



REFINERY SURVIVORS:

**WHO WILL
LEAVE THE
TRIBE?**

*A New Subscription Study
by
THE PACE CONSULTANTS INC.*

Today, environmental regulations are giving the US an even larger and still-growing cumulative shortfall in real GDP growth. A command-and-control regulatory approach dominates environmental policy and is often driven by inordinate preoccupation with insignificant risks and an almost complete disregard for the costs imposed by the bizarre edicts that it imposes.

— *Craig Marxsen in Oil & Gas Journal*
(2/26/01)

The energy infrastructure—pipelines, refineries, utility transmission lines—is aging and the regulatory environment in most states makes building new facilities difficult, if not impossible.

— *Petroleum Marketers Association of America "Weekly Review"*

The EPA has recently approved final rules for a draconian reduction of sulfur in diesel. The diesel rule (a)ffects all "on-road diesel" and requires a reduction in sulfur in diesel fuels to no more than 15 ppm, from over 500 ppm currently, by the year 2006. Cost estimates to achieve these specifications exceed \$6 billion for US industry.

— *Merrill Lynch's "Industry"*
(1/19/2001)

Day-to-day industry operations are increasingly challenged—in some cases, almost to the point of being overwhelmed—by the complexity of doing business in the face of today's legislative and regulatory environment. Managing overlapping (and in many cases duplicative, contradictory or confusing) federal, state, local and even international regulatory requirements is demanding significantly more time from top-level management. The issue is, "In the changing, fast-paced, people-short, regulatory-laden oil and gas industry I've described, how do we continue to make progress without killing the goose that laid the golden egg?"

— *Red Cavaney (President)*
American Petroleum Institute

In the mid-1990s, The Pace Consultants issued *U.S. Refining in the 1990s: A Global Analysis* in which we analyzed the future of the domestic refining industry in the face of a variety of global issues and correctly identified several refineries that would not survive the decade. An overriding issue during our analysis at the time was concern over onerous environmental mandates. Now refiners face the reality of low-sulfur gasoline and diesel requirements. Although these environmental initiatives are not the first that the refining industry has had to endure, we believe that they are the most far-reaching. Consider:

Background

- The original Clean Air Act was passed in 1970. Although all refiners had to phase out lead in gasoline, developments in FCC technology and costs, reformer revamps, isomerization, and eventually oxygenates made the transition less costly than originally assumed. The grandfathering provisions of the Act also mitigated the need to spend money immediately.
- The changes mandated by the Clean Air Act Amendments of 1990 were primarily directed at gasoline used in large cities. The refiners most directly impacted by these changes were on the East Coast and (through CARB) in California. Gulf Coast refiners could elect to minimize capital spending by producing less reformulated gasoline. While most refiners elected to make low sulfur diesel, the heating oil market did not vanish. Many small refiners did not have to produce either product.
- RCRA, CERCLA, SARA, NPDES, SDWA, HAZOPS and other “alphabet soup” regulations have certainly required capital spending. Even so, it has been possible to phase capital projects, minimizing immediate cash flow problems. Technical improvements and creativity have also minimized costs.

In contrast, the current regulations impact all refiners in the fuels business. Smaller local refiners who may have escaped large capital outlays in the past now have few options: *all* gasoline must meet the new sulfur standard. To the extent that many have grandfathered units, projects that increase sulfur production will ‘trip’ more spending than just the process units. Thus, the focus of survivability over the next decade is not just profits, but cash flow. To address the crucial issues facing U.S. refiners today, The Pace Consultants Inc. is offering its subscription study ***Refinery Survivors: Who Will Leave the Tribe?***

Study Approach

Pace will use its proprietary models to estimate each U.S. refinery’s profitability and cash flow requirements, before and after the imposition of the more stringent sulfur specification. We will also include a scenario in which MTBE is phased out of reformulated gasoline. For each fuels refinery in the U.S. and selected Caribbean refiners, Pace will estimate the following based on historical and forecast pricing:

- Likely investment cost to meet new regulations
- Gross margins
- Operating costs
- Fixed costs
- Refinery cash flow.

Benefits to Subscribers

All Refiners

- ◆ Defines a range of capital costs to meet the proposed regulations
- ◆ Identifies and discusses expected response to the proposed regulations on a refinery-by-refinery basis.

Refiners With Limited Capital

- ◆ Discusses possible strategies for capital formation or exiting the market:
 - ◆ Additional investment
 - ◆ Joint venture or processing agreement with another refiner
 - ◆ Third party processing agreement
 - ◆ Refinery shutdown or sale.

Vendors (E&C, Technology, Catalyst)

- ◆ Identifies the scope and likely targets for purchasing services and supplies.

Crude Suppliers

- ◆ Defines expected investment requirements associated with current crude agreements. Also spotlights potential opportunities to arrange new agreements by underwriting part of the expected capital requirement of refiners who are financially challenged.

