor managed under a PMC, to gather information on practices that each of the key stakeholders sees as critical in successful projects. This study is currently in the framing phase, and is open to additional participants.

Mark Etchells, Study Facilitator: ***metchells@ipaglobal.com***

Benchmarking Tank Maintenance

At the request of several clients in the refining and transportation/logistics sectors, IPA developed a study to compare the cost and schedule competitiveness of tank maintenance programs. This study is developing cost and schedule metrics ($/barrel, days/barrel) for tank maintenance by activity (e.g., cleaning, inspection, repair, etc.) and product (e.g., crude, gasoline, diesel). The metrics will allow companies both to compare their historical performance versus industry peers, and set competitive targets for new tank maintenance work. Tank maintenance projects do not generate revenue but can be quite costly to execute. Further, they typically require taking tanks out of service. Hence, executing tank maintenance efficiently is vital. The study is also investigating the different practices that companies use to define and manage their tank programs.

Josh McClellan, Study Principal Investigator: ***jmcclellan@ipaglobal.com***

Phyllis Kulkarni, Manager, Plant-Based Systems: ***pkulkarni@ipaglobal.com***

Upcoming IPA Events & Presentations for 2014

March 11

IPA President to Present Keynote at SPE Workshop in the UAE

IPA's President and CEO, Ed Merrow, will deliver a keynote speech at a Society of Petroleum Engineers (SPE) Workshop, entitled *Challenges of Megaprojects – Managing Projects Execution from Conception to Operation* in Abu Dhabi, UAE. Mr. Merrow's speech, entitled *Why Do E&P Megaprojects Struggle?*, will highlight some of the research findings detailed in his book *Industrial Megaprojects: Concepts, Strategies, and Practices for Success* (John Wiley and Sons, April 2011). For more information please visit ***www.spe.org/events/14aab5/***.

March 31 - April 3

IBC 2014 in Leesburg, VA

The annual meeting of the ***Industry Benchmarking Consortium (IBC)*** provides an independent forum for each participating company to view its performance against other companies' performance. The consortium meeting highlights Best Practices used and reinforces their use to improve capital effectiveness. During the consortium meetings, attendees learn ways to improve specific elements of capital project execution through presentations and face-to-face discussions. For more information, please contact ***Andras Marton*** at ***amarton@ipaglobal.com***.

April 8

IPA to Speak at the Norwegian Petroleum Directorate Seminar in Norway

Nekkhil Mishra, Senior Project Analyst, is scheduled to speak at the Norwegian Petroleum Directorate Seminar in Stavanger, Norway. This seminar is a follow up to a recent report published by the Norwegian Petroleum Directorate (NPD). This report, on behalf of the Ministry of Petroleum and Energy (MPE), looked at projects executed in Norway between 2006 and 2008 and published its findings on why projects fail. Mr. Mishra will present IPA's views on projects executed in the Norwegian continental shelf and discuss the possible drivers of the differences in Norwegian project outcomes versus other provinces (GoM, etc.). Five additional speakers are invited to this seminar from various oil companies to give their views on topics ranging from project controls to project execution.

May 5 - 8

IPA to Speak at the 2014 OTC in Houston, Texas

Neeraj Nandurdikar, Manager of Exploration & Production, will deliver a keynote speech at the 2014 Offshore Technology Conference (OTC), entitled *E&P Major Projects: Improving Project Success*. Mr. Nandurdikar will address the trade-off between the focus on fast production and the perceived need for additional appraisal data. For more information, visit ***www.otcnet.org/2014***.

May 15

IPA to Speak at the ERTC Plant Maintenance & Shutdowns 2014 in Belgium

Patrick Voogd, Senior Project Analyst, will present at the ERTC Plant Maintenance & Shutdowns event in Brussels, Belgium. This event has been developed for refining companies to share their case studies and Best Practices along with industry suppliers and technology providers. Mr. Voogd's presentation will focus on Best Practices in the integration of capital projects and turnarounds and discuss the significant effect the turnaround Front-End Loading (FEL) phase has on turnaround outcomes. For more information, visit ***http://events.gtforum.com/plantmaintenance***.

