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WORLD OIL MARKET TRENDS, 1981 AND 1982

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I. Overview

Developments in the world oil industry in the last two years have provided a textbook example of the free play of market forces. The oil market could not escape the impact of sharply higher real oil prices, sluggish economic growth and high interest rates. The combination of these factors depressed overall energy demand and encouraged and enhanced the economic attractiveness of utilizing substitutes for oil. The resulting reduction in oil demand came as no surprise but the magnitude of the decline did. We estimate world oil demand in non-communist areas fell by 4.8 million barrels per day (MM B/D) or by approximately 9 percent over the two years from 1979 to 1981. The extent of the decline was unprecedented. It was also fairly evenly distributed among the major industrial areas of the world; consumption declines ranging from 12 to 16 percent occurred in the United States, Japan and Western Europe.

The demand reduction, however, did not alone create the surplus supply conditions which have characterized most of 1981, although it did significantly contribute to them. A key factor has been exceptionally high inventories worldwide relative to both typical historic experience and current demand. The bulk of these surplus inventories were accumulated in 1979 in the aftermath of the Iranian Revolution largely in response to the perceived insecurity of Middle East oil supplies and the prospect of inventory

gain via oil price rises. Both of these incentives to accumulate inventories dissipated around mid-1981 as it appeared that oil prices would actually decline and that more than ample OPEC oil production would potentially be available, if required, despite the continuing war of attrition between Iraq and Iran.

At the beginning of the third quarter of 1981 we estimate that some 500 MM Bbl of oil in commercial inventory was in excess of normal or typical industry requirements at that time. Roughly this volume of surplus inventories existed at the outset of 1981, but its effects on the oil market were blunted in at least the first quarter of the year by the uncertainty created by the Iraqi-Iranian War.

Spot crude oil prices were also signaling an end to potential inventory gain from holding on to stocks. Moreover, high interest rates had made the cost of holding surplus oil prohibitively high for most companies, especially in light of relatively low overall company profitability. At the same time, OPEC price unity was in disarray. With spot prices substantially below most official sales price (OSP) OPEC oil, excess stocks could be relied on temporarily to wait out OPEC in the hope of price unification and, in turn, some reduction in excessively high cost oil from certain of the OPEC countries. All of these factors combined with reduced world oil demand and spare OPEC allowable productive capacity led oil companies to pursue a policy of destocking. This began in the third quarter of 1981. Normally in the third quarter oil inventories rise on a worldwide basis by between 1 to 1.5 MM B/D

in preparation for peak heating season demand in the fourth quarter. In this year's third quarter, commercial oil inventories are estimated to have fallen by 1.5 MM B/D (see Table I on page 14).

Not surprisingly, the major impact of destocking fell on the OPEC countries in the form of reduced offtake for their oil, particularly those countries whose prices were substantially out of line with the market. Thus between April and August 1981 OPEC crude oil production fell by 3.3 MM B/D or by 14 percent, with all of the reduction occurring in the OPEC countries other than Saudi Arabia, which it should be recalled maintained a consistent policy of maximizing production. The largest absolute reductions in output were experienced by the two major African OPEC producers--Libya and Nigeria--which saw their output decline from 3.2 to 1.4 MM B/D over the period, accounting for some 55 percent of the total OPEC decline as shown below:

OPEC CRUDE OIL PRODUCTION
(Million Barrels Per Day)

1981:	April	August	Difference
Saudi Arabia	10.00	10.20	+ 0.20
Iran/Iraq	2.40	1.90	(0.50)
Kuwait	0.80	0.63	(0.17)
UAE	1.57	1.48	(0.09)
Venezuela	2.20	1.96	(0.24)
Nigeria	1.62	0.71	(0.91)
Libya	1.60	0.70	(0.90)
Algeria	0.85	0.60	(0.25)
Indonesia	1.63	1.60	(0.03)
Other	1.29	0.90	(0.39)
Total	23.96	20.68	(3.28)

