339 HCRA HB 219 (FILE # 1)

technological know-how, but the local, state and federal governments do not have the ability to deal with the cumulative effects of rapid OCS oil development.

AC&O: What changes, improvements in the existing procedures do you consider essential?

MALLOTT: I think that the federal government should channel sufficient revenues to state and local governments to allow them to do the necessary planning. This does not need to be a long, involved process.

The state government should do a better job of channeling those state and federal resources available to it on down to the local level. It needs to develop state and regional priorities but not over the "dead bodies" of local governments.

Local officials must recognize and accept their responsibilities in this area, including development of local resources to the maximum degree possible, and utilizing state and federal assistance where needed. City governments up and down the coasts of Alaska need to realize the importance of the development and utilization of strong local governmental tools to deal with the challenges they will soon encounter.

Harvey Milton is a 63-year-old Tlingit Indian who has resided in Yakutat all his life. He has fished "since I can remember," and has done commercial gillnet fishing. He has been a registered big game hunting guide for over 30 years. Milton welcomes the new industry to his home but worries about the effect a nearby oil spill would have on his people's subsistence and livelihood.

AC&O: Mr. Milton, you mentioned your father, grandfather and great-grandfather all lived in the Yakutat Bay region. As a resident of this same area for over 60 years, you know a great deal about its people, its history and what happens here. When did you first become aware of the oil companies coming to your village?

MILTON: The oil people first came here about two years ago to see if we could work together. That was going to be alright because they would help Yakutat people by giving them jobs.

AC&O: How do the people here feel about oil exploration in Yakutat?

MILTON: We all know the oil is needed. It's like the tide; we can't stop it and we can't stop needing the oil, but it won't last forever because it is getting shorter. I teach my grandchildren to eat seafood because the time will come when we go back the way as before. When they get no more oil, we go back to the olden days and burn the wood.

AC&O: How do most of the Yakutat people make their living?

MILTON: Most people here, whites and our people, live from fishing the Bay.

AC&O: When did you first notice the impact of the oil companies on the village of Yakutat?

MILTON: At first the oil company was going to build where lots of children go to school, near the old Ocean Cape cannery. Be. Yakutat people were worried about their children, so they talked to the oil people. They agreed to go across the bay and everything worked out fine.

AC&O: What is your main concern about the oil companies being here?

MILTON: If the oil spills on the sea and drifts into the shore it will affect Yakutat. In the springtime, salmon come in here and if the oil comes, all the seafood is going to die because I know the wind and currents and they will bring it in here and the salmon can't go up their streams near Yakutat. That is our concern.

Jeff Widdows, 26, is a commercial fisherman and owner of transportation and janitorial businesses in Yakutat. A 15-year Alaska resident, Widdows lived in Anchorage for 10 years where he attended East High and AMU. Five years ago shortly after he and his wife Kris bought a house in east Anchorage, "We all of a sudden realized we were settled in for the next 30 years with an 8 to 5 schedule and knew we wanted more out of life." They decided on Yakutat, where Jeff had been offered a job with the Standard Oil distributor; Kris went to work for the U.S. Forest Service. As reflected in the interview, Jeff Widdows' feelings about big business coming to his "refuge" are clearly mixed.

AC&O: In our discussions with present and past residents of Yakutat, almost all have ambivalent feelings about the coming of the oil industry. The greatest concern is that it might adversely affect the rural, outdoor-oriented lifestyle characteristic of the community. Why did you move to the area and have any of its attractions been influenced by the new industry?

WIDDOWS: I like the outdoors, and the hunting and fishing it provides, and am consciously aware of it. I cuss the rain but it's part of what I love and part of something that somebody did a damn good job of putting together. What's more important is just knowing that they're available when I have time to do them.

Other attractions of the area I value are the people and the way of living here. Our Anchorage friends ask us what we do "down there." We visit people and don't worry about calling first, or whether it's mealtime, or whether we're properly dressed; or, maybe we'll get hungry for some clams and go down at night and dig some.

If I forget about leaving my keys in the truck, or locking it, I don't worry about it; you'd think at least twice before doing that in Anchorage.

You asked if any of this has been affected by the oil companies coming here. It's hard to say. There are some things that most people would consider minor, but they're important to me and I think they've been somewhat affected. I mentioned that Kris and I often go down to the beach in the evening. A couple of years ago we'd be the only ones there. Now you're seldom alone. When we lived out near the airport we'd see bears all the time. In fact one morning I heard a lot of noise nearby, looked out and saw three of them playing in the bed of my pickup, rocking it and bouncing up and down 'til they got tired of it and left. Another time when I was getting ready to leave for work, I heard some commotion and went to the door to check it out. When I looked out the narrow window in the door as I started to open it, a bear was peering in to see what was happening inside. I loved it. I seldom see them now. This might be related to the increased activity around here.

AC&O: Has the oil business had any direct impact on your livelihood, and if so, what kind?

WIDDOWS: The first impact was when I discovered I no longer had a place to keep my bus. *(Widdows provides transportation services for area school children and had stored his vehicle in a warehouse that Atlantic Richfield leased; ARCO later consented to letting him store the bus in an adjacent warehouse.)* They later asked me if I could provide maintenance services for their offices. I didn't need the money but it was a good offer.

Our house is another example of impact. Ten years ago it sold for $3,000, two years ago it sold for $17,000, and we bought it this spring for $40,000. The reason for that price tag is offshore development in the vicinity. It was the first house available in over four years. It's in poor condition, but we wanted to be part of the community and when you live out at the airport, you're considered to be transient. It may not be the way you feel, but that's the way it is here.

AC&O: How have others you know been affected?

WIDDOWS: The companies have brought money to the town. There are a lot of people here who in the past had little or no money coming in during the winter time. Now they have a regular paycheck coming in during what used to be pretty lean months. This in turn has helped the local stores. One of the biggest assets of this community is its isolation. What has happened to many other Alaskan communities that are more accessible to big business hasn't happened here yet. In others where business has come, many residents by choice or by no choice were sort of pushed aside, but here they haven't been and that's good. Fishing has traditionally been the mainstay of the Yakutat economy and continues to be, gillnetting and subsistence fishing. Considering the options available and the possibilities, I think all sides involved in the planning did a good job.

AC&O: What are your overall feelings about the way the companies have related to the community?

WIDDOWS: This is something I've found it a little hard to admit but I'm pleased with the way they've conducted their operations, with the way they've tried and in most cases succeeded in cooperating with the people here. I hate to admit it but the detrimental impact so far has been very slight and there have been some advantages. A lot of people are employed by their being here and are making more money than they ever have before.

I was dead set against their coming here and I'm dead set against this place changing; until recently my feelings were if they need the oil, get it out of somebody else's backyard, but realistically maybe that's not possible here. I'm still against any big development here but I'm very relieved with the way they've conducted themselves so far, in cooperating with the community in just about every way that they could. I'm pleased also with the caliber of people that they've brought in; they're pretty nice people. I've always noticed two kinds of people in a community, those that are there because they want to be and those that have to be such as for their jobs. The people that came in have been friendly, kept a low profile and seem to get along. □

Alaska Construction & Oil
March '77

"northern latitudes, cold weather, rough seas, deep waters..."

Alaska has no monopoly

AC&O production editor Norman Bolotin recently travelled to Great Britain as part of the preparation for this special report. Having covered Alaska oil development for the magazine for the past four years, he went there to tour the support facilities serving the North Sea oil fields. The following several pages illustrate many more parallels between the North Sea and Alaska than just lines on a map. Photos are by the author unless otherwise indicated.

There are striking similarities between the North Sea and Alaska, and many more than one would suspect at a superficial examination. The obvious parallels come to mind immediately: northern latitudes, cold weather, rough seas. But rough and deep waters for drilling can be found in many parts of the world, although likely not as rough as in the North Seas or offshore Alaska. Initially, it should be noted that the U.K. is perhaps a decade ahead of Alaska in offshore development. Some of the major fields have been producing now for over a year. Onshore construction and offshore drilling continues at a hectic pace in the North Sea while exploratory drilling is only now getting underway in the 49th state.

