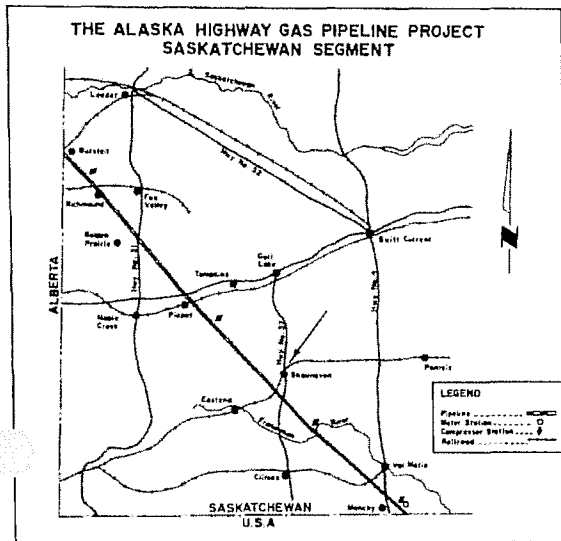


PIPELINE

Shaunavon Welcomes Pipeliners



11,886 m (38,833 ft.) of pipe were unrolled at Shaunavon's CPR station.

Shaunavon's automotive dealers, service stations, food outlets, clothing stores, pharmacies and gift shops are gearing up for 400 pipeliners when construction on the Eastern Leg of the Alaska Highway gas pipeline moves into the area later this summer.

Located only four km (two and a half mi.) east of the pipeline right-of-way, the southeastern Saskatchewan community of 2,200 serves as a supply and service centre for both agriculture and the oil industry in the surrounding region. For several months it will provide the pipeline crew with space for a trailer camp and field office and a site for vehicles and construction equipment. "It's been quiet on the oil front lately, so in terms of business we see the pipeline project as an economic boost," notes Shaunavon Mayor Bruce Pearson. There are bound to be beneficial spin-offs related to pipeline construction and accommodating the largest crew the town has ever had, he says.

Vehicles will need parts and repairs, and materials such as fuel and cement will be required, as well as services provided by shops and food and entertainment establishments. Meal arrange-

ments for the crew have been made with the Shaunavon Hotel, which has banquet facilities. The construction camp will also mean temporary jobs for about 10 local women as housekeeping staff.

Shaunavon has close to 100 small businesses, largely by people under 40. Elected mayor last November, Pearson represents Shaunavon's young business community. "Our outlook is progress-oriented. We want to attract small industry and encourage newcomers to live here," he comments. Pearson also welcomes the recent purchase of space by Foothills Pipe Lines (Sask.) Ltd. in Shaunavon's new industrial park for an operation and maintenance centre once the pipeline is in service. "For a small town, the addition of 16 to 20 permanent employees and their families means a lot."

In anticipation of this summer's construction activity, the town has undertaken a number of preparations. Businesses are increasing their stock and some are hiring extra staff for the busy season. Stores will remain open one night a week to give people who are working long hours a chance to shop.

Although the local RCMP do not

foresee any problems related to large numbers of seasonal workers, an extra police officer could be brought in if necessary. Shaunavon is accustomed to crews of one sort or another - railway crews, road crews and oil rig workers. Since the town is located 54 km (34 mi.) south of the Trans-Canada Highway, it does not share the problems associated with a constant influx of transients and tourists of communities along the main route.

The town has purchased new radar equipment to cope with the increase of traffic along local streets and along Highway 37, which links Shaunavon with the Trans-Canada Highway to the north and the American border to the south. While Shaunavon has needed an improved radar set for some time, says Mayor Pearson, it has been given greater priority now. During construction traffic six days a week along the highway will include 12 to 15 buses to transport workers to the site, eight supply trucks six lowboys - vehicles with flat, low decks - and about 25 half-ton and three quarter-ton pick-up trucks. As far as questions of safety and congestion are

continued next page..

Eastern Leg Construction Begins

The week of May 25 signalled the start of construction of the Eastern Leg of the Alaska Highway gas pipeline in Alberta and Saskatchewan, following a leave-to-proceed order announced May 22 by Sen. H. A. (Bud) Olson, Minister responsible for the Northern Pipeline Agency. The decision granted Foothills Pipe Lines (Alta.) Ltd. permission to begin construction of approximately 24 km (15 mi.) out of 170.6 km (107 mi.) to be built in Alberta in 1981. Foothills Pipe Lines (Sask.) Ltd. was given leave-to-proceed with work on approximately 62 km (38.7 mi.) of the 258 km (160 mi.) to be built in Saskatchewan this year.

