



20 Resource Extraction Project Projection

Research provided by Petroleum News and North of 60 Mining News

RESOURCE EXTRACTION PROJECT PROJECTION

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PREFACE

Welcome to the 2011 AEDC Resource Extraction Project Projection. This projection began in 2004 as a modest project to address a request to the Kenai Peninsula Borough Mayor's oil & gas office from the University of Alaska sponsored Workforce Development conference to give perspective on what the future might hold for resource extractions in the next decade. While that first forecast was very simplistic, it triggered a flood of requests for a more detailed projection that should be updated annually.

Over time, this projection changed in a number of ways, including improved project details and better modeling of project flow and annual workforce demands. In 2007, the projection was handed off to AEDC. Then in 2009 a milestone was reached through an agreement between AEDC and Petroleum News (PN) and North of 60 Mining News (N60) publications. The two publications agreed to provide the factual research upon which AEDC then developed its own perspectives and projections. At the same time, AEDC also engaged the McDowell Group to provide help with modeling annualized workforce needs and project spending for the projects profiled.

When it was first developed, the purpose of the projection was focused on providing perspectives in support of workforce training initiatives. For example, what projects were under development, when would they begin activities and how many workers would they need? It also underlined the need to be better prepared to support the projects through infrastructure improvements, as well as the potential social and economic impacts to communities.

From 2004 through 2008 this projection was driven by optimism for the future. There was good reason for that optimism. The natural gas pipeline from the North Slope to the lower 48 looked like a sure thing. The national political stars were aligned for ANWR. Mining was seeing a resurgence of investment and the Pebble Mine was emerging as a world-class copper prospect that could become a new economic driver in a struggling region of Alaska. Alaska's future was bright and the early years of the resource extraction project projection reflected those looming opportunities.

The 2009 projection was a significant departure from previous years. While there were a large number of projects profiled that were proposing to move forward in the next 10 years, AEDC sounded a clear note of caution, for the first time, that forces were aligning against the successful launching of any of the projects profiled. This growing sense of concern was driven in part by the global recession, but also by growing issues related to taxation, permitting and litigation.

This year, AEDC is departing from past practice and will not offer "odds of success" for any projects included in the projection. The current challenged investment environment in Alaska leads us to view the future as questionable for most of the projects we will address in the projection. Permitting, litigation, critical habitat, taxation, project economics and lack of key infrastructure are issues that are challenging projects in ways that, when combined, create high levels of uncertainty that negatively affect investment and diminish Alaska's competitiveness in the global market place.

The opportunities that exist for significant new development within the next 10 years for Alaska will only be possible if we address these issues and improve Alaska's investment climate and competitiveness. If we do not take proactive steps to address these issues in the near term, it is likely that most of the proposed projects described will not go forward, all to the detriment of Alaska's economic future.

EXECUTIVE SUMMARY

In the next decade, Alaska has the potential to generate as many as 10,460 jobs that would be created through \$33.7 billion of investments in 21 resource extraction projects that are proposed for development within our state. These oil and gas and mining projects are located in regions across Alaska and could create a renaissance in our state's economy that would assure our general prosperity for decades to come.

But, from AEDC's perspective the outlook for these projects is not optimistic. Alaska's competitiveness in the global markets we compete within is not favorable in many ways. Several related issues have created these circumstances for Alaska's competitiveness. Issues based in taxation, permitting, litigation, social compact, commodity pricing, high costs related to project development and access to needed infrastructure have reached a point of, what is effectively, gridlock for many proposed projects.

The following are the graphed views of the projects profiled in this projection. The first two graphs present a combined view of oil and gas and mining projects from two perspectives. The first is the view of total jobs these projects will create and when. The second graph presents an overview of total spending on these projects and when that spending will take place. Please note that all graphs are based on available information and in some cases, projects only offer jobs numbers or capital investment figures, not both, and will be excluded from either the jobs or investment graph.





The next two graphs offer the narrow view of oil and gas projects only and again address total jobs and spending related to those projects over the next decade.





The final two graphs offer the narrow view of mining projects only and again address total jobs and spending related to those projects over the next decade.





The future of Alaska's economy will be based first and foremost on resource extraction and the ability to extract our hydrocarbon and mineral resources in a timely, cost effective and competitive manner. Resource extraction is the foundation upon which all future economic growth and diversification in Alaska will be built upon. We have built the beginnings of a strong, vibrant and sustainable economy over the last 50 years, but the foundation those efforts rest on is eroding.

Alaska stands at a crossroads. While this is often an overused analogy, it has never been truer for the economic future of Alaska. Alaska's economy is at a critical point in time in which the circumstances we are faced with today and how we respond to them in the coming year will either set our state on a path towards greater prosperity or, if we choose poorly, on a rapid path of economic decline, the likes of which have not been seen in Alaska since the mid-1980's.

Unfortunately, current economic circumstances detract from this view. General economic conditions in many of our larger communities are improving. Unemployment is declining and job numbers are up. These and other short-term indicators seem to signify we are back on the path to long-term prosperity as a state. We are not.

Ever higher average oil prices over the last 10-years have masked an underlying decay in our state's economic foundation. That decay lies squarely with the declining volumes of oil produced in our state and the difficulty companies encountering in developing new oil/gas and mining projects. A short list of examples includes:

- The Trans Alaska Pipeline System is now operating at less than 622,000 bpd, or less than 30 percent of capacity. The current outlook is for an average 6 percent decline in throughput volumes for the next several years, putting at risk a significant portion of the 90 percent of state government revenues derived from oil production, as well as the risks posed to the broader economy of Alaska in the form of decreased economic activity. This risk would be exacerbated if annual average crude oil prices decline to any significant degree in the near future.
- Shell Oil has invested billions of dollars in leases, environmental research and permitting processes for OCS development and still can't get permission from the federal government to drill after years of effort. This is due in part to muddled federal policies, continuous litigation and seemingly never ending federal permitting processes. This in a region that holds by some estimates as much as 30 billion barrels of oil (bpo) and 228 trillion cubic feet (Tcf) of natural gas.
- Shale gas has flooded lower 48 natural gas markets with 238 Tcf of newly proven reserves and 1,800 Tcf of potential reserves. This flood of new reserves collapsed the future commodity price outlook to the point that there is now an escalating debate within the Alaska Legislature, the business community and the public on whether or not the state should pull out of any further efforts to build the \$30 billion North Slope Natural Gas Pipeline project.
- The world-class Pebble Mine copper prospect, a project that has yet to submit a single application for permits to build the mine, has generated a heated debate that has reached an unheard of level of, sometimes wildly extreme, opposing points of view with millions of dollars being spent annually in media campaigns of both sides. Meanwhile, given the specter of never-ending litigation against any permits that are ultimately issued, the thousands of jobs that the project could create in this economically depressed region seem to move further and further away.
- ConocoPhillips can't get a permit for a bridge to access its CD5 prospect in the National Petroleum Reserve Alaska (NPRA). In other words, it is being prevented from accessing the "National Petroleum Reserve" to drill for oil because it can't permit a bridge.
- With the imminent closure of the ConocoPhillips/Marathon Oil Company LNG plant in Nikiski, Alaska's 40+ year old natural gas value-added industry that used to employ hundreds is now a memory.

Economics of Pacific Rim natural gas markets combined with the high cost and uncertainty surrounding exploration in Cook Inlet in the last 15 years combined to bring an end to this industry.

- Cook Inlet has reached a critical point for the future energy security of Southcentral Alaska. Deliverability of natural gas for utilities is nearing a crisis situation. This situation has been over a decade in the making due to many factors. These include challenging economics and growing permitting issues, exacerbated by the past actions and inactions of the Regulatory Commission of Alaska related to supply contracts and market stability that industry relies on to make investment decisions. Today, because of the resulting lack of new natural gas reserves development over the last decade, it is likely that local utilities will be forced to import foreign LNG to meet Southcentral Alaska's peak demands for natural gas.
- The Donlin Creek mine project is almost ready except for one critical need. Power for the project. This issue has held up the project from going forward on final permits for several years. The developers now appear to be evaluating the concept of building a gas pipeline from Cook Inlet to the mine site, at considerable cost, to run a power plant, even in the face of dwindling natural gas supplies in Cook Inlet. They appear to be pegging their hopes on new natural gas supplies becoming available either from Cook Inlet or from the North Slope, though neither of these will likely become available for 7 to 10 years, given the current environment for development. The likely backup for this strategy is that foreign LNG would probably be imported to Cook Inlet in the next 3 years to solve regional power and heat demand and could provide the needed additional natural gas for the Donlin project.

Another insidious impact of these issues is that they create an environment of ever growing timeframes required to develop a project. The specific issues include increased uncertainty of when final permits, particularly federal permits, will be issued, and seemingly unending litigation further delaying project starts or extensions. Overall, the ever growing affect these time delays have is that they erode the net present value and internal rates of return for the companies making investments in these projects which as we know makes Alaska less globally competitive over time.

In the past, oil and gas explorers could base Alaska investment decisions on a 3 to 5 year time frame to see a return on their investment (ROI) if they were successful in finding new reserves. Today that time frame now averages 7 to 10 years, putting Alaska at a significant competitive disadvantage compared to many other oil and gas regions. For mining, similar issues have developed. Today, new mine projects developers in many cases could see timelines of 10+ years or more before seeing any kind of return on their investments, again putting Alaska at a serious competitive disadvantage compared to other regions around the world where ROI can be expected in less than 5 years.

A stable, globally competitive tax structure is also a key issue. Whether for existing fields or for new exploration, it is vital that Alaska offer a consistent tax and royalty structure that positions Alaska as an attractive investment opportunity. This is particularly true given the difficult environmental conditions companies must operate within as well as the technological challenges that must be addressed to successfully develop both traditional and marginal oil resources such as heavy and viscous oil, as well as newly emerging oil resources such as shale oil. The ultimate goal is that we need to produce more oil and our taxes, our royalties and our incentives should support that goal. Our long-term economic future depends on the development of new oil reserves, which is underscored by recent economic trends in Alaska.

Gross State Product (GSP) saw a relatively steep decline from 1990 through 2000, corresponding directly to the annual decline of crude oil prices and oil production, our largest contributor to GSP. Then, beginning in late 2001, GSP saw a resurgence that again corresponded directly to the unprecedented surge in crude oil prices through 2008, even though production continued to decline during that same time period. The

following chart clearly demonstrates the decline and recovery in Alaska's GSP from 1990 through 2008 and the disturbing outlook for future Alaska's economy compared to the rest of the United States.



Real Gross Domestic/State Product

The price of a barrel of Alaska North Slope (ANS) crude oil collapsed from an annual average high of just over \$100/barrel to just over \$70/barrel in response to onset of the global recession. Again, the corresponding decline, rise, and recent decline of GSP can be clearly connected to the rise and fall of the price of a barrel of oil. In recent months, prices have again surged to as much as \$117/barrel., but because of the declines in production, even withthese higher prices, the outlook for Alaska GSP through 2020 is basically flat and still below where it stood in 1990.

The recent spike of ANS crude oil prices might give hope to some that our troubles are over and we are back on the path to ever increasing riches for our state. While we are seeing short term gains in state revenues, with as much as a \$2.0 billion surplus recently forecasted for FY2011, this trend cannot continue for much longer unless more production can be brought online to stem the projected 6% annual decline in production as demonstrated in the following chart.



Alaska Oli Liquids Capacity Outlook

In November, 2010 the state of Alaska forecasted ANS production at 622,000 barrels per day (bpd) with an average price of \$77.28 per barrel in FY2012, generating \$17.545 billion in gross revenue and resulting in \$5.061 billion in unrestricted oil revenue to the state of Alaska. Using industry and government projections of 6% average decline in annual production per year over the next decade, the outlook is grim if the slide in annual crude oil production is not reversed. Given the added effects of inflation combined with a relatively flat outlook for GSP growth in the next 10 years, state and local governments could begin to see significant cuts in revenues, perhaps within the next 5 years, unless we can increase the level of oil production enough to stem the current decline of throughput in the TAPS system.

Simplistically, assuming no new crude oil is brought into production, to generate FY2012 levels of projected revenue to the state in FY2017 under the same tax regime, the average price of a barrel would have to rise to \$105/barrel. If no new crude oil production is brought on line by FY2022, prices would have to rise to an average \$127/barrel to equal projected FY2012 revenues. Neither of these price projections takes into account the higher cost to produce a barrel that will increase in the future as fields deplete. Nor do they take into account the likely higher future cost to transport oil from the North Slope to market through the Trans Alaska Pipeline System (TAPS) if throughput is not increased. Taking into consideration the likely higher cost to produce and transport ANS crude to market, and the negative impact those increased costs will have on net revenues to the state likely make these future price estimates less than what would be required.

The solutions are as complex as the issues. If Alaska is to prosper in the coming decade and beyond, we must be more proactive in developing integrated solutions that are strategic in thought and deed. We must develop a long-term vision for resource development in our state to re-establish the strong economic foundation the oil and gas and the mining industries represent. This vision should include these two guiding principles and corresponding general metrics:

- Economic development is defined as programs, policies and activities that improve the economic well-being and quality of life for our state by creating and/or retaining jobs that facilitate growth and provide a stable tax base. How does Alaska's strategic planning and policies for resource and infrastructure development support and embrace this definition?
- Alaska is a resource extraction based economy and will be for decades to come. How is Alaska seeking to strengthen this vital foundation for all future economic growth and is it succeeding in that effort?

AEDC believes there are several goals that should be acted on immediately, with these principles and metrics in mind, to effect significant changes in the future directions of the Alaska economy. Those goals include:

- Alaska must promote increasing ANS crude oil production from state lease tracts immediately. This is a crucial requirement to assure the future of the Alaska economy. To do so is vital to the strategic interest of the state of Alaska. All oil and gas related strategic planning and actions by the state of Alaska should be oriented around this single imperative until it is accomplished.
- Improve the oil and gas taxation system to make Alaska more globally competitive. These improvements could include changes such as-
 - Revisions in the current tax progressivity rates
 - Implementation of tax incentives that reward investments that generate increased production in existing oilfields fields

- o Tax incentives that reward investments in high-risk exploration efforts to find new oil reserves
- Tax incentives that reward investments in new exploration and development technologies that increase production and/or lower the cost of production.
- Improve the permitting regimes in Alaska to provide clear, consistent and timely permit decisions- It is clear that permitting, especially federal permit processes, have become an often significant roadblock to resource extraction projects in Alaska. Alaska boasts what is arguably the most rigorous permitting regime in America if not the world. Between federal and state permitting processes, projects undergo rigorous government and public review before being permitted. This is appropriate given how much Alaskans value the environment we all live in. However, in recent years this robust permitting system has been degraded by inconsistent federal policies and permitting processes, increasingly slow permit processes and increased uncertainty that final permits issued are actually "final." Improvements should include:
 - Review of all state permitting processes related to resource extraction to assure that they are clear, consistent and timely. I.e. date certain processing of permit applications and date certain appeals processes that address both the time for appeals to be made and when those appeal processes will be completed.
 - To the greatest extent possible, engage the federal government to affect meaningful changes that provide significantly improved clarity, consistency and timeliness in all federal permitting processes related to oil and gas and mining projects within Alaska and its offshore regions. This engagement effort should include all decision making levels of the U.S. government including congress, the administration and the federal courts.
 - Assure that all projects, no matter how controversial, have the opportunity to go through the full project and permitting review process. It is a very slippery slope to move to a model where those who have the biggest public relations campaign budgets are allowed to make the decision whether or not a project is developed, rather than on the merits of a fully reviewed project proposal.
- Affect significant changes in litigation processes for appeals of resource extraction projects. As has been noted time is a key element in any oil and gas or mining project. While the public interest should and must be protected throughout the development of any resource extraction project, endless litigation does not serve that public interest. Although often discussed, the concept of making public litigants financially liable for legal costs of those they sue if they lose the lawsuit would be challenging to achieve. The most likely significant change that could be affected is:
 - Providing for date certainty in the process for legal appeals related to all final permits in which final decisions at all levels of the judicial process must be rendered within a finite period of time.
- Adopting a more strategic approach to resource and infrastructure development. While this approach has been engaged in to a degree by the state of Alaska, such as the road proposals to Umiat and Nome or the Watana Hydro project, our view is that this is an effort that should be expanded. We offer the concept that the state of Alaska, as the owner of the resource, should consider treating its efforts to develop natural resources much like a private owner might. How can I achieve the best rates of return from the most marketable resources I own? In the case of the state, how can Alaska achieve the highest levels of economic development (see definition above) through the prudent development of its resources and investments in key infrastructure that maximize resource development opportunities?

• Engaging Alaskans in a clear dialog about the future of resource development. In recent years, Alaska has become caught up in the "now" and lost perspective about both the past and the future. We seem to have lost our ability as a state to think beyond next year or remember past the year before. We also have become so polarized in our viewpoints that we cannot come to any kind of compromise on many of the projects profiled in this projection. There is no middle ground. Either it's absolutely "YES!" or absolutely "NO!" on projects such as the Pebble Mine, offshore Cook Inlet oil and gas, or the Red Dog Mine. We must engage in efforts to change the dialog from either yes or no to "should we?" based on the merits of fully reviewed projects. Alaska has a history of making big dreams a reality. We need only remember our amazing past and then look to the future.

These are many opportunities on the horizon for Alaska during the next decade. If Alaska can address the many challenges outlined here, as well as other important issues not addressed in this document, and make Alaska more competitive in the global competition for scarce investment dollars, the future of our economy can be much brighter.

BACKGROUND INFORMATION OVERVIEW

The following sections contain the factual background information upon which this projection is based. Our thanks to the Petroleum News and North of 60 Mining News publications for providing the research that generated the very detailed information that is provided herein.

Divided into Oil and Gas and a separate Mining section, each begins with an overview of the general resource and market factors that are driving current interests in Alaska by a variety of companies followed by a brief overview of each proposed project, prospect or developed field/mine included in this document. These brief overviews are divided into one of three categories:

- Proposed Projects Profiled (included in the projection graphs)
 These projects have achieved sufficient progress in their development to have reasonable estimates of proposed development timelines, capital investment and workforce required.
- Projects to Be Watched (have not achieved enough progress to be included in the projection graphs) These projects have not sufficiently been developed yet for inclusion in the projection, but represent significant developable resources and should be monitored for future inclusion in the projection.
- 3. **Existing Fields/Mines** (included for reference, but not included in the projection graphs) These are existing projects and will likely help to maintain current levels of employment and investment if the issues and challenges noted earlier are addressed. They are included as an important reference point.

Finally, we have also included a fully detailed review of each project which provides a significant level of detail about the resource, the project mechanics, and the project requirements for investment and workforce where available.

OIL & GAS RESOURCE

FOUR OIL SOURCES, TWO DRIVERS, COULD RAISE NORTHERN ALASKA'S OIL OUTPUT

Northern Alaska has four sources of oil that could, in the next 10 years, maintain the level of liquids in the Trans Alaska Pipeline System, or increase it.

A major driver of oil exploration and production is a pipeline that provides a market for the region's huge reserves of natural gas. Over time, northern Alaska's basin will follow the history of other maturing basins from oil to natural gas. Between then and now, the shared economics becomes a big driver. And even if politics or economics prevent a large diameter line from being built, some gas might be delivered via a smaller line and/or converted to other energy, such as gas-to-liquids that can be shipped down the trans-Alaska pipeline or electricity shipped via transmission lines.

Another major driver is the advances in technology that have made production of hydrocarbons from the four sources possible.

The four major sources of remaining oil in northern Alaska are as follows:

I. Viscous and heavy oil. Viscous oil is oil that has a higher resistance to flow and a higher specific gravity than lighter crudes, typically making it more difficult to produce than lighter crudes. This causes viscous oil on the North Slope of Alaska to have the consistency of maple syrup. Heavy oils on the North Slope have a greater resistance to flow and higher specific gravity than viscous oil. In the producing units on the North Slope, heavy oil is found at shallower depths and is therefore also at colder temperatures than the deeper viscous oil which creates North Slope heavy oil that has the consistency of molasses.

Viscous oil production from Alaska's North Slope currently is approximately 40,000 barrels a day, depending on the definition of viscous used by the reporting company or agency. That production is drawn from an estimated 6 billion barrels of in-place viscous oil that is located within currently producing North Slope Units (four billion barrels in_the West Sak sands/Schrader Bluff formation in the Milne Point and Kuparuk River units and 2 billion barrels in the Schrader Bluff formation in the Prudhoe Bay unit (Orion and Polaris satellites), Nikaitchuq and Oooguruk units.) In addition to the 6 billion barrels within the existing producing units, another 4-6 billion barrels of undeveloped in-place resource is estimated to exist close to infrastructure. Heavy oil is not in production because it cannot be produced economically, but it represents a bigger prize; perhaps 20 billion barrels in place close to and within existing infrastructure. BP, ConocoPhillips, Exxon Mobil and other legacy field partners are working on technology that will allow part of this resource to be commercially extracted with 50 percent being the ultimate target.

2. Source rock. Alaska has three of the most prolific source rocks in the world, stacked one above the other, the deepest and oldest being the Triassic-age Shublik; in the middle the Jurassic-age Kingak shale; and the youngest and shallowest being the Cretaceous-age Hue shale, which is also referred to as the Pebble, HRZ or GRZ shale. At least 100 bpo, a maximum of 20 percent of the crude generated in them, has migrated north to traps along the Barrow Arch on Alaska's northern coast; filling the reservoirs of all those fields, which include Alpine, Kuparuk, Prudhoe Bay, and Point Thomson, and spilling over the arch into the reservoirs under the Beaufort and Chukchi seas. Left behind, trapped in the shale source rocks, is approximately 400 bpo. Five to six percent, or 20-24 billion barrels, of which is recoverable with today's rapidly advancing technology. By this time next year, one expert thinks 7 percent, or 28 bpo, will be technically recoverable. In addition to oil, these same three source rocks also

contain huge quantities of natural gas and natural gas liquids that would be extracted as a part of the production process.

