The year 1969 was a major watershed in Alaska's history. This was the year when the full extent of the international petroleum industry's invasion became apparent to all Alaskans. Most viewed it as a cause for rejoicing and optimism. Overnight the State of Alaska had become rich when the industry made bonus payments of over $900 million for leases on oil and gas lands on the North Slope and the prospects of literally hundreds of millions of dollars of annual royalty and tax payments loomed for the decade ahead. The state no longer had to worry about where the money was coming from and could concentrate on spending. Private employment climbed and all the gold rush legends of quick wealth resumed currency. The magnitude of what was being done by the oil developers and promoters and what was being proposed went beyond anything dreamed of by the wildest "boomers" of a few years back. No physical barrier and no financial cost seemed too great to hinder a prolonged boom. All Alaskans had to worry about was how to cash in on it.
The Petroleum Industry

The story of petroleum in Alaska goes back at least 50 years when systematic investigations were made of the oil seepages along the arctic coast reported by Eskimos and early traders. In 1921 the Standard Oil Company explored and made an effort to stake claims to potential oil lands at Cape Simpson. These efforts were abandoned when discoveries in Oklahoma and Texas turned private developers away from the then remote Arctic. President Harding in 1923 set aside 37,000 square miles of the North Slope as Naval Petroleum Reserve No. 4, however, and over the years exploration has been carried out by the Geological Survey and the Navy, the program being recessed in 1953 when sufficient evidence had been developed to conclude that a major petroleum province existed in northern Alaska. Favorable geologic conditions existed elsewhere in Alaska, and for a period during the 1930’s there was a small commercial production and crude refinery operation in the Katalla district on the southcentral coast. But it was not until the discovery of oil in July 1957 on the Kenai Peninsula that the Alaska petroleum industry could be said to have truly come on stream. Exploration, development and production activities continued in this province throughout the 1960’s, and by the end of 1969 production of crude oil was coming from five fields in the province and of natural gas from nine fields. Wildcat activities were scattered throughout Alaska, Japanese interests were looking into the Bristol Bay area, and Australian interests were rumored to be interested in the Alaska Peninsula. But after a few false starts, most development interest was building up in Alaska’s Arctic, its North Slope province.

The growth of these activities can be traced in statistics on annual exploration and development drilling footages and annual crude oil and natural gas production. Annual crude oil production rose from a token 187,000 barrels in 1959 to 74 million barrels in 1969 and natural gas from 310 million cubic feet to 149 billion cubic feet. Wellhead value of this production rose from $1.5 million in 1960 to $219 million in 1969 and petroleum was easily Alaska’s first industry on the basis of raw material production alone. Further value was added by processing. A natural gas pipeline was constructed to transport gas to the city of Anchorage, and by the end of 1969 a
refinery-petrochemical complex was well established on the Kenai Peninsula—two petroleum refineries producing jet, diesel, and heating fuels, a plant producing 530,000 tons of ammonia and 350,000 tons of prilled urea, and a plant liquifying 135 million cubic feet of natural gas per day for shipment by special refrigerated tankers to Tokyo.

Alaska’s Economy

During the decades of the 1950’s and 1960’s, Alaska served primarily as an “exporter” of military defense, but it was increasing in importance as an exporter of natural resource products. During the five-year period 1951-54, spending by the Department of Defense in Alaska averaged $412.9 million annually. By the end of the 1950’s the defense establishment had passed the stages of developmental build-up and achieved the plateau of simply maintaining and periodically renewing itself. The number of military personnel stationed in Alaska stabilized at about 33,000 men and the civilian employees of the department at between 6,800 and 6,500. From a peak of $512.9 million in 1953, defense expenditures declined to annual amounts fluctuating between $264.6 million to $352.0 million.

The shift of the economic base from dominance by the military to natural resource production was clear during these two decades. From a total 1950 value of $130.6 million, the value of natural resource products rose rapidly to half a billion dollars by the end of the 1960’s. The outlook is that these values probably will exceed two billion dollars by the last half of the 1970’s. This trend started with forest products, the annual cut rising from 72.4 million board feet in 1950 to 581.1 million board feet in 1969. The maximum sustainable yield of the resource will probably level off at about eight hundred million board feet by the end of this decade. The development of the Cook Inlet-Kenai petroleum and natural gas fields reached its peak, or soon will, with production rising from about half a million barrels in 1960 to 74.7 million in 1969. These fields will continue as major producers throughout the decade and beyond, but the annual
outputs soon will begin a down trend. The North Slope province will not hit its peak, on the other hand, until well into the 1980’s.