Source: Petroleum Intelligence Weekly

To reiterate, OPEC output fell as a direct result of companies voluntarily reducing their liftings. The production decline was not initiated by OPEC to bolster the oil market. OPEC was following rather than leading the market. A subtle distinction, but an important one: it is indicative of OPEC's inability to program tightness for the world oil market, an apparent but elusive goal for some time of many of the OPEC countries. In part this is due to the vagaries of world oil demand and resulting inability to accurately gauge demand response to price and income changes. Nevertheless, the dynamics of the oil market itself via the free play of market forces coupled with the ability of companies to freely react to price and other market signals are operating to accomplish an objective of most OPEC countries; that is, elimination of the "visible" oil surplus. This should not come as a surprise since whenever the oil market is out of balance, whether it be sloppy or tight, its dynamics over time move it back towards balance.

Saudi Output and Price Policy

Before discussing our view of the world oil market for the remainder of 1981 and next year, a special note on Saudi Arabian oil policy is appropriate, given this country's overriding influence on the world oil market. Saudi Arabia for most of this year has consistently held to the view that oil prices have risen too rapidly in the last two years and a gestation period is now required to allow the world economy to adjust to the price escalation. Sheikh Yamani predicted last year that a world oil glut

would emerge and Saudi output policy did indeed help create the oil surplus. The Saudis are on the verge of accomplishing much of their apparent objective since the surplus has led to some price reductions and average world oil prices have significantly declined in nominal dollars, and obviously even more so in real or constant dollars, during the course of this year. Recent estimates put the average price of internationally traded crude oil at $33.70/Bbl as of October 1, 1981, compared with $36.00/Bbl at the end of the first quarter of 1981. Despite this decline, the average oil price as of October 1, 1981 was still some 40¢/Bbl more than it was at the end of last year. But since the beginning of October, Iraq lowered its prices by $2/Bbl, similar sized reductions have been reported for various quantities of Kuwait crude, and Nigeria has apparently just recently effectively reduced its prices once again, thereby somewhat further reducing current average oil prices.

All indications are that the Saudis will essentially achieve their goal of price unification between now and year-end. It appears that they are willing to accept a $34.00/Bbl marker crude as a compromise position, despite rhetoric we have heard to the contrary that only a $32/Bbl price would be acceptable. It should be noted that Nigeria's most recent reported price action, brought on by worsening financial pressures, effectively prices its crude on a $32/Bbl base. This might entice the Saudis to stick to its current $32/Bbl price. Given pressure from other OPEC countries, however, we feel it is reasonable to assume that the

Saudis will opt for a $34/Bbl marker price. It is possible that all OPEC prices will not be fully unified at this level since Iran and possibly Libya may continue to demand prices more in line with a $36 or $37/Bbl marker crude. Nevertheless, we feel that the market will inevitably bring their prices into line with the $34/Bbl marker crude, since low output levels will continue in these countries so long as their prices remain out of line and at some point domestic financial pressures will likely force a price realignment.

Saudi Arabia's output policy will certainly be affected if OPEC oil prices are, in general, unified. The current production ceiling of around 9 MM B/D is likely to be reduced to possibly where it was prior to the Iranian interruption, that is 8.5 MM B/D. At that time the Aramco companies could produce less than that level but could not, on average, exceed it. This would likely apply once again. It should be recalled that Saudi Arabia's crude oil production has averaged about 10 MM B/D during the first eight months of 1981 and beginning September 1, 1981 production was reduced by about 1 MM B/D. At the time, the Saudi's decision to reduce output by 1 MM B/D appeared to indicate that they were readily willing to reduce output both to support the $32/Bbl marker crude price in spot markets and to allow other OPEC producers to increase production. It is reasonable to expect a similar Saudi policy when a new $34/Bbl marker crude price is adopted by OPEC.

By what volume Saudi Arabia's production will be reduced will depend mainly on: (1) how many of the OPEC producers effectively adopt the $34/Bbl marker crude price, since the market will continue to back away from the higher cost producers and, in turn, rely more on the others; (2) whether hostilities between Iraq and Iran continue to limit their crude oil production; and (3) the overall required level of OPEC production. Based on our projected likely level of OPEC crude production during the first three quarters of 1982, which will average about 23.4 MM B/D, and also assuming a unified OPEC price structure during this time, it is quite possible that Saudi crude output will average under 8 MM B/D even with the Iraq/Iran conflict continuing. We turn our attention now to discussing the likely trends in OPEC crude oil production and world oil supply/demand through 1982.

