

Pipeline Problems Exacerbate West Coast Oil Surplus

Seven or eight years ago when development of the supergiant oil field on the Alaskan North Slope was getting under way, the oil industry seemed to think there was only one really major hurdle standing in the way of getting the oil to market. That was the problem of overcoming the opposition of national environmental groups and obtaining final federal approval for the Trans Alaska Pipeline System (TAPS). TAPS would move the North Slope crude from Prudhoe Bay to a terminal at Valdez, on the south coast of Alaska, and from there tankers

would carry it to refiners on the West Coast or abroad.

But even though TAPS was approved by Congress itself in 1973 and was subsequently built, other obstacles to the marketing of the Alaskan crude have appeared since the oil first began to flow through the pipeline about a year ago. Namely there has been the so-called West Coast "oil glut" and stiff local or state resistance to proposals to establish pipelines that could carry the surplus North Slope crude to markets in the Midwest or the northern tier of states

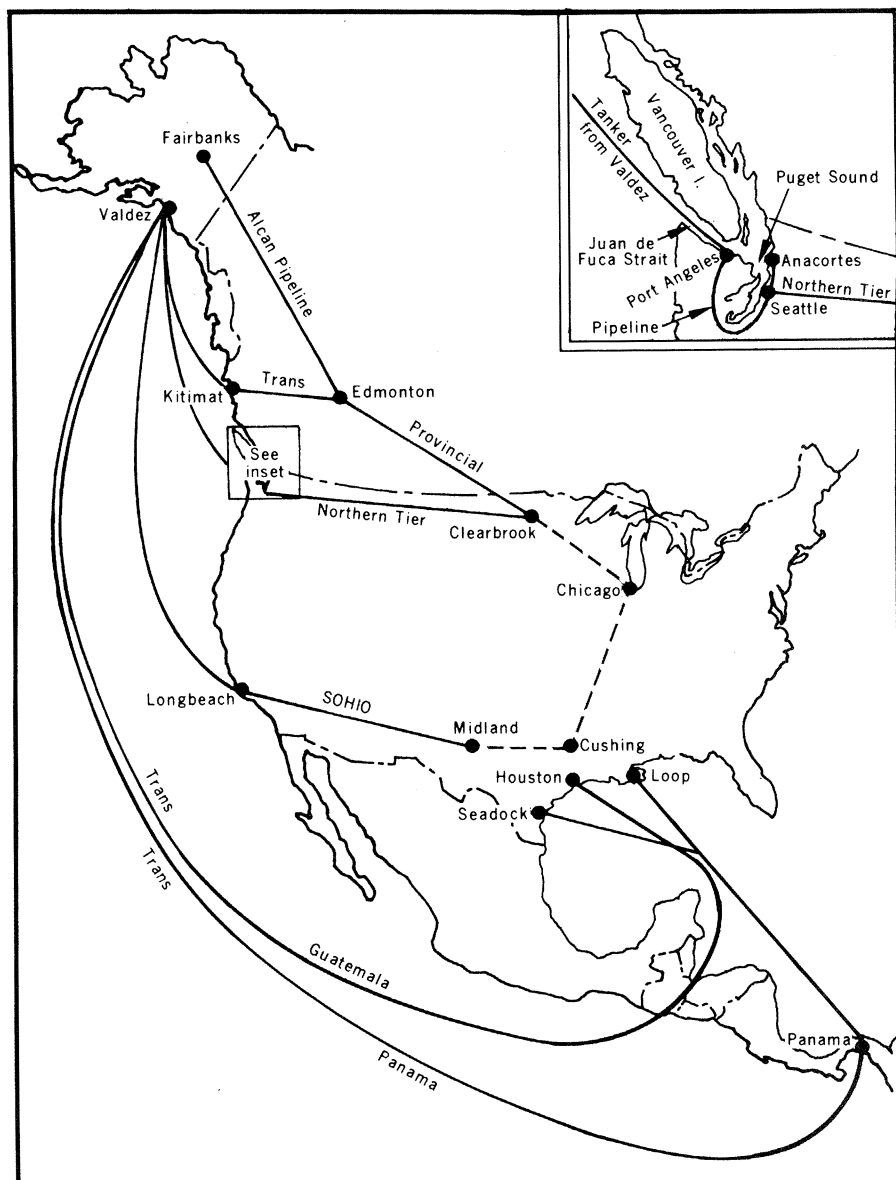
stretching from Montana to Michigan.

