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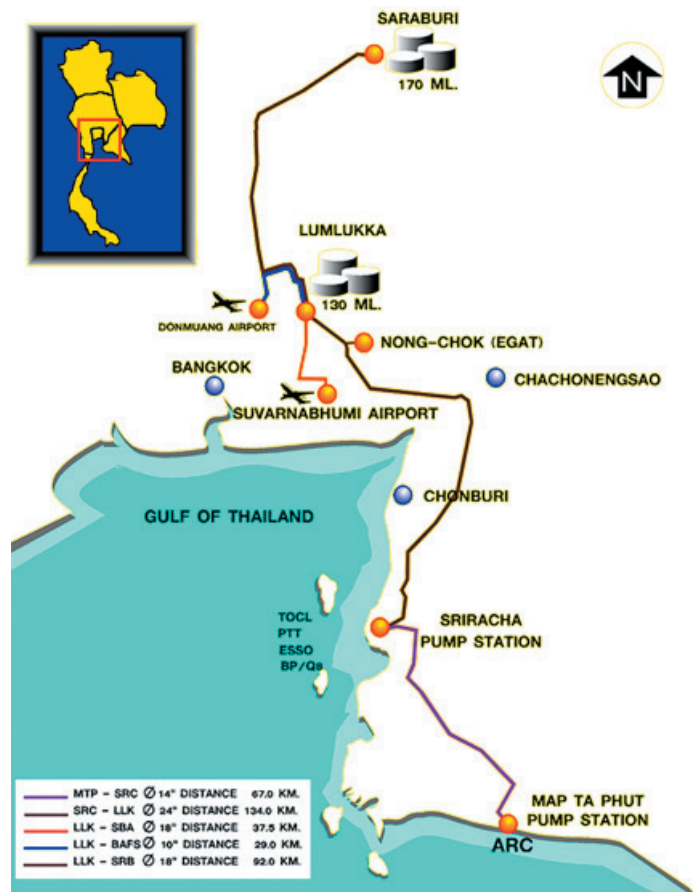
## Exapilot Contributes to Safety, Reduces Costs, and Retains Operational Know-how for SPRC's Product Transfer

Location: Rayong, Thailand  
Order Date: June 2008  
Completion: February 2009  
Industry: Refining

### Executive Summary

Star Petroleum Refining Co., Ltd. (SPRC) found in 1992, is a joint venture refinery between Chevron and PTT Public Company Limited that has land-marked itself as one of the most modern complex refinery in Asian Region. With 150,000 bpd production capacity, SPRC produces a wide range of quality and environment-friendly petroleum products. SPRC transfers oil products from its Map Ta Phut refinery to a station in Sriracha province and from there to customers all over the country via a pipeline network (annual capacity 26 billion liters) operated by the Thai Petroleum Pipeline Company (Thapline). SPRC maintains storage facilities for four main types of products, and these include 12 diesel storage tanks, 11 jet fuel tanks, and 8 gasoline product tanks. To improve overall safety and reduce operational costs, it was essential to fully automate all transfer operations. Yokogawa (Thailand) Ltd. successfully accomplished this challenging and complex task by implementing the Exapilot package and integrating it with an existing CENTUM CS production control system.

Exapilot manages product transfer between the Map Ta Phut and Sriracha stations



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### The Challenges and the Solutions

The first challenge was improving the efficiency of product transfer from SPRC to its downstream customers. From 60% to 70% of the existing operations had already been automated and the customer could operate the plant efficiently, and the challenge was to raise the level of automation to 100%. All operations such as sequences for starting/stopping motors, opening/closing valves, flow measurement, calculation of totals, and flushing sequences were configured in Exapilot. When a product transfer is requested, all operations are now safely, smoothly, and automatically executed. All procedures were written up by SPRC and configured in Exapilot by Yokogawa. Pretest was carefully performed within a very limited period to ensure safe operation.

The second challenge was minimizing shutdowns and keeping facilities operating 24 hours a day, 365 days a year. Following the introduction of the Exapilot software package, the overall operation became much more smooth as operators could monitor the status of the entire plant on a user-friendly graphic display, and always know what was going on at any point during the product transfer stage. The high reliability of this software and Yokogawa's control system ensured minimum downtime and continuous operation.

The third challenge was retaining operation know-how. SPRC realizes that operational knowledge is important to their business. When there is operator turnover or operators differ in skill level, they want to make sure that the valuable expertise of their most experienced operators is readily available and always visible for configuration. Exapilot perfectly answers this requirement: all operational procedures can be configured in a simple flowchart, with icon drag & drop functionality. The important conditions for each step are simply filled in using the definition window.

Exapilot performs the following two functions at the SPRC facilities

Flying mode: Manages the changeover to a targeted product

Switching mode: Manages the changeover from the prior product's tank

The introduction of these two modes has reduced downtime.

Our customer has found that Exapilot not only makes it possible to retain valuable expertise and enhances safety, it also improves operational efficiency.

### Customer Satisfaction

Jamorn Arpapesuch, ISO-Coordinator of SPRC said "We are very happy to be using Exapilot in our product transfer because it has been operating safely for many days now. With the elimination of downtime our operation costs have been reduced. All operations are fully automatic - no manpower is required for changing valves, line selection, pump operation and flushing/purging operation." He added that he and other members of the SPRC staff appreciate very much the support given by Yokogawa (Thailand) Ltd.