

World Fuels TODAY

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REFINING INDUSTRY DEVELOPMENTS • AIR & WATER REGULATION • BUSINESS NEWS • ANALYSIS

October 14, 2002

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TODAY'S TOP STORY:

● Valero Selects Mix of Desulfurization Options to Meet Tier 2 Gasoline Regs

Valero has made its technology selections for meeting Tier 2 U.S. gasoline sulfur regulations, selecting CDTECH's CDHydro/CDHDS technology for grass-roots plants that will be built at five refineries and Axens' Prime G+ for conversions. At least one Axens unit is certain; the technology will be deployed at Valero's Paulsboro, N. J. refinery.

John Hohnholt, the company's senior vice president of development and technical support, and a team of engineers began seriously studying gasoline desulfurization options some two years ago. Phillips' S-Zorb technology was not yet on-line at the time. CDTECH and IFP offered technologies that were commer-

(click to continue...)

Today's Feature:

EIA: New Product Specifications Will Restrict Refinery Operations, Trim Supply

Changing product specifications are creating a much more restrictive world for refinery operations, according to a top analyst at the U.S. Energy Information Administration (EIA).

Clean fuels regulations won't, however, significantly change crude oil purchasing patterns, said EIA's Joanne Shore, who noted that many refineries have already made commitments to more-difficult-to-process heavy crude by investing in additional bottoms capacity.

"The major market implications of the product specification changes are not going to be on crude oil demand as much as on the loss of supply capability from the refineries," Shore told attendees at the recent Hart World Fuels Conference in Washington, D.C.

Shore noted that processing capacity changes chronicle the decline in crude quality since the mid-1980s. Coking capacity has increased 56%, followed by

hydrocracking capacity, which is up 37%. Refiners that have already invested to cope with changing crude quality now face further investments to produce cleaner fuels.

Shore called the Tier 2 gasoline rule the "easiest" challenge. The ultra-low sulfur diesel rule is another matter, as is the trend towards lower aromatics in both gasoline and diesel. "Oxygenate requirements in RFG may be removed, but with state MTBE bans and companies concerned over consumer liability, the industry may very well be dealing with less MTBE and more use of ethanol.

"The Mobil Source Air Toxic Rule (MAST) allowed no backsliding on toxics emissions, locking refiners into their 1998-2000 baselines. With the state bans of MTBE and the potential use of ethanol, which increases toxics, meeting MSAT will require processing changes

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World Fuels Today is published daily by Hart Publications, a division of Chemical Week Publishing, L.L.C. Editorial offices: 1201 Seven Locks Road, Suite 300, Potomac, MD 20854, USA. Phone: (1) 301-354-2030 FAX: (1) 301-424-7260

POLICY UPDATE:

USA

Federal

Regulatory Activity:

California Rep. Henry Waxman (D), an outspoken critic of ethanol, introduced a 'motion to instruct' related to two provisions in the renewable fuels standard (RFS) package last Thursday on the House floor, his spokesman, Phil Schiliro, confirmed to *WFT*.

Waxman wants the House conferees to go on record opposing providing product liability exemptions to ethanol and MTBE, and the entire RFS, Schiliro said. The motion to instruct, scheduled for this Thursday, happens whether an energy bill is passed or not, he noted.

As of presstime Friday, there was no progress on a final piece of U.S. energy legislation. Senate Majority Leader Tom Daschle (D-S.D.), speaking on *Williams Energy News Live*, said he still wants a bill and that negotiations will continue this week.

Regulatory Activity:

U.S. EPA recently awarded four grants totaling more than \$3.5 million to four universities to study the potential consequences of global climate change on U.S. ecosystems, the agency announced last week.

The grants were awarded through the Science to Achieve Results program.

Regulatory Activity:

U.S. EPA kicked off a new program in Texas that will eventually replace 500 pre-1993 model year diesel school buses in the Dallas/Fort Worth area over the next three years.

The new program, "Adopt A School Bus," essentially seeks donations from local sponsors to help school districts purchase new buses or retrofit existing buses.

Georgia

Regulatory Activity:

The Georgia Petroleum Council (GPC) is warning that unless local authorities align 30-ppm gasoline introduction with federal standards, Atlanta will be facing severe gasoline shortages.