Upcoming IPA Events & Presentations for 2014

June 11 - 12

UCEC 2014 Annual Meeting in The Woodlands, Texas

The ***Upstream Cost Engineering Committee (UCEC)***, formally organized in 1999, is an approved subcommittee of the Upstream Industry Benchmarking Consortium (UIBC). The purpose of the UCEC is to improve upstream project and business results by providing metrics for better cost engineering. The UCEC metrics provide asset evaluation and concept development professionals with a better understanding of costs and schedules. The sixteenth annual UCEC meeting will be held in The Woodlands, Texas. For more information, contact ***Carlton Karlik*** at ***ckarlik@ipaglobal.com***.

June 15 - 18

IPA to Speak at the AACEI 2014 Annual Meeting in New Orleans, Louisiana

Fred Biery, Manager of Mining, Minerals, and Metals, and ***Maggie Stewart***, Project Analyst, are scheduled to present at the AACE International 2014 Annual Meeting in New Orleans, Louisiana. The AACE International annual meeting brings together the industry's leading cost professionals in a forum focused on learning, sharing, and networking. Mr. Biery and Ms. Stewart will present a paper titled *Benchmarking Mining and Minerals Processing Projects.* They will discuss their findings about key drivers of performance—level of definition and project team development—that tend to be poor in minerals projects, and point out how industry benchmarking can serve as a vital part of improving project performance for minerals companies. For more information, visit ***www.aacei.org/am***.

June 24 - 25

IPA to Speak at the Marine Seismic Surveys Conference in Singapore

Manoj Prabhakar, Project Analyst, will present at the Marine Seismic Surveys Conference in Singapore. Mr. Prabhakar will discuss marine seismic survey practices and project risks in the oil and gas industry. For more information, visit ***www.marineseismicsurveys.com***.

September 16 - 17

CEC 2014 Annual Meeting in Tysons Corner, Virginia

The ***Cost Engineering Committee (CEC)***, formally organized in 1998, is an approved subcommittee of the Industry Benchmarking Consortium (IBC). The CEC focuses on all aspects of cost (or investment) engineering, including cost estimating, scheduling, and project control practices and metrics, with the goal of expanding the capability of the owner cost engineer. The primary vehicles for accomplishing these objectives are metrics, research, and practice sharing. The event is structured as a working meeting in which active participation is expected; the reward for participants is greater insight into the metrics and Best Practices. For more information, contact ***Luke Wallace*** at ***lwallace@ipaglobal.com***.

November 17 - 19

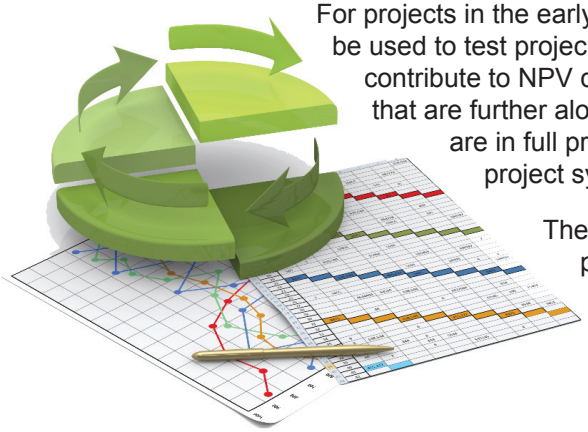
UIBC 2014 in Leesburg, Virginia

The annual meeting of the ***Upstream Industry Benchmarking Consortium (UIBC)*** provides an independent forum for each participating company to view its performance against the performance of other companies. The consortium meeting highlights Best Practices, reinforcing their importance in driving improvements in asset development and capital effectiveness. Attendees learn ways to improve specific elements of capital project execution through presentations and interactive discussions. For more information, contact ***Neeraj Nandurdikar*** at ***nnandurdikar@ipaglobal.com***.

