

tioned in the recent HEW release (3) that spelled out technical review procedures in considerable detail.

Universities themselves are also contributing to the increased use of RFP's. At a time when other sources of funding are increasingly limited, they are demonstrating their willingness to respond to the impossible deadlines and to compete with industry and nonprofit research institutes for research contracts in areas appropriate for universities. Not everyone believes this is desirable. E. P. Bledsoe, chief of procurement at the Office of Naval Research, told us he was surprised that universities were responding to the RFP's listed in CBD and pointed out that the Office of Naval Research still reserves 60 percent of its research money for unsolicited proposals and that 99 percent of this money is allocated to universities. He is concerned that the trend toward solicited research will dry up the new ideas the nation needs. "Who will invent the wheel?" he asked.

Another problem facing universities involves their organizational and functional structure. Unlike industry and research institutes, they cannot quickly assemble a team of experts from a variety of fields to focus on a specific problem. The federal agencies themselves face a similar dilemma. An of-

ficial of one agency told us he could not afford to appoint researchers to the agency staff to study a specific problem because the team would tend to perpetuate itself within the agency after its task had been completed. Thus the agency prefers to use the solicited contract. Universities should take the concern of this agency as a warning. Can they afford to assume the long-range costs required to assemble the personnel, space, and support services needed for such interdisciplinary efforts? On the other hand, can universities remain dynamic institutions if their research is not focused to at least some degree on the pressing problems of our society?

The trend toward contract research solicited through the RFP is increasing, and there are powerful forces providing the impetus. This trend has some advantages for institutions of higher education. It has opened up new funding opportunities in a time of constraint, the time cycle between proposal and award is greatly reduced, cost-sharing is usually not required, and successful contracts can lead to a close interaction between the agencies and the project directors, which in turn can lead to requests for further research on these and related problems. The trend does, however, have important implications

for many issues that have traditionally been of great concern to the academic community—directed and undirected research, peer review, and the balance between applied and basic research. The problems involved are not amenable to easy solutions, and we recommend to national organizations representing university research administrators and faculty that they immediately initiate talks with agency officials to work on ameliorating some of the more undesirable aspects.

#### References and Notes

1. Office of the Federal Register, National Archives and Records Service, *Code of Federal Regulations* (title 41) (Government Printing Office, Washington, D.C., 1971), p. 69.
2. M. Rishe, *Nat. Contract Manage. J.* **6**, 75 (1972).
3. Department of Health, Education, and Welfare, *Fed. Regist.* **37**, 18924 (16 September 1972).
4. C. W. Sherwin and R. Isenson, *Science* **156**, 1571 (1967).
5. A. Etzioni, *Washington Post* (11 June 1972), p. B-3.
6. Intergovernmental Relations Subcommittee of the House Committee on Government Operations, *The Research Grant Programs of the Public Health Service* (Government Printing Office, Washington, D.C., 1968), pp. 1-98.
7. W. Willner and P. Hendricks, Jr., *Grants Administration* (National Graduate University, Washington, D.C., 1972), pp. 3-18.
8. National Institutes of Health Council of University Research Administrators and the National Association of State Universities and Land-Grant Colleges.
9. This article is the outgrowth of two committee studies within the National Council of University Research Administrators and the National Association of State Universities and Land-Grant Colleges.

#### NEWS AND COMMENT

## Alaskan Oil: Court Ruling Revives Canada Pipeline Issue

Since the environmentalists began going to court, it hasn't been as easy as it used to be for the government to let big industry have its way in a matter such as the proposed Trans-Alaska pipeline (TAP). For some 3 years now environmental groups have successfully opposed the construction of the pipeline. Their most recent victory came on 9 February when a federal appeals court ruled that under existing law the Department of the Interior could not issue the necessary right-of-way permit to Alyeska, the pipeline company owned by Atlantic Richfield, Humble, Standard Oil of Ohio, and several other companies hold-

ing leases on Alaska's North Slope. This victory, though perhaps only temporary, means that it is still an open question whether the oil companies may not ultimately have to seek construction of a Trans-Canadian pipeline.

