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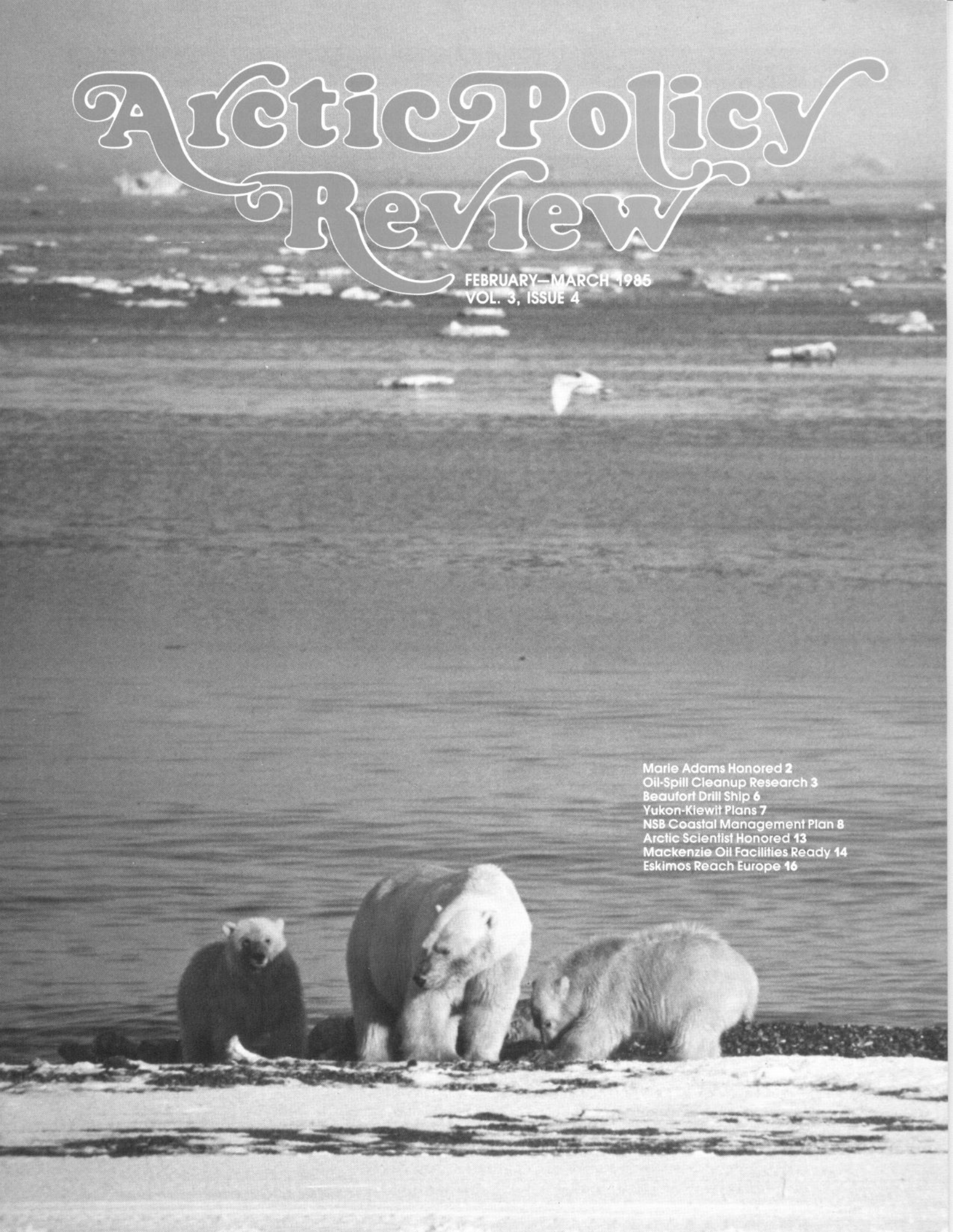
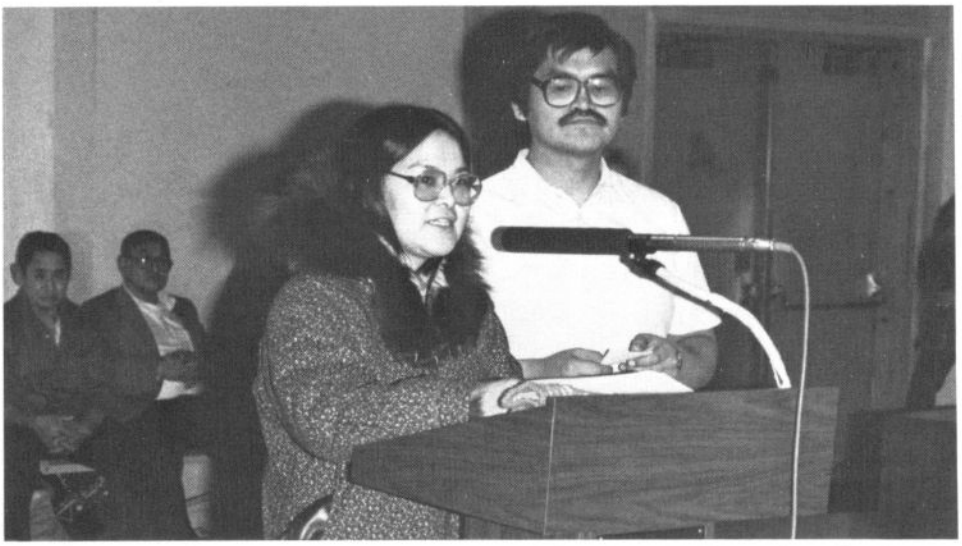


Working Woman Honors Barrow's Marie Adams

Subsistence Whaling Champion



Marie Adams with her brother Jacob at the 1981 Whaling Captains Convention: drawing the bottom line for bowhead resource management.

The March 1984 issue of *Working Woman* contained an article entitled, "Success Story: woman at the top of the world," written by Deborah Heidecker. It began with the description of the Inupiat men of Barrow, Alaska, cutting up and distributing the meat of a recently taken bowhead whale. Among the spectators was Marie Adams, who had come from her job as Manager of the City of Barrow to see the whale taken by her uncle, Captain Jonathan Aiken, Sr.

"Although Adams appears to be just another observer, she is responsible for landing the whale as surely as if she had harpooned it herself," the article stated. "Adams, a native Alaskan, is the executive director of the Alaska Eskimo Whaling Commission (AEWC), and, in this position she presides over the most important of her people's traditions: bowhead whaling. Appointed in 1980 as the AEWC's first woman executive director, Adams has transformed the commission from a loosely structured organization of Inupiat whaling captains and community leaders into a formal nonprofit association that regulates subsistence whaling."

Under her direction, management of the subsistence hunt was transferred from the National Marine Fisheries Service to the AEWC in 1981. Each of the nine Inupiat villages involved in the bowhead hunt is represented on the commission. Adams and the commission have drawn up a set of hunting regulations and developed a hunt-reporting system.

"During the whaling season," the article states, "Adams flies on bush planes to some of these villages, from Gambell and Savoonga on Saint Lawrence Island, up the Bering Strait to Wales, which lies opposite the Soviet Union, and along the Arctic coastline to Kivalina, Point Hope, Wainwright, Barrow, and, finally, Nuiqsut and Kaktovik, a village on Barter Island near the Canadian border. She also is in telephone contact with Washington, D.C., keeping abreast of proposed legislation that would affect whaling in Alaska."