As of June 15, clearing had been completed in Alberta by a native firm, Long Branch Contractors of Slave Lake, and grading and stringing of pipe along the right-of-way were in progress. Also in Alberta, grading has begun in the area of the South Saskatchewan River crossing. Grading, stringing, ditching and automatic welding on the Saskatchewan section are underway.

The final go-ahead was the culmination of a long list of approvals with respect to the design and construction of the project that the company must obtain, under the *Northern Pipeline Act*,

before construction of a given segment begins. This includes approvals for engineering specifications, construction schedules, pipeline route locations and crossing of navigable waters, railways, highways and major utilities.

Foothills' Plans Approved

The Manpower Plan prepared by the parent company, Foothills Pipe Lines (Yukon) Ltd., for construction of all but the 818 km (508 mi.) Yukon segment of the pipeline in Canada, was approved May 21 by Sen. H. A. (Bud) Olson.

The Plan, which applies to both the company and its contractors, is designed to ensure the maximum use of Canadian labour in the planning, construction and operation of the pipeline. Foothills (Yukon) estimates 6,528 person-years of direct employment will be created in the construction of the pipeline in British Columbia, Alberta and Saskatchewan, and that an additional 150,000 person-years of work will be generated indirectly in the Canadian economy as a result of the project. Person-years refer to the amount of

work one person can accomplish over one year. Two additional volumes of the Manpower Plan, covering construction of the Yukon section of the line and the operations phase of the entire project, will be submitted by the company at a later date. The Manpower Plan for 1980 construction of the Western Leg was approved by the Minister in July of last year.

Plans for employment opportunities for native people and women on the Eastern Leg were also given Agency approval on May 21. The environmental protection plan for Saskatchewan was approved May 19 and the Alberta plan including the Eastern Leg, the northern mainline segment and the remaining portions of the Western Leg was approved April 29.

Construction of the 635 km (394 mi.) Eastern Leg will continue through to late fall in 1982. The line extends southeast from Caroline, Alberta to the provincial border near Burstall, Saskatchewan and continues southeasterly to the international boundary near Monchy, Saskatchewan. At this point the line joins with the 1,325 km (823 mi.) American Eastern Leg being built by Northern Pipeline Company.

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Shaunavon Welcomes Pipeliners

concerned, the police are not worried. Farmers run heavy vehicles such as cultivators and tractors up and down the highway regularly without affecting other local traffic, says RCMP Constable Ron Steel. "People around here are pretty conscientious about moving big equipment and used to watching out."

Jack Robertshaw, publisher of the weekly newspaper, *The Shaunavon Standard*, says the general mood in town towards the pipeline project is enthusiastic. The pipeline company has conducted several public meetings in conjunction with the Shaunavon Chamber of Commerce to provide project information, and response within the community has been good, says Robertshaw. He and his wife, Joan, have lived in Shaunavon since 1967 and have noticed that, despite progress and change, the community still has the

peaceful, people-oriented flavour of a small town.

"It's always been a progressive town," says retired businessman Leonard Hanft, who claims he's lived in Shaunavon for "at least 100 years". "We like things to go forward rather than sit at a standstill." Shaunavon started up in 1913 when the CPR branch line from Moose Jaw, Saskatchewan was built. As a bustling railroad community, as well as a trade centre for the surrounding grain farms and cattle ranches, the town grew rapidly. Shaunavon's economic base further diversified with the first discovery of oil in the area in 1952. Hanft recalls how in those days the hotel night clerk, a fellow close to 60 years old, used to keep the oil rig workers in line. "They thought they were a pretty tough bunch, but learned quickly not to stir up any trouble or else they'd wake up in the

corner!"

Construction of the 258 km (160 mi.) Saskatchewan segment of the Alaska Highway pipeline is scheduled for completion this fall, and Hanft says the project will not have a long-lasting effect on the community. "No doubt it will mean a boost while it's being built, but once it's done, things will level off. It will be something like the oil boom in the early '50's." However, Hanft notes that those who arrived in the '50's and stayed in Shaunavon, were community-minded people. "I think the same may be true of the pipeline crew. Whatever spin-off there is will be a definite asset to the community," he continues. "There's only one thing I regret that we don't have now for the pipeline crews which we had when the railroad came in, and that's the Madame and her girls. They closed her down in 1942."

