ASPHALT SUPPLY IN A VOLATILE OIL WORLD

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Issues to be Discussed

- Crude Oil Supply
- Crude Oil Pricing
- Refining Capacity
- Products Supply
- Products Pricing
- Future of the Industry
Crude Oil Supply/Demand
**Crude Oil Supply**

2007 World Crude & Gas Oil Production
Millions of Barrels Per Day

- FSU: 12.6
- OPEC: 36.7
- Non-OPEC: 36.6

Total: 86 MMB/D

Source: US DOE

2008 Forecasted World Crude & Gas Oil Production
Millions of Barrels Per Day

- FSU: 13.0
- OPEC: 37.3
- Non-OPEC: 37.2

Total: 87.5 MMB/D

Source: US DOE
Crude Oil Supply

- The world will rely on OPEC to increase production to meet the 2008 Demand
- Only Saudi Arabia, Kuwait, & UAE have notable reliable spare capacity
- Nigeria and Iraq have capability to increase supply, but are likely to remain unreliable
- Non-OPEC supply vs. projections have disappointed in recent years
- Canada is becoming increasingly important
Crude Oil Demand

- World demand has risen by 8.4 MMBD (10+% ) over the past 5 years
- 2008 Projected Demand at 87.5 MMBD, within a couple million barrels per day of the world daily deliverable capacity
- Vulnerable to supply disruptions caused by storms, accidents, breakdowns, political unrest
- Driven by developing countries
Crude Oil Demand (MBPD)

Source: Goldman Sachs/IEA
Crude Oil Prices
Light-Heavy Crude Prices

- WTI
- MAYA
- BOW
- WTI-BOW
Refining
Topping Refinery

CRUDE OIL

DU

650- GASES

NAPHTHA AND

GASOIL FEEDSTOCKS

650+

Not A Refinery Really Just A Crude Distiller

6OIL or ASPHALT (if heavy crude)
Simple Refinery

“Hydroskimming” Refinery, many exist all over the world

CRUDE OIL

650- GASES

NHT CRU

KHT

DHT

650+

MOGAS

JET/KERO

NO.2

6OIL or ASPHALT (if heavy crude)
U. S. Refining Capacity

Last New U. S. Refinery Built in 1976
Source: Oil & Gas Journal
U. S. Asphalt Refining Capacity

Production Range: 600 B/D to 60,000 B/D

Source: Oil & Gas Journal
U. S. Refining Coking Capacity

Source: Oil & Gas Journal & EIA
Historical Asphalt Supply/Demand

Millions Tons - Liquid

Source: Oil & Gas Journal/Asphalt Institute
Crude/Product Prices

WTI
Gasoline
Asphalt
GC 3%
## Coking Economic Example

### Gasoline/Diesel Pricing
- **DEC., 07 Price:** $98.50/BBL
- **Less Distribution:** $6.00/BBL
- **Net to Refinery:** $92.50/BBL
- **70% Coker Yield:** 21,000 BPD
- **Gasoline/Dsl Net:** $1,942,500

### Kansas City Asphalt Pricing
- **DEC 07:** $50.90/BBL ($45/Ton): $8.04/BBL
- **Asphalt Make:** 30,000 BPD
- **Asphalt Net:** $1,285,800
- **Lost Value:** $656,700 per day

*Source – Poten & Partners*
Current Coking Economic Example

Continued

- $656,700 per day added margin

- $1 Billion / $656,700 = 1,523 days (4.2 years payoff)
U.S. Coker Construction Projects 2005 - 2011

- Planning, Engineering, or Construction Phase
- Total Refineries: 360 MB per day
- Asphalt Refineries: 197 MB per day

Source: Argus Asphalt Report
FUTURE OF THE INDUSTRY
Current Realities

- Crude oil and refined products are a part of a global market
- Crude production is near maximum rates based on existing infrastructure
- U.S. refining running at maximum capacity (less turnaround & unplanned down time activities)
- No new refineries in the near term
- Many refinery expansions planned
- Asphalt must keep pace with conversion feed values to encourage production
- It’s all about hydrocarbon value
Factors Influencing Asphalt Price

- Absolute price of crude (WTI)
- Light/Heavy crude price differential and heavy crude availability
- Relative prices of other refined products (gasoline, 6 Oil)
- Refinery configuration/reliability
- Logistical costs
- Supply/demand
Future For Asphalt

- Many refinery expansion/coker projects planned
- More heavy crude being run
- Asphalt is more expensive in a $90.00+ crude world
- Asphalt has to trend faster and be more competitive with product/crude prices
- Transportation costs rising – Rail, Barge, Terminalling
- High volatility will dominate the market
QUESTIONS