Annual data on employed workforce by industrial classification gives a representation of the structure of the Alaska economy and its shifts over time. In spite of the marked shift from defense to commodity production, employment analysis indicates that commodity producing industries remained almost constant during most of the 1950’s and 1960’s, and that past and projected increases in direct employment in oil and gas has not significantly altered this situation. Distributive industries and non-defense government employment experienced the most dynamic growth and caused the structure of the economy to be in continuous change. In part this reflects the inter-relationship between the defense programs and the supporting industries. Much of the transportation and communications employment, for example, comes from private contractors performing these services for the Department of Defense. Government growth in part reflects the development of the State of Alaska since its creation in 1959.

The Alaska petroleum industry has also contributed directly to the growth of these sectors of the economy. As it has been emerging over the past ten years, the petroleum industry clearly differs from any other commodity producing industries in Alaska’s experience. The petroleum industry is establishing within the state an executive and administrative component which will give its main operations and planning functions an Alaskan base. Furthermore, it relies heavily upon contracting for its various supporting services. This overhead component of the Alaska salmon industry was represented within Alaska only by seasonally imported lobbyists and resident legal representatives, and the minerals and forest products industries simply comprised the Alaskan production extensions of a multitude of individual firm operations headquarter elsewhere. Stated in other terms, employment in these other Alaskan industries has been dominantly productive with a nominal overhead element, while in the emerging Alaska petroleum industry the “overhead” element far overshadows the productive.
The expansion of government programs and employment in part reflects a response to expressed need, but more basically it is a function of resources available to the government for spending. With the growth of the petroleum industry, the revenues received by the state and in part passed on to local governments has steadily increased without significant raises in tax rates or the creation of new taxes. The amount received from the industry in 1969 ($936.2 million) is enough to pay for the entire state budget at 1968 levels for four and a half years. This will not be repeated, but the anticipated annual oil industry revenues are such that future expansion of state and local government employment need not be hindered because of money.

However, there is a further economic impact of the petroleum industry which will cause the future Alaskan economy to differ from that of the past. This is the cyclical nature of industry activities as has been dramatically and painfully experienced in the period 1968-1970.

The 1969 Boom and 1970 Bust

The July 1968 announcements of Atlantic Richfield Company (ARCO) and Humble Oil and Refining Company that they had completed two spectacularly successful wildcat wells at Prudhoe Bay on Alaska's North Slope touched off one of the biggest resource rushes in the history of the North. The first estimates were that the new field might hold reserves of up to ten billion barrels of crude, compared with Canada's known eight billion barrels and Texas' fifteen billion barrels. Furthermore, on the basis of three competitive oil and gas lease sales by the State of Alaska in 1964, 1965 and 1967, only one other oil company, British Petroleum (BP), had a stake in this bonanza.\(^3\) The state had scheduled for September 10, 1969 a fourth sale covering another 450,000 acres of its North Slope land, and the oil rush by those companies not already in was on.

In a straight line the two discovery wells were some 290 miles from the nearest spur of the state's road system and 340 miles from
the head of the Alaska Railroad. Ocean transport was possible by barge, but only for a brief one or two months, depending upon sea ice conditions. In an unsuccessful attempt to provide land access, the state in the winter of 1968-69 pushed through a rough cat road some 360 miles from Livengood to Sagwon, too late to move more than a token amount of equipment before the spring breakup reduced the project to a useless and impassable mud and water canal. Most of the 1968-69 supplies were airlifted by C-130 Hercules transports carrying average loads of 22 tons each from the Fairbanks and Nenana airfields on an around-the-clock basis. Fairbanks took on all the characteristics of an oil boom town.