Both of the major North Slope producers, the Atlantic Richfield Company (ARCO) and the Standard Oil Company of Ohio (Sohio), have put forward pipeline proposals that have run into powerful opposition arising principally from fears of oil spills or aggravated air pollution from tanker operations. ARCO already has been forced to abandon its plan to deliver crude to the northern tier states by means of the existing 744-mile-long Trans Mountain Pipeline between Puget Sound and Edmonton, Alberta, which ties in with the continental network of pipeline systems.

This pipeline actually was built to move Alberta crude west to Puget Sound and Vancouver, but most of its capacity has been unused since Canada began phasing out oil exports to the United States. What ARCO was proposing was to increase tanker traffic from Valdez to its Puget Sound terminal at Cherry Point (which was to be expanded), then use the pipeline in a reverse-flow mode to move oil to the east instead of west.

For people in the Seattle area salmon fishing and boating are very much a part of the good life, and any talk of increased tanker traffic inside Puget Sound seems to induce nightmares and arouse political protest. In this case, the ARCO proposal barely got on the wing before it was shot down, and this despite the fact that it had the warm support of Dixy Lee Ray, governor of Washington.

Whether or not Sohio will have better luck with its long pending proposal to establish a 1027-mile Pactex pipeline from Long Beach, California, to Midland, Texas, is still very much an open question. The Carter Administration supports the project, and even the California Air Resources Board (ARB) now looks upon it benignly. But the necessary state air quality and land use permits are still not in hand, and, even if they are soon issued, construction will continue to be delayed so long as a lawsuit that has been brought against the project remains pending before the California Supreme Court. Still worse from Sohio's point of view, the project could conceivably be killed politically this November, for it is now a virtual certainty that the citizens of the city of Long Beach will be voting on a ballot proposition to cancel Sohio's lease with the city for the land on which the oil terminal and storage facilities would be built. The opposition has turned mainly on fears of air pollution from the stacks of the supertankers that would be visiting the port of Long Beach and from the transfer and storage of the oil, plus aesthetic objections to the siting of storage tanks along the waterfront.



Proposed routes for transporting Alaskan oil by sea and pipeline to Midwest and East.

If the oil industry and its overseers in the Nixon Administration had been right in their public predictions at the time of the TAPS debate, there would have been no oil glut on the West Coast and hence no need to move crude from there to the northern tier and the Midwest. During the congressional debate in 1973 over whether TAPS should receive the go-ahead, the industry was contending that all of the North Slope oil would be absorbed by the West Coast market.

Environmental groups, on the other hand, argued that oil would be in oversupply on the West Coast, and cited in particular a study* by resource economist Charles J. Cicchetti to make their point. They urged that the TAPS proposal be abandoned in favor of a trans-Canada alternative that could provide a single right-of-way for oil and natural gas pipelines from Alaska to an assured market in the Midwest.

For the environmentalists, this economic argument was topping on the cake; in their view the trans-Canada alternative offered compelling environmental advantages, one of which was that it would be an all-overland route involving no tanker traffic and no risk of oil spills in such sensitive and confined waters as those of Puget Sound. The environmentalists suggested, and apparently accurately, that the only reason the oil companies themselves were not worried about a possible West Coast oil glut was that, should this occur, they could expect to reap big profits through exchanges with the Japanese.

Now that the prophesied oil surplus has indeed come to pass, environmentalists are saying "I told you so," while the oil industry contends that the surplus has resulted from events and circumstances (such as the Arab embargo, the precipitous rise in oil prices, and the reduced growth of consumption) which could not have been foreseen. In any case, North Slope crude is flowing to Valdez at the rate of 1.14 million barrels a day, approximately double the volume West Coast refiners can absorb, or at least are willing to absorb.

What has happened is that the Alaskan crude, which is "sour" or high in sulfur content, has displaced the sour crude that West Coast refiners used to import from abroad, principally from Saudi Arabia, Iran, and South America. But it has not displaced the "sweet" or low-sulfur crude which the refiners have been importing (mostly from Indonesia) at the rate of about 600,000 barrels a day.

