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THE IRANIAN OIL CRISIS

INTRODUCTION

Following a lengthy series of paralyzing strikes and sporadic work slowdowns organized by anti-Shah oilworkers last fall, the Iranian oil industry ground to a near halt and suspended oil exports on December 26, throwing world oil markets into disarray and generating intense consternation among oil-importing states. Although Ayatollah Khomeini's revolutionary Islamic regime has recently ordered the oilworkers back to work, it is unclear at this time to what extent these orders will be obeyed and when oil exports will in fact resume. The purpose of this paper is to examine the short-term impact of the Iranian oil shortfall on oil-importing states--especially the United States--and to outline several long-term trends in oil production which might be set in motion by the Iranian oil crisis.

THE IMPACT ON WORLD OIL SUPPLIES

Before the chronic work stoppages began in October, Iran was the world's fourth largest oil producer with an average output of 6.05 million barrels a day (MBD), the equivalent of almost one-fifth of OPEC's total production.¹ Iran, as the world's second-ranked oil exporter (after Saudi Arabia), played an important role

1. Department of Energy, Monthly Energy Review, December 1978, p. 98.

in fueling the economies of the industrial West; its 5 MBD average export level provided for roughly 10 percent of the non-communist world's oil needs. When the politically-motivated strikes reduced Iranian oil output below Iran's domestic energy requirements, the global oil production network was stretched taut as more than 3 MBD of surplus production capacity was thrown into the breach, leaving oil importers to make up the remaining shortfall by drawing down worldwide oil reserves by an extra 2 MBD.

The chief source of new oil output was Saudi Arabia, the swing producer par excellence which functioned as a balance wheel to partially offset the Iranian shortfall and stabilize the volatile world oil market. A spectacular 3 MBD production boost brought Saudi production up to 10.5 MBD by mid-January, about 2 MBD higher than Riyadh's 8.5 MBD self-imposed average annual production ceiling. In addition Kuwait raised output levels by about 550,000 BD; Nigeria and Venezuela provided significant supplementary oil production; and Iraq, Abu Dhabi, and other Persian Gulf emirates provided marginal additions to world oil supplies.

THE REACTION OF OTHER OIL PRODUCERS

While the privately-owned international oil industry smoothly reallocated the Iranian oil shortfall to minimize its impact on world oil markets in general and Iran's individual customers in particular, various national petroleum organizations have sought to extract economic and political windfall benefits from the Iranian oil shutdown. Abu Dhabi opportunistically exercised a contractual option to cut back all its long-term oil supply contracts by 5 percent, thereby enabling itself to auction off two million barrels of oil on the spot market in late January. In early February, Libya mysteriously cut back oil production by 10 percent citing "technical problems" in three oil fields, and it is widely suspected that it is holding back oil in anticipation of future price hikes which might be precipitated by Iran's current difficulties.² The Kuwaiti Oil Minister Sheik Ali Khalifa-al-Sabah has publicly advised other OPEC states not to raise production levels further until consuming nations have depleted their crude oil stockpiles, presumably because by then OPEC's scheduled price increases will have taken effect and producers will realize greater returns for identical quantities of petroleum.

However, the most unsettling development to date has been the recent Saudi decision to scale down production in the first quarter to an average rate of 9.5 MBD, a loss of .7 to 1.0 MBD relative to

2. Energy User News, February 12, 1979, p. 4.

mid-January production levels. Last year Riyadh had indirectly indicated that it would suspend its self-imposed production ceiling of 8.5 MBD as long as Iran was shut down. Aramco boosted production to unprecedented levels (up to 12.85 MBD during one day in December) before having the 8.5 MBD ceiling reimposed in late January with output regulation administered on a monthly rather than an annual basis.³ A "special dispensation" allowed Aramco to produce 1 MBD more than the production ceiling in the first quarter of 1979 as long as the additional oil produced in excess of 8.5 MBD was sold at fourth quarter prices. This 10 percent premium was justified in Saudi eyes because the incremental production was assumed to be "borrowed" from the fourth quarter of 1979 when oil is scheduled to cost \$14.55 per barrel.

Riyadh has not bothered to publicly explain its ambivalent behavior at such a critical time, but the limits it has set on its willingness to offset Iran's oil cutoff are widely believed to be politically motivated. The new limits convey important messages to several different audiences. First, they put the United States on notice that it cannot take Saudi Arabia for granted, that Riyadh is unhappy with U.S. pressure to accede to the Camp David peace process, and that it is disappointed in the way that Washington treated the besieged Shah in the final days of his reign. Second, the new production ceiling indicates to the Shah's successors that the Saudis are not permanently appropriating Iran's former oil markets. This is highly significant in the light of Iranian historical experience in the early 1950s when Dr. Mossadegh's revolutionary regime was undermined by a Western boycott of Iranian oil which paved the way for the Shah's counter-coup. The Saudis are undoubtedly extremely anxious to establish a correct working relationship with the new Iranian regime, if only because Iran looms large as the dominant military-industrial Persian Gulf power. Third, the new production limits pointedly remind oil consumers that the Saudis are serious about conserving their petroleum resources.

Finally, the premium price provisions incorporated into the new production guidelines anticipate the inevitable calls for higher oil prices by "price hawks" within OPEC as well as Saudi Arabia and serve as a model which other moderate OPEC states can follow in order to supply the West with sorely-needed oil without succumbing to a dangerous temptation to force a massive price hike upon desperately needy oil consumers.

3. "Long Iranian Shutdown Could Spawn Fuel Crisis," Oil and Gas Journal, January 8, 1979, p. 21.

THE IMPACT ON OIL PRICES

The International Energy Agency (IEA) estimates that the Iranian shutdown has generated a daily shortage of 1-2 MBD in the international oil marketplace.⁴ Such a surfeit of demand over supply naturally will exert an upward pressure on oil prices, but this pressure on prices is circumscribed by the fact that more than 90 percent of the oil sold on the world market is sold under long-term contracts which are ostensibly insensitive to momentary market fluctuations. Such fluctuations instead register on the spot market, which is the closely-watched barometer of prevailing moods among oil insiders.

In the immediate aftermath of the Iranian shutdown, spot market prices spiraled to \$23 a barrel before settling down to below \$20, still \$4-5 more than the current OPEC price of \$13.34 per barrel. The spot market scramble was partially caused by major firms invoking force majeure clauses to cut back long-term supply contracts, forcing independent oil firms and refineries into an enlarged spot market. The hardest-hit companies were the fourteen members of the Iranian Oil Consortium, especially British Petroleum which controlled 1 MBD (40 percent) of Iran's exports. BP has imposed a 30-35 percent cut in deliveries for the first quarter of 1979--a sure sign that the company does not expect an early return of Iranian production.

While hikes in spot prices have little effect on consumer prices or supplies given the relative smallness of the spot market, the danger is that high spot market prices encourage OPEC price hawks, who understandably feel that they have as much a right to the extra revenues as do spot market speculators. Lawrence Goldstein of the Petroleum Industry Research Foundation estimates that the world market is already 2 percent above the OPEC price.⁵ Non-OPEC producers, such as the British, are already selling oil above the OPEC price and this practically forces OPEC to raise prices.

Already the African producers have warned customers of higher prices in the second quarter over and above the scheduled 3.9 percent price hike on April 1, to be charged when existing 3-month contracts expire. Abu Dhabi and Qatar have recently levied a 7 percent surcharge on all their exports and OPEC as a group does not seem far behind. The Venezuelan oil minister has called for a ministerial meeting in Geneva on March 26 to discuss the price implications of the Iranian crisis. Even if OPEC foregoes a

4. Washington Post, February 8, 1979, p. A11.

5. Washington Star, February 14, 1979, p. 1.

supplementary price hike in 1979, there is little to suggest that it will exercise price restraint in 1980. The Iranian disruptions last fall were a major reason behind the higher than expected price rises proclaimed last December and since then the Iranian situation has significantly deteriorated. OPEC price restraint next year depends on a resolution of the Iranian crisis this year and a slowdown in the dollar's decline in relative value. Unfortunately, the abrupt contraction of the Iranian arms market and the 14.5 percent increase in oil prices scheduled for 1979 will tend to weaken the dollar further. Therefore, one can assume that the ongoing Iranian crisis will trigger further oil price hikes either this year or next and that the magnitude of the price hikes will tend to vary directly in proportion to the duration of the Iranian shutdown.

