

IUDY PATRICI



age ConocoPhillips, BP sanction**9** West Sak heavy oil project

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Arctic platform prototype for sale

Anadarko's Arctic test platform worked well, says Mark Hanley

Anadarko Petroleum's Arctic platform prototype performed "very well," company spokesman Mark Hanley told Petroleum

News Aug. 11. "We didn't have any real problems ... it didn't subside, and we left it out over two seasons."

The unit, tested the last two winters on a gas hydrate project on Alaska's North Slope, is up for sale, Hanley said. A larger model will have to be built for conventional North Slope oil and gas wells, incorporating the "lessons learned" from the prototype.



The unit, built for use in remote areas of Alaska's North Slope where water supplies

and steep terrain make ice roads and pads impractical and cost-prohibitive, incorporates the concept of an offshore drilling platform.

In an earlier interview Keith Millheim, Anadarko's Houstonbased manager of operations technology, said that if you look at old

see **PLATFORM** page A12

Terasen taking on the big boys

Canada's two lesser-known energy pipelines are making aggressive moves to join the major leagues, occupied by TransCanada and Enbridge.

Already immersed in a large-scale expansion of its Trans Mountain crude oil network from Edmonton to Vancouver and Washington state, Terasen Pipelines is now throwing out a challenge to Enbridge in the pursuit of California and Asian buyers for oil sands production.

Meanwhile, Inter Pipeline Fund is mak-

Good, but not great

MMS predicts relatively strong Western Gulf lease sale, unlikely to top '03

BY RAY TYSON

Petroleum News Houston Correspondent

he upcoming Western Gulf of Mexico Lease Sale 192, given the robust commodity price environment and emerging plays in both deepwater and in shallower waters of the continental

shelf, could attract spirited bidding on selected blocks. But the U.S. Minerals Management Service, which

conducts lease sales in the Gulf of Mexico, does not expect the Aug. 18 sale in New Orleans, La., to top last year's nearly \$150 million in high bids.

"Remember the last Western Gulf sale was the best in five years," noted Chris Oynes, Gulf regional director for the MMS. "So I would be thinking this sale would be relatively strong, but it would be very difficult to reach that kind of level again."

see **GOOD** page A2

Gulf hurricane watch

The U.S. Minerals Management Service said it was closely monitoring hurricane Charley in the Gulf of Mexico.

MMS said it had made no decision to change anything regarding the upcoming Western Gulf of Mexico Sale 192 in New Orleans, La., due to the storm. The sale was still scheduled for Aug. 18, and bids were expected to be filed by the bid receipt deadline on Aug. 17 at 10 a.m., MMS said. MMS said it would follow events as they developed in the Gulf and would make any decisions, if warranted, to delay the sale or change the time of bid receipt at a later point.

Irving Oil prepared to lead LNG charge in Canada

Firm receives regulatory green light from Canadian, New Brunswick governments

By GARY PARK

Petroleum News Calgary Correspondent

rving Oil, part of a giant privately held industrial conglomerate, figures it has stolen a march on its rivals to build Canada's first liquefied natural gas plant.

It received a regulatory green light from the Canadian and New Brunswick governments Aug. 6 to proceed with a C\$750 million facility in the deepwater Irving Canaport in New Brunswick just 65 miles from the U.S. border.

The project has a targeted in-service date of 2007

The approvals came from New Brunswick's Environment Department, Environment Canada and Fisheries and Oceans Canada under the federal Canadian Environmental Assessment Act.

LNG would arrive at the terminal by tanker, where it would be re-gasified before delivery to the northeastern United States.

Kenneth Irving, who runs the family business, said in a statement that LNG is the next building



ing a big splash only two years after converting the Canadian pipeline business of privately held Koch Industries into a publicly traded trust.



Terasen quietly injected itself into the contest to link the oil sands with British Columbia's deepwater ports at either Prince Rupert or Kitimat by disclosing plans for a possible 550,000 bar-

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BREAKING NEWS

4 Clouds building over energy income trusts: Analyst says trusts shaky; Alberta plans tighter protection for investors

5 Newfield enters Rockies: Independent acquires 110,000 acres in Utah where no major or well-financed independent has worked

9 Discoveries confirming vast ultra-deepwater play: St. Malo well sheds light on deep horizon in ultra-deepwater Gulf

Tundra travel quandary

Alaska seeks to protect both North Slope tundra and winter exploration: field work tests just completed, results will be released in November

By KRISTEN NELSON

NORTH SLOPE, ALASKA

Petroleum News Editor-in-Chief

he Alaska Department of Natural Resources is responsible for opening and closing state lands on the North Slope for off-road tundra travel each winter. Since the state began setting a tundra opening date 34 years ago, the window for on-tundra work has shrunk from more than 200 days to around 120.

The department's Division of Land, Mining and Water has just completed field work testing the tundra impact of different vehicles at different times from fall through early winter. Results are expected in



November.

The division is also completing a study on how the tundra opening determination has been made over the years, and evaluating the economic impact of the reduction in the number of days the tundra is open.

Results of the field study will provide scientific data.

It will be, says Harry Bader, the division's northern region land manager, the first time the state has ever had a scientific

basis for its tundra opening decisions. And it's not an academic exercise. The division has been given a mis-

see **QUANDARY** page A14

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GOOD

Nonetheless, Gulf lease sales nearly always produce surprises. MMS had a similar prediction going into last year's Central Gulf offering, a sale which exceeded expectations in terms of both participation and high bids.

But Western Gulf Sale 192 will be the 21st sale since the Gulf was opened to areawide leasing in 1983. "The blocks are pretty well picked over," Oynes noted.

Gulf drilling level low

Moreover, despite strong company cash flows driven by high oil and gas prices, companies as a whole are not investing heavily in exploration.

"The drilling level in the Gulf is still very low and it doesn't make any sense," Oynes said. "I don't have a good explanation."

But there could be contributing factors. Companies, particularly independent producers, are using much of their windfall to strengthen balance sheets or to acquire oil and gas properties with proven reserves. Additionally, many companies are still finding it difficult to access wary financial markets.

Still, there are plums to be had in the Western Gulf lease sale, particularly among the 241 so-called "newly available" blocks which have been in company hands and off the market for years. They consist of leases that expired or were relinquished by companies ahead of their expiration dates, as well as leases terminated by MMS.

The newly available leases are among 3,907 blocks covering 21.2-million acres to be offered in the Aug. 18 sale. Slightly less than half of all blocks in the sale are at water

depths ranging from 400 meters to over 1,600 meters. The rest are in shallower waters, mostly on the continental shelf.

More than half of newly available blocks in deepwater

Among the 241 newly available blocks, 135 or about 56 percent are in deepwater, with some on emerging oil plays such as the vast lower tertiary trend believed to extend from Walker Ridge in the Central Gulf to Keathley Canyon in the Western Gulf.

This geologically deep horizon, extending some 30,000 feet below the ocean surface, already has spawned important discoveries, including Cascade and St. Malo in Walker Ridge.

Although blocks in the Walker Ridge portion of the lower tertiary trend will not be offered in the upcoming Western Gulf sale, 24 newly available Keathley Canyon blocks will be included. And a chunk of them are near the closely watched Sardinia exploration well on Block 681. The well is in the process of testing the same deep horizon that produced the St. Malo and Cascade discoveries.

MMS records also show that 27 newly available deepwater blocks will be offered in nearby Alaminos Canyon, which houses another geological trend that has produced the likes of Great White and Trident. Another 45 newly available blocks are in East Breaks and 32 are in Garden Banks, the most heavily explored regions in deepwater Western Gulf.

Some of the 106 newly available blocks in shallow waters of the continental shelf also should draw heavy bidding, given the lure of deep-gas prospects and attractive royalty relief terms on production in the event of a discovery. \bullet

ATTENTION READERS

Part two of Aug. 8's story, "North Slope likely has 211 tcf undiscovered gas," will appear in the Aug. 22 edition of Petroleum News.

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block in a process that started 45 years ago when Irving built a refinery at the Canaport location.

"Our goal is to continue to anticipate and meet the growing energy needs of our customers and to do so early and for the long term," he said, noting that the company is focused on "long-term relationships and value creation" in its U.S. export markets.

Three terminals proposed in Nova Scotia

In neighboring Nova Scotia three other proposed LNG receiving terminals are at various stages of development — a C\$500 million project by privately owned Access Northeast Energy, which is aiming for a 2007 start-up, while Statia Terminals and Keltic Petrochemicals, both of Nova Scotia, have floated separate plans.

Nova Scotia Energy Minister Cecil Clarke said his government should soon complete a regulatory review of those LNG proposals.

He is counting on as much enthusiasm for LNG in Nova Scotia as New Brunswick, believing that competition between the two provinces would be healthy.

For Irving, there was no doubt that being first matters. "We're the first to get the green light ... this is a major milestone," said an Irving spokesman.

He said Irving entered the field three years ago because of strong indications that gas supply was lagging behind North American demand.

"We're in a number of discussions with LNG producers — there have been a number of interested parties," he told the Halifax Chronicle Herald, although he declined to identify the likely supply sources.

West Coast, Quebec terminals also proposed

Other LNG proposals are also moving forward across Canada.

WestPac Terminals and Galveston LNG are both eying terminals on the British Columbia coast, at the deepwater ports of Prince Rupert and Kitimat, respectively.

WestPac plans a facility to handle 300 million cubic feet per day, while Galveston is working on plans for a C\$300 million terminal to handle 340 million cubic feet per day. Neither would start operations before 2008.

Quebec utility Gaz Metropolitain, Enbridge and Gaz de France are partners in a possible C\$700 million LNG terminal in the Beaumont, Quebec, area that could process 500 million cubic feet per day and start deliveries in 2008.

The plant would be across the St. Lawrence River from New York state and could connect to pipelines in the U.S. Northeast. \bullet

continued from page A1

TERASEN

rel per day leg, with an in-service date of 2011, as part of a possible 850,000 bpd addition to its system.

If markets in California and possibly Asia open up, Terasen Pipelines President Rich Ballantyne told a conference call in late July, a 570-mile connection is possible from Rearguard, British Columbia, to a northern port, where shippers could take advantage of the lower costs of very large crude carriers. The current Trans Mountain pipeline to the Vancouver area is scheduled to increase capacity by 30,000 bpd to 225,000 bpd within two months.

So long as firm shipper commitments are received, two more stages of 100,000 bpd are planned — one for 2008 and one for a future date, with each stage costing C\$700 million.

Ballantyne said the key element is Terasen's belief that the markets for Canadian crude on the West Coast are California and Washington.