While the exploration activities of other firms were going on, the establishment Big Three of the slope (ARCO, Humble, and BP) were busy with plans to spend $900 million to build a 48-inch pipeline to move oil 800 miles south to the ice free port of Valdez on the Gulf of Alaska. Initial capacity projected for 1972 was 500,000 barrels daily with an ultimate capacity of 2,000,000 barrels daily. The Trans Alaska Pipeline System was organized and route survey and procurement activities launched. The same firms also launched a forty-million-dollar tanker test of the Northwest Passage. The largest merchant ship under the American flag, the 115,000 ton S.S. MANHATTAN, was converted into an ice-breaking tanker and, in the company of one United States and two Canadian ice breakers, explored the passage. If the 4,500-mile tanker route to the east coast of the United States proved economically feasible, there would be launched a program to construct over the next ten years thirty 25,000-ton ice-breaking tankers at a cost of $1.5 billion. The result would increase the present U.S. flag tanker fleet 2.5 times.

The search for information by the oil companies was carried out under the tightest security conditions, but excitement was kept at a boil by periodic upward revisions of estimated reserves by "reliable sources." The Prudhoe Bay field reserves rose from ten to twenty billion barrels of crude and the ultimate recoverable reserves of the North Slope province were estimated at fifty billion barrels of oil and three hundred trillion cubic feet of natural gas. Clearly the tanker route and TAPS would not have the capacity to accommodate this. The Alberta Gas Trunk Line Co., Ltd., of Canada proposed a
1,550-mile natural gas pipeline from Prudhoe Bay through the Yukon Territory to connect with its system in Alberta. The project would cost as estimated $1.5 billion and could be operational by 1974. Another pipeline was under study by a group of United States and Canadian interests which would run 2,500 miles to Emerson, Manitoba, and would cost $2.5 billion.8

The Alaska boom psychology reached fever pitch with the September 10, 1969 competitive oil and gas lease sale. An Alaskan boom-bust fever chart could be represented by the monthly employment reports for the industrial classification “mining; oil and gas.” From a 1961 monthly average of 500 employees, the level rose steadily to 1,000 by 1966, and afterwards more rapidly to 1,600 in 1967 and on to 2,200 and 3,200 in 1968 and 1969, the peak months being August and September 1969 with 3,700 each.9 In the broader context of the excitement generated by the 1969 announcements of pipelines and Northwest Passage development and the bonuses received by the state at the September 1969 lease sales, a continued increase in direct employment in the petroleum industry with related expansion throughout the economy was confidently predicted. Most of this increase was taking place within the North Slope (in fact, there were offsetting mining employment declines within the developed Cook Inlet-Kenai province). Anticipating that it would be the staging area for these developments, the business community of Fairbanks went heavily into debt to gear up for the 1970 boom. While frozen ground permitted movement, several construction firms moved an estimated $45 million worth of heavy equipment into camps strategically located along what appeared to be the route of the TAPS line in order to get a jump on capturing contracts for construction of the $120 million access road.

The peak of the boom passed by September 1969, but the boomer spirit of Alaskans persisted well into 1970 before giving way to the despair of a bust psychology. The initial drop in oil and gas “mining” employment from 3,700 in September to 3,000 in October 1969 was dismissed as a temporary readjustment, but concern increased as a continuing downtrend developed, oil and gas employment falling by June 1970 to 2,300. Although what was described as “the largest single ocean shipment ever to Alaska”
George W. Rogers

(187,000 tons including 117,000 tons of pipe for TAPS) moved by barges 3,200 miles from Seattle to Prudhoe Bay during the brief summer of 1970, the Fairbanks-North Slope air lift of 1969 dwindled, with a resulting 22 percent drop in local employment in air transportation. Unease increased as it became evident that TAPS was uncertain as to what the actual route of the pipeline should be and how much would have to be elevated above ground to prevent permafrost thawing. By April it was apparent to all that there would be no construction during 1970 due to lack of data and design, and an organizational change within the consortium.

In the Fairbanks area unemployment in June 1970 rose to 13.8% as compared with 8.5% in June 1969 and the state put up booths in outside airports to warn job seekers to stay away from Alaska.