When discussing petroleum these

days, the political aspects of the industry are sure to touch off a controversy. Great Britain is involved in a merry-go-round situation similar to the one in the states—high consumer costs for petroleum products, the resulting dissatisfaction among residents and a mounting national interest in reducing exports and imports of petroleum products: energy independence. Sound familiar? It would take another entire issue just to scratch the political surface of the issues, so this article will deal only with the non-political similarities of the oil industry in the United States and Great Britain.

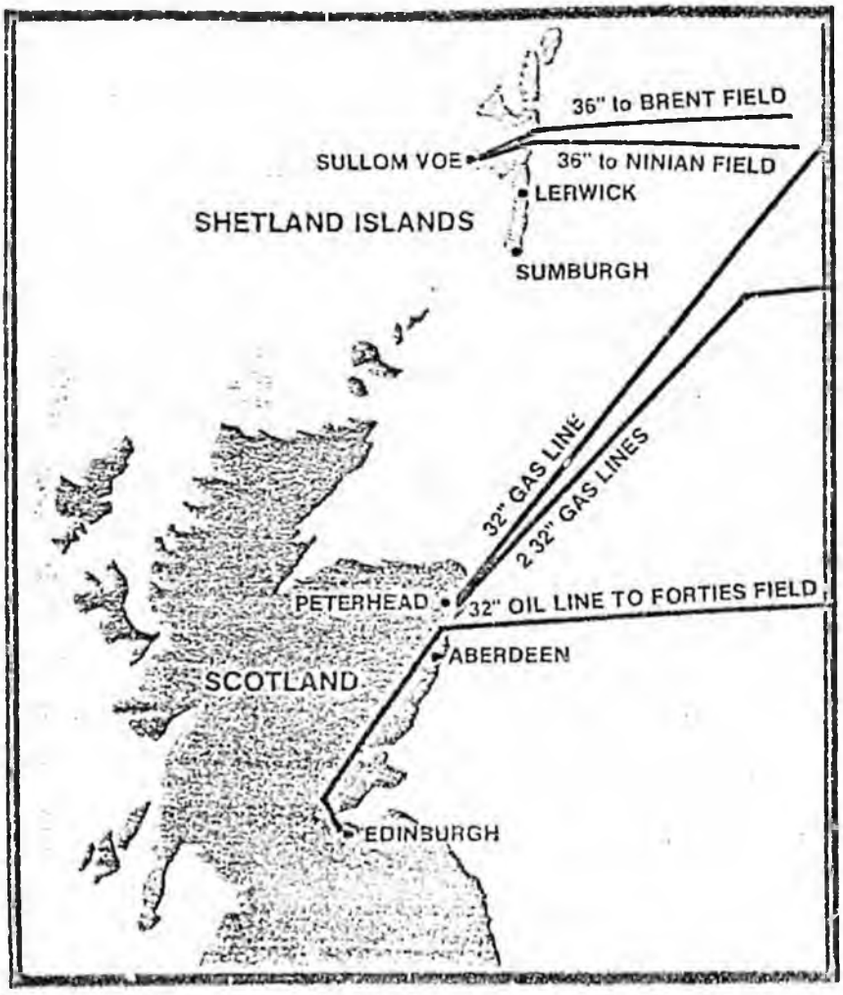
The effects of offshore development in Alaska—on the economy, on the land and on the people—will be more subtle than those experienced on the pipeline. At the same time, they could be greater. Until oil was discovered at Prudhoe Bay, Alaska—to the rest of the country at least—was some land of igloos and gold miners, a place in the far corner of the map that was mired in the 19th century. The oil line educated outsiders and expanded and stabilized the state's economy. The population doubled and the economy doubled many times. The coming of the offshore oil industry, over several decades, will have a tremendous effect on Alaska; but it will come in periodic jumps and it will come after the oil line has had its massive, initial effect. On the positive side, Alaskans know what to expect and so do outsiders. A negative effect could be complacency, an incorrect assumption that after the pipeline, anything will be easy. Those who were in Alaska six or seven years ago have learned to be wary after that first boom and bust came with North Slope oil. A lot can be learned from what has taken place in Great Britain, as well.

OIL FROM THE FORTIES FIELD

AC&O's trip to the U.K. included visits to Edinburgh, Scotland, where a subsea oil line terminates. The other end is in the Forties Field, the largest of the North Sea oil fields. At Edinburgh is the Dalmeny tank farm, where oil is stored prior to loading onto tankers, and the Hound Point tanker terminal, where the crude is loaded onto ships.

The known recoverable reserves of 17.5 billion barrels in the North Sea nearly double those at Prudhoe Bay. It was back in 1959 that British Petroleum, the parent company of the firm so well known to Alaskans now, first demonstrated an interest in the North Sea. Exploratory activity, primarily seismic, began in 1962-63 with a cooperative effort between BP, Shell and Esso. Later, GUMBP was formed: Gulf Oil, Union, Mobil and BP. This group continued searching for potential subsea oil and gas structures, and in 1965, BP sank the first exploratory well. By the end of the year, the firm announced the first commercial discovery of gas in the North Sea.

Due to problems reminiscent of the struggles between the state of Alaska and the federal government, there had been little interest shown in the North Sea earlier. This was because of uncertainty over ownership of the waters; here the question was an international one. The first U.K. leases were issued in 1964. At that time, BP obtained rights to an area 100 miles east of Aberdeen . . . what was to become the Forties Field. The name comes from the water depth along the sandbank in the area—40 fathoms. North Sea weather, like Alaska's, is among the worst in the world, as well. In that area of the North Sea, there are 273 "bad" days in any given year and 49 "marginal" ones. This leaves just 43 classified as "fair" or "good." Due to this and other circumstances, design criteria are stringent, as in Alaska. Platforms in the North Sea are constructed to withstand 94-foot waves and 130-mph winds, statistically probable every 100 years.



Once BP knew there was oil present under the North Sea in commercial quantities, the problem became one of logistics—how to produce it and get it to land. It was decided that the Forties Field would be covered by four platforms some three miles apart. Each production platform would be identical in terms of output and would house 27 wells. The wells would fan out into the subterranean reservoir at angles up to 55 degrees. The next step would be getting the oil to the mainland.

The minimum size line that was determined adequate to carry the projected 400,000 barrels per day of crude oil was 26-in. in diameter. The line was to be built in two segments: a 107-mile stretch under water and a 130-mile section overland to the Grangemouth refinery near Edinburgh. Again, to allow for expanded capacity, the line was redesigned to 32-in. in diameter; the on-land portion of the pipeline measures 36-in. in diameter.

The submarine line was coated with a special concrete mix. By September 1974, the underwater line was in place, with only one major incident having occurred. A typically rough North Sea storm had damaged one section during laying. It was subsequently replaced. The project continued on schedule. Then, again because of weather, the difficult final linking of the line underwater was delayed over one month, waiting for ideal weather.

The onshore portion of the line was simple by comparison . . . by comparison to either the underwater segment or the trans-Alaska pipeline. The right of way was less than 20 feet wide and the temporary work area only another 40 feet. Here weather was not a problem and the line was buried conventionally, as only a portion of the Alaska pipeline could be. The 36-in. diameter onshore pipeline was coal-tar-enamel coated and fiberglass wrapped, then laid in a six-foot deep trench. The onshore line was completed early in 1974, having been placed at up to three miles per day at a cost of $700,000 per mile.