By moving in stages, Terasen allows production from the oil sands to match the

timing of pipeline capacity and the development of West Coast markets.

If all three projects proceed, Terasen would offer capacity of 850,000 bpd out of Edmonton and should Asian demand become a significant part of oil sands expansion, the northern line could be built.

Enbridge working Gateway project

That would put Terasen head-to-head with Enbridge, which is making headway in talks with potential Asian customers for its C\$2.5 billion Gateway project to Prince Rupert, or Kitimat, with planned initial capacity of 400,000 bpd.

Enbridge President and Chief Executive Officer Pat Daniel said that an April trip by company executives to China "generated some very serious interest" by prospective buyers, who have since sent several delegations to Calgary.

He said the best current guess for an instate pipeline tariff on Gateway would be \$1.75 per barrel, which would equal or beat a "competing project to Vancouver."

Daniel said the northern port could handle tankers three times the size of those using Vancouver, which would result in unit savings to Asia of \$2 per barrel.

Ballantyne was not prepared to concede any ground to Enbridge, insisting Terasen's expansion phases could be "more competitive than the alternatives that are out there."

Information provided to shippers by Terasen suggests tolls for the second and third phases of its Trans Mountain pipeline would be rolled into the existing system. Inter Pipeline is staking a large chunk of its future on the oil sands, as well, as it builds on 3,000 miles of pipeline that carries 460,000 bpd of oil sands bitumen, conventional crude and gas plant condensate.





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Its pipeline from the Cold Lake heavy oil area of northeastern Alberta moves 245,000 bpd, drawing on EnCana and Imperial Oil projects.

The fund has also just wrapped up a C\$715 million deal to buy interests in three natural gas liquids extraction plants with combined capacity of 137,000 bpd in southern Alberta from Williams Cos., setting it up to become a major player in the NGL extraction business.

Inter Pipeline has assembled a strong web of pipelines from the oil sands region to the Edmonton refinery area and south to the U.S. border.

-GARY PARK

ON DEADLINE

CANADA

Canadian cap-ex to fall 2.2% this year, Lehman Brothers survey predicts

Exploration and production spending will drop 2.2 percent in Canada this year to \$14.02 billion (all figures in U.S. dollars), but the outlook for 2005 is healthy, with half of the firms surveyed planning to hike their budgets by 10 percent or more, a Lehman Brothers survey reports.

The New York-based investment bank said that if the spending target is achieved it will be \$380 million above estimates at the end of 2003, but trail last year's tally because of upward revisions to capital expenditures.

The mid-year survey by Lehman showed cap-ex by the 62 companies that also participated in the December 2003 survey increased by \$383 million.

Leading the additions were EnCana, up by \$400 million, Imperial up by \$180 million and Burlington Resources up by \$110 million, but Penn West Petroleum slashed its target by \$194 million.

Current budgets are based on average oil prices of \$28.44 per barrel and \$4.76 per thousand cubic feet of gas at the Henry Hub, compared with \$25.29 and \$4.17 in the year-end 2003 survey.

Of the leading Canadian forecasters, FirstEnergy Capital has boosted its West Texas Intermediate price for 2004 to \$35.50 from \$33 and predicted \$32 for 2005 and \$31 for 2006. Gas prices per million British thermal units are forecast by FirstEnergy to average \$6.10 this year and \$5.50 in 2005 and 2006.

Peters & Co. has also boosted its 2004 goals to \$38 for WTI crude and \$30 for 2005, while its Nymex gas prices are at \$6 per million British thermal units in 2004 and \$5 in 2005. Peters said WTI prices have already topped an average \$37 in 2004, while Nymex gas in running close to \$6.

-GARY PARK

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WASHINGTON, D.C.

EIA sees \$30 floor for oil; natural gas to average \$6.21 in 2004, \$6.60 in 2005

The Department of Energy's Energy Information Administration said Aug. 10 that higher oil output from the Organization of Petroleum Exporting Countries during the second quarter "has so far failed to dampen upward price pressure," with prices for West Texas Intermediate reaching into the \$40s per barrel in early August.

The agency said rising consumption and little global surplus production capacity will continue to make near-term prices "volatile and sensitive to news relating to possible reductions in oil production." There may be some price reduction "if increased production continues to flow and inventories build," but "short of a serious slowdown in demand during the coming months," the floor price for West Texas intermediate will probably remain "above \$30 for the foreseeable future."

Despite increases in production by key OPEC countries, spot prices for West Texas Intermediate were above the \$40-per-barrel mark in early August, and the projected third-quarter price for West Texas Intermediate is now almost \$41 per barrel, about \$4 higher than the agency projected in July. The agency said that current world oil prices "may not entirely reflect pure economic fundamentals of the world oil supply market" because of a world-wide perception of a vulnerable supply situation caused by the Iraqi war and the Russian government's treatment of Yukos. Those factors "may have added a premium to what otherwise might be a lower world crude oil price."

OPEC crude oil production was 29.8 million barrels per day in July, 0.5 million bpd higher than June, and about 0.5 million bpd below total OPEC capacity.

Natural gas prices down on normal storage

U.S. pump prices for gasoline since the third week of June have ranged between the high \$1.80s and low \$1.90s per gallon, and on Aug. 9, the agency said, stood at \$1.88 per gallon, about 18 cents per gallon below the historical week high of \$2.06 for regular, reached in late May. On the natural gas side, prices were down in early August as storage levels remained normal and demand levels manageable. "However, with the economy continuing to expand and supply growth sluggish at best, prices at the Henry Hub (which averaged about \$5.83 per mcf during the first week of August) are expected to rise above \$6 per thousand cubic feet by fall," the agency said.

Coal use for power generation was stronger than estimated during the spring, reducing somewhat the need for natural gas for power, and the 2004 demand growth for natural gas is now estimated to be about 0.4 percent, with 2005 demand increase estimated at 0.7 percent.

"Henry Hub prices averaged \$5.80 per thousand cubic feet in 2003 and are expected to average \$6.21 in 2004 and \$6.60 in 2005," the agency said.

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ON DEADLINE

DIL COMPANY EARNINGS

Earnings from Top 35 North American E&P Capex Spenders

Earnings second quarter 2004 • Change from second quarter 2003 Liquids production second quarter 2004 • Change from second quarter 2003 Natural gas production second quarter 2004 • Change from second quarter 2003

Company	symbol	earnings	%	liquids	%	gas	%
BP	BP	\$3,908	+23	2,518,000	+32	8,425	0
RD/Shell	RD	\$4,002	+54	2,238,000	-5	7,773	-5
EnCana	ECA	\$250	-69	269,718	+31	3,037	+23
ExxonMobil	XOM	\$5790	+39	2,581,000	+4	9,001	-3
Can. Natural	CNQ.TO	\$259	-51	275,398	+15	1,452	+10
ConocoPhillips	СОР	\$3,075	+75	1,012,000	-4	3,303	-5
El Paso	EP	Reports delay	ed for restatem	ent			
ChevronTexaco	CVX	\$4,125	+158	1,749,999	-4	4,099	-7
Anadarko	APC	\$405	+35	214,000	-10	1,786	+3
Devon	DVN	\$502	+41	275,400	+25	2,455	+4
Dominion	D	\$251	+5	27,274	+8	1,034	-6
Burlington	BR	\$379	+36	143,200	+38	1,899	+1
Occidental	OXY	\$581	+55	440,000	+6	642	+4
Husky	HSE.TO	C\$239	-46	212,200	+2	685	+13
Newfield	NFX	\$67	+47	15,629	-10	521	+1
Petro-Canada	PCZ	C\$393	-33	310,600	-5	868	+2
Unocal	UCL	\$341	+93	151,000	-7	1,516	-16
Kerr-McGee	KMG	\$110	+59	140,500	-9	740	+6
EOG	EOG	\$145	+33	32,300	+28	978	+4
Nexen	NXY.TO	C\$143	-46	193,200	-15	240	-16
Imperial	IMO	C\$454	-12	251,000	-4	535	+9
Talisman	TLM	C\$197	-2	229,579	+22	1,244	+17
Pioneer	PXD	\$70	-10	67,099	+23	722	+15
Apache	APA	\$373	+53	224,602	+6	1,251	0
Marathon	MRO	\$352	+42	178,000	-12	965	-17
Suncor	SU.TO	C\$203	+75	225,900	+20	209	+19
Merit	Private company o	loes not report	results				
Williams	WMB	-\$18	(-)			555*	+11
Chesapeake	СНК	\$86	+12	18,589	+37	850	+27
Pogo	PPP	\$65	-18	58,423	-15	338	+12
Penn West	PWT.TO	C\$66	-66	34,624	-2	330	-4
хто	XTO	\$99	+73	25,145	+31	803	+27
Spinnaker	SKE	\$18	+76	6,400	+68	111	-1
Forest	FST	\$28	+20	28,100	+13	277	+11
BHP Billiton	BHP	Does not prov	ide quarterly fig	gures			

Liquids production in barrels per day. Natural gas production in millions of cubic feet per day, except as noted. *millions of cubic feet equivalent per day

NOTE: Top 35 is based on Petroleum News research



CANADA

Clouds building over energy income trusts

Analyst: Trusts too shaky for those seeking stable income over long period; Alberta government plans tighter protection for investors

By GARY PARK

Petroleum News Calgary Correspondent

nergy income trusts may be entering an uncertain period in Canada, accompanied by warnings from an analyst with Edward Jones, a leading investment and financial services

firm. The concerns are reflected in the

unwillingness by directors of Penn West Petroleum to bend to shareholder pressure at the company's annual meeting on Aug. 20 and convert

their conventional E&P company, the fifth largest independent producer in Canada, into a possible C\$4 billion trust.

Over the past decade there has been an explosion of oil and gas trusts **Although there is no clear evidence**

been an explosion of oil and gas trusts from five in 1995 with a market value of about C\$600 million to 28 today with a market cap of about C\$30 billion. Although there is no clear evidence yet that the trust sector is stretched Warne, a Canadian market strategist with Edward Jones, said her firm has no trusts on its list of recommended

Although there is shares to buy.

no clear evidence yet that the trust sector is stretched to the limit, Kate Warne, a Canadian market strategist with Edward Jones, said her firm has no trusts on its list of recommended shares to buy.

She told the Edmonton Journal that trusts — despite some suggestions that they are as reliable as bonds — are too risky for investors who need stable income streams for long periods, because cash payouts to unit holders are bound to suffer when oil and natural gas prices drop.

Edward Jones is more enthusiastic about the integrated oil companies that produce, refine and sell, providing them with some cushioning when oil prices drop.