3. Beaufort and Chukchi outer continental shelf, or OCS. In 2008 the United States Geological Survey (USGS) estimated that Arctic Alaska contained almost 30 billion barrels of mean technically recoverable conventional oil. Much of this potential is located in the Beaufort and Chukchi seas. While numerous large discoveries have been made in the OCS, currently the only production is coming from the northern part of BP's Northstar field, which is in decline and produces about 18,000 barrels a day. A recent study commissioned by Shell, and executed by Northern Economics and the Institute for Social and Economic Research (ISER) at the University of Alaska, estimates that in a 50 year period, starting with exploration drilling, OCS development off northern Alaska will produce an annual average of 2,800 full-time jobs from the Beaufort and 2,500 jobs from the Chukchi. The direct monetary investment in Alaska's economy from the oil and gas industry during these 50 years will likely total \$72.0 billion.

4. Remaining onshore and near shore stratigraphic and structural plays. Conventional oil and gas reservoirs produce from either structural or stratigraphically trapping mechanisms (or a combination of both). In structural plays oil is trapped within a folded or faulted reservoir and usually has a distinctive signature that can be seen on seismic data. In a stratigraphic play the oil is not trapped in a structure but by a change in reservoir rock properties causing the up-dip portion of the reservoir to act as a seal. Stratigraphic traps are much more subtle and difficult to interpret on seismic data.

Most of the more obvious and assessable structural plays in northern Alaska, particularly onshore and near-shore in state waters along the Barrow Arch, have been drilled, but many stratigraphic reservoirs have yet to be developed. Advances in technology, such as directional drilling, are not only making viscous and source rock plays viable, but horizontal drilling and the ability to produce from low permeability reservoirs are making more of these stratigraphic North Slope oil fields economic, inside and outside of producing units. There are also numerous untapped smaller structural plays close to existing oil and gas infrastructure. The USGS 2005 mean, or middle, estimate of remaining undiscovered, technically recoverable, conventional oil resources in the Central North Slope and adjacent offshore is 4 billion barrels, plus 478 million barrels of valuable natural gas liquids, which can be shipped with oil down the trans-Alaska oil pipeline. The USGS' mean estimate of remaining discovered reserves, largely inside of existing units, is 7 bpo.

National Petroleum Reserve-Alaska. There has been very little movement regarding access to leased acreage and future lease sales that allow access to NPR-A's most prospective areas for oil and gas from the federal government. This a major contributing factor in the low ranking (129 out of 143 oil provinces) Alaska as a whole gets from Wood Mackenzie for its Ability to Execute, Commercial Considerations in its analysis of global competitiveness. Recently Talisman subsidiary FEX said it expects its leases in NPR-A will "expire or be relinquished without renewal." A revised NPR-A resource assessment from the USGS in October has slashed its estimate of undiscovered, technically recoverable oil in the reserve from 10.5 billion barrels to just 896 million barrels. The data indicate an abrupt change from oil prone to more gas prone resources, just 15 to 20 miles west of the Alpine oil field in the Colville River Delta. USGS scientists think oil plays analogous to the Alpine field in NPR-A likely contain very little oil west of the area that ConocoPhillips and Anadarko have been exploring around their Lookout and Alpine West prospects. Without federal permission to build a bridge across the Colville River, ConocoPhillips officials say they can't economically develop their leases in the oil reserve.

DESPITE DECLINES, COOK INLET STILL ACTIVE

While the bulk of Alaska's oil and gas reserves lie north of the Brooks Range, the Cook Inlet continues to be a dynamic on and offshore basin, where big players squeeze life from old assets and new companies chase untapped targets. (See production chart that shows Cook Inlet production as compared to North Slope production.)



Alaska's Average Daily Oil and NGL Production Rate 1960 - 2010

The largest Cook Inlet investment that is certain will come from Escopeta Oil's sizeable offshore program (see index), which will pump a minimum of \$150 million in exploration funds into the inlet and upwards of \$660 million each for four separate prospects once they are proved up by drilling with a jack-up rig the company just shipped to Alaska. The Kitchen Lights project is the only fully profiled project in this projection. Due to a general lack of significant activities in Cook Inlet, the following narrative was developed to cover the general situation in the Basin.

Armstrong will be inlet's newest producer

Armstrong Cook Inlet will be the newest producer in the Cook Inlet. The Denver-based independent and several partners recently got approval to bring the onshore North Fork unit, located in the southern Kenai north of Homer, into production. Armstrong is already set up to make deliveries to regional utility Enstar Natural Gas through a contract brokered in 2009, but is also exploring the oil potential of the unit. With North Fork, the regional natural gas transmission grid now extends into the southern half of the Kenai Peninsula, changing the economics of development in the region.

However, as of yet, leaseholders in the region have not announced new projects.

Chevron active, but selling all Cook Inlet assets

The majors in the Cook Inlet continue to focus on maintaining legacy assets. In 2011, Chevron, which has all its Cook Inlet assets up for sale, is planning a mix of activities, including a work over and drilling program for gas on the Steelhead platform. The company is considering a new drilling opportunity at its Ninilchik unit and is evaluating the drilling of a replacement well in Beluga River unit this year. Work over operations are under way on the Grayling Platform where the company is doing platform abandonment work. After that, it will start a workover program on the King Salmon Platform. Well P&A work is planned on one of the Middle Ground Shoal platforms, pending the results of a tender that is currently under way (March 2011). Onshore Chevron has a well workover program planned for the summer at Swanson River. Chevron, through subsidiary Unocal, recently asked the State of Alaska to extend the terms of the Nikolaevsk unit, located just northeast of North Fork, until March 31, 2012. The unit was originally set to expire on Jan. 30, 2009, but the state previously extended it to March 31, 2011. Over the past year, the Division of Oil and Gas rejected Chevron's third plan of development for the unit, as well as a request to form participating areas at the unit.

Reduced drilling for Marathon

Marathon Oil continues to forecast reduced drilling, planning to drill between one and three wells per year in Alaska in 2011 and 2012, according to recent U.S. Securities and Exchange Commission filings. (Marathon drilled nine wells in 2008, six wells in 2009 and three wells in 2010.) The company did drill an exploration well in 2010, saying only that its Sunrise LK2 well on Cook inlet Region Inc. (CIRI) leases inside the Kenai National Wildlife Refuge "encountered a zone of interest."

Mothballing LNG export facility

ConocoPhillips and Marathon are in the process of mothballing their liquefied natural gas export facility on the Kenai Peninsula. While the companies said they are monitoring LNG demand in Japan in the wake of a nuclear disaster, they do not — as of March 15, 2011 — have any plans to make additional shipments outside of their original contract.

ConocoPhillips concentrating on field maintenance

ConocoPhillips is focusing mostly on field maintenance; in particular the company is working to move compressors at the Beluga River unit closer to wells to increase reservoir pressure.

Pioneer selling Cosmopolitan prospect

Pioneer Natural Resources recently terminated its Cosmopolitan unit, located west of North Fork along the coast by Anchor Point, but kept two leases held by production. The short term status of those leases will become known when the division releases the notice for the next Cook Inlet area-wide lease sale, expected in the next few weeks. Cosmopolitan is primarily oil prone, but is thought to contain significant gas as well.

Largest leaseholder is newcomer Apache

The largest leaseholder in the Cosmopolitan area is Apache, the Houston-based independent that arrived in Alaska last year. It has not announced any exploration or development plans for the area and is reportedly (rumor) in negotiations to buy Chevron's assets.

Linc Energy on fast-track

Linc Energy Alaska, the local subsidiary of an Australian independent, recently completed its first well in Alaska, an onshore well near Point McKenzie. Since arriving in Alaska about a year ago, Linc has acquired 122,000 acres in oil and gas leases and 181,000 acres in Underground Coal Gasification (UGC) leases from the Mental Health Trust. Linc drilled the onshore LEA No. 1 well in October, 2010, confirming "three significant sand intervals that appear

to be gas charged." The company is still analyzing well data. While LEA No. I is a conventional gas well, Linc is primarily focused on Underground Coal Gasification, a process to produce synthesis gas in situ from deep coal seams. Linc expects a three phase UGC project in Alaska: a single gasifier on a 90-day trial monitored for one year; a panel of three to six gasifiers on a one year trial; and finally a working underground coal gasification project combined with gas-to-liquids technology producing 20,000 bpd of various synthetic diesel products.

Nordaq spuds first well

Local independent Nordaq Energy Inc. spud its Shadura No. I exploration well in mid-February on CIRI subsurface in the Kenai National Wildlife Refuge and is expected to make an announcement about the results by early April. At a total depth of 14,556 feet, the well is targeting potential gas horizons in the Upper and Middle Tyonek formation and a secondary objective in the Beluga formation.

Cook Inlet Energy has busy year

On the west side of Cook Inlet, Cook Inlet Energy, a subsidiary of Tennessee independent Miller Energy Resources, spent its first year in Alaska restoring production from older fields it picked up following the bankruptcy of Pacific Energy Resources. Cook Inlet Energy is considering some exploration and development wells it could drill from the Osprey platform. "We have begun ordering the equipment necessary to deploy our next stage of development for the Osprey platform and are in active discussions to secure the necessary capital to fund the next phase of our operations. If we are successful in securing this necessary funding, we believe our development plans will result in an increase in both the number of producing wells and the amount of our total oil and gas production," Miller CEO Scott Boruff said in a March 22, 2011 statement.

Aurora Gas looking at drilling two wells

Veteran Cook Inlet independent Aurora Gas — a leaseholder on both sides of the Cook Inlet — is focusing on marketing its gas, but also proposing to drill two onshore wells in 2011. The company, though, might farm-out some or all of its exploration acreage.

Buccaneer aims to get busy

Another Cook Inlet newcomer is looking to shift from planning to drilling. Buccaneer Alaska, the local subsidiary of an Australian independent, is gearing up to drill its first well in Alaska, an onshore well just north of Marathon's Cannery Loop unit. Buccaneer recently contracted the Glacier Drilling Rig No. 1 — previously used at NordAq's Shadura No. 1 well — to drill the Kenai Loop No. 1 well this spring. Buccaneer is also planning a much larger drilling project for this summer. The company is looking to buy a jack-up rig to explore two offshore prospects in upper Cook Inlet — the Southern Cross unit and the North West Cook Inlet unit. Buccaneer is looking to partner on the purchase with the Alaska Industrial Development and Export Authority (AIDEA) and should know more about the fate of the venture in April. With those two projects taking priority for 2011, Buccaneer has pushed back work on its two other Alaska projects — the West Eagle prospect in the southern Kenai Peninsula and the West Nicolai Creek prospect on the west side of the Inlet — for at least a year.

CIRI and Ormat look to unconventional resources

CIRI has been drilling on the west side of the Cook Inlet to explore the underground coal gasification potential of deep coal seams in the area. Meanwhile, Ormat Nevada recently confirmed the geothermal potential of its wells in the Mount Spurr area and is now wants to sign a power purchase agreement to fund development.

Natural gas storage facility looking good for 2011 construction start

Cook Inlet Natural Gas Storage Alaska is fast tracking the development of its facility in the Sterling C sands of the Cannery Loop gas field, on the south side of the City of Kenai, to head off a potential Southcentral Alaska utility gas shortfall in the winter of 2012-13. CINGSA is a joint venture between Semco Energy and MidAmerican Energy Holdings Co., while Semco is also the parent company of CINGSA and Enstar Natural Gas Co., the main

Southcentral Alaska gas utility. The CINGSA facility will provide third-party gas storage services, with customers hiring storage space in the facility reservoir and paying for the injection and withdrawal of gas. Southcentral gas and power utilities Enstar, Chugach Electric Association and Municipal Light & Power will be CINGSA's initial customers. The facility will have an initial capacity of 11 billion cubic feet per day (bcf), with the possibility of future expansion. The maximum total gas delivery rate from the facility will be 150 million cubic feet per day (mcf). Enstar projects peak winter utility gas demand rising from 276 to 298 mcf between 2011 and 2015, with some of that gas coming directly from operational gas wells and some coming from gas storage. Enstar will probably have to add compression to its dual gas line from the Kenai Peninsula to Anchorage, to support the delivery of gas into Anchorage from the CINGSA facility. So far, CINGSA has cleared all regulatory hurdles.

PROPOSED PROJECTS – OIL & GAS

BEECHEY POINT UNIT - QUICKFACTS

Overview

The Beechey Point unit is located in Gwydyr Bay at Kuparuk River delta north of the Prudhoe Bay unit. The operator, Brooks Range Petroleum Corp, plans on drilling two wells in the 2011-2012 season at a cost of \$40 million. Total construction and drilling costs (excluding what has already been spent) is estimated to be \$200 million with a total of 100 drilling and 100 construction jobs created. In 2009 TG World stated there was 100 million barrels in "reserve potential" in the Gwydyr Bay area. Drilling has been conducted on the property sporadically in the past by various companies starting with the Hamilton Brothers Point Storkersen No. I well in 1969.

Start Date: Winter 2011-2012 or 2012-2013 Duration of Project: 15 years Jobs: 100 construction, 100 drilling, 8 operation Total Project Costs: Over \$200 million

DEWLINE UNIT - QUICKFACTS

Overview

The Dewline Unit is located just west of Prudhoe Bay unit's Point McIntyre and north of Midnight Sun PAs. To date North Dewline LLC has drilled one 9,900 foot vertical well targeting oil in the lvishak formation. Dewline is offering a percentage interest in three leases to venture capital investors who put up 100% of the risk capital of \$18-19 million to drill primary production well and sidetrack to casing point through lvishak lease ADL 390419. A second well would be drilled in the first quarter of 2012 and a third is scheduled by May 31, 2014. If the first well and/or sidetrack is successful additional development and water injection wells will need to be drilled over a 5-7 year period. Estimated potential reserves on the three leases is 5 to 20 million barrels of oil. The economic analysis for development was done on the mean case for reserves, or 11 million barrels. Although part of the unit is offshore, all wells can be drilled from onshore locations.

Start Date: Possible start date of 2015
Duration of Project: Unknown
Jobs: Estimate 150 jobs during first quarter of 2012 drilling of second well, 150 for third well drilling in 2012-2013 or 2013-2014, and 100 for road and pipeline construction in 2012-2013 or 2013-2014
Total Project Costs: Unknown

GREAT BEAR PETROLEUM - QUICKFACTS

Overview

Great Bears petroleum shale rock source development is located south of the Kuparuk and Prudhoe units, bracketing the Dalton Highway and the trans-Alaska oil pipeline. Great Bear Petroleum is proposing to develop "source-reservoired oil" at its new 537,000-acre lease position. If production begins in 2013 as planned, in a conservatively scaled project of 200 wells a year, Great Bear could show oil production from its acerage at 200,000 bpd by 2020, peaking at 600,000 bpd in 2056 with a projected project life of around 80 years. When Great Bears top executive was recently asked by Alaska lawmakers if it would be possible for Great Bear to increase the number of wells up to 1,000 a year in order to get I million barrels of oil into the TAP, he said yes, provided he had the support of all of the stakeholders in such an accelerated program. Total project costs, including the necessary infrastructure construction, could reach as high as \$40 billion with thousands of jobs created.

Start Date: 2013

Duration of Project: Roughly 80 years

Jobs: 100-200 for 2011-2012 core hole and test well drilling, 2,200-3,500 for Phase I-III drilling and construction, 60 operations

Total Project Costs: Unknown but one pad per acre, pipelines, roads, and facilities would presumably be in the \$40 billion range.

KITCHEN LIGHTS UNIT - QUICKFACTS

Overview

The Kitchen Lights unit located in the Upper Cook Inlet is operated by Escopeta Oil. The first five wells planned in its Kitchen Lights development plan with the State of Alaska include Corsair, East Kitchen and Kitchen wells, in that order. The Northern Lights prospect is not included in its initial drilling plans. Escopeta plans on using a Baker Marine Corp. 150H, class independent leg, cantilever jack-up rig designed and constructed by Baker Marine which has been winterized for Cook Inlet. Wells would extend vertically to depths in the range of 16,000-20,000 feet into the Jurassic. The only one of the prospects that has been drilled previously is Cosair, where Shell, Phillips and ARCO drilled a total of five exploration wells between 1962 and 1993. The wells all have gas shows and some also tested for small quantities of oil.

Start Date: As early as 2014 Duration of Project: 30 Years Jobs: 412 exploration/drilling Total Project Costs: \$810 million

LIBERTY DEVELOPMENT - QUICKFACTS

Overview

Liberty Development is located in the Beaufort Sea outer continental shelf (OCS) 15 miles east of Prudhoe Bay. Shell originally drilled two wells in 1982 and one in 1987 within the Liberty prospect area. Evidence of hydrocarbons was found in the 1987 well, but Shell subsequently dropped the lease. In 1997 BP discovered Liberty accumulation when drilling an exploration well from Tern gravel island. Future plans involve the drilling of up to four production wells and two water injection wells drilled from the completed extension of Endicott satellite drilling island using ultra-extended reach wells by one of the most powerful rigs in the world, a \$200 million Parker

rig designed to drill eight mile long directional wells. BP halted previous rig construction to divert resources to review design and engineering of the Parker rig which pushed the initial start-up date of the project out to 2013.

Start Date: Uncertain, but no earlier than 2013 Duration of Project: Unknown Jobs: Not yet determined Total Project Costs: Estimated at \$1.5 billion

NIKAITCHUQ PRODUCING UNIT - QUICKFACTS

Overview

The Nikaitchuq producing unit, operated by Eni Petroleum, is located immediately north of the Kuparuk unit and northeast of the Oooguruk unit. The unit has been unitized with pool rules for Schrader Bluff oil pool from Alaska's Oil and Gas Conservation Commission (AOGCC). The first oil was produced from the unit in January 2011 with peak production estimated at 28,000 bpd and recoverable reserves estimated at 220 million barrels of oil. Eni has completed 12 of the planned 52 extended reach wells have been drilled as of March 2011, 26 of which will be producers, 21 water injectors, 3 water source wells and 2 disposal wells. Development capital expenditures are estimated to be \$2 billion with 650 jobs created during construction through 2011, 200 jobs created during development drilling from 2011-2014, and 60 jobs created during field operation from 2015 until the end of the estimated 30+ years of production.

Start Date: Exploration phase set to begin in 2011, production could begin as early as 2015

Duration of Project: 30+ years

Jobs: 650 jobs created during construction through 2011, 200 jobs created during development drilling from 2011-2014, and 60 jobs created during field operation from 2015 until the end of production Total Project Costs: Estimated at \$2 billion

NORTH TARN PROSPECT - QUICKFACTS

Overview

The North Tarn, Central North Slope Prospect is located on the North Slope adjacent to the west side of the Kuparuk River unit, just north of the Alpine pipeline. The Brooks Range Petroleum Corp. (BRPC) has applied to Alaska's Division of Oil and Gas to form the Southern Miluveach unit covering 60,864 acres over leases held by its joint venture partners. BRPC plans on drilling its first well this month, March 2011. If that well is successful there are plans to drill a sidetrack and conduct a development 3-D survey. BRPC has allocated a capital budget for 2011 of \$17.5 million. There is a potential reservoir of 41 million barrels of oil split between the Brookian (35 million barrels) and Kuparuk (6 million barrels) reservoirs. If the project is sanctioned, drilling and construction is slated to begin in 2012 with the first oil expected in 2013. Peak production is expected to reach 10,000 barrels a day. The estimated cost of the development is \$50 million with an approximate cost per well of \$20 million.

Start Date: 2013 Duration of Project: Unknown Jobs: Unknown Total Project Costs: \$50 million

POINT THOMPSON UNIT - QUICKFACTS

Overview

The Point Thompson unit is located on state acerage along the remote Beaufort Sea shoreline, 60 miles east of Prudhoe Bay adjacent to the ANWR 1002 area. The operator, ExxonMobile and it's partners, are in negotiations with the State of Alaska regarding a dispute about the unit, leases and work commitments. Negotiations are expected to conclude before the end of April. An interesting feature of the Point Thompson project is its use of gas cycling facilities designed to recover hydrocarbon liquids and re-inject natural gas back into the reservoir which makes Point Thompson, according to ExxonMobile, the highest-pressure gas cycling operation in the world. Phase one of the project was expected to commence by Winter of 2013-2014, but delays make a 2015 start date more realistic. Daily production is anticipated to be 10,000 barrels/day of condensate shipped down the trans-Alaska pipeline. Total estimated recoverable reserves are 8 trillion cubic feet of gas and 200 million barrels of condensate (excluding non-Thompson sands reservoirs).

Start Date: 2015 Duration of Project: 30 years Jobs: 450 construction, 200 development drilling, and 80 operation Total Project Costs: Over \$1.8 billion

REPSOL/ARMSTRONG/GMT PROSPECTS - QUICKFACTS

Overview

The Repsol/Armstrong/GMT prospects are located on 494,211 acres on Alaska's North Slope and nearshore Beaufort Sea including large chunks of the Kuparuk River unit and near the Oooguruk unit. For the 2011-2012 drilling season 6-15 wells have been proposed at a cost of \$5 to \$15 million per well depending on depth and location. A minimum investment of \$768 million has been allocated for a multiyear drilling program. Current estimates place the oil reserves around 1.5 billion barrels. Direct jobs expected during the exploration phase are estimated at 550, with 400-700 jobs per year for two years each during peak development drilling and construction investment. Armstrong, the company tasked with overseeing operations on behalf of Repsol YPF, has sent a letter to the Alaska Legislature's House Resources committee indicating that passage of Gov. Parnell's HB 110 would have a significant impact on their capital expenditures in Alaska.

Start Date: Multiyear exploration drilling program set to begin in 2011-2012

Duration of Project: Unknown

Jobs: Direct jobs expected during the exploration phase are estimated at 550, with 400-700 jobs per year for two years each during peak development drilling and construction investment

Total Project Costs: Unknown

TOFKAT (TITANIA) PROSPECT - QUICKFACTS

Overview

The Tofkat prospect is located east and south of Nuiqsut, southwest of the Kuparuk River unit near Colville River. The operator, Brooks Range Petroleum Corp, has one exploration well scheduled for the 2011-2012 drilling season with possible production starting as early as 2013-2014. The 2011-2012 exploration is anticipated to provide 125 jobs.