DURATION OF THE SHUTDOWN

At this point the single most crucial determinant of the overall global impact of the Iranian oil shutdown is the length of time that Iranian oil exports will be denied to the world, and this cannot be reliably ascertained with any precision given the prevailing political instability which has paralyzed the oilfields. Shahriar Rouhani, the Washington spokesman for Iran's new Islamic government, predicted on February 13 that oil production would resume in eight to ten weeks. Secretary of Energy James Schlesinger estimates that it will take one to three months to bring Iran onstream again and more pessimistic analysts fear that Iranian wells will remain shut-in until the first quarter of 1980.⁶

Clearly, before Iranian oil starts flowing again in significant quantities, the Khomeini-Bazargan regime must assert its authority in the oilfields and gain the allegiance of key segments of the oil industry's labor force. To date the revolutionary Islamic regime has not demonstrated the ability to compel dissident oilworkers to return to work. Even if its current back-to-work order should eventually prove to be successful, the new regime may discover that the oilworkers, flushed with past success, will constitute a volatile political force in Iranian domestic politics prone to rely on work slowdowns or stoppages to register disapproval of the regime's policies. The pro-Soviet Tudeh Party, long outlawed by the Shah for its role in Moscow's abortive attempt to set up an autonomous "People's Republic of Azerbaijan" in Northern Iran in 1946, has exerted a radicalizing influence on Iranian oilworkers in recent months. A significant number of Iran's estimated one to two thousand Tudeh Party members work in the oilfields where they have cultivated a substantial number of sympathizers, especially among the ranks of second-level managers.

6. Wall Street Journal, February 13, 1979, p. 1.

Before becoming Prime Minister, Mr. Bazargan encountered communist strength firsthand as Khomeini's representative in the oilfields. Although Khomeini had previously called for a resumption of enough oil production to satisfy Iran's domestic needs, it took Bazargan much longer than expected to secure the compliance of the more radical oilworkers and this was at a time when the ayatollah was perceived to be an irresistible political force gathering momentum on the political horizon. In mid-February Khomeini's direct order to return to work was ignored by approximately 15,000 of the 67,000 workers engaged in the oil industry. At that time radical workers vowed to continue the strikes until "final victory," which was widely interpreted as meaning the creation of a Marxist state. It is becoming increasingly apparent that the oil strike strategem used by the National Front against the Shah, and by Khomeini's forces against the Bakhtiar regime, is now being used by leftists against Khomeini.

Given the strength of leftist sentiment in the oilfields, it is highly improbable that Khomeini's followers will be able to restore Iranian oil exports in the near future. In mid-February a high-ranking American intelligence official confided that his organization was "more optimistic" than it had been a week earlier due to the number of oilfield workers who trickled back to work after February 18. However, he cautioned "In the next week or so, the key question will be how many more oilfield workers go back." Since the ayatollah is not a compromiser, it is unlikely that he will bargain with the leftists in order to obtain their cooperation in returning to work. However, should he force a confrontation with the recalcitrant strikers, there is the distinct possibility that the resumption of Iranian oil exports would be postponed indefinitely since Marxist groups would be in an excellent position to sabotage the highly vulnerable oil facilities, should they choose to exercise this option. Perhaps the only way that oil production could be brought back onstream in the near future would be if the leftists backed down in the face of public pressure applied by Khomeini, but this, too, is an unlikely possibility in view of their previously articulated public refusal to accede to the ayatollah's wishes.

In addition to political factors which militate against a quick resumption of oil exports, there are political and technical constraints which would limit the rate at which the Iranian oil industry could come back onstream in the short run and the ultimate level of output which Iran could sustain in the long run. The less damage visited on Iranian oil facilities by natural causes and acts of commission (sabotage) or omission (lack of maintenance), the less dependent the Iranians will be on the reintroduction of foreign technical assistance to recommence oil production and the sooner they will be able to resume exports. Oil industry experts estimate

that if the oil facilities survive the Iranian political crisis relatively intact, it would take Iran three months to reach 3 MBD without the 1,000 foreigners (mostly Americans) who supervised oil production.⁷

While the oil facilities seem to have been shut down in an orderly fashion and have escaped major cases of sabotage thus far, the lack of discipline in the oilfields during the strikes has probably hamstrung maintenance procedures which would have prevented sanding, water seepage, corrosion, and loss of pressure in the wells. Iran will need foreign assistance to rework its wells in direct proportion to the degree that they have been damaged by their lengthy period of inactivity, yet both the conservative religious leaders and the radical left wish to minimize Western participation in oil operations. Furthermore, in the light of the xenophobic anti-American campaign of intimidation which culminated in the assassination of Paul Grimm in the oil capital of Ahwaz on December 23, no Americans and few Westerners are likely to return to their former jobs without explicit guarantees of personal safety. Unless the new Islamic government can accommodate the Marxists or obtain a popular mandate to effectively suppress them, it will not be in a position to extend such a guarantee.

FUTURE IRANIAN PRODUCTION

Once the Iranian political environment has calmed down sufficiently to allow the resumption of oil exports, the critical issue will become the quantity of oil which Iran would be willing and able to export. Once again the answer would primarily be political in nature because it would depend on the extent to which the Shah's successors could tolerate foreign technical assistance and, more importantly, the economic program which would be financed by future oil revenues. The IEA estimates that without foreigners, Iran will be able to produce 4.5 MBD at most. Iran's oilfields have been in production for a long time and keeping production up was becoming progressively more expensive and difficult even before the oil shutdown. When the political turmoil began, Iran was just initiating elaborate programs of gas injection to maintain pressure in the wells and forestall production declines in mature fields. Unless Iran retains the cadre of highly specialized foreign technicians which it has already assembled to implement the gas reinjection program, slackening pressure in existing wells will lower the recovery rates in the Iranian oilfields and lower Iran's future export potential. Not only is foreign expertise vital to Iran's

7. Washington Post, February 14, 1979, p. A19.

secondary recovery program, but it is currently indispensable to Tehran's exploration, drilling, and corporate planning capabilities where foreigners hold key administrative and supervisory positions. Iran's drilling program would be particularly hard hit by the absence of foreigners since only three of the sixty operational drilling crews were composed entirely of Iranians. While such activities are peripheral to short-term production efforts, they would be prime determinants of Iran's long-term export potential.

Another casualty of the Iranian revolution is likely to be the \$9 billion natural gas program begun in 1974. Since Iran does not have the technical capabilities to go it alone, long-range expansion plans are seriously hampered by the anti-foreign sentiment which has drained Iran of expatriate expertise. Gas from the massive new projects had been slated for export, secondary recovery programs, and domestic consumption, freeing as much as 600,000 barrels of oil a day for export. Unless foreign administrative and technical aid is allowed to continue to contribute to this important effort, Iran's future export potential will be significantly downgraded.

Undoubtedly, the most important influence on Iran's long-term export potential is likely to be the nature and scale of the economic development program which a successor regime will choose to implement. The Islamic Revolutionary Council under Khomeini is opposed to rapid economic development because it is considered to be unnecessary, inherently wasteful, and a corrupting influence on traditional social values, but any successor regime, regardless of political stripe, is likely to slow the pace of modernization in order to better control the explosive political forces which fast-paced economic growth and the concomitant social dislocations inevitably produce. Slower economic growth combined with a sharply reduced arms purchasing program will drastically reduce Iran's financial need to export oil, leaving any successor regime more sensitive to growing demands for conservation of the nation's dwindling petroleum resources.

The chronic political turmoil which closed Iran's bazaars, banks, factories, and businesses has crippled the Iranian economy, possibly for years to come. Politically-inspired wage hikes have exacerbated an already high inflation rate and have set the stage for a future round of demands for wage increases. Even before the strikes began in October, the government was operating under an unusually large \$2 billion budget deficit. While Khomeini's economic plans remain ambiguous, international bankers are concerned that the change in regimes may force delays in the repayment of the \$2.2 billion that Iran has borrowed from the U.S. and the \$3-4 billion it has borrowed from other countries. It is not clear as yet precisely how Iran's economic difficulties will affect its need for future oil revenues, but it would be safe to assume that as more of Iran's loans and import bills come due the new regime will come under increasing pressure to increase oil exports in order to finance them.

Currently, Secretary of Energy Schlesinger estimates that a successor regime would have to produce 3.5 MBD to meet its financial obligations. The new Economics Minister of the Islamic revolutionary government, Abdul Hassan Banisadr reportedly favors holding Iranian oil output to 2.4 MBD, roughly 40 percent of its former level.⁸ In any case, Department of Energy analysts project that Iranian production will probably never exceed 4 MBD again, a permanent net loss of almost 2 MBD.

THE IMPACT ON THE U.S.

In the first half of 1978, the U.S. was importing Iranian oil at a rate of 885,000 BD, the equivalent of about 10 percent of its oil imports and about 5 percent of its daily oil consumption. Because other exporters picked up the slack, the U.S. shortfall actually amounted to a net loss of 500,000 BD. In view of the huge 1.2 billion barrel stock of reserves on hand, Secretary Schlesinger called the situation "serious but not critical" and maintained that oil market conditions in the U.S. would remain "quite manageable" without Iranian crude at least through the end of March and possibly up to summer.⁹

Thus far the shortfall has exerted a negligible influence on the economy, but the returns are not completely in yet. Ultimately the shortfall is expected to trigger higher world oil prices which will add to inflationary pressures within the U.S. and slow real economic growth. Since trading partners, like Japan and West Germany, have historically reacted to such external shocks by markedly slowing their own economic growth rate, lowering import levels, and encouraging exports, it is likely that the U.S. trade deficit will be adversely affected; but this will take time to run through its course. The most visible immediate impact of the Iranian shortfall was a squeeze on independent refiners who could not afford to replace missing Iranian crude with high-priced crude from other sources found on the nervous spot market. As a result many have gone to the Economic Regulatory Administration requesting emergency supplies under the 1974 mandatory crude oil allocation program. Because the refiners tend to substitute heavier crudes for light low sulphur Iranian crude, they are unable to produce as much gasoline per barrel of crude as they would normally. Therefore, U.S. gasoline production could fall even further than the cutback in imports implies.

