



FIG. 1. A photograph of the spill site in which the 6 tanks in the tank farm may be seen. All of the tanks had been at the same level as the 3 on the left and all were damaged; however, the tank on the far left did not spill its contents of gasoline. The tank on the far right, well out on the foreshore, is understood to have been nearly empty at the time of the slide. View to the northwest at about higher high water on 18 June, about 10 days after the slide occurred, but before cleanup.

dispose of the oil ashore, particularly as a significant amount of water is unavoidably pumped with the oil. An attraction of pumping on to the sea ice was that the amount of water pumped would not overload the "system", and hence, it was envisaged that all of the oil might be pumped. As well, disposal by burning would still be possible and at location away from the tank farm where one tank of gasoline still existed and away from the tundra, both of which conceivably could have been set afire. However, the containment was such that the "burns" were generally discrete, both on the intertidal zone and elsewhere, so that we were able to predict the extent of a burn should one be initiated. Eventually each of the larger accumulations had been set afire and finally, by repeated burns, all of the oil was cleaned up.

The cleanup technique, i.e. pumping and burning, relates directly to the character of the oil and we recognize that some oil, if spilled, could neither be pumped nor burned as readily as diesel oil; indeed neither of these operations may be possible. Thus, it may not always be possible to take advantage of the control of spilled oil which can occur in ice covered regions.

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Problems of a Contemporary Arctic Village

There is increasing concern regarding the effects of industrial development on the Canadian and Alaskan north. The problems encountered today by an arctic village may serve to illustrate the fragility of the northern ecosystem, of which the isolated village is still an integral part.

The village of Old Crow is located near the headwaters of the Porcupine River in the north of Yukon Territory at 67°35'N., 139°50'W. Like many remote northern villages the river on which it is located is its lifeline to the outside world, for it is far too expensive for the residents to bring supplies in by air. The location of a village, however, is dependent upon factors other than communication with the outside world, and from several of these aspects the village of Old Crow is well situated. Close by are the Crow Flats. This is an area dotted with numerous small lakes, sloughs and streams which supports a large muskrat population, and which has been a traditional trapping ground for the Vunta Kutchin people of Old Crow. This resource has long formed the backbone of the Old Crow economy, for in a good season

a single man may harvest as many as 1,500 rats.

The village is also situated near one of the caribou migration routes and, until recently, in the autumn or late summer, when the large herds of deer passed through, the people would harvest them for their winter meat supply. During the summer months whitefish, pike and inconnu are still taken from the Porcupine River, and in late summer the salmon run arrives. By and large then, the surrounding country contributes very substantially to the well-being of the people of Old Crow, and it is by virtue of their adaptation to this rugged way of life that they have contributed so substantially to scientific studies.

In the summer of 1968 the rain clouds dropped their moisture in the mountain ranges, and when they reached the Yukon and Porcupine Valleys they were dry. The water levels in the rivers dropped rapidly and the *Brainstorm*, which is the supply barge that services Old Crow, could complete only one trip because the shallow water would not support her draft. The village was thus temporarily deprived of essential supplies such as food, gasoline and fuel oil as well as comfort items.

The summer wore on without rain, and because of the dryness forest fires consumed thousands of acres of woodland. A part of this was spruce forest which covered the caribou migration route, and when the fire passed through, the lichen which forms the base of the caribou diet was destroyed. As a consequence the deer took an alternate migration route, bypassing Old Crow, and the people lost their primary source of winter meat. The lichens, *Cladonia* and *Cetraria*, upon which the caribou depend are very slow growing. They often require more than 50 years to recover from a burn, so the possibility of the caribou passing near Old Crow again in the near future appears remote.

Because of the low water in the Porcupine the summer fish catches were low, and the salmon run which supplies food for both men and dogs was late and far below normal numbers. Needed supplies were soon being ferried to the village by air, but the planes were often turned back due to the poor visibility caused by smoke from the forest fires.

By January 1969 the people ostensibly had been without meat for about 3 months, and residents of the village were of two opinions: One group wanted the Government to supply meat to the village through welfare channels, and the other, mostly older people, felt that the men should make every effort to provide for their own needs by hunting.

An Indian Agent was sent up from Whitehorse to discuss the matter. During this period Charlie Abel, who is an ex-Chief, and a friend decided to set the example by hunting. Both of these men were over 60 years old. Their hunt was successful and the moose they brought back was consumed by the village during a big feast and dance. Thus those who wanted to hunt carried the day (at least temporarily) and before my departure the following week yet another moose was killed.

This, however, was not the end of the problems. "Progress" is reaching out its hand to isolated Old Crow. Oil exploration is expected in the Crow Flats and a new runway is to be constructed for the village. Some residents have expressed concern over what may be the long-term results of this exposure, primarily with respect to the economy. They say that in Canada, if the land near a village has been traditionally used for subsistence, and is still being used to support the village economy, it cannot be obtained by outside interests for developmental purposes. If, however, the land is no longer being used by the village residents, then it may be opened to development. Concern exists in the possibility that runway construction, or temporary oil camp construction, in conjunction with the poor trapping seasons influenced by drought, may cause the people to forsake the traditional trapping grounds in favour of temporary construction jobs. This would (in theory) open the trapping grounds to outside development and when the temporary construction jobs terminated, the people would find themselves without their traditional means of support.

Modern problems thus blend with the traditional in the contemporary arctic village. The answers posed by these problems are complex, but the questions must be faced by all who are associated with the development of both the Canadian and the Alaskan north. It is hoped that we can provide answers which will, in supporting economic development, also support social development in the remote northern communities, as well as the very fragile arctic and sub-arctic ecosystems upon which they both depend.

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