The main goals of the AEWC have been to raising the annual hunt quota imposed by the International Whaling Commission (IWC) and to educate environmental groups, government, and the IWC of the difference between commercial and subsistence whaling. Through the efforts of the AEWC, much of the initial objection to the subsistence hunt of the bowhead whale has been eliminated. "Some IWC members undoubtedly will continue to seek bans or tight restrictions on bowhead whaling, but for the moment, at least, the AEWC seems to have won U.S. government support for its position," the article says.

Adams lived in Barrow all her life, except for her attendance at schools elsewhere. She attended high school in Sitka, Alaska, the University of Alaska at Fairbanks, Evangel College in Springfield, Missouri, and George Washington University in Washington, D.C., where she graduated with honors with a B.A. in Education and Human Development.

Crossing Sexual Barriers

It was in the spring of 1979 while she was still a student that her brother, Jake Adams, asked her to work for the commission. She became a legal intern at Van Ness, Feldman, Sutcliffe, Curtis & Levenburg, the Washington, D.C., law firm representing the AEWC. The article stated that Adams "has had to battle hard for acceptance as the woman who oversees the male world of Inupiat whaling."

Crossing traditional sex barriers, Adams has managed to earn respect from whaling crews and environmentalists alike. AEWC attorney Deborah Gottheil was quoted as saying, "In the beginning, we had to fight to get an Eskimo allowed into an IWC meeting. Adams is the only non-commissioner or non-deputy commissioner who has been allowed to address the commission, aside from the scientists. She commands phenomenal respect from everyone she deals with. By the time Marie speaks, there's no more room for give. People understand that she's expressing the bottom line."

The article concluded, "Long ago, Inupiat women poured fresh water in a dead whale's spout hole, as a sign of respect for the animal and to ensure future catches. Adams has worked toward the same end, using words instead of water." ■

State, NSB Join Forces on Arctic Oil-Spill R&D Program

Industry Dragged Along

Prudhoe Bay oil-spill cleanup demonstration: disposal by burning is less difficult on land than on sea, where only relatively thick oil slicks will burn.

During June 1984 the State of Alaska revised the Beaufort Sea Drilling Restrictions in order to accommodate 1) Shell Oil's need to drill confirmation wells on its Seal Island discovery, and 2) industry's failure to demonstrate oil-spill cleanup capability in broken-ice waters as required by the State's 1981 Tier-II Drilling Restrictions as a condition for threshold drilling into oil-bearing depths (See APR, v.2, n.6)

At that time, the North Slope Borough (NSB) agreed to allow below-threshold drilling during the broken-ice season under the following conditions:

1. Successful boom deployment and maintenance be demonstrated.
2. Adoption of an adequate whale-monitoring plan.
3. Adoption of an adequate well-ignition plan.
4. Industry commitment to a research and development (R&D) program.

Oil-Spill Cleanup Technology Deficiencies

The revised Seasonal Drilling Restriction includes provisions for the NSB and Federal Government to help the State identify oil-spill technology deficiencies and establish priorities for the R&D program. Once this is accomplished, the oil companies requesting permits to drill on State tracts during the broken-ice season will be required to sponsor R&D projects to resolve the deficiencies.

NSB-State Agreements Reached

NSB officials have been pleased with the progress so far on the new restrictions. On 20 August 1984, a telephone conference was held in which Paul O'Brien of the Alaska Department of Environmental Conservation (DEC) and Robert Butts of the Department of Natural Resources (DNR) said that the state's function in the R&D program would be 1. to identify the deficiencies in broken-ice oil-spill cleanup technology and 2. to develop procedures for implementing the R&D program. This program would last five years, after which industry would take up the responsibility of identifying the deficiencies and conducting R&D projects as further deficiencies are discovered.

They did not agree with NSB's oil-spill response officer JoAnn Loncar's request that the Borough share authority with the State in approving the R&D projects proposed by industry, but said the NSB and the federal government would be consulted as deficiencies were identified and prior to implementation of R&D procedures. All agreed that a high level of cooperation between the Borough and the State would be necessary for the success of the R&D program.

NSB R&D Program Goals

The new R&D effort is the latest stage in a process that began in 1974, when NSB officials first warned of industry's inability to demonstrate oil-spill cleanup capability in Arctic storms, especially those involving broken ice. Last year, in the face of mounting pressures from industry to drill year-round, the Borough was able to win state support of the oil-spill cleanup-technology research and development program. The Borough's own goals for this R&D program are:

1. Assist the State in identifying deficiencies related to Beaufort Sea oil-spill cleanup technology, including deficiencies relating to:
   a. wildlife protection
   b. oil-spill detection, containment, cleanup, and disposal.
2. Prepare reports establishing the deficiencies.
3. Review previous R&D projects for determining work needed to improve Beaufort Sea oil-spill cleanup capability.
4. Provide technical assistance to State in evaluating industry-proposed R&D projects and monitor the R&D program.

The Oil-Spill Performance: the Record

As part of its effort in accomplishing these goals, the Borough evaluated in detail industry and Canadian government reports on the 1983 oil-spill demonstrations conducted at Prudhoe Bay. This evaluation revealed the following questions and were used to pin-point the deficiences listed in Table 1:

1. What steps would be taken to protect wildlife that is threatened by an oil spill?
2. What are the environmental hazards associated with burning

Continued next page

large quantities of crude oil that contains toxic materials?

3. How effective is existing equipment for cleaning up oil and burn residue in broken ice?

4. Can prototype fire-resistant booms effectively contain burning oil for periods longer than six hours or divert ice from oil-cleanup equipment?

Identifying Deficiencies

During August and September 1984, the State held several meetings with the Borough and Minerals Management Service (MMS) to discuss oil-spill technology deficiencies. The Borough and State immediately agreed on a list of deficiencies, while MMS suggested that the list include only the deficiences which are directly related to cleaning up oil during the broken-ice season in State waters. They advised that deficiencies inherent to cleaning up oil in Federal waters and oil-spill disposal be deleted from the list. After much discussion, the State went along with this decision, but the Borough did not.

To ensure that nothing was overlooked, the list of deficiencies was forwarded to interested organizations in the Lower-48 and Canada for comments. Afterwards, minor revisions were made and the list of deficiencies shown in Table 1 was sent to the oil industry to initiate its participation in the planning part of the R&D program.

Is Well Ignition an Effective Response?

Several reports from both industry and the Canadian oil-spill response consultants have said that well ignition is an effective response, because it is assumed that 90-95% of the oil released in the blowout would be burned, leaving only 5-10% in the water, which could be cleaned up by in-situ burning or cleanup by mechanical methods. This assumption is the basis of industry's contention that oil-spill response capability is adequate for the broken-ice season.

After reviewing the reports, however, the Borough could not find any technical basis to support the 90-95% ignited-well burnout assumption. The 1984 Persian Gulf reports on burning blowouts revealed a 60% burnout with 40% entering the water.

In view of this discrepancy, the Borough suggested that the R&D program include development of a technical basis for estimating the amount of oil burned in a blowout by igniting the well. This proposal was rejected by the State in favor of other priorities.

Confronting Industry with R&D

On 24 September 1984, a public meeting was held in Anchorage to discuss the R&D program. Industry representatives questioned the need for the program and complained that it would hamper their own R&D programs. They also complained that no provisions were made for them to jointly conduct an R&D program as required by the State. They said that their own oil-spill cooperative (Alaska Clean Seas—ACS) could not implement this program because some of its members would not agree to it.