Start Date: Unknown

Duration of Project: Unknown Jobs: 125 during 2011-2012 exploration phase Total Project Costs: Unknown

UMIAT PROSPECT - QUICKFACTS Overview

The Umiat prospect is located on the Upper Foothills in the North Slope. The project operator, Renaissance Alaska LLC, anticipates drilling 5 appraisal wells in 2011-2012, and 115 development wells in 2013-2015. Renaissance has allocated \$2 million for its 2011 capital budget and estimates the appraisal costs for the project to be \$45 million with the development cost to be roughly \$1.3 billion. If sanctioned, development drilling and construction could begin as early as 2013 with an expected production start date of 2015. This prospect has estimated oil reserves of 250 million barrels and an anticipated peak production rate of 50,000 barrels of oil per day. When the project is sanctioned, oil processing facilities and a 110 mile buried pipeline would need to be constructed.

Start Date: Development drilling and construction as early as 2013, production as early as 2015
Duration of Project: Unknown
Jobs: Unknown
Total Project Costs: \$45 million for appraisal phase, \$1.3 billion for development phase

PROJECTS TO BE WATCHED - OIL & GAS

STINSON PROSPECT - QUICKFACTS

Overview

The Stinson prospect is composed of ten leases located on 35,434 acres north of ANWR's 1002 area in Camden Bay directly west of Point Thompson. The operator is currently in the process of applying for unitization. The operator has not drilled any wells on the property to date, but ARCO drilled a well on the property in 1991 capable of producing. There are an estimated 150 million barrels in the tertiary horizon within a single 100 foot sand. A pipeline tie in would need to be constructed from Point Thompson to Badami when the property reaches the development phase.

Start Date: Unknown Duration of Project: Unknown Jobs: Unknown Total Project Costs: Unknown

VISCOUS & HEAVY OIL - QUICKFACTS

Overview

Viscous oil production from Alaska's North Slope is currently around 40,000 barrels a day, depending on the definition of viscous used by the reporting company or agency. Production is drawn from an estimated 6 billion barrels of in-place viscous oil that is located within currently producing North Slope units including the West Sak sands/Schrader Bluff formation in the Milne Point and Kuparuk River units as well as the Nikaitchuq and Oooguruk

units. Another 4-6 billion barrels of undeveloped in-place resource is estimated to be present close to existing infrastructure. BP's Alaska President John Milne said in November that he believes it is possible to develop two billion barrels of gross viscous oil with technology advancements that BP believes are achievable which would require around 2,000 additional wells on 50 pads with a new gathering center and a hundred miles of new pipeline. This development would cost an estimated \$30 billion and would provide roughly 3,500 jobs per year in the first 10 years.

Heavy oil is not currently in production, but it represents a significantly larger prize. There are perhaps 20 billion barrels of heavy oil in place in the Ugnu formation close to and within existing infrastructure. BP, ConocoPhillips, ExxonMobil and other legacy field partners are working on technology that will allow part of this resource to be commercially extracted. BP has completed commissioning a \$100 million heavy oil pilot program on the Milne Point S-Pad that will start up in April in order to find an economical way to extract heavy oil from the Ugnu formation. The estimated cost of developing this oil is estimated at \$30 billion with a minimum of 3,500 jobs per year for the first ten years of development.

Start Date: Unknown. BPs heavy oil pilot program is set to begin April, 2011

Duration of Project: Unknown

Jobs: 3,500 per year for first ten years for viscous oil production and an additional 3,500 per year for first ten years of heavy oil production

Total Project Costs: \$30 billion for viscous oil production, \$30 billion for heavy oil production

YUKON GOLD - QUICKFACTS

Overview

The Yukon Gold prospect, operated by Savant Alaska, is located about 50 miles east of Prudhoe Bay. There are an estimated 120 million barrels of recoverable reserves with an expected peak production of 50,000 barrles of oil per day. Development of this prospect is expected to cost \$450 million. That cost does not include the construction of a pipeline to nearby Point Thompson which would be necessary for the project development. An estimated 300 to 400 jobs would be expected during the development drilling and pipeline construction phase of this project.

Start Date: Unknown. Dependant on construction of pipeline to Point Thompson

Duration of Project: Unknown

Jobs: 400 expected during development drilling and pipeline construction phase

Total Project Costs: \$450 million (does not include cost of pipeline to Point Thompson necessary for project development)

EXISTING FIELDS – OIL & GAS

BADAMI PRODUCING UNIT - QUICKFACTS

Overview

The Badami producing unit is located on the eastern North Slope on and offshore between Endicott and Point Thompson. Savant is currently heading up operations on BPs behalf per 2008 agreement between BP, Savant and ASRC Exploration to bring Badami back into production which had been shut down in 2007 after producing intermittently since it came online in 1998. Savant brought Badami back into production on November 5, 2010.

As of March 24, 2011, production was 1,680 barrels from 5 wells. In January Savant said the most likely reserve estimate for the Kekiktuk accumulation was 45 million barrels. Savant has allocated an \$8 million capital budget for 2011. When Point Thomson to the east of Badami comes online there will be a 22-mile, 70,000 bpd liquids pipeline connecting it to Badami, which at some point might have to be expanded or a sister line built.

Start Date: Currently in production Duration of Project: Around 11 years Jobs: 20 in 2011, 22 in 2012, 24 in 2013 and 25 from 2014-2022 Total Project Costs: Unknown

KUPARUK RIVER PRODUCING UNIT - QUICKFACTS

Overview

Located about 40 miles west of Prudhoe Bay, the Kuparuk River Producing Unit was discovered in 1969. The first oil was produced in 1981 with peak production of 322,000 bpd occurring in 1992. The total oil produced through the end of 2009 was 2.19 billion barrels. More than \$5 billion has been spent to develop and implement programs to optimize oil recovery since Kuparuk started up in 1981. By the end of 2009, Kuparuk had 436 producing, 208 water injectors, and 164 water alternating gas injector wells. Although considerable in-field drilling is set for 2011, no new drill sites are planned. Kuparuk has a \$900 million capital budget for 2011, but what part of that is spent will be greatly influenced on what its partners are willing to fund of their share. Spending will be directed toward development of existing Prudhoe Bay and Kuparuk fields, as well as the Western North Slope.

Start Date: Currently in production Duration of Project: Unknown Jobs: Unknown Total Project Costs: Unknown

OOOGURUK PRODUCING UNIT & NUNA DEVELOPMENT PROJECT - QUICKFACTS Overview

The Oooguruk producing unit is located northwest of Oliktok in the Beaufort Sea's Harrison Bay northwest of the Kuraruk unit. The Nuna development project is south and southwest of the Oooguruk unit boundary on the eastern bank of the Colville River. The Oooguruk unit has rules in place defining two oil pools: the Oooguruk-Nuiqsut and the Oooguruk-Kuraruk. The Nuna area includes 5-6 onshore leases outside the unit. The first oil was produced from the main Oooguruk unit in June of 2008 and the first oil from the Torok formation in the Nuna project could be produced as early as 2014-2015. Capital expenditures to date on the Oooguruk unit is \$1 billion. If a production facility is built for Nuna and Oooguruk, those expenditures could double, otherwise the expenditures from Nuna are projected to be between \$400 to \$450 million. There are an estimated 172-214 million boe in recoverable reserves resulting in an estimated 30 year commercial life from start-up for the Oooguruk unit.

Start Date: Oooguruk is currently in production; Nuna could begin production as early as 2014-2015

Duration of Project: 30 years from start-up

Jobs: 600 during peak construction, 120-160 for production phase and 225 for Nuna appraisal drilling in 2012. If Nuna is sanctioned, an increase of several hundred construction jobs is expected in 2013-2015 with around 125 jobs expected for the following production phase.

PRUDHOE BAY PRODUCING UNIT - QUICKFACTS

Overview

The Prudhoe Bay unit is located in the Central North Slope. Oil was discovered in the Prudhoe Bay reservoir in 1968 and came on-stream in 1977. Production averaged more than 1.5 million barrels of oil and natural gas liquids per day for more than a decade. By the end of 2010, more than 12 billion barrels had been produced from the Prudhoe reservoir; another one billion barrels from the Greater Prudhoe Bay area, including satellites Orion, Polaris, Aurora, Midnight Sun and Borealis, as well as Lisburne, Point McIntyre and Niakuk. There are 25 bpo in place at Prudhoe, excluding heavy oil. Initially 40% was considered recoverable. By 2009, new technologies and techniques increased that estimate to more than 60%, leaving 2-3 billion barrels of conventional oil still recoverable, plus 26 trillion cubic feet of natural gas. Additional and expensive research investments are required to bump up the 60% recoverable estimate. Raising that number by just 10% would make another 2.5 bpo recoverable, but BP has said it needs a more moderate production tax system adopted by the State of Alaska in order to make those investments competitive with its opportunities elsewhere in the world.

Start Date: Currently in production

Duration of Project: Some estimates as high as decades from now

Jobs: Over 2,000 full time jobs

Total Project Costs: Over \$40 billion to date which includes development and transportation infrastructure costs

MINING RESOURCE

SIX EXISTING MINES, 10 PROPOSED MINES AND VAST UNDEVELOPED MINERAL RESOURCES COULD CREATE 1,000's OF JOBS ACROSS ALASKA

With the addition of the Kensington gold mine in July, Alaska now boasts six major mines. These operations produced more than 600,000 tons of zinc, around 900,000 ounces of gold, some 14 million ounces of silver, 135,000 tons of lead and 2 million tons of coal in 2010.

Zinc, which makes up about 40 percent of Alaska's annual production in terms of value, is currently the dominant mineral produced in the state. A position the industrial metal will likely relinquish if any of Alaska's massive gold projects come online in the next decade.

According to a feasibility study completed for project partners Barrick Gold and NovaGold Resources, Donlin Creek would produce more than I million ounces of gold per year. The Livengood project, being advanced by International Tower Hill Mines, is anticipated to produce at least 500,000 ounces of gold per year.

With the advent of Pebble, Alaska also would emerge as a major supplier of copper, a metal not currently mined in the state.

An economic study completed earlier this year for Northern Dynasty Minerals – one of the partners in the Pebble Project – envisions that annual production at Pebble could be 690 million pounds of copper, 667,000 ounces of gold, 31,000 pounds of molybdenum, 27,000 kilograms (58,000 pounds) of rhenium and 20,000 pounds of palladium.

Though this is a preliminary study, and does not represent a mine-plan endorsed by the Pebble Partnership, it provides a glimpse of the potential of the enormous copper project.

Additionally, Alaska has two permitted smaller scale gold projects (Nixon Fork and Rock Creek), a 25-million-tonper-year coal project seeking its permits (Chuitna) and several other projects nearing the permitting phase (Bokan Mountain rare earth element project, Niblack copper-gold-zinc-silver project, Lik Zinc-silver-lead project and Wishbone Hill coal project).

The markets

Precious and base metals alike enjoyed significant price gains in 2010, a bull run that is expected to continue.

Safe-haven investments, driven by worries of a softening U.S. dollar, a spreading of the European debt crisis, and unrest in North Africa and the Middle East, are expected to keep investors buying large quantities of gold and silver. At the same time, base metals are expected to be nudged by significant growth in emerging countries, especially China and India.

At around \$1,400 per ounce, gold prices have climbed \$300, or 27 percent over the past year. Silver prices have made more substantial gains – selling for around \$35 per ounce, more than double the \$17 an ounce price of a year ago.

Driven largely by growth in China, most analysts are calling for a deficit in copper supply in the coming months.

Copper, currently selling for about \$4.30 per pound, surged 30 percent last year as the global economy recovered from the worst recession since World War II. The International Copper Study Group is predicting a 435,000-ton deficit of the metal in 2011.

Zinc and lead on the other hand have been in oversupply in recent years, a situation that is expected to continue until 2012. There is expected to be a shortage of these base metals in the longer term.

China and India demand are expected to drive strong growth in the seaborne thermal coal market, increasing supply deficits and prices. Over the next year thermal coal prices are expected average more than \$100 per ton.

Due to Alaska's position on the Pacific Rim, Asia is a primary market for the export of Alaska's coal.

By 2015 demand for thermal coal in Asia is expected to be around 647 million metric tons, a 35 percent increase from the 477 million metric tons estimated to be used there in 2010.

With six operating mines producing some US\$3 billion worth of minerals in 2010 and another 10 projects positioning themselves to join the ranks, Alaska is poised to help supply the world with much needed minerals while bolstering the economy and providing good paying jobs at home. That is, if Alaska can overcome the significant issues that challenge our existing and potential mining projects.

Infrastructure and environmental regulations are top concerns amongst miners

Alaska is considered one of the most mineralized provinces on Earth, but due to an inter-related combination of Arctic weather, rugged terrain, limited infrastructure and high exploration costs, the state's vast mineral potential remains largely untapped.

In the Survey of Mining Companies: 2010/2011, conducted by the Fraser Institute, top executives from 494 mining and mineral exploration company's ranked Alaska as having the highest mineral potential out of 79 jurisdictions worldwide.

Several world-class deposits discovered in Alaska over the past 20 years underscore the state's mineral potential. Among these recent finds are the Pebble deposit, which is estimated to contain 80.6 billion pounds of copper, 107.4 million ounces of gold and 5.6 billion pounds of molybdenum, and the 40 million-ounce Donlin gold project.

Though worldwide mining executives consider Alaska a storehouse of untapped mineral resources, the state did not fare so well in the overall survey. In the Policy Potential Index – which is a composite index that measures numerous factors – Alaska ranked 21^{st} .

Infrastructure was amongst the top reasons for this lower overall score. Amongst the same 79 jurisdictions, Alaska placed 57th on this issue.

A vast amount of mineral wealth is locked up in a more than 350,000-square-mile area west of Alaska's contiguous infrastructure. This Texas-sized, expanse is without surface transportation or affordable energy.

In its 2010 report, the Alaska Minerals Commission informed state lawmakers that, "Mining is one of few Alaska industries with near-term growth potential. Unfortunately, realizing this potential is currently limited by inadequate energy and transportation infrastructure."

As an example, the Arctic deposit – located on the southern slopes of the Brooks Range about 175 miles west of the road system – is one of the richest and highest grade deposits of its type in the world, but, due to its location, this deposit and several others in the region remain undeveloped.

Concerns over environmental regulations and uncertainty over wilderness protected areas also weighs on mining investment in Alaska.

Alaska placed 45th in the Fraser Institute survey when it comes to uncertainty concerning environmental regulations, and the state ranked 58th out of the 79 jurisdictions on the issue of uncertainty concerning which areas will be protected as wilderness, parks or archeological sites.

Underscoring these concerns a president of a consulting company offered this: "In Alaska there are already three lawsuits designed to stop a project that is still in the exploration phase."

Though it is widely assumed that the permitting process for large projects such as Pebble and Donlin will be rigorous, the handling of this by the regulatory agencies involved is expected to weigh on future mineral investment in Alaska.

The U.S. Environmental Protection Agency is currently considering the option of exercising its authority under Section 404(c) of the Clean Water Act to prohibit the discharge of material from Pebble, a pre-emptive strike that would prevent the development of the project before it has entered the permitting process.

U.S. Senator Lisa Murkowski forewarned, "Any effort by the agency to block responsible development before a project has even been proposed would be unprecedented and would have a chilling effect on the state's economy."

A sentiment echoed by Anglo American CEO Cynthia Carroll, who recently said, "The EPA has an important role to play in the permitting process. The intervention of the agency at this stage, however, introduces great uncertainty for anyone engaged in economic activity in the region. Uncertainly deters investment at a time when the United States and the State of Alaska need the revenue and jobs that major projects such as Pebble bring to the table."

PROPOSED PROJECTS – MINING

CHUITNA COAL PROJECT - QUICKFACTS

Overview

The Chuitna Coal Project is a surface coal mining and export development proposal for an ultra low sulfur, sub bituminous coal resource located in the Beluga coal field of South-Central Alaska, roughly 45 miles west of Anchorage. The proposed project includes a surface coal mine and associated support facilities, a mine access road, a coal transport conveyor, personnel housing, air strip facility, a logistic center, and a coal export terminal which would include a 10,000 foot trestle constructed into Cook Inlet for the loading of ocean going coal transport ships. The current estimated production rate is for 12 million tons of coal extracted per year over a minimum of 25 years for a total extraction of at least 300 million tons of coal over the life of the project. Landownership in the project area consists of a combination of public and private entities including the State of Alaska, Mental Health Trust, Kenai Peninsula Borough, Tyonek Native Corporation, Cook Inlet Region Inc. and individuals. A previous project design was evaluated in an Environmental Impact Statement and permitted by most of the applicable state and federal regulatory agencies in the 1990s, but the project never proceeded to development. There have been substantial changes to the project's design and to regulatory requirements since then which resulted in the United States Environmental Protection Agency requiring the project prepare a comprehensive, stand-alone Supplemental EIS (SEIS) which it has submitted. The company is now working on individual permit applications. The SEIS and permitting process is expected to take 18-24 months at which point the Pac Rim Coal LP will decide whether or not to proceed with development based on market conditions.

Start Date: At least 18-24 months out, probably more

Duration of Project: Current predictions a minimum of 25-year mine life Jobs: 350 – 400 workers Total Project Costs: Not Available

DONLIN CREEK GOLD PROJECT - QUICKFACTS

Overview

The Donlin Creek project is a refractory gold deposit located 280 miles north of Anchorage. The deposit is situated on Native lands owned by the Kuskokwim Corporation (surface) and Calista Corporation (subsurface). The project has estimated reserves of 33.6 million ounces of proven and probable reserves grading approximately 2.23 grams gold per metric ton. Additionally, the project contains 4.3 million ounces of measured and indicated resources and 4.4 million ounces of inferred resources. The 53,000 metric-ton-per-day mine proposed in the feasibility study Donlin Creek LLC submitted is expected to produce about 1.6 million ounces of gold per year over the first five years of operation. Based on current reserve estimates, the mine should produce around 26.2 million ounces of gold over the projected 21 year life of the mine. According to a feasibility study submitted in 2009, construction of the mine and infrastructure is estimated to be \$4.84 billion. Donlin Creek has budgeted \$41 million for its 2011 program, which will focus on revising the feasibility study to incorporate a natural gas pipeline and preparing permit applications for the project. That feasibility revision, which proposes the use of natural gas instead of diesel as the primary power source is scheduled to be completed in the second half of 2011.

Commodity: Gold

Start Date: Unknown. Permitting set to begin around 2012.
Duration of Project: 21-year mine life based on current reserves
Jobs: 1,000 construction jobs for 3 year period, 600 operation workers
Total Project Costs: Construction on mine and related infrastructure estimated \$4.84 billion

LIVENGOOD GOLD PROJECT - QUICKFACTS

Overview

The Livengood project is located adjacent to the Elliot Highway 70 miles northwest of Fairbanks and is composed of 115 State mining claims, land leased from the Mental Health Trust Authority and four leases with private holders of state and federal patented and unpatented mining and placer claims. Current reserve estimates indicate 20.6 million ounces of gold reserves present on the property. According to preliminary estimates, building a Fort Knox –sized mine would cost roughly \$1.385 billion, with an additional \$450 million in life-of-mine sustaining capital costs and would employ an estimated 500 workers depending on the final mine design. The company is currently conducting two prefeasibility studies for the project, one based on a heap-leaching-only scenario to be completed in 2011 and one based on a more expensive combined heap-leach/mill operation immediately after. Permitting is projected to begin as early as 2012 and depending on the type of mine selected production could begin as early as 2017.

Commodity: Gold Start Date: Production could begin by as early as 2017 Duration of Project: Over 21 years Jobs: Current estimates assume 500 workers depending on final mine design Total Project Costs: Estimated at \$1.385 billion with an additional \$450 million for life-of-mine costs

NIXON FORK GOLD MINE - QUICKFACTS

Overview

The Nixon Fork mine is an existing underground lode mine located 32 miles northeast of McGrath that is currently not producing. The mine has been active sporadically between 1917 and the 1950s, and is being developed by the Fire River Gold Corp. The mine is a 200 metric ton per day flotation plant with a gravity gold separation circuit, a sulfide flotation circuit and a new carbon-in-leach circuit. There is also a fleet of mining vehicles, a power plant, maintenance facilities, an 85-person camp, office facilities and a 1.5 km long airstrip. The developer has obtained the bonds and permits needed to move the project quickly back into operation. That operation, based on a preliminary economic assessment, is sufficient to sustain a 2 year production at a rate of 150 tpd. Additional resources may be discovered as a result of ongoing exploration in the area.

Commodity: Gold Start Date: Projected to resume operations in early Spring 2011 Duration of Project: Approximately two years Jobs: Approximately 75 Total Project Costs: Unknown

PEBBLE COPPER-GOLD-MOLYBDENUM PROJECT - QUICKFACTS

Overview

The Pebble Project is a copper-gold-molybdenum porphyry deposit located in the Bristol Bay Region of southwest Alaska 17 miles northwest of the community of Iliamna. The reserves for the Pebble project are estimated to be 80.6 billion pounds of copper, 107.4 million ounces of gold, and 5.6 billion pounds of molybdenum as well as silver, rhenium and palladium. As of 2010, the Pebble Limited Partnership had made roughly \$500 million in capital expenditures. It is estimated that an additional \$4.7 billion will be necessary to build the mine and \$1.3 billion will be needed for infrastructure costs. 2,080 people are expected to be employed over the four year construction period and 1,020 people will be necessary for the operations workforce after the mine comes online. Assuming the total resource was mined at a rate of 220,000 metric tons per day, the mine would be in operation for 135 years. The Pebble Partnership is continuing work on an environmental baseline document and feasibility study which will be a compilation of over \$120 million worth of environmental studies conducted in the Pebble Project, which has become a hot button issue for both environmentalists and resource development proponents. Due to the sensitive nature of the project, Pebble has been reluctant to issue a timeline for completion of the mine plane and feasibility study currently underway.