IPA's Asset Economics Simulator Reduces NPV Guesswork

IPA research shows that the average oil and gas project delivers 30 percent less net present value (NPV) than promised at sanction. A new project assessment and diagnostic tool—***IPA's Asset Economics Simulator (AES)***—can help upstream businesses and project teams make more informed capital investment decisions.

Currently being used by clients as part of ***IPA's Project Strategy Workshop***, the AES is useful as both a predictive and diagnostic tool, giving business and project teams the information they need to correct or cancel projects that are on track to fail or underperform. What distinguishes the AES from other decision analysis tools is the database of more than 1,300 E&P projects at its core. The analytical engine behind the AES draws on this database and more than a decade of research that empirically links business decisions, project strategies, and front-end practices to project outcomes. AES outputs help business managers with portfolio management, allows project managers to push back against unreasonable targets, and enables project functional leads to quantify cost-benefit trade-offs, with empirical data.



For projects in the early planning phases (prior to concept selection), the AES can be used to test project development scenarios to predict different factors that might contribute to NPV degradation, such as cost and schedule trade-offs. For projects that are further along in planning or the execution phases or even projects that are in full production, the AES can be used as a diagnostic tool to identify project system factors that may be contributing to NPV erosion.

The AES eliminates biases from company estimates and instead provides project decision makers with NPV knowledge based on empirical evidence. The simulator's models can then be used to assess the true effect that the project practices are likely to have on its NPV.—*Geoff Emeigh, IPA Staff Writer*

For more information or to schedule a Project Strategy Workshop or a demo of the AES for your business team, contact *Neeraj Nandurdikar*, IPA E&P Business Area Manager, at: *nnandurdikar@ipaglobal.com*.

Getting Serious (Finally) About Standardization

At the 2013 Upstream Benchmarking Industry Consortium (UIBC), IPA Founder and President Ed Merrow offered up a beginner's list of steps that the exploration and production (E&P) Industry can take to improve upstream asset outcomes.

However, one step was presented as a challenge to the Industry: "Get serious about standardization programs—I mean really serious as in 'you absolutely cannot rework adequate designs!'"

The reasoning behind the challenge was clear. When planned properly, standardized facilities designs can lower project cost. Standardization can help address Industry's growing problem with skyrocketing project costs by keeping costs in check, Merrow said.

Company business units should incorporate design goals for standardization into their project realization strategies early, according to IPA Senior Project Analyst David Rosenberg, who has led IPA studies involving standardized design in upstream projects. In a recent interview, Rosenberg said that standardized design considerations should be included in the opportunities identification process used to guide portfolio management decisions.

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"Standardization programs require business and project teams to be disciplined and on the same page," Rosenberg said, noting that facility designs cannot be changed without cost growth. "A stable environment and a stable process are necessary" for the execution of a repeatable design. Standardization systems tend to improve with repetition, "and standardization is mostly likely to succeed in portfolios that have a sequence of [many] similar opportunities," Rosenberg added. However, business teams must recognize that standardization is not the right project development approach for all projects, particularly for big facilities.

Standardization can offer significant cost and schedule benefits. However, it must be pursued in a systematic and disciplined manner rather than opportunistically.—*Geoff Emeigh, IPA Staff Writer*

For more information about upstream project standardization or research opportunities regarding standardization systems, contact *David Rosenberg*, Senior Project Analyst, at *drosenberg@ipaglobal.com* or *Tom Mead*, Deputy Manager of E&P Research Development, at *tmead@ipaglobal.com*.

Slips in Engineering Ensnare E&P First Oil Targets

A recently completed IPA study concludes that engineering slip drives slip to first oil, highlighting the need for oil and gas companies to adopt stronger engineering planning practices.