Money still flowing into trusts

Regardless of these warning flags, money is still flowing into the trusts, prompting four more companies — Progress, NAV Energy, Zargon and Espirit — to join the ranks this year. become the year's hottest topic of speculation.

Company President Bill Andrew kept his thinking under tight wraps Aug. 6 when Penn West released its secondquarter results, which showed a sharp drop in earnings to C\$65.5 million from C\$192.5 million a year earlier, when a favorable tax ruling and foreign exchange gains gave a sharp lift to results.

Andrew would only say that until a recommendation is made to shareholders Aug. 20 "it is my intention not to discuss any details regarding the strategic review process."

Many trusts reducing cash dividends

In the meantime, many trusts have quietly shifted their strategy, lowering their cash dividends to 70 percent of cash flow from the traditional 90 percent or more, reducing the need to borrow and creating a reserve to maintain distributions if cash flow tapers off.

As well, more trusts are breaking with the past and starting to drill for new reserves rather than just buying at premium prices and exploiting the assets.

By offering a growth component through exploration, the trusts are also seen as improving their market appeal.

Meanwhile, the Alberta government is taking steps to ensure that trust investors are better protected.

Revenue Minister Greg Melchin told the Edmonton Journal the province feels it has a duty to remove the risk of trust unit holders being held legally liable for any wrongdoing by trusts.

Although there has yet to be a court case, Melchin said Alberta wants to "remove the uncertainties," at a time when about half of the 150 trusts listed on the Toronto Stock Exchange are based in Alberta.

He said all the questions related to corporate and securities acts must be reflected in income trusts, covering such matters as registration, insider trading, roles of trustees, directors and officers, appointment of auditors and voting rights.

Alberta has already introduced the Income Trusts Liability Act, which limits the liability of investors to the amount of their investment. Melchin expects the next phase will fine tune that legislation, depending on the responses from stakeholders by a Sept. 30 deadline.●





Whether Penn West joins that movement and creates what could be the biggest trust of any kind in Canada has



HOUSTON, TEXAS

Newfield enters Rockies with \$575M Inland acquisition

Independent acquires 110,000 acres at Monument Butte field in Utah, where no major or well-financed independent has worked and where Newfield plans to invest \$80M per year

By RAY TYSON

Petroleum News Houston Correspondent

ouston-based Newfield Exploration, rounding out its years-long effort to become a more diversified exploration and production company, is entering the Rocky Mountains with a bang.

Newfield is stepping into the region with a negotiated deal to acquire private Inland Resources and its vast 110,000-acre position in the coveted Monument Butte

field of Northeast Utah for \$575 million. The transaction is expected to close Sept. 1.

The Inland trans-

action comes just

weeks after acquisi-

tion-minded

Newfield scooped up

Denbury Resources'

Mexico assets for

\$186 million,

David Trice, presi-

dent. Newfield offshore Gulf of Exploration

"It's a low risk, repeatable exploitation play that offers us the chance to develop thousands of drilling locations over the next decade," David Trice, Newfield's chief executive officer, said of onshore Monument Butte in an Aug. 6 conference call with industry analysts.

Newfield would operate the Monument Butte field with an average 78 percent working interest.

A huge, relatively untapped resource situated in the middle of the prolific Uinta basin, Monument Butte is surrounded by large producing fields and is said to hold estimated overall reserves exceeding 2 billion barrels of oil equivalent.

Only 1.5 percent recovered

The field has never been touched by a major oil company or a large, wellfinanced independent. To date, only 30 million barrels, or 1.5 percent of in-place oil reserves, have been recovered since Monument Butte was discovered in 1964.

In addition to providing Newfield with a more diversified geographic base of operations. Monument Butte also would put more oil in Newfield's gas-heavy portfolio. When the deal closes, Newfield said it would be 70 percent weighted to gas. In its effort to diversify, Newfield over the past five years has expanded from its roots on the Gulf of Mexico's continental shelf in the 1980s to South Texas, Louisiana, deepwater Gulf of Mexico, the Midcontinent, East and West Texas, and now the Rockies. The company also has moved into Malaysia, China's Bohai Bay and the North Sea.

hedges" for 2005 through 2007 based on the bright outlook for prices.

"The market is clearly indicating things have changed," Trice said. "Instability, unrest and higher demand dictate strong prices. There just isn't a great deal of excess capacity in today's oil markets."

In exchange for the negotiated \$575million price for Inland Resources, Newfield would receive proved reserves amounting to about 326 billion cubic feet of gas and probable reserves of about 439 billion cubic feet of gas equivalent. The reserves are 85 percent oil and 70 percent proved undeveloped, the company said.

However, the field contains far more potential than is being reported to satisfy strict U.S. Security and Exchange rules governing reserve estimates, including the potential for lucrative deep natural gas discoveries, Newfield said. Also, Monument Butte is said to be 20 to 30 years behind industry in terms of secondary oil recovery, including water flooding.

"In addition to a greater sweep of oil in the identified sections, there's also the potential to explore for deeper gas intervals," said Dick Schaible, Newfield's vice president in charge of acquisitions. This would all be upside above and beyond reserve potential quantified."

Under terms of the deal, Newfield said it would own 40 percent of any natural gas discovered in the lower horizons.

Newfield will invest \$80 million a year

Newfield said it intends to invest \$80 million a year in Monument Butte to drill upward of 3,000 wells, or about 150 wells a year, during the next 10 years, adding that it also plans to double current daily oil production of 7,000 barrels to 14,000 barrels by the end of 2006. Three rigs are currently drilling in the field, a level of drilling activity Newfield plans to maintain for now.

"We are in a very good neighborhood surrounded by giant fields with access to market," Schaible said, adding that there are four refineries in the region capable of handling Newfield's increasing production at Monument Butte.

Monument Butte wells, given their relatively low daily rates, aren't big producers but remain steady once they reach their plateau. While the average well comes on line at about 65 barrels per day and declines to about 20 barrels before stabilizing, it produces about 75,000 barrels during its lifetime. Moreover, it only takes seven days to drill a well to the shallow producing zone at around 5,500 feet. And drilling expenses average only \$500,000 per well.

"This is not an asset we can grow quickly, but we can grow it for a long time," Schaible said.

"I am confident vou will see comparable growth from our Rocky Mountains region as we develop this play in the future," Trice added.

Big Gulf gas wells decline quickly

The long-lived oil reserves of Monument Butte are in stark contrast to gas reserves Newfield holds on Gulf of Mexico's continental shelf, where wells come on line producing at high rates but decline quickly.

"From the high-rate return, shorter-lived fields in the Gulf of Mexico to the longlived oil and gas plays of the Rockies and the Midcontinent, we have achieved balance," Trice said.

The Inland transaction would lengthen Newfield's reserve life by nearly 20 percent to about seven years, the company said.

The acquisition of steady, low-risk production from the Rockies also would help offset the cost of more risky exploration

see **NEWFIELD** page A12



FINANCE & ECONOMY





Company believes higher oil prices here to stay

Oil prices also have rocketed nearly 40 percent over the past year, another Newfield motive to buy Inland Resources. With continuing unrest in the Middle East, Nigeria and Venezuela, coupled with growing economies in China, India and the United States, Newfield believes higher oil prices are here to stay. The company already has added "some very attractive oil

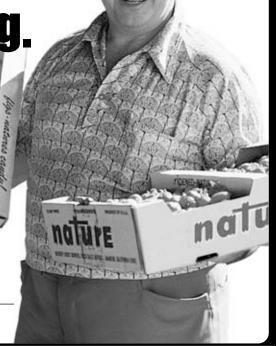
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FINANCE & ECONOMY

CANADA

Engineering firm counting on oil sands

SNC-Lavalin Group, a major Canadian engineering and construction firm, is counting on a wave of oil sands projects moving ahead, so long as oil prices settle above US\$20 per barrel.CEO Jacques Lamarre told analysts Aug. 5 that although crude won't "stay above US\$40 a barrel forever," his firm is confident that strong oil and natural gas prices will keep it on a steady growth path for many years, with the oil sands making a key contribution.He said the company expects to sign a contract for a major oil sands project in the next six weeks.

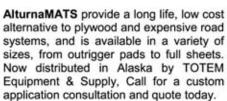
-GARY PARK



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ALBERTA

Suncor Energy takes Alberta to court

Files C\$250 million claim for 'extensive financial losses' stemming from dispute over classification of oil sands project

By GARY PARK

Petroleum News Calgary Correspondent

uncor Energy has ratcheted up a royalty feud with the Alberta government by suing the province for C\$250 million in damages.

The oil sands powerhouse filed a statement of claim July 29 against the government and Energy Minister Murray Smith, alleging it has suffered "extensive financial losses" stemming from misrepresentations and breaches of fiduciary duties by the government.

At the core of the dispute is Alberta's classification of Suncor's C\$500 million Firebag addition to its northern Alberta operation as a new project rather than just an expansion of the existing complex.

That means Suncor must pay a 25 percent royalty, after operating and maintenance costs, on Firebag production rather than 1 percent until capital costs have been recovered.

The ruling would cost the company C\$200 million in royalties this year if West Texas Intermediate prices averaged US\$34 per barrel this year, compared with C\$33 million last year.

Firebag came on stream in January, is currently producing 11,000 barrels per day and is scheduled to reach 35,000 bpd in 2005 and 140,000 bpd in the 2010-2012 period.

Government's call based on different technology

Alberta Premier Ralph Klein said in April the difference between a new project and one deemed to be an expansion would be about C\$875 million "to the government's bottom line."

He told the legislature that Smith's department was concerned that any change in royalty policy "would have a serious affect on how we treat other oil sands projects."

Although the suit had to be filed by July 31 to preserve Suncor's right to a legal review, the company said it continues to seek

a negotiated settlement. The government won't comment on a

case that is before the courts.

Smith argued that because Firebag is employing steam-assisted gravity drainage technology to extract raw bitumen it is different from Suncor's long-time open-pit mining operations.

Suncor says it had assurances

A spokesman for Suncor countered that Firebag is connected physically to the existing project for the purpose of providing bitumen for upgrading.

He said Suncor is quite prepared to pay its fair share of royalties, but its concern is that "timing of the royalties and how that affects our growth plans."

That echoed the comments in May of Chief Executive Officer Rick George, who said Suncor might be forced to reassess its choices on the location of heavy-oil upgrading plants if the government insisted on "changing the rules midstream." Suncor has insisted it has assurances dating from 1998 on how Firebag would be treated.

