Surfacing Alaska’s Black Gold

‘And up through the ground come a bubblin’ crude; Oil, that is, black gold, Texas tea....’ If only Alaskan North Slope (ANS) crude was as easy to discover as this lyric describes from the television show, “The Beverly Hillbillies.” For Americans that live in Texas or Oklahoma, they don’t witness “bubblin’ crude,” but they certainly can see oil derricks and pumps in their own backyards. Due to Alaska’s majestic geography, most Alaskans will never see the production of the state’s black gold or its exploration fields.

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Alaska Crude Production – FY 04 – FY 08

Production is average barrels per day

Source: Department of Revenue
On the Job

A New Generation

“It the oil and gas industry is dynamic; it’s changing all the time.”
– Carrie Wittkopf, Pioneer Natural Resources

Her name is Carrie Wittkopf and she hails from the Colorado School of Mines where she majored in Petroleum Engineering. Now she is an engineer with Pioneer Natural Resources working at the Oooguruk Unit on the North Slope.

Pioneer Natural Resources entered the Alaska oil patch in late 2002 and drilled three exploration wells at Oooguruk in 2003. Today Pioneer has built a 6-acre gravel island, constructed a 5-mile subsea flowline, fabricated and commissioned more than 120 truckable modules and commenced development drilling on the project. Production from Oooguruk is expected to peak in 2010 with an output of 15,000 to 20,000 gross barrels per day.

On her first trip to the North Slope, Ms. Wittkopf was impressed. “It was amazing,” she says. Alaska seemed big. Prudhoe Bay seemed big. And it was a long way from Texas where Carrie had previously worked.

In Texas there’s no such thing as ice roads and even though future planning is important, it’s not an overriding aspect of upcoming projects: “The oil and gas industry is dynamic; it’s changing all the time,” she says, “but in the Alaska oil industry you must plan way out in the future, regardless of what the industry is doing.”

We asked Ms. Wittkopf about her first impressions of Alaska. “The sheer scale is amazing,” she said. And being a woman on the slope? “It’s a lot more widely accepted and open-minded than you’d imagine. Up here, work ethic is the most important thing. “If you work hard,” she says, “you are respected. It doesn’t matter what your gender is.”

Ms. Wittkopf is also impressed with the environmental approach to the Oooguruk operation. “We are very careful with our operations,” she says. “Sometimes the oil industry has a bad reputation, but if people could see operations on the North Slope they’d be really impressed. We are as safe and environmentally friendly as possible.”

The pioneering spirit of Alaska’s North Slope operations lives on in the new generation of engineers like Carrie Wittkopf. She’s a tribute to all the hard-workers that have gone before and a vital element to the oil & gas industry’s vibrant future.
1. What year did Marathon come to Alaska?
Marathon’s oil and gas activities in Alaska began in 1954. This is our 54th year of continuous operations in the State/Territory. Marathon’s in-state activities are currently focused on the exploration and development of natural gas resources in Cook Inlet.

2. Where else does Marathon do business?
Marathon is the fourth-largest U.S.-based fully integrated international energy company engaged in exploration and production; integrated gas; and refining, marketing and transportation operations. The company has exploration and production activities in the United States, the United Kingdom, Angola, Canada, Equatorial Guinea, Gabon, Indonesia, Ireland, Libya and Norway. Marathon also is developing integrated gas projects that are linking stranded natural gas resources with key demand areas where domestic production is declining and demand is growing, particularly in North America. Marathon is the fifth-largest refiner in the U.S. with 1,016,000 barrels-per-day of crude processing capacity in its seven-refinery system. The Company’s retail marketing system comprises approximately 6,000 locations in 18 states; nearly three-quarters are Marathon brand locations. Marathon serves the Midwest and Southeast as a petroleum products marketer with 85 light product and asphalt terminals and access to approximately 9,900 miles of pipeline.

3. How many employees does Marathon have in Alaska?
We currently have 60 Alaska based employees, and an additional 200 contract employees working throughout our operations on a typical day.

4. What is Marathon’s total acreage of Alaska leases and where are the leases located?
Marathon’s operations and existing leasehold are focused in Cook Inlet. We currently hold leases on approximately 165,000 acres.

5. What is Marathon’s forecasted production?
In 2007, Marathon produced just under 150 million cubic feet per day (MMcfd) of natural gas and a small volume of oil from nine company operated onshore fields along the Kenai Peninsula as well as the Chevron operated Trading Bay Unit in Cook Inlet. This represented approximately 30% of Marathon’s domestic gas production in 2007. Projections for 2008 range from 130 MMcfd to 155 MMcfd, and will again represent close to 30% of Marathon’s U.S. gas production.