Birds Of Prey Protected Along The Eastern Leg

by Ken Ambrock

The major wildlife concern on the Eastern Leg of the Alaska Highway gas pipeline is the potential impact on raptors - birds of prey - such as hawks, falcons, owls and eagles. Studies undertaken by the Alberta and Saskatchewan segment companies of Foothills Pipe Lines (Yukon) Ltd. indicate about 15 species nest in the vicinity of the pipeline route in Alberta and Saskatchewan.

As a group, the raptors are sensitive to disturbance by man, especially early in the breeding season when disturbance during pre-nesting, egg production, or incubation can cause the birds to abandon their nests, possibly resulting in lost production for the year. However, once the young have hatched the probability of desertion by the adult is low. For most raptor species, the sensitive period extends from the beginning of April to mid-July.

In 1978 and 1980, Foothills (Alta.) and Foothills (Sask.) conducted surveys of raptor nest sites along the Eastern Leg of the pipeline route. In Saskatchewan, over 40 active or occupied raptor nests were found within a six km. (3.8 mi.) - wide corridor of the route, while in Alberta over 80 nests were located within a four km (2.5 mi.) - wide corridor. It was not possible to determine accurately how many of these in Alberta were active because the survey was done after the young had left their nests.

The ferruginous hawk, prairie falcon, and golden eagle are of particular concern because they are considered uncommon or scarce over much of their range. The ferruginous hawk, for example, is listed as a threatened species by the federal-provincial Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Several ferruginous hawk and prairie falcon nests are located less than 0.5 km (0.3 mi.) from the pipeline right-of-way.

Raptor nesting habitat varies with the species. Prairie falcons require only a ledge or crevice of a cliff and do not build actual nests. Ferruginous hawks and golden eagles, on the other hand, build large, elaborate stick nests on cliffs or in caves. The same nest may be used in subsequent years. The coulees and river valleys along the Eastern Leg provide ideal nesting habitat.

The prairie grasslands support large populations of mice, ground squirrels and rabbits which constitute the major

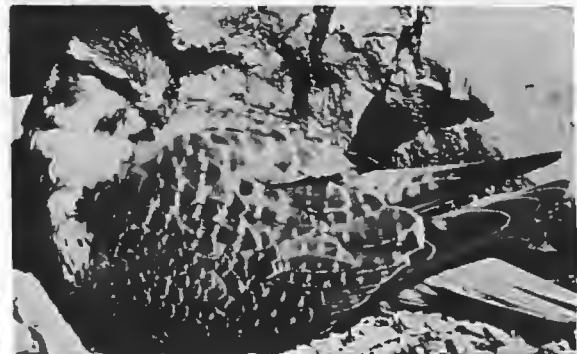
food source of these raptor species. Prairie falcons will also take insects and birds.

Raptor nests may be destroyed as a result of pipeline construction during right-of-way clearing and grading work. Harassment or disturbance by men, equipment and aircraft can cause nest abandonment.

To ensure these impacts are minimized as much as possible, the pipeline company will take several mitigative measures, the most important of which is scheduling. Construction over much of the area of good raptor

Construction personnel will be restricted to the right-of-way in order to lessen the chance of birds being disturbed in their nests, and the possession or use of firearms by construction personnel is prohibited.

In the event that active nests are actually destroyed or abandoned because of construction activities, the Agency has asked the company to compensate for such losses by creating artificial nest sites elsewhere. In the case of ferruginous hawks, this can be done by installing wire mesh nest baskets in trees and filling the baskets with twigs, sticks or



Immature ferruginous hawk (above), immature golden eagles (left) and female prairie falcon incubating eggs (right).
photos by Richard Fyfe, Canadian Wildlife Service

habitat has been scheduled for July or August, when the young have left their nests. In other sections where earlier construction is planned and where potential conflicts with nesting raptors exist, the Northern Pipeline Agency has required the company to conduct a pre-construction survey to determine which nests are occupied this spring. These nests will be monitored during construction.

Facilities such as access roads and compressor stations will be located off right-of-way so as not to destroy trees.

other available nesting material.

The Canadian Wildlife Service and the Alberta Fish and Wildlife Division have demonstrated that these artificial nests have been used successfully by hawks, and even by Canada geese. In the case of prairie falcons, holes in cliff are excavated by hand. It is hoped that few nests will be destroyed or abandoned during construction and that artificial nests will not be required.

Ken Ambrock is Senior Environmental Scientist, Wildlife, for the Northern Pipeline Agency.

