

# F.A.S. PUBLIC INTEREST REPORT

Journal of the Federation of American Scientists (FAS)

SPECIAL ISSUE:  
STRATEGIC PETROLEUM  
RESERVE

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## WHAT GOOD IS AN EMPTY PETROLEUM RESERVE?

Nothing better illustrates America's reluctance to prepare for energy emergencies than the saga of the Strategic Petroleum Reserve (SPR). It was five years ago, after the 1973-1974 Arab oil embargo, that Congress decided America needed a 90 day reserve to protect itself against oil blackmail. With imports running at about 8 million barrels a day, this meant storing 750 million barrels.

Five years later, we have stored 92 million barrels—a two week supply—and have just begun to store another 36 million barrels because Congress insisted. But the Administration is not soliciting the sale of more. It has no real guidelines on how the oil will be withdrawn. And it is moving too slowly toward the construction of space for the last 250 million barrels of the 750 million originally mandated.

### Everyone Appears to Support SPR

All this despite an overwhelming consensus, within the government and without, that America needs this petroleum reserve. And events since 1975 have shown—in the spring, 1979, loss of Iranian oil and then in the fall 1980, loss of Iraqi oil—that purposeful embargoes were by no means the only problem.

Moreover, during the Iranian-Iraqi war, related tanker insurance rates jumped 300% deterring much oil traffic from entering the Gulf of Hormuz, and suggesting a new way in which the Strait of Hormuz could be closed: pre-emptively by Lloyds of London on the specter of spreading Gulf violence. The Moslem world, a mosaic of fracture lines that makes the Balkans look like an island of stability, has again exposed its capacity: for internecine warfare; for the taking up of sides by bystanders; and for its ability to draw America into the

struggle (through the Saudi request for AWACS planes). Our allies have shown understandable reluctance to become involved. All in all, if recent events do not lead to an actual disaster, they certainly represent a dress rehearsal.

The strategic oil reserve, in a rational world, would be one of America's highest priorities. With its currently projected size of one billion barrels, and assuming that half of America's imports would survive a Middle Eastern oil catastrophe, the reserve could disgorge a 3,000,000 barrel a day replacement—and thus sustain the country at approximately pre-crisis levels—for about a year.

This would give the economy much needed time to adjust and would save untold billions in the gross national product. It would provide the bureaucracy with the time it needs to implement such other emergency preparedness schemes as rationing and a host of mandatory schemes for driving less (such as the day-a-week plan advocated by FAS)—schemes which are in a state of perpetual disarray. Alternatively, it would permit Congress to legislate methods that would ration gasoline through higher prices, windfall taxes and suitable rebates to low income persons.

Most important of all, it would give America the confidence to react deliberately, and thoughtfully, to threats to American oil. It should be evident now that these threats can come in many different guises which deserve quite different responses. A year's oil reserve might well not be decisive in the geo-political considerations surrounding a Soviet invasion of oil fields. But it would be highly relevant to an Administration trying to

*(Continued on page 2)*

## SPR: CAN IT BE FILLED AND EMPTIED?

The Administration is fulfilling, minimally, a Congressional mandate to fill the SPR but the rate is so modest as would take a quarter century! This is despite surprising unanimity of support for SPR including a Republican Party Platform that calls for "rapid filling" of the reserves and a Democratic Party Platform that calls for filling "as market conditions permit," which they most certainly do now. This preeminent issue is discussed on pages 3 and 4.

While the pumps now exist to drawdown the reserve in emergencies, surprisingly little thought has been devoted to the conditions under which these pumps would be used—a matter discussed on pages 6 and 7 in an initial effort to stir some badly needed discussion. Is the reserve a last-ditch

protection only against the ravages of war or gross dislocation, or could and should it be used to moderate the enormous price increases anticipated in oil-related crises? The absence of agreement on this point within FAS turns, it seems, on the likelihood that only with a large reserve could one achieve both goals. Some numbers are provided in an effort to estimate how large.

In between we focus on whether the salt domes can be trusted to hold the oil, tips about this started FAS on this investigation. In this regard, things seem more or less in order, but the project should be securing from previous owners of the salt domes every last bit of information available and there is some question whether it has. □

(Continued from page 1)

gauge whether it needed to intervene to support a Saudi regime or could, alternatively, wait to deal in due course, with a successor government. And since, to put it mildly, war is the most expensive of man's activities, an oil reserve that could provide an alternative is cost-effective indeed.