The present Canadian government has favored such a project, provided of course the pipeline is controlled by Canadians. But no pipeline, whether intended for Alaskan or Canadian oil, can be built through the North American Arctic without environmental hazards, as some Canadian environmentalists are now arguing. Furthermore, the proposal for a Trans-Canadi-

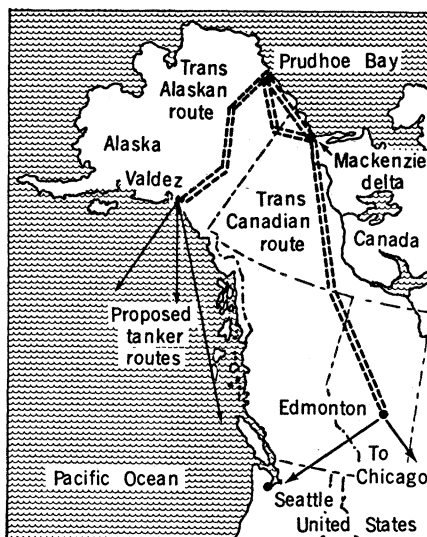
an pipeline tends to raise the controversial question of a "continental energy policy," which to many Canadians is simply a code phrase signifying an American desire to share Canadian resources.

In 1969, the year following the big oil strike at Prudhoe Bay by the Atlantic Richfield Company, application was made to the Department of the Interior by the oil companies for a permit to build a 48-inch hot oil pipeline—the largest ever—from Prudhoe to the port of Valdez, 800 miles to the south and mostly across federal domain lands. Despite high risk to the integrity of the pipeline from potential earthquakes and from problems associated with permafrost, Interior indicated that the permit would be forthcoming once it was fully satisfied with the pipeline design. For their part, officials of the oil companies were so little concerned that the permit might be denied that, as early as the summer of 1969, they began accepting delivery in Alaska of \$100 million worth of steel pipe from Japan.

Complications were soon to arise, however. For one thing, passage of the National Environmental Policy Act (NEPA) in late 1969 meant that a formal Environmental Impact Statement on the pipeline project would have to be prepared—with alternatives to that project fully discussed. For another thing, the Mineral Leasing Act of 1920 states, in clear language, that the right-of-way granted for a pipeline crossing the federal domain shall not exceed 50 feet (not counting the width of the pipe); yet for the TAP and its service road a right-of-way of some 300 feet would be required.

Three environmental groups, namely, the Environmental Defense Fund, the Wilderness Society, and the Friends of the Earth, were eager to challenge the pipeline project in court, for they regarded the proposed pipeline as a dangerous intrusion into one of the last large wilderness areas in North America and (inasmuch as a fleet of tankers would be operating out of Valdez) as part of an oil delivery system that would inevitably pollute coastal waters in Alaska and elsewhere. But without the legal handholds provided by NEPA and the strictures of the Mineral Leasing Act, these groups would not have had a chance even to delay the pipeline project, much less stop it.

The pipeline case reached the U.S. Court of Appeals for the District of Columbia on an appeal by the environmental groups, after a lower court last August finally lifted an injunction granted in 1970 in the absence of an environmental impact statement. The appeals court, hearing the case *en banc* (seven judges participating), held unanimously that it would not be lawful for Interior to issue supplementary permits allowing the use of a 300-foot right-of-way. Noting that Interior's Bureau of Land Management had long been in the habit of issuing such permits, the court said that it rejected the proposition that an agency is "entitled to violate the law if [it does] it often enough." Proponents of the TAP—Interior, the oil companies, and the State of Alaska (the state being eager to receive a flow of oil royalties)—would now have to look to Congress to amend the Mineral Leasing Act, which might or might not be an easy thing to do. To make matters worse for the TAP proponents, the court decided to defer judgment on issues arising under NEPA until the problem of the right-of-way width limitation was resolved,



which could mean that the pipeline case might be left hanging for still another year or two even if Congress chose to amend the Mineral Leasing Act.

The central issue arising under NEPA was whether the six-volume Environmental Impact Statement prepared by Interior had dealt adequately with the possible alternative of delivering the oil to the U.S. market by means of a pipeline across Canada instead of by the proposed TAP-tanker system. The physical facts and circumstances governing the North Slope oil development make the question of the Trans-Canadian alternative a compelling one.

First of all, there is no way to extract the North Slope oil without also extracting natural gas, and some way must be found to transport the gas as well as the oil to the U.S. market. The gas cannot be flared, for the State of Alaska would not permit such waste of the resource. Nor can it be reinjected into the earth except as an interim measure, workable for perhaps a year or so but probably not for much longer than that. A gas pipeline could be built to Valdez or another port in southern Alaska, but there the gas would have to be liquefied for shipment by tanker. The liquefaction plant alone would cost more than a half billion dollars, to say nothing of the expense of building storage tanks, a fleet of liquefied gas tankers, and special facilities at ports of destination. The economic feasibility of such a gas delivery system is doubtful.