8. Washington Star, February 14, 1979, p. A1.

9. Energy Daily, January 4, 1979, p. 2.

THE U.S. RESPONSE

The demand for most oil products is relatively insensitive to shortrun price changes. Because of rigidities inherent to price controls on domestic crude oil and gasoline as well as controls on refiners' profit margins, the U.S. oil market cannot effectively respond to a shortage. Since the controls cannot be immediately dumped due to domestic political pressures, the Carter Administration is seeking the best way to allocate shortages in the least disruptive manner.

The Administration's immediate response to the Iranian shortfall was to call for voluntary "prudent" conservation aimed at saving up to 600,000 BD by encouraging motorists to observe posted speed limits and eliminate unnecessary driving while asking homeowners to lower their thermostats. This conservation effort was to depress demand while an oil inventory drawdown of about 500,000 BD increased market supplies. The Administration's second line of defense, outlined in early February, maintained that the U.S. "will have to begin to constrain demand or we will be in trouble next winter." Secretary of Energy Schlesinger held out the prospect of mandatory energy conservation measures which could be triggered by April 1, if Iran had not yet started up production and voluntary conservation failed to erase the shortfall.¹⁰ Schlesinger focused on the cumulative effect of tapping oil inventories which would soon need to be built up in preparation for next winter's heating season. In order to prevent Americans from "borrowing against the future" the Administration readied mandatory conservation curbs and emergency crude allocation schemes which would serve the function of redistributing the burden of the Iranian oil shutdown without hindering the inventory buildups needed for next winter.

In addition to standby emergency authority to allocate shortages among refiners, the Department of Energy was considering indirect curbs aimed at altering driving patterns by closing gas stations on Sunday or allowing motorists to fill up their tanks only on alternate days and was preparing a standby gasoline rationing program for submission to Congress in late February to be used only as a last resort. Other policy options under consideration were measures promoting the use of natural gas rather than oil, the easing of clean air regulations to permit more coal consumption, and the diversion of oil from the strategic oil stockpile to the internal oil market.

The Iranian shortfall forced the Administration to postpone previously considered energy policy proposals as well as develop new contingency plans. The possible inflationary repercussions which the Iranian shortfall would have on a free market forced the

10. Petroleum Intelligence Weekly, February 5, 1979, p. 5.

Administration to indefinitely delay the submission of a gasoline decontrol bill, which it had tentatively considered sending to Congress in February. Also placed in limbo was Carter's pledge to decontrol crude oil, made at the Bonn economic summit last summer as part of an American effort to reduce oil imports. While both these decontrol plans may have been rendered unpalatable to the American public in the short run due to the inflationary impact which the oil supply shortfall would exert on energy prices, in the long run the sense of urgency engendered by the crisis will probably raise public awareness of the benefits of oil decontrol, not the least of which would be added protection against supply disruptions. According to the American Petroleum Institute, if the U.S. had lifted price controls after the Arab oil embargo, it would have stimulated enough domestic exploration and investment to produce 2 MBD more of domestic oil in 1979--more than enough to neutralize the impact of the Iranian oil cutoff.¹¹

THE IEA OIL-SHARING AGREEMENT

A major factor which is likely to affect the American domestic response to the Iranian shortfall is whether the IEA oil-sharing agreement is in fact triggered by global shortfalls. The Department of Energy estimates that the U.S. would lose an additional 500,000 BD of crude if called upon to make up shortfalls in other IEA states in the event that the oil-sharing agreement is triggered. Under the terms of the agreement oil shortfalls of less than 7 percent are met by market forces, but any member that crosses the 7 percent shortfall threshold holds the option of setting allocation procedures in motion which distribute supply deficits equitably among all nineteen IEA members.

Thus far the IEA has purposely avoided public speculation about the possible consequences of a lengthy Iranian shutdown. Ulf Lantzke, the IEA Executive Director, has projected "no problem for February and no major problem for March," but the IEA has stepped up its monitoring of oil supplies and has scheduled a meeting of the Governing Board for March 1-2, presumably to assess the Iranian situation.

Currently, the U.S. Department of Energy estimates that the IEA group taken as a whole is 1 MBD above the 7 percent shortfall which would pull the general trigger of the oil-sharing mechanism. Japan is the hardest hit IEA member, having lost 17 percent of its total oil imports in the Iranian cutoff, and is hovering near the 7 percent trigger threshold. The Japanese have instituted mandatory

11. Newsweek, February 19, 1979, p. 26.

consumption curbs and fear the situation will reach "crisis proportions" if Iranian exports do not resume by June.

If any single country triggers the oil-sharing agreement, it is likely to be Japan; but even if Japan falls below the 7 percent flashpoint it is believed that the Japanese might be reluctant to trigger the agreement for fear that OPEC members would exploit the situation to raise prices. Japanese buyers are currently the heaviest buyers on the spot market and would be forced to swallow astronomical price premiums if the initiation of the oil-sharing agreement panicked the short-term market. The Japanese might also be reluctant to trigger the oil-sharing plan because activation requires stringent mandatory conservation methods which could lead to serious economic dislocations in their free market economy. Moreover, triggering the agreement would force the four major IEA oil producers--the U.S., U.K., Canada, and Norway--to give up crude, possibly generating internal political problems for them which would weaken the solidarity of the oil-importing bloc. For the time being the Japanese, like other IEA members, find it easier to rely on the international oil companies to informally allocate oil shortages than to rely on rigid IEA redistribution schemes which have never been tried before. Not only are the companies more responsive, more flexible, and more experienced in dealing with the logistics of the marketplace, but they are accustomed to dealing with the hasty denunciations which will inevitably arise as the public's temper becomes frayed by drawn-out oil shortages.

SOUTH AFRICA AND ISRAEL

The two countries most affected by the Iranian crisis are South Africa and Israel, neither of which belongs to the IEA. South Africa has long enjoyed a special relationship with Iran, partially because the Shah's father lived and died there in exile after being forced from his throne in favor of his son during World War II. South Africa, which has no oil of its own, imported more than 90 percent of its 430,000 BD import total from Iran, its best customer in the Middle East. Since the new Islamic government has joined African and Arab oil exporters in embargoing the country, South Africa has been forced to enter the spot market and to draw down its large strategic and commercial stockpiles, the equivalent of two to three years' worth of consumption, depending on the rate of use. In the long run, Pretoria is expected to fall back on its massive coal reserves, expand its coal liquification capacity and develop an atomic power industry.

Ironically, Israel has been hit harder by the 1978-1979 Iranian shutdown than by the 1973 Arab oil embargo. While details about Israel's oil supply arrangements are closely held due to fear that

disclosure could result in public pressure from Arab producers on the companies that supply Israel, it is believed that Israel depended on Iran for about 80,000 BD of its 125,000 BD oil imports.¹² Permanently denied its access to Iranian oil by the new Islamic government, Israel has sought to replace Iranian oil with shipments from Mexico, Venezuela, and Norway. If new supplies are not forthcoming in sufficient quantities, Tel Aviv could fall back on its nine-month supply of oil in commercial and strategic stockpiles as well as a secret codicil to the 1975 Second Sinai withdrawal agreement which commits the United States to make oil available for sale to the Israelis for up to five years in an emergency. According to the State Department, the upper range of oil which the U.S. would be required to divert to Israel would be 70,000 BD, less than one-half of 1 percent of U.S. daily consumption, and would commence 60-90 days after the pledge was invoked. While Secretary Schlesinger recently reaffirmed Washington's intention to honor this commitment, the Israelis are not eager to activate the supply pledge, preferring to seek alternative sources of oil rather than increase their vulnerability to American political pressure at this sensitive juncture in the Arab-Israeli peace talks.

The denial of Iranian oil imports has also hindered Tel Aviv's position at the peace talks regarding its contemplated withdrawal from the Sinai Peninsula. Minister of Energy Yitzak Modai has indicated that Israel would not sign a peace treaty unless it included provisions affording it access to oil from Sinai fields developed under Israeli occupation. Egypt had previously maintained that after a peace treaty, it would be willing to sell oil to Israel on a purely commercial basis at world market prices, but would not accept any Israeli participation in operations or other priority commitments. Butros Ghali, Egypt's acting Foreign Minister, reiterated Egypt's position on January 8, 1979, when he explicitly rejected according any privileges to Israel in regard to Sinai oil as a consequence of the Iranian situation. While the Sinai oil issue is peripheral to the main sources of disagreement, it is likely to be perceived by the Israelis as an indicator of Egyptian sensitivity to Israeli security worries and could engender complications in other areas of negotiation.

COMPARISONS TO THE ARAB OIL EMBARGO

While the initial impact of the Iranian oil shutdown was not as severe as the 1973 Arab oil embargo, its long-range implications are far more troubling. If it had to happen, the Iranian crisis could not have come at a better time. World oil stocks were at an all-time high--4 to 5 billion barrels--in anticipation of the OPEC price rise which was to be announced in December 1978. Moreover, the first quarter of any year is usually a low oil buying season.