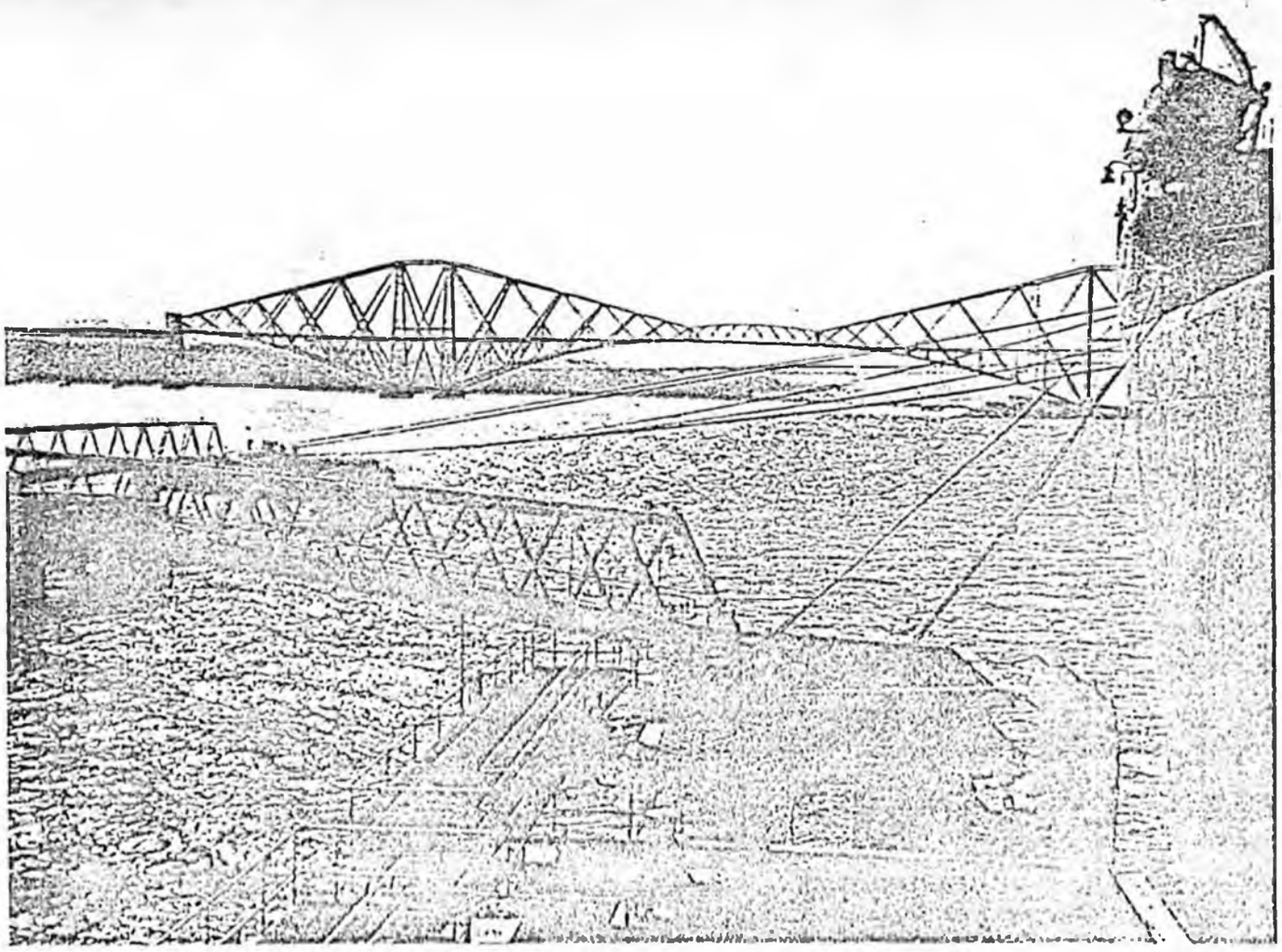
There are alarm systems and check valves built in every 10 miles, and driving through the area now the casual observer would be unaware of the line's existence. If full, the line would contain approximately 1.4 million barrels of crude. Once the oil reaches the refinery, the similarities to the U.S. are even more obvious. Oil and gas are separated as they are at the Slope in BP and ARCO gathering and flow stations.

Another structure of significance was built at Cruden Bay. This is where the 21-in. diameter underwater line meets the 36-in. diameter overland (or more accurately, underland) line. Two surge tanks were erected there, to avoid shutting down the line completely in the event of any problem. This way, oil could be diverted for a couple of hours if necessary. Flow in the line can be stopped almost immediately, but start-up takes a full day. The tanks, but nothing else, can be seen at Cruden Bay. The line winds innocently under the area, including a stretch that runs next to the local golf club.

FROM PIPELINE TO REFINERY TO TANKERS

BP already had a large tanker terminal in western Scotland, but using it to serve the Forties Field would have meant construction of another long and costly pipeline. The problem—again similar to the situation in Alaska—was to find a suitable site. It had to be downstream from the large Firth of Forth bridges, yet not too near the more than half-million people of Edinburgh. Tankers would be needed to take the crude to other refineries, since only one-fourth it would be handled at Grangen h. Hound Point was selected. The name is reflective of typical Great Britain history. A faithful dog there is said still to mourn his master, who was lost in the Crusades of the 12th century.

The Hound Point terminal, and the Dalmeny tank farm inland from it, are amazingly unnoticeable, despite their close proximity to Edinburgh. The site selected for the tank farm was already environmentally impacted. A half-century earlier the area was a thriving shale oil mining site and was scarred with a huge "bing," or spoil heap. In July 1973, the construction began. The project required dozing and rearranging 2.5 million cu. yd. of the spoil. Today, the site looks more like a landscaped industrial park than a tank farm of such magnitude. It is clean and aesthetically pleasing. Grass covers the area, as do 55,000 trees and shrubs . . . and nettles. The 93-acre site is less than four miles inland from the tanker terminal and just 10 miles from the heart of Edinburgh; yet it is isolated. Coming around a curve in the road, there is a



View from the Hound Point tanker terminal near Edinburgh. At the right is the stern of a tanker being loaded. In the distance are the twin Firth of Forth bridges; the nearer one is the old steel railroad structure.

fence with green hills behind it. After a few more turns up the private road, the tanks seem to jump out. The area is landscaped to blend in with the surrounding countryside. The tank farm was built to be functional and unobtrusive; it is the latter, and BP says it is the former, as well.

The tank farm sits 165 feet above the sea level of the tanker terminal, so loading all can be done by gravity flow if desired. Pumps are present for faster ship loading when needed. The entire plant can feed a tanker at up to 15,000 tons (7.5 bbl. per metric ton) of crude per hour when employing the pumps. The tank farm includes not only the crude tanks, but ballast facilities as well. And a 250,000 dwt supertanker can be turned around in just 24 hours, including off-loading and treating ballast. This time is exactly the same as it will take to deballast and load a crude tanker at Valdez.

The Hound Point tanker terminal is not owned by BP, but leased to the oil company by the Forth Port Authority. The "W" shaped maze of valves, pipe and steel sits in 78 feet of water and stretches a quarter of a mile in length. The terminal, while its actual capacity could be more, is to be used for an average of three tanker callings per week—one super and two smaller tankers.

The tank farm and terminal have served their purpose, and in fact have helped bolster the local economy, according to Ron Findlay, BP spokesman at Grangemouth. But the effects have been subtle, as intended. On the environmental side, the tank farm is well hidden, as we have said, and it is revegetated so well that sheep have been brought in to graze on the site. Any visitor to the area would be totally unaware of the tank farm and likely would miss the tanker terminal as well; the twin Firth of Forth bridges are far more impressive and offer an interesting contrast: the old steel cantilever railway bridge and the newer automobile suspension bridge.

Some residents there are less than happy with the results of the oil development, however. This comes back to the political situation mentioned earlier. One resident summed up the situation: "Oil is like everything else," he said. "We export more whisky than anyone else in the world . . . but we never see the money. Oil? We won't see that money, either. Nothing for Scotland. That bridge is like your Golden Gate Bridge, but you know how long it took us to get the money?" And one shopkeeper added simply, "we don't see any extra money from it."

