Behind the Gas Pump:
Implications of Our Dependence
on Mideast Oil

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AT ISSUE

Looking to Saudi Arabia

In the event of a war or other disruption to oil supplies, the United States would depend on Saudi Arabia to prevent a price shock like the one after the Persian Gulf war.

Dependence on foreign oil continues to increase...

Net imports of crude oil as a percentage of consumption

...while strategic reserve capacity grows less adequate...

Number of days' worth of foreign imports in Strategic Petroleum Reserve days

...and Saudi Arabia could add the most capacity in case of a crisis

Surplus capacity in OPEC countries

fourth quarter 2002

Saudi Arabia

Iraq

U.A.E.

Kuwait

Iran

Nigeria

Algeria

Qatar

Indonesia

Libya

Venezuela

Sources: Energy Information Administration, Office of Strategic Petroleum Reserve, Department of Energy

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Surplus capacity in OPEC countries, fourth quarter 2002

- Saudi Arabia
- Iraq
- U.A.E.
- Kuwait
- Iran
- Nigeria
- Algeria
- Qatar
- Indonesia
- Libya
- Venezuela

Additional capacity after 90 days

Million barrels per day above current production
U.S. Oil Consumption Will Continue to Exceed Production

(Millions of Barrels per Day)
Dependence on Foreign Sources of Oil

(Millions of Barrels a Day)

Consumption

Net Imports

1970  80  90  00

20  15  10  5  0
U.S. Economy is More Energy Efficient (Energy Intensity)
Primary Energy Use

Quadrillion Btus

Energy Use at Constant 1972 E/GDP

Actual Energy Use

1950 60 70 80 90 00 10 20

180
160
140
120
100
80
60
40
20
0
Energy Consumption per Dollar of Gross Domestic Product, 1949-2001
U.S. Per Capita Oil Consumption: 1970–2000

(Barrels per Year)
Oil Prices Have Risen Sharply

Monthly Spot Price of West Texas Intermediate Crude Oil

(Dollars per Barrel)

1970 75 80 85 90 95 00 01

Real Prices
Nominal Prices
FIGURE 5.7

Looking for Oil
Images generated by supercomputers allow geologists to locate small pockets of oil or gas.

Drilling Technology
Old drills were limited to a single vertical well, but newer wells can drill horizontally or vertically in different directions to tap small pockets of oil.

Transporting the Oil
A 14-inch pipeline connects the Alpine field to the Trans-Alaska Pipeline, about 60 miles west of the Arctic National Wildlife Refuge, a site proposed for new drilling.

Using the Latest Drilling Technology to Reduce Environmental Damage
Oil drilling sites like those in the Alpine field on Alaska's North Slope are using cutting-edge technology in hopes of reducing environmental damage.

Recent advances are lessening the industry's impact on the fragile Arctic ecosystem.

Transporting the Oil
Today's drills are sophisticated, computer-controlled machines that send information about the exact position of the drill bit and properties of the rock to the drilling team.

Chapter 5 - Energy for a New Century: Increasing Domestic Energy Supplies
The Evolution of a Drill Site: 1970 to Present

1st Generation (1970) 65 acres
2nd Generation (1980) 24 acres
3rd Generation (1985) 18 acres
4th Generation (1995) 8.7 acres

Scale: 1' - 500'
Regional Reserves Distribution

Relative Petroleum Potential: Original
Total Wells Drilled Each square [■] equals 50,000 wells.

<table>
<thead>
<tr>
<th>REGION</th>
<th>Original %</th>
<th>(1992) %</th>
<th>Billion bbls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>1%</td>
<td>1%</td>
<td>6</td>
</tr>
<tr>
<td>Europe</td>
<td>2%</td>
<td>1%</td>
<td>14</td>
</tr>
<tr>
<td>Asia</td>
<td>6%</td>
<td>4%</td>
<td>44</td>
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<tr>
<td>Africa</td>
<td>7%</td>
<td>6%</td>
<td>61</td>
</tr>
<tr>
<td>United States</td>
<td>11%</td>
<td>3%</td>
<td>26</td>
</tr>
<tr>
<td>Latin America</td>
<td>11%</td>
<td>2%</td>
<td>120</td>
</tr>
<tr>
<td>Russia</td>
<td>12%</td>
<td>6%</td>
<td>57</td>
</tr>
<tr>
<td>Middle East</td>
<td>50%</td>
<td>67%</td>
<td>660</td>
</tr>
</tbody>
</table>

100% 100% 990

Middle East

Current Producing Oil Wells
Canada 40,670 Europe 9,660 Asia 64,250 Africa 7,060 United States 600,200 Russia 41,880 Latin America 148,990 FSU 6,290

Average
BOPD/Well
Canada 35 4,000 Europe 250 Asia 1,000 Africa 12 United States 50 Russia 300 Latin America 70 FSU 7,000