Profile: D.H. (Howie) Hushion - Assistant Administrator, Engineering Design

"This project grows on you, it gets into your blood."



D.H. (Howie) Hushion, Assistant Administrator, Engineering Design.

Ask D.H. (Howie) Hushion about his 32 years of professional experience in the natural gas industry, and he says it began with a hockey scholarship to Colorado College following three and a half years of wartime service as a pilot in the Canadian Airforce.

Now an Assistant Administrator in charge of Engineering Design for the Northern Pipeline Agency, the native Montrealer relates his initial enthusiasm for the gas industry to his first job with Colorado Interstate Gas Company after receiving his bachelor's degree in civil engineering. "It was a great learning opportunity," Hushion recalls. "The company had a hand in everything from exploration and drilling to production, transmission and even some distribution."

In 1957, Hushion returned to Canada to join the fledgling Alberta Gas Trunk Line Company Limited (AGTL), now NOVA, An Alberta Corporation, and 50 percent owner of Foothills Pipe Lines (Yukon) Ltd., builders of the Canadian portion of the Alaska Highway gas pipeline. "AGTL was just starting in those days, sort of like the Agency is now," Hushion remarks. "A lot of the fun was in developing a small, competent, energetic staff and watching it grow. There was never a dull moment during those formative years with new projects

always happening and a number of firsts initiated."

These accomplishments included the first use of topsoil conservation in pipeline construction, the first winter installation of large diameter pipe in 1964-65, and the construction in 1970 of 200 km (125 mi.) of a 1,067 mm (42 in.) pipeline which was the first of this size in high pressure gas service in Canada. The welding of 120 km (75 mi.) of a 1,067 mm (42 in.) pipeline using automatic equipment in 1971 was not only the first in Canada, but also the largest project in the world to be welded automatically and the first in the world for which automatic welding was used on pipe with a yield strength of 483 megapascals (70,000 lb. per sq. in.). In 1973 under Hushion's direction, the world's largest gas turbine compressor unit at that time, capable of moving 85 million cu. metres (3 billion cu. ft.) of gas per day, was installed at Princess, Alberta.

By this time, Hushion had advanced to the position of Senior Vice-President of Engineering and Construction with AGTL. He notes that the gas pipeline industry has benefitted by major improvements in the field of metallurgy, in pipe strength, toughness and weldability. Higher strength pipe is required today, he says, particularly since pipelines

are being built further north under colder conditions.

Hushion's association with the Alaska Highway Gas Pipeline Project goes back to 1969, when AGTL first became involved. In 1974, with the company's formation as a subsidiary of AGTL, he was appointed the first Executive Vice-President of Foothills. "This project grows on you, it gets into your blood," he smiles. "It's reached the point where have to see it through to completion."

Now working on the regulatory side of the project as the Agency's Assistant Administrator in Engineering Design, Hushion is responsible for recommendations for approval and monitoring of all the engineering design aspects of the pipeline and related facilities. The Engineering Design group, consisting of four other engineers and a secretary, is deliberately small in number. "I feel fortunate to work with such a capable team," Hushion comments. "The few staff that we have need to have broad experience." He says the greatest challenge in overseeing the pipeline project from an engineering viewpoint is to ensure that the recommendations he advises are correct. "Our work may appear dull at times, but you have to think things out. You read and worry and mull and search. It's not the kind of thing the demands writing a hundred letters or memorandums, for instance."

Hushion notes that with the trend towards an increasing amount of coordination between industry and government, it is important for people to gain experience from both worlds. "It's a healthy idea to have a trade back and forth between government and industry so each can understand the problems both sides and make 'working together' much better," Hushion suggests. "Half the fun in switching from industry to government is in seeing what's new, and how you have to adjust," he concludes. "Both the company and the Agency are trying to accomplish the same goal: ensure this is a pipeline of high integrity built as economically and with as little adverse impact as possible."

News In Brief

A public hearing will be held on July 10 in Strathmore, Alberta to consider applications made by Foothills Pipe Lines (Alta.) Ltd. for additional land rights along the sections of the Eastern Leg in Alberta scheduled for 1982 construction, an approximate total distance of 206 km (129 mi.). The interests of 65 landowners could be affected. Parties intending to intervene in applications by Foothills (Alta.) must make written submission to William A. Scotland, Designated Officer of the Northern Pipeline Agency, by July 3.