At present, and under intense Congressional pressure, the Administration is taking 100,000 barrels a day for a year from the Elk Hill Naval Petroleum Reserve and, through swaps, is "front-loading" most of this into the Strategic Petroleum Reserve by January 1. The Administration's reluctance appears to have been an exaggerated response to not very strenuous Saudi objections to our filling the reserve. We urge that solicitations to purchase more oil after that time be put out immediately for substantial amounts of oil, on the order of 300,000 barrels per day. In fact, it should be the goal of any Administration to ensure that there is no period in which the Strategic Petroleum Reserve is not being filled at least at some level, so as not to present an opening to those who would seek to dissuade us from protecting ourselves.

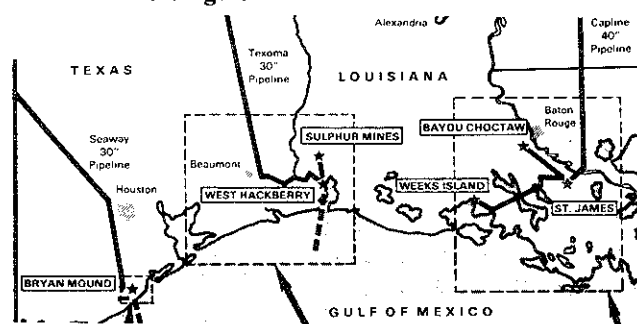
We urge the Administration in general, and OMB in particular, to accelerate work on the next phase of construction of storage space which will, under the best of circumstances, take four years to bring on line. We urge the Justice Department to cooperate with the Strategic Petroleum Reserve Office lawyers in pressing the previous owners of the strategic reserve salt domes to answer any and all technical interrogatories about these domes, as part of the litigation now underway over the Government's purchase price. We simply must know everything we possibly can about those salt domes to ensure that the oil is safely stored, and can be efficiently retrieved.

As the reserve fills, there must be intense thought given to the conditions under which the oil will be withdrawn. Can it be done in conjunction with allies and in response to price shocks so as to hold down ratcheting upwards of oil prices in crises? Or should the reserve be thought of as an ultimate bargaining chip almost never to be played? It is believed that the salt caverns will safely permit five complete withdrawals and refills; what domestic pressures will there be to use this refill possibility, or to avoid it? Our specialists are not agreed on these questions and the matter clearly needs attention.

America likes to believe that God looks after it. And heretofore, we have been strong enough to leave emergency preparedness to weaker nations. But today, in the face of massive instability in oil production, we no longer have the luxury of ignoring future possibilities. Rarely have so many portents of future disaster been so widely ignored in preparedness; the strategic petroleum reserve is becoming a test of American common sense. □

—Reviewed and Approved by the FAS Council

### The Five Storage Sites and the St. James Terminal



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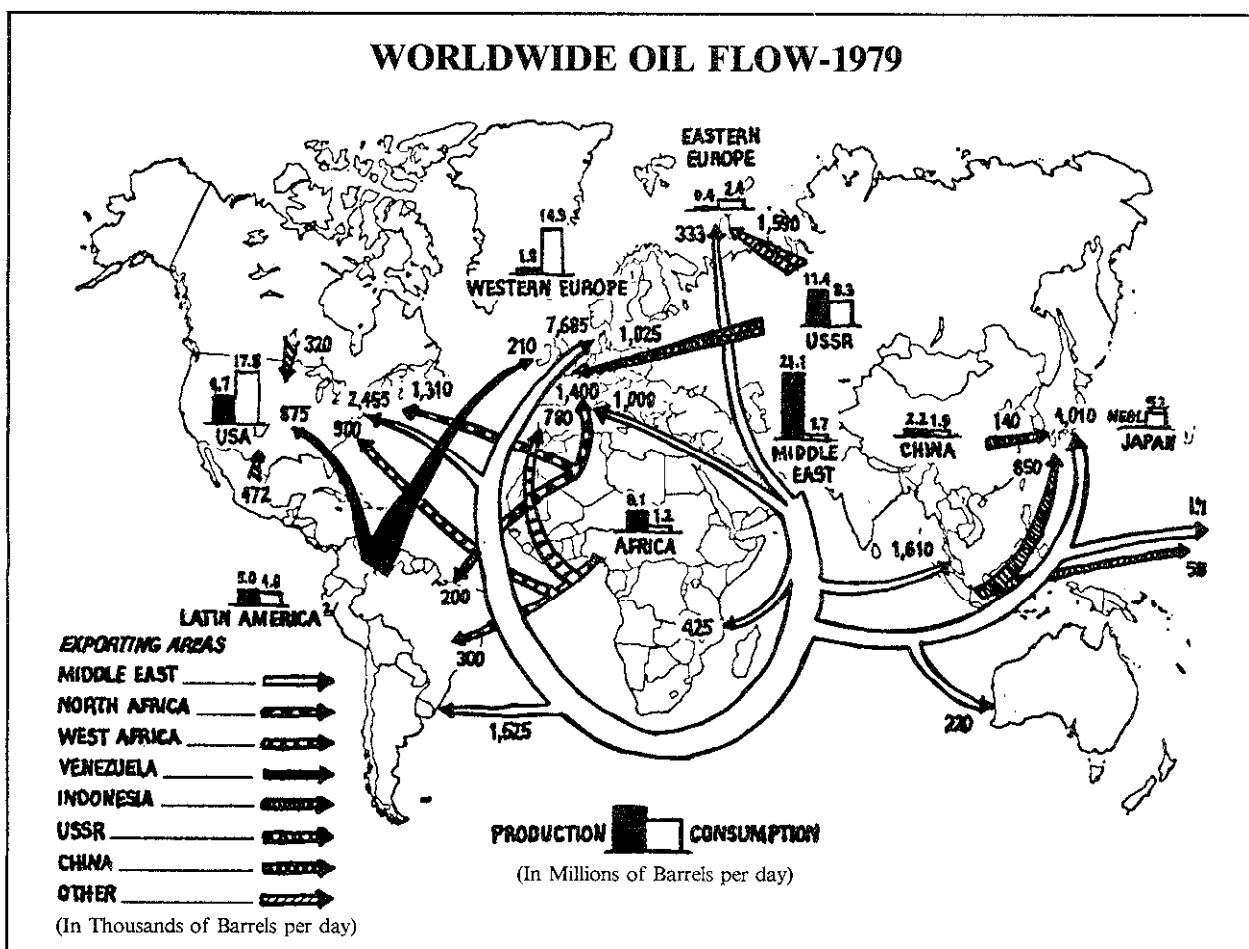
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This Defense Department graph reveals how a closure of the Strait of Hormuz would effect 77% of Japanese imports and 70% of Western European imports, but only 32% of our own imports. Even more significant in the relative impact of the disaster is the fact that the Japanese import *all* their oil and the Western Europeans import 87% of their oil, while we import only about 40%.

