

**Some members of Congress want to protect indigenous life on the Arctic Coastal Plain. We couldn't agree more.**

The ANWR Coastal Plain is not just a wilderness—it is home to Alaska Inupiat Eskimos like ourselves, whose families have lived here for thousands of years. Our survival today not only depends upon hunting and fishing, but also on developing the land for income.

In the years before Prudhoe Bay was developed, our people lived in sod houses without heat or electricity and with no reliable form of transportation. While this may seem quaint to outsiders, life for us was often harsh and dangerous.

We do not want to go back to that time. The Inupiat Eskimos of the Arctic support opening the ANWR Coastal Plain to oil exploration. The Coastal Plain is our home. Nobody cares more about this land than we do or have more to lose if this land is harmed. Having seen oil development at Prudhoe Bay, we are convinced that oil exploration and development can take place in an environmentally sound way.



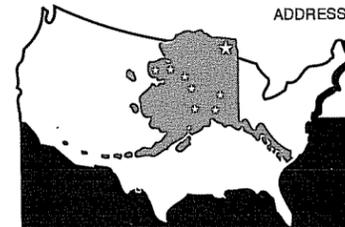
P.O. Box 129, Barrow, AK 99723

This edition sponsored by:

**Arctic Slope Regional Corp.**

Resource Development Council  
121 W. Fireweed, Suite 250  
Anchorage, AK 99503

ADDRESS CORRECTION REQUESTED



**Resource Review**

April 1992

A monthly publication of the Resource Development Council, Inc.

Bulk Rate  
U.S. Postage  
PAID  
Anchorage, AK  
Permit No. 377

**Squeezing the most from Prudhoe Bay**

**Remaining oil is more difficult to produce**

Despite multi-billion dollar investments in new projects and technologies to optimize oil recovery, production from the super-giant Prudhoe Bay oil field will continue to drop at an average rate of 8 to 10 percent annually

through the remainder of the decade, warned Jerry Pollock, manager of Prudhoe Bay engineering for ARCO Alaska, Inc.

With the reality of Prudhoe's declining production, sustaining Alaska's

oil revenues will require the opening of new fields and new areas for exploration, Pollock told a Thursday gathering attending the March 19 breakfast meeting of the Resource Development Council.

"New reserves need to be brought on line on the North Slope if the trans-Alaska pipeline's rate is to be maintained," Pollock said. New fields could also extend Prudhoe's productive life, he added.

For the majority of Alaskans, Prudhoe's decline only became apparent recently, but to the accountants the decline began during 1988 when the field was no longer able to make its maximum allowable rate of 1.5 million barrels of oil per day.

To the credit of massive industry investments to new projects aimed at offsetting slumping production, the decline has been somewhat less than 8

(Continued to page 4)



Between 250 and 400 additional wells are planned for Prudhoe Bay through the end of this decade, at a total cost of \$1.5 billion.

## Working to assure youth get a balanced education



**Message from  
the Acting  
Director**  
by  
Debbie Reinwand

"I want to become an environmentalist and stop polluters," my five-year old son announced one day after reading a favorite book about the different jobs available in the grown-up world.

I bit my tongue, gathered my thoughts and proceeded to explain to him that there is a vast difference between an environmentalist - which I consider myself to be, as do 80% of all Americans recently polled by Gallup - and someone whose calling in life is to stop polluters. Not one to miss an opportunity, I shifted into overdrive and further explained what an obstructionist, non-developmental zealot is.

Later in the day, I thought about the conversation and the misimpressions that the general public, and in particular, our youth have regarding development and its impact on the environment. The book my son had quoted showed a graphic picture of a big, bad bear deliberately dumping stinky stuff into a fish-filled stream. And frankly, that mental image is one I picked up in my educational experience in Alaska's public schools. Sure, there was an occasional attempt to paint economic development in a positive light - generally when we were reviewing development in a historical sense, such as

the impact of mining on the cities of Juneau and Fairbanks. Not once can I recall being told of the link between mining and jobs or the infrastructure the development provided.

As resource advocates and producers prepare for the uncertain economic future ahead, more emphasis will need to be placed on getting our message into Alaska's schools. If Earth Day and recycling can be an integral and accepted part of school activities, then so can the importance of responsible development. The school children that are correctly learning to separate cans and paper, should also be able to name 20 items used in daily living that are made of petroleum products and metals. In addition, they need to be stimulated to learn about resource production so they can pursue careers as geologists, engineers and other technicians that will be needed in Alaska businesses in the year 2000 and beyond.