Commodity: Copper, gold, molybdenum, silver, rhenium and palladium

Start Date: Unknown

Duration of Project: Approximately 135 years depending on production rate and mine plan Jobs: 2,080 during the four year construction phase, 1,020 during the approximately 135 year operations phase Total Project Costs: Estimated at \$4.7 billion for the mine and \$1.3 billion for the infrastructure upgrades.

ROCK CREEK GOLD MINE - QUICKFACTS Overview The Rock Creek Gold Mine is located in western Alaska on the Seward Peninsula eight miles from Nome. The mine began production in September 2008, but due to financial and mechanical issues operations were suspended later that year and the mine was placed in care and maintenance. The owner is currently seeking a buyer. There is an estimated 320,000 ounces of gold reserves and a 310,000 ounce gold resource at Rock Creek that would allow for six years of operations if the mine is reopened.

Start Date: Unknown Duration of Project: Six years once production starts Jobs: Roughly 150 when in production, unknown for care and maintenance Total Project Costs: Unknown

WISHBONE HILL COAL PROJECT - QUICKFACTS

Overview

The Wishbone Hill coal prospect is owned by the Usibelli Coal Mine Inc. and is located ten miles northeast of Palmer. Estimated reserves are 14 million tons of bituminous coal with a potential commercial life of 12 years from start of production. If Usibelli decides to proceed with the development of Wishbone Hill, some 500,000 tons of bituminous coal will be shipped overseas to Japan via a newly constructed loading facility at Port MacKenzie on the west side of upper Cook Inlet across from Anchorage. Usibelli is conducting a feasibility study that is expected to be completed in early 2011 and depending on the results of that study mining could begin as early as 2012. An ISER study estimated the number of jobs potentially created by the mine at 90 people.

Start Date: As early as 2012 depending on results of ongoing feasibility study Duration of Project: Twelve years based on current reserves estimates Jobs: Roughly 90 jobs based on an ISER socioeconomic study Total Project Costs: Unknown

PROJECTS TO BE WATCHED – MINING

BOKAN MOUNTAIN RARE EARTH ELEMENTS PROJECT - QUICKFACTS Overview

The Bokan Mountain Property is located at the southern most part of the Alaskan panhandle, on the southern end of Prince of Wales Island within the Tongass National Forest approximately 60 km southwest of Ketchikan. The land is currently managed by the US Forest Service and has no indigenous or residential populations. There is an inferred mineral resource of 3.7 million metric tons grading 0.75% total rare earth oxides (TREOs), with 39% of the TREOs being the higher value heavy rare earth oxides (HREOs). Due to the current shortage of rare earth elements (REE) worldwide stemming from Chinas decision to dial back their REE exports this project has received significant support from both the state and federal delegates including Sen. Lisa Murkowski and Gov. Sean Parnell. Sen. Murkowski has introduced the Rare Earth Supply Technology and Resources Transformation Act in the Senate last June which would provide loan guarantees to stimulate REE exploration in the US as well as expediting review and approval of permits for REE exploration and development in Alaska.

Commodities: Uranium, tanatlium, niobium, dysprosium, terbium, and other REEs **Start Date:** Due to its strategic importance it is possible this deposit could be developed within 10 years **Duration of Project:** Not Available

Jobs: Not yet determined

Total Project Costs: Not Available, but dependant on federal REE legislation currently being decided in Congress

NIBLACK PROJECT - QUICKFACTS

Overview

The Niblack project is a copper-zinc-gold-silver prospect in an advanced stage of development. The prospect is located off Moira Sound on southeastern Prince of Wales Island, approximately 30 miles southwest of Ketchikan. There are 161.5 million pounds of copper, 450,000 ounces of gold, 332.5 million pounds of zinc, and 7.2 million ounces of silver in estimated reserves at the Niblack prospect. Over \$15 million was spent on exploration over the past 18 months and plans are in place to spend an additional \$10 million by the end of 2011. The State of Alaska is investigating whether there might be ways for shared infrastructure between Niblack and the Bokan Mountain REE project to reduce infrastructure costs. Representatives from AIDEA also participated in those meetings and there is a possibility they could play a role in the eventual infrastructure development and financing of the project. A preliminary economic study is slated to be completed by the end of 2011 and a prefeasibility study is planned for as early as 2012 depending on the results. Although there are currently no timelines for production, based on the current rate of advancement, the prospect could be moved into a production phase as early as 2021.

Start Date: Unknown Duration of Project: Unknown Jobs: Early indications are about 300 jobs Total Project Costs: Unknown

LIK ZINC PROJECT - QUICKFACTS Overview

The Lik Project is located roughly 90 miles from Kotzebue and 14 miles northeast of the Red Dog mine in northwest Alaska. The property is composed of 296 unpatented federal mining claims and contains an estimated 3.3 billion pounds of zinc, over one billion pounds of lead and over 31 million pounds of silver. Lik North, which is a deeper deposit that could extend the mines life, is thought to contain an additional 1.3 billion pounds of zinc, 500 million pounds of lead and ten million ounces of silver. A preliminary economic assessment estimates a 5,500 ton/day mine and mill with an eight year production span. A prefeasibility study for the development of the Lik deposit is currently underway and hammering out transportation infrastructure is a key component. The transportation system used by the nearby Red Dog mine is available for use by the owners of the Lik project. A current due diligence study on expanding the current transportation Systems owner, the AIDEA. Depending on the results of the prefeasibility study, the Lik project could begin permitting development as soon as 2012, which would put it on a timeline to begin production within 10 years.

Commodity: Zinc, lead and silver Start Date: Possibly within 10 years, company has not proposed a timeline Duration of Project: Roughly 8 years Jobs: Estimated 300 jobs Total Project Costs: Unknown

EXISTING MINES – MINING

FORT KNOX GOLD MINE - QUICKFACTS

Overview

The Fort Knox mine is an open-pit gold mine located approximately 26 miles northeast of Fairbanks. The mine was originally permitted in 1994 and currently produces roughly 330,000 ounces of gold annually. To date more than 4.5 million ounces of gold have been extracted from Fort Knox since it began production in 1997. The mine site is located on lands owned either by the State of Alaska or the Mental Health Trust. In 2009, Kinross completed construction of a heap leach facility and expansion of the existing mine. The company projects there are enough ore reserves in place to continue extraction through 2018 and to continue heap leaching operations through 2021.

Commodity: Gold

Start Date: Currently Operating
Duration of Project: Current reserves projections mill operating till 2018 and heap leach operations till 2021
Jobs: Over 500 jobs
Total Project Costs: Unknown

GREENS CREEK MINE - QUICKFACTS

Overview

The Greens Creek Mine is located in southeast Alaska adjacent to Admiralty Island National Monument, an environmentally sensitive area. The Greens Creek property is located on 17 patented lode claim, one patented mill site claim, and property leased from the US Forest Service. In addition, Greens Creek also hold the mineral rights to 7,500 acres of federal land adjacent to the properties. The entire project is accessed by boat and served by 13 miles of road and consists of the mine, an ore concentrating unit, a tailings impound area, a ship-loading facility, camp facilities and a ferry dock. The Greens Creek mine opened over 20 years ago with an estimated 2.9 million metric tons of ore reserves. Subsequent exploration has expanded on those estimates and the current reserves are estimated to be 8.4 million tons of ore. This level of reserve is enough to keep the mine in operation for an additional ten years. Additional exploration is being conducted near the mine in an attempt to define a potential prospect called the North East contact. Exploration expenditures for 2011 should exceed \$11 million.

Commodity: Silver, Gold, Zinc and Lead Start Date: Currently Operating Duration of Project: Current reserves to last till 2021 Jobs: About 300 workers Total Project Costs: Unknown

KENSINGTON GOLD MINE - QUICKFACTS

Overview

The Kensington Gold mine is located in southeast Alaska roughly 45 miles northwest of Juneau. Major permitting for the mine was completed in 2005 and the construction of the mine and mill facilities was completed in 2007. On June 22, 2009, the U.S. Supreme Court affirmed the Kensington 404 Permit for tailings placement allowing production at the mine to go forward. It was Alaska's sixth major mine when it began production on June 24th, 2010. The mine produced a total of 43,143 ounces of gold during its first three months of operation and anticipates an annual production of 125,000 ounces of gold for the duration of the project. Based on the current gold bearing ore reserves estimates of 1.4 million ounces, about 11.5 years of production is predicted. Coeur d'Alene Mines is continuing to add to its reserves estimates through exploration drilling in the area. In 2010 Coeur completed about 6,100 meters of drilling on a prospective high grade gold system named the Raven Vein. Follow up drilling is planned for this year.

Commodity: Gold

Start Date: Currently Operating

Duration of Project: Current reserves till about 2022

Jobs: About 300 workers were employed during the construction phase and 200 workers are employed for the production phase with approximately \$16 million in annual wages and benefits **Total Project Costs:** \$338 million

POGO GOLD MINE - QUICKFACTS

Overview

The Pogo gold mine is located 110 miles southeast of Fairbanks and is the first overseas mine operated by Tokyo based Sumitomo Metal Mining (SMM). The Pogo Mine includes an underground mine that feeds gold ore to a mill at a rate of approximately 2500 tons per day for an annual production of around 380,000 to 400,000 ounces of gold annually. Sumitomo spent \$347 million on startup costs for the mine including the cost of infrastructure, electrical transmission and transportation construction costs. The facilities include an underground cut and fill mine with conveyor access to the surface, a surface ore mill, tailings preparations facilities, a 249 person upper camp and 126 person lower camp, a transmission line and onsite electrical distribution system, a 49 mile all season road and a water management system. In 2010 SMM completed roughly 40,000 meters of surface and underground drilling at Pogo in an effort to locate expansion areas, property-wide potential and reserve/resource definition. SMM plans on extending the life of the mine by expanding their reserves and locating new ore bodies on their extensive land package surrounding the mine through additional exploration.

Commodity: Gold Start Date: Currently in production Duration of Project: Through 2017 based on 2009 reserve estimates Jobs: 328 Total Project Costs: \$347 million startup

RED DOG MINE - QUICKFACTS

Overview

Red Dog is a zinc-lead mine located in northwest Alaska roughly 82 miles north of Kotzebue. In operation since 1989, the Red Dog mine is one of the worlds' largest producers of zinc concentrate. The mine was developed under an agreement between NANA Regional Corporation and Teck Alaska incorporated. Red Dog is an open-
pit truck-and-loader operation that uses conventional drill and blast mining methods. The mineral processing facilities use grinding and sulfide flotation methods to produce zinc and lead concentrates. There are an estimated 51.6 million metric tons of reserves averaging 16.7 percent zinc and 4.4 percent lead. Tecks' 2010 exploration in the region focused on Anarraaq, a deep deposit that lies seven miles north of Red Dog. There is an estimated one billion metric ton barite ore body and a zinc-lead-silver massive sulfide zone with an estimated 18 million ton resource at 18 percent zinc, 5.4 percent lead and 85 grams per ton (g/t) silver.

Start Date: Currently in production
Duration of Project: Through 2031 due to permitting approval of the Aqqaluk deposit
Jobs: 475 full time and 80 temporary jobs
Total Project Costs: Unknown

USIBELLI COAL MINE - QUICKFACTS

Overview

Usibelli Coal mine, Alaska's longest-lived large-scale mine, is located south of Fairbanks. Usibelli coal supplies coal to six power plants in Interior Alaska and ships approximately one million metric tons overseas annually. The Usibelli Coal Mine provides approximately100 jobs and has a projected commercial life of 350 years based on current production rates and reserve estimates of around 700 million tons. Usibelli is located near to the currently idle Healy Clean Coal plant which has the potential to provide 50 megawatts of power to the Alaska Railbelt electrical grid. Golden Valley Electric is currently in the process of renewing the permit needed to bring the Healy Clean Coal operation online.

Start Date: Currently in Production Duration of Project: 350 years at current production rates and estimates Jobs: About 100 Total Project Costs: Unknown

APPENDIX – OIL & GAS

BADAMI PRODUCING UNIT, EASTERN NORTH SLOPE

This data is extrapolated from public and industry sources, not necessarily from the operator.

Operator: BP, but Savant currently heading up operations per 2008 agreement between BP, Savant and ASRC Exploration to bring Badami back into production; had been shut down in 2007 after producing intermittently since came online in 1998.

Location: Eastern North Slope, on and offshore between Endicott and Point Thomson.

Status & importance: Farthest east producing field on North Slope. 35,000 barrels-per-day common carrier oil sales line from Badami to Endicott, which in turn is connected to Central North Slope pipelines, is important to continued development of the Eastern North Slope. When Point Thomson to the east of Badami comes online there will be a 22-mile, 70,000 bpd liquids pipeline connecting it to Badami, which at some point might have to be expanded or a sister line built.

First oil: 1998 by BP, shut-in for last time by BP in 2007

Brought back into production: Nov. 5, 2010, by Savant

Drill site, facilities: Single, compact central processing and well pad, B1, which also holds production facilities.

Wells by end of 2010: 6 verticals by BP. Savant drilled 1 new well, B1-38, in winters 2008-09 and 2009-10, testing its Red Wolf prospect's Kekiktuk formation, a formation that contains oil reservoir for Endicott field to the west. Savant remains tight lipped about results from Kekiktuk but said it discovered oil in higher-level secondary target in Cretaceous Killian sands. B1-38 production from Killian pool. Second well Savant drilled was B1-18A horizontal sidetrack to vertical well BP drilled to test use of horizontal drilling techniques to tease higher flow rate from field. Planning to use hydraulic fracturing techniques similar to those used to produce shale oil and gas in L48 in the B1-18A horizontal in 2011 or 2012, to try to improve oil flow from Badami's Brookian sands. Hydraulic fracturing has been tried before at Badami, but only on vertical wells. Savant hopes to hydraulically fracture Killian formation in mid-2011.

Current production: As of March 24, 2011, production was 1,680 barrels from 5 wells. Savant still has one well to bring on line that will require artificial lift.

Recoverable reserves: In January Savant said "most likely reserve estimate" for Kekiktuk accumulation was 45 million barrels. Before running into technical problems with highly compartmentalized Brookian reservoir, BP hoped to recover 120 million barrels from those sands.

Cost per horizontal well: \$10 million

Hydraulic fracturing per horizontal well: \$5 million

Jobs in 2011: 20

Jobs expected in 2012: 22

Jobs expected in 2013: 24

Jobs expected annually from 2014 through 2022: 25

Capital budget for 2011: \$8 million

Owners: Existing production 67.5% Savant Alaska, 32.5% ASRC Exploration, and 0% BP. But BP does own 100% working interest in all lands outside of certain lands containing the producing wells and it has overriding royalty interest in existing wells which varies by tract.

Plans for future development: Killian delineation, Red Wolf delineation

BEECHEY POINT UNIT, CENTRAL NORTH SLOPE

This data is extrapolated from public and industry sources, not necessarily from the operator.

Exploration/delineation/development drilling start: Winter season 2011-12 Total time for drilling: Two more winter seasons, possibly more Total drilling costs in winter 2011-12 (two wells): \$40 million Drilling & construction costs, excluding what has been spent to date: \$200 million Construction start: Winter season 2011-12 or 2012-13 Total time for construction: One winter season Total construction jobs: 100 Total drilling jobs: 100 Average number operation jobs: 8 Production start/life: First guarter 2012 or 2013, 15 years

East Shore and Pete's Wicked prospects: Same as above, but follow North Shore by one and two years, respectively.

Operator: Brooks Range Petroleum Corp. (BRPC)

Location: Gwydyr Bay at Kuparuk River delta, north of Prudhoe Bay unit, between Milne Point and Northstar units. Mostly onshore North Slope; offshore leases accessible from onshore.

Exploration blocks, prospects: Five exploration blocks—North Shore, West Shore, Northwest Shore, East Shore and Offshore—identified in BRPC's unit plan. Three prospects identified to date: East Shore, North Shore, Pete's Wicked. Total: 52,876 acres.

Status: Since arriving in Alaska more than a decade ago, the various companies involved in this BRPC joint venture have expended most of their efforts on what is now the Beechey Point unit, on the west side of the Kuparuk River delta. They are now considering a development on the east side of the Kuparuk River delta within the Beechey Point unit.

Seismic: Acquired 130 square miles of 3-D seismic data covering entire unit area in 2007.

Wells drilled in past: Area drilling began in 1969 with Hamilton Brothers' Point Storkersen No. I well, testing oil in Sag River, flowing 315 bpd and 735 bpd from 2 different depths in Ivishak Sandstone; did not test Kuparuk River formation. Hamilton drilled Kuparuk Delta 51-1 well in 1970 in the then Kuparuk Delta unit, finding no flowing hydrocarbons in Kuparuk, Sag River, Shublik and Ivishak, but flowing 2,200 bpd, decreasing to 1,500 bpd,

from lower Brookian "stray sandstone" at depth of some 7,100 feet. Conoco drilled 13,605-foot Kuparuk Delta 51-2 in 1970, with successful tests of oil from Ivishak and Kuparuk, with Ivishak flowing 695 bpd (bpd) and 520 bpd from 2 different depths; also was flow to surface from Kuparuk. Conoco became operator, renamed it Gwydyr Bay unit. Conoco didn't drill until 1981, but more wells drilled in area by Mobil and Cities Service. Conoco's Gwydyr Bay 2A well, a sidetrack from 11,365-foot Gwydyr Bay 2, flowed 3,000 bpd from Ivishak with stabilized flow of 740 bpd from Kuparuk. In 1997, BP drilled Pete's Wicked, identifying 65 feet of oil pay in Ivishak on logs; no well tests. BP had plans for roadless, 3-well project, but plans dropped, acreage reverted to State of Alaska.

Wells drilled by BRPC by end of 2010: In 2007, drilled Sak River No. 1; did not encounter hydrocarbons. Also drilled North Shore No. 1, which tested at 2,092 bpd from the lvishak; Sag River tests inconclusive. In 2010 drilled two wells: results of Sak River 1-A sidetrack led partner TG World to relinquish some interest in program. Remaining partners drilled North Shore No. 3.

Drilling anticipated: Work commitment with State of Alaska calls for one exploration well in each of the five blocks by July 2019.

Approximately cost per well: \$20 million

Noteworthy about prospect: UltraStar holds state lease contiguous on northern side.

Recoverable reserves: TG World said in December 2009 there was 100 million barrels in "reserve potential" in Gwydyr Bay area in 5 blocks, pointing to North Shore No. I and Pete's Wicked for 2 million barrels and 3 million barrels respectively, with estimates of undiscovered oil at Sak River No. Ia of 11 million barrels; another 4.5 million barrels at North Shore No. 3.

Working interest: BR Alaska Venture Capital Group, Brooks Range Development Corp., Ramshorn Investments and TG World Energy.

DEWLINE UNIT, CENTRAL NORTH SLOPE

This data is extrapolated from public and industry sources, not necessarily from the operator.

Expected development drilling start: First quarter 2012 Expected development drilling completion: By May 31, 2014 Expected construction start: Early 2013 Total construction & drilling costs: \$80-110 million Total time for construction: 2 years Total construction jobs: 150 Jobs expected during first quarter 2012 development drilling: 100 Jobs expected during 2013 drilling: 100 Jobs expected during road & pipeline construction: 150 Average number operation jobs: 4 Production start/life: 2015, 20 years

Operator: North Dewline LLC owned by UltraStar Exploration

Location: Just west of Prudhoe Bay unit's Point McIntyre and north of Midnight Sun PAs.

Status: On March 15, the State of Alaska expanded the unit, requiring another well. Must drill N. Dewline No. 1 well by May 31, 2013, and the N. Dewline No. 2 well by May 31, 2014. Leases include: Dewline Lease ADL 389944; North Dewline Lease ADL 390419; Far North Dewline Lease 390608; Storkersen Lease 389943 for total of 4,533 acres.

Development, additional investment: Operator offering percentage interest in 3 leases to venture capital investors who put up 100% of risk capital of \$18-19 million to drill primary production well and sidetrack to casing point through the lvishak level into lease ADL 390419. A well to this depth would also test Kuparuk and Sag River potential in both primary hole and sidetrack. A successful well or sidetrack will require additional capital to complete and test. If first well and/or planned sidetrack successful, there will be need to drill additional development and water injection wells over ensuing 5-7 years. In mean reserve case those investments for North Dewline investors are estimated at an additional \$83 million, for project development cost of \$15.10/bbl. At \$80/bbl, the value of the North Dewline investors share of mean case reserves is \$542 million. At \$60/bbl, it is \$244 million, and at \$100/bbl, it is \$678 million. Upside case of 18 million barrels nearly doubles these numbers for little additional cost.

Wells drilled to date by operator: 2009 Dewline No. 1, onshore 9,900-foot vertical well targeted oil in the lvishak formation.

Second well: First quarter 2012. North Dewline No. 1 will likely be 14,000-15,000-foot directional well to offshore target from onshore pad, with a 6,000-foot horizontal displacement.

Third well: By May 31, 2014. N. Dewline No. 2 well.

Possible production start date: 2015

Reserves: The range of potential reserves on 3 leases is 5 million to 20 million barrels of oil, with geological chance factors in 50-70 percent range. There are known accumulations to east and west. Prospects in same fault system as those accumulations. Offsetting wells have been tested at between 350 and 750 bpd at Kuparuk level; 500 to 3,500 bpd from lvishak. On lease ADL 389943, there is 100% chance of having 700,000 to 1 million barrels of oil, as it's the Point Storkensen prospect that was drilled and proved up by Hamilton Brothers in 1969, testing 735 bpd from lvishak. The economic analysis for development was done on the mean case for reserves, or 11 million barrels.

Noteworthy: Part of unit offshore but all wells can be drilled from onshore locations. State production tax, ACES, allows reimbursement of 45% of qualified exploration expenses. Charter for Development obligates North Slope processing facility operators BP and ConocoPhillips to grant access to facilities at "reasonable commercial terms," and if parties can't come to agreement, there is provision for expedited, binding arbitration. Another provision obligates BP and Conoco Phillips to purchase oil from small producers with limited balance sheets at Pump Station I, using a pre-agreed pricing mechanism tied to the State's Royalty in Kind (RIK) value of oil.