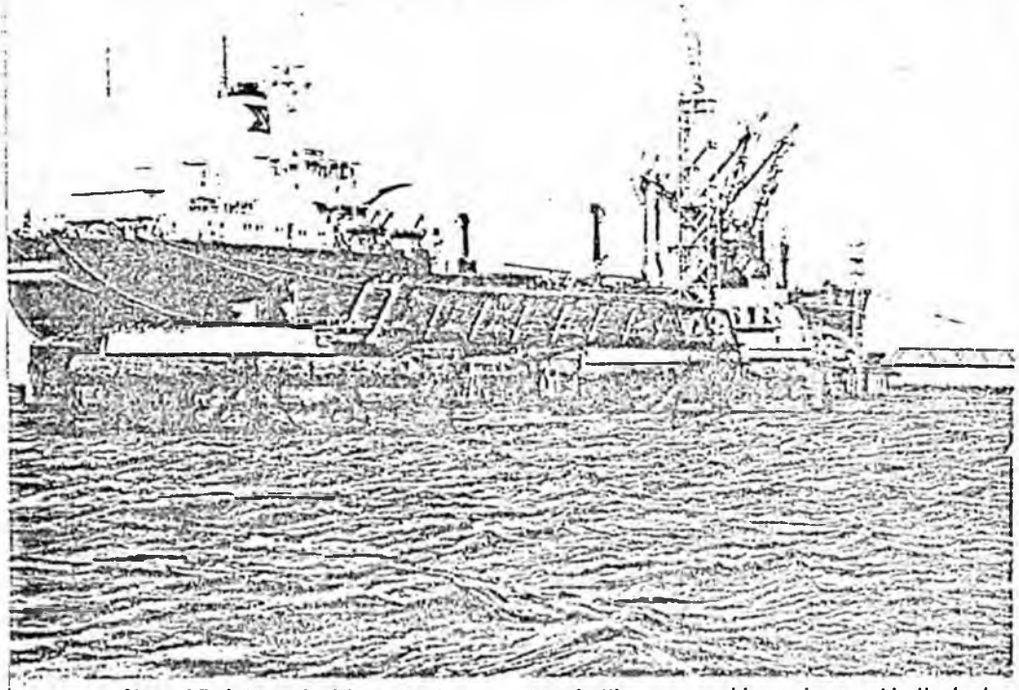
Edinburgh is hundreds of years old, a city with more people than the whole of Alaska. The oil industry is making very small ripples in the lifestyle there. The pipeline in Alaska should have made one thing very clear to Alaskans. Any tanker terminal, ANYWHERE in Alaska, will have a much, much greater effect on nearby communities, both socially and economically.

Also of interest to Alaskans is the difference in scheduling between offshore development and that which is underway at Prudhoe Bay. With the Alaska pipeline, there was a single major field with a single major construction project to serve it.

In the North Sea—and in Alaska's

future—there will be more incidences of construction coinciding with production. For example, the "ultimate" capacity of the Alaska pipeline is 2 million bbl./day; but to handle production as it is scheduled from the planned number of wells and known reserves at Prudhoe, the actual capacity will be more like 1.5 million bbl./day. This figure is based on the production that should come from the Prudhoe Bay structure as it is planned to be drilled. In addition to four pump stations needed to bring the line to full capacity, other structures in the North Slope area would have to be tapped to increase the throughput to 2 million bbl./day.

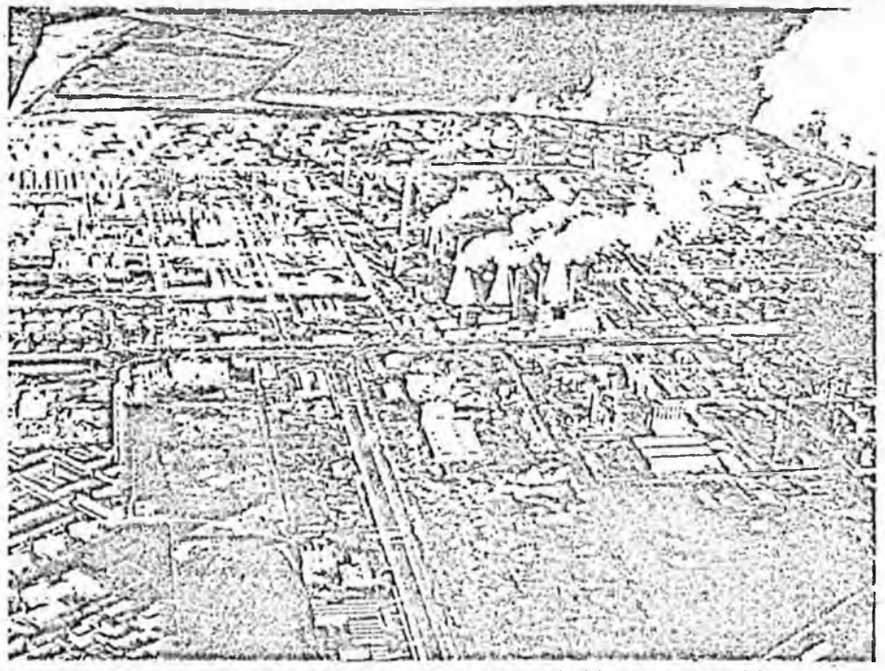
In the North Sea, plans call for exploratory drilling to be ongoing with the construction of new facilities needed to keep pace with anticipated discoveries. As new wells are sunk, onshore facilities are increased. In Alaska, the pipeline is a more singular project, but the added pump stations could come if these other structures are tapped in the next few years. On the longer term, of course, would be activities in the Beaufort Sea, which also could feed the line.



Hound Point terminal from the ferry used to shuttle personnel from shore out to the tanker terminal. The cantilever-like structures near the front of the vessel are the offloading booms feeding crude to the tanker at the time this shot was taken.

THE SHETLAND ISLANDS

The Shetland Islands are like the small communities of Alaska and Sullom Voe is the Valdez of the North Sea. While all of Alaska is isolated, Shetland is somewhat unique to the U.K. Remember that Great Britain has a land mass roughly equivalent to the state of Oregon—just a small



Aerial view of the Grangemouth refinery near Edinburgh. Photo courtesy BP.

island in comparison to Alaska. Scotland is densely populated in only a few areas, but compared to Alaska, there are people everywhere. The Shetland Islands are nearly 700 miles north of London, and 185 miles above Aberdeen. Aberdeen, like Edinburgh, is old, but smaller, with less than 200,000 people. It is the main transport point for North Sea personnel. But because it is so old, and relatively large, the impact of the oil industry has not been what it will be on the Shetland Islands or on Alaska.

In Shetland, the feelings are much like those of Alaska. A feeling that the less than 20,000 residents there (only 3/100 of one percent of the U.K. population) are isolated and ignored. Even Alaska can boast a larger percentage of the U.S. population, an overwhelming 1/5 of one percent. The size and isolation of the area and the feeling of Shetlanders should be familiar to Alaskans.

THE SULLOM VOE TERMINAL

Sullom Voe is more isolated than the facilities at Edinburgh, and not just because everything in Shetland is remote. It is even isolated to those living in the islands. It sits just beyond the remains of a World War II air base. It is hardly small, but to be an eyesore, someone has to be nearby to see it.

The closest town is Lerwick, 25 miles down the narrow road; it is also the only town in Shetland, boasting about one-third of the islands' population. The most recent census of 6,100 does not reflect the oil industry, which has increased the town's population by perhaps as much as 25 percent. And another 25 miles from Lerwick is the Sumburgh airport, at the extreme southern tip of the main island. Beyond Lerwick, the rest of Shetland's population lives in a few scattered villages and on farms. Anyone who enjoys the countryside or quiet solitude of Southeast Alaska couldn't help but enjoy the Shetland Islands. But Shetlanders don't necessarily like the oil industry. This is not to say that it is resented; it is accepted, at the least. Still, despite the smallness of Shetland and the largeness of the oil development, the impacts seem remarkably few, either positive or negative.

This level of impact should be interesting to Alaskans. We have already mentioned the isolation, with which Alaskans surely can identify, as well as the feelings that perhaps too many of the economic benefits are reaped at the national rather than local level.

The accompanying article in this issue on development in the Yakutat area should be read with Great Britain in mind. The problems and development in Great Britain and Yakutat offer unique insight into one another, enough that we felt the subject warranted a separate article. In Shetland, development is far beyond the exploration underway in Yakutat; but it is what has been learned in this activity that we hope can help in guiding the activities in Alaska.

The Shetland project, exclusive of other North Sea work to the south at Edinburgh and in the Forties Field, totals approximately $9 billion, thus far. This includes $7 billion for offshore platforms and field development, $1 billion for pipelines and another $1 billion for the terminal itself. The Sullom Voe terminal "will be Britain's biggest oil port, and is designed to be a tangible expression of co-operation between the Shetland Islands Council and the oil industry," according to BP. In a local paper, Ian Clark, chief executive of the Shetland Islands Council (the local political body) was quoted as saying that "what is surprising is not that difficulties have arisen but that there have been so few!"

The environment has received prime concern from BP. While the Cruden Bay-to-Grangemouth line discussed earlier was larger, the conventionally-buried lines at Shetland were placed with the same care. Of particular environmental interest is the countryside in general: the roadways could not accommodate a pair of typical American sedans side by side. And the paved roads that wind through Shetland with sheep grazing only a few feet to each side are off limits to all construction vehicles. The large trucks simply were not allowed to service the site from land. All shipments—from machinery and cement to steel and food—had to be hauled by sea and delivered at a dock at the Voe. To the farmer or shopkeeper living somewhere between Lerwick and Sullom Voe, just looking out the window would not reveal the presence of a billion-dollar construction project so near. And since crews are shuttled north from Aberdeen by plane, then directly to rigs by helicopter, there is no booming bed and bar business.