Just as other civic organizations are concerned with the educational process in Alaska, RDC wants to ensure that Alaska's youth get a balanced education regarding the environment and development. Education has long been a priority of this organization, with weekly forums and annual conferences topping the list of educational activities. This year, RDC's board sponsored a dozen college and high school students at its December resource conference. While a small group, these students commented effusively on the information they received and the "reality check" the conference provided them regarding resource development.

Alaska development advocates need to band behind groups like the Alaska Minerals and Energy Resource Fund, and other private efforts to bring an educational, balanced message into the schools regarding resource development. Alaska's economic future and our kids jobs depend on it.

## RDC supports Denali visitor complex

The National Park Service should move forward expeditiously with the development of new visitor facilities on the south slope of Denali National Park and Preserve, according to the Resource Development Council.

Responding to the Park Service's call for comments on its draft plan for the development of visitor facilities in or near Denali State Park, RDC noted that improved access and new visitor facilities in Alaska's national and state parks will encourage tourism and allow it to make a larger contribution to the economy.

Specifically, RDC supports construction of a large visitor center near Talkeetna. The Talkeetna site commands a

magnificent view of Mt. McKinley and has a number of critical amenities already in place, such as road and rail access, a local airport and numerous visitor services. RDC also supports construction of backcountry public use huts, new campsites and trail systems in both Denali state and national parks.

If consideration of the Talkeetna complex is withdrawn, RDC would then support construction of a comparable facility with a view of the mountain in Denali State Park, according to Don Follows, RDC's Tourism Division director.

Environmentalists and some residents of Talkeetna oppose siting the complex near the town. An earlier proposal in

*(Continued to page 6)*

## Congress must deal with facts, not fantasy

The public esteem of Congress is at an all-time low. Many attribute this decline to disclosures about the abuse of official privileges.

As viewed from Barrow, Alaska, however, I believe the problem is more fundamental than abuse of perks. Many members of Congress are not earning their pay. They have forgotten who they represent. They are out of touch with the interests of voters and taxpayers and the fundamental needs of the country. This is especially true of some Congressional Democrats.

Many members of Congress do not understand what it takes to feed, house, raise and educate a family—especially in an economic recession. They do not see the absurdity of Federally chartered commercial banks that refuse to give credit or make loans; the terror of being unemployed; or the humiliation of having to accept public assistance.

The Congressional response to the economic recession which grips the country is instructive. Faced with high unemployment, falling productivity, a bulging trade deficit, industrial down-sizing, and a flight of capital abroad, Congress enacts a revenue "neutral" tax fairness bill. Instead of acting to create new jobs and stimulate the economy, the public is invited to an abstract political debate and the certainty of a Presidential veto.

One year after the war with Saddam Hussein and Iraq in the Persian Gulf, Congress has finally begun to act on energy policy. The Senate passed a 594-page regulatory bill in February. That bill, however, is silent on the two most important conservation and supply initiatives available. Higher automotive mileage standards and opening the Coastal Plain—the nation's best prospect for major new oil discoveries—were deleted from both the energy bill and the Senate debate.

The ability of Congress to deal with problems and deliver answers free of the choking tentacles of special interest groups like the environmental movement is in absolute decline. This poses real threats in a fast changing world that expects leadership as well as military power from the United States. It also poses a dangerous threat to domestic policy and the future of the nation.

Those of us who live and work in Alaska are often the victim of legislative policies based on environmental propaganda. Many of us have been engaged since 1987 in trying to secure legislative authorization to open the small Coastal Plain area of ANWR east of Prudhoe Bay. We clearly have the facts and the merits on our side on this issue. Yet, we have been repeatedly frustrated by Congressional acceptance of absurd environmental claims.

The spectacle of members of Congress pandering to the nonsense of environmental spokesmen to make the country's next Prudhoe Bay a wilderness area is pathetic. I support the State's recent advertising campaign to put the facts about jobs and the huge oil potential of the Coastal Plain before the American people. Energy is our future. We, the people of Alaska, have an obligation to act to protect the



**Guest  
Opinion**  
by  
Jacob Adams  
President  
Arctic Slope Regional Corporation

interests of our future generations.

We should deal directly with the problem we face. We, the American people, are the owners of this government as well as of the public lands. Members of Congress are our elected representatives—or hired managers. When Members of Congress don't or can't perform competently, they should be replaced.