Why this is so is not easy to explain

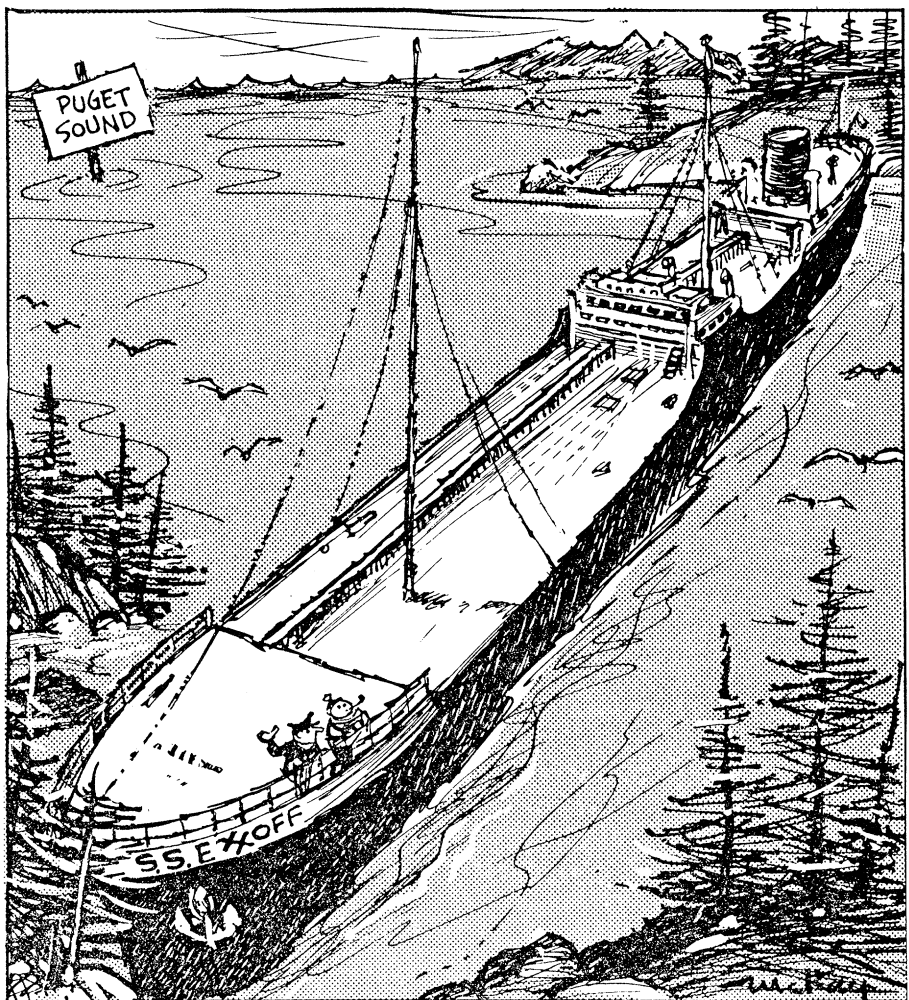
fully, for the answer involves a variety of complicated circumstances and considerations, such as the inability of certain refineries to "run" much sour crude for lack of desulfurization equipment, the profitability (or relative lack thereof) of the product mix obtainable from such crude, and the fact that high sulfur residual fuel oil cannot be burned in utility boilers under California's stringent air quality regulations. In any event, the Alaskan crude that is in excess of West Coast needs (the surplus is now running at about 550,000 barrels a day) must—in the absence of pipelines—be moved to the Gulf Coast by tanker. And this involves an awkward and costly transfer of the oil at Panama from large tankers to smaller ones that can go through the canal.

The problem could be solved of course by going to the solution the oil companies may have had in mind all along: exporting the surplus to Japan in exchange for Middle Eastern oil delivered to Atlantic and Gulf ports. But it looks as though this is not going to happen.

The TAPS legislation of 1973 provided

that no such exchanges were to be allowed without a presidential finding that they would be in the national interest. Then, last year, Congress tightened this provision by making even those exchanges that might be sanctioned by the President subject to disapproval by either the House or Senate. Although the Carter Administration was interested for a time in allowing exchanges as a stop-gap solution for the oil surplus, it apparently has backed away from this remedy. Attitudes could change, but before the government resorts to exchanges with Japan the surplus on the West Coast may have to reach extreme proportions.