### WHY ISN'T IT FULL?

America is dependent upon foreign oil for about one-third of the 18 million barrels a day which it consumes. Attempts to eliminate the dependence, as in President Nixon's Project Independence, have failed utterly. There is little chance, in the foreseeable future, that either projects of drilling more oil wells, creating synthetic fuel or developing renewable resources, will close the gap. In the short and medium run, American dependence can only be resolved by conservation.

But there are ways to reduce America's vulnerability to oil supply cutoffs. And what they all come down to is having a reserve supply which buys time to resolve, or accommodate to, the new reality.

But the gap between reserve goals and reserves in place has rarely been so great. In April, 1977, President Carter expanded the long run goal of the Strategic Petroleum Reserve to one-billion barrels—about four months of U.S. imports. But today, of the oil originally planned to be stored by this date, only 20% is, in fact, in reserve.

Today, SPR is just beginning to add (marginally) to a two-week reserve of imports which was already in place in early 1979. SPR's problems with oil supply began after the spring, 1979 Iranian Revolution. At a June summit, the

Japanese asked President Carter to cease purchases for the reserve so as not to further burden an already tight oil market. At that time, the reserve had the 92 million barrels it has today.

Nine months later, in April, 1980, Secretary of Energy Charles Duncan went to Saudi Arabia to advise the Saudis, among other things, that we were going to return to filling the reserves. As should have been predicted in advance, he found resistance. The Administration pulled back. Perhaps President Carter feared a fight with the Saudis before the election.

But sentiment throughout most of the bureaucracy—including persons reading the cable traffic with Saudi Arabia—was for going ahead. This feeling was almost unanimous inside the Congress itself. Congress thereupon fashioned legislation with both carrot and stick, to ensure that SPR got some oil. By late September, 1980—with SPR having gotten no new oil for over 18 months—an amendment to the Energy Security Act (the Act authorizing synthetic fuels and hence deeply desired by the Administration) required the President to resume filling the reserve at a minimum rate of 100,000 barrels per day. Not satisfied just to direct the President to comply, Congress asserted that no government oil from the Elk

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Hills Naval Petroleum Reserve could be sold unless the 100,000 barrels for SPR was forthcoming—Elk Hills was producing about 160,000 barrels a day at the time. Hence the Administration was denied revenue from 160,000 barrels per day unless it provided 100,000 for SPR.