One of the two pipelines coming inland in the Shetland Islands is shown here. The line is all conventionally buried in Shetland and from this work, one would hardly guess the magnitude of the project. The pipeline will carry half the oil that arrives at Sullom Voe when the terminal comes on line, but to the casual observer, this work might look like little more than a new irrigation line being placed on a Scottish sheep farm.

THE PIPELINES TO SULLOM VOE

The pipeline out to the Ninian Field is impressive, even if the onshore portion is short—just 17 kilometers. The 36-in. steel subsea line was laid at the rate of one mile per day in the midst of 30-ft. waves. The Ninian line comes inland at Grut Wick and the second 36-in. steel line, from the Brent Field, comes inland at Firth Voe.

The Ninian line runs 103 miles to Grut Wick on the Lunna Ness, where the coastline out to sea is very rugged, dipping to 270 feet below the surface just a half mile offshore. The Brent Line is only 10 miles shorter, with connecting lines bringing crude from other fields in the area. Because of the rough sea floor, gravel was dumped along the route to provide a soft bed for the line.

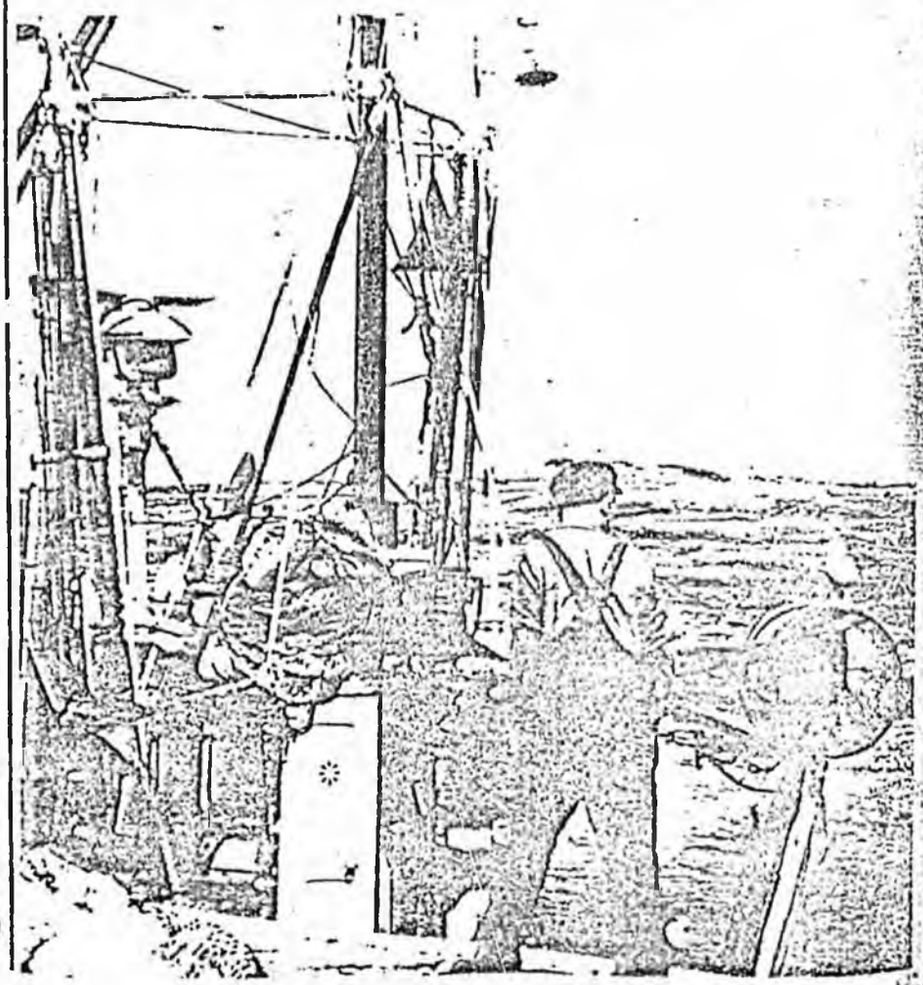
The Brent Field was discovered by Shell/Esso in 1971, starting the oil industry on its way in the northern areas of the North Sea. Considering how much development has taken place since then, and comparing it to the 1968 Prudhoe Bay discovery, a lot has been accomplished in a very short span of time.

After the Brent discovery, four other fields were found in subsequent years, with the Ninian field (the other major one in the area) being the fifth discovered. There is oil industry speculation that other fields could eventually lead to more pipelines into Sullom Voe.

Sullom Voe, a 1,200-acre complex, is to be operational in 1978, but by no means complete. The initial stage of operation will have the terminal receiving 800,000 bbl./day of crude, with 3 million bbl. day scheduled several years in the future. Of the firms involved there many would be familiar to those involved in Alaska oil: BP, Chevron, Conoco, Gulf, Shell, Esso, Amoco, Amerada, Mobil.

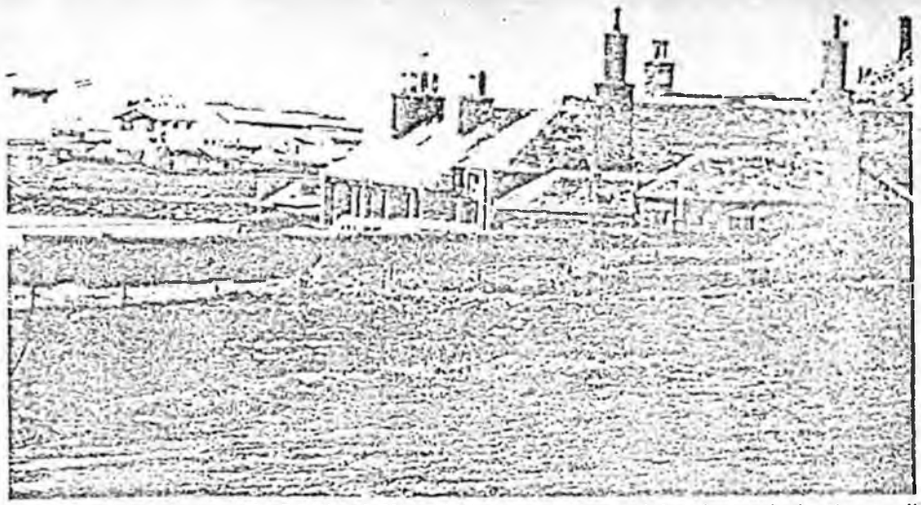
When Sullom Voe is completed, it will be the largest oil terminal in all of Europe. Interestingly, the senior project manager for the terminal is David Henderson, a BP engineer who formerly worked in Alaska. By the time his work is completed, the terminal will be handling tankers up to 300,000 dwt and as

The fishing fleet has always been a mainstay in Lerwick, and even though it is smaller than in previous years, fishing will likely outlive oil in the Shetland Islands.



many as 1,000 vessel movements per year. Like other facilities mentioned here, Sullom Voe is not privately owned. It is a 50-50 arrangement between the Shetland Islands Council and a consortium of over 30 oil companies.

Unlike those at Valdez, the crude storage tanks at Sullom Voe will have floating roofs and each of the four tanks currently under construction will have a 600,000-bbl. capacity. The total capacity will be expanded in later phases of construction. Ships docking at the terminal will berth at one of two jetties. Number One will accommodate tankers from 18,000 dwt to 120,000 dwt and Number Two will handle the larger vessels, ranging from 50,000 dwt to 300,000 dwt. The smaller of the two jetties will also handle dockings by liquefied gas tankers. A third pipeline is being built in the area as well; it will run from the Brent field south to St. Fergus, near Peterhead on the mainland of Scotland. It will carry 500 million cu. ft. per pay of natural gas.