GREAT BEAR PETROLEUM SHALE SOURCE ROCK DEVELOPMENT, CENTRAL NORTH SLOPE

This data is extrapolated from public and industry sources, not necessarily from the operator.

Drilling of 4 core holes: 2011 Cost of drilling: \$16 million Total drilling jobs: 100

Drilling of 4 test wells to develop well design: 2012 Cost of drilling: \$120 million Total drilling jobs: 200

Development drilling start for phase 1: 2013, for 15 years
No. of wells for phase 1: 3,000 (200 per year)
Cost of drilling for phase 1: \$2 billion a year (\$10 million a well) for total of \$30 billion.
Cost of construction for entire project: Unknown but one pad per acre, pipelines, roads, and facilities would presumably be in the \$40 billion range.
Total time for construction: 4 years
Total construction and drilling jobs: 3,500
Average number operation jobs: 60

Development drilling start for phase 2: 2028, for 15 years
No. of wells for phase 2: 3,000 (200 per year)
Cost of drilling for phase 2: \$2 billion a year (\$10 million a well) for total of \$30 billion.
Cost of construction for entire project: already assessed in phase 1—same pads, facilities, pipelines and roads will be used.
Total drilling jobs: 2,200
Average number operation jobs: 60

Development drilling start for phase 3: 2043, 15 years total
No. of wells for phase 3: 3,000 (200 per year)
Cost of drilling for phase 3: \$2 billion a year (\$10 million a well) for total of \$30 billion.
Cost of construction for entire project: already assessed in phase 1—same pads, facilities, pipelines and roads will be used.
Total drilling jobs: 2,200
Average number operation jobs: 60

Peak production for entire project: 600,000 barrels a day in 2056

Production: If production begins in 2013 as planned, in a conservatively scaled project, Great Bear shows oil production from its acreage alone at 200,000 bpd by 2020; 350,000 bpd by 2035; 450,000 bpd by 2041; peaking at 600,000 bpd in 2056, with a sustained long-term production of 450,000 bpd out as far as 2074.

Life of project: 80 years

Operator: Great Bear Petroleum LLC

Location: South of Kuparuk and Prudhoe units, bracket the Dalton Highway and the trans-Alaska oil pipeline.

Status: In the October 2010 State of Alaska areawide North Slope lease sale the newly formed independent, which only plans to do business in Alaska, won more than 500,000 acres containing a chunk of the geologic "kitchen" that generated the 100 bpo that flowed north into traps along the Barrow Arch, such as the Prudhoe Bay, Kuparuk, Alpine and Point Thomson reservoirs. Those leases are expected to be issued in May 2011. Any acreage over 500,000 will have to be released to the state or assigned to a third party by Great Bear as there is a 500,000-acre state exploration limit north of the Brooks Range.

Noteworthy: Alaska has three of the most prolific source rocks in the world, stacked one above the other, the deepest and oldest being the Triassic-age Shublik; in the middle the Jurassic-age Kingak shale; and the youngest and shallowest being the Cretaceous-age Hue shale, which is also referred to as the Pebble, HRZ or GRZ shale. At least 100 bpo, a maximum of 20 percent of the crude generated in them, has migrated north to traps along the Barrow Arch on Alaska's northern coast; filling the reservoirs of all those fields, which include Alpine, Kuparuk, Prudhoe Bay, and Point Thomson, and spilling over the arch into the reservoirs under the Beaufort and Chukchi seas. Left behind, trapped in the shale source rocks, is approximately 400 bpo. Five to six percent, or 20-24 billion barrels, of that oil is recoverable with today's rapidly advancing technology. By this time next year, one expert thinks 7 percent, or 28 bpo, will be technically recoverable. In addition to oil, these same three source rocks also contain huge quantities of natural gas and natural gas liquids that would be extracted as a part of the production process. Great Bear's land position was very well thought out, per State of Alaska geologist Paul Decker, in terms of both availability and maturity of all three source rocks but also in its position to the Dalton Highway, which will allow the company to truck oil to Prudhoe production facilities from its 2012 test wells, prior to building its own facilities.

KITCHEN LIGHTS UNIT, UPPER COOK INLET EXPLORATION

This data is extrapolated from public and industry sources, not necessarily from the operator.

FIVE-WELL EXPLORATION PROGRAM

Corsair prospect exploration, first two wells: Exploration drilling start: May 2011 Construction of first platform start: TBD by drilling results Total time for drilling: 1 year, depending on demand for rig by other operators Total exploration drilling jobs: 412 Total cost of exploration: \$60 million Production start/life: TBD by drilling results, possibly 2014, 30 years

East Kitchen & Kitchen prospects, three wells:

Exploration drilling start: 2012 or 2013, depending on demand for rig by other operators Total time for drilling: 2-3 years, depending on demand for rig by other operators Total exploration drilling jobs: 412 Total cost of exploration: \$90 million

DEVELOPMENT SCENARIOS FOR FIRST THREE PROSPECTS

Development estimates derived from East Kitchen projections done in 2007 (in 2007 dollars): Total wells: 48 development wells (30 oil producers including the discovery well, 10 gas producers and 8 water injectors.) Construction start: 2014 Total time for construction of platform & associated on and offshore facilities: 2 years Development drilling start: After platform installed, possibly 2016 Total construction & drilling costs: \$660 million Production start/life: 2016, 30 years

Operator: Escopeta Oil

Location: Upper Cook Inlet.

Status: Jack-up on the way to Cook Inlet from the Gulf of Mexico. Drilling expected to begin in late May. 83,394-acre unit formed in 2009.

Oil and gas prospects in unit: Its first five wells in its Kitchen Lights development plan with the State of Alaska include Corsair, East Kitchen and Kitchen wells, in that order. The Northern Lights prospect is not included in its initial drilling plans.

Water depth: Average water depth in unit is 105 feet.

Jack-up rig description: Baker Marine Corp. 150H, class independent leg, cantilever jack-up. Designed and constructed by Baker Marine; built in accordance with rules of American Bureau of Shipping. Classified as an A-1 self-elevating mobile drilling unit. Refurbished to new in 2006. Water depths from 12 to 150 feet. Drilling depth rating 25,000 feet. Three drilling mud pumps. 2000 HP draw works. Top drive, Varco TDS-3. Quarters for 54 personnel. Winterized for Cook Inlet and will have a 15,000-pound blowout preventer installed shortly after it arrives in Alaska.

Dock: Escopeta using Arness Dock west of Kenai, opening an office at dock and possibly in Anchorage.

Approximate cost per Kitchen Lights unit exploration well: \$30 million

Approximate cost per Kitchen Lights development well from platform: \$10 million

Well depths: Wells would extend vertically to depths in the range 16,000 to 20,000 feet into the Jurassic. Operator must drill into a pre-Tertiary zone, such as the deep Jurassic, to take advantage of tax credits available from the state. That depth would allow Escopeta to test both the gas and the deeper oil potential of the region.

Previous wells: The only one of these prospects that has ever been drilled is Corsair, where Shell, Phillips and ARCO drilled a total of five exploration wells between 1962 and 1993. The wells all had gas shows and some also tested for small quantities of oil.

Recoverable reserves: In 2004 Escopeta said East Kitchen is a structural trap holding possibly 2.33 trillion cubic feet of gas and 457 million barrels of oil, while Kitchen is a faulted stratigraphic trap with perhaps 9.35 tcf of gas and 829 million barrels of oil. In 2003 Forest said that a pre-drill analysis of the Corsair prospect indicated that the prospect might hold as much as 137 million barrels of oil, split between the Tertiary-age Tyonek and Hemlock formations. The prospect, with 10,000 acres of subsurface closure, might also hold 480 bcf of natural gas, the company said. Mark Landt, whose company has overriding interest in the Northern Lights leases and once was

involved with the companies that had it under lease, said in 2003 said that the geological data showed these was a potential of finding 104-488 million barrels in Northern Lights.

Noteworthy: Escopeta calls its offshore prospects Kitchen and East Kitchen, to reflect a view that the prospects lie over the deep center of the Cook Inlet basin, close to the oil source "kitchen" where organic material is cooked into oil. Those estimates, if correct, would make Kitchen Lights the largest Cook Inlet gas and oil play. The gas estimate alone is similar to the recoverable natural gas reserves that ExxonMobil estimates it has in its Point Thomson field, the second largest known gas deposit on Alaska's North Slope.

Geology: The prospects all lie along a major Tertiary fold structure extending south-southeast from the ConocoPhillips North Cook Inlet gas field. And, although many geologists believe that there is still a large quantity of undiscovered natural gas in subtle prospects known as "stratigraphic traps" in the Cook Inlet basin, the prospects in the Kitchen Lights unit represent perhaps the best remaining opportunities in the basin for an especially large oil or gas find. In fact, there is a known oil pool, variously known as Tyonek Deep or Sunfish, underneath the North Cook Inlet gas field and in proximity to the Northern Lights prospect in the Kitchen Lights unit. ARCO and Phillips Petroleum, precursors to ConocoPhillips, drilled the Sunfish prospect in the early 1990s, and later that decade Phillips drilled into Tyonek Deep from its Tyonek offshore platform, the platform for the North Cook Inlet field. In January 1999, having drilled three wells into the oil pool, Phillips pulled the plug on the Tyonek Deep project (oil prices were about \$10 per barrel at the time).

KUPARUK RIVER PRODUCING UNIT, CENTRAL NORTH SLOPE

This data is extrapolated from public and industry sources, not necessarily from the operator.

Operator: ConocoPhillips

Location: About 40 miles west of Prudhoe Bay

First oil: 1981

Peak production: 322,000 bpd in 1992.

Oil produced through end of 2010: 2.3 billion barrels.

Remaining producible oil, excluding heavy oil: 1.17 billion barrels

Current production from Kuparuk and satellites: In February 2011 produced an average of 132,810 bpd (not including Oooguruk), as compared to 141,000 bpd as of year-end 2009.

Original oil in place (gross): 6 bpo

Investment by Kuparuk owners through 2009: More than \$5 billion to develop and implement programs to optimize oil recovery since its start up in 1981.

Drill pads for Kuparuk and all satellites: 46, including IB, IC, ID, IE, IJ, and 3K which are shared with the West Sak satellite.

Wells by end of 2009: 436 producers, 208 water injectors, 164 water alternating gas injectors

Noteworthy: I. Drill pads reduced from 65-acre pads (original Prudhoe Bay design) to about II-acre drill sites at Kuparuk. 2. High-performance Beaufortian reservoir of ConocoPhillips Palm discovery on western edge of Kuparuk led to construction of new drill site, 3S, and expansion of Kuparuk River unit. This development serves as reminder of how profitable exploration success close to existing infrastructure can become, with cluster of small satellite fields now operated by BP and ConocoPhillips around major fields of Prudhoe Bay, Kuparuk and Alpine. In 2009 Kuparuk satellites West Sak, Tarn, Meltwater and Tabasco produced an additional 37,600 bpd.

In-field drilling and development for Kuparuk Participating Area: Among accomplishments in 2009, ConocoPhillips implemented 9-well coiled-tubing drilling program generating "peak incremental oil rate" of 4,300 bpd. The company says 21 laterals were drilled. A workover program added 6,000 bpd to Kuparuk's production. A similar program was initiated in 2010, helping offset, but not reversing the production decline. Conoco says Kuparuk development plan "assumes the current business climate of increased regulation and taxation will continue, increasing field operating costs. For example, the transition to Ultra Low Sulfur Diesel use in 2009 added tens of millions of dollars to Kuparuk's annual operating costs." Still, company anticipates extensive investments, but it also anticipates Gov. Sean Parnell's tax bill to pass into law. Seismic analysis has revealed "a significant number of leads for infill or sidetrack drilling," Conoco said in mid-2010. "Candidate wells developed from these leads will be a mix of 'grass root' wells, rotary sidetracks and coiled-tubing sidetracks, depending on the volume of expected oil recovery and the design and operational status of proximal wells." The "large portfolio" of potential coiled-tubing drilling candidates spawned new Nabors rig CDR2-AC, custom-built for, and delivered to, North Slope for 2009 drilling. ConocoPhillips is looking at a low-salinity waterflood pilot project using trademarked LoSal process at drill site 2X, with injection possibly starting by 2014. Although considerable in-field drilling is set for 2011, no new drill sites are planned and Kuparuk's production decline is expected to continue unless changes are made in the state's production tax to encourage more investment.

Kuparuk satellites: West Sak, Tarn, Meltwater, Tabasco, Palm. West Sak, Tarn biggest producers.

West Sak: West Sak is vast viscous oil deposit overlaying Kuparuk field. West Sak produced average of 18,866 bpd in 2009; has tallied about 46 million barrels over its lifetime. At end of 2009, field had 44 active producer wells and 46 water injectors on 6 drill sites. Additional West Sak reservoir potential lies outside current Participating Area; those areas currently being evaluated by operator for development potential. In core area, priority is for pads IE and IJ to be developed by long-reach, multilaterals. Plans in mid-2010 were to drill first pattern of wells in late 2011 or early 2012. Conoco anticipated beginning development drilling in NEWS area of West Sak in 2011, with possible new drill site.

Tarn and new South Tarn development: Daily average production peaked in December 2002 at 36,879 bpd. Producing less than 10,000 bpd in December 2010, with average water cut of about 68%. As of July 2010, 63 wells drilled in and near Tarn pool: 6 exploratory wells, 18 injectors, 39 oil producers. Pool developed on 10-acre spacing. 4 of 6 new wells finished in last part of 2010 and early 2011 in South Tarn, but losing Doyon 15 rig per agreement with ENI. ConocoPhillips said in mid-2010 about Tarn: "More than 15 new wells and sidetracks could be drilled as part of a future infill and peripheral development drilling program. Targeted areas include the thinner distal lobes that previously were considered uneconomic." 2 Tarn wells drilled in first part of 2011 were horizontal wells with multistage fracs.

Meltwater: About 10 miles south of Tarn, Meltwater began production in 2001; produced 2,715 bpd in 2009 from recoverable reserves of 31-52 million barrels. 19 wells on single drill site; over its lifetime has produced 14.1 million barrels of original oil in place of 222 million barrels. Challenging because of sand bodies "highly discontinuous with structural barriers that limit fluid movement through the reservoir," ConocoPhillips said in mid-2010, noting Meltwater "shows a large incremental target for additional development." 3-D seismic survey

completed in 2008, and "horizontal or undulating wells to help connect multiple reservoir sands will be considered." Rumor has it unit expansion might occur in 6 leases that fill un-unitized fairway between Kuparuk and Meltwater satellite; leases expiring Jan. 31, 2012. In December, state records show ConocoPhillips transferred a 0.3648% working interest and a 0.304% royalty interest in those 6 leases to ExxonMobil, which is reportedly willing to help fund development drilling.

Tabasco: Heavy oil field on Kuparuk's western flank, has 12 development wells and produced 1,948 bpd in 2009. Since startup in 1998 it has produced 15.6 million barrels. In mid-2010 Conoco said geological and reservoir simulation models will help "evaluate alternative recovery strategies and additional development opportunities" for Tabasco, which it now waterfloods.

Capital budget for 2011: \$900 million capital budget for Alaska this year, but what it spends will be greatly influenced on what its partners, especially BP, are willing to approve for their share of project funding, which was a problem in 2010 when Conoco budgeted \$854 million, but only spent \$730 million. Spending will be directed toward development of existing Prudhoe Bay and Kuparuk fields, as well as the Western North Slope, the company said.

Jobs today: 1,000 people work for ConocoPhillips in Anchorage, excluding contractors, a chunk of those people work on Alpine and its satellites, as well as Conoco's plans for the OCS.

Jobs added in next year: 2 rigs and fraccing crews will likely be added to unit in last half 2011, first half 2012, as well as possible new coiled tubing rig, similar to CDR-2, representing possible increase in employees, including contractors, of 250. Investment is partly dependent on changes in Alaska's production tax being made by mid-year 2011.

Working interest owners: ConocoPhillips 55.2%, BP 39.2%, Chevron 5.0%, ExxonMobil 0.6%.

Challenges: During 2009, Kuparuk imported an average of 18,391 bpd of Prudhoe natural gas liquids to make miscible injectant, which greatly enhances production. Kuparuk faces a looming problem—insufficient natural gas. Field gas production is expected to decline significantly in coming years, which will leave Kuparuk short of gas for enhanced oil recovery and to fuel field operations. "The most technically feasible known alternative gas source is Prudhoe Bay," ConocoPhillips said in mid-2010. Prudhoe, unlike Kuparuk, has a vast gas cap. Most likely, gas imports from Prudhoe Bay will begin around 2015.

LIBERTY DEVELOPMENT, BEAUFORT SEA OCS, OFF CENTRAL NORTH SLOPE

This data is extrapolated from public and industry sources, not necessarily from the operator.

Development drilling start: 2013 or later Total development drilling costs: \$600,000 Total time for development drilling: 2-plus years Total development drilling jobs: 170 on rig, 30 other for total of 200 Average number operation jobs: 12 Production start/life: 2013, 30 years **Note: Construction of Liberty is complete.**

Operator: BP

Location: Beaufort Sea outer continental shelf (OCS) approxiamtely 15 miles east of Prudhoe Bay, 8 miles east of Endicott Island.

Status: Unitized. BP has halted rig construction to divert resources to review design and engineering of giant Parker drilling rig that was special built for Liberty. Company moved earlier start-up date of spring 2010, then 2011 and 2012, out to 2013.

Seismic: 3-D seismic data acquired winter 1995-96. In 2008 seismic survey, BP commissioned Savant to log subsurface above oil prospect in Kupcake well that Savant drilled near Liberty. BP's 2008 seismic program investigated subsurface rock formations along the proposed drilling corridor from Endicott to the Liberty oil field.

Drill site: Drilling will be from completed extension of Endicott satellite drilling island, using ultra-extended reach wells by one of most powerful rigs in world, \$200 million Parker rig designed to drill eight-mile-long directional wells.

Wells drilled by others in the prospect: Shell originally drilled two wells in 1982 and one well in 1987 in Tern prospect within Liberty prospect area. Shell found evidence of producible hydrocarbons in 1987 well but subsequently dropped leases.

Wells drilled by current operator through end of 2010: One. In 1997 BP discovered Liberty accumulation when drilling an exploration well from Tern gravel island.

Wells drilled in future: Plan involves drilling of up to four production wells and up to two water injection wells.

Production facilities: Production will utilize existing Endicott facilities and pipelines.

Expected production start date: 2013 or later

Production: Plateau production rate 40,000 bpd.

Noteworthy about Liberty: Producing the oil through these long-reach wells eliminates the need for construction of new facilities, an offshore drilling island and subsea oil pipeline.

Recoverable reserves: 100 million barrels.

Working interest owners: BP is sole owner.

Challenges to exploration and development: Requires record-setting ultra extended reach up to eight miles. The uncertainty in this project comes from technology—rig might not work.

NIKAITCHUQ PRODUCING UNIT, CENTRAL NORTH SLOPE

This data is extrapolated from public and industry sources, not necessarily from the operator.

Construction of offshore drill site at Spy Island: Under way as of winter 2011-12 Total construction & drilling costs: \$2 billion—but only \$1.15 billion spent through end of 2010, so balance will be spent in 2011. (Spy Island left to construct and 40 wells to drill)

Total time until Spy Island construction completion: I year Total construction jobs: 400 Development drilling: Under way, balance of 40 wells to be drilled by 2014 (12 already drilled) Total development drilling jobs: 125 Average number operation jobs: 40 Production start/life: Jan. 30, 2011, 30 years

Operator: Eni Petroleum

Location: Immediately north of Kuparuk unit and northeast of Oooguruk unit, nearshore Alaska's North Slope in Beaufort Sea.

Status: Unitized, has pool rules for Schrader Bluff oil pool from AOGCC.

Water depth: 9 to 10 feet of water

First oil: Jan. 30, 2011

Peak production: 28,000 barrels of oil per day (bpod).

Current production: 499 bopd average for February

Recoverable reserves: 220 million barrels of oil.

Processing: Oliktok Point processing facility can handle up to 40,000 bpd of heavy crude with sand and up to 120,000 bpd of water, allowing Eni to ship sales-quality oil down trans-Alaska oil pipeline. Has other leases in OCS offshore from Nikaitchuq it's looking at developing that could utilize Nikaitchuq processing facility, which can be expanded.

Drill sites: Eni developing unit through combination of onshore and offshore drill sites. Production began from onshore pad; currently building offshore drill site at Spy Island.

No. of wells: 12 of the 52 extended reach wells have been drilled as of March 2011; 26 of the 52 will be producers, 21 water injectors, 3 water source wells and 2 disposal wells, with 22 wells drilled from onshore and 30 from offshore. Balance of wells to be drilled by end of 2014.

Drill rigs: Oliktok Point Nabors rig 245-E; Spy Island Doyon 15.

Capital expenditure to develop: \$2 billion

Noteworthy: Third company to operate production facilities on Alaska's North Slope; other production facility operators are BP and ConocoPhillips. Eni considers some of the Nikaitchuq wells, drilled using proprietary technology, to be "leading-edge," because they extend 4,000 feet vertically and up to 20,000 feet horizontally.

Pipelines (completed in 2010): Pipeline bundle will carry oil from Spy Island drill site to Oliktok Point processing plant. Bundle includes 18-by-14-inch production flowline, 12-inch water injection flowline and 6-inch spare flowline. Fiber optic cable and power cable part of bundle. 10-inch export pipeline carries processed oil from Oliktok processing plant to Kuparuk pipeline.

Working interest owners: Eni 100%.

Primary construction/development contractors: INTECSEA, pre-FEED and FEED contractor for subsea pipeline; Nanuq, offshore gravel island constructor; H.C. Price, pipelines contractor; ASRC Energy Services, support services provider; ATCO, on-site camp constructor.

Natural gas: Produces only enough for in-field use.

Commercial life of unit: 30-plus years.

Reservoirs: Eni first targeting deeper Schrader Bluff OA sand; will decide whether to develop shallower Schrader Bluff N sand (bigger accumulation) and minor light oil accumulation in low quality Triassic Sag River sandstones based on drilling and seismic results.