12. Washington Post, January 13, 1979, p. A15.

Oil buyers normally stock up in the last quarter of the year for winter home heating supplies and wait until the second quarter of the next year to build up inventories for summer gasoline use.

The 1973 embargo removed approximately 570 million barrels of oil from world markets over five months. The Iranian crisis as of mid-February had removed roughly 375 million, but no end is yet in sight. The 1973 oil embargo caught importing countries flat-footed. The West reacted in a piecemeal fashion, some nations resorting to saue qui peut policies, while others, including the United States, made the mistake of "overallocating" the supply shortfall. By 1979 oil importers had created the IEA to handle oil supply emergencies, had drawn up better plans for conservation and allocation, and generally held a heightened awareness of the problem. Because oil-importing countries had already overcome the difficulties imposed by the 1973 embargo, they were operating in a better psychological climate and could draw on their experience in 1979. With larger stockpiles and more extensive pre-crisis preparations, they could afford to take a longer term view of the crisis.

During the worst of the 1973 embargo, the U.S. was deprived of 1.5 MBD, compared with about .9 MBD in 1979. The initial supply impact of the Iranian crisis was only about 60 percent as bad as the 1973 supply shortfall. When Iranian production ceased, the U.S. had a 70-day supply of crude on hand, compared with only 54 days in October 1973. Moreover, in December 1978, the U.S. had developed a strategic stockpile of more than 70 million barrels of oil, although the machinery for withdrawal would not be in place until August 1979.

In 1973, the price rise generated by the embargo did more damage to the economy than the resultant supply shortfall. Crude oil prices quadrupled in less than a year, raising the Consumer Price Index 3.5 points and in effect imposing a \$45 billion tax on the American economy. Price hikes precipitated by the Iranian crisis will not be anywhere near as large and will not have the same inflationary impact, because the base price is already so high. However, the Iranian crisis is likely to affect oil supplies more than oil prices in the short run and will probably have several troubling implications for world oil production levels in the long run. While the 1979 crisis is not likely to be as quantitatively severe as the 1973 crisis, it will probably impose more severe qualitative constraints on the future world oil situation.

LONG-TERM IMPLICATIONS

The Iranian oil crisis is likely to lead other OPEC producers to several conclusions which could impair Western interests in the future. First of all, the disruptive sociopolitical fallout of

Iran's oil-fueled modernization process has focused attention on the domestic political repercussions of high oil revenues. OPEC producers with low absorptive capacity have historically tended to favor conservation of their petroleum resources; Iran's demise will strengthen their conservation orientation. What is new now is that countries with high absorptive capacities will tend to become more open to the conservation ethic, having seen the dangers of rapid economic development. They will be more prone to think in terms of how much social dislocation can be absorbed by their political system and this will complicate their thinking about how much oil revenue can be absorbed by their economic system. The reinforcement of conservation tendencies among OPEC states will be harmful to Western interests to the extent that it results in lower oil exports to oil consumers and lower imports from the industrialized exporters. Widespread determination on the part of OPEC producers to rein in their economic growth could precipitate an economic slowdown in the West as oil prices rose in response to tightened supply conditions, Western export industries lost part of their OPEC markets and trade balances deteriorated, once more raising the specter of petrodollar recycling problems.

A second lesson of the Iranian crisis which OPEC states in general and Persian Gulf states in particular are likely to learn is that the U.S. cannot ensure their stability. The Carter Administration's record in handling the Iranian crisis is not likely to encourage confidence in the capabilities of this country to backstop troubled allies. As the Administration continuously shifted policy one step behind events, U.S. policy became increasingly ambiguous. In the eyes of many conservative Arab leaders Carter's emphasis on human rights seems more like an escape clause for dodging previous commitments than a constructive principle of U.S. foreign policy.

Perhaps the most serious long-term implication of the Iranian crisis will be its impact on Saudi energy and foreign policies. Riyadh is understandably nervous about the startlingly rapid collapse of the Iranian monarchy and unhappy with the American unwillingness and/or inability to do anything about it. While there is little chance that a similar collapse could occur in Saudi Arabia given the homogenous nature of Saudi society and the unusual solidarity of the Saudi elite, the Saudis have been weakened in the eyes of potential enemies who might seek to foster similar instability in their oilfields. The danger is that Riyadh will relinquish its role as supplier of last resort to the West in order to pursue a more conservation-minded oil policy which would distance itself from Western interests, thereby reducing the incentives and opportunities of anti-Western political groups to stir up trouble in the Saudi oilfields.

Riyadh's unexplained reduction of oil output in January 1979 may have been intended to be a warning signal to oil importers who have come to expect and rely on the Saudis to stabilize world oil markets regardless of the Saudi domestic consequences or the reactions of other OPEC states. Most projections of future oil supplies have assumed that the Saudis would be producing at a rate of 12 MBD by the early 1980s and that they would increase output to 16 MBD by the end of the decade. If the Saudis have in fact revised their long-term thinking about just how much oil they are willing to produce, then the future international energy picture may not suit the tastes of Western oil consumers.

Finally, the Iranian crisis has removed the world's cushion of excess oil production for an indefinite period, leaving the taut global supply system fragile and more vulnerable to other surprise interruptions. The crisis has, in effect, telescoped time and moved the supply-demand situation to where it was expected to be in the mid to late 1980s. Running such a delicate system so close to absolute capacity leaves relatively little margin for error. A terrorist incident or a serious accident like the 1977 Abqaiq oil pipeline fire which temporarily deprived the world of almost 6 MBD could be disastrous for the West. The success of a small number of oilworkers in effectively disrupting the oil plans of a major oil exporter opens up a Pandora's box of future problems for oil exporters and importers alike. Given the Iranian oilworkers' manifest success in accomplishing their goals, a worst case analysis would indicate that it is only a matter of time before another group somewhere else attempts to duplicate that success.

In 1973 the energy supply of the West was threatened by a group of states pursuing national foreign policy objectives. In 1978-1979 Western supplies were interrupted by domestic political factions within an oil exporting state pursuing domestic political objectives. In the future, the West may be confronted by a nightmare situation in which its energy supplies are threatened by a subnational political organization pursuing international political objectives.

CONCLUSION

The timing of the Iranian oil shutdown was fortuitous for the West. Petroleum stocks were at an all-time high due to the normal buildups for the winter heating season and abnormally high stockpiling in anticipation of the OPEC price hike announced in December. The 5 MBD shortfall in Iranian exports was made up by approximately 3 MBD of extra production from other oil producers, especially Saudi Arabia, and a 2 MBD faster than normal drawdown of world oil stocks. The United States suffered a net deficit of

500,000 BD and initially sought to make this up through voluntary conservation measures. However, if the Iranian shutdown lasts much longer, the Carter Administration may be forced to resort to mandatory allocation measures in order to prevent a major drain on inventories which would give rise to shortages during the summer driving season or, more importantly, the winter heating season.

Although several oil-exporting states have sought to exploit the tightened supply situation by opportunistically boosting prices, the most ominous development was Saudi Arabia's signal that it was no longer willing to fully offset the Iranian shortfall. Riyadh's imposition of a 9.5 MBD production ceiling possibly foreshadows a significant alteration in Saudi long-term oil production plans, a move fraught with serious political, economic, and energy supply consequences for the West in general and the United States in particular.

At this point, the single most important determinant of the overall global impact of the Iranian oil shutdown is the length of time that Iranian oil exports will be denied to the world. While Ayatollah Khomeini has ordered oilworkers back to work, it is unclear to what extent radical strike leaders will be responsive to his demands. In addition to political factors which militate against a quick resumption of Iranian oil exports, there are technical constraints on ultimately attainable output levels which will be exacerbated by the drain of foreign technical expertise set in motion by the wave of virulent xenophobia currently gripping Iran.

In the long run, the Iranian crisis will tend to depress oil production in other OPEC states as well. The Shah's demise has vividly demonstrated the political pitfalls which accompany rapid economic development. Oil-exporting states in the future will be more prone to think in terms of how much social dislocation can be absorbed by their political systems and this will complicate their thinking about how much oil revenue can be absorbed by their economic systems. A widespread tilt to conservation-oriented oil production strategies among oil-exporting states would undermine Western interests to the extent that it would result in lower levels of oil available for export, higher oil prices, and large balance of trade deficits among oil importers.

The prospective long-term loss of 2 MBD of Iranian production will soak up much of the extra production capacity which was expected to provide a restraining influence on OPEC price policy and cushion the world against future oil supply disruptions. It will advance the date at which world oil demand is expected to grow dangerously close to world production capacity. Moreover, it has demonstrated the extent to which oil-importing states have become

vulnerable to unpredictable events beyond their control. Hopefully, the Iranian oil crisis will lead oil-importing states to take strong action to improve their energy security positions before their economies are disrupted by another politically-inspired interruption in oil supplies at some time in the future when there is not likely to be as much slack in the oil production system. In a very real sense, the West's addiction to Persian Gulf crude has become the Achilles' heel of its national security/foreign policy and a potentially disruptive influence on its economy.