Although the connection between E&P project engineering slip and first oil slip is critical because product production is delayed, the important insight of the study is describing the ripple effect that engineering slip has on subsequent project activities and the resulting cost implications. "This begins a cascade of events leading to overall slip, cost growth, and operational problems," said IPA Institute Director Andrew Griffith, presenting the study last fall at IPA's Upstream Industry Benchmarking Consortium (UIBC). Eighty percent of projects that experience slip in first oil, begin slipping in engineering, an activity that is supposed to start within weeks of sanction ***(Figure 1)***.

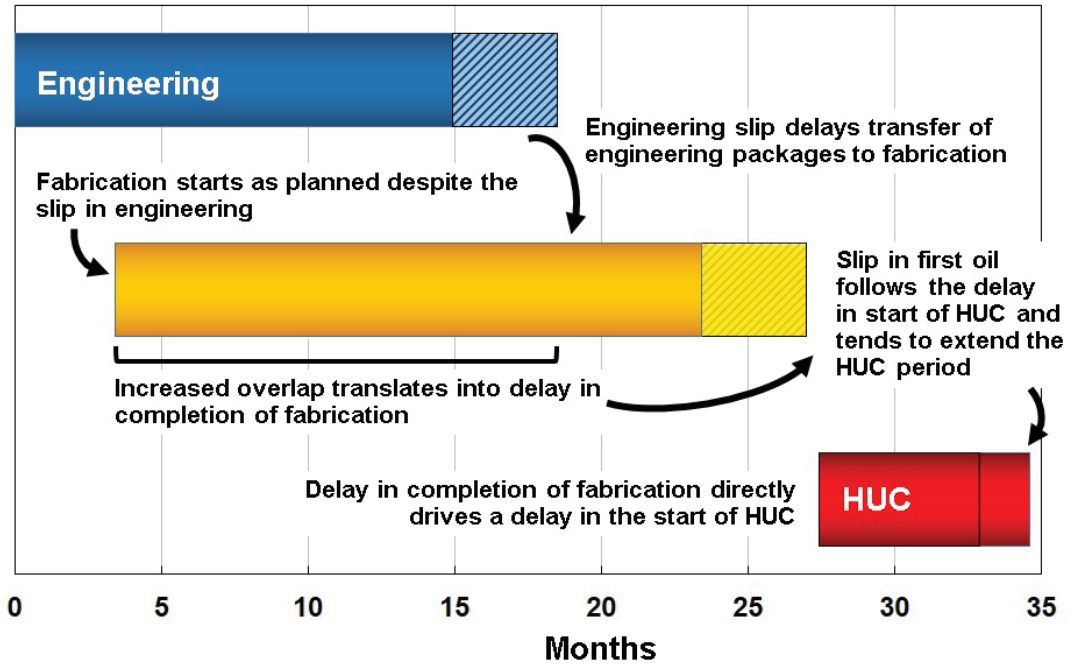

Figure 1. How Engineering Slip Drives Slip in First Oil

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The study found that engineering slip longer than 6 months, on average, results in first oil slip of 8 months or more, Griffith said. Notably, project teams tend to underestimate the duration for engineering activities.

Delays in fabrication and construction and hook-up and commissioning were identified as the initial causes for first oil slip in some cases, but the study found that slip early in engineering was more frequently the source for slip in first oil.

Among the recommendations included in the study is for project teams to have a "robust project controls system in place and operational early" in Front-End Loading (FEL). Because recovering from engineering slip is unlikely, the study also includes a recommendation to fully analyze the benefits of increasing the overlap in the project's development phases with the risk generated by the overlap

Other ways to mitigate engineering slip include creating a schedule buffer for engineering so that fabrication does not begin prematurely and establishing systems to detect slip in engineering, such as by tracking contractor actual mobilization versus plan as a key performance indicator.—*Geoff Emeigh, IPA Staff Writer*

For more information about the UIBC study, *Anatomy of Schedule Slip for E&P Projects*, contact *Andrew Griffith*, Director of the IPA Institute, at *agriffith@ipaglobal.com*.