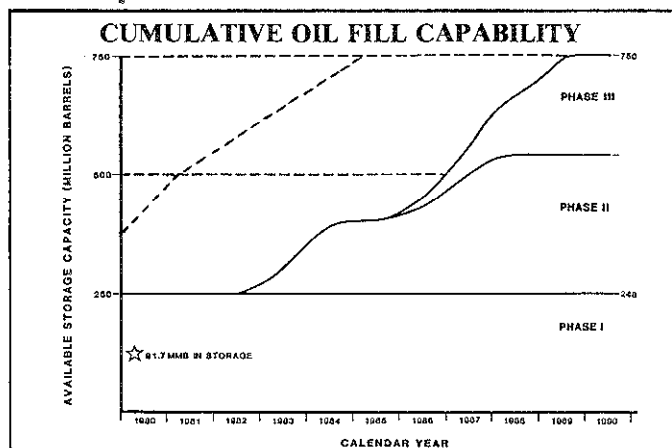
Congress further provided that all oil purchased for the reserve in fiscal year 1981 would receive "entitlements" (in effect, rebates) worth nearly \$30 of the about \$37 per barrel purchase price for oil. Never again would oil be purchased so cheaply for SPR. Moreover, the Appropriations Committees included funds to permit an average daily fill of 300,000 barrels per day for fiscal year 1981 plus long term contracting for delivery at the same rate for the first six months of fiscal year 1982.

What do these fill rates amount to? One hundred thousand barrels per day is 36 million barrels per year or about *one week* of imports—a very modest level which would require a decade to get even to the original 90 day level. On the other hand, 300,000 barrels per day would produce three weeks of reserves in a year. And as the graph below shows, if maintained steadily, it is a rate higher than the construction rate could accommodate. (This graph shows that a steady state rate would be about 250,000 barrels per day if construction plans are not stepped up.)

Acquiescing in the Congressional mandate, but observing that it was not feasible to ship the full amount by pipeline from California to the Louisiana and Texas storage sites, the Administration has been soliciting swaps of oil and "front-loading" the storage schedule so that most of the full year of 100,000 per day oil will, in fact, be stored within a few months.

Thus far, however, the Administration has not put out any solicitation to buy oil in excess of the 100,000 per day from Elk Hills. The test of the Administration's seriousness in filling the reserve will come, presumably, after the election.

Thus the money has been appropriated. The existing empty storage space of 150,000,000 barrels are ready to take as much as 700,000 barrels per day and the new Phase II construction could take 400,000 barrels per day. Meanwhile, the Saudis have become our beneficiary with the sending of American soldiers and AWACs planes. And an oil glut still exists on the market. The time to buy appears to be now. □



## STRATEGIC PETROLEUM RESERVE: FOUR CAVERNS AND A MINE

The five storage sites include one salt *mine* (Weeks Island) and four sets of salt *caverns*. The caverns are, in effect, oil wells drilled into salt formations after which water is pumped in—so as to induce an underground bubble of brine. Crude oil is then pumped in so as to displace the brine. When one desires to retrieve the oil from storage, the process is reversed with water pumped in so as to drive the oil out. (Because the water used to remove the oil tends to leach out still further volumes of salt, the caverns cannot be filled and refilled endlessly without losing their needed shape, combining with one another, or reaching the outside of the salt dome. But they are designed to be capable of five complete refills.)

The salt mine at Weeks Island, on the other hand, is much like a coal mine, in which salt rather than coal was formerly mined by Morton Salt. Two horizontal mine shafts have been connected by tens of vertical columns. Oil will be stored in these columns, and on the two horizontal levels, in what is really an interconnected oil "honeycomb"; it can be reused indefinitely.

Morton Salt has sold the salt rights only down to about 300 feet below the lower of the two shafts; it plans to mine salt underneath the oil storage. Thanks to intervention by the Labor Department's Mine Safety Administration, Morton is being required to stay 600 feet below the salt in the name of miner safety; the oil might not otherwise have been safe, GAO specialists argued.

Since half of Phase I will be filled by January 1, Phase I could be completely filled in another six months, if the oil were purchased to do so. (It could then be emptied, if needed, at 1.7 million barrels per day in five months.)

But the second phase of SPR, involving the expansion of three, of the initial five, sites by 290 million barrels is still under construction. These expansion operations involve leaching out more volume at Bryan Mound (120 million barrels), West Hackberry (120 million barrels) and Bayou Choctaw (10 million barrels). These operations have begun at Bryan Mound and will start at East Hackberry in May, 1981. But the leaching rate at these locations will limit SPR absorption of oil there to 400,000 barrels per day; in sum, Phase II could not be filled for at least two years, even if all efforts were made. (Thereafter, in an emergency, Phase I and II of SPR could supply 3.5 million barrels per day for about five months.)

By January 1, half of Phase I will be filled and able to absorb the remaining 122 million barrels in as little as six months. Thereafter, beginning in mid-1982, 200,000 barrels per day could be absorbed until mid-1984 as more storage space is leached out at existing sites. For almost two years, little more could be stored, until Phase III began to be ready in 1986, after which a return to storage levels of 250,000 barrels per day could be accommodated. The cause of the two year gap is that Phase III should already have been funded at about \$50,000,000 in fiscal 80 but, in fact, is getting only \$2.8 million in fiscal 81—not enough for land acquisition and detailed design. Unless Phases I and II are filled promptly, Congress may become reluctant to provide meaningful funding for Phase III—much less for the projected Phase IV bringing the total to one billion barrels. Dotted line shows SPR is five years behind original plan for construction.