**Delay, Uncertainty and Cycles in Petroleum**

The oil and gas employment drop on the North Slope and the rise in unemployment throughout the northern economy was popularly attributed to the postponement of the pipeline construction. This in turn was blamed upon the alarmist outcry of environmentalists both inside and outside Alaska, the Department of the Interior's delay in granting right-of-way permits until design was completed, and Native groups who objected to invasion of their hunting and trapping areas. Actually, the subject of these demands and requirements was already a matter of concern to the industry which did not wish to add further fuel to national protest over the succession of oil spills in the Santa Barbara Channel and Gulf of Mexico. A public statement by a senior vice president of Philips Petroleum Company in August 1970 suggested that furthermore, given the magnitude of the undertaking and the lack of basic geologic data, delays in construction of the pipeline or even its abandonment were part of the industry's long-range planning. "Scientists have determined that about 20 per cent of the line needs to be elevated, but some disagree and insist that 80 per cent or more needs to be above the permafrost. Even with 20 per cent above ground, new cost
figures project to $1.3 billion for the cost for building the pipeline today as compared to the original $900 million estimate. (This has been based upon preliminary advice that ninety per cent could be buried.) Certainly, if it is decided that more of the line must be above ground, that figure would be even higher. To venture a personal opinion, I believe that regardless of what is decided concerning the ecology, the final cost of the complete project is now most likely to be very near to $2 billion. If more problems are encountered with the pipeline and tanker alternatives, the economics of huge submarines may well become more attractive. In any case, you can easily see that the lead time for bringing any of these alternatives into reality is quite long."

In addition to lack of data sufficient to select a route and produce an adequate design and plan, the August 28, 1970 announcement of the creation of the Alyeska Pipeline Service Company to replace TAPS revealed that the loosely structured consortium of eight firms was proving unequal to the task of planning and launching construction of the pipeline. An Alaskan editorial commented, "Few, if any, will mourn the demise of the old Trans Alaska Pipeline System. The oil companies which created it recognized its failings; realized that as organized it could not accomplish the monumental task assigned it. A consortium of oil companies, it was operated by committee. The official announcement of the new Alyeska company states that 'within general policy guidelines' the new president will have 'broad responsibilities and authority for the service corporation to build and operate the pipeline... The Alyeska company 'will also provide a single contact point for various governmental representatives and agencies.'"

Beyond the problems of planning and securing permits for the construction of the pipeline, there were other causes of the 1970 employment slump. In April 1970 the state Department of Labor noted, "Also figuring in the decline are negotiations concerning unitization of the Prudhoe Bay oil field. Although it has been agreed to unitize the field, specifics of the plan have yet to be worked out. Because of this, even if a pipeline completion date were known, many companies would be unable to proceed with development
plans." By mid-year it appeared that the field would be developed in two sectors with BP Alaska, Inc., serving as operating company for all leaseholders in the western half and Atlantic Richfield Company as operator of the eastern sector. Under this system, the leaseholders would receive shares of oil produced from each sector of the field based upon the extent of their holdings.

Although preliminary plans for development of Prudhoe Bay finally were made public in September 1970, significantly the news releases gave no indication of when a decision would be made to proceed. This final delay and uncertainty could be attributed to the size of the contemplated developments alone and the uncertainty of the industry as to the potential impacts upon national and world petroleum supplies, costs and regulation. Petroleum economics experts in August 1969 at the Alaska Science Conference had discussed whether or not a rapid rate of development of the North Slope might even break up the regulatory systems of the other oil producing states, completely disrupt United States oil import policies, and cause basic reorganization of the corporate and institutional relationships within the industry. Although these discussions and the continuous flow of speculation that followed were inconclusive and contradictory, by mid-1970 it was apparent that the urgency of industry action and intensity of interest in 1968 and 1969 was one of competition to accumulate information as a means of securing a share in the anticipated bonanza. After September 10, 1970 the need was for thoughtful weighing of the consequences of any further course of action or inaction and analysis of the options which were now available to the international petroleum industry. Too much was at stake for precipitous action.