As part of the state's plan to meet the one-hour ozone standard in Atlanta, Georgia's Environmental Protection Division is requiring the introduction of a 30-ppm "Georgia Phase II" gasoline beginning April 2003. The Atlanta 30-ppm requirement comes three years ahead of federal requirements.

The GPC said it understands the need to bring clean fuels to the city, "but Georgia's unique Phase II gasoline specifications — and the 2003 implementation deadline for the fuel's delivery — pose significant problems for refiners who supply the Atlanta market."

In the spring of this year, the GPC contracted a fuels survey to determine the industry's capacity to manufacture the Phase II gasoline. That study determined that there is potential for a "significant" shortfall in supply at the onset of the program in April 2003.

"The survey report suggests the supply picture will improve markedly within a year (by April 2004), but even a short-term supply disruption is a major concern," the GPC said. "Therefore, while our member companies continue to search for additional sources of Phase II low-sulfur gasoline, we are asking the EPD to consider modifications to the gasoline marketing rule."

NEWS FROM AROUND THE WORLD:

● Valero Selects Mix of Desulfurization Options to Meet Tier 2 Regs...*from page 1*

cially proven, albeit in the early stages.

After two years of evaluations, the Valero team concluded that CDTECH had the edge on capital costs, hydrogen consumption and octane loss and IFP had a level of experience with fixed bed technology that the refiner/marketer felt comfortable with.

Not all refineries have had final technology selections. Houston, an important part of Valero's portfolio, is one facility that has yet to receive a commitment. The refinery in Denver is another question mark. Unlike Houston, that plant is in a geographic phase-in area, and Valero has a longer timeframe for making a decision.

Under consideration, said Hohnholt, is the installation of a diesel hydrotreater for diesel compliance. If need be, the refinery could cut the end-point of the gasoline to get gasoline sulfur in compliance. If supplies are short, the deficit can be made up from McKee.

Some of Valero's refineries are either on spec or facing additional evaluation, Hohnholt said. The California plants already meet California Air Resources Board specs, which require low sulfur to meet stringent gasoline performance standards.

"At Paulsboro, Axens' Prime G+ technology will process a blend of high-

sulfur FCC naphtha and light coker naphtha," said Jean-Luc Nocca, director of technology and marketing for Axens North America. "The revamp will reduce capital costs. Axens has now licensed more than 55 Prime G+ units, many for revamps, which appear to be attractive for refineries to meet the regulations."

In other desulfurization news, Sinclair Oil announced that it will license ExxonMobil's SCANfining gasoline desulfurization technology at its 60,000-b/d Tulsa, Okla., refinery.

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● California Program Would Delay Fuel Cell Vehicle Commercialization, Analysts Warn

Fuel cell vehicle commercialization will likely be pushed further into the future if automakers fail to win a court battle over California's zero-emissions vehicle (ZEV) program, according to financial analysts at New York-based Fitch Ratings.

Reason: Original equipment manufacturers (OEMs) will have to shift their focus to more fully adopt hybrid vehicle technology, Fitch explained.

California's ZEV program was recently amended to allow automakers to sell "partial" ZEVs (hybrids with at least 30% better fuel economy standards than the regulations set), which would earn them credits under the ZEV program.

But automakers, and now the Bush administration (*see WFT 10/11/02*), argue that the program is illegal because it pre-empts federal law by attempting to set cor-

porate average fuel economy standards, which both argue is, and always has been, a function of the federal government.

If the autos convince the courts that they're right, fuel cell vehicle development will continue unfettered. But if their efforts fail, the 'hydrogen economy' will take a back seat near-term to hybrid vehicle development, the analyst said.

"Fitch believes that if the California standards are upheld, the hybrid vehicle will become the short-term winner over fuel-cell powered vehicles" and investors would see the development of viable fuel cell vehicles "pushed out further into the future as the domestic OEMs would be forced to shift their efforts to hybrids over the near term to meet the revised California standards," Fitch said.

What's more, domestic and European OEMs would be put at a "rela-

tive disadvantage" to Japanese OEMs in the near term, Fitch said. U.S. OEMs (GM and Ford) are focused on development of the fuel cell and European OEMs are focused on diesel engines. If mass quantities of hybrids will be needed in California, Japanese OEMs (Toyota and Honda), which have a strong focus on hybrid vehicles, will be raking in the cash while domestic automakers struggle to catch up, Fitch noted.