He said Suncor is not threatening to back away from its next expansion phase, which has a price tag of C\$3 billion, but it has "lots of options on how we design future growth." That could include shipping more raw bitumen to the company's Ontario refinery or the 62,000 bpd Denver refinery purchased from ConocoPhillips last year.

Although the suit had to be filed by July 31 to preserve Suncor's right to a legal review, the company said it continues to seek a negotiated settlement. The government won't comment on a case that is before the courts. \bullet

STATE OF ALASKA ANNOUNCES OIL AND GAS LEASE SALES NORTH SLOPE AREAWIDE 2004 BEAUFORT SEA AREAWIDE 2004

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A6

Beaufort Sea Areawide 2004 Oil and Gas Lease Sales on October 27, 2004. Sealed bids must be received by DO&G by 4:00 p.m. local time on October 25.

North Slope Areawide 2004

Bidding Method:Cash bonus – minimum bid on all tracts — \$10/acre.Fixed Royalty Rate:Leases have a rate of 12.5% or 16-2/3%, depending on location.Term:All leases — 7 years.

Beaufort Sea Areawide 2004

Bidding Method:	Cash bonus – minimum bid on all tracts — \$10/acre.
Fixed Royalty Rate:	Leases have a rate of 12.5% and 16-2/3%, depending on location.
Term:	10 years and 7 years, depending on location.
Tract additions:	Tracts $1 - 26$, offshore ANWR, which have been deferred from previous areawide sales, will be
	included in this sale.

Annual Lease Rental

\$1.00/acre for the first year, \$1.50/acre for the second year, \$2.00/acre for the third year, \$2.50/acre for the fourth year, and \$3.00/acre for the fifth and following years.

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INTERNATIONAL

IEA says high oil prices likely to persist

THE ASSOCIATED PRESS

he world oil market is tight and uncertain, the International Energy Agency said Aug. 11, but it questioned whether soaring prices were justified while supply still exceeds demand.

"Limited spare production capacity combined with security warnings and headline news about Russia, Iraq, Venezuela, China and monthly employment, industry activity and confidence statistics are propelling the market," the Paris-based agency said in its monthly report.

"The market is tight, production and infrastructure capacity is less than desired and uncertainties continue to weigh on the market," it added. "But, does this justify US\$45 oil? Current oil prices are a concern and are causing economic damage."

Oil prices remained near record highs Aug. 11. Crude oil for September delivery was at US\$44.55 a barrel in after-hours trade Aug. 11 on the New York Mercantile

Exchange, easing from the Aug. 10 record of US\$45.04 a barrel.

Paris-based IEA, the energy watchdog for wealthy oil-importing countries, said the market is tight, "but the market has been living with greater uncertainties for quite some time now. It has a buffer to cope with potential supply disruptions."

"Yukos is exporting more than it did this time last year and earlier this year. Supply is running ahead of demand. Saudi Arabia has the ability to raise production in the short term," its report said.

However, the agency said the trend in the futures markets suggested it was unlikely that prices would decline significantly in the near term: "Relatively high prices throughout the futures strip suggest that current sentiment leans toward expectations for high prices to continue through the winter and into next year." •

CARACAS, VENEZUELA

Venezuela: OPEC nearing maximum capacity

FINANCE & ECONOMY

Venezuela's oil minister said Aug. 6 that the Organization of Petroleum Exporting Countries is reaching maximum capacity after increasing production quotas earlier this vear.

"The capacity of OPEC is reaching the maximum," Rafael Ramirez told reporters at the Miraflores presidential palace.

Asked if OPEC would consider increasing production at its next meeting on Sept. 15, Ramirez said: "We don't see that there are many possibilities. We are going to see how we enter the winter period."

OPEC decided to raise its production ceiling by 2 million barrels a day on July 1 and followed with a 500,000-barrel increase in an effort to keep prices from ris-

OPEC decided to raise its production ceiling by 2 million barrels a day on July 1 and followed with a 500,000-barrel increase in an effort to keep prices from rising. Its production ceiling is now 26 million barrels.

ing. Its production ceiling is now 26 million barrels.

Venezuela is a founding member of OPEC and the world's No. 5 oil exporter. Ramirez said high oil prices stemmed in part from "an aggressive foreign policy by the United States in the Middle East."

Crude prices for September delivery on the New York Mercantile Exchange ended Aug. 6 at US\$43.95 a barrel amid concerns about production by the Russian oil company Yukos, which is embroiled in legal problems, and worries that OPEC has no spare capacity.

-THE ASSOCIATED PRESS

NEWS IN BRIEF

Magnum closes deal

Exploration and production independent Magnum Hunter Resources said Aug. 3 that it has completed its previously announced \$239 million acquisition of oil and gas properties in New Mexico from Tom Brown, a subsidiary of big Canadian independent EnCana.

The acquisition was financed with a combination of stock issued by Magnum Hunter in late June and proceeds from borrowings under the company's recently increased \$480 million senior bank credit facility.

DeGolyer and MacNaughton, an independent reservoir engineering firm, estimated that the Tom Brown properties hold about 115 billion cubic feet of gas equivalent of proved reserves, up from 99 billion cubic feet estimated by the firm in June. DeGolyer and MacNaughton has assigned another 5 bcfe of probable reserves to the properties. In addition to the 465 producing oil and gas wells, Magnum Hunter also acquired roughly 44,000 net acres of undeveloped leasehold mineral interests.

David Johnston joins Armstrong Alaska team

David Johnston has joined

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Armstrong Alaska's team as manager of engineering. Johnston, former senior vice president of ASRC Energy Services, said he will primarily work for Armstrong Alaska, but he will also do some work outside the state for Denverbased Armstrong Oil and Gas.

Johnston will report to Stu Gustafson, vice president operations for Armstrong Oil. "David ... will be a real asset to Armstrong. He will be working with me to develop and implement the exploration and initial production programs at Two Bits on Alaska's North Slope," Gustafson said Aug. 9.

Gustafson said Johnston's "extensive production and operations experience will be a great asset" in working with Armstrong's North Slope partners, Kerr-McGee and Pioneer Natural Resources, "towards potential production plans." -RAY TYSON AND KAY CASHMAN



INTERNATIONAL

Shell subsidiary hits oil in Siberia's Salym field, **ConocoPhillips**, Talisman sign \$4 billion gas deal

joint venture of a Shell subsidiary and a unit controlled by Londonbased Sibir Energy hit oil at an exploration well in Siberia's Upper Salym field.

Salym Petroleum Development N.V., a 50-50 venture, said Aug. 10 that the well hit 16 meters of oil-bearing sand. It was drilled to a depth of 2,316 meters into the Bonus structure. Testing of the well is expected later this year, and executives say it should boost reserve numbers.

The Salym field is in the Ob region in western Siberia. The joint venture is already pumping oil from Upper Salym. West Salym, considered the largest deposit, is expected to start producing by the end of next year and reach 120,000 barrels a day by 2009. A third field, called Vadelyp, is on tap to begin pumping in 2006. Total field development budget is more than \$1 billion.

ConocoPhillips project gets \$4 billion gas deal

THE INDONESIAN state gas transportation company has signed a 17-year deal to buy natural gas worth more than \$4 billion from a joint venture that involves ConocoPhillips and Talisman Energy of Canada.

The deal calls for the sale of 2.3 trillion cubic feet of gas from the Corridor Block PSC in south Sumatra at \$1.91 per thousand cubic feet. Deliveries would start in 2007 at a rate of 170 million cubic feet daily and plateau at 400 million cubic feet a day in 2012.

A pipeline will be built by Perusahaan Gas Negara, the Indonesian company, from existing gas processing facilities at Grissik in south Sumatra to Cilegon in West Java, and another from Grissik to Muara Tawar east of Jakarta. ConocoPhillips holds 54 percent of the

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FAREAST report

Corridor Block PSC, while Talisman has 36 percent and Pertamina, the Indonesian state oil and gas company, has the remaining 10 percent.

Australian LNG pact with **CNOOC** expected

CHEVRONTEXACO SAYS it's on track to complete a 25-year \$22.5 billion deal to ship LNG from its Gorgon gas project to China, according to Dow Jones. Gorgon is a huge deposit off the coast of western Australia.

ChevronTexaco is operator and controls four-sevenths of the field, while Shell has two-sevenths and ExxonMobil one-seventh. The venture has conditional approval for an LNG facility on remote Barrow Island.

Gorgon, discovered about 30 years ago, is about 80 miles off the coast and has proven reserves of 12.9 trillion cubic feet of natural gas.

When the agreement is completed, the China National Offshore Oil Corp. is expected to contract for up to 100 million metric tons of LNG, with the Chinese company expected to purchase an eighth of the project.

Executives of ChevronTexaco say the deal should be completed by the end of the year.

Total, Mitsui join Bali exploration venture

TOTAL OF FRANCE AND MITSUI **OIL EXPLORATION** of Japan have farmed into a deepwater exploration block north of Bali, in Indonesia, according to Santos Ltd., which is currently the operator of the project.

Total will take over as operator from Santos after the first three-year exploration period and will take a 39.9 percent interest, with the right to obtain a further 10.1 per-

NORTH SEA

ConocoPhillips gets approval for Saturn development, says U.K. OCS offers competitive opportunities

cent. Mitsui Oil will take 20 percent, and Santos will have 40.1 percent, declining to 30 percent if Total takes on the remaining share.

Santos has done 2D seismic in the block about 130 miles west of Surabaya and six miles north of Bali Island. Water depths range from about 300 feet to 3,000 feet. An exploration well is expected to be drilling by October.

Santos recently signed a deal with ConocoPhillips to explore a gas prospect in the Timor Sea, and another with Devon for an eight-well program in the Gulf of Suez off Egypt. Santos, based in Adelaide, is listed on the Australian Stock Exchange and the NASDAQ.

Kazakhstan expects to reach top five by 2015

KAZAKHSTAN EXPECTS TO PUSH its oil output to more than 3.3 million barrels daily by 2015, making it one of the world's top five producing countries, according to the state oil company KazMunaiGas. That would triple current production.

Most of the growth is expected to come from giant developments being husbanded by Western oil companies, according to Uzakbay Karabalin, the state oil firm's president. ChevronTexaco is the lead company for the TengisChevroil project, BG Group and Eni are working on the Karachaganak field, and Eni head the Kashagan project in the North Caspian Sea.

Parker Drilling completes Turkmenistan well

PARKER DRILLING AND CHALYK ENERGY have completed a second exploratory well in western Turkmenistan at the Korpeje field.

The well reached 3,930 meters and two more wells of about the same depth are in process using Parker Drilling land rigs.

see FAR EAST page A10

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ConocoPhillips said July 29 that it has received approval from the U.K. Department of Trade and Industry for development of the Saturn Unit Area in the United Kingdom Southern North Sea.