Challenges: The challenge at Nikaitchuq is that it is a marginally economic field based on viscous oil development, David Moles, Eni's Alaska representative and development manager, said Nov. 17, 2010. Eni is reportedly looking for a partner in Nikaitchuq to spread the risk.

NORTH TARN, CENTRAL NORTH SLOPE PROSPECT

This data is extrapolated from public and industry sources, not necessarily from the operator.

Construction & development drilling start: Winter 2011-12 Total construction costs: \$50 million for micro-processing facility, pipeline, permanent pad, etc. Total time for construction and development drilling: 2 years Total development drilling costs: Spending \$17.5 million right now. Another 3 wells \$45 million. Peak construction and development drilling jobs: 250 Average number operation jobs: 8 Production start/life: 2013, 20-30 years

Operator: Brooks Range Petroleum Corp

Location: Alaska North Slope, adjacent to west side of Kuparuk River unit, near Miluveach River, just north of the Alpine pipeline.

Status: BRPC applied to Alaska's Division of Oil and Gas to form Southern Miluveach unit, covering 60,864 acres over leases held by its joint venture partners. BRPC proposed 4-exploration-well program, plus seismic program.

Drill site, pad description, location: Ice pad 2 miles west of Kuparuk River unit, with 4-mile ice road connecting pad to drill site 2M in KRU.

Rig to be used in winter 2010-11: Nabors 9ES

No. of wells drilled by BRPC: One that was spud this month, March 2011, North Tarn No. I, a 6,440 foot measured depth well.

Seismic: If first well successful, plans to drill a sidetrack and conduct development 3-D survey.

Capital budget for 2011: \$17.5 million

Cost estimated for field facility and pipeline construction: \$50 million

Approximately cost per well: \$15 million

Peak production expected: 10,000 bpod.

Recoverable reserves: Brookian reservoir could contain approximately 35 million barrels of oil and Kuparuk reservoir could contain 6 million barrels, for total of 41 million. 2008 seismic produced 16 leads—10, 20, some 30-40 million barrels of oil in size.

Noteworthy about prospect: Only exploration well being drilled on North Slope winter 2011-12. Because of closeness to Alpine pipeline, doesn't need to be huge to be economic. "We think we could get there with a discovery in the Kuparuk at that 6 million barrel number," company executive Jim Winegarner told PN in 2010.

Facilities if and when sanctioned: If BRPC makes commercial discovery, partners will likely build dedicated micro-processing facility to bring crude oil to sales quality. North Tarn's location, I mile from Alpine pipeline, greatly improves economics.

Working interest owners: BRPC is leasehold JV operator on behalf of its parent company, Kansas-based Alaska Venture Capital Group (AVCG), as well as three joint venture companies: Brooks Range Development Corp., Ramshorn Investments and TG World Energy. Plus, farm-in partner Eni Petroleum which formerly owned the 6 prospect leases. BRDC is a name change from former partner Bow Valley. When Dana Petroleum purchased Bow Valley as a result of the worldwide financial crisis, Dana had no interest in Alaska. JV partners ended up reacquiring the interest from Dana and kept the corporate entity in anticipation of finding another partner to acquire the BRDC interest.

Geologic targets: North Tarn No. I will test targets in Brookian and deeper Kuparuk formations. Brookian is producing at Kuparuk River unit Tarn satellite to the south; has produced 100 million barrels to date. Kuparuk is main formation at Kuparuk unit, which has produced over 2.2 bpo to date. Although the Kuparuk is deeper and smaller than the Brookian, BRPC sees it as better bet because of compartmentalized geology of Brookian.

Primary contractors during exploration & development drilling: Nabors Alaska Drilling and Peak Oilfield Services

Challenges to exploration and development: Resource size.

OOOGURUK PRODUCING UNIT & NUNA DEVELOPMENT PROJECT, CENTRAL NORTH SLOPE

This data is extrapolated from public and industry sources, not necessarily from the operator.

Nuna (Torok) onshore development outside of Oooguruk unit Appraisal drilling done offshore in Oooguruk unit: Winter 2011-12, 2-6 wells Development onshore drilling in core area of Torok start: Winter 2012-13 Development drilling end: Winter 2017-18 No. of wells for appraisal & development drilling: 15- 20, all extended reach horizontals Total time for construction: 2 years, 2013-15 Total construction & development drilling costs: \$400-450 million. Total appraisal & drilling jobs: 100-225 for four months and then drop back to 20 jobs between drilling seasons

Total construction jobs: 250 Average number operation jobs: 16 Production start/life: 2015, 20-30 years

Ongoing development drilling in Oooguruk unit, same every year through 2018: \$120 million per year, 4-5 wells, 125 jobs.

Project to watch is an Oooguruk processing facility. Right now Oooguruk crude is being processed at the nearby Kuparuk River unit, but recoverable reserves in Torok inside the unit and outside, in the Nuna project, might justify the construction of Pioneer-operated processing facilities. Geology and economics will play into the decision.

Operator: Pioneer Natural Resources Alaska

Location: Oooguruk is northwest of Oliktok Point, in the Beaufort Sea's Harrison Bay, northwest of Kuparuk unit. Onshore proposed Nuna project is south and southwest of Oooguruk unit boundary on eastern bank of Colville River, stretches under river delta.

Water depth: 4 to 5 feet of water. Nuna pad would be onshore.

Status: Oooguruk unitized. Rules in place defining two oil pools—the Oooguruk-Nuiqsut and Oooguruk-Kuparuk; Pioneer filed in February for Torok pool rules inside existing offshore unit. Nuna area includes 5-6 onshore leases outside unit; 5 owned 70/30 by Pioneer, Eni; one operated by Conoco in Kuparuk unit. Nuna sanctioning will not occur, said Pioneer, until completion of appraisal work offshore and receipt of major agency approvals. Initial development will target the northern area of the Torok pool, reachable from the existing Oooguruk offshore drill site. Wells, including injectors, will be hydraulically fracture stimulated to enhance productivity and improve vertical injection sweep. The initial development will serve as a pilot flood of the Torok and provide critical performance and injection data. Assuming Torok development from the offshore drill site is successful, the core area of the Torok pool would be developed from an onshore drill site on the edge of the Colville Delta, called the Nuna Development. Onshore development drilling from early 2013 to early 2018.

First oil from main Oooguruk unit: June 2008

Possible first oil from Torok formation in Nuna project: 2015

Offshore existing drill site: Six-acre artificial gravel island at mouth of Colville River, 5.7 miles from shore, with facilities for development drilling and field operations.

Onshore drill sites for proposed Nuna development: 1-2 new drill sites on eastern bank of Colville River. Second tie-in pad adjacent to KRU drill site 3S (DS-3S).

No. of wells in initial unit plan: About 40 horizontal wells, approximately half producers, half injection.

No. of wells in Nuna development: 15-20, all extended reach horizontals.

Capital expenditure: Approximately \$1 billion through end of 2010; Nuna could double that if production facility built for it and Oooguruk. Otherwise, \$400-450 million.

Peak unit production: Bumped I year from 2010 to 2011, 15,000-20,000 bpd.

Peak unit Torok production: Pioneer said there is considerable uncertainty in production rates for the Oooguruk-Torok pool given limited data on well performance and uncertainty in drilling time, but the company estimates that over the project life of 20 to 30 years production could average from 4,000 to 9,000 bpd, with a peak production rate of 7,000 to 15,000 bpd. Uncertain if this Torok production includes Nuna onshore development adjacent to, but outside, the offshore Oooguruk unit.

Noteworthy: First independent to operate producing field on Alaska's North Slope. Crude processed at Kuparuk River unit (KRU) under facility sharing agreement with KRU.

Recoverable reserves in unit: 172-214 million barrel of oil equivalent (boe); 29 million boe proved up in 2010. (In filings Pioneer gives only its net oil; these numbers include Eni's portion.)

Oil in place in Nuna: Core area in this onshore project is some 7,000 acres with 290 million barrels of original oil in place (OOIP); an expansion area of some 15,000 acres, 350 million barrels of OOIP.

Pipelines: Produced fluids are gathered and transported to shore in buried subsea 3-phase flowline, which on shore transitions to above-ground insulated line. 12-inch subsea flowline sits within 16-inch pipe that provides leak detection, secondary containment.

Nuna infrastructure: Utility service, including water, gas, and power, would be provided on elevated flowlines from OTP to drill sites via DS-3S. Drill sites would be connected to DS-3S by gravel roads. 3-phase production transported for processing to KRU via flowline tie-in at DS-3S.

Jobs, direct, including contractors: 600 jobs during unit peak construction; 120-160 for production and continued development in 2011 and beyond; 100-225 for Torok/Nuna appraisal and development drilling; if sanctioned, increase by 250 construction jobs in 2013-15; then drop to about 125 jobs when only development drilling through 2018. Operations jobs for Nuna: 8

Working interest owners: Pioneer Natural Resources 70%; Eni 30%.

Commercial life of Oooguruk unit: 30-plus years from startup.

Reservoirs: Jurassic Nuiqsut sandstone, Kuparuk C sandstone and Torok.

Challenges: Commercial uncertainties surrounding availability and deliverability of gas to unit for enhanced recovery and competing for funds against high rate of returns in source rock (shale) plays Pioneer invested in outside Alaska.

POINT THOMSON UNIT, EASTERN NORTH SLOPE

This data is extrapolated from public and industry sources, not necessarily from the operator.

Construction start: Winter 2012-13 Development drilling re-start: Winter 2013-14 at earliest. Total construction & remaining development drilling costs: \$1.8 billion Total time for construction & development drilling: 4 years Total development drilling jobs: 200 Total construction jobs: 450

Average number operation jobs: 80 Production start/life: year-end 2014 or 2015, 30 years-plus.

Operator: ExxonMobil

Location: On state acreage along remote Beaufort Sea shoreline approximately 60 miles east of Prudhoe Bay, adjacent to the ANWR 1002 area.

Status: The unit status is uncertain. The State of Alaska and ExxonMobil and its partners are in negotiations to settle a dispute about the unit, leases and work commitments. Those negotiations are expected to result in a settlement before the end of April. Exxon resumed drilling in Point Thompson unit (PTU) in 2009 under an agreement with the state.

Unit formed: 1977

Leases: When it was first formed in 1977 the unit included 18 leases covering 40,768 acres. Over time the unit grew to 45 leases encompassing 106,201 acres, which was its size in December 2006 when the state terminated it.

History: After 1983, Exxon began to propose plans of development that didn't include further drilling citing the lack of a North Slope gas pipeline as a reason. PetroTel Inc., a Plano, Texas, consultant, conducted a resource assessment and field development study for the state of Alaska in 2008. It concluded that a majority of proven hydrocarbon resources in Thomson sand are contained in the form of gas with entrained liquids known as a retrograde condensate. Those reservoirs tend to be deeper and have higher pressures and temperatures than conventional reservoirs. Due to the abnormally high pressures and temperatures, the fluid in a retrograde condensate reservoir does not behave like those in conventional oil and gas reservoirs. Rapid production of gas from such a reservoir, and the resulting loss of pressure, will cause vaporized hydrocarbon liquids to condense and clog pore space, PetroTel said. The result is that "hundreds of millions of barrels of condensate will become trapped in the reservoir and never be produced." The state wanted a petroleum liquids project before gas was produced from the unit. This would be done by bringing gas to the surface, processing it to capture the condensate and natural gas liquids, and then pumping the dry gas back downhole for storage. Producing these liquids first, as opposed to a quick gas "blowdown," has important practical advantages for a field such as Point Thomson, the PetroTel study said. On May 16, 2002, Exxon's Alaska production manager at the time, Jack Williams, said the company was working with regulators on a potential gas cycling project to produce up to 75,000 bpd of Point Thomson liquids. In 2003, Exxon said the gas cycling project was not economic and would not be pursued. On Sept. 30, 2005, a landmark decision came down from Mark Myers, then the state's oil and gas director. He found that the Point Thomson unit agreement was in default because of ExxonMobil's failure to submit an acceptable plan of development. Since 2005, the companies and the state have engaged in a fight for control of Point Thomson both administratively and in the courts. On May 8, 2009, with the state's permission, Exxon spud the first of two wells on a pair of Point Thomson leases, part of Exxon's "unconditional commitment" to start producing 10,000 barrels a day of condensate from Point Thomson by the end of 2014. For the conditional reinstatement of the two leases to become final the state required unconditional funding commitments for drilling two wells and for construction of production facilities necessary for "sustained commercial production and transportation of hydrocarbons from these two wells on these two leases to market by 2014—i.e. a pipeline. On Jan. 11, 2010, Exxon and its partners scored a major victory when Superior Court Judge Sharon Gleason of Anchorage reversed the state's unit termination. The state appealed aspects of Gleason's decision to the Alaska Supreme Court, where for several months the case has stood idle as the two sides attempt to negotiate a settlement. On Oct. 27, 2010, Exxon announced it had finished drilling the two development wells, PTU-15 and PTU-16, on leases ADL 47559 and ADL 47571. The company's target of 2014 for startup has been held up by the U.S. Army Corps of Engineers delay in issuing a wetlands permit for its proposed gas cycling project due to its

being behind about eight months on an environmental impact statement needed to issue the wetlands permit. A draft document is scheduled to be published on June 24 for a 45-day public review and comment period. A signed record of decision is expected on March 15, 2012. Hank Baij, the Point Thomson environmental impact study (EIS) manager for the U.S. Army Corps of Engineers, has said part of the reason for the schedule slippage is to allow more time for certain studies and analyses. One such study is to evaluate noise impacts from Point Thomson construction and operations on the Arctic National Wildlife Refuge, located just east.

Wells drilled in unit through 1983: Hydrocarbons were first discovered in 1975 with Alaska State A-1 well, which tested a zone of the lower Tertiary Flaxman sand and flowed at a rate of 2,507 bopd and 2.2 mcf of gas. A second discovery well, the Point Thomson Unit No. 1, was drilled in 1977 and conducted flow tests in the Lower Cretaceous Thomson sand. One test yielded 2,283 bopd and 13.3 mcf of gas. Six more wells were drilled over the next seven years to delineate the two discoveries. In the process, other hydrocarbon reservoirs were encountered. In 1994, BP and Chevron drilled the Sourdough No. 2 well targeting Brookian sands of the Canning formation in the southern portion of the Point Thomson unit, and followed up with the Sourdough No. 3 well in 1996. In a 1997 press release, BP announced a discovery of potentially 100 million barrels of recoverable oil. Altogether, 17 wells were drilled within the boundaries of the PTU between 1975 and 1996. State officials certified seven wells as "capable of producing oil or gas in paying quantities," a legally significant designation.

Pipeline: An Exxon affiliate has applied for a state right of way to build a 22-mile pipeline to carry Point Thomson liquids west to the Badami unit to hook into the existing North Slope pipeline network. The right of way can't be issued until Corps EIS record of decision is signed.

Phase I of PTU development: Five wells are part of a phase I, five-well oil rim program laid out by Exxon in 2008 and initiated in 2009. The five oil rim wells will be drilled through gas. Exxon said the aim is to delineate the oil and investigate whether it's producible. If the oil is not economically or technically producible they will become gas wells when North Slope gas becomes marketable.

First phase wells drilled in 2009 and 2010, only wells since 1983: The two recent wells, PTU-15 (injector) and PTU-16 (producer), were drilled from Point Thomson 3 Pad to a measured depth of more than 16,000 feet. The shore-based Nabors 27-E rig drilled directionally under the Beaufort Sea to the targeted reservoir more than 1.5 miles offshore. A 60-mile ice road from Endicott to Point Thomson was constructed for the project.

Next three wells in phase 1: Winter of 2013-14 was the original scheduled start date before the Corps delay. Based on that delay, a 2015 start is more realistic. The next three wells in Exxon's phase 1 plan include two oil rim wells from the west pad; and one oil rim well from the east pad. There is no existing west pad at Point Thomson and initial drilling there will be from an ice pad; there is an existing gravel pad on the east side, but that will be moved because of erosion.

Final four wells: The next four wells, totaling nine wells, will all be from the central pad: two gas wells and two oil rim wells, Exxon said in 2009.

Approximately cost per well: \$250 million for the first and \$100-\$150 million for successive wells in phase 1. But the first two wells reportedly ran over budget.

Cost estimated for phase 1, 5-well development: \$1.3 billion (initial, not allowing for cost overruns), plus four additional wells at about \$125 million each for grand total of \$1.8 billion.

Capital expenditures through 2010: \$730 million spent in last two years (total of \$1.5 billion since unit formed)

Remaining capital costs for completion of phase 1, 10,000 bpd: \$570 million left of the original \$1.3 billion estimate, but since cost overruns on first two wells ate up more than their share of the budget, this number is probably closer to \$900 million, plus the additional \$500 million for four additional wells for a grand total of \$1.4 billion that remains to be spent on this project as originally envisioned by Exxon

Expected start date: Target was by year-end 2014, but because of Corps delays, will likely slip to end of 2015.

Daily production expected from phase I: 10,000 bpd of condensate to be shipped down trans-Alaska oil pipeline.

Total estimated recoverable reserves: 8 trillion cubic feet of natural gas, 200 million barrels of condensate, excluding non-Thomson sands reservoirs.

Noteworthy: The Point Thomson pilot project includes gas cycling facilities designed to recover hydrocarbon liquids and re-inject natural gas back into the reservoir, making Point Thomson "the highest-pressure gas cycling operation in the world," according to Exxon.

Working interest owners: Exxon 37 percent, BP 32 percent, Chevron 26 percent, ConocoPhillips 5 percent.

Geologic targets: PetroTel summed up Point Thomson this way: "Well log and production or drill stem test data indicate that much of the Point Thomson area is underlain by the Cretaceous (Neocomian) Thomson sand that contains abundant natural gas and hydrocarbon liquids in the form of gas condensate, ranging from 35° to 45° American Petroleum Institute (API) gravity. In addition to gas and condensate, the Thomson sand also contains a thin and potentially discontinuous oil-rim at the bottom of the reservoir interval that has tested oil as high as 18° API gravity. The Point Thomson area contains the potential of hundreds of millions of barrels of oil in the shallower Tertiary Brookian reservoirs. Another potential productive reservoir is composed of carbonates and bedded metasedimentary strata in the 'Pre-Mississippian' basement below the Thomson sand reservoir.

PRUDHOE BAY PRODUCING UNIT, CENTRAL NORTH SLOPE

This data is extrapolated from public and industry sources, not necessarily from the operator.

Operator: BP Exploration (Alaska) Inc.

Location: Central North Slope of Alaska, 400 miles north of Fairbanks, 250 miles north of Arctic Circle, 1,200 miles from North Pole.

First oil: Prudhoe Bay was discovered in 1968 and came onstream June 20, 1977. Production averaged more than 1.5 million barrels of oil and gas liquids per day for more than a decade.

Oil produced from Prudhoe field through end of 2009: 12 billion barrels from Prudhoe reservoir; 13 billion barrels from Greater Prudhoe Bay area, including satellites Orion, Polaris, Aurora, Midnight Sun and Borealis, as well as Lisburne, Point McIntyre and Niakuk.

Recoverable oil and gas: When production started at the Prudhoe Bay field the recovery rate of the 25 bpo in place was expected to reach 40 percent. By 2009, using new technologies that estimate has increased to more than 60 percent, leaving 2 billion barrels of conventional oil (excluding heavy oil) still recoverable and 26 tcf of natural gas.

Current production (February 2011) from Prudhoe and satellites Aurora, Borealis, Midnight Sun, Orion and Polaris: 327,924 bpd.

Oil in place for satellites: Orion 1.2 billion barrels, Polaris 500,000 barrels, Aurora 100,000 barrels, Midnight Sun 600,000 barrels; Borealis 100,000 barrels.

Current production (February 2011) from Lisburne, Point McIntyre and Niakuk, part of greater Prudhoe Bay: 33,672 bpd

Status: Unitized. Satellites currently producing (liquids processed through Prudhoe's main facilities) are: Aurora and Borealis fields, which produce from similar formations; Midnight Sun, which produces from sandstone formation at 8,000 feet below sea level, and; Orion and Polaris fields, which both produce viscous oil from Schrader Bluff formation, at depths of 4,000 to 5,000 feet below sea level.

Noteworthy: Largest oil field in North America.

No. of wells by end of 2010 in Prudhoe and 5 satellites: 1,500-plus

No. of wells in 2011: Similar to 2010, with about 20 rotary drilling penetrations and almost 40 coiled tubing penetrations.

No. of wells in 2012 and beyond: BP is looking to add a seventh rig at Prudhoe in 2012 and a rig at Milne Point because after the last oil spill, when BP temporarily halted production, a lot more Milne wells than expected would not come back online, which is generally the case with Milne. The rig at Prudhoe is likely dependent on State of Alaska production tax changes.

Investment by Prudhoe owners through 2009: Development of Prudhoe Bay and the transportation system necessary to move its crude oil to market cost more than \$40 billion, which includes the recent addition of 4 modern, Alaska-class double-hulled tankers.

Capital and operational spending for BP in Alaska in 2011: In November 2010, BP laid out an \$800 million capital budget (down about 20 percent from 2009, which was about 33 percent above 2008) and a \$1.3 billion operating budget for Alaska in 2011, describing both as "broadly flat" from 2010. BP said capital budget roughly split in equal thirds, between infrastructure renewal; drilling to sustain base which offsets and mitigates production decline; and growth projects, which currently is primarily Liberty, a new field being developed in Beaufort Sea OCS.

Cost of wells: In neighborhood of \$6 million on average; a multilateral off of that anywhere from \$2.5 million to \$3 million, per 2009 numbers from BP.

Employees, company and contractor, today: More than 2,000 full-time employees (including contractors) involved in Prudhoe operation, with 300 of those jobs adding to oil production volumes through techniques such as perforating wells and stimulating the oil reservoir. Presumably at least half the jobs dedicated to Prudhoe infrastructure renewal.

Employees, company and contractor, over next 10 years: Expected to stay about the same for infrastructure renewal and drilling to sustain base which offsets and mitigates production decline. Growth project capital investment could increase, depending on technological success with heavy and viscous oil projects.

