

# ENERGY EXPERT: ISSUES IN FOCUS

*A quarterly review of disputes and complex issues in the hydrocarbon production and processing industries.*

Baker & O'Brien, Inc.

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## FPSO Hull Conversion: Longer Schedule and Higher Costs

### International Arbitration, South & Central America

By Don Flessner and Homero Russares

Floating Production Storage and Offloading (FPSO) vessels are often used to produce oil in remote offshore locations that lack offtake infrastructure. An FPSO can be built either on a new ship hull designed for the purpose or on a used hull that is converted for use as an FPSO. Hull conversion projects have higher schedule and cost risks over new hulls, primarily due to significant uncertainty regarding the vessel condition and the required scope of repairs. In addition, an FPSO conversion often uses different shipyards and contractors for each phase of construction, which introduces additional degrees of complexity into the EPC process.



An Owner engaged several contractors located around the world to participate in an FPSO conversion project, including: (1) an engineering company to provide all engineering and design services; (2) a conversion yard to perform hull repairs and modifications; and (3) a module fabrication and integration contractor to procure equipment and to fabricate, install, and integrate the modules on the converted hull.

The project was delivered late and encountered large cost overruns, resulting in claims and counterclaims between the Owner and one of the contractors. The Owner alleged that the contractor's work was not fit for purpose and delayed delivery of the FPSO. The contractor alleged that incomplete hull conversion works, incomplete engineering, Owner-instructed changes, and out-of-scope carryover work from other contractors contributed to the large cost overruns and delays.

Baker & O'Brien was retained to investigate: (1) the quality and completeness of "Approved for Construction" engineering and design deliverables; (2) whether design changes were implemented late in the process; (3) the extent to which the FPSO modules were delivered late or incomplete; and (4) whether any of these issues could have had a material effect on the delivery of the FPSO. Our investigation involved the review of the computerized 3-D model prepared for the hull conversion and modules, review of changes to equipment specifications and size during procurement, and an evaluation of pipe fabrication activities from design through final inspection and shipping. Our findings were presented in an expert report, reviewed by other experts, and defended in expert testimony.

## Equipment Condition: Was an Insurance Claim Inflated Because of Poor Mothballing Practices?

### Insurance-related Arbitration, North America

By Dave Morgan

Process facilities are sometimes shut down for periods of time, during which it is common practice to preserve and maintain (mothball) equipment until it is restarted, repaired, decommissioned, or sold. The specific mothballing procedures may vary according to the shutdown period and the reason for the shutdown. Process equipment that is typically considered for mothballing includes reactors, pressure vessels, mechanical equipment, heat exchangers, storage tanks, piping, towers, and flare systems. Key aspects for developing and implementing a mothballing program include: inspecting the equipment to determine its condition, establishing the steps required to prepare the equipment for preservation, determining the time period required for preservation, and developing an equipment-specific preservation plan.



been developed, the Operator also had to consider the potential decommissioning and/or demolition of the process equipment. At the completion of the investigation, the Operator filed an insurance claim to repair or replace equipment damaged by the incident. The Insurer believed that: (1) the claimed costs were excessive; and (2) the Operator had failed to adequately mothball the facility while it was shutdown, thereby, incurring additional costs for which, under the terms of the policy, the Insurer should not be liable.

Baker & O'Brien was retained to: (1) assess how the process equipment was mothballed following the incident and, given the possibility of more than one

outcome following the investigation, determine if the procedures conformed to good industry practice; (2) estimate the cost to properly mothball the facility to prepare for repair and restart; and (3) to opine whether the method of mothballing influenced the equipment's condition and, therefore, affected the amount of the insurance claim. Our findings were submitted in an expert report.

Synthetic quartz crystals are manufactured at severe process conditions: 350°C / 660°F and 1,000 bar / 14,500 psi. Following the catastrophic explosion of a pressure vessel at a quartz crystal manufacturing facility, the process equipment remained idle for an extended period of time to allow the investigation to be completed. Additionally, until the equipment repair plan had

## Refinery LP Models – Intimidating but Necessary

### Refinery Business Interruption Claim, North America

By Daniel Finelt



Petroleum refiners typically use Linear Program (LP) models for optimizing the operation of a refinery. These same LP models can also be used for evaluating lost profit from business interruption (BI) events. When a refiner carries BI insurance, the submitted BI losses are carefully scrutinized and, in some cases, disputed by the Insurer. Such a case arose following a fire in a major process unit which led to a downtime of several months for the process unit. To identify the monthly BI loss, the refiner used an LP model to estimate what the refinery yield of each product would have been but for the fire event. Baker & O'Brien was retained to opine on the appropriateness of the LP model and the assumptions therein.

Baker & O'Brien was initially provided historical monthly LP model plan charge and yield data and actual monthly charge and yield results for a relevant historical period. Upon further discussions with the refinery personnel, it was learned that a new LP model had been developed just prior to the occurrence of the fire. Therefore, any analysis of the old historical monthly LP model data would not be meaningful since the prior LP model had been revised. Subsequently, it was agreed that a "backcast" analysis would be developed using the new LP model. This analysis provided information on how the new LP model accounted for seasonal variations in product specifications and operating modes.

Baker & O'Brien assessed the effectiveness of the new LP model to estimate the actual refinery performance as if the fire event had not happened. Then we reviewed the "backcast" results and issued an expert report that was used in subsequent negotiations between the parties.

## Consulting Support for Complex Commercial Disputes

When faced with complex commercial disputes in the energy-related industries, clients often turn to Baker & O'Brien for its independent and objective support. For over 25 years, the firm's consultants have employed their engineering knowledge, industry experiences, and commercial acumen to provide assistance on a wide range of matters. Our project experience includes disputes involving operational incidents, standards of care, asset valuation, commercial supply terms, product quality, large engineering and construction projects, and intellectual property.

Our clients include many of the world's largest law firms, insurance providers, and operating companies. Law firms rely upon Baker & O'Brien to evaluate

technical and commercial aspects of a case and provide expert testimony. Our analyses, conclusions, and expert testimony have been heard by judges, juries, and arbitration panels around the world. On insurance matters, clients rely upon Baker & O'Brien's assistance for investigation of industrial accidents and quantification of resultant property damage and business interruption losses. We are also called upon to assist insurers in subrogation actions by evaluating causation theories and claims for damages.

We welcome the opportunity to discuss our qualifications in more detail as they relate to your specific area of interest.

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