6. What type of exploration plans does Marathon have for Alaska?
We acquired additional 2D and 3D seismic data in two areas during 2007. Data is being processed or interpreted at this time, and we hope to generate drilling prospects under both surveys. We would anticipate drilling to commence in late 2008 or 2009. Both prospects are onshore in the Cook Inlet Basin, with close proximity to our existing operations and to the pipeline infrastructure serving Southcentral Alaska.

In addition, we continue to review other exploration opportunities throughout the State.
Worth the Investment

Technology to Protect Bears

Polar bear protection and worker safety is of paramount importance to the oil and gas industry operating in the Alaska arctic. One method of achieving these objectives during the winter exploration and construction season utilizes unique technology borrowed from the military.

Pregnant female bears build dens in snowbanks (invisible in the winter white landscape) around November, give birth to cubs in December or January, and leave their dens in March or April. This denning period is critical to early survival but it also coincides with the typical drilling season.

In 1996, Forward-Looking Infrared Imagers (FLIR) were tested to meet the challenge of detecting dens. FLIR systems were designed to assist in night vision and heat sensing for military and commercial applications.

Considering that polar bears produce enough heat to warm the surface of their dens to an average of 10˚C warmer than surrounding snowbanks, it is no surprise that the use of FLIR with a detection limit of 0.1˚C was successful.

According to BP Environmental Studies Leader, Bill Streever, Ph.D., “the use of FLIR surveys to identify denning bears has become part of the routine for projects in denning habitat. Knowing where the dens are allows us to restrict activities around dens, protecting the bears from disturbance and protecting our workers from the bears.” FLIR imaging is used prior to the building of ice roads as well as seismic, bathymetry, or gravity work.

Forward Looking InfraRed Sensor System

The airborne FLIR unit is an effective tool in surveying pipelines for potential corrosion and detecting leaks. FLIR is also a powerful spill response tool for tracking spill movement under ice and snow. FLIR can image a spill site and return pertinent information to Incident Command as video footage or as a video frame registered map.

Recently, industry applied FLIR technology to assist the U.S. Fish & Wildlife Service by verifying the locations of polar bear dens. Pregnant polar bears den on the sea ice and onshore along coastal and floodplain bluffs. The U.S. Fish & Wildlife Service places satellite collars on female bears to monitor denning activity throughout the Beaufort Sea region.

Expanded tests of other FLIR applications for locating polar bears and other large mammals and birds in the Arctic coastal plain are planned.
Production
North Slope production provides 98% of the state’s current production, but production is forecasted to continue its natural decline from this mature basin.

“Legacy Fields”
New companies and projects are important to the overall production mix for Alaska, but activity in the so-called “legacy” fields is often overlooked. According to the Department of Natural Resources (DNR), 138 development wells have been drilled in Prudhoe Bay and Kuparuk in the last 14 months. Investment in these fields has produced an additional 70,000 barrels per day from Prudhoe Bay alone, which would be the fourth-largest field on the North Slope if it was a stand-alone field. But, there could be more. Following the latest tax increases, companies deferred projects including $1 billion in planned investment in Prudhoe Bay. Investment in Alaska’s “base” is vital, as 10 years from now the Department of Revenue is projecting these fields will account for 65% of total production.

New Exploration
What will make up the remaining 35%? As the DNR map shows, seven exploration wells were drilled in the past winter drilling season. Most of these wells were looking for oil, while others were exploring for gas. It will be some time before companies will know the results of this exploration, and most will have to drill more wells next season to fully determine the geology of the resource and economic viability of producing from these wells. If companies are successful, it will take another 7-10 years before any of this new oil will make it into the Trans-Alaska Pipeline.

ANS is not “bubblin’ crude,” but resources are there. Alaskans need companies to invest, explore and produce to maintain production levels.
In this issue of Straight Talk we explore the world of exploration on Alaska’s North Slope. In addition to the usual challenges facing Alaska oil and gas development – harsh environment, remote location and high costs – exploration activities are further challenged by limited seasons in which they take place.

Onshore exploration activities on the North Slope are undertaken during winter, often termed the “winter drilling season,” to take advantage of unique technological advancements associated with the use of ice roads and ice pads to reduce the impact of these activities to the environment.

Conversely, offshore exploration activity is conducted during the summer to take advantage of the ice-free season while at the same time minimizing the impacts on the spring and fall whale migrations and subsistence harvest.

These short seasons make it easy to understand, then, why the typical time to bring new fields on line from exploration to production can take as long as 7-10 years. Each of these new fields make an important contribution to the “production mix” for Alaska.

This long development timeframe demonstrates the important role production from Alaska’s existing fields plays in protecting our base. Continued development drilling and investments in technological innovations are critical to assure production levels are in place to bridge the gap until the new fields are brought online.

As we go to press Alaskans are absorbing the announcement of the Denali gasline project, demonstrating real progress toward construction of the North Slope gasline. With completion of this project being 10-12 years out, it is incumbent upon us to ensure that North Slope crude oil production levels are sustained.