II. World Oil Supply/Demand Projections

Table I summarizes PIRA's world oil supply/demand projections by quarter for the period 1980 through 1982. In the last year each time we have prepared such a forecast we have lowered our demand estimates. In part this has been due to slower than anticipated economic growth in the major industrialized countries which is identified after it occurs due to the lag in reporting. Other contributing factors have been the unexpected relative strength of the dollar in international markets which has significantly increased the dollar cost of oil to major industrialized oil consuming nations, especially those in Western Europe. Finally, it appears that consumers worldwide have shown greater price (and income) sensitivity than earlier believed.

World oil demand is expected to average 47.3 MM B/D in 1981 or some 2.3 MM B/D or 4.6 percent less than that in 1980. As can be seen in the table, all of the decline is forecast to occur in the United States, Japan and Western Europe and the decline is believed to have been more pronounced in the first half of the year (at 6 percent) than in the second half (at slightly over 3 percent). In part this may be due to possible large scale secondary and tertiary liquidation of stocks by intermediate dealers and consumers during the first half of the year.

For 1982 world oil demand is forecast to remain approximately flat in the first half of the year and subsequently increase by about 1 percent in the second half, both being compared to 1981

levels. This assumes somewhat faster economic growth in OECD countries in the second half of 1982 versus the first half, especially in the United States. Also underlying our 1982 demand forecast is the expectation that the U.S. dollar will remain relatively strong compared with major European currencies and OPEC crude oil prices will be essentially unchanged for the year once the $34/Bbl marker crude price is adopted by most, if not all, OPEC countries.

On the supply side, non-OPEC free world oil supplies, which averaged 21.1 MM B/D in 1980, are forecast to increase by half a million barrels per day in 1981 and by 0.8 MM B/D in 1982. All of the increase over the period is expected to come from increased North Sea and Mexican production as shown in Table I. Net communist oil exports are forecast to decline slightly in 1982 as we believe they did in 1981.

The balancing element in the world oil supply/demand equation is, of course, OPEC oil production which combined with inventory changes sets oil supply equal to apparent demand. As previously discussed, OPEC production fell considerably in the third quarter of 1981 as many crude buyers walked away from relatively high cost OPEC oil and relied on accumulated surplus inventories to satisfy customer requirements. Thus OPEC crude production dropped off by 2 MM B/D in the third versus the second quarter and to meet third quarter demand, inventories were reduced by 1.5 MM B/D. Since inventories are usually built-up by 1.0-1.5 MM B/D during this quarter, a substantial volume--about half--of

the surplus which existed at the beginning of the quarter (some 500 million barrels) was utilized. On a days' supply basis--that is the ratio of world oil inventories at the beginning of a quarter to anticipated demand in that quarter--the industry remained in a comfortable position at the beginning of the fourth quarter of 1981. As shown in Table II, it had over 105 days of supply at the beginning of the fourth quarter, some 10 days less than it had at the beginning of the fourth quarter of last year, but significantly more than in previous years.

Now, in the early part of the fourth quarter, it appears that OPEC crude production is probably around 20 MM B/D. If this rate of production were to remain for the rest of the quarter, substantial strengthening in spot crude oil prices would be expected. The industry would be required to draw down its inventories by 5.5 MM B/D, a very rapid rate, reducing the industry's days' supply ratio by the beginning of 1982 to a particularly low level (92.7 days)--only modestly higher than that which existed when the Iranian revolution began to have a major impact on oil markets(towards the end of the fourth quarter of 1979).