In the face of this opposition, DEC's Oil Pollution Manager Paul O'Brien reminded them that it was now state law and would be enforced. He encouraged them to provide input for identifying R&D projects which would resolve the deficiencies. He also commented that any ACS or industry R&D project which addresses the deficiencies would be accepted as part of the R&D program.

Industry Objects

During a public meeting 26 October 1984, the State requested comments on draft procedures and approval criteria for the R&D program. Industry objected because the procedures and criteria would:

1. *Require companies which conduct offshore development drilling in State waters to participate in the R&D program.* Since the 1979 Seasonal Drilling Restriction did not apply to offshore development drilling (only to exploration) industry feels the R&D program should not include drilling activities not covered by the restriction.

2. *Require all results of the R&D program to be public information.* Industry contends that R&D results should be treated as proprietary information in order to benefit from developments which might have commercial value. Otherwise, there would be no financial incentives to participate in the program.

3. *Require industry's R&D effort to be commensurate to Canada's R&D effort for improving oil-spill cleanup technology.* Industry contends this would not ensure quality research and effective results.

The Division of Risk Assessment

In a letter to then-DEC Commissioner Neve and DNR Commissioner Wunnic-

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The North Slope Borough was incorporated as a first-class borough 1 July 1972. A Home Rule Charter was adopted by the Borough on 30 April 1974. The North Slope Borough is the regional local government of northern Alaska, with mandatory powers of taxation, assessment, education, planning, and zoning. Within its boundaries are eight Inupiat Eskimo communities (pop. 4,693), seven military installations (pop. 193), and the Prudhoe Bay Resource Development District (pop. 7,843), 88,281 square miles of land and nearly 800 miles of arctic coastline, constituting 15 percent of the State and the largest municipality in the U.S.

ke, NSB Mayor Ahmaogak supported the State's intent to make the R&D program applicable to development drilling. The "division of risk assessment"— a 1981 policy devised by the State and Federal Governments to allow separate environmental standards for exploration and development operations — should not be used, the Borough contends, to promote weaker standards for the development phase of operations. The Borough agrees with the State that the potential for oil spills is greater during offshore development and that effective oil-spill cleanup technology is needed before extensive offshore drilling occurs.

Mayor Ahmaogak agreed that the State should safeguard R&D which is considered proprietary by industry, and suggested that only the final results of R&D projects be made public without the need of industry approval. He felt this would allow them sufficient incentive to seek commercial patents. He also agreed that the State should not specify the level of funding that industry should commit to the R&D program or require that it be commensurate with Canadian efforts. Instead, he felt it was important for the Borough and State to concentrate on program results.

In response to these comments, the state limited the procedures and approval criteria so that it would only apply to exploration drilling, but it retained authority to require those involved in offshore development drilling to participate in the R&D program on a case-by-case basis. It also protected proprietary information and required that only general results and major findings by made public. Finally, the specific funding levels requirements were dropped.

The Technical Advisory Committee

The procedures and approval criteria provide for the establishment of a Technical Advisory Committee consisting of representatives from the various levels of government and industry for the purpose of reviewing R&D projects to determine if they are appropriate for resolving the deficiencies listed in Table 1. It will also determine whether proposed R&D projects comply with the procedures and approval criteria. The findings of the Committee will be reported to the DEC Oil-Pollution Control Manager and the DNR Division of Oil and Gas Director.

The NSB Technical Report

During November 1984, the Borough prepared for the Technical Advisory Committee a report entitled "What's New in Arctic Oil-Spill Response Technology — a Summary of Recent R&D." This report summarizes public information on R&D projects covering wildlife protection, oil-spill detection, containment, cleanup, and disposal. Borough staff hopes the report will aid the Committee in identifying deficiencies, technical data gaps, and priorities.

Keeping R&D on Track

As part of the Borough's tradeoff for allowing Beaufort Sea development to proceed without proven safeguards, it intends to vigorously address the scientific and technical problems that continue to plague effective oil-spill response. So far, it has been pleased with State progress on this measure.

During a public meeting on 20 November 1984, it was agreed that industry would submit a list of proposed R&D projects to the State by 7 January 1985. The Technical Advisory Committee met on 31 January to discuss these proposals and establish R&D priorities.

Borough officials know that a key factor in the implementation of the R&D program depends on industry's need to conduct offshore drilling during the 1985 breakup season. According to the State Seasonal Drilling Restriction, the R&D program must be in progress before industry can drill below a predetermined level during periods of broken ice. ■

TABLE 1

Summary of Deficiencies for Arctic Oil-Spill Response Technology

Response Category[2]	*Identified Deficiency*[1]
Detection	Visual techniques are not reliable during reduced visibility or when oil is in or under ice.
Containment	The ability of prototype fire-containment booms to contain oil in the Beaufort Sea or burning oil for longer than six hours is unknown.
Containment	Sufficient boom does not exist for containing oil in broken ice or diverting ice from oil-recovery equipment.
Recovery	Broken ice limits the performance of oil-spill cleanup equipment.
Recovery	The Arcat Skimmer cannot effectively clean up oil along ice edges. Also, broken ice or thick or viscous oil films may limit this vessel's oil-spill cleanup performance.
Recovery	It is unknown whether conventional skimmers techniques can effectively clean up burn residue or or emulsified oil.
Recovery	Sufficient logistical resources and plans do not exist for cleaning up oil in water less than 6 feet deep.
In-Situ Burning/Disposal	Environmental impacts that may result from burning crude oil on the water surface are unknown.
In Situ Burning/Disposal	Additional information is needed to determine if in-situ burning is effective for thin oil films or weathered oil.
In Situ Burning/Disposal	Industry's air-deployable ignitors do not ignite weathered oil and oil emulsions.
In Situ Burning/Disposal	There is not enough information to show whether chemical agents are effective counter-measures for the Beaufort Sea.
Fate and Behavior	There is not enough information on oil-spill behavior in broken-ice to design appropriate countermeasure systems.
Wildlife Protection	Available techniques are not adequate for protecting marine mammals and molting water fowl from spilled oil.

[1]Summary of deficiencies identified by the State, NSB, MMS, U.S. Coast Guard, and industry.

[2]Priorities suggested by the State of Alaska:
High—Containment, recovery, in-situ burning-disposal, wildlife protection.
Low-medium—Fate and behavior.
Low—Detection.

Hitting Ice Isn't Nice When Drilling for Oil On Floating Platform

by Alan Bayless

ABOARD THE KULLUK — This isn't outer space, but is a reasonable facsimile. In the dimness of Canada's Beaufort Sea, this puck-shaped drilling vessel is a floodlit outpost of humanity encircled by a vast emptiness of ice.

It is 10:30 on a frosty morning — dawn in these Arctic parts — and the Kulluk is floating lazily. Capt. Bruce Brophie, its master, would rather be 12 miles away, anchored and still drilling hard into a wildcat oil well called Akpak. But the well site is about to be covered by a drifting ice floe that is 10 times the size of Manhattan, so the Kulluk ("thunder" in Eskimo) has retired a safe distance to watch. And wait.

In shallower waters off the coast of Canada and Alaska, drillers can make their rigs into artificial islands firmly affixed to the sea floor. But here, miles offshore, the only solution is a floating rig like the Kulluk that can dodge the immense, drifting floes that clog these waters.