We, the people of Alaska, should lead a national movement to set some standards; to hold members of Congress accountable to the same levels of competence we hold our plumbers and teachers, our policemen and firemen, our doctors and our commercial airline pilots. This means that members of Congress must be compelled to deal with facts, not fantasy. They must provide independent leadership based on national needs. They must share the goals and aspirations of the voters and owners of government. They must place public requirements ahead of political posturing. They must decide issues on the merits.

## Decline...

*(Continued from page 5)*

Gas production is over three times what it was initially. Currently, it is about five billion standard cubic feet per day. GHX-1 helped raise the field gas handling capacity to that level. Following installation of GHX-2 in 1994, gas production will increase again, to 7.5 billion cubic feet a day, allowing the industry to produce wells that have high gas rates compared to oil production. Engineers would say these wells have a high gas-to-oil ratio.

But there is an economic limit to adding facilities. And as a consequence, as the field matures, the production facilities reach their maximum capacity to handle produced water and gas. Wells with falling oil rates and increasing produced water or gas volumes have to be shut-in. Total field oil production drops.

When we say decline in the oil patch, we're only talking about oil production because everything else keeps going up. The number of wells is going up, and the volumes of water and gas that have to be handled from each well are also going up. Increasing well count, together with increasing water and gas production are the three main items that tend to drive costs up in Prudhoe Bay.

The Resource Development Council (RDC) is Alaska's largest privately funded nonprofit economic development organization working to develop Alaska's natural resources in an orderly manner and to create a broad-based, diversified economy while protecting and enhancing the environment.

### Executive Committee Officers

President ..... John Rense  
Vice President ..... Curtis Foster

Vice President ..... Paul S. Glavinovich  
Secretary ..... Rex Bishopp  
Treasurer ..... Kyle Sandel  
Past President ..... Bill Schneider

### Staff

Acting Director ..... Debbie Reinwand  
Communications Director ..... Carl Portman  
Member Services Director ..... Michele Hendrickson  
Administrative Assistant ..... Kimberly R. Duke  
Staff Assistant ..... Nancy Davis

**Resource Review** is the official monthly publication of the Resource Development Council. RDC is located at 121 W. Fireweed, Suite 250, Anchorage, AK 99503, (907) 276-0700.

Material in the publication may be reprinted without permission provided appropriate credit is given.

**Writer & Editor**  
Carl Portman



# South Denali proposal meets new resistance

(Continued from page 2)

1986 to build the facility near Curry Ridge in Denali State Park also drew fire from environmentalists, who suggested the facility be built near Talkeetna, where the footprint of development already exists. Meanwhile, the Park Service's proposal to construct trails and huts have been met with opposition from some environmentalists fearing that those amenities might adversely affect the park's wilderness character.

"This mindset would clearly preclude the expansion of Alaska's tourism industry and close off the state's massive national park acreage to the citizens the parks have been created for," RDC stated in its written comments to the Park Service.

While new tourism infrastructures should compliment resource management goals, carefully-sited development on the south slope of Denali National Park is an appropriate use of the land, RDC insisted. "A visitor center, hiking trails and public use huts would hardly affect the overall wilderness character of the 6 million acre national park," RDC said.

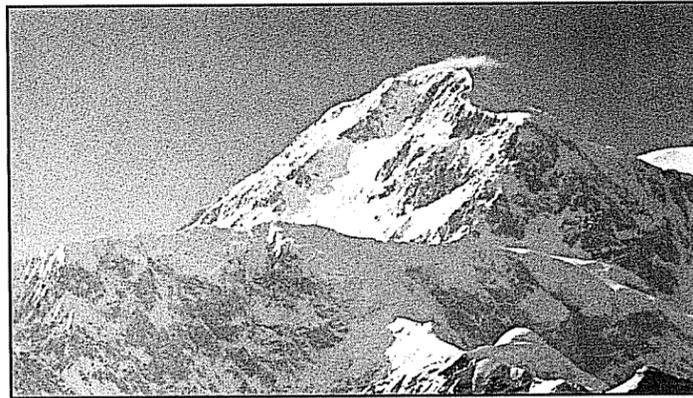
The park has over 9,000 square miles of wilderness with an additional 2.25 million acres recommended for Wilderness status.