First gas production from the Saturn Unit Area is expected in the fourth quarter of 2005 with an initial gross rate of approximately 75 million cubic feet per day, the company said, with a maximum rate of some 170 million cubic feet per day expected within a year of startup.

"This project is another step toward our strategy of prolonged and efficient production from the North Sea," Henry McGee, president of ConocoPhillips Europe & Africa, said in a statement. "It is a great example of where we can benefit from strong relationships with our partners, use our technical expertise and extensive experience in the North Sea, and link with our existing infrastructure. It clearly demonstrates that there are competitive opportunities in the U.K. continental shelf."

The Saturn Unit Area lies 23 miles north of the Lincolnshire Offshore Gas Gathering System on the U.K. continental shelf. Initial development will consist of three wells from a normally unattended six-slot wellhead platform at the suspended appraisal well in 82 feet of water. A 27-mile, 14-inch gas export pipeline will tie the platform back to new reception facilities to be added to the Lincolnshire gathering system.

ConocoPhillips (U.K.) Ltd. is the operator of the Saturn Unit Area with a participating interest of 42.9 percent.

exploration&production

WEEK OF AUGUST 15, 2004

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PETROLEUM NEWS

A9

CANADA

Canadian Natural set to enter oil sands on its own terms

Canadian Natural Resources wants to start construction on a massive oil sands project this winter and it's ready to tackle the C\$8.5 billion Horizon venture solo.

Steve Laut, chief operating officer of the Calgary-based independent, said Aug. 4 that although finding a partner to share the cost and risk of Horizon remains an option "we're definitely more comfortable taking 100 percent."

A final decision to proceed is expected from the board of directors in the final quarter for a C\$5.2 billion first phase that should come on stream in 2008 at 113,400 barrels per day. Further expansions are designed to boost output to 232,200 bpd by the end of 2012.

Over the last three years, Canadian Natural has indicated several times that it was hoping to line up a partner with more experience than it has in oil sands mining and upgrading, but no takers surfaced.

Horizon, after some delays while the company pondered the impact of the Kyoto climate-change treaty on project economics, was cleared for takeoff in January by the Alberta Energy and Utilities Board and the Canadian Environmental Assessment Agency.

-GARY PARK

NORTH AMERICA

Canada's rig count falls by 39, U.S. up by six rigs

The number of rotary drilling rigs operating in North America during the week ending Aug. 6 totaled 1,619, down by a net 33 compared to the previous week but up by 148 versus the year-ago period, according to rig monitor Baker Hughes.

Canada's rig count in the recent week actually fell by 39 to 384 compared to the prior week and also was down by 13 compared to the same weekly period last year.

The overall loss was partially offset by a six-rig gain in the United States, which ended the recent week with 1,235 rigs, up by 161 rigs compared to the year ago period. Compared to the prior week, the number of land rigs rose by four to 1,118 while inland water rigs increased by two to 19. Offshore rigs remained unchanged at 93.

Of the total number of rigs operating in the United States during the recent week, 1,064 were drilling for natural gas and 170 for oil, while one rig was being used for miscellaneous purposes. Of the total, 775 were vertical wells, 318 directional wells, and 142 horizontal wells.

Among the leading producing U.S. states, Louisiana's rig count increased by six to 168 during the recent week. Texas gained one rig for a total of 515. California remained unchanged with 25 rigs, as well as Oklahoma with 175 rigs and Wyoming with 83 rigs. Alaska's rig count fell by three to eight, while New Mexico's slipped by one to 64.

-RAY TYSON

\$500 million West Sak heavy oil project approved

By KRISTEN NELSON

NORTH SLOPE, ALASKA

Petroleum News Editor-in-Chief

ommercial development of the heavy oil resource at West Sak in the Kuparuk River unit is finally becoming

a reality.

ConocoPhillips Alaska, the field operator, and BP Exploration (Alaska), the other major owner, said Aug. 10 that the first large-scale West Sak development has been approved: a \$500 million two-pad, 44-well program which will increase Darren Jones,

West Sak oil field production Alaska to approximately 45,000 bar-

rels of oil per day by 2007. Construction jobs for the project will peak next year at more than 850, the companies said.

Expansion of Drill Site 1E is expected to add

about 10,000 barrels per day, with first production expected this summer, the companies said. Darren Jones, vice president of ConocoPhillips'

Greater Kuparuk Business Unit, told Petroleum News that the fourth West Sak well is being drilled now at Drill Site 1E, an existing Kuparuk drill site. There are already some skids on site at 1E, Jones said, where work involves adding production headers for the West Sak wells and adding crude oil processing and water handling facilities, plus electrical and instrumentation modules.

The work at 1E, he said, just involves bringing in additional modules and the bulk of the West Sak development facilities work will be at that pad this year.

West Sak pilot pad

The other pad, 1J, where the majority of the wells, 31 out of 44, will be drilled, is the West Sak pilot pad, Jones said. The pad was built in 1984

see **HEAVY OIL** page A12

GULF OF MEXICO



Two Gulf 'ultra-deepwater' discoveries announced, Jack well data under review; Sardinia prospect well spud July 4, drilling ahead at 19,000 feet

By RAY TYSON

Petroleum News Houston Correspondent

pot load of useful information is said to have come from the St. Malo appraisal well, apparently shedding more light on a far-reaching, geologically deep horizon that's rapidly trans-

forming the remote southern portion of "ultra-deepwater" Gulf of Mexico into one of the hottest oil plays in the region.

Devon Energy and its partners already have scored important lower tertiary discoveries at St. Malo and Cascade and are currently reviewing well data from the Jack well, which Devon said has been temporarily abandoned pending outcome of the

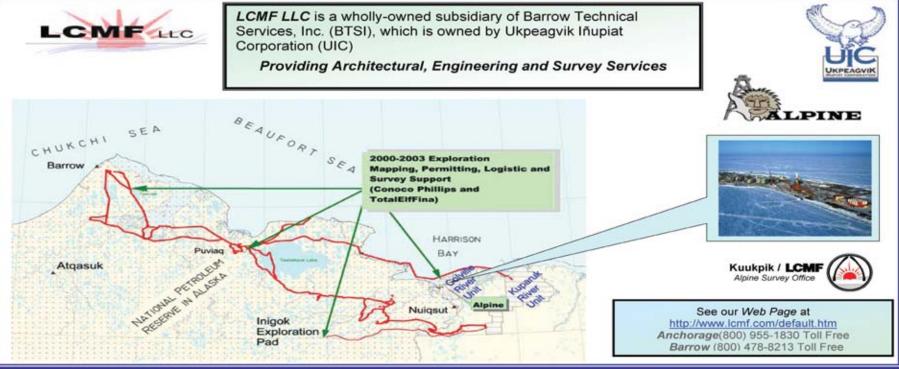
The St. Malo appraisal was a re-entry and deepening of a dry hole drilled in 2001, which was drilled to a shallower objective. The appraisal was deepened about 2,000 feet to a total depth of 28,903 feet. The prospect is located in roughly 7,000 feet of water.

review.

The companies also are in the process of drilling an exploratory well at the Sardinia prospect, another lower tertiary test headed to a target depth of 29,000 feet. The well was spud July 4 and is currently at

see GULF page A10





EXPLORATION & PRODUCTION

HOUSTON, TEXAS

Hellfighter 'Red' Adair dies

Paul N. "Red" Adair, who earned the nickname "Hellfighter" for having never met an oil well fire he couldn't cap and whose story inspired John Wayne to portray his life on screen, died Aug. 7. He was 89.

He died of natural causes at a Houston hospital, his daughter, Robyn Adair, told The Associated Press Aug. 8.

When an oil well fire raged in the Sahara Desert in 1962, the flames grew so high that astronaut John Glenn said he saw it from space as he orbited Earth. The fire became known as the "Devil's Cigarette Lighter" and burned for six months. Extinguishing it took daring and skill and became one of Adair's most memorable achievements.

Adair is credited with battling more than 2,000 land and offshore oil well fires and was instrumental in capping Kuwaiti oil wells set ablaze by Iraqi soldiers. His death-defying feats included battling the July 1988 explosion of the Piper Alpha platform that killed 167 men in the stormy North Sea, 120 miles off the coast of Scotland.

Adair started the Red Adair Co. Inc. in 1959 and revolutionized the science of snuffing and controlling wells spewing high-pressure jets of oil and gas, using explosives, water cannons, bulldozers, drilling mud and concrete. He was the first to cap an underwater well and the first to cap a floating vessel. He led the industry in developing modern equipment and firefighting techniques, including the semi-submersible firefighting vessel.

Adair's prowess inspired the title of the 1968 John Wayne movie based on his life, "The Hellfighters."

-THE ASSOCIATED PRESS

continued from page A8 FAR EAST

Gas from the Korpeje field is already flowing to Iran. The field has about 100 producing gas and oil wells.

Russia plans to cut export tax for CIS countries

RUSSIA'S PARLIAMENT has approved a measure to end the value-added tax on

petroleum exports to countries in the former Soviet Union starting at the first of next year.

The Duma approved the legislation Aug. 5, according to the Prime-Tass news agency. Russia currently levies a VAT of 18 percent on the exports of oil, gas and condensate.

The bill also boosts the royalty tax to 419 rubles per metric ton of oil from 400 and to 135 rubles per thousand cubic meters of natural gas from 107 rubles now. —ALLEN BAKER continued from page A9

GULF

about the 19,000-foot level, Devon said.

Devon's interest in the lower tertiary play alone is impressive, extending some 140 miles from Cascade in Walker Ridge west to Sardinia in Keathley Canyon.

"If this momentum continues to gather in the lower tertiary trend, it will be a very significant growth driver for Devon for many years to come, Larry Nichols, Devon's chief executive officer, declared in an Aug. 5 conference call with industry analysts.

While the partners continue to evaluate data from the St. Malo appraisal well, he added, "our optimism is growing" for the prospect and the region.

"More important is the implication for Devon's prime acreage and prospect position in the emerging lower tertiary trend," Nichols said.

Devon holds interests in more than 200 blocks, or greater than 500,000 net acres, in the Alaminos Canyon, Keathley Canyon and Walker Ridge areas.

St. Malo Devon's third discovery

St. Malo was Devon's third discovery in the area, following Cascade and Trident.

With completion of the Jack well at Walker Ridge Block 759, Devon earned a 25 percent stake in 71 additional deepwater blocks under a previous agreement with owner ChevronTexaco to participate in the drilling of four deepwater exploration wells. Jack was the final well in the program.