In 1983, the Kulluk worked the Canadian Beaufort until mid-December in spite of the harshest ice conditions in nine years. It resumed operations in mid-June 1984, setting another record for floating vessels on the Beaufort Sea. Photo: Ranson Photographers, Edmonton, for Gulf Canada Resources.

Mobility and Nerve

"The drillers like to keep working, but it is my ticket on the line if the Kulluk is damaged," says Capt. Brophie, 46 years old and a veteran of Arctic offshore operations. To protect his vessel, he relies on technology, mobility and his own nerve.

The idea is to keep the Kulluk anchored and drilling as long as possible, moving to avoid danger only at the last possible moment. When it is hired out and actually drilling, the Kulluk brings its owner, Chevron Corp.'s Gulf Canada Ltd. unit, an estimated $800,000 a day. When it is wating for ice to clear, the vessel earns much less. While that provides powerful incentive for Capt. Brophie to keep drilling, he must also be sure to allow enough time for an unhurried escape. "If we get forced off without securing the well, I'll be hung from the highest tree," he says.

Although the Beaufort Sea may contain the largest untapped oil basins in North America, the treacherous conditions can make exploration here five times as costly as in the North Sea and most other areas. Gulf Canada spent about $110 million two years ago to have the Kulluk built, making it one of the most expensive rigs in the world. That doesn't include the cost of the four icebreaking and supply ships that protect it and tow it everywhere; it doesn't have an independent means of propulsion.

Gulf Canada officials insist that even a collision with an ice floe wouldn't sink the Kulluk. Instead, they say, the vessel would simply be shoved aside like an errant buoy. But that would be disaster enough. If the Kulluk moved enough to shear off its drill pipe, the pipe might irreversibly block the well. A $100 million investment could be ruined.

That has never happened, but the Kulluk did receive a bad scare last year when drilling officials were too slow to react to an approaching floe. "We were still learning our limitations, and we got caught off guard," recalls a Gulf Canada employee — who asks to remain unidentified. "We had just begun a new well when a 2½-square-mile floe approached at an accelerating speed. We lifted the drill pipe and were in the process of raising the anchors when the ice knocked us off the hole." The impact, he says, broke three anchor cables and damaged a wince, necessitating $1.5 million worth of repairs. Neither Capt. Brophie, who wasn't involved in the incident, nor other company officials would comment on it.

Since the accident, the company has revamped its procedures to make clear that the Kulluk's captain, rather than any drilling supervisor, has the final decision on when the vessel should be moved.

To help him make that call, Capt. Brophie has several tools. On a desk in the Kulluk's control room, he unfurls one of them: a chart-sized, high-resolution photo taken daily by an airplane-mounted radar device.

He appoints to a large mass on the photo: the gargantuan ice block that is about to cover the Akpak well. "We had to leave the site about a week ago when another floe, about the same size, was threatening us," he says. Kenneth Woolner, the Kulluk's 24-year-old ice specialist, adds: "The floe weighed about 1.1 billion tons, and it was approaching us at close to one nautical mile an hour. It was only two hours away from the drill hole" when the vessel sailed away. The rig still has about five days worth of work to complete at Akpak this season, but it isn't certain the floes will let it back in.

A specialist like Mr. Woolner — known in the trade as an "ice worm" — helps plan strategy. Every day, he and Capt. Brophie lift off from the Kulluk's helicopter pad to survey their desolate surroundings.

Despite the nearly uniform whiteness of the sea below them, the two men have little trouble distinguishing the harmless ice from the dangerous. In these waters, there aren't the kind of huge, jagged iceburgs found in the North Atlantic. Instead, the two men look for the telltale ridges on an otherwise flat floe that indicate the ice is two years old, or older. The ridges are formed when blocks collide and weld together.

First-year ice, formed only since the fall freeze-up, doesn't worry the Kulluk; the blocks are only about two feet thick, and the vessel's cone-shaped hull easily deflects them. Older ice is another matter. Second-year floes have an average thickness of 10 feet, and older ice can be as thick as 50 feet. Older ice is also harder, because the salt leaches out of it over time.

For the Kulluk's spotters, locating a meanacing floe is just the first part of the battle. The toughest job is predicting where the ice is headed. Winds, currents and climatic conditions are all taken into consideration. Even the earth's rotation must be factored in. A force called the "Coriolis effect" can deflect ice into a spiral path, offshore drillers have discovered. "We found out when ice floes circled around and came back at us after we thought they had gone by," Capt. Brophie says.

Using onboard computers, the Kulluk's experts can create video-screen simulations of possible ice movements. Such forcasts aren't completely reliable, but they still prove helpful in predicting whether a floe is headed for a drilling site and in deciding whether, when, and where to move the vessel.

Because of its special design, the Kulluk can work a longer season than more conventional drilling ships can. The other vessels work only from July to October, but, the Kulluk usually can operate from June until mid-December. Up to 108 seamen, drillers, and others are aboard the 265-foot diameter craft at any given time; most work two-week shifts.

When the winter ice finally becomes overwhelming, the Kulluk is towed to a sheltered harbor, and its crew heads for a long vacation. For Capt. Brophie, that means time relaxing with his wife on their sailboat home in Vancouver, B.C., and perhaps searching for some sunshine and warm weather further south.

"I like the money and the time off, and I like the challenge," he says. "Life is never dull when you constantly lay your job on the line." ■

Canadian Feds Push Kiewit Proposal

COPE Taking Time

The federal government is putting pressure on the Inuvialuit to set up a temporary environmental impact assessment body to look at a rock quarry proposal for the Yukon North Slope.

Inuvialuit implementation committee spokesman Bob DeLury says the Department of Indian Affairs and Northern Development has suggested that the interim committee look at the Peter Kiewit Sons Ltd. proposal to mine rock from a quarry east of the Babbage River, before the permanent review bodies called for in the land claim agreement are established. The Inuvialuit Final Agreement, which came into force last July, called for an environmental impact screening committee and a separate review board. The job of those two bodies would be to recommend to the relevant government whether or not an activity can safely take place and, if so, how.

A letter from assistant deputy minister Neil Faulkner, dated 22 October 1984 to Peter Green, president of COPE, asks that the interim committee be made up of representatives from Canada and the Yukon governments, the Council of Yukon Indians (CYI), and the Inuvialuit. Mr. Faulkner suggested the federal department of environment and fisheries and oceans should also participate.

A mid-November meeting of the committee was held to discuss his proposal. The Kiewit project has been hot and cold for a couple of years. The company would like to mine rock from a quarry on the Yukon North Slope. The rock would be used to build drilling islands in the Beaufort and would be trucked over a 15-mile road from the quarry to a seaside port. The project would take place on traditional Inuvialuit hunting grounds.

The company has offered partnerships in the project to both the Inuvialuit and to the CYI. The CYI has accepted the offer, but the Inuvialuit have kept their distance because the environmental safeguards (the screening and review bodies) have not been put in place yet. One of the terms of the offer has been that the Inuvialuit "fully and actively" support the project. Mr. Delury says the Inuvialuit would find that hard to do without the safeguards in place.

He emphasizes that the implementation committee isn't getting involved in the economies of the Kiewit proposal. He says the committee is concerned only with the environmental impact of such an operation and wonders if attempts are being made to buy off the Inuvialuit without proper attention to lcoal habitat and wildlife.