As for Phase III, the increase in the reserve from 538 million barrels to 750 million, it will require four years to bring on line, even if started at once, filling at a rate of 600,000 barrels per day and bringing the entire SPR to a rate of drawdown of 4.5 million barrels per day for almost six months.

#### Chemical Companies Previous Owners

The four sites of salt caverns were previously owned by chemical companies: Dow Chemical (Bryan Mound); Allied Chemical (Bayou Choctaw), Allied and Pittsburgh Plate Glass (Sulphur Mines) and Olin (West Hackberry). These companies were washing salt out of the ground for use in various chemicals. Unlike SPR, they were unconcerned about the shape of the underground formations they induced and, as a result, many of the caverns were unusable for SPR.

Not counting the Weeks Island Mine which will have 75 million barrels, there are sixteen salt caverns in use ranging from 5-30 million barrels in size. The contents, at \$35 per barrel, are each worth between \$17.5-\$100 million. Thus, at first glance, there seems a wholly desirable dispersion of these valuable contents among five different geographical sites and, in fact, 17 different places of storage.

Unfortunately, the government seized the four sites being used for salt caverns by use of eminent domain. In the resultant litigation over a fair price, the SPR had difficulties getting all the data it wanted on the historical use of the salt domes of the chemical companies.

Mr. Donald Mazur, project manager, advised FAS that SPR had all necessary historical records, and had sonared the caverns to produce very precise maps of their shape. It had confirmed the viability of the caverns by pressure testing at 125% of anticipated pressure. Asked if it were possible that the chemical companies had dumped waste products in any salt caverns which they had then deemed unsuitable for further leaching of salt, he said that metals would have shown upon the sonar.

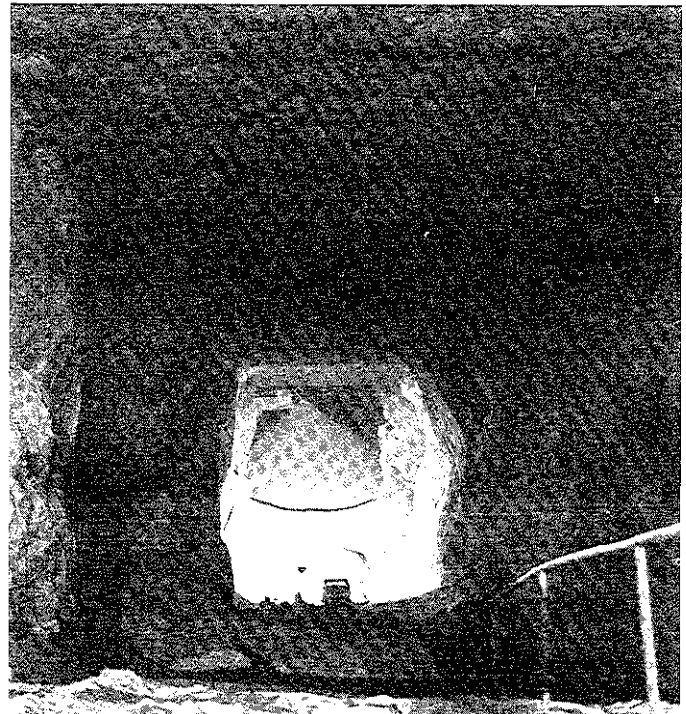
The greatest worry with the caverns Mr. Mazur said, would involve a breaking off of the well-head after which 1% of the contents of the cavern, normally at pressures of 500 to 600 pounds per square inch, would blow out. If oil did not ignite, it would still badly degrade the environment in an area of sensitive wet lands.

With Weeks Island, on the other hand, one worried most about ground water seepage which, while it would not prevent recovery of the \$75 million of oil, could destroy the mine for future use. Still the mine had been in use for 75 years and this was considered a livable risk.

Mr. Mazur said the cost of storage was no more than \$3 per barrel in Phase I or II and that he had just sold DOD on a schedule for designing Phase III. But, others advised, this was only for \$2.8 million and that four years being required to get Phase III on line. OMB should be discouraged from its likely stalling on much larger funds needed to get it going.

