THE ENERGY OUTLOOK

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Tables 1 and 2 give the outlook for oil and natural gas, which substitute for each other in many uses. The prospect is really not bad. Steady growth from aggressive exploration and development is expected. That will be enhanced if there is decontrol of natural gas prices.

Crude oil supply increased in 1980. We expect it to decline a little in 1981, but the outlook is more optimistic now that we have decontrol. We are very active in exploration and development in oil and natural gas, and pleased with our success.

Jet fuel is the product of most interest to aviation. Table 3 makes clear that it is a small part of the total energy picture. The outlook for aviation fuels is pretty stable.

Table 4 shows our projection for revenue passenger miles. Available seat miles are consistent with earlier discussions of load factors.

In Table 5 are projections of consumption patterns in the commercial market, and military consumption, in thousands of barrels (42 gallons) a day. The forecast growth rates indicate that we do not expect the rapid increases of recent history to continue. In 1980 and 1981, economic conditions caused consumption to decline, but the main factor is that we expect more efficient aircraft in the future, assuming that the industry can command financing at reasonable rates.

Table 6 gives jet fuel prices. What will happen in the future mainly depends on the Middle East. OPEC countries produce about half of the world's oil supply, and the Middle East is a major part of OPEC. The region is unstable for many reasons. For one, it is the heart of the OPEC cartel, which has been known to do nasty things. It also is an area where communist influence is increasing. Libya, Syria, Iraq, Afghanistan, Yemen, and Ethiopia are all countries with significant communist influence. There is more than one kind of communist influence. Syria and Iraq both have the orientation, yet are very angry with each other. Syria is siding with Libya against Iraq. The current war with Iran raises another problem.

Table 1. U.S. natural gas supply (trillions of cu.ft.)

	1978	1979	1980	1981
Domestic prod'n(dry)	19.1	19.5	19.5	19.4
Imported Canadian	0.9	1.0	0.7	0.7
Imported Mexican	-	-	0.1	0.1
Imported LNG	0.1	0.3	0.1	0.2
Synthetic gas	0.3	0.2	0.2	0.2
Supply adjustments	-0.3	-0.2	-0.2	-0.2
Total	20.1	20.8	20.4	20.4

Table 2. U.S. crude oil supply (millions of BBLS/day).

	1980 Projected	Change from 1979	1981 Forecast	Change from 1980
Domestic crude oil	8.7	+ 2%	8.5	-2%
Domestic NGL	1.5	-12%	1.5	-3%
Imported crudo oil	5.3	- 5%	4.8	-9%
Imported products	1.6		1.7	+4%
Processing gain	0.5	0%	0.5	-6%
Total	17.6	- 7%	17.0	-3%

Table 3. Refined product demand (millions of BBLs/day).

	1980 Projected	Change from 1979	1981 Forecast	Change from 1980
Gasoline	6.6	- 6%	6.4	-3%
Kero-distillate	3.1	-12%	3.0	-3%
Jet fuel	1.1	- 2%	1.0	-3%
Residual fuel	2.5	-10%	2.4	-5%
Other products	3.8	- 6%	3.7	-3%
Total	17.1	- 8%	16.5	-3%

Table 4. Forecast of airline operations.

	1979	1980	1981	1985	1990	2000
Rev.Pass.Mi. (10^9)	284	270	260	318	379	498
% change/yr.	+12	- 5	-3½	+ 5	+3½	+ 3
Avail.seat mil. (10^9)	434	447	430	513	603	782
% change/yr.	+ 9	+ 3	- 4	+4½	+ 3	+2½
Load factor (%)	66	60	61	62	63	64

Table 5. Forecast of jet fuel consumption.

	1979	1980	1981	1985	1990	2000
Commercial (10^3 b/d)	809	787	752	848	917	1021
% change/yr.	+ 2	- 3	+4½	+3	+1½	+ 1
Military (10^3 b/d)	255	267	272	280	282	282
% change/yr.	+ ½	+ 5	+ 2	+ ½	0	0
Total (10^3 b/d)	1064	1054	1024	1128	1199	1303
% change/yr.	+1½	- 1	- 4	+2½	+ 1	+ 1

Table 6. Jet fuel price history for all carriers.

	1976	1977	1978	1979	1980	Dec. 1980
¢/gallon	31.7	36.2	39.2	57.4	89.4	93.5

Table 7. OPEC supply (millions of BBLS/day).