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THE IRANIAN OIL CRISIS

INTRODUCTION

Following a lengthy series of paralyzing strikes and sporadic work slowdowns organized by anti-Shah oilworkers last fall, the Iranian oil industry ground to a near halt and suspended oil exports on December 26, throwing world oil markets into disarray and generating intense consternation among oil-importing states. Although Ayatollah Khomeini's revolutionary Islamic regime has recently ordered the oilworkers back to work, it is unclear at this time to what extent these orders will be obeyed and when oil exports will in fact resume. The purpose of this paper is to examine the short-term impact of the Iranian oil shortfall on oil-importing states--especially the United States--and to outline several long-term trends in oil production which might be set in motion by the Iranian oil crisis.

THE IMPACT ON WORLD OIL SUPPLIES

Before the chronic work stoppages began in October, Iran was the world's fourth largest oil producer with an average output of 6.05 million barrels a day (MBD), the equivalent of almost one-fifth of OPEC's total production.¹ Iran, as the world's second-ranked oil exporter (after Saudi Arabia), played an important role

1. Department of Energy, Monthly Energy Review, December 1978, p. 98.

in fueling the economies of the industrial West; its 5 MBD average export level provided for roughly 10 percent of the non-communist world's oil needs. When the politically-motivated strikes reduced Iranian oil output below Iran's domestic energy requirements, the global oil production network was stretched taut as more than 3 MBD of surplus production capacity was thrown into the breach, leaving oil importers to make up the remaining shortfall by drawing down worldwide oil reserves by an extra 2 MBD.

The chief source of new oil output was Saudi Arabia, the swing producer par excellence which functioned as a balance wheel to partially offset the Iranian shortfall and stabilize the volatile world oil market. A spectacular 3 MBD production boost brought Saudi production up to 10.5 MBD by mid-January, about 2 MBD higher than Riyadh's 8.5 MBD self-imposed average annual production ceiling. In addition Kuwait raised output levels by about 550,000 BD; Nigeria and Venezuela provided significant supplementary oil production; and Iraq, Abu Dhabi, and other Persian Gulf emirates provided marginal additions to world oil supplies.

THE REACTION OF OTHER OIL PRODUCERS

While the privately-owned international oil industry smoothly reallocated the Iranian oil shortfall to minimize its impact on world oil markets in general and Iran's individual customers in particular, various national petroleum organizations have sought to extract economic and political windfall benefits from the Iranian oil shutdown. Abu Dhabi opportunistically exercised a contractual option to cut back all its long-term oil supply contracts by 5 percent, thereby enabling itself to auction off two million barrels of oil on the spot market in late January. In early February, Libya mysteriously cut back oil production by 10 percent citing "technical problems" in three oil fields, and it is widely suspected that it is holding back oil in anticipation of future price hikes which might be precipitated by Iran's current difficulties.² The Kuwaiti Oil Minister Sheik Ali Khalifa-al-Sabah has publicly advised other OPEC states not to raise production levels further until consuming nations have depleted their crude oil stockpiles, presumably because by then OPEC's scheduled price increases will have taken effect and producers will realize greater returns for identical quantities of petroleum.

However, the most unsettling development to date has been the recent Saudi decision to scale down production in the first quarter to an average rate of 9.5 MBD, a loss of .7 to 1.0 MBD relative to

2. Energy User News, February 12, 1979, p. 4.

mid-January production levels. Last year Riyadh had indirectly indicated that it would suspend its self-imposed production ceiling of 8.5 MBD as long as Iran was shut down. Aramco boosted production to unprecedented levels (up to 12.85 MBD during one day in December) before having the 8.5 MBD ceiling reimposed in late January with output regulation administered on a monthly rather than an annual basis.³ A "special dispensation" allowed Aramco to produce 1 MBD more than the production ceiling in the first quarter of 1979 as long as the additional oil produced in excess of 8.5 MBD was sold at fourth quarter prices. This 10 percent premium was justified in Saudi eyes because the incremental production was assumed to be "borrowed" from the fourth quarter of 1979 when oil is scheduled to cost \$14.55 per barrel.

Riyadh has not bothered to publicly explain its ambivalent behavior at such a critical time, but the limits it has set on its willingness to offset Iran's oil cutoff are widely believed to be politically motivated. The new limits convey important messages to several different audiences. First, they put the United States on notice that it cannot take Saudi Arabia for granted, that Riyadh is unhappy with U.S. pressure to accede to the Camp David peace process, and that it is disappointed in the way that Washington treated the besieged Shah in the final days of his reign. Second, the new production ceiling indicates to the Shah's successors that the Saudis are not permanently appropriating Iran's former oil markets. This is highly significant in the light of Iranian historical experience in the early 1950s when Dr. Mossadegh's revolutionary regime was undermined by a Western boycott of Iranian oil which paved the way for the Shah's counter-coup. The Saudis are undoubtedly extremely anxious to establish a correct working relationship with the new Iranian regime, if only because Iran looms large as the dominant military-industrial Persian Gulf power. Third, the new production limits pointedly remind oil consumers that the Saudis are serious about conserving their petroleum resources.

Finally, the premium price provisions incorporated into the new production guidelines anticipate the inevitable calls for higher oil prices by "price hawks" within OPEC as well as Saudi Arabia and serve as a model which other moderate OPEC states can follow in order to supply the West with sorely-needed oil without succumbing to a dangerous temptation to force a massive price hike upon desperately needy oil consumers.

3. "Long Iranian Shutdown Could Spawn Fuel Crisis," Oil and Gas Journal, January 8, 1979, p. 21.

THE IMPACT ON OIL PRICES

The International Energy Agency (IEA) estimates that the Iranian shutdown has generated a daily shortage of 1-2 MBD in the international oil marketplace.⁴ Such a surfeit of demand over supply naturally will exert an upward pressure on oil prices, but this pressure on prices is circumscribed by the fact that more than 90 percent of the oil sold on the world market is sold under long-term contracts which are ostensibly insensitive to momentary market fluctuations. Such fluctuations instead register on the spot market, which is the closely-watched barometer of prevailing moods among oil insiders.

In the immediate aftermath of the Iranian shutdown, spot market prices spiraled to \$23 a barrel before settling down to below \$20, still \$4-5 more than the current OPEC price of \$13.34 per barrel. The spot market scramble was partially caused by major firms invoking force majeure clauses to cut back long-term supply contracts, forcing independent oil firms and refineries into an enlarged spot market. The hardest-hit companies were the fourteen members of the Iranian Oil Consortium, especially British Petroleum which controlled 1 MBD (40 percent) of Iran's exports. BP has imposed a 30-35 percent cut in deliveries for the first quarter of 1979--a sure sign that the company does not expect an early return of Iranian production.

While hikes in spot prices have little effect on consumer prices or supplies given the relative smallness of the spot market, the danger is that high spot market prices encourage OPEC price hawks, who understandably feel that they have as much a right to the extra revenues as do spot market speculators. Lawrence Goldstein of the Petroleum Industry Research Foundation estimates that the world market is already 2 percent above the OPEC price.⁵ Non-OPEC producers, such as the British, are already selling oil above the OPEC price and this practically forces OPEC to raise prices.

Already the African producers have warned customers of higher prices in the second quarter over and above the scheduled 3.9 percent price hike on April 1, to be charged when existing 3-month contracts expire. Abu Dhabi and Qatar have recently levied a 7 percent surcharge on all their exports and OPEC as a group does not seem far behind. The Venezuelan oil minister has called for a ministerial meeting in Geneva on March 26 to discuss the price implications of the Iranian crisis. Even if OPEC foregoes a

4. Washington Post, February 8, 1979, p. A11.

5. Washington Star, February 14, 1979, p. 1.

supplementary price hike in 1979, there is little to suggest that it will exercise price restraint in 1980. The Iranian disruptions last fall were a major reason behind the higher than expected price rises proclaimed last December and since then the Iranian situation has significantly deteriorated. OPEC price restraint next year depends on a resolution of the Iranian crisis this year and a slowdown in the dollar's decline in relative value. Unfortunately, the abrupt contraction of the Iranian arms market and the 14.5 percent increase in oil prices scheduled for 1979 will tend to weaken the dollar further. Therefore, one can assume that the ongoing Iranian crisis will trigger further oil price hikes either this year or next and that the magnitude of the price hikes will tend to vary directly in proportion to the duration of the Iranian shutdown.