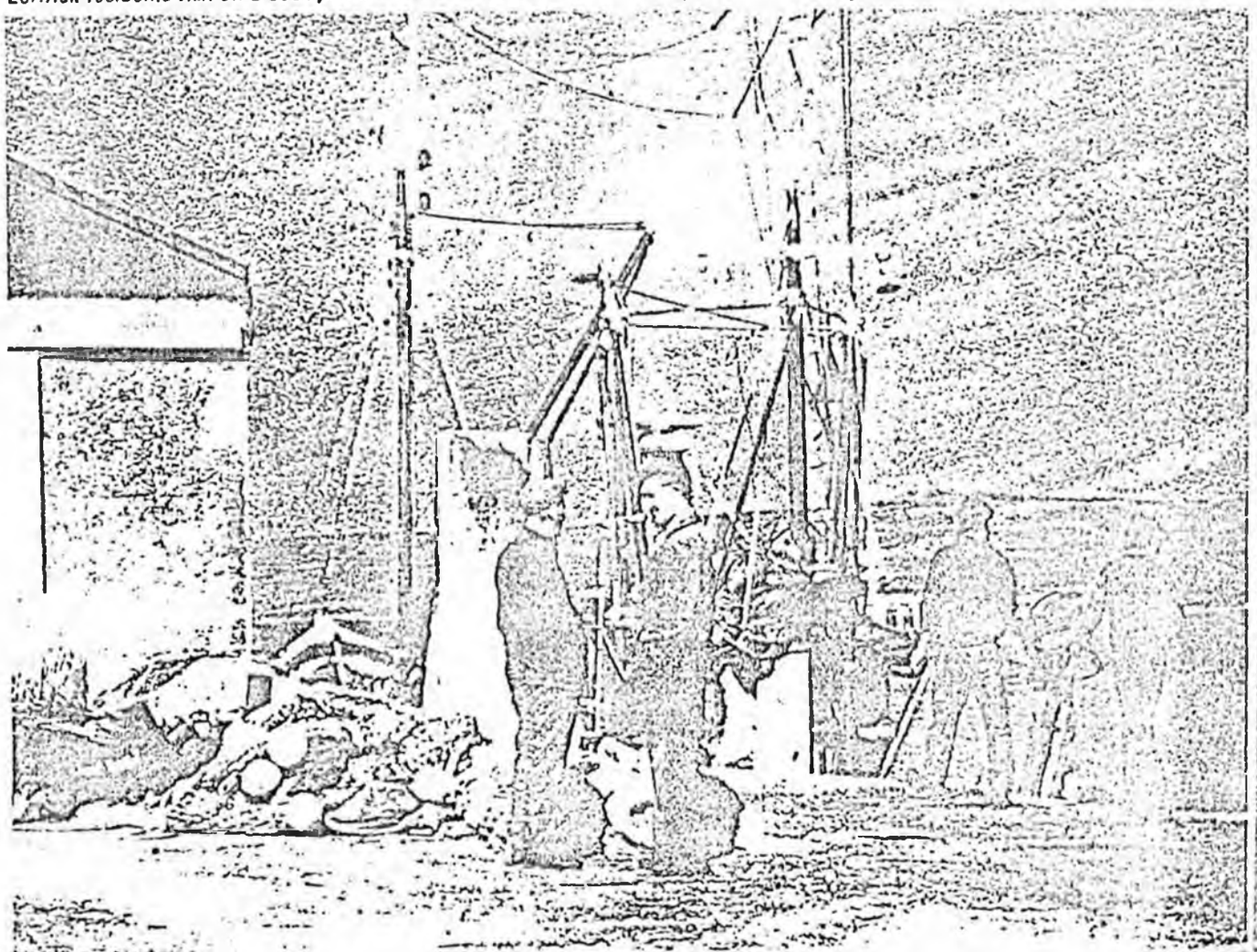


Lerwick, the only town in Shetland. The 1971 census showed 5,100 people in the small community; forty years earlier there were 5,500 living here.

Peat in this area of the world is quite common, but disposing of the large amount excavated at Sullom Voe was not easy. JMJ, earthmoving contractor on the job from Northern Ireland, moved several million cu.yd. of the material—used there for home heating—on the site; it was used as fill in nearby Orka Voe, an inlet just east of the terminal. One of the important factors on the job was coordination. With nearly three dozen firms involved in the consortium building the massive facility, often as much as six weeks was needed before each phase of work to ensure approval of all of the oil companies. While BP has been designated project manager, there is no separate company formed by those involved, such as was done by the pipeline owners in the formation of Alyeska Pipeline Service Co.

The list of equipment operating at Sullom Voe to accomplish this big

Lerwick residents visit on a dock just a block from the commercial street, closed as it always is this Wednesday.



earthmoving task is impressive . . . and familiar to U.S. construction personnel. Caterpillar equipment dominated, including the following:

Dozers,
D4s through D9s.....16
657 Scrapers.....6
End dumps.....19
Excavators.....8

Other equipment on the job included much of European manufacture, as well as some from this country. Among these were a pair of Massey-Ferguson dozers and two each Hyster and Dynapac compactors.

The "average" size vessel calling at Sullom Voe is estimated to be in the 100,000 dwt class. Each ship will be met by a qualified local pilot to guide it into port. Tugs will steer the tanker in and after safety and anti-pollution checks, it will be allowed into the terminal entrance channel for deballasting. Loading rates will be 25,000 to 30,000 tons per hour.

An interesting Alaska-U.K. comparison is the size of the Sullom Voe facility in relation to Valdez. Assuming 1.5 million bbl./day throughput for the Alaska pipeline in 1980, Valdez will be handling about 7 percent of the U.S. projected consumption of 21 million bbl./day. On the other hand, Sullom Voe will be handling 40 percent of Great Britain's domestic need. And by 1980, total North Sea production is expected to fulfill 100 percent of the U.K.'s needs. Both Alaska and North Sea resources are, of course, finite, while demand often seems infinite. The North Sea fields currently being developed are estimated to have a producing life of 25 to 40 years.

In Shetland, residents will be assured of at least one positive impact from this oil development. Somewhere between $70 million and $175 million is to be distributed to local industries as reimbursement for the disturbance caused by the oil industry. Other effects already have been felt.

The fishing fleet has dwindled, but the economy is stronger than in recent years. But one Lerwick resident asked AC&O rhetorically, "What will we do when the oil industry goes . . . ?" It does not seem unreasonable that perhaps 40 years from now life will not be all that different in Shetland than it is today, or as it was 40 years ago. If the several thousand residents of Shetland had wanted another way of life, they would have changed the area before the oil industry arrived or they would have moved elsewhere. In 1931, for instance, the official census of Lerwick was 5,538—little different from the present. Naturally, those that own the small hotels or that drive the taxis are glad to see that business is better. But no Hilton or Sheraton is going up to rival the Kveldsro or Lerwick hotels; each is small, with a restaurant and bar where residents go for an evening out.

A college student in her twenties saw more good coming from the growth of industry there. "There used to be one flight in and out a day," she said. "There are close to 100 now." That figure includes the helicopter flights to the platforms but still it reflects the obvious change in the small airport. "Young people have not had much opportunity here, you know," she went on. "You could teach . . . or work in a shop . . . or be a fireman," she said. "Otherwise you had to leave Shetland. Now there are other things to keep the younger people with an education from leaving." And that viewpoint is part of what seemed fairly universal there: living in Shetland because one likes