Remaining commercial life: "At the start of the 1980s, the field was expected to last about 30 years," Howard Mayson, BP's vice president of technology, said in 2009. "There could easily be another 50 years to go. It's very long-legged, and a lot of that is down to technology."

Infrastructure renewal: Upgrading of unit's pipeline infrastructure got under way in 2006. BP completed replacing 16-miles of oil transit lines in late 2008. The project, which cost \$500 million, included rebuilding main Prudhoe Bay oil delivery system, pigging modules, corrosion inhibitor injection facilities, state-of-the-art leak detection, metering facilities and all the affiliated electrical and emergency systems. But Greater Prudhoe Bay has more than 1,600 miles of pipelines and a significant effort since 2006 has been put into evaluating, inspecting and understanding long-term pipeline requirements. Right-sizing critical pipelines will involve replacing some lines, upgrading others and abandoning some. **Second step of field renewal** is also under way: the upgrade of the automation, fire protection and gas handling facilities. Upgrades will recognize advances in electronic and computer technology since field was built in 1970s. **Third step of field renewal** also under way—planning and engineering design work for modernization of field facilities, including possible installation of facilities designed for gas production if North Slope gas line is built. For example, supplying sufficient electrical power to operate new facilities, including enhanced oil recovery programs or heavy oil facilities, will likely require replacement of Prudhoe Bay power plant, the largest power plant in Alaska. Facilities consolidation, roads and pads consolidation, and additional oil development.

Reservoirs: Prudhoe Bay produces from the Sadlerochit sandstone formation, nearly 9,000 feet below sea level. The oil bearing column is 500 feet thick in some areas. The main reservoir is the 450-foot thick Permo-Triassic lvishak formation, with the much thinner Sag River formation forming a second reservoir above the lvishak.

Interesting tidbit: BP has been working with Halliburton to test new tool for downhole separation and reinjection of gas, with field testing expected by mid-2012.

Working interest owners: BP holds a 26.36 percent working interest in the Prudhoe Bay unit, ExxonMobil owns 36.40 percent, ConocoPhillips owns 36.08 percent, and Chevron holds 1.16 percent.

REPSOL/**A**RMSTRONG/**GMT P**ROSPECTS, CENTRAL NORTH SLOPE, ON AND OFFSHORE

This data is extrapolated from public and industry sources, not necessarily from the operator.

Exploration start: Winter 2011-12 Total exploration costs: \$768 million Total time for exploration: 3-plus years Total exploration jobs: 550 (about 4 months per year), 45 of those annual positions Combined development drilling & construction investment: 12 fields, 30-250 million barrels, \$12-plus billion Construction start: 2012-13 Peak construction jobs: 200-650 jobs per year for an average of two years each for each of 12 fields Average number operation jobs: Does not apply Production start/life: First half 2015 for first field, each field 20-30 years

Operator: Repsol YPF, but has tasked Armstrong (North Slope subsidiary is 70 & 148 LLC) to handle operations.

Acreage: 494,211 acres (2,000 square kilometers) on Alaska's North Slope and nearshore Beaufort Sea, including large chunks south of the Kuparuk River unit, in the White Hills area and near the Oooguruk unit. All of GMT Exploration LLC's and 70 & 148 leases were included in the transaction, including recent sale acreage that has not yet been assigned.

Investment: "Minimum exposure" of \$768 million for multiyear drilling program.

Prospects: "More than a dozen ideas outside of existing producing units" on project list, in many cases companies know oil is in place.

Average cost per well: \$5-30 million, depending on depth and location and well design

Recoverable reserves: possibly 1.5 billion barrels

Working interest owners: Repsol holds a 70 percent working interest in the acreage; the remaining 30 percent is 75 percent held by Armstrong and 25 percent by GMT.

Geologic targets: multiple,

Challenges to exploration and development: What wasn't said in Repsol's March 7 press release, Petroleum News sources contend, is that the Spanish major expects Alaska Gov. Sean Parnell's proposed changes in Alaska's production tax to pass into law. It's not hard to believe. Just three weeks before the long-awaited deal closed with Repsol, Armstrong Vice President Ed Kerr submitted a letter to the co-chairs of the Alaska Legislature's House Resources Committee, saying that the governor's bill, "HB 110 will have a significant impact on our capital expenditures and future activities in Alaska. The improved fiscal terms as proposed by HB 110, particularly the portions of the bill that apply to activities outside of existing units, will give us the needed incentive to not only drill multiple new wildcat and delineation wells, but the motivation to drive certain projects to development.".

STINSON PROSPECT, OFFSHORE EASTERN NORTH SLOPE

This data is extrapolated from public and industry sources, not necessarily from the operator.

Operator: Donkel/Cade.

Location: 10 leases, 35,434 acres, north of ANWR 1002 area in Camden Bay surrounding ARCO Stinson No. 1 well; directly west of Point Thomson. Purchased from BRPC in 2009, plus three leases in Beaufort Sea north of ANWR won in latest State of Alaska Beaufort Sea lease sale that has expanded to the southeast Donkel/Cade holdings within the accumulation defined by the ARCO Stinson #1 well. Total leases: 10. Total acreage: 35,434 acres.

Status: Currently applying for unitization

Water depth: +/- 50 feet

Wells drilled in past by other operators: ARCO Stinson No. I well, drilled in 1990, certified capable of producing, and was granted extended well data confidentiality because of proximity to unleased acreage in ANWR's 1002 area.

Wells drilled by operator: none

Seismic acquisition: No new seismic shot.

Capital expenditures through 2010: N/A

Capital budget for 2011: N/A

Cost estimated for development: N/A

Noteworthy about the prospect: The deeper of the two oil bearing horizons involves the basement complex, a horizon relatively new to North Slope production.

Total estimated recoverable reserves: The Tertiary horizon contains 150 million barrels of oil (mmbo) probable reserves within a single 100-foot thick sand (P90: 80 MMBO; P10: 420 MMBO). Reserves for the basement are currently under assessment.

Facilities and pipelines description for development if sanctioned: A pipeline tie in to Point Thomson would be required.

Geologic targets: ARCO Stinson #1 discovered flowable gas and oil in both the basement and in a shallower Tertiary horizon. Donkel/Cade believes these horizons, especially the Tertiary, expand and thicken to the southeast. They also say that said horizons bespeak much about the hoped for undeformed belt of the ANWR 1002 coastal plain.

Other Donkel/Cade northern Alaska prospects: "Regarding other leaseholdings, although very prospective, at present no defined prospects have been generated, with the exception of a potential play in the Hemi Springs area."

Challenge to development: The only major challenge to development, since Stinson is in state waters, is a pipeline from Point Thomson to Badami.

TOFKAT PROSPECT, CENTRAL NORTH SLOPE (PREVIOUSLY NAMED TITANIA)

This data is extrapolated from public and industry sources, not necessarily from the operator.

Development drilling start: 2011-12 Construction start: 2012-13 Total construction costs: \$50 million Total time for construction: 1 season Total drilling jobs: 125 Total construction jobs: 200 Average number operation jobs: 6 Production start/life: 2014, 15-20 years Note: This project might never get developed; much depends on resource size and economics.

Operator: Brooks Range Petroleum Corp

Location: East and south of Nuiqsut, SW of Kuparuk River unit, near Colville River.

Status: BRPC will be applying to form the Putu unit around its Tofkat acreage at end of March.

Because Titania was a prospect Phillips (now ConocoPhillips) proposed in 2002 as part of expansion of Colville River unit, BRPC changed name to Tofkat.

Wells drilled in past by other operators: None, but Phillips shot 3-D seismic over area.

No. of wells drilled by BRPC: Winter of 2007-08 drilled Tofkat No. I well, taking 10 oil samples from 4 different sandstone reservoirs and finding 6 feet of net pay in Kuparuk formation, deepest zone tested. Drilled 2 sidetracks to find edge of Tofkat reservoir.

Wells possible in winter 2011-2012: |

Seismic acquisition, future plans: Winter 2007-2008 acquired 210 square miles of 3-D seismic. Per TG World, the "seismic was unable to map the Tofkat #1 oil play as the reservoir was too thin. Additional analysis of the Kuparuk prospect at Tofkat #1 is ongoing in an attempt to determine the commerciality of this oil play. The JV has added to its land position around Tofkat and is in the process of identifying additional targets."

Approximately cost per well: \$15 to \$20 million.

Noteworthy about the prospect: Distance between North Tarn and Tofkat (-10 miles) does not mean the two prospects are automatically candidates for joint development.

Working interest owners: BRPC is leasehold JV operator on behalf of its parent company, Kansas-based Alaska Venture Capital Group, or AVCG, as well as three joint venture companies: Brooks Range Development Corp. (BRDC), Ramshorn Investments and TG World Energy. BRDC is a name change from former partner Bow Valley. When Dana Petroleum purchased Bow Valley as a result of the worldwide financial crisis, Dana had no interest in Alaska. JV partners ended up re-acquiring the interest from Dana and kept the corporate entity in anticipation of finding another partner to acquire the BRDC interest.

Geologic targets: Kuparuk

Primary contractors during exploration: Nabors Alaska Drilling

Challenges to exploration and development: Resource size, per BRPC.

UMIAT PROSPECT, CENTRAL NORTH SLOPE

This data is extrapolated from public and industry sources, not necessarily from the operator.

Appraisal drilling start: Winter 2011-12 Total time for appraisal & development drilling: 5 years

Cost estimated for I-year appraisal program: \$45 million Cost estimated for construction & development drilling: \$1.3 billion Development drilling & construction to begin: 2012-13 Jobs expected during appraisal drilling: Unknown Jobs during field construction and development drilling: Unknown Jobs to operate field: Unknown Production start/life: 2015, 30 years

Operator: Renaissance Alaska LLC

Location: Upper Foothills, North Slope, Alaska

Drill site, pad description, location: Multiple

Wells drilled in past by other operators, including date completed, operator, and name: 11 shallow wells drilled by U.S. Navy in late 1940s and early 1950s. One deep test, Seabee No. 1 well, drilled by U.S. Government (contract with Husky) in 1978-79.

Total capital expenditures through 2010: \$43 million

Capital budget for 2011: \$2 million

Peak production: 50,000 bpod

Noteworthy: 37° degree gravity oil, target formations between 200 feet and 1,500 feet, upper portion of reservoir in permafrost.

Recoverable reserves: 250 million barrels of oil (Ryder Scott)

Facilities and pipelines description when sanctioned: Oil processing facilities with 110 mile buried pipeline to trans-Alaska oil pipeline.

Working interest owners: Renaissance Umiat LLC (100%)

Geologic targets: Upper and Lower Grandstand formations, located in Cretaceous

Challenges to exploration and development: Lack of year round seasonal access.

Note: See Oil & Gas Journal Article, DOT Presentation on Road to Umiat and Northern Economics Report on website below.

Website: http://www.renaissancealaska.com/

VISCOUS AND HEAVY OIL, CENTRAL NORTH SLOPE

This data is extrapolated from public and industry sources, not necessarily from the operator.

Stepped-up viscous oil development:

Construction & drilling start: 2012 Total construction & drilling costs: \$20-30 billion

Total time for construction & drilling: 10 years Total construction & drilling jobs: 3,500 per year Average number operation jobs: 300-plus Production start/life: 2013, 50 years

Note: The viscous oil step-up won't happen without the governor's tax bill passing into law.

Viscous oil description: Viscous oil is oil that has a higher resistance to flow and a higher specific gravity than lighter crudes, typically making it more difficult to produce than lighter crudes. Viscous oil on the North Slope of Alaska has the consistency of maple syrup.

Heavy oil description: Heavy oils on the North Slope have a greater resistance to flow and higher specific gravity than viscous oil. In the producing units on the North Slope, heavy oil is found at shallower depths and is therefore also at colder temperatures than the deeper viscous oil. North Slope heavy oil has the consistency of molasses.

Current viscous oil production: Viscous oil production from Alaska's North Slope currently is about 40,000 barrels a day, depending on the definition of viscous used by the reporting company or agency. That production is drawn from an estimated 6 billion barrels of in-place viscous oil that is located within currently producing_North Slope units (4 billion barrels in_the West Sak sands/Schrader Bluff formation in the Milne Point and Kuparuk River units and 2 billion barrels in the Schrader Bluff formation in the Prudhoe Bay unit (Orion and Polaris satellites), Nikaitchuq and Oooguruk units. In addition to the 6 billion barrels within the existing producing units, another 4-6 billion barrels of undeveloped in-place resource is estimated to be present close to infrastructure.

Viscous potential, per BP: BP's Alaska president, John Minge, said in November 2010 that as a "result of the scoping work ... we believe it is possible to develop 2 billion barrels of gross viscous oil with technology advancements that we believe are achievable. ... A project like this would require on the order of 2,000 more wells on 50 pads with a new gathering center and a hundred miles of new pipelines." Such a project using "economies of scale" has "the potential to flatten the North Slope's production decline."

Price tag: Possibly \$20-30 billion.

Jobs in the first 10 years: Minimum 3,500 a year.

Heavy oil development:

Construction & drilling start: 2014 or later Total construction & drilling costs: \$20-30 billion Total time for construction & drilling: 10 years Total construction & drilling jobs: 3,500 per year Average number operation jobs: 300-plus Production start/life: 2015, 50 years

Note: The technology to produce North Slope heavy oil is still being developed. Once the technical challenge is overcome, there will be the challenge of economics. Passage of the governor's tax bill is likely essential.

Heavy oil potential: Heavy oil is not in production but it represents a bigger prize; perhaps 20 billion barrels in place in the Ugnu formation close to and within existing infrastructure. BP, ConocoPhillips, ExxonMobil and other legacy field partners are working on technology that will allow part of this resource to be commercially extracted, but that could change.

Heavy oil pilot project to start in April 2011: BP has completed commissioning a \$100 million heavy oil pilot project on the Milne Point S-Pad that will start up in April, with the goal of finding a technically viable way to extract heavy oil from the relatively shallow Ugnu formation that overlies much of the Central North Slope's producing reservoirs. The pilot will use a technique called cold heavy oil production with sand (CHOPS). "Even if we only get a fraction of that, say 10 percent (3 billion barrels, including Kuparuk's Ugnu), to the surface, it's still a huge potential oil field," Eric West, manager of BP's Alaska renewal team, said in March 2011. (See Petroleum News article, 3-20-2011, at http://www.petroleumnews.com/pnads/294537150.shtml)

Peak production: 250,000 barrels a day for first 3 billion barrels

Price tag: Possibly \$30 billion.

Jobs in the first 10 years: Minimum 3,500 a year.

Challenges of heavy oil production: One, in order to ship the heavy oil in pipelines, BP will have to mix in an equal amount, or more, of lighter oil with it, so conventional oil and/or natural gas liquids from the North Slope through the trans-Alaska oil pipeline will have to stay steady or increase in order to deliver heavy oil to market. Two, heavy oil has less of the light, high-hydrogen components, valued for refining into high-value products such as gasoline, than does light oil, thus giving the heavy oil a lower market value than its lighter cousin. Three, in addition, the production and usage of heavy oil would involve the use of the same value chain of pipelines, oil tankers, refineries, etc. as light oil, but with new (and costly) technology bolted on. Heavy oil is unlikely to ever be more economic than light oil. BP has stated "Heavy oil is not light oil that happens to weigh more. It is in fact a different commodity. It has different technical challenges."

Timing: And although BP's test facility should this year provide some clarity over whether the physics of heavy oil production from the Ugnu works, it will likely take another couple of years, and perhaps another pilot project, to flesh out the production characteristics of the heavy oil resource, BP said.

Noteworthy: In Canada, extraction rates in the tar sands are as high as 50 percent, thanks to advances in technology by producers and government.

Definition of specific gravity: Specific gravity is calculated by dividing the density of a fluid by the density of water. As you may know, if something is denser than water, it sinks, while if it is less dense than water, it floats. So if a fluid's specific density is higher than I, it will sink, but if it is less than I, it will float. Knowing what fluids will float is important in many industrial fields.

Definition of API gravity: Specific gravity is especially important for the petroleum industry. When crude oil is taken from the ground, refineries separate the crude into tar, kerosene, gasoline, hydraulic oil and many other compounds. The knowledge of specific gravities and boiling points allows refineries to separate these compounds efficiently. But values of specific gravity vary widely, and the American Petroleum Institute, or API, found it convenient to create a new unit, the eponymous API gravity. To calculate API gravity, you need to know the fluid's specific gravity. Divide 141.5 by the fluid's specific gravity and subtract 131.5. If that seems arbitrary, it is because the equation was designed for convenience's sake. Values of specific gravity vary widely, but by using this formula, API gravity values of petroleum products are closer together than specific gravity values.

YUKON GOLD, EASTERN NORTH SLOPE

This data is extrapolated from public and industry sources, not necessarily from the operator.

Operator: Savant Alaska

Location: About 50 miles east of Prudhoe Bay. 2 leases along Staines River on western boundary of ANWR 1002 area; a third lease is adjacent to northern of 2 leases along river.

Status: Like the Sourdough wells to the north drilled by BP along the edge of the 1002 area (in former Point Thomson unit), BP's 1994-96 Yukon Gold No. I is on the state's extended confidentiality list.

Water depth: Onshore

Noteworthy: Similar to Sourdough, Yukon Gold is not likely to be developed until a pipeline is built to nearby Point Thomson because Yukon Gold's reserves are not large enough to justify a pipeline connecting it to Badami, the farthest east producing field on the North Slope. Point Thomson output will flow to the Badami field 20 miles away, bringing infrastructure within 10-15 miles of Yukon Gold. Once the lines reach Sourdough or Yukon Gold, they are on the doorstep of ANWR's 1002 area, set aside by Congress for its oil and gas potential.

Recoverable reserves: 120 million barrels of oil per State of Alaska.

Cost estimated for development sans production facilities: \$450 million

Approximately cost per well: \$10 million

If project sanctioned, development drilling and construction expected to begin: TBD

First oil expected: TBD

Peak production expected: 10,000 bpod

Drill site: When a BP engineering feasibility study indicated an insulated ice pad in March 1993 at Yukon Gold No. I well would significantly extend winter drilling season, BP built 390-by-280-foot ice pad covered with 600 wind-resistant insulating panels. Summer visits confirmed ice beneath panels remained sufficiently frozen. When panels were disassembled in October 1993, they had not bonded to resting surface, or scattered; nearly 90 percent were in excellent condition and reusable. BP began drilling in November, 2 months ahead of conventional Arctic practice. BP had time to drill nearby Sourdough No. 2, where insulated panels were placed under drilling rig to give BP option of leaving rig on location over summer and avoiding remobilization if well wasn't completed. Proved to be unnecessary since the Sourdough well was completed during same season. BP netted cost savings of more than \$2.3 million from the 2 single-season well completions, per Department of Energy (DOE). In addition, tundra endured significantly less impact than would have been the case had BP's crews been required to move equipment back and forth between 2 drilling seasons. DOE also reported that subsequent site monitoring showed no long-term environmental impacts from use of insulated ice pads.

Wells drilled in past by other operators: 1993 BP's Yukon Gold No. 1

Wells drilled to date by operator: None

Next well: TBD

Geologic targets: Thomson sands, Brookian. Some geologists suspect Yukon Gold's reservoir extends east under Staines River into ANWR's 1002 area. If Yukon Gold developed, wells on state lands might cause oil and gas

fluids to migrate across border. Per federal law, backed by court decisions, if they don't hold lease sale for their side of reservoir, the U.S. government wouldn't be able to claim revenue from federal oil drained from Yukon Gold's state leases. Per 1998 assessment, the 1002's northwest corner holds some 10.4 bpo.

Jobs expected during development drilling and pipeline construction: 300-400

APPENDIX – MINING

BOKAN MOUNTAIN RARE EARTH ELEMENT PROJECT

Operator: Ucore Rare Metals Inc.

Location: Prince of Wales Island in Southeast Alaska

Reserves: Bokan Mountain hosts an inferred mineral resource of 3.7 million metric tons grading 0.75 percent total rare earth oxides (TREO), with 39 percent of the TREO being the higher value heavy rare earth oxides (HREO). This comes to about 27,420 metric tons TREO, and about 10,584 metric tons HREO.

Jobs: Not yet determined

Noteworthy: The swift development of Bokan Mountain is increasingly being seen as vital to securing a domestic supply of dysprosium, terbium and other heavy rare earth elements critical to national defense and green technologies in the United States.

The project is getting support both in Washington D.C. and Juneau.

U.S. Sen. Lisa Murkowski, R-Alaska, introduced the Rare Earth Supply Technology and Resources Transformation Act, or "Restart" Act, in the Senate last June. Her bill calls for loan guarantees to stimulate U.S. rare earth element (REE) mining and manufacturing as well as expediting review and approval of permits for rare earth exploration and development. Lawmakers in Juneau also have voiced support for expediting permitting and production of REEs in Alaska.

Gov. Sean Parnell also has voice his support for development of Bokan Mountain and has taken steps to get the project recognized.

"The Bokan Mountain site is one of the largest known REE deposits in North America and has significant deposits of the highly valued 'heavy' REEs such as dysprosium," Gov. Parnell wrote in a Feb. 22 letter to President Barack Obama.

In the works for 2011 and beyond: Ucore released a resource estimate for Bokan Mountain in early March and hopes to complete a prefeasibility study by the end of 2011.

In addition to building a mine, Ucore is investigating the viability of developing a metallurgical refining complex to capture the value-added segment of the rare-earth processing chain. The location of this facility has yet to be determined. Alaska Department of Natural Resources Deputy Commissioner Ed Fogels said the state is investigating whether there are any state lands nearby that might be suitable for such a facility.

Due to the strategic importance of the minerals at Bokan Mountain, it is possible this deposit could be developed within 10 years.

For the latest Mining News articles on Bokan Mountain visit:

http://www.petroleumnews.com/pnads/493490683.shtml

http://www.petroleumnews.com/pnads/85579437.shtml

http://www.petroleumnews.com/pnads/752046632.shtml

CHUITNA COAL PROJECT

Operator: PacRim Coal LP

Location: Beluga Coal Field, about 45 miles west of Anchorage

Reserves: 300 million tons of ultra-low-sulfur, sub-bituminous coal.