To maintain a 20 MM B/D crude production level would require extraordinary discipline on the part of the OPEC countries, this time leading the market rather than following it. We do not believe this discipline exists at such a low level of OPEC production since many of the OPEC countries would like to increase their output. Nor do we believe that the Saudis would allow market prices to take off, and thereby throw by the wayside what

they have sought to achieve. Thus, in our fourth quarter projections, we have assumed an OPEC crude production level of 21.5 MM B/D, about 1.5 MM B/D higher than current production. However, even at this crude production level inventories will have to be drawn down by 4.0 MM B/D in the fourth quarter, and the industry's days' supply will drop to around 95 days at the beginning of 1982, the lowest level it's been since the second quarter of 1979. Furthermore, at this production level virtually all of the industry's surplus inventories will be worked off by around the end of 1981 since typically inventories are drawn down by around 1.5 MM B/D in the fourth quarter. This should not pose any supply problems for the industry, although we do expect that if our OPEC crude production estimate is realized, spot crude oil prices should strengthen significantly as the fourth quarter progresses. Some strength has already been seen in the last few weeks which offers some evidence of this anticipated trend.

Figure I illustrates the observed coincidence of spot crude oil prices and the industry's days of oil supply in inventory. There appears to be a good correlation between significant declines in days' supply and higher spot crude oil prices. The figure provides some insight into why we expect spot crude oil prices to strengthen somewhat as the fourth quarter progresses under our assumed level of OPEC crude production and, in turn, inventory reduction. We should add that a part of the recent strength in spot prices is undoubtedly due to the possibility

of OPEC unifying prices at a $34/Bbl marker crude level before year-end and possibly this month. Even if it does not happen this month it will likely be expected to occur at the December OPEC meeting in Abu Dhabi and therefore somewhat prop up spot (especially sour) crude oil prices during the quarter.

For 1982 we see OPEC crude production averaging about 23.7 MM B/D, with peak crude production occurring in the fourth quarter of the year at 24.6 MM B/D. It is unlikely that strengthening spot crude oil prices in the fourth quarter of 1981 will carry over through much of the first quarter of 1982. A unified OPEC price is expected to lead to increased OPEC crude production in the first quarter of 1982 and OPEC production could even be higher than the 23.4 MM B/D level we have assumed. Moreover, as the first quarter progresses world oil demand begins its seasonal decline which, of course, takes hold in the second quarter, and tends to generally ease supply conditions.

OPEC's maximum available crude oil production capacity is about 30 MM B/D. However, assuming both that the Iraqi-Iranian War continues (limiting production in these two countries to, say, 3 MM B/D) and that an 8.5 MM B/D production ceiling is instituted in Saudi Arabia, available capacity drops to about 24.5 MM B/D, ample enough for most of 1982, but suggesting some tightness towards the end of the year. This, again, assumes that Saudi Arabia would not increase its production above 8.5 MM B/D in the fourth quarter of 1982 and that the Iraqi-Iranian war continues throughout 1982, both relatively restrictive assumptions.

Thus, on balance, we see ample crude oil supplies being available throughout 1982. Spot crude oil prices should stay within a range of ± 5 percent relative to most OPEC OSP's throughout the year, with the higher levels likely to be achieved in the fourth quarter of the year. This may very well set the stage for an OPEC crude oil price increase at the end of 1982, especially if OPEC crude prices remain unchanged throughout the year, which now appears a reasonable assumption.

TABLE I

WORLD* OIL SUPPLY/DEMAND 1980 THROUGH 1982 BY QUARTER

(Million Barrels Per Day)