Implementation committee chairman Billy Day, who has been working closely on with Mr. DeLury on the proposal, says, "We don't want to sell off the caribou in exchange for some rock." ■

North Slope Borough Coastal Management Plan

State Approval Pending

The borough's detailed formulation of Arctic policy goes before the Alaska Coastal Policy Council.

After years of planning, numerous revisions, and hundreds of hours of consultation with citizens, industry representatives, and state and federal agencies the North Slope Borough Coastal Management Program (CMP) approaches its next hurdle on the way to final approval and implementation. The latest version of the CMP, which was approved in concept by the North Slope Borough Assembly in February 1984 is due to go before the Alaska Coastal Policy Council (CPC) in April. If approved by the CPC, the program will be submitted to the federal Office of Ocean and Coastal Resource Management of the Department of Commerce for final approval. This will provide the North Slope Borough with a set of comprehensive, enforceable policies on which to base future coastal-resource decisions.

The sixteen-member CPC is made up of representatives from seven state agencies and nine regional representatives nominated by municipalities and appointed by the Governor. The meeting is expected to receive considerable attention from all parties which participated in the planning process. These include borough residents, the oil and gas industry, managing state and federal agencies with responsibilities in the borough's coastal zone, and other coastal planners throughout Alaska. The CPC is responsible for deciding whether or not the CMP meets state requirements for inclusion in the Alaska Coastal Management Program.

The CMP includes three volumes, the CMP, a Background Report, and an atlas. The Background Report details the biological, natural, and cultural resources of the region, and a historical description of the Inupiat use of coastal resources. Material in the Background Report along with input from borough residents served as the basis for defining local needs and related CMP policies for coastal-resource management. The CMP document contains the borough's goals, objectives, and enforceable policies for managing coastal resources.

Coastal Zone Management: A Federal Call For Local Control

The North Slope Borough's CMP is one of many such programs being developed by local coastal districts around the country. The Federal Coastal Zone Management Act, passed in 1972, called for state and local governments to develop local planning and regulatory authority for their coastal areas. Federal money for local planning efforts are channeled through states with approved programs. The Alaska Coastal Management Act, passed in 1977, outlines the state's goals and objectives. These include provisions for protecting coastal resources and environments while allowing for development consistent with local interests. The state as also identified seventeen "uses of state concern" which are issues beyond immediate local concern such as siting of energy facilities, transportation routes, defense facilities, and harvest of fish and wildlife. Local plans are expected to develop policies which do not unreasonably restrict these regional or national interests.

Under the state's program, local coastal districts, such as the North Slope Borough, develop local plans. Sixteen local plans in Alaska have received federal and state approval and are now part of the state's program. Six have received state approval and await final approval by the federal government. The North Slope Borough's CMP covers the largest area of any of the plans so far considered and, because of the extensive development interests, has generated the most discussion.

Finding the balance between industry and subsistence has been the chief goal of the borough's Coastal Management Plan.

Through the consistency provision of the national law, the borough's CMP, once adopted, will affect all lands within the coastal zone. Federal and state land managers will be required to see that decisions on activities in these areas are consistent with the policies to the greatest extent possible. The borough will make consistency recommendations to the appropriate agencies based on whether or not a proposed activity complies with CMP policies. These recommendations will be the basis of local input into the state and federal coastal decisions. Once the national Coastal Zone Act Management Act was passed, industry, federal, and state managers were quick to recognize its potential and aimed their attacks at the consistency provision, which was a major concern of the creators of the national coastal zone management program.

Consistency has already been tested to some extent in the courts. In a recent Supreme Court case, the Court decided that the State of California could not use their coastal zone management policies to influence federal OCS oil-and-gas activities during the leasing stage in spite of California's argument that these activities directly affect their coastal zone. This decision was a blow to local management even though states can still assert consistency provisions over leasing within state waters. Major portions of the federal Coastal Zone Management Act are up for renewal in Congress this year, and the issue is expected to be controversial. The re-authorization will appear before the House Merchant Marine and Fisheries Committee, in which Representative Don Young was former Chairman and is still influential, and the Senate Commerce Committee, in which Senator Ted Stevens is influential.

Up for reauthorization are sections relating to funding for state programs. President Reagan's cost-cutting administration has sought to eliminate federal funding for this program for the past five years and is expected to take the same stance this year. In addition, the oil-and-gas industry would like to further weaken consistency powers of the states. Industry contends that the program creates an unnecessary layer of regulation. On the other hand, the Organization of Coastal States will be seeking strong coastal-zone management legislation which they see as a legislative

Continued next page

solution to the weakening of the program resulting from the Court's decision. Coastal states will continue to seek a guaranteed source of funding for their coastal programs through revenue sharing from federal offshore oil-and-gas activities. This has yet to gain enough support in the Senate and is unlikely to pass again this year.

Emphasis on Inupiat Concerns

By means of extensive public meetings in North Slope villages, the borough's CMP planning team was able to identify the residents' major concerns on coastal issues. These included protection of subsistence and cultural resources along with improved economic status. The planning team also met repeatedly with industry and concerned state and federal agencies to ensure that their views were not overlooked during the program's development.

With this input as a guideline, the CMP planners pursued the difficult balance between resource management — which includes a centuries-old subsistence relationship with these resources — and industrial resource development, which has been the source of new economic growth.

Specific CMP policies outline prohibited activities as well as standards for appropriate activities. To note some examples: development which would 1) deplete a subsistence resource, 2) preclude access to a subsistence resource, 3) interfere with the bowhead whale migration, or 4) disturb a cultural site would be prohibited. Examples of the specific standards listed include details concerning pipelines, roads, mining, and offshore development. North Slope Borough planners feel that CMP standards will safeguard subsistence resources and important habitat while providing consistent and reasonable guidelines for developers.

At the Beginning

As borough residents prepare for the CPC hearing, they are reminded that their efforts are one more episode in a long struggle to assure local input into the decision-making process. Early relations between the borough and the oil and gas industry were marred when industry went to court in 1972 to try to prevent organization of the borough. Failing in court, industry then staged a massive legislative lobbying effort aimed at limiting the borough's taxing powers. Because of the efforts of early borough leaders, industry now recognizes the borough's ability to represent local concerns in development decisions.

The borough's CMP likewise had rocky beginnings. Because of the vastness of the borough's coastal zone, limitations on planning resources, and the immediate pressures to develop a plan for the Prudhoe Bay area, borough officials decided in 1976 to limit its first CMP to the mid-Beaufort Sea region. This first plan was completed in 1978, but approval was delayed by two scheduled oil-and-gas lease sales and strong industry opposition. As approval of a coastal management program was in doubt, the North Slope Borough developed a zoning ordinance for the area that could be used in the interim. This detailed ordinance was later added to the coastal plan, and together they were called the Mid-Beaufort Coastal Management Plan.

Again, industry opposition to the program was extremely strong. In addition, several state agencies voiced strong

The CMP background includes the borough's Traditional Land-Use Inventory and related studies, the Elders' Conferences, consultation with industry and agency officials, public meetings, testimony from lease-sale hearings, and the strong leadership provided by the NSB Planning Commission.

criticism. Sensing that the CPC and the legislature would not approve the plan, the borough withdrew it from CPC consideration in January 1980. It began immediately to expand its efforts to develop a more acceptable plan that would cover its entire coastal zone—from Demarcation Point on the Canadian border to where the coast meets its southern boudary at Cape Seppings on the Chukchi Sea.