	Iran	Iraq	Other OPEC	Change
Late 1978	6	3	22	
Early 1979	0	3	25	-3
Late 1979	3	3½	24½	+3
Early 1980	1½	3½	22½	-3½
Late 1980	0	0	24	-2½
Early 1981	1	1	23	+1

Middle Eastern countries do not like one another for territorial reasons. In the past Iran has taken some territory from Iraq, including three islands in the Strait of Hormuz. Iraq makes the retaking of those territories a major objective in its war. Religion is still an important reason for conflict. Israel has had a state of war with its Arab neighbors for more than 30 years. Christians are still battling Moslems in Lebanon. Two major Moslem sects, the Sunni and the Shiites, are having great difficulty living together peacefully. Take all these ingredients and mix them well, and you must have trouble in the future. That is the prospect as we see it.

Table 7 gives some recent history from the supply side. It will clarify what subsequently happened to prices. Late in 1978, before the Iranian revolution, Iran and Iraq were producing six and three million barrels a day respectively. Other OPEC countries put out 22 million barrels a day. Then came the Iranian Revolution. Iran went from six million barrels to zero for 68 days. The rest of OPEC increased production, leaving a net reduction in worldwide supplies of three million barrels a day - a five percent reduction. Coinciding with that supply reduction (based upon what we know about demand elasticities) was something like a fifty percent increase in real prices.

Late in 1979, Iran came back with its production, but far below earlier levels. Losing native technicians was part of the reason. Of course, all the expatriate technicians were expelled right away, including many from our company. Before the Iranian revolution we had 15 percent of our worldwide liftings from Iran, so we were a company hard hit by the revolution.

By late 1979 there was almost a full restoration of supply reductions. Nevertheless, prices continued to climb, because in late 1979 there was the taking of the American hostages. The world expected more trouble in the Middle East. There began a massive stock building program, not only in the United States but all through the world. Jobbers, dealers, and large consumers of petroleum products also began building stocks. Thus, despite the restoration of supplies, prices continued to climb.

Early 1980 saw the beginning of more problems in Iran. Iran was losing its productive capability. There was a worldwide reduction of three and one-half million barrels a day. Then came the outbreak of the Iran-Iraq war in September 1980, and the world sustained another two and one-half million barrels a day reduction. During the time of that war there was a reduction of six million barrels a day worldwide. That was larger than the worldwide reduction during the Iranian revolution. That reduction in supply had to affect the market. Unfortunately, these effects are being confused with the effect of decontrol of oil.

There was an oil shock, making that commodity more scarce and prices had to go up. That is a far more logical reason than decontrol for the increase in refined product prices that we have seen recently. However, we are now having some resumption of production from both Iran and Iraq, restoring some of that loss.

The Strait of Hormuz is an absolutely critical tanker route for oil. In 1979 fully one-third of the world supply came through the Strait of Hormuz. Now part of the dispute between Iran and Iraq are three islands in that channel, and the shipping channesl are on either side of those three islands. The serious threats of escalation in this area could be mining that Strait, or blockading it, which would cut off the supply.

Another dangerous situation is the limited number of loading terminals in the Persian Gulf. The damage so far in the Iranian-Iraq war had to do with refineries and pipelines. The damage to refinery facilities at Abadan and Basra is not a serious problem for world oil supply. The important thing from Iran or Iraq is crude oil, not refined products. Refined products are important to their own economies, but crude oil is important to the rest of the world. The Iranian loading terminals at Kharg and Laran Islands are pretty much undamaged. The Iraqi terminal at Basra has some damage but the construction companies that built the facilities think that they could be operating fully by the end of 1981 if hostilities do not intensify. There seems to be a kind of unwritten truce not to attack one another's loading terminals. Pipeline damage does interrupt supplies, but it is easy to repair pipelines, at least compared with loading terminals which tend to be unique facilities. Pipelines use standard equipment and can be repaired with already fabricated parts brought in from other parts of the world.

Kharg Island is the important Iranian loading point, and there are also the Shatt-al-Arab and the Basra loading points. There are also producing fields in the area around Basra. The pipeline at Basra is reversible and they are now reversing the flow toward rather than from Kirkuk. From Kirkuk oil is moving through two pipelines into the Mediterranean. One goes through Turkey and the other through Syria, with a total capacity of about two million barrels a day. Therefore Iraq can before long increase its production, currently rated at about a million barrels a day, to two million barrels. It is not clear that Iran can do that well but there is a prospect of improved supplies in the near future if hostilities do not intensify.

Table 8. Primary U.S. petroleum stocks, end of September.

	1980 10^6 BBLS	1979 10^6 BBLS	Inventory difference
Gasoline	260	230	5 days
Distillate	234	227	3 days
Residual oil	92	90	1½ days
Jet fuel	36	27	12 days
Crude oil	391	319	5½ days
	1014	893	8 days

Source: American Petroleum Institute

Prices increased recently in the United States. Table 8 shows the level of primary stocks, including secondary stocks in the hands of jobbers and dealers, or tertiary stocks in the hands of final consumers. The next column shows the stock situation in the previous year. The difference between these two stocks divided by how much was consumed per day expresses the difference in terms of days of supply. This is convenient since 1979 was a more normal year with respect to stocks.