	1980					1981					1982				
World* Oil Demand	Q1	Q2	Q3	Q4	Annual Average	Q1	Q2	Q3	Q4	Annual Average	Q1	Q2	Q3	Q4	Annual Average
United States	18.3	16.4	16.1	17.3	17.0	16.8	15.5	15.8	16.9	16.2	16.7	15.4	15.9	17.1	16.3
Western Europe	15.3	13.5	12.7	14.5	14.0	13.7	12.3	12.0	13.2	12.8	13.7	12.2	11.9	13.4	12.8
Japan	5.8	4.7	4.5	5.0	5.0	5.4	4.3	4.0	4.8	4.6	5.3	4.2	4.1	4.8	4.6
Other	13.7	13.6	13.5	13.6	13.6	13.7	13.6	13.7	13.8	13.7	13.9	13.8	13.9	14.0	13.9
Total	53.1	48.2	46.8	50.4	49.6	49.6	45.7	45.5	48.7	47.3	49.6	45.6	45.8	49.3	47.6
World Oil Supplies															
United States(1)	11.0	10.8	10.7	10.7	10.8	10.8	10.7	10.7	10.7	10.7	10.7	10.6	10.6	10.5	10.6
Mexico	1.9	2.1	2.2	2.2	2.1	2.5	2.8	2.4	2.7	2.6	2.9	3.0	3.0	3.1	3.0
North Sea	2.3	2.2	2.1	2.3	2.2	2.4	2.4	2.3	2.4	2.4	2.6	2.6	2.7	2.8	2.7
Other	6.1	6.1	6.0	6.1	6.1	6.0	6.0	5.9	5.9	5.9	6.1	6.1	6.1	6.1	6.1
Non-OPEC	21.3	21.2	21.0	21.3	21.1	21.7	21.9	21.3	21.7	21.6	22.3	22.3	22.4	22.5	22.4
Net Communist Exports	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7
OPEC: Crude	29.7	27.5	26.7	24.2	27.0	24.9	23.2	21.2	21.5	22.7	23.3	23.4	23.4	24.6	23.7
NGL	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8
	30.5	28.3	27.5	25.0	27.8	25.6	23.9	21.9	22.2	23.4	24.1	24.2	24.2	25.4	24.5
Total Supplies	52.7	50.4	49.4	47.3	49.9	48.1	46.6	44.0	44.7	45.8	47.1	47.2	47.3	48.6	47.6
Commercial/Strategic Inventory Change	-0.4	+2.2	+2.6	-3.1	+0.3	-1.5	+0.9	-1.5	-4.0	-1.5	-2.5	+1.6	+1.5	-0.7	-

*Non-communist world.

Note: Sum of parts may not equal total due to rounding.

(1) Includes processing gain.

Source: PIRA.

TABLE II

DAYS' SUPPLY OF WORLD OIL, 1978 THROUGH 1982 BY QUARTER

		World[1] Oil Demand (MM B/D)	World[1] Oil Stocks[2] Total (MM Bbl)	World[1] Oil Stocks[2] Adjusted[3] (MM Bbl)	Days' Supply (Adj. Stocks/Demand)
1978	Q1	54.0	5,372	5,364	99.3
	Q2	49.3	4,913	4,894	99.3
	Q3	49.0	4,995	4,965	101.3
	Q4	53.6	5,225	5,162	96.3
1979	Q1	56.2	5,188	5,090	90.6
	Q2	49.8	4,702	4,587	92.1
	Q3	49.3	5,002	4,880	99.0
	Q4	53.2	5,416	5,292	99.5
1980	Q1	53.1	5,462	5,338	100.5
	Q2	48.2	5,426	5,302	110.0
	Q3	46.8	5,626	5,502	117.6
	Q4	50.4	5,865	5,731	113.7
1981	Q1	49.6	5,580	5,431	109.5
	Q2	45.7	5,445	5,278	115.5
	Q3	45.5	5,527	5,314	116.8
	Q4	48.7	5,389	5,136	105.5
1982	Q1	49.6	5,021	4,738	95.5
	Q2	45.6	4,796	4,502	98.7
	Q3	45.8	4,942	4,631	101.1
	Q4	49.3	5,080	4,752	96.4

(1) Non-communist world.

(2) Beginning quarter.

(3) Less U.S. SPR and Japanese Government stockpile.

Source: PIRA.