Financial Community

- ◆ Identifies the potentially lowest risks for investments.

Importers

- ◆ Provides information to identify if or where opportunities will exist in the U.S. for increasing supply and/or investing in upgrading.

Pipeline Companies

- ◆ Identifies pipeline rationalization pressures.

Study Elements

Certainly, **competitiveness** is one of the keys to survival. Our study therefore will examine the following on a refinery-by-refinery basis:

- ◆ **Size**—Economies of scale are obviously at play in the refining industry. However, some plants with high throughput are almost a collection of smaller parallel refineries.
- ◆ **Crude and Upgrading Capability**—The facile assumption that a refinery with a delayed coker is always ‘better’ than a light crude refinery will be explored, and we will differentiate the truly effective crude upgrading plants.
- ◆ **Location Advantages**—‘Niche’ refineries are usually those with logistic cost advantages on both crude and product: pipeline minus on crude, and pipeline plus on product. However, domestic crude production has declined for years, and many crude oil advantages are now at risk. New and expanded product pipelines have also eroded product advantage.
- ◆ **Environmental Status**—As previously noted, plants with many grandfathered units will have to spend more to meet regulations than some large, sophisticated refineries. Refiners in the Houston/Galveston area share an additional burden of complying with the new nitrous oxide standards.
- ◆ **Age**—There is little question that older refineries face higher maintenance and sustaining capital charges than newer plants.

Competitiveness, however, is not the sole measure of survivability. Other key parameters include the following:

- ◆ **Ownership**—A refinery with multiple large owners is less likely to shut down than a plant owned by a single company. With multiple owners, there are more ‘deep pockets’ available to fund a cash flow shortfall. Also, as the number of owners increases, it is more difficult to obtain a decision to shut down a refinery. Thus, some less competitive plants may continue to operate through simple inertia.
- ◆ **Integration with Petrochemicals**—Shutting down a refinery that is highly integrated with a petrochemical complex presents a number of special issues in terms of cost and ongoing operation of the petrochemical plant.
- ◆ **Crude Support Agreements**—Obviously a strong crude support agreement allows a refiner to weather economic downturns and improves bankability. Further, offshore crude producers may see such plants as a necessity, especially for heavy crudes.
- ◆ **Recent Spending**—Refiners who have recently had major additions are less likely to shut down since both owners and lenders are unwilling to write off investment, even when it isn’t profitable.
- ◆ **Cash Flow Potential**—The ultimate barometer of survivability is cash flow. We will therefore estimate potential cash flow by refinery, focusing not only on operating profit but also on capital requirements.

Deliverables

Subscribers to this study will receive, as a minimum, analysis and discussion of the following issues:

- ◆ Individual refinery ranking by quartile and region for competitiveness and survivability
- ◆ Forecast of demand for gasoline, kero/jet, diesel, and No.2 fuel oil
- ◆ Estimates of investment ranges required for each refinery to meet proposed sulfur regs
- ◆ Identification of additional regulation barriers (loss of grandfather status, new regional emission regulations, etc) that could increase investment requirements for refineries
- ◆ New investment requirements to phase out MTBE in reformulated gasoline
- ◆ Profitability scenarios (based on crack spreads) and costs (fixed and variable) for each refinery
- ◆ Current and future refinery capacity (including: refinery expansion, estimates of the potential for increased capacity via “creep” and debottlenecking, and refinery shutdowns).
- ◆ Based on projected profitability and cash flow requirements, ownership, integration, crude support agreements, and recent investment, identify which refineries are likely to invest in new capacity and which are likely to shut down.
- ◆ Profitability of investments to meet proposed regulations based on either investment in processing or selling/shutting down the refinery
- ◆ Effect of forecasted capacity changes on refinery profitability
- ◆ Changes in regional supply (by PADD and sub-PADD) with emphasis on changes in inter-PADD supply
- ◆ Outlook for imports to meet any projected shortfall in domestic supply of gasoline and middle distillates (since proposed low-sulfur diesel specifications are so low, current importers of diesel either will be forced to invest in processing or exit the U.S. market).
- ◆ Discussion of technologies to meet proposed regulations
- ◆ Pipeline rationalization pressures (crude pipelines) and investment opportunities (product pipelines)

ABOUT PACE

THE PACE CONSULTANTS INC. has served the petroleum, petrochemical, chemical, and utility power generation industries with supply/demand/pricing forecasts and strategy studies since 1957. In addition to its continuing subscription publications which include *The Pace Petroleum Coke Quarterly*, *Pace Petrochemical Service*, *Pace Refining Outlook*, and *The Hodson Report*, in recent years the company has issued reports on topics such as California refining, the bottom of the barrel, Gulf Coast power forecasts, MTBE removal, and propylene economics.

FOR INQUIRIES, PLEASE CONTACT . . .

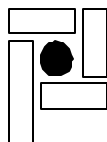
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