Study Examining Rise in Owner's Costs

A joint-industry IPA study is underway to ascertain the drivers and long-term outlook for owner's costs that are contributing to the relentless climb in capital project expenses being doled out by oil and gas companies.

Over the last several years, oil and gas operators have been paying more on personnel and project fees, especially for project scoping, definition, and management activities. However, it is unclear whether upstream companies are getting more value for the dollar, especially when companies are facing the price/cost squeeze. Even if such owner's cost are justifiable, some companies want to know how fast and for how long the upward cost trend will continue and if some costs can be optimized.

The percentage of owner's cost spent on project management, for instance, has grown by 50 percent over the last decade, according to IPA data ***(Figure 1)***. The rise in cost, though not surprising, is definitely worrisome. Such concerns may center on whether more is being spent for worse quality, such as the reliability of cost estimates and the quality of detailed engineering delivered. Other expenses possibly contributing to skyrocketing owner's costs include insurance and taxes, venture setup costs, and permitting and regulatory costs.

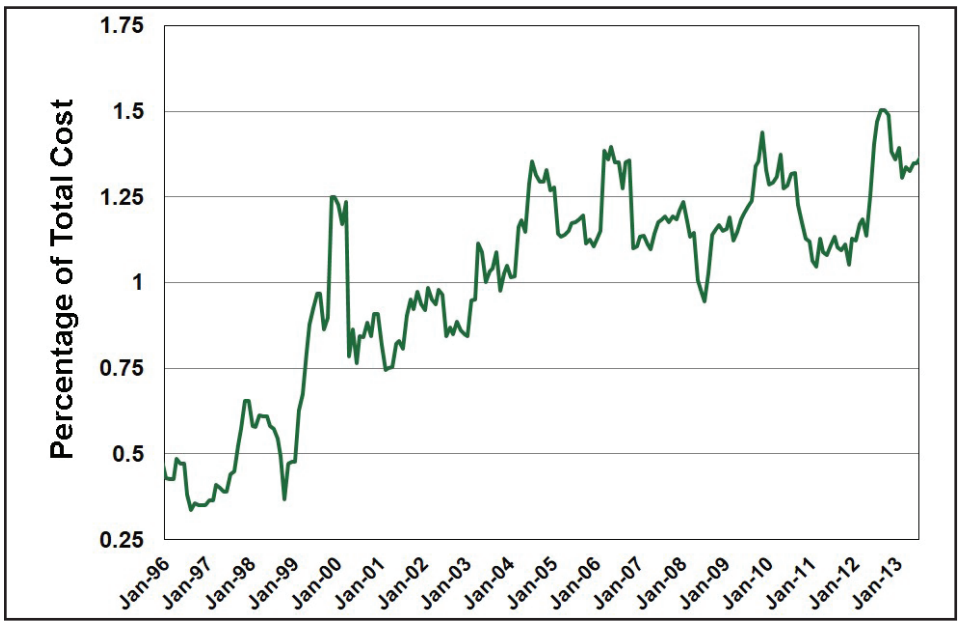

Figure 1. Project Management Costs Over Time

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The study's framework entails defining the owner's cost categories, developing a database to test hypotheses about owner's cost trends and drivers, establishing cost outcome variables, and examining the drivers of rising owner's costs. IPA will also hold discussions with each of the study's industry participants to gather company-specific owner cost data and to prepare customized deliverables.

Seven oil and gas companies are currently participating in the study. IPA researchers are currently in the process of assessing the amount and quality of the data provided by the participants. Researchers are also in the process of putting together a draft list of outcome variables and a potential set of internal and external drivers of owner's costs. There is still time to participate in the study.—*Geoff Emeigh, IPA Staff Writer*

For more information on the study and requirements for participation, please contact *Jon Walker*, Study Principal Investigator, at *jewalker@ipaglobal.com*.