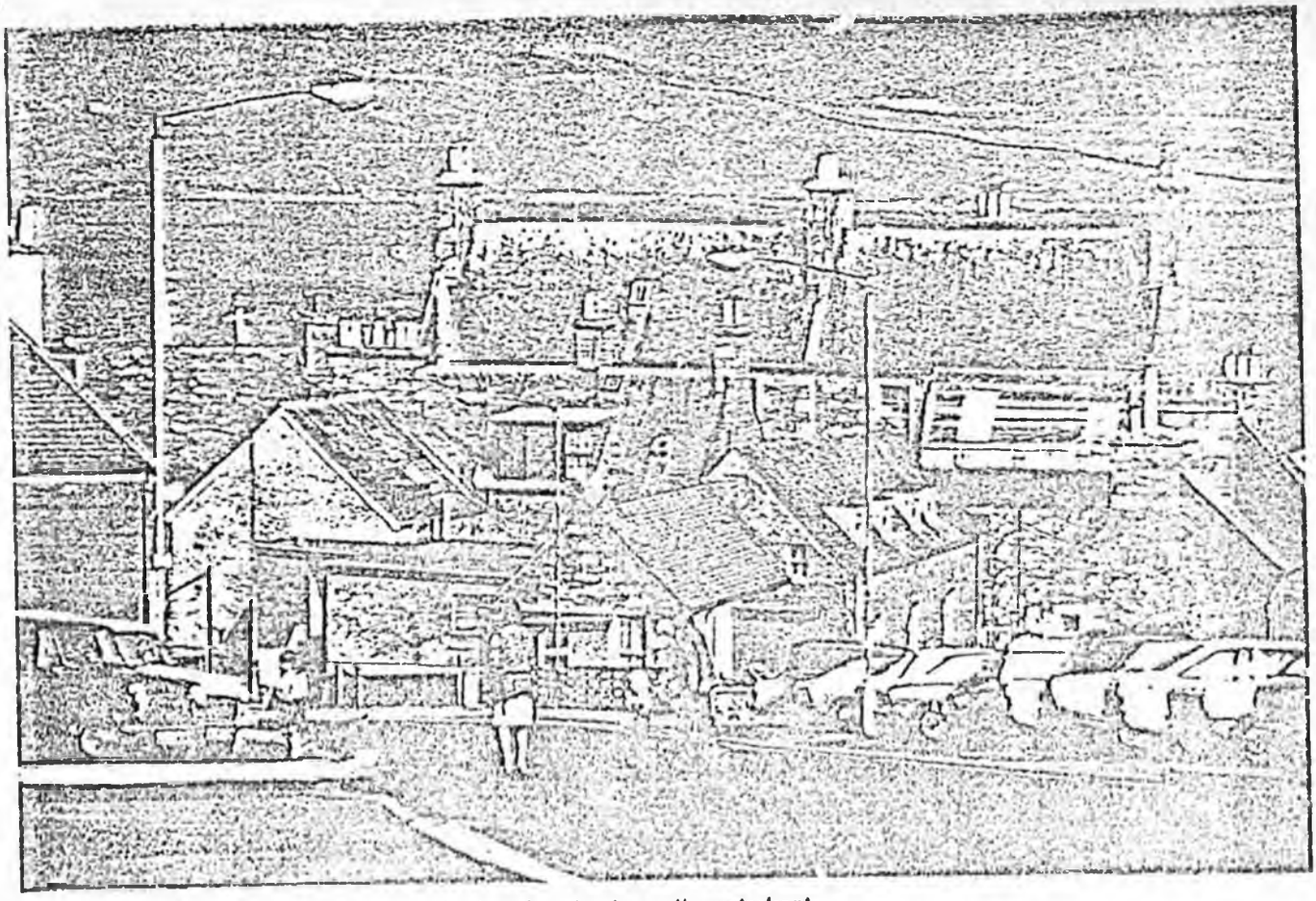
Shetland, a pride in being a Shetlander—not wanting to leave. It is that same camaraderie one sees in Alaska.

The hotels do receive more business because of the oil industry, no longer relying totally on seasonal trade. But as we said, there has been no rash of construction to meet a demand by industry people. Houses are another story, however. "It's hard to find a home for sale," one man related, but again, not solely because of the industry. "Most farms have been handed down from generation to generation and you can't just go buy one." His farm was small by Shetland standards: 40 acres, a couple dozen sheep. He has lived in Shetland all of his 40 years, driving a taxi for wages. "My wife takes care of the house and garden," he said. Then remembering what outsiders, even outsiders from as near as London, had written, he added that "newspaper people come up here, spend a day and think they're experts on Shetland. They see a farm like mine and look around here (the road from Sumburgh to Lerwick) and then go write about the poor potato farmer and the barren islands with no trees." It's not unlike what happens when uneducated politicians or journalists come to Alaska and produce "exposés" on the crime or describe Alaska as it was when Jack London wrote about it.

A painter enjoys the cool wind and scenic waterfront of Lerwick.

Visibly annoyed, the taxi driver continued, "Sure, I've got potatoes, and I dig up just what we need to cook for dinner each night. But I'm not a potato farmer. And I slaughter a sheep or two each year for food, but that's all. I drive a taxi every day, and work on my farm the rest of the time. There's a lot we don't have here... one television station, no nightclubs...." But that's why Shetlanders live in Shetland. He smiled a bit and added: "I could drive you to one of the most beautiful places you've ever seen," motioning over the rolling hills. "We've got trees here; there's a place over there where they bend over the road and come together. You can drive under them and not even see the sky." But it all depends on who is doing the looking; a lot of people would find Alaska unattractive or boring, too.

One can learn a lot during a 25-mile taxi ride, and besides the education, the price compares well, too. It costs under $10 from Sumburgh to Lerwick, about the same as from Juneau to the airport there, which is only nine miles. And in Lerwick gas is twice the price as in Alaska. But Shetland prices have nothing to do with the coming of the oil industry. Gas was expensive and taxis cheap before anyone decided to build the Sullom Voe terminal.



Downtown Lerwick, walking toward the main shopping street near the waterfront.

Some prices do reflect the oil industry. House prices, because supply is low and demand high, have gone up considerably. "If the oil company wants them, they'll pay any price," one person said.

With a large work force at Sullom Voe, the effects have to be felt. There are over 1,000 w[illegible]ers at the site now; that number w[illegible]peak at 2,800 by late 1978. But they have Shetland's second largest "town," the construction camp at Sullom Voe. Like those in Alaska, it has a cafeteria, television rooms, tennis courts, the excellent camp food and something not one of the pipeline camps can offer: liquor.

One company helping to see that crews are well taken care of in the North Sea is quite familiar to Alaska, as well: Universal Services. USI, well-known for feeding and serving Alaskan pipeliners, began its North Sea work in 1965. The firm had grown so much that in 1972 it opened an office in Aberdeen. The following year, Universal Services Inc.-International set up its headquarters for North Sea operations in Edinburgh. As in Alaska, USI employs mostly locals for its operations, which include Sedco, Santa Fe International Service, Transworld Drilling, Penrod Drilling Company and Zapata North Sea, Inc., as clients in the North Sea.

Besides the well-known ponies, sheep are even more prevalent in Shetland. There is also arctic wildlife like that found in Alaska, such as the brightly-colored puffin. And the environment is well cared for according to a local newspaper, which said that the oil industry has drawn "on (its) accumulated experience in environmental care and research from the island of Britain to the delicate tundra of Alaska" to ensure that no damage is done during construction.

The environment in Shetland is unique to Great Britain just as Alaska's is to the U.S. The climate in Shetland, despite the northern latitude, is relatively mild, aided by a gulfstream. Snow is uncommon, as is extreme cold; but fog is another story. It can lay in patches all day in one valley, yet be conspicuously absent only a mile away. This is onshore, remember, as once one travels the 100 miles to the oil fields, Alaska-like ice, snow and cold accompany the rough waters.

At Sumburgh, there might be excellent visibility and sunshine at noon, only to have the airport socked in by that afternoon.

NORTH SEA TRANSPORTATION LINK

And when the airport is socked in, crews go nowhere. It used to be that talking of offshore rigs conjured up visions of rough seas and small boats carrying the seasick crews. The seas weather and temperament of the seas haven't improved over the years, but transportation has. Today, supertankers carry the crude and massive helicopters carry the crews.

In 1975, nearly 200,000 passengers and 1,000 metric tons of supplies were carried from Aberdeen and Sumburgh to the northern North Sea platforms by helicopter. This total is exclusive of the lifts done in other areas of the North Sea, and the freight figure refers only to small items carried along with crews. The big lifts of supplies and million-pound items is done by ship and barge. But the passenger figures are impressive, and when the totals are released for 1976, the figures will be much higher.