Devon holds a 22.5 percent working interest in St. Malo. Unocal is the operator with a 28.75 percent working interest. Petrobras holds a 25 percent stake in the prospect, followed by ChevronTexaco with 12.5 percent, EnCana with 6.25 percent, ExxonMobil with 3.75 percent and Eni with 1.25 percent.

Devon President John Richels said "a tremendous amount of data" was collected from the St. Malo appraisal well a mile east of the initial discovery on Walker Ridge 678. The discovery logged a robust 450 feet of net oil pay, while the appraisal encountered 400 feet of net.

"The technical teams are reviewing the data and determining what the next move will be," he added. Specific results from the St. Malo appraisal were not disclosed by Devon.

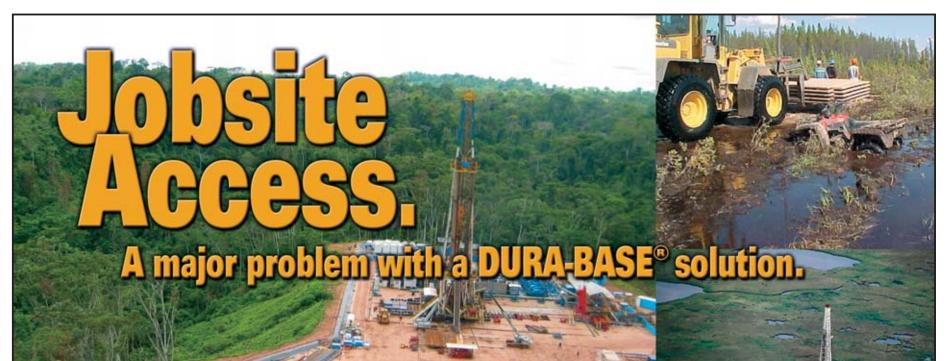
However, Richels said Devon at least expects to participate in an appraisal well at Cascade late this year or early next year, which could shed additional light on the extent of the massive lower tertiary play.

The company said the partners should have a better idea of the region's true oil potential following review of well data from Jack and drilling results from Sardinia.

Nevertheless, Devon is now saying that development of oil discoveries in the area could begin as early as 2008, although the company said the partners continue to weigh development options, including the possible use of a floating production system.

"The pieces of the puzzle are still coming together," a Devon official said. "However, I think a lot of that depends on how many discoveries are out there."

The St. Malo appraisal was a re-entry and deepening of a dry hole drilled in 2001, which was drilled to a shallower objective. The appraisal was deepened about 2,000 feet to a total depth of 28,903 feet. The prospect is located in roughly 7,000 feet of water. \bullet



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HOUSTON, TEXAS

Devon Energy vows no more decline in **2004 at Barnett Shale**

Gas volumes slip in huge East Texas field while total daily production jumps 11% to 683,000 barrels of oil equivalent

By RAY TYSON

Petroleum News Houston Correspondent

evon Energy says it doesn't expect further production declines this year from its huge share of the East Texas Barnett Shale gas field, which at roughly 555 million cubic feet per day accounts for more than a third of the company's 1.65 billion cubic feet of daily U.S. natural gas volumes.

After registering strong quarterly production increases from the unconventional gas play near Dallas, Texas, Devon's Barnett Shale output during the 2004 second quarter slipped from the previous quarter, raising concern among some industry analysts who participated in an Aug. 5 conference call.

Devon, the largest U.S.-based exploration and production independent, by far is the dominant player in the Barnett Shale, which is thought to be among the hottest natural gas plays in the United States.

"We're on track now for an increase in 2004 Barnett Shale production over the actual 2003, and we think the outlook from here is pretty stable to up," Devon spokesman Vince White said.

However, Barnett Shale's production profile all depends on how many dollars the company invests in drilling during 2005 and that corporate decision won't be made until later this year, White said.

"When we finalize our capital budget for 2005, we'll decide whether we're going to take the thing up or down," he added. "But we don't expect additional declines in 2004."

Other production up

Barnett Shale aside, Devon's overall daily oil, gas and natural gas liquids production during the 2004 second quarter climbed a hefty 11 percent to 684,000 barrels of oil equivalent from 615,000 barrels in the year-ago period, largely on the strength of Devon's merger with fellow independent Ocean Energy.

Increased production, coupled with strong commodity prices, also generated a healthy 41 percent increase in Devon's profit during this year's second quarter to \$502 million or \$2.07 per share, compared to a 2003 second-quarter profit of \$356 million or \$1.67 per share. Revenues were \$2.22 billion versus \$1.81 billion in the year-ago period.

"Between the drilling we see, the additional infill opportunity and the advent of technology, we see a lot of running room both inside and outside the core in the Barnett Shale field." - Devon Energy President **John Richels**

work remains on track. Horizontal wells now account for more than 20 percent of Devon's Barnett Shale production, the company said, adding that it plans to drill about 60 horizontals in the field's core area this year alone.

Lots of opportunity

Brad Foster, general manager of Devon's Central Division, said the Barnett Shale represents "a huge resource base" for Devon and that the company is attempting to figure ways to increase recovery rates, which stand at just 10 to 15 percent of in-place hydrocarbons with current technology. At year-end 2003, Devon had booked reserves of 1.3 trillion cubic feet, essentially all in the core area.

"We're looking at longitudinal wells, we're looking horizontal wells," Foster said. "We're also looking at seismic data and simulation models, core data, and a number of different areas to ... really try to increase the recovery out of the core area."

He said the resource is so large inside the core area that a 1 percent increase in the recovery rate yields about 230 billion cubic feet of recoverable reserves, or about 40 million cubic feet per day net to Devon.

"We think we have another two years where we're hoping we can sit there and apply technology and expertise and be able to get more reserves on that vast resource base," Foster said.

He said Devon hopes to boost recovery in the core area by 5 percent over the next five years, "but that's a pure guess right now."

In addition to the more than 100,000 acres that make up the core area, Devon holds title to 390,000 acres of largely exploration area outside the core area, which the company said holds perhaps another 1.3 to 1.8 trillion cubic feet of recoverable gas reserves. "Between the drilling we see, the additional infill opportunity and the advent of technology, we see a lot of running room both inside and outside the core in the Barnett Shale field," Devon President John Richels said.

EXPLORATION & PRODUCTION

GULF OF MEXICO

Current Deepwater Activity

Operator	Area/ Block	OCS Lease	Rig Name	Prospect Name	Water Depth (ft)
Shell Offshore Inc.	LL 399	G23480	R&B FALCON DEEPWATER NAUTIL	Cheyenne	8,951
Shell Offshore Inc.	AC 857	G17565	TRANSOCEAN D.C. DEEP SEAS	Great White	8,220
BP Exploration & Production Inc.	WR 724	G17011	DIAMOND OCEAN CONFIDENCE	Das Bump	7.591
BP Exploration & Production Inc.	GC 743	G15606	TRANSOCEAN D.W. HORIZON	Atlantis(GC)	6,829
Union Oil Company of California	KC 681	G20949	DISCOVERER SPIRIT	East Sardinia	6,345
BP Exploration & Production Inc.	MC 778	G09868	TSF DISCOVERER ENTERPRISE	Thunder Horse South	6,037
Dominion Exploration & Production, Inc.	MC 773	G19996	PRIDE 1503	Devil's Tower	5,610
Kerr-McGee Oil & Gas Corporation	GC 767	G24182	TRANSOCEAN D.W. MILLENNIUM	Conquest	5.268
Mariner Energy, Inc.	VK 962	G15444	DIAMOND OCEAN AMERICA	Swordfish	4,673
Nippon Oil Exploration U.S.A. Limited	EB 857	G20765	GLOMAR EXPLORER	Кір	4,512
BHP Biliton Petroleum (GOM) Inc.	GC 653	G20084	GLOMAR C. R. LUIGS	Shenzi	4,340
Anadarko Petroleum Corporation	GC 608	G18402	NABORS POOL 140	Genghis Khan	4.287
Anadarko Petroleum Corporation	GC 518	G21801	NOBLE PAUL ROMANO	K2 North	4,035
Chevron U.S.A. Inc.	GC 640	G20082	TRANSOCEAN CAJUN EXPRESS	Tahiti	4,017
Eni Petroleum Co. Inc.	GC 562	G11075	GLOMAR CELTIC SEA	К2	3,925
BP Exploration & Production Inc.	VK 915	G06894	NOBLE JIM THOMPSON	Dorado	3,460
Eni Petroleum Co. Inc.	GC 298	G08010	DIAMOND OCEAN VALIANT	Allegheney(South)	3,305
Murphy Exploration & Production Company -	GC 338	G21790	NOBLE AMOS RUNNER	Front Runner	3,278
Shell Offshore Inc.	GC 248	G15565	NOBLE MAX SMITH	Glider	3,243
Shell Offshore Inc.	VK 956	G06896	H&P 205	Ram-Powell	3,214
Kerr-McGee Oil & Gas Corporation	GB 668	G17408	NABORS MODS RIG 150	Gunnison	3,152
Kerr-McGee Oil & Gas Corporation	GB 667	G17407	DIAMOND OCEAN STAR	Gunnison/Durango	3,152
Nexen Petroleum U.S.A. Inc.	GC 243	G20051	TRANSOCEAN MARIANAS	Aspen	3,065
Shell Offshore Inc.	GB 426	G07493	AUGER	Auger	2,862
Walter Oil & Gas Corporation	MC 583	G16624	DIAMOND OCEAN LEXINGTON	Killer Bee	2,487
Murphy Exploration & Production Company	MC 582	G16623	MODS 141	Medusa	2,215
LOG Exploration & Production Company	GB 415	G24491	DIAMOND OCEAN SARATOGA		2.072
Chevron U.S.A. Inc.	VK 786	G10944	ENSCO 25	Petronius	1,754
El Paso Production GOM Inc.	EW 1003	G06921	NABORS SUNDOWNER 11	Prince	1,483
3P Exploration & Production Inc.	VK 989	G09771	NABORS POOL 143	Pompano I	1,295
BP Exploration & Production Inc.	MC 109	G05825	H&P 203	Amberjack	1,030

New Deepwater Activity

Shell Offshore Inc.	AC 857	G17565	Great White	8,220	
Nexen Petroleum U.S.A. Inc.	GC 243	G20051	Aspen	3,065	
LLOG Exploration & Production Company	GB 415	G24491		2.072	
BP Exploration & Production Inc.	VK 989	G09771	Pompano I	1,295	



Meanwhile, Devon said it completed its 100th horizontal well in the Barnett Shale, and reassured analysts that field



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NATURAL GAS

A12

ALBERTA

EOG Resources moving into CBM ranks

By GARY PARK

Petroleum News Calgary Correspondent

oalbed methane is stirring the interest of more operators in Alberta, with Houston-based EOG Resources the latest to signal its intention to follow the lead of others in southern Alberta.