"Clearly there will be winners and there will be losers," commented Chris Sturve, Fitch's director. But when it's all said and done, he believes the California laws will be overturned. "And that is a positive for future fuel cell development," Sturve said.

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● Hellenic Petroleum to Grab Stake In Montenegro Fuel Supplier

Greece's Hellenic Petroleum will buy a 54% stake in Jugopetrol AD Kotor, Montenegro's number one fuel supplier, the company announced late last week.

Jugopetrol doesn't own any refineries, but the company owns several storage

terminals, retail outlets and exploration and production rights in Montenegro.

In other news, Hellenic announced half-year 2002 profits of \$68 million, a 23% increase on earnings during the same period in 2001.

While international refining margins took a significant chunk out of earnings, figures were boosted by improved profitability of heating oil in the first half of this year, the company said.

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FUEL ECONOMICS:

Crude Softens as Market Recovers from Storm Effects

The November crude futures contract on the New York Mercantile Exchange settled below \$29/bbl for the first time in five weeks on Oct. 10, as traders expected to see much of the lost crude stocks replenished in the next set of industry inventory reports.

The potential effects of the storms had been built into the futures prices over the past two weeks, and prices softened as Gulf production and refining return to normal without much trouble.

The most recent sets of inventory numbers mainly reflect the effects of bad weather in Gulf of Mexico and do not provide much in the way of fundamental indicators.

Reporting agencies showed huge stock draw downs to already low inventory numbers due in large part to reduced production on the Gulf Coast due to Tropical Storm Isidore and Hurricane Lili late last month and earlier this month.

The American Petroleum Institute (API) said supplies fell another 2.6 million bbls, to 273.3 million bbls, after a showing 14-million bbl draw the week before. The U.S. Energy Information Administration backed up the report of dwindling inventories, reporting a stock level decline of 4.7 million bbls, to 270.5 million bbls — about 12% below year ago levels. It also said stocks fell 10 million bbls the week prior.

The storms caused production to drop by 388,000 b/d, to 4.8 million b/d — more than 16% off of the production seen in the same week last year, EIA reported.

The storms hampered overseas deliveries to Louisiana and Houston. As a result, imports fell by 1.04 million b/d, to 7.7 million b/d, API reported. EIA's data showed imports dropped by only 318,000 b/d, to around 8.2 million b/d, due to weather-related logistical snarls in and around the Gulf.

Refinery utilization and input numbers really took a hit on refinery shutdowns earlier this month. Throughput fell by 7 percentage points, to 82.9% of capacity, according to EIA. API reported refinery utilization rates dropped 6.8 percentage points, to 84.7% of capacity.

Refinery input numbers fell in accordance with lower throughput rates. Refinery inputs dropped by a huge 1.1 mil-

lion b/d, to 13.7 million b/d, EIA reported. API reported an input fall of 1.139 million b/d, to 14.086 million b/d.

Crude prices also softened due to geopolitical events of the week. The "war premium" also shrank after President Bush's Oct. 7 speech wherein he outlined his reasons for possible military action in Iraq, but at the same time appeared to have lessened his taste for war. Iraq later invited the U.S. to take a look at sites where it suspects weapons of mass destruction were being made.