Sen. H.A. (Bud) Olson, Minister responsible for the Northern Pipeline Agency, announced June 9 to the Canadian Senate the details of the financing plan reached in late May between sponsors and producers of the Alaskan segment of the Alaska Highway Gas Pipeline. The plan, now before the U.S. banking community, estimates \$21 billion as the "as spent" cost of installing the 1,180 km (730 mi.) line from Prudhoe Bay to the Yukon border, \$6 billion for the gas conditioning plant and \$3 billion for possible cost overruns. The major North Slope gas producers - Exxon Corporation, Atlantic Richfield Co. and Standard Oil Co. of Ohio (SOHIO) - will contribute a maximum billion of the equity financing and 30 percent or \$6.75 billion of the debt. Northwest Alaskan Pipeline Company, the 11-company consortium sponsoring the project, will contribute up to \$5.25 billion of the equity and seek the remaining 70 percent or \$15.75 billion of the debt in loans from banks and other financial institutions.

Sen. Olson noted that Secretary of Energy, James B. Edwards, said in Washington on May 28, 1981, that he is prepared to seek a waiver from Congress to allow producers equity status in the project, and to provide for such other amendments as may be required to facilitate it. Under the present legislation, producer ownership is prohibited.

Foothills Pipe Lines (Yukon) Ltd. awarded contracts for 1981 Eastern Leg compressor and meter station construction. Interpro Contractors Ltd. of Richmond, B.C., will build compressor stations at Monchy and Piapot, Saskatchewan and a meter station at Monchy. In Alberta, Brown and Root Ltd. of Edmonton will install a compressor station at Jenner. The direct capital cost of the stations being built in Saskatchewan is estimated at \$47 million and the estimated cost of the station at Jenner is \$33 million.

Foothills Pipe Lines (South Yukon) Ltd. is taking inventory of Yukoners interested in pipeline construction employment. Company officials began a five-week tour on May 25 of all communities in the territory to collect information on those people seeking

pipeline jobs, the type of work they are interested in and what skills they possess. The inventory will be used in the planning of training programs.

Approximately 70 applications from northerners for operations and maintenance training jobs were received by Foothills Pipe Lines (South Yukon) Ltd. during a series of information and recruitment sessions held in Yukon communities from April 27 to May 12.

Mechanical and corrosion technicians will be trained by Westcoast Transmission Company Limited in British Columbia while gas measurement, control and automation technicians will be trained by NOVA, An Alberta Corporation in Alberta. Successful candidates will commence work in the trainee positions this summer. On-the-job apprenticeship programs would be completed in time for northerners to return to operate the pipeline system in Yukon in 1985.

Information brochures on the training program and job descriptions are available in Yukon communities from local offices of the Canada Employment and Immigration Commission (CEIC), band council offices and local offices of the



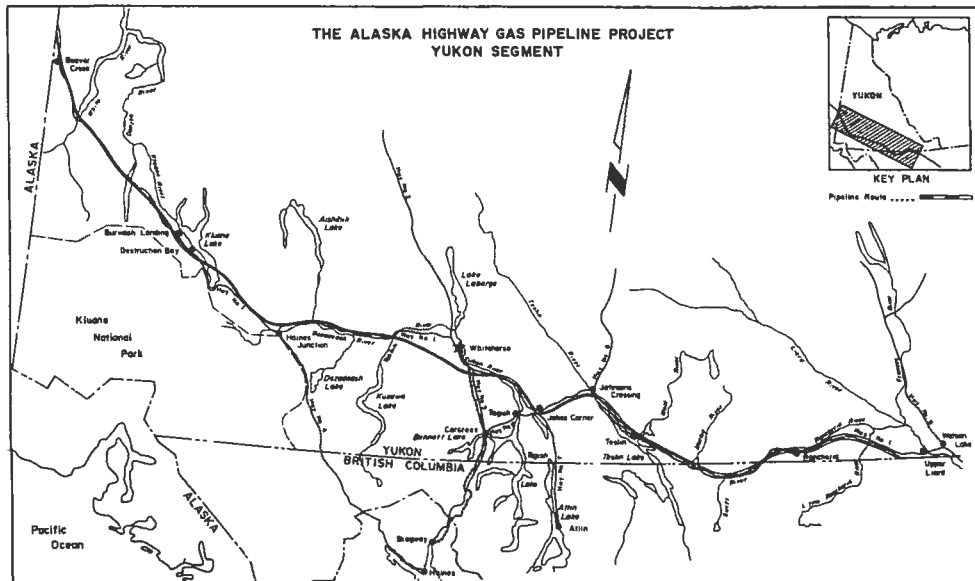
Final tie-in to the ANG system in the Crowsnest Pass area of South B.C.