In a meeting with legal and engineering personnel, it turned out that there *was* project unhappiness with the extent to which records had been turned over by the chemical companies. It was believed that Olin had turned over the

#### WEEKS ISLAND SALT MINE



Conveyer belt from large chambers on a lower level creates a cone-shaped pile of salt in the upper level during Morton salt mining operation before conversion of the mine to oil storage.

information it had, but the SPR office had not been able to clear up rumors that Dow Chemical might have put asbestos in the salt dome. It was later admitted that one well at Bryan Mound (#4) *had* suffered from chemical pollution and the brine needed treatment before it could be safely disposed of. (There had even been rumors elsewhere, in which the SPR Office did not put much credence, that the government had once put waste from biological weapons production into one of the caverns.)

In general, quite apart from the question of "dumping," the records would help give information about the formations themselves which could not be expected to be "pure" salt. On this matter, sonar was, at best, an imperfect instrument, which told you what you had, but not how you had gotten there. Not having these records was, one participant said "a pain in the behind."

#### SPRO Prepared Interrogatories

Since the information at issue goes also to the heart of determining the relevant value ("highest and best usage") which the government must pay, the SPRO office had prepared relevant interrogatories such as: "Had the companies disposed of industrial waste or any other substance besides water in the caverns?" Had "fluids been injected" into the cavern? And so on. Unfortunately, in what appears to have a disagreement amongst the Justice Department legal team over tactics, the relevant questions were not, some SPRO employees believed, passed along to the companies. And after the trial, this information might never be given to them (perhaps because the companies might feel liable for damages incurred through earlier failures to disclose or simply through animosity toward the government for its use of eminent domain). □

## WHEN TO BRING THE OIL OUT? Introductory Notes on a Neglected Subject

An International Energy Agency (IEA) agreement on an International Energy Program (IEP) has about 20 (mostly OECD) industrialized nations who have agreed to work together to mitigate energy emergencies. They have undertaken to maintain 90 days of net imports as reserves and to prepare "contingent oil demand restraint measures." In a crisis, they agree to implement the restraint measures so as to reduce their own oil consumption by 7% to 10% depending upon the severity of the crisis. Thereafter, if the supplies available to the IEP continue to fall short, they would share the oil available amongst each other, in such proportion as each had previously imported oil.

It is unclear, however, what this means. The oil "available" depends upon the price offered. Nations, not within the sharing agreement such as Brazil or France and the third world generally, could bid up prices so as to vary supplies otherwise available to the IEP nations. This suggests that the IEP nations would have to agree on a maximum price, above which they would not bid if only to make their agreement meaningful.

In effect, the "sharing" aspect of the IEP agreement seems designed for the original purpose, embargoes, rather than for general oil "shortages." In an embargo, one or a few nations being discriminated against through a boycott could, in principle, get useful help from shared access to the international market, notwithstanding the embargo.

Indeed, in the absence of a war, some economists would argue that "shortages" in the economic sense would not occur except for very transitional periods, since price rises would serve to clear the market. In their view, the issue is one of creating a common policy of "disgorging" oil from the national reserves so as collectively to hold down price shocks.

### Would Released Oil Simply Be Hoarded?

But how feasible is this and under what conditions? Unfortunately, in a crisis, the first instinct of the consuming nations will be to hoard oil, and to *increase* stockpiles, rather than to seek to hold down price by *reducing* reserves. In crises, money is no object. And, after all, none will know how long the crisis might last and it might always get worse. To the extent that other consuming nations are reducing their reserves, each nation which does not do so is assisted. The declining reserves of price-conscious nations reduces the world price for all by adding reserves to the world wide oil market. Thus, the most supply-anxious nations can get their price benefits from the actions of the price-anxious nations while buying up the oil they need to slake their own anxiety about the future. In such a context, sadly, it is to the benefit of each nation to defect from the coalition of nations cooperating in reducing their reserves. In any case, nations will hang together to release reserves only to the extent that they think they can control the market.

Accordingly, common sense suggests that nations will only be willing to use oil for price amelioration until, and to the extent, that their anxieties about minimum reserves

are tranquilized. Meanwhile, as a further condition, they will be keenly interested in who is joining with them and how much they can, by themselves, influence the price. In practical terms, this means that world-wide and U.S. reserves must be very large indeed.

For example, assume that the United States was willing to use about half of its projected strategic reserves of 750,000,000 barrels in an effort to hold down "price shocks." It could, by itself, release 375,000,000 barrels over a period of as little as, perhaps, 100 days. The 3.7 million barrels per day is about seven percent of Western consumption, about the amount lost in the Iranian-Iraqi war, and about 40% of that produced daily by Saudi Arabia. It would seem that this would hold down price importantly only if: a) the Japanese and Western European countries thought the crisis would end within months; or b) their own stockpiles were filled to overflowing; and c) their private companies had, also, already filled their tanks to overflowing.