Yet, unless one or more pipelines are built within the next several years, the surplus could in fact become an awful glut by anyone's definition. TAPS is now operating at only a bit more than half of its ultimate capacity of 2 million barrels a day, so the flow of oil from Valdez may increase markedly. Also, new production from the outer continental shelf off California and Alaska could eventually be substantial, as could increased flows



"Let's look at the good side. If we don't get out of here we could become the fourth floating bridge in the state."

Dave McKay, from *Washington Teamster*, Seattle, Washington

**Alaskan Oil: Alternative Routes and Routes and Markets*, published by the Johns Hopkins University Press for Resources for the Future.

of California oil from the Elk Hills naval petroleum reserve and from the application of tertiary recovery methods to other fields.

If construction of a pipeline to move some of the surplus crude eastward does not begin before long, it will not be for a lack of interested applicants. A remarkable variety of proposals has been put on the table. Besides the Sohio and the ARCO projects, there are four other pipeline proposals, not to mention proposals to move Alaskan crude to eastern or northern tier markets by such unusual means as unit trains or icebreaking tankers plying the hazardous Northwest Passage across the Canadian arctic. The pipeline proposals include:

- One by a Guatemalan company (supported by several American engineering and construction firms) for a 227-mile trans-Guatemala pipeline. But promoters of the project thus far have not come forward with evidence of having

any real hope of either an assured throughput of oil or adequate financing.

- A proposal by Foothills Pipe Lines Ltd. of Calgary, Alberta, to build what under one option would be an all overland Alcan pipeline of 1500 miles that would in part at least share a common corridor with the pipeline already approved to transport Alaskan natural gas. This proposal is little known and little mentioned.

- A proposal by a number of substantial Canadian and American oil and pipeline companies, including Sohio and Ashland Oil Canada, to build a 753-mile pipeline from Kitimat, a small British Columbia port situated 650 miles north of Seattle at the head of a long fjord, to Edmonton. If this proposal is not dead, it is at least moribund. The report issued last February by the commissioner assigned by the Canadian government to conduct a special inquiry concluded that Canada does not now need such an oil

port and pipeline. The commissioner indicated, moreover, that even if the project were needed the justification for it should be gravely examined in light of the risk of oil spills.

- Finally, there is the proposal by the Northern Tier Pipeline Company of Montana, and, apart from the Sohio project, it now seems to be the one with the chance of getting somewhere. Although none of the major oil companies are behind the project at this point, the U.S. Steel Company is a participant in it; furthermore, refiners across the northern tier who have in the past counted on Canadian oil must now look to some other crude supply, and North Slope crude may be their best bet. The Northern Tier project calls for construction of a deep-water terminal for supertankers at Port Angeles, some 15 to 20 miles west of Puget Sound on the Strait of Juan de Fuca. From there, the pipeline would extend 1550 miles to Clearbrook, Minnesota. It

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Court Upholds Refusal To Be Medical Good Samaritan

A Pittsburgh man named Robert McFall, who may be dying of aplastic anemia, recently filed—and lost—an extraordinary lawsuit to compel his cousin to donate bone marrow to him in a desperate attempt to save his life. Acknowledging that the law was clearly on the cousin's side, attorney John Murtagh, Jr., asked the court to "change a centuries old law in our favor," but Allegheny County judge John P. Flaherty ruled that to do so "would defeat the sanctity of the individual."

Although this particular case was quickly resolved without creating a new legal precedent, it brings attention to questions about whether one individual can be forced to help another by making a life-saving donation, be it of blood, bone marrow, or some transplantable organ such as a kidney.

McFall, a former asbestos worker, was diagnosed as having aplastic anemia in June when he went to the hospital because of a nosebleed. There is speculation that his disease, in which bone marrow fails to produce blood cells, was brought on by exposure to an industrial chemical, but no cause has been pinpointed.