The result is the version of the CMP now awaiting CPC consideration. Because of the value of the expansive resources within the borough's coastal area, industry, government, and local residents have repeatedly scrutinized the borough's CMP throughout its controversial history. Borough officials are confident this long period of development has given their CMP an extraordinary refinement and significance.

Issues of Possible Conflict

But in spite of all this, they anticipate that certain issues will be controversial. The coastal-zone boundaries selected by the North Slope Borough are expected to be one of these contested issues. The CPC adopted statewide guidelines for coastal zone boundaries. The seaward limit is the three mile offshore boundary of state waters while the inland limit includes areas which have a direct influence on the coastal zone and its resources.

Using these criteria, the state published the Interim Coastal Zone Boundaries based on habitat research conducted by the Alaska Department of Fish and Game. Individual coastal planning districts were allowed to make changes in the interim boundaries if they felt that they were necessary to manage uses and activities that could have a direct influence on activities in the coastal zone. This included changes to protect the biological resources which are dependent on the waters and habitat of the coastal zone. In practice, districts have expanded boundaries where they felt it was necessary to properly manage fisheries, subsistence wildlife populations, water quality, or other resources which depend directly on the coastal area.

The NSB chose to deviate from the Interim Coastal Zone Boundaries in two areas. These changes extend the area in which CMP policies would apply but would not result in any special preclusion of development. Boundaries in the mid-Beaufort section were extended along anadromous fish streams to protect vital habitat of this important coastal-subsistence resource. The boundaries extend in a one-mile-wide corridor along specific waterways between the Colville and Canning Rivers. The coastal boundary was also extended inland on the Lisburne Peninsula to include anadromous fish and seabird habitat. Protection of this habitat is also critical for important coastal-subsistence resources, and the CMP explains the biological merits of these extensions.

Industry is expected to object to these extensions, while state officials have indicated that the Alaska CMP may require further justification of the extensions in the Lisburne Peninsula and that boundary changes would be looked at on a case-by-case basis. At a recent CPC hear-

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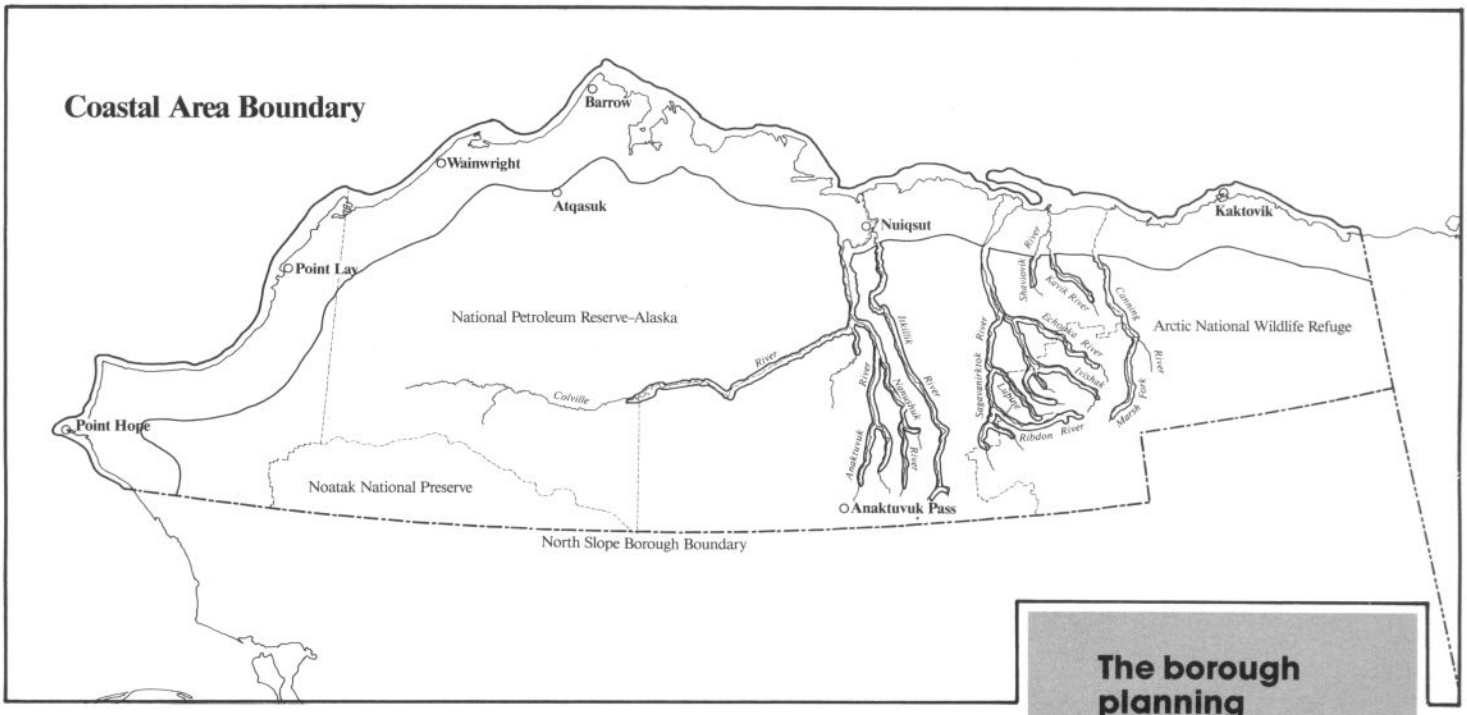

ing in Dillingham, North Slope Borough officials joined others in supporting the Bristol Bay Coastal Management Program and the extensions of the coastal zone boundaries along the anadromous fish streams. The state has since approved the plan with the extensions.

Further controversy is expected regarding policies which prohibit certain uses. Ten policies prohibit development of any type which would negatively impact subsistence or cultural resources. Some state agencies have criticized these policies as vague, and industry has criticized them as too broad and potentially precluding any development activities. NSB planners note, however, that the CMP does include specific criteria under which other development may be relieved of certain policy restrictions. These criteria include a significant public need for the development, a demonstrated lack of alternatives, and a commitment to abiding by CMP policy to the greatest extent possible. If the development does not meet these criteria, it must meet a full range of specific tests including eleven categories of restricted types of activities and seven required features. Despite the criticisms, the North Slope Borough feels that it is clear that these policies are meant to emphasize the borough's commitment to protecting subsistence resources and their traditional uses while providing guidelines for future development.

While the borough prepares to meet these objections to the CMP, it also anticipates strong support from many groups in Alaska, most important of which are borough residents, who have contributed so much to the planning process.

Areas Meriting Special Attention

Under the Alaska Coastal Management Program, districts may designate Areas Meriting Special Attention (AMSA). These are areas which are recognized for exceptional resource values or circumstances that require different management techniques or policies than the rest of the coastal zone. The plan includes two candidate AMSA's along with documentation supporting their nomination, which the CPC will consider for approval at a later meeting.

They are Cape Thompson and Kasegaluk lagoon, both nominated for their exceptional habitat values. The cliffs at Cape Thompson provide a unique nesting area for sea birds, and the area also supports numerous marine mammals. Local people have long depended upon these abundant resources for subsistence gathering and hunting.

Kasegaluk Lagoon and the barrier islands system related to it support the subsistence economy of the village of Point Lay. Kasegaluk Lagoon is especially important for beluga whales and other marine mammals, and the barrier islands provide critical habitat for migratory shorebirds and waterfowl.

The borough planning commission played a very important role in issue analysis and policy development for the CMP. As official advisors of the borough assembly, the commission set the tone for policy development.