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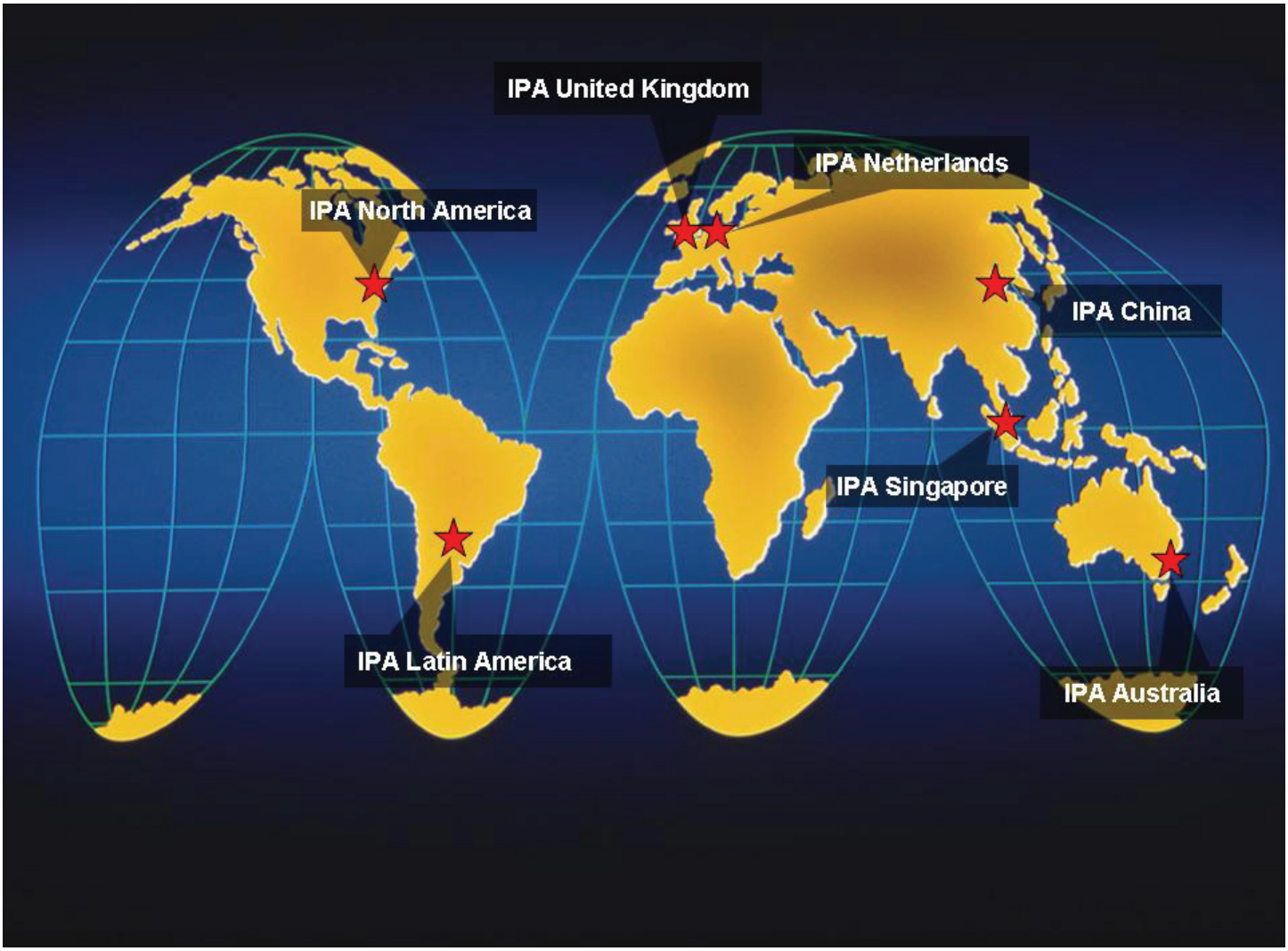

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