DURATION OF THE SHUTDOWN

At this point the single most crucial determinant of the overall global impact of the Iranian oil shutdown is the length of time that Iranian oil exports will be denied to the world, and this cannot be reliably ascertained with any precision given the prevailing political instability which has paralyzed the oilfields. Shahriar Rouhani, the Washington spokesman for Iran's new Islamic government, predicted on February 13 that oil production would resume in eight to ten weeks. Secretary of Energy James Schlesinger estimates that it will take one to three months to bring Iran onstream again and more pessimistic analysts fear that Iranian wells will remain shut-in until the first quarter of 1980.⁶

Clearly, before Iranian oil starts flowing again in significant quantities, the Khomeini-Bazargan regime must assert its authority in the oilfields and gain the allegiance of key segments of the oil industry's labor force. To date the revolutionary Islamic regime has not demonstrated the ability to compel dissident oilworkers to return to work. Even if its current back-to-work order should eventually prove to be successful, the new regime may discover that the oilworkers, flushed with past success, will constitute a volatile political force in Iranian domestic politics prone to rely on work slowdowns or stoppages to register disapproval of the regime's policies. The pro-Soviet Tudeh Party, long outlawed by the Shah for its role in Moscow's abortive attempt to set up an autonomous "People's Republic of Azerbaijan" in Northern Iran in 1946, has exerted a radicalizing influence on Iranian oilworkers in recent months. A significant number of Iran's estimated one to two thousand Tudeh Party members work in the oilfields where they have cultivated a substantial number of sympathizers, especially among the ranks of second-level managers.

6. Wall Street Journal, February 13, 1979, p. 1.

Before becoming Prime Minister, Mr. Bazargan encountered communist strength firsthand as Khomeini's representative in the oil fields. Although Khomeini had previously called for a resumption of enough oil production to satisfy Iran's domestic needs, it took Bazargan much longer than expected to secure the compliance of the more radical oilworkers and this was at a time when the ayatollah was perceived to be an irresistible political force gathering momentum on the political horizon. In mid-February Khomeini's direct order to return to work was ignored by approximately 15,000 of the 67,000 workers engaged in the oil industry. At that time radical workers vowed to continue the strikes until "final victory," which was widely interpreted as meaning the creation of a Marxist state. It is becoming increasingly apparent that the oil strike strategem used by the National Front against the Shah, and by Khomeini's forces against the Bakhtiar regime, is now being used by leftists against Khomeini.

Given the strength of leftist sentiment in the oilfields, it is highly improbable that Khomeini's followers will be able to restore Iranian oil exports in the near future. In mid-February a high-ranking American intelligence official confided that his organization was "more optimistic" than it had been a week earlier due to the number of oilfield workers who trickled back to work after February 18. However, he cautioned "In the next week or so, the key question will be how many more oilfield workers go back." Since the ayatollah is not a compromiser, it is unlikely that he will bargain with the leftists in order to obtain their cooperation in returning to work. However, should he force a confrontation with the recalcitrant strikers, there is the distinct possibility that the resumption of Iranian oil exports would be postponed indefinitely since Marxist groups would be in an excellent position to sabotage the highly vulnerable oil facilities, should they choose to exercise this option. Perhaps the only way that oil production could be brought back onstream in the near future would be if the leftists backed down in the face of public pressure applied by Khomeini, but this, too, is an unlikely possibility in view of their previously articulated public refusal to accede to the ayatollah's wishes.

In addition to political factors which militate against a quick resumption of oil exports, there are political and technical constraints which would limit the rate at which the Iranian oil industry could come back onstream in the short run and the ultimate level of output which Iran could sustain in the long run. The less damage visited on Iranian oil facilities by natural causes and acts of commission (sabotage) or omission (lack of maintenance), the less dependent the Iranians will be on the reintroduction of foreign technical assistance to recommence oil production and the sooner they will be able to resume exports. Oil industry experts estimate

that if the oil facilities survive the Iranian political crisis relatively intact, it would take Iran three months to reach 3 MBD without the 1,000 foreigners (mostly Americans) who supervised oil production.⁷

While the oil facilities seem to have been shut down in an orderly fashion and have escaped major cases of sabotage thus far, the lack of discipline in the oilfields during the strikes has probably hamstrung maintenance procedures which would have prevented sanding, water seepage, corrosion, and loss of pressure in the wells. Iran will need foreign assistance to rework its wells in direct proportion to the degree that they have been damaged by their lengthy period of inactivity, yet both the conservative religious leaders and the radical left wish to minimize Western participation in oil operations. Furthermore, in the light of the xenophobic anti-American campaign of intimidation which culminated in the assassination of Paul Grimm in the oil capital of Ahwaz on December 23, no Americans and few Westerners are likely to return to their former jobs without explicit guarantees of personal safety. Unless the new Islamic government can accommodate the Marxists or obtain a popular mandate to effectively suppress them, it will not be in a position to extend such a guarantee.

FUTURE IRANIAN PRODUCTION

Once the Iranian political environment has calmed down sufficiently to allow the resumption of oil exports, the critical issue will become the quantity of oil which Iran would be willing and able to export. Once again the answer would primarily be political in nature because it would depend on the extent to which the Shah's successors could tolerate foreign technical assistance and, more importantly, the economic program which would be financed by future oil revenues. The IEA estimates that without foreigners, Iran will be able to produce 4.5 MBD at most. Iran's oilfields have been in production for a long time and keeping production up was becoming progressively more expensive and difficult even before the oil shutdown. When the political turmoil began, Iran was just initiating elaborate programs of gas injection to maintain pressure in the wells and forestall production declines in mature fields. Unless Iran retains the cadre of highly specialized foreign technicians which it has already assembled to implement the gas reinjection program, slackening pressure in existing wells will lower the recovery rates in the Iranian oilfields and lower Iran's future export potential. Not only is foreign expertise vital to Iran's

7. Washington Post, February 14, 1979, p. A19.

secondary recovery program, but it is currently indispensable to Tehran's exploration, drilling, and corporate planning capabilities where foreigners hold key administrative and supervisory positions. Iran's drilling program would be particularly hard hit by the absence of foreigners since only three of the sixty operational drilling crews were composed entirely of Iranians. While such activities are peripheral to short-term production efforts, they would be prime determinants of Iran's long-term export potential.

Another casualty of the Iranian revolution is likely to be the \$9 billion natural gas program begun in 1974. Since Iran does not have the technical capabilities to go it alone, long-range expansion plans are seriously hampered by the anti-foreign sentiment which has drained Iran of expatriate expertise. Gas from the massive new projects had been slated for export, secondary recovery programs, and domestic consumption, freeing as much as 600,000 barrels of oil a day for export. Unless foreign administrative and technical aid is allowed to continue to contribute to this important effort, Iran's future export potential will be significantly downgraded.

Undoubtedly, the most important influence on Iran's long-term export potential is likely to be the nature and scale of the economic development program which a successor regime will choose to implement. The Islamic Revolutionary Council under Khomeini is opposed to rapid economic development because it is considered to be unnecessary, inherently wasteful, and a corrupting influence on traditional social values, but any successor regime, regardless of political stripe, is likely to slow the pace of modernization in order to better control the explosive political forces which fast-paced economic growth and the concomitant social dislocations inevitably produce. Slower economic growth combined with a sharply reduced arms purchasing program will drastically reduce Iran's financial need to export oil, leaving any successor regime more sensitive to growing demands for conservation of the nation's dwindling petroleum resources.

The chronic political turmoil which closed Iran's bazaars, banks, factories, and businesses has crippled the Iranian economy, possibly for years to come. Politically-inspired wage hikes have exacerbated an already high inflation rate and have set the stage for a future round of demands for wage increases. Even before the strikes began in October, the government was operating under an unusually large \$2 billion budget deficit. While Khomeini's economic plans remain ambiguous, international bankers are concerned that the change in regimes may force delays in the repayment of the \$2.2 billion that Iran has borrowed from the U.S. and the \$3-4 billion it has borrowed from other countries. It is not clear as yet precisely how Iran's economic difficulties will affect its need for future oil revenues, but it would be safe to assume that as more of Iran's loans and import bills come due the new regime will come under increasing pressure to increase oil exports in order to finance them.

Currently, Secretary of Energy Schlesinger estimates that a successor regime would have to produce 3.5 MBD to meet its financial obligations. The new Economics Minister of the Islamic revolutionary government, Abdul Hassan Banisadr reportedly favors holding Iranian oil output to 2.4 MBD, roughly 40 percent of its former level.⁸ In any case, Department of Energy analysts project that Iranian production will probably never exceed 4 MBD again, a permanent net loss of almost 2 MBD.

THE IMPACT ON THE U.S.

In the first half of 1978, the U.S. was importing Iranian oil at a rate of 885,000 BD, the equivalent of about 10 percent of its oil imports and about 5 percent of its daily oil consumption. Because other exporters picked up the slack, the U.S. shortfall actually amounted to a net loss of 500,000 BD. In view of the huge 1.2 billion barrel stock of reserves on hand, Secretary Schlesinger called the situation "serious but not critical" and maintained that oil market conditions in the U.S. would remain "quite manageable" without Iranian crude at least through the end of March and possibly up to summer.⁹

Thus far the shortfall has exerted a negligible influence on the economy, but the returns are not completely in yet. Ultimately the shortfall is expected to trigger higher world oil prices which will add to inflationary pressures within the U.S. and slow real economic growth. Since trading partners, like Japan and West Germany, have historically reacted to such external shocks by markedly slowing their own economic growth rate, lowering import levels, and encouraging exports, it is likely that the U.S. trade deficit will be adversely affected; but this will take time to run through its course. The most visible immediate impact of the Iranian shortfall was a squeeze on independent refiners who could not afford to replace missing Iranian crude with high-priced crude from other sources found on the nervous spot market. As a result many have gone to the Economic Regulatory Administration requesting emergency supplies under the 1974 mandatory crude oil allocation program. Because the refiners tend to substitute heavier crudes for light low sulphur Iranian crude, they are unable to produce as much gasoline per barrel of crude as they would normally. Therefore, U.S. gasoline production could fall even further than the cutback in imports implies.