Yukon Territorial Government. Residents of the Mackenzie district of the Northwest Territories have been advised that they can obtain further information from the local office of the Manpower Development division, Government of the N.W.T. or from Dick Hill, Foothills Information Office in Inuvik.

Final tie-ins of the constructed sections of the Western Leg of the Alaska Highway gas pipeline to the existing systems of NOVA, An Alberta Corporation in Alberta, and Alberta Natural Gas Company Ltd (ANG) in South B.C., were completed on May 24. Final tie-ins involve cutting a portion about nine metres (30 ft.) long out of the existing line, and replacing it with a T-shaped unit which is then connected to the new pipeline.

Construction of the Western Leg completed last February except for final tie-ins, involved the installation of 215 km (132 mi.) of 914 mm (36 in.) - diameter pipe through the addition of several sections running parallel to the existing lines of NOVA and ANG. Through the new facilities, up to 8.5 million cu. m (301 million cu. ft.) a day of Alberta gas is licensed for export to the United States beginning in the fall, 1981.

Spring Spawning Activity in Yukon Studied



Foothills Pipe Lines (South Yukon) Ltd. is studying the spring spawning patterns of fish populations in certain watercrossing locations in Yukon along the route of the Alaska Highway gas pipeline scheduled for summer construction.

Over a six-week period ending June 30, the spawning activity of any Arctic grayling within one km (0.6 mi.) downstream of the crossings will be identified, as well as the estimated number of fish using the area. In addition, chinook salmon and Dolly Varden char will be studied to determine the stage of egg

development.

The Foothills (South Yukon) program also includes research on the physical characteristics of crossing locations as they relate to the production of silt, or suspended solids in the water. By observing water temperature and discharge, bank stability and composition of the watercourse bed material, the most effective mitigative measures can be determined for protecting the fish populations from excessive levels of silt during pipeline construction, says Rick Higgins, senior fisheries biologist for the Northern Pipeline Agency. "Silt is not as

hazardous to adult fish as it is to fish eggs, which breathe by osmosis," he explains. "Silt literally smothers the eggs by preventing their intake of oxygen."

However, Higgins notes that careful construction scheduling will minimize the risk of silt harming fish eggs. The water crossing should be built during a fish window - the time period within which fish are least sensitive, such as after the eggs have incubated and before spawning migration begins in-stream.

Under certain circumstances, other special construction techniques may further help protect spawning fish from silt, continues Higgins. One method is fluming, which involves carrying the water by pipe across the in-stream ditchline while construction activity proceeds beneath the flume. Other measures include stockpiling the spoil material from ditches on river banks where possible and diversion of the watercourse around the work site. Filter dams may also be used to filter suspended solid material from the water and allow it to collect in in-stream settling ponds, away from spawning areas.

Although construction of the 818 km (508 mi.) Yukon segment of the pipeline is two years away, Higgins stresses it is important to plan protective measures now.

American Update

The final design cost estimate for the U.S. Eastern Leg was approved by the Office of the Federal Inspector (OFI) on April 15. Northern Border Pipeline Company, the consortium building the eastern segment, estimates its costs at \$1,226,462,100. Construction on the initial 1,325 km (823 mi.) began in early May in South Dakota, Montana, Iowa and Minnesota and is scheduled to begin August 1 in North Dakota.

Northern Border Pipeline Company on April 27 won a lawsuit against Jackson County, Minnesota over the requirement that the eight km (five mi.) stretch of the U.S. Eastern Leg of the pipeline

crossing the county be buried 1.8 m (six ft.) deep throughout. In the dispute, the company argued a depth of 0.9 m (three ft.) was the minimum required by the U.S. Natural Gas Pipeline Safety Act, and that digging a deeper trench in Jackson County would result in construction and land reclamation problems. The county contended the extra depth is necessary to prevent interference with drain tiles, or underground water drainage systems. In its decision, the U.S. District Court of Minnesota ruled a Minnesota county cannot set restrictions on the depth of an interstate gas pipeline passing through the county.

Pipeline

The Northern Pipeline Agency was created by Parliament in April, 1978 to oversee planning and construction of the Alaska Highway gas pipeline project in Canada. Inquiries or suggestions regarding the Agency's publication "Pipeline" may be directed to:

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