Aplastic anemia is one of those diseases, often fatal, for which there is no

cure. Sometimes, the patient's bone marrow regenerates spontaneously. Sometimes, drugs will induce bone marrow to resume blood cell production. And sometimes a patient can be saved by a bone marrow transplant from a genetically compatible donor. McFall's physician, Louis Pietragallo, who told the court that a successful marrow transplant would increase his patient's chances of surviving a year from 25 percent to 40 to 60 percent, asked McFall's relatives to submit to tests to see if any of them was genetically compatible. In only one case was the preliminary answer yes. McFall's cousin, David Shimp, was a perfect match according to one index—the HLA test for tissue compatibility. He was asked then if he would be willing to be tested again, this time to measure genetic compatibility according to the MLC or mixed lymphocyte culture test (each is an *in vitro* test for which the potential transplant donor supplies only a small amount of blood), but Shimp refused. Even if he had turned out to be a perfect match, he had decided not to donate bone marrow to his cousin.

That was when Murtagh went to court as McFall's attorney. "The situation was extreme," Murtagh told *Science* in a telephone interview. "We tried to compel him to go through with the test, even though in this country we have no legal 'duty to rescue.'" Anglo-Saxon common law holds the sanctity of the individual to be complete so that there is no legal obligation on one person's part to come to the

aid of another, as there is in countries whose legal system rests on a different base. "Here, you don't even have to throw a drowning man a rope," Murtagh said. In court, he had argued in part that Shimp should be compelled to donate bone marrow because the procedure is essentially harmless to the donor, whose own marrow will be replenished within a short time, much as blood is replenished after donation. However, the donor is hospitalized and given an anesthetic for the procedure, which can be extremely painful. (It should be noted that, although giving bone marrow may be quite safe, from the recipient's view it is a risky proposition. If the transplant is successful, the patient might be saved; but if it is not, he could die from graft versus host disease, as the transplanted marrow destroys the recipient's tissues.)

But Judge Flaherty did not see it that way. Though he called Shimp's refusal to try to help his cousin "morally indefensible," he acknowledged that a ruling to compel marrow donation would "require forcible submission to a medical procedure. Forcible extraction of bodily tissues causes revulsion to the judicial mind."

Following the court ruling in his favor, Shimp told reporters in Pittsburgh that he had refused to be a donor because he was afraid that he might become paralyzed during the process of giving marrow, in which physicians insert needles into the pelvis and withdraw marrow cells from the bone. "There's no guarantee that when doctors stick more than 100

would not cross Puget Sound but would go around the sound's south end, then swing north toward Seattle before crossing the Cascade Mountains and continuing eastward through the northern tier.

This project, which would have a design capacity of up to 1.2 million barrels a day, has gained enough political support and momentum to be quite seriously regarded. Senator John Melcher of Montana, a resourceful legislator who is determined for his region to have an assured supply of oil, is strongly behind it, as are a number of other political, business, and labor leaders across the Great Northern Plains and the upper Midwest. Furthermore, the project may have received a substantial political boost last winter when the House and Senate conferees working on the National Energy Act (which is still not law) agreed to have the Department of Energy (DOE) study alternative ways of meeting the need for new oil delivery systems, with particular

attention to be given the needs of the northern tier states.

The conferees also called for expedited federal permitting procedures once the President has decided, on the basis of the DOE study, which project or projects should go forward. But, unlike the situation that existed with respect to TAPS, the major hang-ups facing the Northern Tier proposal and other pipeline projects have as much or more to do with state and local permits as they do with federal approvals.

In the state of Washington, the Northern Tier project has now become the focus of a paradoxical political situation. On the one hand, this proposal represents a big increase in tanker traffic in state coastal waters, and few people want that. Indeed, many of the citizens of Port Angeles and Clallam County, where the oil terminal would be built, are up in arms.

But, on the other hand, some environ-

mental groups such as the Coalition Against Oil Pollution (which draws most of its members from the Seattle area) see in the project their best and perhaps only chance to eliminate most of the *existing* tanker traffic from inside Puget Sound. This traffic, which serves four refineries at or to the north of Anacortes on the east side of the sound, increased dramatically after the Canadian government cut off the flow of Alberta crude that was coming to the refineries through the Trans Mountain Pipeline. Yet, if linked to the Northern Tier Pipeline by means of a spur, the refineries would no longer have to be served by tankers. It is precisely this possibility that the environmentalists have seized upon.