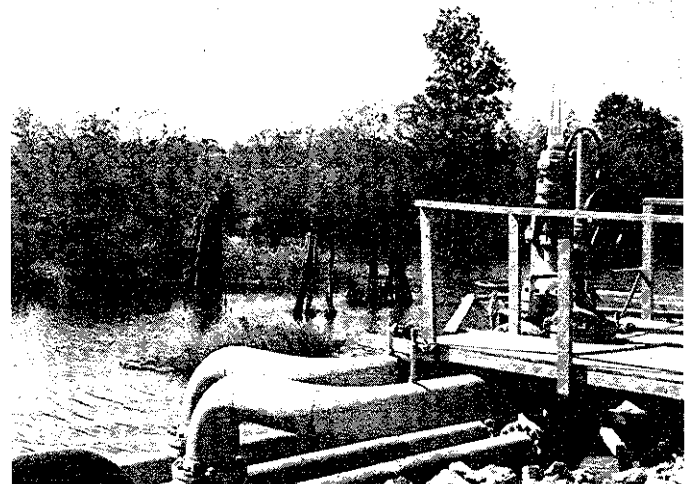
This analysis suggests that agreements between nations to influence price would have to be very tightly worked out between a few nations with very large stockpiles. It constitutes a major argument for a much larger U.S. strategic reserve, and for negotiations with other major users, such as the Japanese, to coordinate their policy with ours much more closely than IEP is likely to do.

### What Are World Oil Stockpiles Normally?

In order to get some sense of how much oil, given current world storage capabilities, are sufficient to saturate capacities, consider the following statistics provided by Petroleum Intelligence Weekly:

- 3.3 billion barrels are necessary to fill pipelines and keep distribution flowing and represent an absolute minimum unusable quantity
- .5 billion barrels are in stockpiles requiring a political decision for their release;
- .8 billion barrels are in ships en route to destinations

Thus only the amount above 4.6 billion barrels in world



BAYOU CHOCTAW IS A BAYOU



stocks can be considered commercially usable inventory. Commercially usable inventories are normally about 350 million barrels in April rising to 700 million barrels by October in preparation for winter. This would give, in a normal cycle, 5.3 million barrels as an upper limit.

The present series of crises since the Spring 79 Iranian revolution have produced additional inventories which Petroleum Intelligence Weekly estimates and projects as follows:

Oct. 79 5.45 billion bbls (150 million bbls above normal)  
 Apr. 80 5.30 billion bbls (350 million bbls above normal)  
 Oct. 80 5.70 billion bbls (400 million bbls above normal)  
 Oct. 81 5.60 billion bbls (300 million bbls above normal)

These statistics show that oil companies and others are capable of storing, in a crisis period like the present, 400 million barrels more than normal. Most of this appears to be "stored" in tankers at sea that steam more slowly than they could or spend more time in port. (World tanker supply at full speed exceeds the demand of 210,000,000 deadweight tons by a factor of 50%.)

Put directly, a consortium of nations interested in holding down the price in an emergency might find that they first had to release onto the market on the order of 400 million barrels to fill whatever storage space existed in private (and non-cooperating nations) hands. These buyers would not, after all be panicky buyers whose impetus to hoard could be tranquilized by a "show of (oil-selling) force." Instead, they might just represent the time-tested instinct of oil businessmen that each crisis has produced prices for oil that rise faster than the interest rate; it is this instinct that produced, after all, higher oil inventories at the end of each of the last two oil crisis than at the beginning. (The International Energy Program might prevent some hoarding if the agreement held up.)

#### **A Year of Shortfalls Can Equal One Billion Barrels**

Afterwards, they would have to provide whatever few to several million barrels per day shortfall of oil constituted the crisis for so long as they wanted to influence price. During a year, each 1 million barrels per day shortfall would give rise to almost another 400 million barrels so that a few to several million barrels per day shortfall could involve another one to two billion barrels in reserves. (This latter quantity, however, could be expected to be diminished through conservation induced both by uncontrolled prices and the crisis.)

Thus, a rough estimate of the consortium's needed "clout" to hold prices relatively flat—a controversial goal—is on the order of one or two billion barrels. The caveat must be kept in mind that these amounts would have to be "expendable." Nations might want to keep, for non-price ultimate purposes, as much again as they used to dampen the price. Hence the consortium would need to have stored in strategic reserves two to four billion barrels of oil, amounts analogous to the quantity that is currently in motion, and storage, throughout the world.

Of course, quite possibly, the continued latent crisis in oil production could keep world oil stockpiles close to the brim as businessmen calculated that all available storage space was best used to hoard oil indefinitely; then the consortium could

make do with somewhat less oil.