The People's Accomplishment

Emerging from the Congressional intent that local districts have a strong voice in the environmental protection of coastal resources, the North Slope Borough's Coastal Management Program is the most expansive and detailed expression of Arctic policy found anywhere. Supported by the people's concern for their environment, it represents a prodigious accomplishment of historical significance. Attempting to balance the protection of subsistence resources with industrial development, it will provide an effective forum for the management of Arctic resources for many years to come. ■

Bowhead Conference Honors Arctic Scientist

Work in Zoonotic Diseases Highlighted

Paying tribute to science: former NSB Mayors (left to right) Eugene Brower and Jacob Adams join Mayor George Ahmaogak in honoring Dr. Robert Rausch, accompanied by his wife Virginia.

Arctic parasitologist Robert Rausch, D.V.M., Ph.D., first recipient of the North Slope Borough's Arctic Science Prize, was honored at a banquet at the 3rd Conference on the Biology of the Bowhead Whale at Anchorage on 22 January. Tribute was made not only to his life-long dedication to science and the excellence of his work, but also to the benefits of his work to northern peoples.

In his introductory remarks, NSB Mayor George Ahmaogak called Dr. Rausch a major figure in Arctic animal biology and said, "the excellence of his work is recognized throughout the scientific community." Since 1978, he has been at the University of Washington where he holds five positions including Professor of Animal Medicine at the medical school.

Dr. Rausch delivered an address on "Biomedical Research in Alaska: Some Recollections," in which he recounted the effects of biomedical science on the history of Alaska and talked about the most important aspects of his work. At the end, praised the North Slope Borough for the unique role it has undertaken in Arctic Science.

Recognized as a major figure in Arctic biology with a broad range of competence, Rausch has authored or coauthored over 200 publications since 1946. His major research effort has been with the biology of parasites of mammals of northern Alaska and comparable areas of the Soviet Union. His contributions to this field have been of great signficance to public health. Of particular importance are his contributions to the understanding of zoonotic diseases (which are passed from animals to humans), particularly trichinosis and alveolar hydatid disease, which affect Alaskan Eskimos and Native peoples of eastern Siberia.

Microbial Colonization of Alaskan Societies

In his address, Dr. Rausch recalled the work of naturalist and physician Georg Wilhelm Stellar who, as part of Vitus Bering's historic voyage, identified Kayak Island off the coast of Alaska as part of the New World and thus initiated the period of Russian colonization.

"Conquest by the Europeans was not the only danger recognized by the inhabitants," Rausch recalled. "According to Bancroft, the old man at Kodiak Island objected to the landing of the Russian boats in 1763, because, he asked, 'Who knows what sickness they may bring us?' " Under both Russian and American periods of colonization, Alaska Native societies were severely impacted by wave after wave of imported infectious diseases, including smallpox, influenza, and tuberculosis. "A combination of disease, imposed acculturation, and other factors contributed to the continuing decline of the indigenous populations well into the 20th Century," Rausch said. This situation of neglect was not reversed until after World War II, when a series of well-publicized reports on the lack of Alaskan Native health care shocked the American public. In 1947, the Department of In-

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terior and the American Medical Association conducted a survey of Alaska Native health conditions (the Barnett Report), which among other things was responsible for the establishment of the Arctic Health Research Center in Alaska, with a million dollars of Congressional funding. Dr. Rausch began working at the Center when it opened and in 1948 and remained until it was closed in 1974.

"Anyone working in the more remote regions of remote Alaska," Rausch said, "around 35 years ago was constantly shocked and depressed by the tragic effects of communicable diseases. For example, in 1952, the rate of death from tuberculosis among Indians, Aleuts, and Eskimos was 501 per hundred thousand. The census of 1950 gave the combined population of Aleuts and Eskimos as 19,774 — a decline of 1,401 since the census of 1940."

Caution: improperly prepared polar-bear meat can be dangerous to your health.

New Medical Programs

In the 1950's, this trend began to be reversed with new advances in the treatment of tuberculosis and the determination by the governments of the U.S. and Alaska to establish facilities for medical treatment in rural villages. By 1970, there were no deaths from tuberculosis.

Dr. Rausch's work concentrated on those kinds of diseases transferred from animals to humans, such as rabies, Rocky Mountain spotted fever, and trichinosis. It was long believed that trichinosis was only contracted from pigs and rats. But in 1948 Danish doctors observed an outbreak of trichinosis among Eskimos in Greenland related to consumption of walrus and other marine mammals.

Since 1943, Rausch had been investigating animal-parasite relationships and continued this work in Alaska in which he discovered parasites of public health significance. Rausch began investigation of this problem in Alaska. Soon he was given space for his work at the Naval Arctic Research Laboratory at Pt. Barrow, established by the Office of Naval Research in 1947. "The Eskimo hunters at Barrow," he said, "were generous in providing materials from marine mammals, and Thomas Brower Sr. decided it was time to eliminate stray dogs from the village. His effort was quite productive, and his specimens provided important information."

Rausch soon discovered trichinosis to be common in dogs, foxes, and polar bears, and also discovered the tapeworm which causes hydatid disease in man in a dog and an Arctic fox. In 1956, he published his initial report on trichinosis and found 23 species to be infected. Rates of infection were high: 53 percent in polar bears, 50 percent in brown bears, 41 percent in red foxes, 50 percent of wolverines, and 62 percent of dogs outside Anchorage, and in Barrow 93 percent of examined dogs.

Research in Anaktuvuk Pass

Rausch attributes much of the success of his work to the helpful cooperation of hunters and trappers. In April 1949,

Mackenzie Valley Oil Ready for Pipeline

Norman Wells Project Near Completion

Norman Wells, N.W.T. — Economic activity in the community is beginning to wind down as Esso gears up for full-scale production of Mackenzie Valley oil. Eight years after the Mackenzie Valley Pipeline Inquiry headed by Judge Thomas Berger called for a 10-year moratorium on building a major pipeline from the Mackenzie Delta to Alberta, oil will begin to flow down a small-diameter buried pipeline from Norman Wells to Zama, Alberta, where it will enter an existing national system.

Once the pipeline is completed next summer, Esso will be producing 25,000 barrels of oil a day from 292 wells, of which 135 have been drilled on six man-made islands and two natural islands in the middle of the Mackenzie River. Another 25 wells will be drilled before production begins.

Most of the work on the islands was done during the winter months, when slots were cut in the ice and filled with 800-pound rocks creating the island. Larger one-ton boulders were later barged over and placed on top to create a second layer.

Automated equipment installed on each island controls the flow of oil, gas, and water pumped from the wells. From the island, the mixture flows through a recently completed pipeline to one of two satellite stations on Bear Island from which the mixture flows in a single line to the recently completed Central Processing Facility (CPF) on the mainland. At the CPF, the water and gas are removed. Both the gas and electricity generated from it will be sold locally to the community of Norman Wells and used to pump oil out of the ground at later stages of production. Some of the oil — 475 cubic meters a day — will be refined locally and sold to governments, communities, and dealers in the region. ■

— from *News/North*.

Rausch accompanied Thomas Brower Sr. to Tulugak Lake in the Brooks Range to meet with the inland Eskimos, the Nunamiut, who were still nomadic hunters. This was the beginning of an association which Rausch warmly recalled lasted 20 years. "I shall long be indebted to the Nunamiut, for I can say they provided my basic education in Arctic biology. They were excellent observers, and the old hunters had an excellent understanding of the fauna. In addition, they had a great fund of knowledge which had been transmitted orally over the generations."