During his last years as governor, Dan Evans, who since leaving office in early 1977 has been president of the Evergreen State College in Olympia, also became persuaded that the Northern Tier project, if built with a spur to the refineries,

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needles in me something won't go wrong," Shimp is quoted as saying. "What if I become a cripple? What if my marrow doesn't regenerate?"

There is a large body of data that suggests Shimp's fears are unfounded, but the legal point is that he is entitled to say no whether others accept his reasons or not. Furthermore, had the judge issued an order compelling Shimp to be a marrow donor, other legal considerations, such as informed consent, surely would have entered into the case on appeal.

According to Murtagh, now that a marrow transplant is out of the question, McFall will begin treatment with experimental drugs. Murtagh says he plans no further legal action, but Shimp's attorney is worried that there might be a "wrongful death" suit against his client if McFall dies.

Leaning over Backwards on a No-Politics Rule

An incident at this year's Gordon Conference on Nuclear Chemistry has brought to the surface questions about the proper relationship between science and politics that, in generic terms, have been assuming increasing importance in recent years.

During informal conversation one evening, a small group of participants drafted

two petitions—one to the Soviet Academy of Scientists and one to the International Union of Pure and Applied Physics—having to do with mistreatment of dissident scientists and scientists' right to travel to meetings. The next day, James Griffin of the University of Maryland, in a brief announcement, informed his colleagues of the petitions' existence and said anyone wishing to sign could do so during the break. There followed what Griffin and a colleague named Philip Siemens described to *Science* as a heated confrontation that ended at lunchtime when one of the conference directors actually ripped the petitions in half. The Gordon Conference as an organization, it turns out, has a policy against "organized political activity of any kind" at its meetings.

Speaking for the Gordon Conference, Alexander Cruickshank told *Science* that the Conference's policy dates to 11 April 1972 and was reaffirmed by the board of trustees in 1977. The purpose of the Gordon Conference, he said, is to hold meetings designed only to foster "pure scientific inquiry." To mix in politics is "distracting." Furthermore, the Conference's legal counsel advises that the introduction of politics into the meetings could jeopardize the institution's non-profit tax status. The policy prohibits scientists attending one of the many week-long summer meetings from using the "name, facilities or occasion" of the Conference for anything other than science. In short—no politics.

Thus, according to what seems to be little-known Conference policy, any individual scientist who tries to engage his colleagues in any kind of stand-taking on political matters is in violation of the rules. In fact, Cruickshank said, the policy extends not just to issues of international politics—such as dissidents—but to the politics of science itself. When, in 1973, participants at a Gordon Conference wrote a letter calling public attention to recombinant DNA research, they were, says Cruickshank, "in violation of our policy."

To Griffin and Siemens (on sabbatical at the Lawrence Berkeley Laboratory) and some of their colleagues, the no-politics policy raises a serious question about being asked to "check their citizen's rights" at the door when they go to a Gordon Conference, especially because any political discussions or actions that do take place occur during the free time of those attending the Conference and are not part of the formal agenda of the meeting.

It has become increasingly common for scientists gathering at meetings to use the occasion to talk politics as well as research, especially right now in the wake of all of the attention given the issue of Soviet refuseniks. It seems entirely reasonable that the Gordon Conference wants to protect its name from abuse and preserve the scientific nature of its meetings, which is, after all, what makes them so popular. But one needs to ask where to draw the line.

Barbara J. Culliton

could be made to serve the state's interests as well as the nation's. The state coastal zone management plan prepared late in his administration gave explicit support to the "concept of a single, major crude petroleum receiving and transfer facility at or west of Port Angeles."

But Governor Ray, Evans' successor, took office with quite a different set of perceptions and predilections with respect to tanker traffic and pipelines. She was, and is, convinced that fears as to the consequences of an oil spill in Puget Sound have been much exaggerated. A marine biologist herself, she believed—contrary to the thinking of many of her former colleagues at the University of Washington—that such a spill would be by no means catastrophic.

In keeping with this sanguine view, she chose to support the ARCO proposal to establish a major oil port on the sound and adapt the Trans Mountain Pipeline for the eastward movement of Alaskan crude. To that end, she proposed to strike from the coastal management plan the statement of policy against such a project; she also expressed disagreement with the law passed by the Washington legislature in 1975 prohibiting tankers of greater than 125,000 deadweight tons from entering the sound.