The oil workers are hauled predominantly by two firms—Bristow Helicopters and British Air-

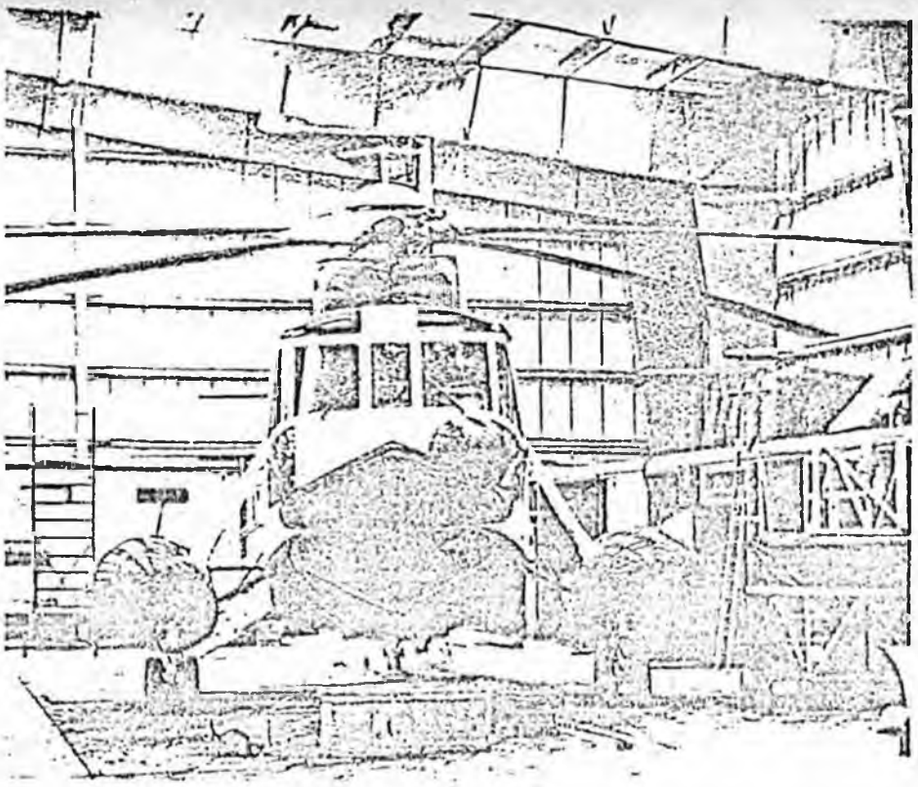
ways Helicopters. The latter is a wholly-owned subsidiary of the large airline with the same name, but is a totally independent operation. Together, they have made Aberdeen the busiest heliport in the world. The two companies' investments in Scotland are approaching $100 million. In 1975 pilots for the two firms logged 36,000 hours of flying time out of Sumburgh and Aberdeen. The totals were higher in 1976, as well, but complete figures were not yet available as we went to press.

The weather at Shetland can change as rapidly as anywhere in the world; but when it changes before a chopper is in the air, it is no problem for the pilot. He either flies or he doesn't. It does cause immense logistics problems for the companies trying to get crews and supplies to and from rigs. The danger from the pilot's point of view is that a weather window may open to fly and be gone before the flight is completed. To put the area in perspective, the drilling platforms are roughly 100 miles out of Shetland, or halfway to Bergen, Norway. Flights to the rigs often have unscheduled stopovers in Bergen due to weather.

Brian Johnstone, in charge of scheduling and flight control for British Airways Helicopters at Sumburgh, told AC&O that the problem is compounded when the weather forces a helicopter to Norway. "We have no aircraft for the next group out," he said. Robin Zingel, manager of the British Airways Helicopter operation at Sumburgh, reiterated the problem. "We're stretched so thin ... we could use two more aircraft right now." When the airport is socked in or a flight is delayed by weather, the small airport is jammed with crews waiting . . . and waiting. The back-up is a constant problem, as every oil company is obviously anxious to have its crews on the rigs working rather than sitting in an airport waiting.

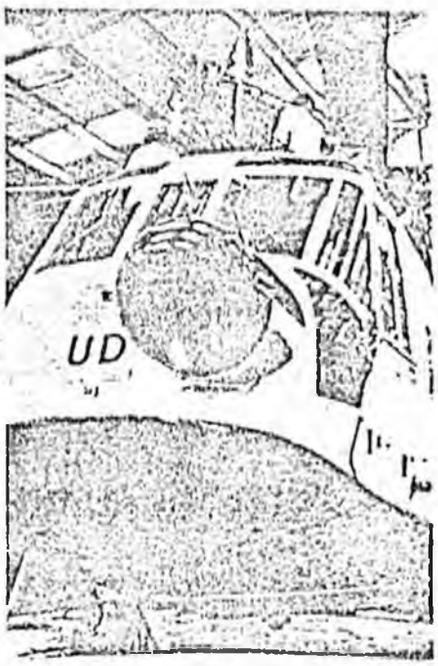
The growth of the helicopter service in the area has been tremendous, but that is to be expected with this type of development. It is the same effect that has made Anchorage and Fairbanks two of the fastest growing major airports in the world.

The mainstay of both Bristow and British Airways fleets is the big Sikorsky S61N. The reliable aircraft is used by the British Navy and in normal passenger applications can haul 25 passengers. In the North Sea, however, heavy freight cargoes and safety requirements in the rough weather cut the number of passengers to about 22 per flight.



Having been serviced, this British Airways helicopter is ready to go back to shuttling crews out to the rigs, 100 miles from Shetland.

As the industry has grown, so have the carriers. In 1971, for instance, British Airways had a single aircraft servicing the area. British Airways now has five of the big Sikorsky aircraft each at Aberdeen and Sumburgh. Bristow runs only one to three out of Sumburgh, but has a fleet of 15 at Aberdeen. The companies utilize smaller aircraft as well, but the S61N is the workhorse of the North Sea oil industry. Sikorsky passenger helicopters and sky cranes are already in use in Alaska, and the S61N obviously could play a large role in the coming offshore industry in the 49th state.



The easily-recognizable nose of a Sikorsky S61N, the main mode of transportation to and from North Sea oil platforms.

There are a total of 150 pilots flying out of the two airports, with some 400 ground personnel employed for support. In the past three years, British Airways Helicopters' operation, nearly all of which is serving the North Sea oil fields, has grown from six to 18 aircraft and flying time has tripled, as well, Zingel told AC&O. There are 83 pilots in the firm. At Sumburgh, Zingel said an average of eight or nine British Airways Helicopter flights are scheduled daily, accounting for about 80 percent of the company's flying time. The remainder is taken up with special charters and unscheduled runs to the oil platforms.

The S61N has a built-in safety feature for use in such rugged conditions. It is a twin engine aircraft, so there is always back-up power if one engine fails. The helicopters are equipped with the latest navigational aids, and are also used in North Sea search and rescue operations. The search and rescue work is in conjunction with the British government, and ensures safety in an area where conditions can be extremely dangerous.

Anch Times Feb 16, 1977

Stevens Cites Directive To Speed Offshore Leasing

The Anchorage Times

Congress has directed the Interior Department to accelerate offshore oil and gas leasing, Alaska's Sen. Ted Stevens said yesterday, and since 70 per cent of the nation's outer continental shelf lies off Alaska's shores, "the question is where and when and under what conditions."

Stevens, here for the congressional recess, said it shouldn't be surprising that Interior Secretary Cecil Andrus canceled the lower Cook Inlet lease sale, which was scheduled for Feb. 23 by his predecessor.

"He (Andrus) wanted to make the decision himself," Stevens said. "The first thing that happened after he became secretary was to be sued over his predecessor's decision (to hold the lower Cook Inlet sale). If he was going to be sued, he wanted it to be on the basis of his own decision.

"What he will do, I don't know," Stevens said. "But I don't think we ought to overreact to his (Andrus) acting in a rational manner.

"I still believe that lower Cook Inlet oil development ought to go ahead under safeguards for the fishing industry and for protection of the total environmental area there, including Kachemak Bay and others.

"But I think we ought to recognize the secretary must be in a position to personally defend the order (for a lease sale)."

Stevens said there are strong forces in the Congress which believe that the development of the outer continental shelf has been delayed by industry waiting for oil and gas prices to change and trying to create a false shortage.

"I don't agree," he said. "I don't think people realize the complexity of outer continental shelf development. Most don't realize that 70 per cent of it is off Alaska. I believe they are going to get a little bit better educated. Every year, members of Congress who have been there a while sound more reasonable. But when we just get someone to the place he understands the problems, he either retires or gets defeated for re-election.

Towboats Slice Mississippi Ice

ST. LOUIS (AP) — For the first time since Jan. 19, the Mississippi River has been opened to commercial traffic, the U.S. Coast Guard announced.

Towboats succeeded in breaking up ice above Cairo, Ill., and the channel between there and St. Louis was 300 feet wide and nine feet deep in most places, officials report.

Officials warned there were still some obstacles such as sunken barges that could present a hazard to navigation.