EOG has drilled 17 coalbed methane wells on 120,000 net acres in the area so far this year and now plans another 100 Horseshoe Canyon wells as part of a 1,300-well program in southern Alberta, Chairman and Chief Executive Officer Mark Papa told a conference call Aug. 3.

He said EOG hopes to copy the coalbed methane success of other operators on nearby lands by incorporating coalbed methane into its larger drilling operations.

Papa said EOG estimates it has 375 potential coalbed methane locations in southern Alberta that it views as

"quite economic" based on initial drilling results and the potential for further coalbed methane development.

Meanwhile, MGV Energy, a unit of Quicksilver Resources, boosted its coalbed methane-dominated gas production almost four-fold in the second quarter to 1.84 billion cubic feet from 486 million cubic feet in EOG Chairman and CEO Mark Papa the same period of 2003 and expects to end 2004 with output as high as

40 million cubic feet per day as more coalbed methane comes on stream.

The company completed 152 net wells in the first half of 2004 and forecasts another 131 for the balance of 2004.

Quicksilver President Glenn Darden told a conference call that the bulk of current production is from wells that

ALASKA

Alliance continues oil and gas training program for U.S. Foreign Service officers

The Alaska Support Industry Alliance and the Foreign Service Institute have completed a 2004 advanced oil and gas training program for Foreign Service officers. The program, held July 26-30, was based in Anchorage and included trips to the North Slope, Cook Inlet and Valdez, with reviews of North Slope infrastructure, an on-site inspection of a Cook Inlet production platform and a review of the pipeline terminal infrastructure in Valdez. The program also included an inspection of the ConocoPhillips' liquefied natural gas plant at Nikiski and a demonstration of oil spill preparedness by Ship Escort Response Vessel Systems in Valdez.

continued from page A1 PLATFORM

offshore jackup rigs used in the Gulf of Mexico you could get a feel for the dimensions of the Arctic platform, which could be as large as 32 modules, each 50 feet by 12.5 feet. (The prototype has 21 modules, all of which, Hanley said, would have to be modified using "lessons learned" at the gas hydrate project if they were to be part of a larger module for conventional North Slope wells.)

Currently the camp, which rested on the platform so that only the prototype's legs were touching the ground, is being leased by Alyeska Pipeline Service Co. in Alaska. The rest of the prototype is up for sale.

"There are stellar uses for the existing platform in a smaller scale setting," he said. Designed for a smaller drilling rig, "it can be used in other sensitive environments ... such as swamps."

So when is Anadarko going to build a full-size platform and begin drilling exploration wells in remote areas of the North Slope, such as the Brooks Range Foothills?

the process of evaluating what it learned from the prototype but, more importantly, it needs several drillable prospects to proceed.

"Unlike ice roads and pads, the Arctic platform could be used for multiple wells over a period of many years. So you can spread the cost over more than just one or two wells," Hanley said.

"We're in the process of putting together a multi-year drilling program," but a major challenge for Anadarko in Alaska, he said, is the chicken or egg battle regarding the proposed natural gas pipeline from the North Slope to southern markets. The company needs to know it will have access to the gas pipeline before it can commit to drilling a lot of wells in the gas-prone Brooks Range Foothills.

"The next generation platform will be improved and take advantage of the lessons we learned to reduce costs and improve efficiencies," Hanley said. "We're still evaluating the economics and how it would compete with other exploration options ... but a big part of it is getting the prospects lined up." Their location and environment, he said, plays into the final design of a full-size

continued from page A9 HEAVY OIL

and West Sak pilot vertical wells were drilled there.

"So the gravel is there," Jones said, "but nothing else we could use."

A pipeline and power line will be built to Drill Site 1J this winter, a distance of some three to four miles from Kuparuk Central Processing Facility 1, and modules will be installed this time next year.

Now that the project has been approved, Jones said, they can start ordering some of the longer-lead items and start letting contracts for construction.

Jones said they aren't releasing an estimate of original oil in place for the Drill Site 1E and Drill Site 1J areas, but the known accumulation of West Sak oil at Kuparuk is 7 billion barrels of oil in place.

Development of Drill Site 1J will add about 30,000 bpd, with first production expected in late 2005 and peak production in 2007, the companies said.

Production will more than quadruple

The companies said production of West Sak oil is now at about 10,000 barrels per day, and with the Drill Site 1E and 1J project, production is expected to reach approximately 45,000 bpd by 2007.

The West Sak heavy oil accumulation overlies conventional oil over much of the Kuparuk River field, and the accumulation, variously called heavy or viscous, has been known for decades, since wells to conventional oil drill through the West Sak formation.

Producing it has been a challenge. but

average only 90,000 to 130,000 cubic feet per day, but farther north in the Palliser area rates have gone as high as 400,000 cubic feet per day.

Thunder Energy said it is advancing plans to increase coalbed methane volumes in Alberta now that it is averaging about 70,000 cubic feet per day from 12 wells in the Fenn-Big Valley area of the Horseshoe Canyon formation.

In July it moved to the next stage by launching a 40well program in the Belly River/Horseshoe Canyon area.

Once those are connected Thunder expects to have 60 producing well bores with an average 75,000-80,000 cubic feet per day, said President and Chief Executive Officer Doug Dafoe.

MGV, along with EnCana and Apache, dominates Canada's fledgling coalbed methane sector, which is expected to achieve combined production of about 150 million cubic feet per day by the end of 2004, just two years after the commercial debut.

> "Extensive technical cooperation by ConocoPhillips and BP also has contributed to the recent advance in the production and development of heavy oil resources at West Sak and the BP-operated Orion and Milne Point fields," the companies said.

Forty-four West Sak wells

Plans call for the drilling of 13 West Sak wells at Drill Site 1E and 31 wells at Drill Site 1J, the companies said. Jones said the 1E wells include seven injectors and six producers and the 1J wells include 14 injectors and 17 producers.

First-year average production rates from a typical West Sak well have climbed from a few hundred barrels of oil per day in 1997 to more than 1,500 bpd today, the companies said. The increase in production rates is a result of advanced drilling technologies such as multilateral wells, which have multiple producing well bores, and the use of enhanced oil recovery technologies that make it possible to extract more oil from the reservoir.

"Extensive technical cooperation by ConocoPhillips and BP also has contributed to the recent advance in the production and development of heavy oil resources at West Sak and the BP-operated Orion and Milne Point fields," the companies said.

Engineering under way

Detailed engineering contracts for the West Sak development program have been awarded to VECO Alaska and NANA/Colt Engineering LLC. Additional contracts for drilling, facility module construction, pipelines and power lines will be awarded once detailed engineering is completed for Drill Site 1J. Companies that have already been awarded contracts for support of development at Drill Site 1E include ASRC Energy Services and Doyon Drilling. ConocoPhillips Alaska operates the West Sak field, which will be owned by ConocoPhillips (52 percent), BP (37 percent), ExxonMobil (5.8 percent), Unocal (5.0 percent) and ChevronTexaco (0.1 percent). ConocoPhillips Alaska spokeswoman Dawn Patience told Petroleum News that there have been some changes in ownership that are pending approval from the state of Alaska. Current ownership is ConocoPhillips 55.9 percent; BP 39.7 Unocal 3.96 percent: percent; ExxonMobil 0.36 percent; ChevronTexaco 0.1 percent. ●



The short answer: The company is still in

platform

-KAY CASHMAN

continued from page A5 NEWFIELD

drilling in the Gulf of Mexico and abroad, the company said.Newfield said it plans to pay for Inland Resources using a combination of stock and borrowing. On Aug. 9, the company said it would publicly offer 4.7 million shares of its common stock to help pay for the acquisition.

Inland couldn't come up with capital

Denver-based Inland Resources, the product of a merger between Lomax Exploration and Inland Mining Co. in 1994, simply could not come up with the capital to further develop the Monument Butte field, Schaible said.

"They contemplated raising additional

money to fund drilling activity earlier this year and then later decided to sell the company," he added. "Newfield worked with Inland on a negotiated basis and reached an agreement to acquire this legacy asset."

However, he said, Newfield intends to keep the Inland staff because of their experience with developing the field and working with the U.S. Bureau of Land Management. Monument Butte is located on federal land.

"With Newfield's financial strength and an infusion of a few key Newfield employees, we think we have the winning combination to better exploit this unique asset," Schaible said. He said Newfield would use the Inland acquisition to establish a foothold in the Rocky Mountains.

"This acquisition places us squarely in the Rockies, an area where we intend to grow in the future," Schaible said.

recently both ConocoPhillips and BP, which produces heavy oil at Milne Point and at western Prudhoe Bay satellite fields, have signaled success with multilateral wells: two, three or even four horizontal penetrations into the West Sak from a single well bore.

Greg Leveille, ConocoPhillips' manager of Kuparuk satellites, said in February that ConocoPhillips began to employ new techniques to recover heavy oil in the 2000-2002 timeframe, including lateral wells through producing zones, but results were still "marginally economic."

But, he said, 2003 was "a big transition year for us" in heavy oil, with "extremely long" lateral sections through the reservoir combined with a less expensive completion technique using slotted liners, a combination which made developing heavy oil an economic proposition.

PETROLEUM NEWS • WEEK OF AUGUST 15, 2004

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ADVERTISER INDEX

Business Spotlight

By PAULA EASLEY



Lyle Madsen, senior account manager

Alaska Railroad Corp.

Added to the Alaska Railroad Corp.'s fleet this year are eight new locomotives, 25 hopper cars, and 10 TOFC flatcars to handle increased freight demands. An updated fleet plan is also under way. The railroad offers trailer-on-flatcar service daily between Anchorage and Fairbanks and specializes in heavy loads.

Before joining the Alaska Railroad nine years ago, Lyle Madsen was employed in marine and rail transportation sales and marketing. He worked for Northland Services and Crowley Marine Services for a total of 11 years. Today he enjoys the interaction between customers and operations once marketing has committed the railroad to a move. Lyle is active in the Alaska Miners Association, the Alliance and Resource Development Council. His and wife Nita's four sons are grown and living Outside.



Mark L. Susich, senior pipeline specialist

Marathon Oil Co.