In addition to the more apparent delay and uncertainty in the decision making process, Alaskans were to learn that employment and economic decline had other causes inherent within the petroleum industry itself. As the development plan for the Prudhoe Bay field emerged, it became clear that the process of exploration, development, and finally production was a cyclical one unlike any other resource development pattern Alaskans had experienced before. In other resources the generalized pattern was one of small beginnings building up to a peak and then declining as the resource
was depleted (as in the case of other minerals and fishing) or dropping off with market decline (as in the case of furs). Watching employment and economic levels ascend rapidly during the final years of the 1960's, Alaskans anticipated that they would continue a climb paralleling that of projected petroleum output. In a meeting on the possibility of development of new arctic communities held in July 1970, for example, one Alaska resource development expert predicted that the North Slope population would rise from its estimated level of 5,900 persons in 1969 to 15,000 persons. At the same meeting a representative of BP put forward a completely opposite forecast, pointing out that the peak of employment on the Prudhoe Bay field had been achieved in the period May-September 1969, would continue tapering off during this final period of exploration and development and would drop to 300 to 400 persons during the productive phase. There would be no new communities beyond temporary camps due to the nature of the cyclical process and the highly automated nature of production.

The basic nature of the temporary peak of employment and activity during the exploration and development phases is reflected in the practice of the petroleum producers of contracting for most of their drilling, geophysical, supply and support services rather than building up their own direct labor force beyond a level needed for the longer-run production periods. For example, an industry report of direct employment in Alaska gave the 1965 employment by the oil companies as 414 persons and by service companies under contract to the oil companies as 749. In 1969 the report was that oil company employment had risen to 775 persons (an 87.2% increase) and contractor employment to 2,400 persons (a 220.4% increase). The contracted services during the development phase are further increased by construction contracts, the building of field systems, the trans-Alaska pipeline, etc. The major objective of the oil companies appears to be to maintain as nearly as possible a constant rate of production and a relatively constant level of company employees. The contracting firms, on the other hand, seek to maintain their employment levels by moving freely throughout the petroleum world in response to development forces. These practices have important implications for Alaskan efforts to implement their local hire preference policies. If Alaska Natives were trained for these
jobs, they must then be geographically mobile in order to continue in these employments. The Alaska based jobs in production, on the other hand, will be extremely limited in number.

The Future Impact

The essence of the announced development plans for the Prudhoe Bay field are maximum co-ordination of all production (the objective of unitization) and minimum labor input per unit of output (the objective of automation of production and maintenance of high levels of output). The BP plan for the western sector of the field calls for twelve drilling islands (gravel pads raised above the tundra, which is subject to thawing and flooding) of four wells each, three crude oil gathering and treating centers and a system of thirty miles of gathering and transit pipelines connecting the producing wells, the centers and the final transmission line. Both sectors of the field will share common utility, transport and support systems. The production process will be automatic and managed primarily from outside the North Slope region, probably from Anchorage. Oil will flow from the ground under natural pressure into the three gathering and treating centers where gaseous matter will be separated and a certain amount of skimming will take place before the oil enters into the main transmission system. This gathering and treating system will be provided with electronic monitoring devices, automatic safety locks and diversion systems, standby capacity, etc. In addition to promptly detecting leaks and failures, the system will be programmed to take immediate corrective action. As a further safeguard, the operation of each unit will be covered by close-circuit TV to permit frequent check by trained human observers from the field control center. The limited number of field personnel required will be housed and work in a central headquarters complex on a two weeks on and one week off basis. Frequent rotation will eliminate need for construction of family units or elaborate community, recreation and other social services in the field.19

Employment projections have been made on the assumption that over the next twenty years there will be continuing exploration
and development work on the North Slope and that final commercial production will come from the present Prudhoe Bay field and two somewhat smaller fields. Exploration employment will recover and build up between 1970 and 1980 and drop off rapidly during the 1990's. Most of the basic construction and development work will take place during the 1970's, reaching its peak about midway through the decade. These activities account for most of the employment projected for oil and gas mining and much of contract construction for 1970, 1975 and 1980. Primary production employment will reach its peak about 1980 and will fall off during a longer secondary recovery production period probably extending to the end of the century. At most, however, this will amount to only a few hundred workers (a figure of not more than 400 has been suggested by some industry representatives).

These are the direct employment impacts anticipated, but the major employment impacts will be the indirect ones reflected in the distributive industries and in government. The heavy overhead component in the Alaska petroleum industry has been referred to above as has been the impact upon government of the availability of a continuing major source of revenues from taxes, royalties, leases, etc. What this will mean to the State of Alaska, therefore, depends upon what Alaskans do with the money they receive rather than whether or not they become part of the petroleum industry's labor force.

NOTES


6Division of Oil and Gas, *Report for the Year 1969*.