TABLE III

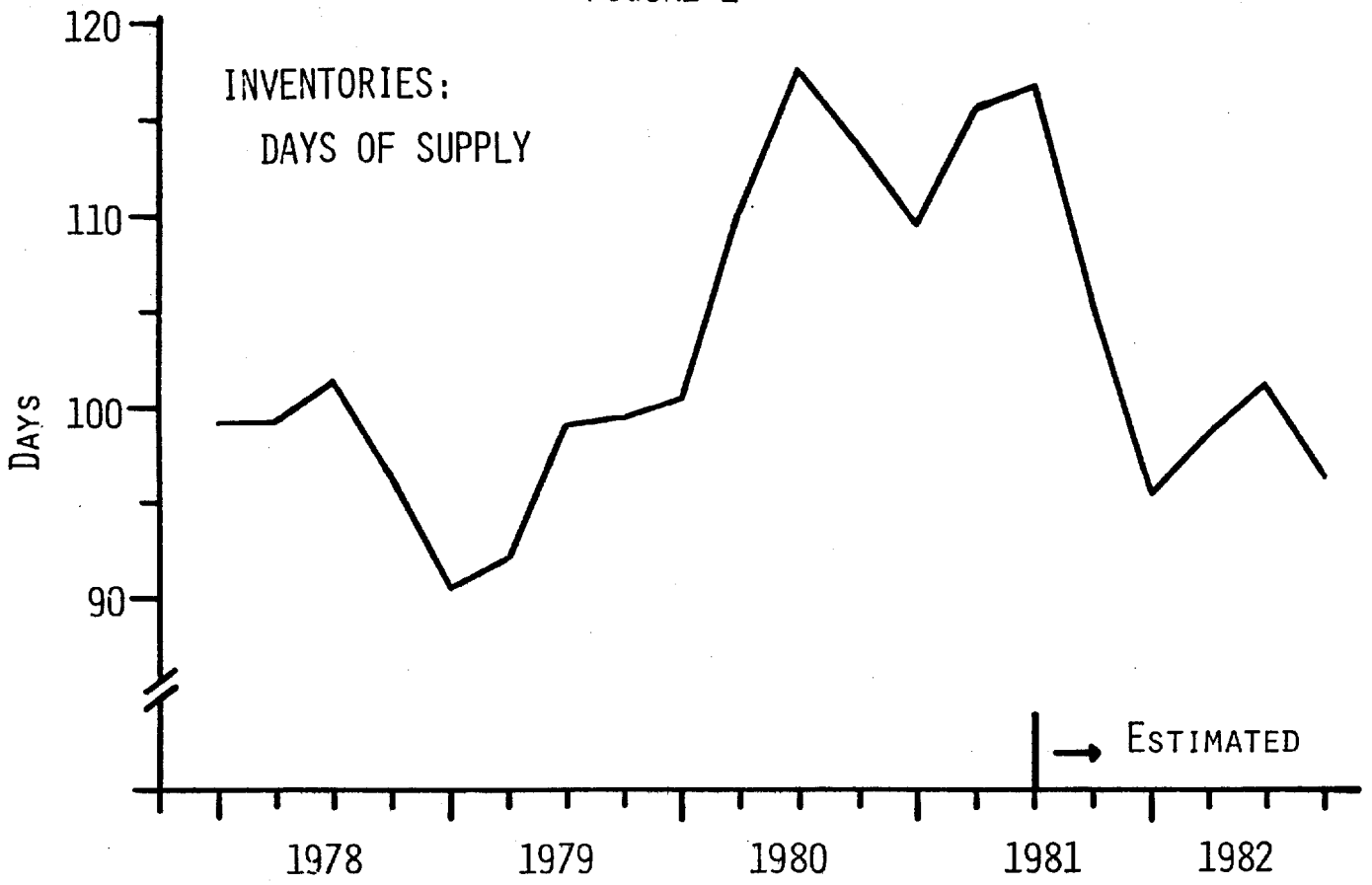
ESTIMATED AVAILABLE OPEC CRUDE OIL PRODUCTION,*
NOVEMBER 1981

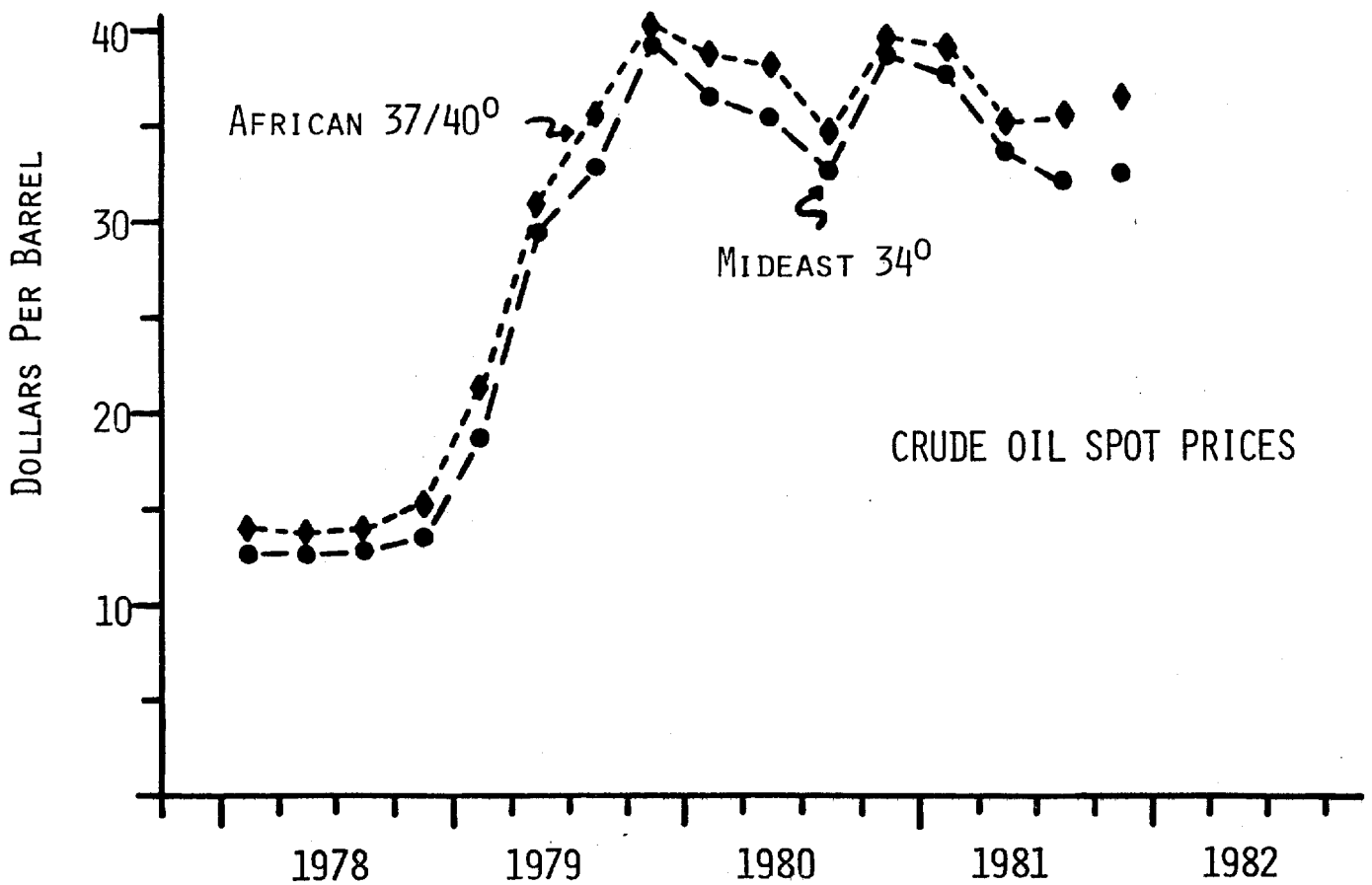
(000 B/D)

Algeria	1,000
Ecuador	225
Gabon	200
Indonesia	1,650
Iran) Iraq)	2,800
Kuwait	1,250
Libya	1,750
Neutral Zone	600
Nigeria	2,200
Qatar	550
Saudi Arabia	8,500
United Arab Emirates	1,445
Venezuela	2,300
	24,470

*The numbers in this table represent the existing production ceiling in each country, determined by the lower of physical capacity limitation or the allowable production ceiling imposed by the government.

FIGURE 1


INVENTORIES:
DAYS OF SUPPLY
DAYS
120
110
100
90
ESTIMATED
1978
1979
1980
1981
1982


DOLLARS PER BARREL
40
30
20
10
AFRICAN 37/40°
MIDEAST 34°
CRUDE OIL SPOT PRICES
1978
1979
1980
1981
1982