8. Washington Star, February 14, 1979, p. A1.

9. Energy Daily, January 4, 1979, p. 2.

THE U.S. RESPONSE

The demand for most oil products is relatively insensitive to shortrun price changes. Because of rigidities inherent to price controls on domestic crude oil and gasoline as well as controls on refiners' profit margins, the U.S. oil market cannot effectively respond to a shortage. Since the controls cannot be immediately dumped due to domestic political pressures, the Carter Administration is seeking the best way to allocate shortages in the least disruptive manner.

The Administration's immediate response to the Iranian shortfall was to call for voluntary "prudent" conservation aimed at saving up to 600,000 BD by encouraging motorists to observe posted speed limits and eliminate unnecessary driving while asking homeowners to lower their thermostats. This conservation effort was to depress demand while an oil inventory drawdown of about 500,000 BD increased market supplies. The Administration's second line of defense, outlined in early February, maintained that the U.S. "will have to begin to constrain demand or we will be in trouble next winter." Secretary of Energy Schlesinger held out the prospect of mandatory energy conservation measures which could be triggered by April 1, if Iran had not yet started up production and voluntary conservation failed to erase the shortfall.¹⁰ Schlesinger focused on the cumulative effect of tapping oil inventories which would soon need to be built up in preparation for next winter's heating season. In order to prevent Americans from "borrowing against the future" the Administration readied mandatory conservation curbs and emergency crude allocation schemes which would serve the function of redistributing the burden of the Iranian oil shutdown without hindering the inventory buildups needed for next winter.

In addition to standby emergency authority to allocate shortages among refiners, the Department of Energy was considering indirect curbs aimed at altering driving patterns by closing gas stations on Sunday or allowing motorists to fill up their tanks only on alternate days and was preparing a standby gasoline rationing program for submission to Congress in late February to be used only as a last resort. Other policy options under consideration were measures promoting the use of natural gas rather than oil, the easing of clean air regulations to permit more coal consumption, and the diversion of oil from the strategic oil stockpile to the internal oil market.

The Iranian shortfall forced the Administration to postpone previously considered energy policy proposals as well as develop new contingency plans. The possible inflationary repercussions which the Iranian shortfall would have on a free market forced the

10. Petroleum Intelligence Weekly, February 5, 1979, p. 5.

Administration to indefinitely delay the submission of a gasoline decontrol bill, which it had tentatively considered sending to Congress in February. Also placed in limbo was Carter's pledge to decontrol crude oil, made at the Bonn economic summit last summer as part of an American effort to reduce oil imports. While both these decontrol plans may have been rendered unpalatable to the American public in the short run due to the inflationary impact which the oil supply shortfall would exert on energy prices, in the long run the sense of urgency engendered by the crisis will probably raise public awareness of the benefits of oil decontrol, not the least of which would be added protection against supply disruptions. According to the American Petroleum Institute, if the U.S. had lifted price controls after the Arab oil embargo, it would have stimulated enough domestic exploration and investment to produce 2 MBD more of domestic oil in 1979--more than enough to neutralize the impact of the Iranian oil cutoff.¹¹

THE IEA OIL-SHARING AGREEMENT

A major factor which is likely to affect the American domestic response to the Iranian shortfall is whether the IEA oil-sharing agreement is in fact triggered by global shortfalls. The Department of Energy estimates that the U.S. would lose an additional 500,000 BD of crude if called upon to make up shortfalls in other IEA states in the event that the oil-sharing agreement is triggered. Under the terms of the agreement oil shortfalls of less than 7 percent are met by market forces, but any member that crosses the 7 percent shortfall threshold holds the option of setting allocation procedures in motion which distribute supply deficits equitably among all nineteen IEA members.

Thus far the IEA has purposely avoided public speculation about the possible consequences of a lengthy Iranian shutdown. Ulf Lantzke, the IEA Executive Director, has projected "no problem for February and no major problem for March," but the IEA has stepped up its monitoring of oil supplies and has scheduled a meeting of the Governing Board for March 1-2, presumably to assess the Iranian situation.

Currently, the U.S. Department of Energy estimates that the IEA group taken as a whole is 1 MBD above the 7 percent shortfall which would pull the general trigger of the oil-sharing mechanism. Japan is the hardest hit IEA member, having lost 17 percent of its total oil imports in the Iranian cutoff, and is hovering near the 7 percent trigger threshold. The Japanese have instituted mandatory

11. Newsweek, February 19, 1979, p. 26.

consumption curbs and fear the situation will reach "crisis proportions" if Iranian exports do not resume by June.

If any single country triggers the oil-sharing agreement, it is likely to be Japan; but even if Japan falls below the 7 percent flashpoint it is believed that the Japanese might be reluctant to trigger the agreement for fear that OPEC members would exploit the situation to raise prices. Japanese buyers are currently the heaviest buyers on the spot market and would be forced to swallow astronomical price premiums if the initiation of the oil-sharing agreement panicked the short-term market. The Japanese might also be reluctant to trigger the oil-sharing plan because activation requires stringent mandatory conservation methods which could lead to serious economic dislocations in their free market economy. Moreover, triggering the agreement would force the four major IEA oil producers--the U.S., U.K., Canada, and Norway--to give up crude, possibly generating internal political problems for them which would weaken the solidarity of the oil-importing bloc. For the time being the Japanese, like other IEA members, find it easier to rely on the international oil companies to informally allocate oil shortages than to rely on rigid IEA redistribution schemes which have never been tried before. Not only are the companies more responsive, more flexible, and more experienced in dealing with the logistics of the marketplace, but they are accustomed to dealing with the hasty denunciations which will inevitably arise as the public's temper becomes frayed by drawn-out oil shortages.

SOUTH AFRICA AND ISRAEL

The two countries most affected by the Iranian crisis are South Africa and Israel, neither of which belongs to the IEA. South Africa has long enjoyed a special relationship with Iran, partially because the Shah's father lived and died there in exile after being forced from his throne in favor of his son during World War II. South Africa, which has no oil of its own, imported more than 90 percent of its 430,000 BD import total from Iran, its best customer in the Middle East. Since the new Islamic government has joined African and Arab oil exporters in embargoing the country, South Africa has been forced to enter the spot market and to draw down its large strategic and commercial stockpiles, the equivalent of two to three years' worth of consumption, depending on the rate of use. In the long run, Pretoria is expected to fall back on its massive coal reserves, expand its coal liquification capacity and develop an atomic power industry.

Ironically, Israel has been hit harder by the 1978-1979 Iranian shutdown than by the 1973 Arab oil embargo. While details about Israel's oil supply arrangements are closely held due to fear that

disclosure could result in public pressure from Arab producers on the companies that supply Israel, it is believed that Israel depended on Iran for about 80,000 BD of its 125,000 BD oil imports.¹² Permanently denied its access to Iranian oil by the new Islamic government, Israel has sought to replace Iranian oil with shipments from Mexico, Venezuela, and Norway. If new supplies are not forthcoming in sufficient quantities, Tel Aviv could fall back on its nine-month supply of oil in commercial and strategic stockpiles as well as a secret codicil to the 1975 Second Sinai withdrawal agreement which commits the United States to make oil available for sale to the Israelis for up to five years in an emergency. According to the State Department, the upper range of oil which the U.S. would be required to divert to Israel would be 70,000 BD, less than one-half of 1 percent of U.S. daily consumption, and would commence 60-90 days after the pledge was invoked. While Secretary Schlesinger recently reaffirmed Washington's intention to honor this commitment, the Israelis are not eager to activate the supply pledge, preferring to seek alternative sources of oil rather than increase their vulnerability to American political pressure at this sensitive juncture in the Arab-Israeli peace talks.

The denial of Iranian oil imports has also hindered Tel Aviv's position at the peace talks regarding its contemplated withdrawal from the Sinai Peninsula. Minister of Energy Yitzak Modai has indicated that Israel would not sign a peace treaty unless it included provisions affording it access to oil from Sinai fields developed under Israeli occupation. Egypt had previously maintained that after a peace treaty, it would be willing to sell oil to Israel on a purely commercial basis at world market prices, but would not accept any Israeli participation in operations or other priority commitments. Butros Ghali, Egypt's acting Foreign Minister, reiterated Egypt's position on January 8, 1979, when he explicitly rejected according any privileges to Israel in regard to Sinai oil as a consequence of the Iranian situation. While the Sinai oil issue is peripheral to the main sources of disagreement, it is likely to be perceived by the Israelis as an indicator of Egyptian sensitivity to Israeli security worries and could engender complications in other areas of negotiation.

COMPARISONS TO THE ARAB OIL EMBARGO

While the initial impact of the Iranian oil shutdown was not as severe as the 1973 Arab oil embargo, its long-range implications are far more troubling. If it had to happen, the Iranian crisis could not have come at a better time. World oil stocks were at an all-time high--4 to 5 billion barrels--in anticipation of the OPEC price rise which was to be announced in December 1978. Moreover, the first quarter of any year is usually a low oil buying season.