Currently there is a chronic shortage of public and private visitor infrastructure along the south side of Denali. Meanwhile, over 600,000 people visited the north side of the national park last year, a number that has been increasing by 10 percent each year. Since the Park has only one road and one 140-bed hotel, just under 200,000 visitors actually got to the interior of the park.

Testifying at a public hearing in Anchorage last month, RDC tourism director Don Follows pointed out that new facilities and better access to the south will help spread the pressure more evenly so one site will not bear the brunt of the impacts. "South slope development will not only provide the type of facilities visitors demand, but the new infrastructure necessary to build a strong tourism industry in a state facing an uncertain economic future," Follows said.

Follows noted that problems with access and the lack of visitor facilities is not limited to Denali. Eleven of Alaska's 13 national parks have no road access. Moreover, those parks have very limited or no federal visitor facilities.

"Heritage tourism can help stabilize Alaska's economy, but if it ever is to become a major force in the economy, new visitor facilities must be developed and access to parks such as Denali must be improved," Follows said.



Overall, 158 million acres in Alaska have been set aside into federal conservation units. These units, which nearly equal the combined size of California and Oregon, comprise 70 percent of America's national park lands and 90 percent of its wildlife refuges.

Senator Frank Murkowski said Alaskans must be committed to doing more than paying lip service to the notion of diversifying its economy.

"If we are not willing to allow additional tourists reasonable access to the scenic wonders of Alaska, we must be ready to live without the benefits that additional tourism dollars will bring to our economy," Murkowski said.

"I'm convinced we can and must get moving to promote tourism, because time is passing and our chance to diversify to make our economy less dependent on oil is also passing us by."

## Is your congressman voting you out of a job?

*Editor's Note: This is an excerpt from one of four ads the state has placed in Outside newspapers.*

Right now, the last thing you need to hear is that your job is on the line. But that may be the case. A simple "yes" or "no" from your congressman could determine the future of thousands of Georgia workers. Workers like you. Blue collar. White collar. Jobs throughout the state, throughout America, are in your congressman's control.

Right now your senators and congressmen are deciding whether or not to support ANWR, a project that could generate 735,000 jobs across America and 18,000 jobs that stay right here in Georgia.

ANWR is a remote part of Alaska's arctic that could hold a valuable supply of domestic oil. Energy that's produced in America, for America. It's a project backed by Alaskans who've seen firsthand that we can strengthen our economy while protecting the environment.

But ANWR's passage is in jeopardy. It hinges on a few key votes, including the votes of your congressmen.

Call or write your congressmen and tell them you support ANWR. By acting now you could help create 735,000 jobs as well as preserve one very important job — yours.

# State's ANWR advertising blitz generates Outside media interest

The State of Alaska's \$800,000 print advertising blitz supporting oil and gas development in the Arctic National Wildlife Refuge (ANWR), has generated a wave of media interest from coast to coast.

Dubbed "Arctic Storm," the campaign targets national and local print media in about 20 states and eight national publications. It is comprised of four concepts, put forth in page-dominant ads which emphasize the impacts ANWR development could have on the national economy and on the economies of individual states.

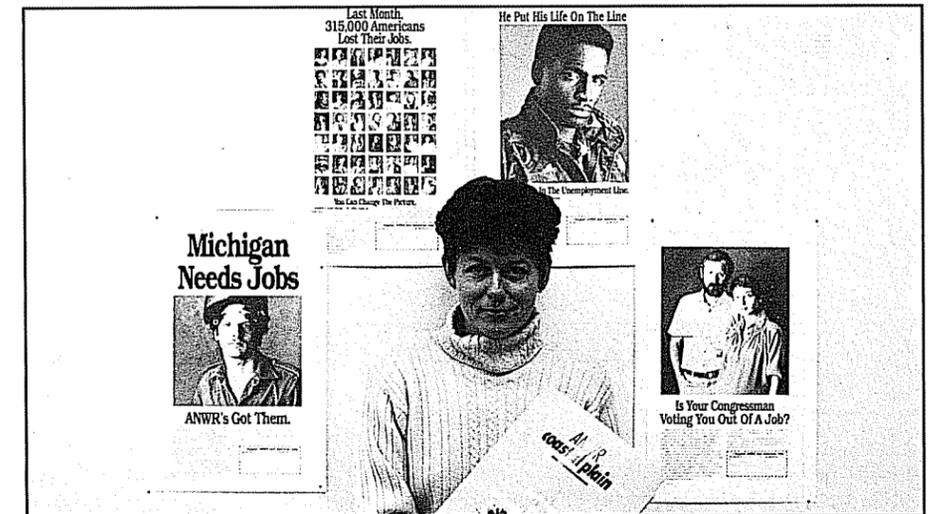
Shortly after the first ads appeared in such newspapers as the Boston Globe, the Washington Post, USA Today and the New York Times, Governor Walter Hickel's ANWR coordinator, Becky Gay, was swamped with telephone calls from television, radio and newspaper reporters. In two days, Gay was interviewed 27 times.