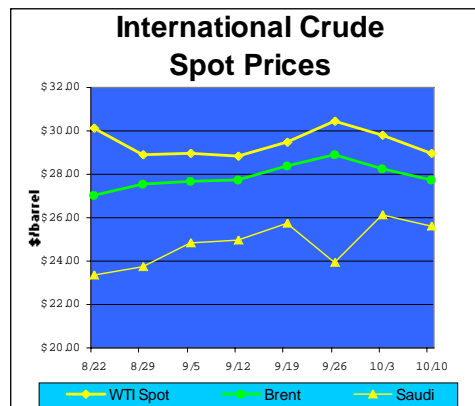
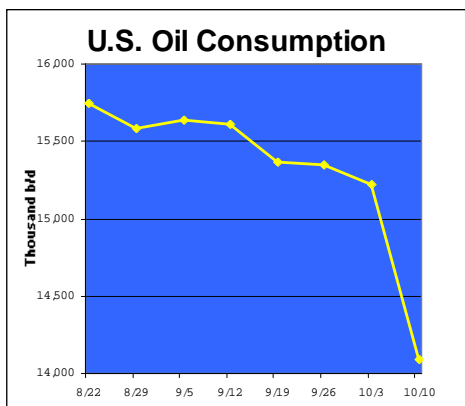
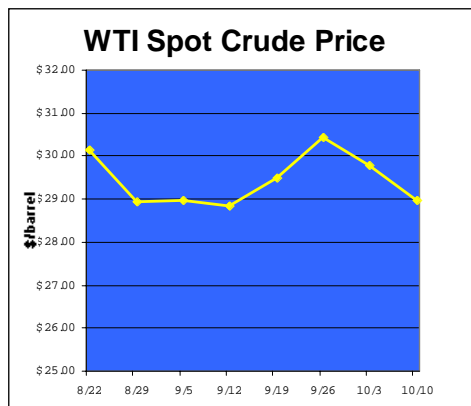
The OPEC basket price also fell below \$28/bbl for the first time in over a week. Traders took great interest in the OPEC basket price as the cartel had indicated it would raise output if its crude prices stayed above \$28/bbl for more than 20 days at a time.

Additionally, OPEC's over-production rose again in September. OPEC-members, excluding Iraq, produced 2.34 million b/d more than their self-imposed target of 21.7 million b/d, *Dow Jones* reported. OPEC 10's production rose 450,000 b/d, to 24.05 million b/d in September.

— *Suzanne McElligott*
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In other sectors...

- NYMEX crude closed at \$29.43, up 36 cents on the day.
- IPE Brent crude finished the day up 26 cents, at \$27.83.
- NYMEX heating oil closed at 78.9 cents, up 0.6 cents on the day.
- Unleaded gasoline closed at 82 cents on the NYMEX, up 1.3 cents.



TODAY'S FEATURE:**EIA: New Product Specs Will Restrict Refinery Operations...from page 1**

and possibly yield losses to stay at baselines established when using MTBE. DI [distillation index] continues to be an issue. Some believe that the switch to ethanol may require more stringent DI standards than currently being used. In total, the changing product specifications are creating a much more restrictive world for refinery operations.”

In California, the question is making enough CARB gasoline without MTBE. “Another 50,000-100,000 b/d of alkylate or iso-octane would help, but will it be found?,” she asked. “On the East Coast, the challenge is MSAT and the MTBE ban. Getting back to the toxic levels achieved when using MTBE requires some refiners to both reduce sulfur and benzene and other aromatics. For some of these refiners, this may be very difficult, and some of these refiners are already using a light-sweet crude oil slate.”

More Changes Ahead for Crude Buyers

The demand pattern for light or heavy crude oils is not expected to change significantly over the next 10 years, Shore stated. “Refiners using heavy crude oils are not likely to abandon their processing investments when making changes to meet new product specifications,” she said. “Refiners using light-sweet crudes should be able to find adequate feedstocks at reasonable prices.

Heavy and light crude oils have their drawbacks. “Heavy crudes produce a high sulfur and, in some cases, heavy metal coke that may become more difficult to market in the future,” Shore cautioned. “This could lead to the need to gasify the coke,

which increases the overall cost of processing the heavier crude oil. These crude oils have more aromatics and higher sulfur in intermediate streams and can make achieving the ultra-low sulfur products much more challenging.”

Light-sweet crudes should become more available in the mid-term, she continued. Using these crude oils can simplify processing, but the price premium on light crude oils “can sometimes be high.”

Product specification changes will have less of an impact on crude markets and more of an impact on refineries, Shore warned. “First, there is likely going to be a trend toward more refinery outages as a result of the increased complexity and decreased blending flexibility. Losing one unit will likely have a greater impact on production than in the past,” she said. “More units, higher severity operations and more complexity mean more things that can go wrong, and hence more outages. More outages mean that the industry will see some decline in maximum achievable utilization. Furthermore, the investments needed to simply stay in business are large, and in the short term, we may see an acceleration of shutdowns. We recognize the challenging choices refiners have over the next few years, involving choices of crude and associated bottoms processing choices, and the magnitude of investments required to deal with the changing product specifications in order to simply stay in business.”

— Carol Cole

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