12. Washington Post, January 13, 1979, p. A15.

Oil buyers normally stock up in the last quarter of the year for winter home heating supplies and wait until the second quarter of the next year to build up inventories for summer gasoline use.

The 1973 embargo removed approximately 570 million barrels of oil from world markets over five months. The Iranian crisis as of mid-February had removed roughly 375 million, but no end is yet in sight. The 1973 oil embargo caught importing countries flat-footed. The West reacted in a piecemeal fashion, some nations resorting to saue qui peut policies, while others, including the United States, made the mistake of "overallocating" the supply shortfall. By 1979 oil importers had created the IEA to handle oil supply emergencies, had drawn up better plans for conservation and allocation, and generally held a heightened awareness of the problem. Because oil-importing countries had already overcome the difficulties imposed by the 1973 embargo, they were operating in a better psychological climate and could draw on their experience in 1979. With larger stockpiles and more extensive pre-crisis preparations, they could afford to take a longer term view of the crisis.

During the worst of the 1973 embargo, the U.S. was deprived of 1.5 MBD, compared with about .9 MBD in 1979. The initial supply impact of the Iranian crisis was only about 60 percent as bad as the 1973 supply shortfall. When Iranian production ceased, the U.S. had a 70-day supply of crude on hand, compared with only 54 days in October 1973. Moreover, in December 1978, the U.S. had developed a strategic stockpile of more than 70 million barrels of oil, although the machinery for withdrawal would not be in place until August 1979.

In 1973, the price rise generated by the embargo did more damage to the economy than the resultant supply shortfall. Crude oil prices quadrupled in less than a year, raising the Consumer Price Index 3.5 points and in effect imposing a \$45 billion tax on the American economy. Price hikes precipitated by the Iranian crisis will not be anywhere near as large and will not have the same inflationary impact, because the base price is already so high. However, the Iranian crisis is likely to affect oil supplies more than oil prices in the short run and will probably have several troubling implications for world oil production levels in the long run. While the 1979 crisis is not likely to be as quantitatively severe as the 1973 crisis, it will probably impose more severe qualitative constraints on the future world oil situation.

LONG-TERM IMPLICATIONS

The Iranian oil crisis is likely to lead other OPEC producers to several conclusions which could impair Western interests in the future. First of all, the disruptive sociopolitical fallout of

Iran's oil-fueled modernization process has focused attention on the domestic political repercussions of high oil revenues. OPEC producers with low absorptive capacity have historically tended to favor conservation of their petroleum resources; Iran's demise will strengthen their conservation orientation. What is new now is that countries with high absorptive capacities will tend to become more open to the conservation ethic, having seen the dangers of rapid economic development. They will be more prone to think in terms of how much social dislocation can be absorbed by their political system and this will complicate their thinking about how much oil revenue can be absorbed by their economic system. The reinforcement of conservation tendencies among OPEC states will be harmful to Western interests to the extent that it results in lower oil exports to oil consumers and lower imports from the industrialized exporters. Widespread determination on the part of OPEC producers to rein in their economic growth could precipitate an economic slowdown in the West as oil prices rose in response to tightened supply conditions, Western export industries lost part of their OPEC markets and trade balances deteriorated, once more raising the specter of petrodollar recycling problems.

A second lesson of the Iranian crisis which OPEC states in general and Persian Gulf states in particular are likely to learn is that the U.S. cannot ensure their stability. The Carter Administration's record in handling the Iranian crisis is not likely to encourage confidence in the capabilities of this country to backstop troubled allies. As the Administration continuously shifted policy one step behind events, U.S. policy became increasingly ambiguous. In the eyes of many conservative Arab leaders Carter's emphasis on human rights seems more like an escape clause for dodging previous commitments than a constructive principle of U.S. foreign policy.

Perhaps the most serious long-term implication of the Iranian crisis will be its impact on Saudi energy and foreign policies. Riyadh is understandably nervous about the startlingly rapid collapse of the Iranian monarchy and unhappy with the American unwillingness and/or inability to do anything about it. While there is little chance that a similar collapse could occur in Saudi Arabia given the homogenous nature of Saudi society and the unusual solidarity of the Saudi elite, the Saudis have been weakened in the eyes of potential enemies who might seek to foster similar instability in their oilfields. The danger is that Riyadh will relinquish its role as supplier of last resort to the West in order to pursue a more conservation-minded oil policy which would distance itself from Western interests, thereby reducing the incentives and opportunities of anti-Western political groups to stir up trouble in the Saudi oil fields.

Riyadh's unexplained reduction of oil output in January 1979 may have been intended to be a warning signal to oil importers who have come to expect and rely on the Saudis to stabilize world oil markets regardless of the Saudi domestic consequences or the reactions of other OPEC states. Most projections of future oil supplies have assumed that the Saudis would be producing at a rate of 12 MBD by the early 1980s and that they would increase output to 16 MBD by the end of the decade. If the Saudis have in fact revised their long-term thinking about just how much oil they are willing to produce, then the future international energy picture may not suit the tastes of Western oil consumers.

Finally, the Iranian crisis has removed the world's cushion of excess oil production for an indefinite period, leaving the taut global supply system fragile and more vulnerable to other surprise interruptions. The crisis has, in effect, telescoped time and moved the supply-demand situation to where it was expected to be in the mid to late 1980s. Running such a delicate system so close to absolute capacity leaves relatively little margin for error. A terrorist incident or a serious accident like the 1977 Abqaiq oil pipeline fire which temporarily deprived the world of almost 6 MBD could be disastrous for the West. The success of a small number of oilworkers in effectively disrupting the oil plans of a major oil exporter opens up a Pandora's box of future problems for oil exporters and importers alike. Given the Iranian oilworkers' manifest success in accomplishing their goals, a worst case analysis would indicate that it is only a matter of time before another group somewhere else attempts to duplicate that success.

In 1973 the energy supply of the West was threatened by a group of states pursuing national foreign policy objectives. In 1978-1979 Western supplies were interrupted by domestic political factions within an oil exporting state pursuing domestic political objectives. In the future, the West may be confronted by a nightmare situation in which its energy supplies are threatened by a subnational political organization pursuing international political objectives.

CONCLUSION

The timing of the Iranian oil shutdown was fortuitous for the West. Petroleum stocks were at an all-time high due to the normal buildups for the winter heating season and abnormally high stockpiling in anticipation of the OPEC price hike announced in December. The 5 MBD shortfall in Iranian exports was made up by approximately 3 MBD of extra production from other oil producers, especially Saudi Arabia, and a 2 MBD faster than normal drawdown of world oil stocks. The United States suffered a net deficit of

500,000 BD and initially sought to make this up through voluntary conservation measures. However, if the Iranian shutdown lasts much longer, the Carter Administration may be forced to resort to mandatory allocation measures in order to prevent a major drain on inventories which would give rise to shortages during the summer driving season or, more importantly, the winter heating season.

Although several oil-exporting states have sought to exploit the tightened supply situation by opportunistically boosting prices, the most ominous development was Saudi Arabia's signal that it was no longer willing to fully offset the Iranian shortfall. Riyadh's imposition of a 9.5 MBD production ceiling possibly foreshadows a significant alteration in Saudi long-term oil production plans, a move fraught with serious political, economic, and energy supply consequences for the West in general and the United States in particular.

At this point, the single most important determinant of the overall global impact of the Iranian oil shutdown is the length of time that Iranian oil exports will be denied to the world. While Ayatollah Khomeini has ordered oilworkers back to work, it is unclear to what extent radical strike leaders will be responsive to his demands. In addition to political factors which militate against a quick resumption of Iranian oil exports, there are technical constraints on ultimately attainable output levels which will be exacerbated by the drain of foreign technical expertise set in motion by the wave of virulent xenophobia currently gripping Iran.

In the long run, the Iranian crisis will tend to depress oil production in other OPEC states as well. The Shah's demise has vividly demonstrated the political pitfalls which accompany rapid economic development. Oil-exporting states in the future will be more prone to think in terms of how much social dislocation can be absorbed by their political systems and this will complicate their thinking about how much oil revenue can be absorbed by their economic systems. A widespread tilt to conservation-oriented oil production strategies among oil-exporting states would undermine Western interests to the extent that it would result in lower levels of oil available for export, higher oil prices, and large balance of trade deficits among oil importers.

The prospective long-term loss of 2 MBD of Iranian production will soak up much of the extra production capacity which was expected to provide a restraining influence on OPEC price policy and cushion the world against future oil supply disruptions. It will advance the date at which world oil demand is expected to grow dangerously close to world production capacity. Moreover, it has demonstrated the extent to which oil-importing states have become

vulnerable to unpredictable events beyond their control. Hopefully, the Iranian oil crisis will lead oil-importing states to take strong action to improve their energy security positions before their economies are disrupted by another politically-inspired interruption in oil supplies at some time in the future when there is not likely to be as much slack in the oil production system. In a very real sense, the West's addiction to Persian Gulf crude has become the Achilles' heel of its national security/foreign policy and a potentially disruptive influence on its economy.

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