"Some question the timing of our campaign, but the time is always right to tell the ANWR story to the American people," Gay said. "The ads are part of a broad effort by the state to educate Americans about the economic benefits each state would derive from ANWR development. ANWR will create jobs in every state and put people to work."

Gay believes the campaign will hit a nerve among the nation's unemployed and underemployed, making people more aware of the ANWR issue.

"With 9.2 million Americans out of work, there is no better time to start educating citizens about what ANWR oil development can do for them and our nation," Gay said. "The economic recovery of this country depends on projects like ANWR — which keep jobs at home, while producing a domestic resource for domestic consumption."

Detractors say the state's ad campaign is misleading, insisting that jobs created from Coastal Plain oil production would not be created until after the turn of the century. Gay pointed out,



Becky Gay has been swamped with media inquiries since the campaign was launched.

however, that many jobs would be created up front throughout the leasing, exploration and development phases.

"Thousands of jobs will be created long before the first drop of oil begins to flow down the pipeline," Gay said. "Some jobs will happen even if oil is not found."

"ANWR means jobs now and jobs for the future. It's a fact which no one can dispute. Detractors can argue for no jobs and no oil, but that's not what Alaska believes."

Some have questioned the state's expenditures in promoting ANWR development at a time of budget shortfalls and pending cuts.

### See excerpt from state print ad Page 6

"Consider what we spend promoting ANWR as an investment in the state's economy, just like tourism and seafood promotion," Gay said. "Oil production from the Coastal Plain could generate new revenues and help close the growing budget gap created by declining production from Prudhoe Bay."

The state's ads were created by Bradley Communications of Anchorage. One ad shows a grim looking man standing next to his pregnant wife. The

headline below the picture asks, "Is your congressman voting you out of a job?" Another ad shows a man dressed in a military camouflage jacket looking despondent. "He put his life on the line, today he's in the unemployment line," the headline reads. Still another ad depicts a blue-collar worker with a message that reads, "Michigan needs jobs, ANWR's got them."

In covering the state's campaign, the Outside media, including a television station in Seattle, is playing the issue as a trade between jobs and the environment — an angle that Gay believes is wrong and misleading.

"Some news reports are leading the public to believe that Alaskans are willing to trade the refuge and its wildlife for a few jobs, but it's not an either/or situation," Gay insisted. "Development of energy reserves would directly impact less than one percent of the Coastal Plain, which itself is only 8 percent of the refuge. The massive wilderness area inside the refuge would not be touched by development."

"America can have domestic jobs, a new supply of domestic oil, the revenues created by producing that oil inside American borders, while continuing to protect the wildlife and the habitat of ANWR."

# Decline

Water and gas replaces oil in the Prudhoe Bay reservoir

*Editor's Note: This is an excerpt taken from Jerry Pollock's speech before the Resource Development Council on March 19.*

A common misconception about oil fields is that oil reservoirs are vast, underground pools. Like many misconceptions, this one contains a grain of truth. Oil is found in underground pools, but the pools are microscopic in size — on the order of one-one thousandth of an inch in diameter. These pools are found between the grains of sand that comprise an oil reservoir. The pools are tiny, but there are literally trillions of them, interconnected to form a single reservoir.

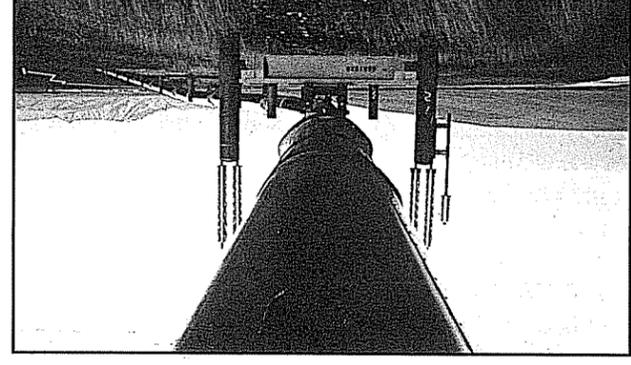
Oil, water and gas are found within these tiny pools under pressure. Wells drilled into the reservoir release this pressure and the oil flows into the well bore.