The only other possibility is to build a gas pipeline from Prudhoe Bay down through Canada to the midwestern United States. And this, in fact, is what the oil companies active on the North

Slope have expected to do. But, if a Trans-Canadian gas pipeline is to be built, then why not also a Trans-Canadian oil pipeline, with the two placed in a single corridor, thereby keeping to a minimum the intrusion into the wilderness?

The Environmental Impact Statement acknowledged not only that such a dual pipeline system might offer the advantages inherent in a single-corridor approach, but also that a pipeline route down through Canada's MacKenzie River Valley would be superior to the TAP-tanker system in a number of other particulars. For instance, no high mountain ranges would be encountered (except possibly the Brooks Range in Alaska, depending on the exact route taken); the region to be traversed is far less prone to severe earthquakes; and there would be no tanker operations and hence no threat of marine pollution.

Set against these positive considerations were some negative ones. The distance from Prudhoe Bay to Edmonton, Alberta—the point at which the oil could enter established pipeline systems (which would have to be enlarged) for delivery to points on the West Coast and in the Midwest—is 1800 miles. Thus, compared to the TAP, the Trans-Canadian pipeline would reach twice as far across the Arctic and sub-Arctic wilderness of North America. It would traverse more permafrost terrain and it would cross 12 rivers, each of which is at least a half mile wide and is subject to scouring by ice after the spring break-up. Either a Trans-Alaska or a Trans-Canadian pipeline could result in massive oil spills, but it is a fact that, in an early draft, Interior's impact statement concluded that, on balance, the trans-Canadian route through the MacKenzie Valley had fewer environmental drawbacks.

As finally issued, the statement indicated that, environmentally, neither route offered a clear advantage over the other. The Administration based its preference for the TAP on the grounds that, although the TAP-tanker delivery system would not be more efficient economically than a Trans-Canadian pipeline, it would better serve the interest of national security because it could be completed more quickly and Alaskan crude would be available sooner to help reduce U.S. dependence on Middle Eastern oil.

NEPA does not stand in the way of

decisions in which environmental factors are subordinated to other considerations, such as an impending oil shortage. But, as the environmental groups saw it, Interior's consideration of the trans-Canadian alternative was cursory by comparison with the exhaustive study which it made of the TAP proposal. In their court brief, these groups noted that no direct discussion about the pipeline took place between the Secretary of the Interior and Canadian officials until *after* the impact statement was released.

The prospect now is for a struggle in Congress—with all sides making the most of the "energy crisis" for their own purposes—over whether the Bureau of Land Management (BLM) should be given general authority to grant rights-of-way sufficient for projects such as the TAP. Apparently, the vehicle for accomplishing this will be a new version of what last year was a relatively noncontroversial Administration bill to give BLM its own organic law. Unlike agencies such as the National Park Service and the National Forest Service, BLM lacks a legislative mandate spelling out its basic mission and responsibilities.

According to Brock Evans of the Washington, D.C., office of the Sierra Club, any proposed organic act for BLM leads to legitimate questions about the nation's mineral policies—the Administration itself wants these policies revised—and environmentalists will want Congress to consider them. There clearly will be opportunity for the BLM legislation to become mired down in controversies going far beyond the Alaskan pipeline issue.

But behind the legislation will be a potent array of supporters: besides the Nixon Administration, there will be an important part of the oil industry, shipbuilders interested in building the tankers, several labor unions (representing pipe fitters, teamsters, and workers in the maritime industry), and the chairman of the Senate Interior Committee, Henry M. Jackson of Washington. However, Jackson has said that, while he favors eliminating the right-of-way limitation, he will oppose any legislation—such as is now being proposed by Alaskan senators—to exempt the TAP project from further court review under NEPA (an act which Jackson himself sponsored).

To refer to a "trans-Canadian" pipeline is, strictly speaking, to employ a misnomer because the first 200 to 300

miles of the pipeline would cross federal land in Alaska, running either just inland from the coast of the Arctic Wildlife Range or skirting along the western and southern edges of this 9-million-acre preserve. Therefore, the fight in Congress will not be over removing the right-of-way limitation *per se* (for this will be essential wherever the pipeline goes), but rather over whether Congress should not specify a trans-Canadian routing, subject of course to the agreement of the Canadian Government and to all the provisions of NEPA. Representative Les Aspin (D-Wis.) will be pushing a bill that would require just that.