The legislature, disturbed at these attitudes on the part of the new governor, moved to kill the ARCO project, but good. It passed a bill restating, in flat statutory terms, the prohibition against major oil transfer facilities on Puget Sound. Ray vetoed this measure, but soon found herself outflanked. The state legislators and environmentalists prevailed upon Senator Warren Magnuson (D-Wash.), one of the powers-

that-be on Capitol Hill, to push through an amendment to the Marine Mammal Protection Act which does precisely what the legislature had sought to do. For this, Ray called Magnuson a "dictator."

Both the governor and the senator are now saying somewhat the same thing about the possibility of oil transfer facilities anywhere in state coastal waters. Such facilities, they say, would serve no state need and are unwanted. But the governor in particular has indicated that, if President Carter declares such a facility to be in the national interest, this would carry great weight with her. If the President does in fact decide the Northern Tier project is needed, it will be up to the governor herself to grant or withhold state permission to build the facility once she gets a recommendation from the Energy Facilities Site Evaluation Council.

The circumstances in which the Sohio project at Long Beach now finds itself illustrate how important—and volatile—local opinion can be in deciding the ultimate outcome of even an oil port and pipeline proposal that enjoys support at the highest political levels, including the White House. If this project fails to survive the forthcoming municipal referendum, the project could be dead. For Sohio, this would be the bitterest kind of setback, for there is no doubt that the company has, however slowly and reluctantly, made concession after concession to meet the demands of the California Air Resources Board (ARB).

Both the ARB and the U.S. Environmental Protection Agency apply a rigorous "trade-off" policy in cases where a new industrial facility is to be established in a region such as southern California which does not meet ambient air quality

standards. What this means is that, besides providing assurances that its own emissions will be kept within prescribed levels, the company seeking an ARB permit must also agree to more than offset those emissions by providing the wherewithal to allow another industrial entity in the region to lower its own emissions below the levels permitted.

Sohio has agreed to a trade-off package that will cost the company up to \$82 million. The Southern California Edison Company alone will receive some \$60 to 65 million to install a sulfur dioxide scrubber at an oil-fired electric generating plant near Long Beach. Also, Sohio will pay for a "de-nox" unit (for removal of nitrogen oxides) to be installed at this plant and for equipment to allow three large dry-cleaning establishments to reduce their emissions of hydrocarbons.

On the strength of these commitments to improved air quality, Sohio is hoping that the citizens of Long Beach will be persuaded that their interest will be best served by allowing the Pactex project to go ahead. But, as matters stand, what the voters will do is said to be anybody's guess.

As must now be all too clear to the North Slope producers and the rest of the oil industry, the comfortable assumption of several years ago that all would be well once TAPS was built was dead wrong. Indeed, with the benefit of hindsight, some oil industry people may be thinking in their heart of hearts that they could have spared themselves a lot of misery by agreeing to move the North Slope oil across Canada to the Midwest rather than insisting on landing it on the West Coast.—LUTHER J. CARTER

Environmental Assessment Sought for Federal Actions Abroad

In 1976 the Export-Import Bank authorized some \$644 million in loans and loan guarantees to the Philippines for a nuclear power reactor. Later, after that country asked the Nuclear Regulatory Commission for help in evaluating preliminary site investigation reports, it was ascertained that the Philippines lie in an earthquake belt, and also in a volcano

belt; that the plant site was near a live volcano; that there were no stable salt formations in which to bury nuclear wastes; and that cost per kilowatt of nuclear power was considerably higher than geothermal, hydropower, or coal alternatives.

The future of this project is not certain. However, it can be argued that the

prior availability of detailed information on the potential environmental impacts would have been helpful to the Filipinos.

This is a striking example of the kind of situation that could be avoided, or at least foreseen, if this country extended its evaluation of environmental impact of federal projects to actions abroad.

Now, 9 years after the enactment of the National Environmental Policy Act (NEPA), the White House is preparing to issue an executive order requiring some form of environmental assessment of "major federal actions" in foreign countries. (This would not apply to actions by the private sector.)

The Environmental Protection Agency has always thought that the procedures established by NEPA—requiring the