As oil is produced from the reservoir sands, the remaining oil-saturated section decreases in volume. Water and natural gas move in to fill the spaces vacated by oil, and with time the water and gas begin to be produced along with the oil.

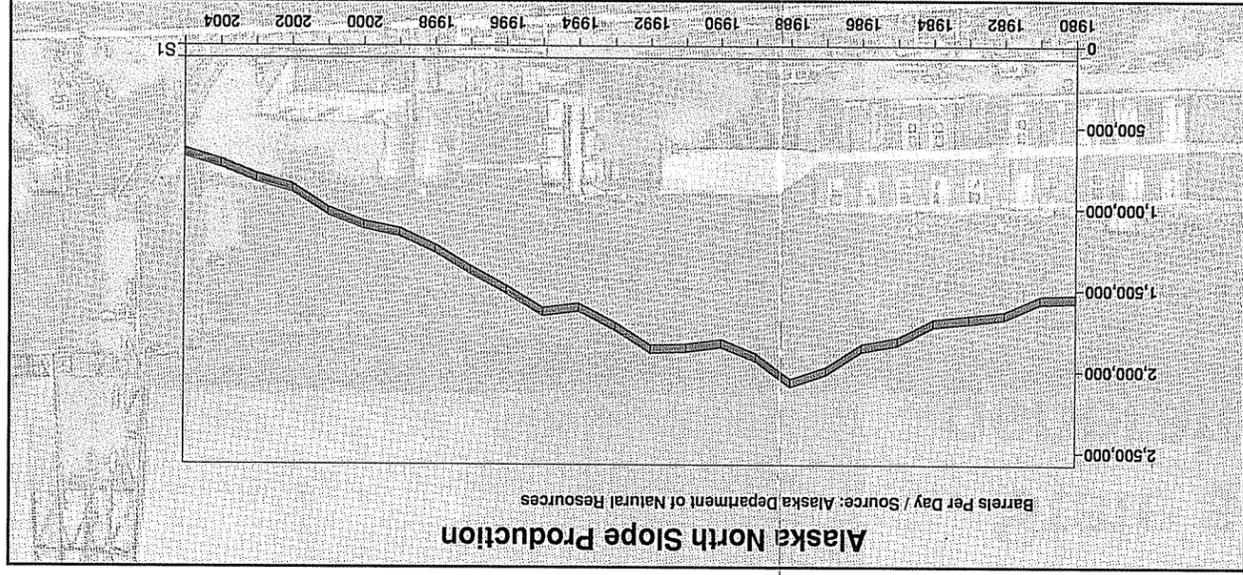
That's the major mechanism of decline. Water and gas slowly replace oil in the reservoir, and eventually in the production stream.

Produced water and gas are injected back into the reservoir, sustaining reservoir pressure and improving recovery by displacing oil to the producing wells.

Water production, effectively zero for the first few years of field life, now exceeds one million barrels per day. By the year 2000, water production is expected to exceed 1.5 million barrels a day.



With the reality of Prudhoe's declining production, sustaining Alaska's oil revenues will require opening new fields and new areas for exploration.



Through the end of this decade, between 250 and 400 additional wells are planned for the Prudhoe Bay field at a total cost of \$1.5 billion.

Expanding the capacity of the production facilities is another major part of development. The field's first major gas handling expansion project, GHX-1, was installed in 1990. It added about 100,000 barrels of oil per day to the field's production rate, merely offsetting the decline from the rest of the field.

The largest project now underway is the second major phase of gas handling expansion, called GHX-2. This \$1.5 billion project enables wells that are producing high gas volumes to continue producing oil. GHX-2 is also expected to contribute 100,000 barrels a day by 1995, again helping to offset the 8% to 10% field decline. Taken together, GHX-1 and GHX-2 are expected to boost field recovery by about 800 million barrels over the life of the field.

The fourth big component of Prudhoe's continued development is Enhanced Oil Recovery (EOR). Recently, the Alaska Oil and Gas Conservation Commission approved the operators' request to double Prudhoe Bay's huge enhanced oil recovery project. It is already the world's largest miscible injection EOR project, and the planned expansions will increase recovery by 150 to 220 million barrels.