#### Anti-TAP Coalition

As a relatively junior member of Congress, Aspin is not a mover and shaker but, on this issue, he will have many sympathizers and fellow travelers in both the House and Senate, though possibly not enough. Leaders of the Sierra Club, the Wilderness Society, and Friends of the Earth already are thinking of an anti-TAP coalition which would try to follow the example of the successful coalitions against the SST and the proposed National Timber Supply Act.

Because of actual and impending oil shortages in the eastern half of the United States there may in fact be the possibility of a coalition that would include—in addition to environmental groups—organizations representing consumers and possibly even some industrial and commercial interests. Last May, 12 Republican senators from the East and Midwest, acting on the initiative of Senator Robert P. Griffin of Michigan, the assistant Minority Leader, wrote Secretary of the Interior Roger C. B. Morton to urge that a decision on the TAP be deferred until the alternative of a Trans-Canadian pipeline system, which would bring oil into the Midwest, could be more closely studied. They said:

You are familiar with the fact that there is a serious and growing shortage of oil and gas in the Midwest and East. . . . This situation imposes a heavy financial burden on each of our states and the industries operating within them. Moreover, the outlook into the 1980s is one of increasing reliance on foreign imports in our regions. . . .

Furthermore, we must call attention to some obvious national security advantages to a pipeline directed to the American heartland. Future discoveries of oil in the Alaskan Gulf will logically be shipped by tanker to the West Coast. Fu-

ture discoveries on the North Slope and in Canada should go to the areas of greatest shortage—the Midwest and East—but cannot if there is no pipeline to get them there.

The Liberal Government of Prime Minister Pierre Trudeau has made a substantial effort to have the United States consider a system of dual oil and gas lines across Canada. In fact, in February 1971 the then Minister of Energy, Mines, and Resources, J. J. Greene, stated publicly that, "Failure of the United States to adequately consider the Canadian route for Alaskan oil could render a signal disservice to the growth of the western Canadian oil economy."

How Greene could have put the matter so strongly requires a bit of explanation. Canada now exports more oil than she imports, but, from the standpoint of production from existing proved reserves—about 10 billion barrels, found mostly in Alberta—her position could go from that of a surplus to that of a deficit within another decade or so (proved gas reserves are somewhat more ample and are believed more than sufficient to meet Canadian needs for at least 25 years). On the other hand, Canada's *potential* oil reserves have been estimated at 120 billion barrels, not counting the 300 billion barrels of recoverable but presently uneconomical oil in Alberta's Athabasca Tar Sands. Nearly all of the potential reserves onshore as well as a substantial part of those offshore are in the frontier areas of northern Canada; a significant part of the total, perhaps a third or more, is believed to be in the MacKenzie Delta and adjacent onshore and offshore areas.

Yet without the prospect of a large volume of exports to the United States, the huge amounts of investment capital needed to tap the Arctic petroleum resources—the oil and gas pipelines alone would cost several billions of dollars each—would simply be unobtainable. A major advantage to Canada of having one pipeline system serve oil and gas fields in both the Alaskan and Canadian Arctic would be that Canada could allocate less of its oil and gas for export—should this be advisable in view of Canada's own long-term energy needs or other policy considerations—and still have an economical system for delivery of oil and gas to its own domestic markets. Some Canadian gas might use the system from the start because large discoveries of gas have

been made in the MacKenzie Delta. But, because there are no proved oil reserves in the delta yet, there would not initially be any Canadian oil entering the system and thereby possibly interfering with delivery of Alaskan oil. Ultimately, the pipeline system would have to be expanded.

The Trudeau Government's interest in having the United States opt for the trans-Canadian alternative was explained last March to Secretary of the Interior Morton by the incumbent Minister of Energy, Mines, and Resources, Donald S. MacDonald. And, shortly thereafter, the Canadian Parliament, while not mentioning the alternative of a Trans-Canadian pipeline, declared that the movement of oil by tanker along the coast of British Columbia from Valdez to Puget Sound was "inimical to Canadian interests"—a judgment shown to have substance when, a few weeks later, an oil spill at the new Atlantic Richfield refinery at Cherry Point polluted British Columbia beaches. A member of Parliament, David Anderson, head of the Liberal Party in British Columbia, and the Canadian Wildlife Federation already had taken the highly unusual step of joining the American environmental groups as plaintiffs in the suit to block the TAP. (Anderson has since given up his seat in Parliament.)