Jobs: 350 to 400 workers.

Noteworthy: Chuitna was originally evaluated through an environmental impact statement and nearly permitted in the 1990s, but a coal mine was never developed. With the increased demand and price of steam coal, PacRim has put the project back on the regulatory track.

Over the past two years, the Chuitna developer has made several modifications to the project design aimed at reducing the environmental impact of the proposed mine.

Commercial life of deposit: The current project predicts a minimum 25 year-mine life with a production rate of around 12 million tons a year.

In the works for 2011 and beyond: Due to these design alterations as well as changes in coal regulations, the U.S. Environmental Protection Agency is requiring that PacRim complete a supplemental Environmental Impact Statement for Chuitna. PacRim has filed the SEIS applications, and the company is now working on updating the individual permit applications to reflect the redesigned project.

The SEIS and permitting process for the coal project is expected to take at least 18 to 24 months, if the permits are approved by state and federal agencies, the company will evaluate market conditions and make a decision whether to proceed with development.

For more information on work being completed at Chuitna visit:

http://www.petroleumnews.com/pnads/219778416.shtml

DONLIN CREEK GOLD PROJECT

Operator: Donlin Creek LLC

Working interest owners: NovaGold Resources Inc. 50%, Barrick Gold Corp. 50%

Location: Kuskokwim region of western Alaska

Capital expenditure: According to a 2009 feasibility study, construction of the mine and related infrastructure is estimated to be US\$4.84 billion.

Noteworthy: Donlin Creek LLC is currently updating its 2009 feasibility study for the project to include a 320mile natural gas pipeline to run from the west side of Cook Inlet to Donlin Creek The natural gas would replace the diesel and wind originally envisioned to generate the 127 megawatts of electricity needed to power the mine.

Reserves: 33.6 million ounces of proven and probable reserves at Donlin Creek grading about 2.23 grams gold per metric ton. Additionally, the gold deposit contains 4.3 million ounces of measured and indicated resources and 4.4 million ounces of inferred resources.

Jobs: An estimated 1,000 jobs during a three-year construction period, about 600 jobs during operations.

Commercial life of deposit: The 53,500-metric-ton-per-day mine proposed in the feasibility study is expected to produce about 1.6 million ounces of gold per year over its first five years of operation. Based on current reserves, the mine should produce about 26.2 million ounces of gold, or an average of about 1.25 million ounces per year, over a 21-year mine life.

In the works for 2011 and beyond:

Donlin Creek LLC has budgeted \$41 million for the 2011 work program, which will focus on completing a revision to a feasibility study that incorporates the natural gas pipeline and preparing permit applications for the project. The feasibility revision, which is scheduled to be completed in the second half of 2011, will provide operating costs using natural gas rather than diesel as the primary power source for the project, and also will use more recent gold prices and capital inputs to provide updated capital and cash flow estimates. Dependent on the outcome of the study, the company will decide whether to use natural gas to power the mine or to employ diesel-wind cogeneration as envisioned in the 2009 feasibility study. Either way, it is expected that NovaGold and Barrick will proceed with permitting by early 2012.

For more information on the proposed natural gas pipeline, visit:

http://www.petroleumnews.com/pnads/665148000.shtml

FORT KNOX GOLD MINE

Operator: Kinross Gold Corp.

Location: 26 miles north of Fairbanks.

Reserves: 3.6 million ounces of gold.

Jobs: More than 500.

Noteworthy: On Jan. 23, Fort Knox employees logged more than 4 million man-hours without a lost-time incident. This follows the Dec. 28 milestone of four years running without a lost-time incident at the gold mine.

Fort Knox has produced more than 4.5 million ounces of gold since 1997, including 350,000 ounces in 2010.

Commercial life of deposit: In 2009 Kinross completed construction of a heap leach facility and expansion of the current mine through exploration. The company currently projects that it has enough ore in reserves to feed the mill through 2018 and continue heap leach operations through 2021.

In the works for 2011 and beyond:

Kinross continues to seek new ore in the immediate Fort Knox area. In 2011 company plans to spend \$8 million on exploration at and near the mine.

GREENS CREEK MINE

Operator: Hecla Mining Co.

Location: Near Juneau

Reserves: 90.7 million ounces of silver, 757,000 ounces of gold, 813,000 tons of zinc and 428,200 tons of lead.

Jobs: Around 300 workers.

Noteworthy: In 2010 Greens Creek produced 7.2 million ounces of silver at a negative cash cost of \$3.90 cents after credits for gold, lead and zinc.

Commercial life of deposit: The 8.4 million tons of ore currently in reserves is enough to last about 10 years. The mine opened more than 20 years ago with 2.9 million metric tons of reserves and has continued to replenish and add to its reserves through exploration.

In the works for 2011 and beyond:

Hecla said it is working to optimize mill capacity at Greens Creek and has successfully increased throughput by about 10 percent since 2008 to 2,200 tons per day, and will work towards increasing throughput to 2,250 tons per day in 2011.

The company is also undertaking an aggressive exploration campaign. In addition to expanding ore-bodies currently being mined, Hecla is defining a nearby area known as the North East contact. This target represents a new prospective ore-body near the current mine that appears to be similar in size to the Greens Creek deposit that the company has been mining for the past two decades.

Exploration expenditures at Greens Creek in 2011 should exceed \$8 million. Two drills are expected to work underground all year and the surface exploration program has three drills and a number of surface mapping and sampling crews in the spring and summer.

KENSINGTON GOLD MINE

Operator: Coeur d'Alene Mines Corp.

Location: 45 miles northwest of Juneau

Reserves: About 1.4 million ounces of proven and probable gold reserves.

Jobs: About 200 workers.

Noteworthy: Kensington became Alaska's sixth major mine when it began operations on July 3. Alaska's newest mine produced a total of 43,143 ounces in 2010. The fourth-quarter production of 27,988 ounces is an 85 percent increase from the 15,155 ounces produced during the first three months of operation. Coeur anticipates average annual production of 125,000 ounces of gold.

Commercial life of deposit: About 11.5 years based on current reserves

In the works for 2011 and beyond:

Coeur d'Alene Mines is continuing to add to its reserves through exploration drilling. In addition to the 1.4 million ounces of reserves, the company has about 600,000 ounces of gold resources at Kensington. The company plans to upgrade these to reserves and discover new deposits to increase the life of the mine. One such target is the Raven Vein.

In 2010 Coeur completed about 6,100 meters of drilling on this prospective high-grade gold system, which represents the first drilling program conducted by the company on this prospective target. Follow-up drilling is planned for the Raven Vein in 2011.

LIK ZINC PROJECT

Operator: Zazu Metals Corp.

Working interest owners: Zazu Metals 50%; Teck Resources Ltd. 50% (Zazu has the exclusive right to increase its stake in Lik to 80 percent by spending US\$25 million on the project by 2018.)

Location: 14 miles northeast of Red Dog Mine in Northwest Alaska

Reserves: Lik South – which is being considered in a current feasibility study – contains more than 3.3 billion pounds of zinc, more than 1 billion pounds of lead and more than 31 million ounces of silver. Lik North – a deeper deposit that could extend the mine life – contains an additional 1.3 billion pounds of zinc, 500 million pounds of lead and nearly 10 million ounces of silver.

Jobs: An estimated 300 jobs.

Commercial life of deposit: A preliminary economic assessment envisions a 5,500 ton-per-day mine and mill with an eight-year mine life. (By comparison, Red Dog processes about 9,800 tons per day.)

In the works for 2011 and beyond:

A prefeasibility study for the development of the Lik South deposit is currently underway and hammering out transportation infrastructure is a key component for completing the study.

AIDEA, which is considering financing infrastructure requirements, is completing its own due diligence on Lik South. AIDEA owns the Delong Mountain Transportation System, which is the haul road and port used by the Red Dog Mine. The transportation system is available to Zazu for the development of the Lik deposit and subsequent concentrate shipments. AIDEA, which determined that there is sufficient merit in developing the Lik deposit to warrant due diligence as a precursor to financing of new infrastructure and modifications to the Delong Mountain system, expects its review to be completed within six months. A 14-mile road linking Lik to the transportation system and additional concentrate storage at the port are among the upgrades that would need to be made.

In addition to continuing work on the Lik South feasibility study, Zazu is planning exploration drilling on the contiguous Lik North deposit in 2011.

Depending on the outcome of the prefeasibility study, Zazu could begin permitting development at Lik as early as 2012, which would put it on a timeline to begin production within 10 years. The company has not proposed a timeline for permitting or production.

LIVENGOOD GOLD PROJECT

Operator: International Tower Hills Mines Ltd.

Location: Adjacent to the Elliot Highway about 70 miles north of Fairbanks

Resources: 20.6 million ounces of gold. An updated estimate is expected by April.

Commercial life of deposit: A preliminary economic assessment (PEA) completed in August envisions a heap leach pad and mill operation similar in scale to those at Kinross Gold Corp.'s Fort Knox Mine located about 60 miles to the southeast. Processing 81,000 metric tons of ore per day, this size operation would produce around 504,000 ounces of gold annually over a 21-year mine life.

Jobs: Currently estimated to be 500 workers, but will depend on the final mine design.

Noteworthy:

According to the PEA, building a Fort Knox-sized mine at Livengood would cost around US\$1.385 billion, with an additional US\$450 million in life-of-mine sustaining capital costs.

Though the PEA demonstrates that a clone of the Fort Knox mill and heap leach operation at Livengood is economical, this will likely not be the operation that Tower Hill ultimately builds to mine the gold deposit.

Two alternatives under consideration would be to scale up the size of the mill at Livengood, or to begin production with a heap leach-only operation and add a mill later. With capital costs at about half of constructing a combined mill-heap leach operation, the initial heap leach-only option is an attractive alternative if Tower Hill puts Livengood into operation on its own.

In the works for 2011 and beyond:

International Tower Hill Mines budgeted \$10.3 million for its 2011 exploration program at the Livengood gold project in Interior Alaska. This year's exploration, which began in February, includes about 45,000 meters of drilling to expand the current resource area, and 10,000 meters dedicated to seeking new deposits across the 145-square-kilometer, or 56-square-mile, Livengood project.

While resource expansion continues at Livengood, the company is working on two prefeasibility studies for the project. A prefeasibility study for a heap-leaching-only scenario is expected to be completed by mid-2011, and then immediately after that, the company aims to look at the mill operation. A prefeasibility study for that option is scheduled to be completed by year's end. Permitting is anticipated to begin as early as 2012. Depending on the mining scenario chosen, Tower Hill could begin construction in 2015 and production could begin as early as 2017.

For the latest Mining News article on developments at Livengood, visit:

http://www.petroleumnews.com/pnads/323360188.shtml
NIBLACK PROJECT

Operator: Heatherdale Resources Ltd.

Working interest owners: Heatherdale Resources Ltd. 51%; Niblack Mineral Development Inc. 49%

Location: Prince of Wales Island in Southeast Alaska.

Resources: A resource calculated for Heatherdale Resources in February estimates Niblack contains 161.5 million pounds of copper, 450,000 ounces of gold, 332.5 million pounds of zinc and 7.2 million ounces of silver.

Jobs: Unclear at this time, but early indications are that the deposit would support an operation similar in scale to Hecla's Greens Creek Mine. (around 300 workers)

Noteworthy: State of Alaska officials are investigating what synergies may exist between the Niblack project and Ucore Rare Metals Bokan Mountain project about 15 miles to the north. Alaska Department of Natural Resources Deputy Commissioner Ed Fogels said the state is investigating whether there are any state lands nearby that could facilitate production facilities for the two projects.

Representatives from the AIDEA also participated in the meetings. AIDEA could play a role in infrastructure development and financing.

In the works for 2011 and beyond:

Heatherdale Resources has spent more than \$15 million on exploration at Niblack over the past 18 months and plans to spend an additional \$10 million by the end of 2011. The company says it has defined mineral resources with sufficient volumes and grades, including a significant high-grade core, to initiate engineering and other technical studies towards the completion of a preliminary economic assessment for the project later in 2011 and a prefeasibility study as early as 2012.

Considering the current pace of advancements, the project could go into production within 10 years. Heatherdale has not proposed a timeline for permitting or production.

For the latest Mining News article on developments at Niblack visit:

http://www.petroleumnews.com/mnarch/05-08-1.html

NIXON FORK GOLD MINE

Operator: Fire River Gold Corp.

Location: 35 miles northeast of McGrath

Reserves: 98,300 ounces of gold

Jobs: About 75

Noteworthy: Nixon Fork is complete with a 200-metric-ton-per-day flotation plant with a gravity gold separation circuit, a sulfide flotation circuit and a brand-new carbon-in-leach circuit. The mine also boasts a fleet of mining vehicles, a power plant, maintenance facilities, an 85-person camp, office facilities, and a 1.5 kilometer-long airstrip. The developer also has obtained the bonds and permits needed to move the project quickly back into operation.

Commercial life of deposit: According to a preliminary economic assessment completed in February, the current resource is sufficient to sustain a two-year production forecast at a rate of 150 tons per day (tpd). Fire River noted that mineral inventories in the report do not include the results of ongoing ore definition and exploration drilling.

In the works for 2011 and beyond:

Fire River Gold is currently completing construction of the recovery circuit at Nixon Fork and the company plans to resume mining in early spring 2011.

PEBBLE COPPER-GOLD-MOLYBDENUM PROJECT

Operator: Pebble Limited Partnership

Working interest owners: Anglo American plc; 50%; Northern Dynasty Minerals Ltd. 50%

Location: Near Iliamna in the Bristol Bay region of Southwest Alaska.

Capital expenditure: Around \$500 million through the end of 2010.

Development costs: An estimated \$4.7 billion for the mine, plus \$1.3 billion for infrastructure.

Reserves: 80.6 billion pounds of copper, 107.4 million ounces of gold and 5.6 billion pounds of molybdenum. Additionally, the deposit contains rhenium, palladium and several million ounces of silver.

Jobs: 2,080 workers over a four-year construction period and an operations work force projected at 1,020.

Noteworthy: Based on a preliminary assessment prepared for Northern Dynasty, over 45 years the deposit could produce 31 billion lbs copper, 30 million ounces gold, 1.4 billion lbs molybdenum, 140 million ounces silver, 1.2 million kilograms (2.6 million lbs) of rhenium and 907,000 ounces of palladium, while mining only 32 percent of the total Pebble mineral resource.

Commercial life of deposit: Assuming the total resource was mined, at the production rate of around 220,000 metric tons per day the deposit would last about 135 years.

In the works for 2011 and beyond:

The Pebble Partnership is continuing work on an environmental baseline document and feasibility study.

The environmental baseline document will be a compilation of more than \$120 million worth of environmental studies completed in the Pebble region since 2004. Expected to be completed early in 2011, the document is expected to be around 6,000 pages. A 150-page technical summary and 30-some page popular summary also will be available.

Due to the complexities of the project, the Pebble Partnership is reluctant to provide a timeline for the completion of the mine-plan and feasibility study currently underway for the project. Once completed, the company will present the mine-plan to regional stakeholders before submitting permit applications. The permitting process is expected to take three to four years, and the Pebble Partnership anticipates that the project will be tied up in litigation subsequent to the permitting process.

For a summary of the Feb. 2011 preliminary assessment prepared for Northern Dynasty Minerals, visit:

http://www.petroleumnews.com/mnarch/05-08-1.html

POGO GOLD MINE

Operator: Sumitomo Metal Mining Pogo LLC

Working interest owners: Sumitomo Metal Mining Co. Ltd. 85%, Sumitomo Corp. 15%

Location: 110 miles southeast of Fairbanks.

Jobs: 328 workers

Noteworthy: Pogo is the first overseas mine operated by Sumitomo Metal Mining, which has been a comprehensive nonferrous manufacturer since the 16th century. Part owner of the mine until recently, the 400-year-old business said acquisition of the remaining interest in Pogo was a significant step toward becoming a major force in the nonferrous metals industry worldwide.

Commercial life of deposit: 2017

In the works for 2011 and beyond:

Sumitomo Metal Mining Pogo completed some 40,000 meters of surface and underground drilling at Pogo in 2010. A 21,150-meter surface program split between helicopter-supported and road-based drill rigs investigated both expansion areas near the mine and the property-wide potential at Pogo. About 7,460 meters of the underground program was exploration drilling and the remaining 12,200 meters was dedicated to reserve/resource definition. The Tokyo-based miner plans to continue extending the life of the mine through reserve expansion and seeking new ore-bodies across the company's extensive land package surrounding the mine.

RED DOG MINE

Operator: Teck Resources Ltd.

Working interest owners: Teck Resources Ltd. 75%; NANA Regional Native Corp. 25%. NANA's stake increases by 5% every five years starting in 2007.

Commercial life of deposit: In 2010 Teck received permits needed to begin mining the Aqqaluk deposit, which will provide enough ore to keep Red Dog in operation until about 2031.

Location: Northwest Alaska about 82 miles north of Kotzebue.

Reserves: 51.6 million metric tons of reserves averaging 16.7 percent zinc and 4.4 percent lead.

Jobs: Red Dog provides 475 full-time jobs and about 80 temporary jobs annually. Nearly 58 percent of these positions are filled by NANA shareholders, many of whom have worked their way up to high-level positions at the mine.

Noteworthy: From 1990-2008, Red Dog provided US\$1.3 billion in benefits, including wages to shareholders, joint venture contracts, payments in lieu of taxes and direct royalty payments to NANA. In 2009 alone, the mine provided US\$116 million in federal and states taxes and invested US\$217 million in the local and state economy through the purchase of goods and services from Alaska suppliers.

A total of \$471 million in royalties has been paid to NANA since the agreement was signed in 1982, and due to provisions of the Alaska Native Claims Settlement Act, 60 percent of the royalties are shared with the 12 other Alaska Native regional corporations.

NANA's increased interest in Red Dog has helped boost income from the mine over recent years. From 2005 to 2009, the Native corporation received \$373 million in royalty payments.

In the works for 2011 and beyond:

Teck's 2010 exploration in the Red Dog region focused on Anarraaq, a deep deposit that lies about seven miles northwest of the current operation. According to a 2004 report, Anarraaq hosts a 1-billion-metric-ton or so barite body and a zinc-lead-silver massive sulfide zone with an estimated resource of about 18 million tons at 18 percent zinc, 5.4 percent lead, and 85 grams per metric ton silver. The company completed a 17-hole drill program at Anarraaq and nearby Antiguruk prospect in 2010. The company plans to resume its exploration of the deep deposit area upon the delivery of new drill rigs in 2011.

ROCK CREEK GOLD MINE

Operator: NovaGold Resources Inc.

Location: 8 miles from Nome in western Alaska

Reserves: 320,000 ounces of gold reserves and a 310,000-ounce gold resource.

Jobs: About 150.

Noteworthy: The mine began production in September 2008, but due to financial and mechanical issues, operations were suspended later that year and the mine was placed in care and maintenance. NovaGold is currently seeking a buyer for the mine.

Commercial life of deposit: About 6 years based on current reserves and resources.

In the works for 2011 and beyond:

NovaGold has budgeted \$8.5 million for care and maintenance activities at Rock Creek in 2011. The company said these costs may be reduced if the project is sold during the year. The company also will prepare a preliminary

www.AEDCweb.com

closure plan for the project in the event that the board chooses to close and reclaim the property rather than selling it to another operator.

USIBELLI COAL MINE - HEALY OPERATIONS

Operator: Usibelli Coal Mine Inc.

Location: Near Healy

Reserves: Surface mineable coal reserves to around 700 million tons

Jobs: About 100

Noteworthy: Alaska's longest lived large-scale mine. The fourth-generation family-owned company, founded in 1943 by Emil Usibelli, started off supplying coal to the newly constructed Ladd Army Air Field (now Fort Wainwright). Today, Usibelli transports coal to six power plants in Interior Alaska, and ships about 1 million metric tons overseas annually.

Commercial life of deposit: At current production rates Healy has about 350 years of reserves.

In the works for 2011 and beyond:

The Healy Clean Coal Project (HCCP), sitting idle next to Usibelli's Healy operation, has the potential to provide 50 megawatts of power to the Alaska railbelt electrical grid, and has the best possibility to offer near-term expansion to Usibelli's domestic market.

Golden Valley Electric Association, an electric cooperative serving some 100,000 residents of Interior Alaska, is in the process of renewing the permit it needs to bring the Healy Clean Coal Project online. The Alaska Department of Environmental Conservation has approved the permit and the U.S. Environmental Protection Agency is in the process of reviewing it. Once the permit is approved, GVEA estimates it will take between 18 to 24 months to bring the plant online, depending upon legal challenges by environmental groups.

Usibelli says it has maintained a long-term commitment to clean coal technology and is ready to provide coal to the facility whenever HCCP is returned to service.

The company says it has the infrastructure in place to double production without significant capital investment, and it is positioned to supply both domestic and international markets in the foreseeable future.

See latest Mining News article on Usibelli Coal Mine Inc. at:

http://www.petroleumnews.com/pnads/403879659.shtml

WISHBONE HILL COAL PROJECT

Operator: Usibelli Coal Mine Inc.

Location: 10 miles northeast of Palmer.

Reserves: 14 million tons of bituminous coal.

Jobs: According to a socioeconomic impact study completed by ISER, the mine would provide around 90 jobs.

Noteworthy: If Alaska-based Usibelli decides to develop Wishbone Hill, some 500,000 tons a year of the cleanerburning bituminous coal will likely be shipped to Japan via newly constructed loading facilities at Port MacKenzie on the west side of upper Cook Inlet directly across from Anchorage.

Commercial life of deposit: Based on the 6 million tons of coal reserves being considered in a feasibility study currently underway, Wishbone Hill would operate for about 12 years.

In the works for 2011 and beyond:

Usibelli anticipates completing the feasibility study early in 2011 and depending on its results, could begin mining Wishbone Hill coal as early as 2012.

Vision Statement By 2025, Anchorage is the #I city in America to Live, Work and Play



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