Could such quantities as 1 to 2 billion barrels of oil be put aside without, themselves, increasing the price horrendously? Probably the only even vaguely realistic method of securing the oil quickly would be as part of a package arrangement in which conservation measures saved the amounts involved, which were then placed within the reserve; this would not, at least, burden the market with added demand and, by the same token, might usefully assuage *some* concern of oil producers. Thus an import reduction program might be set equal to strategic reserves purchases. And, of course, it would be done over a decade or two.

And what of the cost? There are storage costs of a few dollars a barrel (currently averaging \$3.53 per barrel) in constructing the caverns. The largest cost however for \$35 per barrel oil is the annual interest for the funds used to purchase the oil (or for the funds foregone if the oil comes from Government reserves such as Elk Hill). However, the rate of inflation, the rate of interest, and the increase in oil prices, are all roughly linked and hence the oil in the reservoir can be expected to increase in value at a rate that justifies nicely having expended the funds earlier. Indeed, oil will go up faster in price if anything, one would think.

#### **Storing For What? An Unexplored Question**

This kind of analysis needs to be pursued and can be viewed in a variety of ways. For some, it may reveal the hopelessness of using a strategic oil reserve for price. Others may see the analysis as revealing a desirable long-run goal or at least the utility of SPR for somehow preventing price rises from becoming exorbitant. In the latter case, the U.S. would have to get (and keep) moving since even apart from construction limits, it would take ten to twenty years to accumulate the necessary oil and negotiations with others would have to be pursued.

But if the oil is not going to be sufficient in quantity to influence price then how to define its purpose, and what rules will determine its use? As noted on page one, the purpose of the reserve need not be related to price at all, but to American confidence that it need not go immediately to war for oil, and to protection against the possibility of major wars elsewhere, or wars thrust upon us. In this regard it need never be used. One is reminded of the O. Henry story called "The Bank Account" in which a mother maintained the morale of her family with a fictitious bank account which—she conspired to arrange—was never quite touched through a series of family crises over which its presence hovered reassuringly.

Most likely of all, the instinct to have a Government reserve, shared not only by Federation members, but by government officials quite generally, is a sound instinct notwithstanding the difficulties which economists and strategists may have in pinpointing precisely why, how and when it would be used. "Better to have than not," one expert commented.

In any case, unless government policy is changed rapidly, America is not going to face any of these questions of "How Much is Enough For What?" If the rate of fill of SPR is not speeded up rapidly, it will be years before even the presently financed construction is utilized (500,000,000 barrels) and even longer before any more space is available. □

### EMERGENCY LEGISLATION UNREADY

On September 25, FAS released a statement observing that it would take more than the 100 days available before a closure of the Strait of Hormuz reduced oil supplies just to get the emergency provisions of the Emergency Conservation Act of 1979 ginned up. The time to start them was now.

A few days later, this complaint was echoed by the Environment, Energy, and Natural Resources Subcommittee of the House Committee on Government Operations. It called the Title II provisions in which states would be urged to cut back oil usage "virtually useless" as a tool for national energy supply interruption. Indeed, thus far, the states have been given "conservation targets" that were higher than projected demand. Only a handful of states had tried to complete emergency plans, and representatives of state legislatures were complaining that the DOE had not passed on the one (Nebraska) plan submitted to it which, they argued, was needed by other states as a precedent and model.

FAS wrote the 50 Governors urging them to consider experimenting with the day-a-week plan in which drivers forego driving on a day of their choice with a view to providing experience that might, someday, embolden a President to invoke this method. □

### SOS ANNOUNCES INTERNATIONAL BOYCOTT

Soviet treatment of Soviet dissident scientists continues to be a serious issue for scientific exchange. A Washington press conference of Scientists for Orlov and Shcharansky (SOS) revealed that the SOS sponsored six month boycott had captured the support of scientists from 44 countries including 10% of the British scientific establishment (92 of 850 Fellows of the Royal Society). Simultaneous press conferences were held in Paris, London, and Geneva in an effort to influence the Madrid conference, November 11, on

the Helsinki Accord.

SOS gave four concrete examples of bilateral conferences with the Soviet Union cancelled or dramatically influenced as a result of agitation by western scientists here, in Geneva, or in France.



Walter Gilbert lecturing to Moscow Refusenik Seminar in 1975.

### FAS SPONSOR WINS NOBEL PRIZE

Walter Gilbert, Harvard Professor of Biochemistry, and FAS sponsor since 1978 shared the 1980 Nobel prize for Chemistry with Stanford's Paul Berg and Frederick Sanger of Cambridge University in England. Dr. Gilbert received the award for his work in developing a simpler and quicker method of deciphering DNA. Besides his professional duties at Harvard, Dr. Gilbert is co-chairman of the Geneva-based firm Biogen, S.A., which seeks to apply recombinant DNA techniques.

Professor Gilbert is married to Celia M. Stone, a poet, and the sister of FAS's Director. □

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