EOR works by injecting solvent manufactured from the gas production stream back into the oil reservoir. The injected solvent mobilizes oil that would have otherwise been left behind.

Yet when Prudhoe reaches its economic limit and stops, there will still be a lot of oil in the reservoir — about 10 billion barrels. Since this oil adheres to the reservoir sands with incredible tenacity, it would be prohibitively expensive and uneconomic to remove it all.

Even so, that oil left in the ground is a target for the future, an incentive for new projects and improving technology. But reality is showing that investment decisions are getting tougher as it becomes more difficult and costly to produce the remaining oil reserves from the field.

# Reality

As oil production falls, capital investments, operating expenses rise

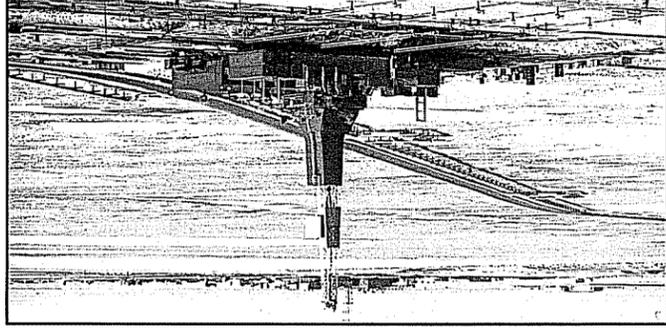
*(Continued from page 1)*

percent annually. In fact, field production was stable between 1990 and 1991. However, ARCO and BP both warn it's becoming increasingly difficult to hold off steeper production rate declines. The industry claims new opportunities to offset production declines will become increasingly marginal from an economic perspective, and in time larger numbers of projects will fail the economic test.

When Prudhoe first met its maximum production rate in 1979, it took only 218 wells to produce 1.5 million barrels of oil per day. By 1988, it took 916 wells to produce the same amount of oil. Today it takes 1,100 wells, each averaging about 1,200 barrels a day, to make the current field rate of 1.3 million barrels of oil per day.

Initially, each well at Prudhoe produced 7,000 barrels of oil each day. By 1988 individual well production had fallen to 1,700 barrels daily. Essentially, the number of wells had to be quadrupled between 1979 and 1988 to maintain production. The 700 new wells drilled and their related facilities cost the industry over \$3.5 billion.

In addition, \$9 billion in basic infrastructure improvements such as the Central Gas Facility and the Seawater Treatment Plant were also made. These were in addition to an original \$9 billion invested to bring Prudhoe on-line. Investments to date in Prudhoe total about \$22 billion.



Increasing well count, together with increasing water and gas production tend to drive costs up at Prudhoe Bay.

While investments in new wells, facilities and infrastructure enable Prudhoe to produce 1.5 million barrels of oil per day for nine years, longer than anyone ever thought possible, adding more wells can't keep the oil production rate up forever, Pollock explained.

"We're already past the point where drilling can stave off the falling oil rate," Pollock said. "Oil reserves are finite."

Pollock noted the cost of drilling new wells has not gone down, but production benefits have. That is why the oil industry is trying hard to control costs and account for those costs it cannot control such as taxes and regulatory compliance costs. Pollock pointed out that additional costs have a negative impact on future investment opportunities.

"By working the cost side of the equation to lower costs, project economics improve," Pollock explained. "Better economics increase the number of projects that can be done, which in turn increases the amount of oil produced. We believe that translates into more profit for the Alaska petroleum industry as a whole, more jobs and more revenue for the state."

According to the Alaska Division of Oil and Gas, the State of Alaska has received over \$28 billion in taxes and royalties from Prudhoe Bay. On an annual basis, oil and gas revenues from Prudhoe comprise 85 percent of the state's revenue base.

Some 7.5 billion barrels of oil to date have been produced from Prudhoe Bay. When the field was discovered, it was estimated that 22 billion barrels were in place with about 9.6 billion barrels considered recoverable. Advances in technology and new investments have pushed recovery levels to over 12 billion barrels. As a result, about 4.5 billion barrels of recoverable reserves exist at Prudhoe.

To help capture the remaining one-third of the recoverable reserves, the industry will spend an estimated \$4 billion to enhance productivity of existing wells, drill new wells, expand existing facilities to handle increasing amounts of produced water and gas, and improve technology to enhance oil recovery.