

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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Failure Following an Extended Interval between Turnarounds: Management Negligence or Pre-existing Defect?

Criminal Trial, Russia, Eastern Europe and Central Asia

By Dave Morgan

Petroleum refineries are complex manufacturing facilities that require periodic shutdowns, or – in industry parlance – turnarounds, to perform essential internal equipment inspections and repairs and/or replacements that cannot be performed while the facilities are in operation. They are often – but not always – coincident with essential operations to replace or regenerate catalysts for a new operating cycle. The “annualized downtime days for a turnaround” is a widely-used industry measure.

Historically, perhaps thirty or more years ago, it was fairly common for intervals between turnarounds to be fixed by management directives; for example, a major turnaround every four years and a minor turnaround every two years. In some countries, intervals between turnarounds were legislated. As continuous processes cannot generate profits while undergoing a turnaround, there have been industry efforts to minimize the annualized downtime days for turnarounds. Additionally, the actual shutting down – and subsequent starting-up – of a refinery process unit can also present safety risks. Therefore, extending intervals between turnarounds can have additional benefits.

While pressure vessels still have to be inspected periodically, there is no world-wide industry standard that requires fixed intervals between turnarounds for refinery process units. To plan and schedule turnarounds, petroleum refiners have developed risk-based inspection and process safety

management programs. These programs use predictive and preventive techniques to extend intervals between turnarounds while simultaneously trying to minimize the actual time that the process unit is shut down. If implemented successfully, these programs can result in significant commercial benefits due to increased on-stream time. There is now wide acceptance in the refining industry of these “risk-based” maintenance practices.



A refiner hired a new management team to introduce and develop industry best practices for refinery maintenance, inspection, and turnaround execution. Following the implementation of these programs, a decision was made to postpone a scheduled turnaround. Soon after the originally-scheduled turnaround date, the refinery suffered a catastrophic failure that resulted in a fire, injuries, and major equipment damage. Baker & O'Brien was engaged to investigate the event and the possible causes.

We were engaged to assess whether: 1) the practices and programs developed and initiated by the new management team met industry best practices and applicable government regulations; 2) the decision to postpone the turnaround was justified from the standpoint of the refinery's maintenance risk assessment program; and 3) the extended interval between turnarounds was a factor in the cause of the fire. Our conclusions were presented in an expert report.

Design Flaw Leads to Environmental Incident – Is Owner or Contractor Responsible?

Damages Claim, North America

By Kevin Waguespack



An expansion project at a large fuels refinery required modifications to the oily water and wastewater treatment systems. The refinery owner (Owner) prepared the basic design modifications and engaged a construction contractor (Contractor), under an existing master services agreement, to prepare the “issued for construction” (IFC) drawings and fabricate and install the modifications.

Sometime after the installation, and after heavy rainfall at the refinery, oil was found in the wastewater discharge, which resulted in an environmental incident. Investigators determined that the heavy rain had caused the storage tanks to overflow into a diked area, which was intended to contain any oil that may have been released. However, oily residue in one of the outlet culverts confirmed that oil had made its way from the diked area into the modified wastewater treatment system. An inspection revealed that the modified system was not functioning as intended.

Baker & O’Brien was retained to determine whether the installation met the functional requirements contained in the work order. Our consultants visited the site to inspect the installation and reviewed the design documents and IFC drawings. We provided a report that presented our findings and opined regarding Owner and Contractor duties and responsibilities under the terms of the master services agreement. A key issue in the matter was project management practices surrounding the use and relevance of IFC drawings.

Hooked on a Pipeline

Damages Assessment, North America

By Bill Jackson

A large freighter was caught in a hurricane that made landfall along the U.S. Gulf Coast. In an attempt to control its movements while riding out the storm, the ship dropped anchors. Unfortunately, as the anchors were dragged along the seabed, they became ensnared in an offshore natural gas pipeline. As the storm battered the ship, the pipeline was dragged out of place and bent. While no spill occurred, the mechanical integrity of the pipeline was weakened to the point that a large section had to be replaced immediately. The pipeline owner used contractors to complete the repairs.



Baker & O’Brien was engaged to provide an independent assessment of the pipeline repair costs. Our consultants utilized contracts, invoices, work scopes, engineering drawings, and design documents to determine the actual costs of repairs and the schedule for the repair work. A register was created to summarize information for every purchase order, contract, and invoice applicable to the pipeline repairs. In addition, an expert report was prepared to summarize our view of the reasonable repair cost.

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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Baker & O'Brien, Inc. is an independent, professional consulting firm specializing in technology, economics, and management practice for the international oil, gas, chemical, and related industries.

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