Nevertheless, one cannot say that it is a certainty, or even a near certainty, that the Canadian government would agree to a Trans-Canadian pipeline for Prudhoe Bay oil or gas. There is a strong feeling of economic nationalism in Canada, and many Canadian politicians and citizens resent the fact that so much of Canada's industry and resources—including most of the leases to the MacKenzie Delta oil and gas acreage—are owned by American or other foreign companies. The Government's royalties on oil and gas recovered in the Arctic will be comparatively low—the rates were set in the early 1960's when Canada was trying to encourage oil exploration in the North—and there is considerable feeling that the best thing to do about the Arctic petroleum resources is, for the time being at least, to do nothing at all. Eric Kierans, an economist at McGill University and a disaffected former member of the Trudeau Cabinet, holds to such a strategy, in part from a belief that the northern oil development would cause such a heavy inflow of foreign investment capital that the value of the Canadian dollar would be pushed up

and exports of Canadian manufactured goods would suffer.

Should the Canadian public come to believe, rightly or wrongly, that the Government's approval of a Trans-Canadian pipeline represented a step toward a joint Canadian-U.S. policy on the allocation of energy resources, the Trudeau regime could be in trouble. And, here, bear in mind that the Government is 24 votes short of a parliamentary majority and governs only with the consent of the New Democratic Party, where feelings of economic nationalism are said to burn with a fine passion.

#### Canadian Environmentalists

Canadian environmentalists are concerned about the impact a pipeline system could have on the Arctic, but it appears that this concern is fairly muted and is of less political significance than the economic nationalism issue. Except for the marshes in the delta the MacKenzie River Valley is not a pristine wilderness area: there are several settlements along it; barges ply the river in summer; and work on a MacKenzie Valley highway has begun. A pipeline system that took the MacKenzie Valley route would, however, affect some resources which the environmentalists treasure. For example, the migrations of the Porcupine Valley caribou herd (estimated at 70,000 animals) might be impeded by the pipeline. Ian McT. Cowan, dean of graduate studies at the University of British Columbia, has in fact suggested that an alternate trans-Canadian route—following the TAP route down to the Alcan Highway, then following the Alcan and other existing highways down to Alberta—would eliminate the threat to the caribou herd by keeping the pipeline out of the Arctic Wildlife Range and adjacent areas in Canada.

An application for a pipeline permit and export license would be decided upon by Canada's National Energy Board (a body comparable to the Federal Power Commission) and, ultimately—if the NEB recommends approval—by the Cabinet. The application would not be subject to a vote in Parliament, although, of course, dissension sparked by this issue could affect the outcome of other issues on which the Government could fall. Canadian Arctic Gas Study Limited, a group made up of 25 Canadian and foreign-owned pipeline and oil and gas companies, expects to file an application

with the NEB sometime after midyear for permission to build a gas pipeline from Prudhoe Bay down the MacKenzie Valley.

A second group, MacKenzie Valley Pipe Line Research Limited, made up of 15 Canadian and foreign companies, has prepared preliminary plans for an oil pipeline from Prudhoe Bay to Edmonton. This latter group includes two companies owned by firms active on the North Slope, Imperial Oil Limited (owned largely by EXXON) and Mobile Oil Canada Limited (owned by the Mobil Oil Corporation), Atlantic Richfield Canada Limited also belonged to the group but withdrew last July. According to this research organization's recent report, its proposed pipeline could be completed in 4 years (if all government approvals are obtained within the first year) and at a cost of \$3.4 billion. If these estimates as to time and cost are realistic—Alyeska would say that they are not—then they are competitive with those for the TAP-tanker system. A decision by MacKenzie Valley Pipe Line Research Limited to file application with the NEB for a construction permit and license would, at this point, depend on abandonment of the plan for the TAP.

Without minimizing the political difficulties which may beset any proposed Trans-Canadian pipeline, it must be pointed out that, if the Government is determined to see such a project through, the obstacles are fewer than those that could arise in a comparable situation in the United States. There is no coequal and independent legislature and there is no Canadian equivalent of NEPA (although, in fairness, it should be noted that both the Canadian government and the oil companies have had under way a significant program of environmental research along the MacKenzie Valley route). Furthermore, the Government has full powers of eminent domain to establish international or interprovincial pipeline rights-of-way, and it can condemn land even if the ownership is in doubt (as it would be in the case of land that might be subject to native claims).

In sum, if the Nixon Administration and the companies which have high stakes riding on North Slope oil should conclude that the way to go is via Canada, there is reason for a measure of optimism—cautious optimism—that the way will be clear.

—LUTHER J. CARTER