Arctic Animal Taxonomy

Dr. Rausch's study of the animals of the Brooks Range led to insights about the connection between Siberian and Alaskan animals. "Before 1949," he said, only the wolf and ermine were recognized as holarctic species by North American biologists." It was not until 1937 that the Swedish botanist Eric Hulten proposed the theory of the Bering Straits land bridge, giving it the name "Beringea." Noting the distribution of Arctic plants, he recognized that animals must have shared the same history. Science was slow to realize its implications of the land bridge for the distribution of animals. Because of the close evolutionary relationship between hosts and parasites, Rausch and his associates were able to demonstrate that sixteen species are common to both continents.

Parasitic Tapeworms

In 1950, Rausch began investigations of the tapeworms which cause hydatid disease in humans, which investigations are now continuing. The tapeworm lifecycle involves infestation of two animals, a herbivore (caribou and lemmings) and a carnivore (dogs, foxes, cats, and wolves). Humans can serve as the intermediate host when the eggs are ingested accidentally. According to Rausch, there may be a million cases of this disease world-wide. By 1949, Rausch and his associates were aware of the presence of one form of this disease, cystic hydatid disease in Alaska, where two hundred cases have since been diagnosed among humans. In 1951, they discovered another form of the disease, alveolar hydatid disease, caused by a separate species of tapeworm, which invades the liver and brain of humans. This disease has been found since in eight other states of the U.S. and in Canada as well as throughout the Soviet Union, spread often by the importation of red foxes for the purposes of hunting.

New medications have been developed to control the spread of the disease among dogs and to treat inoperable forms of the disease in humans. Rausch said, "Alveolar hydatid disease appears to be a problem of increasing importance in the northern hemisphere," establishing itself in Hokkaido, Japan, and Northern China, and found also in Iraq and Northern Africa.

Arctic Research Needs

Noting that there is a much greater emphasis on basic research in Siberia, Rausch noted, "Indeed, our national interest in Arctic research seems to have reached a low point in recent years. In Alaska as well as in Canada, field stations have been closed and support for research has diminished.

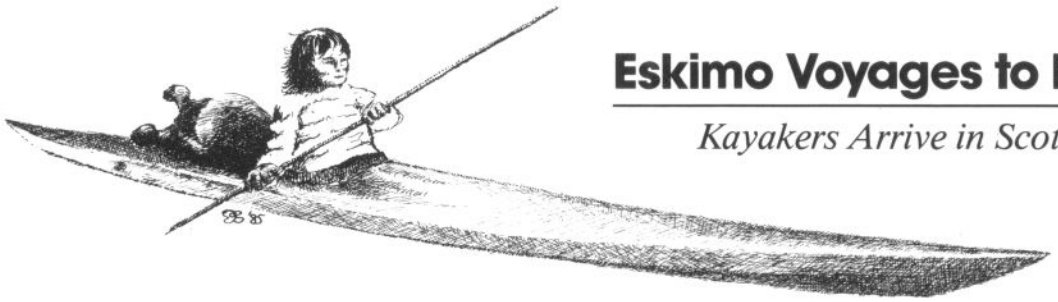
"Under these conditions, the administration of the North Slope Borough especially deserves commendation for its recognition of the need for research in natural history in the broadest sense, and in environmental problems which are of such grave concern to us all. Some cause for renewed optimism for the future of Arctic research in our country is given by the new Arctic Research and Policy Act. The lack of continuity in our national effort has been very costly in terms of loss of facilities and loss of experience of investigators.

"We can hope that a new beginning is at hand and that an interest in knowledge about Arctic North America will be sustained far into the future. With the world population approaching 6 billions, the environment of our planet is changing rapidly. The welfare of life on earth may now depend, to a large extent, on knowledge derived from basic research and biology."

In his remarks Mayor Ahmaogak also emphasized the need for research. "We must understand," he said, "that development of our Arctic resources benefits the entire nation. But we must also remember that those who live in the Arctic will be the ones who must live with the resulting impacts of this development for years and years to come. . . .

"Arctic research by governmental agencies is declining, while industry activity is on the rise. We recognize this trend and realize that an increased body of knowledge is our best defense. We are perhaps affected more by science than any other municipality in the world, and it is through the utilization of science that we seek to protect our subsistence way of life." ■

Inuit Travel



Eskimo Voyages to Europe

Kayakers Arrive in Scotland

Richard Cooper, a historian specializing in modern Britain, published an article in the September 1984 issue of *Oceans* summarizing the evidence pointing to early west-to-east crossings of the Atlantic Ocean by Native Americans, some going back as far as the first century, A.D.

He points our that these early voyages were not voyages of discovery as were the voyages of Columbus, which initiated continuous contact between the two hemispheres. These were apparently accidental, one-way trips across the Northern Atlantic. The most recent ones were probably travelled by Greenlandic Inuit who made it beyond the coast-hugging Labrador Current and were caught in the Gulf Stream which like a conveyor belt soon deposited them on some European coastline.

The Inuit were certainly capable of the trip, according to Cooper. Theirs was the shortest route: 275 miles from Greenland to Iceland; 180 miles from Iceland to the Faeroes; and 200 miles from the Faeroes to the Orkney Islands off Scotland; a total of only 655 miles in the open ocean.

The earliest record of possible west-east contact dates from Roman times. Cooper records, "In the first century of the Christian era, the Roman proconsul, of Gaul, Metellus Celer, received as a gift from a barbarian king several strange people who had been blown ashore by a tempest and who had turned up in Germany." Two independent accounts verify the story of these people who were called Indians, meaning Asiatic Indians.

Columbus was aware of these crossings, which were noted in the margin of one of his books:

> Men of Cathay have come towards the east. Of this we have many signs. And especially in Galway, in Ireland, a man and a woman, of extraordinary appearance have come to land on two tree trunks.

In 1508 a French ship encountered a small boat containing seven men of dark complexions off the coast of England. Their boat was "a wicker frame covered with the stout bark of trees." Six of the seven died, but the survivor was eventually presented to Louis II of France.

The best evidence of the arrival by sea of aboriginal Americans in Europe dates from the 1680s and '90s. "At least five and perhaps six men in kayaks arrived in Scotland between about 1680 and 1700," according to the author. "Three of these kayaks still exist in Scottish museums. There seems to be no reasonable doubt that these travelers were Eskimos, most likely from Greenland."

The Orkney natives called them "Finnmen," and gave us this account of their boats:

> Their boats being made of Fish Skins, are so contrived that he can never sink, but is like a Sea-gull swimming on top of the water. His shirt he has so fastned to the Boat, that no water can come into his Boat to do him damage, except when he pleases to untye it, which he never does but to ease nature, or when he comes ashore.

Cooper writes that in the traditional lore of the Orkneys, the Finns — who have not used skin boats in historical times — were legendary seamen with magical powers. "Calling the kayakers 'Finnmen' may have simply been a way of saying that their appearance was magical, or, in other words, inexplicable."

Atlantic crossings in a kayak or a dugout seem more believeable in the light of modern one-man crossings in small boats. In 1982, William Dunlop crossed from west to east in a boat only nine feet long.

The author concludes, "What the records of Atlantic crossings by native Americans suggest is that the process of cross-cultural contact between the New World and the Old was not completely one-sided. Some of the transatlantic traffic originated in America." ■

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