On the eve of the Iran-Iraq war we had fully eight days of additional stocks over and above normal. By contrast, on the eve of the Iranian revolution, which came as a surprise to everyone, we had nowhere near such a comfortable stock position and the subsequent price increases came more quickly and violently. Stocks can only hold off the tide for so long. Prices eventually will

Table 9. Primary oil stocks and gasoline prices.*

	Sep 26 1980	Nov 7 1980	Dec 5 1980	Jan 9 1981	Jan 16 1981	Jan 28 1981
Stocks**	8	4	3	1	0	- 1
Prices***	119	119	121	124	126	129

* Sources: American Petroleum Institute and the Oil & Gas Journal.
** Difference in stocks compared with previous year expressed in days of supply.
*** Pump price of gasoline in cents per gallon.

rise, as shown in Table 9. It shows eight days' supply difference between 1980 and the previous year, and the average price of a gallon of gasoline as reported by the Oil and Gas Journal, $1.19. Nevertheless, we had comfortable supplies even a month or so after the outbreak of the Iran-Iraq war. Beginning in December, there were lesser but still comfortable supplies, and some movement in prices. Of course we also had inflation during this period.

Beginning in January, stocks were approaching the previous year's level. Prices were on the move. In the middle of January stocks were at the previous year's level and prices increased some more. At the end of January when the decontrol decision was announced, the price of gasoline had increased ten cents a gallon from the eve of the Iran-Iraq war. It took about three and one-half months, but the full effects of the Iran-Iraq war were being felt when decontrol was instituted. The time lapse for the effects of the Iranian revolution was a little shorter - about two months - but certainly it is to be expected that prices will increase in the wake of oil shocks. The Iran-Iraq war was certainly a shock, even if somewhat anticipated. Prices also increased after the decontrol decision but embodied in the decontrol decision was an accelerated phase-in of the windfall profits tax (WPT). Overnight the windfall profits tax went from about two and one-half cents a gallon to seven cents a gallon, a four and one-half cent increase. The price increases in the wake of the decontrol-cum-WPT decision are about six cents, the magnitude of the WPT increase. In fact there has been some settling back of prices in the Chicago area, reflecting the partial resumption of production in Iran and Iraq.

Table 10 shows the taxes on motor fuel in the Midwest. These data are updated almost monthly because the tax situation is changing in various states. Illinois, especially Cook County, has much higher tax rates than neighboring states. Fully half of the pump price goes to various governments, and that is only a partial total since it does not include taxes on the retail end of the distribution system.

By contrast, Table 11 shows how much average profit an oil company makes. Domestically, a typical oil company makes about three and one-half cents a gallon. Clearly, that is small compared to the tax portion.

Table 12 shows some of Standard Oil's situation with direct taxes increasing at a very rapid rate, and those taxes tend to be passed along. If those taxes were not increasing so rapidly we could be increasing our exploration and development program by the rate that the taxes are going up. Of course, boosting supply is the solution for energy problems.

What is the energy problem? The problem is that oil prices are higher than they could be. The cause is the reduction in supplies. First, there

Table 10. Payments to governments by motorists (1980 ¢/gal.).

	Ill.	Ind.	Mich.	Minn.	Mo.	Wisc.
Federal excise	4	4	4	4	4	4
State excise	7½	8½	11	11	7	7
County (Cook)	2					
Sales	5	4	4			
Federal leases	3	3	3	3	3	3
State severence	1	1	1	1	1	1
Income taxes	5½	5½	5½	5½	5½	5½
Other corp.taxes	5½	5½	5½	5½	5½	5½
Payroll taxes	2	2	2	2	2	2
Divided taxes	1	1	1	1	1	1
Windfall profits tax	2½	2½	2½	2½	2½	2½
Foreign governments	26	26	26	26	26	26
Partial total*	65	63	65½	61½	57½	57½

* Not including real estate, licensing, payroll and business taxes paid by independent jobbers and dealers.

Table 11. Profit margin on sales.

7¢/gallon worldwide
3½¢/gallon domestically

Table 12. Domestic financial data for Standard Oil (Indiana).

	1980	From 1979
Net earnings	$ 1.1 billion	+34%
Revenues	$25.2 billion	+41%
Capital & exploration	$ 2.9 billion	+41%
Direct taxes	$ 1.6 billion	+83%

was OPEC, and then revolution followed by war in the Middle East. The solution now ought to be related to the cause, otherwise we are not coping with the problem. The solution obviously is to increase domestic and non-OPEC supplies.