G-M

Golder Associates
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Hanover Canada
Hawk Consultants
H.C. Price
Hunter 3D
Industrial Project Services
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Marathon Oil Co. continues building on its natural gas exploration successes. In 2000, Marathon commissioned Glacier Drilling Rig No. 1, which recently surpassed 250,000 feet drilled. The company remains committed to providing natural gas to Southcentral Alaska. Since 1961, Marathon and other Cook Inlet producers have delivered some 7 trillion cubic feet of natural gas to local markets without compromising public safety or the environment. Mark Susich joined Marathon in

Mark Susich joined Marathon in 1988 and oversees pipeline regulatory requirements and various drilling support operations. Claiming no responsibility, he oversaw Mount Redoubt's 1990 eruption from the Dolly Varden platform. Mark is an avid outdoorsman and enjoys coaching a girls' soccer team. (What could be more fun than watching 4 and 5-year-olds play soccer?) Mom, the two girls and the dog all love camping and fishing.

continued from page A1

QUANDARY

sion, he said: to extend the on-tundra work season while maintaining — or exceeding — the current level of tundra protection.

The number of days allowed for winter tundra work has dropped significantly since the state began to set the tundra opening date in 1969, and a chart of that decline, Bader said Aug. 1, prior to a tour of some of the division's tundra test plots, has been widely used to illustrate climate change.

And "part of this project is to tease out how much of this graph is a result of climate change and how much is the result of management choice."

Bader said he hopes to find that a fraction of the changes in the tundra opening dates are due to management choice, "because if it's entirely climate driven, I'm going to have a hard time opening up the season."

The \$1 million study

The tundra study is collaborative, Bader said, involving the Department of Natural Resources, the Alaska Oil and Gas Association, the U.S. Department of Energy, Yale University and the University of British Columbia. Costs of the study will come to about \$1 million, he said: the Department of Energy provided \$270,000 in startup money; the Alaska Oil and Gas Association coordinated personnel and equipment time valued at \$80,000; and Yale University computing time is valued at about \$700,000.

The division is studying a number of things in what is, Bader said, "the first-ever test on the tundra in a controlled environment."

One question being asked is "what is the level of disturbance under our current standard?" Public consensus seems to be, he

Tundra opening tools have changed

Part of the work for the Alaska Department of Natural Resources' Division of Mining, Land and Water's analysis of tundra opening dates took place on the North Slope. Part of the work was done in the division's Fairbanks' offices, studying how tundra-opening decisions were made in the past.

When Harry Bader took over as northern region land manager for the division in 2002, he had a study done of the division's decision-making processes. One outcome of that study was a recommendation for further analysis of the decision making behind the tundra opening.

As with the tundra plot work, Bader wanted people working on the project who don't, as he put it "have a dog in the fight." He chose academic interns: University of Oregon law student Patricia Bradwell; University of Alaska Fairbanks graduate student Sherri Wall, a Ph.D. candidate in economics; and Alison Macalady, a master's degree student at Yale University School of Forestry.

They studied how the state made tundra opening decisions in the past, and what the economic cost is to the state of a shorter tundra opening.

Institutional history, transparency

The first thing they found, Patricia Bradwell said, was a lack of documentation of the decision-making process, so they had to discover what went on by interviewing present and past staff, as well as personnel from local, state and federal agencies who had some involvement, and then checking recollections against documents from the time.

Tundra opening, Bradwell said, "is a product of a variety of factors including climate variability, the measure techniques that DNR has used to determine the frost level and ground hardness of the tundra, and also changes in the way that DNR decision makers have valued the tundra ecosystem over the years."

The assumption at the beginning of the study was that the state had always used the 12 inches of hard ground and six inches of snow standard for determining tundra opening. What they discovered was "that that standard was applied in a number of different ways over the years, and in some cases it wasn't applied at all."

General guidelines have changed a lot.

The 12 and six guidelines were developed by Max Brewer, formerly director of the Naval Arctic Research Laboratory in Barrow, in advising the U.S. Geological Survey and the U.S. Navy on construction of airplane landing strips, roads and drilling pads

see TOOLS page A15

said, that the current level is acceptable. Measuring that level of disturbance is significant, because the division has been asked to change how it opens the tundra so the season



will be longer, while maintaining — or enhancing — the present level of tundra protection.

Bader said he wanted people outside the system for the study, and chose to go with academic interns, most of them graduate students, from the University of Alaska Fairbanks, the University of Oregon Law School, McGill University in Canada and Yale University.

Two test areas

Two test areas were selected, one four miles south of Deadhorse on the coastal plain of the North Slope, and one in the Brooks Range Foothills some 60 miles south of Deadhorse. Selection criteria included: road access; a pullout for staging; no previous activity; and a good representation of the major ecology systems on the North Slope. Given the requirements, there were really only two spots, Bader said, and they weren't perfect: a helicopter over flight found an old seismic trail — invisible from the ground — at one site, and that "green" trail had to be marked from the helicopter so that the test plots wouldn't overlay the old disturbance.

The Foothills site is dominated by tussock shrubs, he said, while the coastal plain site is 90 percent wet sedge meadow.

The test work was done over the fall and winter season, and included five treatments on six dates, for a total of 30 plots at each site.

In the treatments vehicles were driven in a figure eight pattern on the plot. The ground was staked to indicate the pattern. Treatments were: a trucker, a wheeled frontend loader, a D-7 cat tractor, a challenger (a rubber-tracked vehicle) and a "no-treatment" treatment.

The "no-treatment treatment" is not the control, Bader said. The control was the baseline ecological data that he and interns working on the project collected the summer before the tests.

The "no-treatment" treatment "is to calibrate the natural variation in change that occurred in the tundra" Bader said. To be significant, any change in the area driven over by, for example, the D-7 Cat, compared to the baseline, "has to be statistically significantly different than the change that occurred in the no-treatment treatments for the same time period."

Measurements crucial to study

Baseline ecological data was collected prior to the tests.

Before the driving tests, measurements were made of snow depth, snow slab thickness, hoar frost thickness and ground hardness.

Ground hardness is measured with a drop hammer. One person lifts a weight and drops it; a second person is on the ground, recording how many drops it takes for each inch of penetration by the probe to a depth of 12 inches.

For the vehicle treatments, each was driven over a figure-eight course, marked by stakes.

Bader said the tests, which included 10 passes through the cross "gate" marked by stakes in the center of the figure eight, exceeded anything the division would allow companies to do on the tundra in terms of repeated driving over a single spot.

For each test date, each vehicle was driven in a figure eight pattern on a separate plot; then the plots were left alone. For the next test date, vehicles were driven over different plots.

This enables the division to compare both the date of the test (and the snow and ground hardness conditions on the test date) and the results from different vehicles.

October represents "worst case"

The test included a late October date, requested by the North Slope Borough to represent a "worst case" scenario. Bader,

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TOOLS

on permafrost. In conversations with Brewer, Bradwell said, "it became clear that the 12 and six standard was less of a scientific standard than it was an engineering rule of thumb."

What the state actually relied on, however, has varied a lot: from 1969-82, air temperatures at Barrow and Barter Island were the basis for tundra opening. From 1982-84, the state also measured the thickness of ice on rivers, or asked oil companies working in the area to measure it. In these early years, Bradwell said, there wasn't a budget for state staff to go to the North Slope to take measurements.

In 1985, however, the state started directly measuring tundra hardness: driving a graduated steel rod into the frozen ground with a sledgehammer. In 1993, the state began to experiment with different techniques to take measurements, and in 1995 began using a slide hammer: as the hammer was dropped down the weight would push the point into the ground.

There were problems with both the sledgehammer and the slide hammer, however, because the number of sledgehammer strokes — or the number of drops of the slide hammer — depended on the strength of the person doing the measuring, and the slide hammer often required application of additional pressure to drive it into the ground. And that affected the measurement of how hard the tundra was.

Bader helped develop the drop hammer, in use since 2002. The drop hammer has a probe which is both harder and slimmer than that used on the slide hammer, so it can penetrate the ground service without additional pressure, so the strength of the person operating the equipment doesn't affect the measurements.

Economic implications of tundra season

Sherri Wall found a significant economic impact on oil and gas exploration from a shorter tundra season, especially since onshore exploration targets have gotten farther away - now as far as the National Petroleum Reserve-Alaska -— as the tundra season has gotten shorter.

Most exploration is done from ice roads and ice pads: they take time and cost money to build. Wall said she was told that \$100,000 a mile is a good estimate for ice road costs. Taking 60 miles as an example, that's \$6 million just to put in the ice road, and then you have to drill. If you can only drill one well from that ice road, because of the shorter tundra season, that adds \$6 mil-

continued from page A14

QUANDARY

This project will wrap up with modeling, but Yale has applied to the Department of Energy for money to monitor the plots over

THE REST OF THE STORY



Number of days of tundra travel per year.

lion in cost to a single well, whereas if you had time to drill two or three wells the cost could be split between the projects, she said.

And what are the oil companies saying? Anadarko Petroleum told Wall: "Alaska's a difficult place to do business, given the lack of access to infrastructure and cold weather. The shortened season is considered for fund allocation. There is no doubt that there have been many decisions that our dollars are better spent taken elsewhere."

And ConocoPhillips, in recent years the most active North Slope explorer, said: "We have more projects than money and we must consider where we can most efficiently spend our money. So Alaska is in a disadvantaged position to compete, given the seasonal operations. Exploration is teetering on the brink of extinction."

If there is no exploration, then production declines as existing reserves are produced.

Oil royalties and taxes account for 84 percent of the state's general fund revenues. In 2003, royalties were \$1.2 billion and tax, severance and other payments by the industry were \$800 million, Wall said. Alaska provides 19 percent of U.S. oil production, so as the tundra season shortens, "there are economic implications not only to the oil companies themselves, but also to Alaska's fiscal stability and national energy security."

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showing a photo from that test, noted that while there was snow on the ground, the ground was not frozen. "You see a lot of mud and torn-up grass." While the study results aren't in yet, he said he doesn't think October will be an opening date for tundra travel, "because without measuring it, that does look like there's probably some disturbance."

This summer Bader and interns Jacvnthe Guimond, a graduate of McGill University, in Montreal, Quebec, and University of Alaska Fairbanks undergraduate Jonathan Fiely, returned to the test plots. They took measurements of tussock frequency and disturbance; shrub frequency and disturbance; vegetative cover; depth of active layer; soil temperature at depth; soil volumetric water at depth; and microthermography.

One test, measuring plant stress, used a device developed to measure plant stress on golf courses.

a 20-year period.

Bader said just entering the data for computer analysis will take 175 to 200 hours.

Has he found a way to increase on-tundra time? Bader says he doesn't know: look for results in November.





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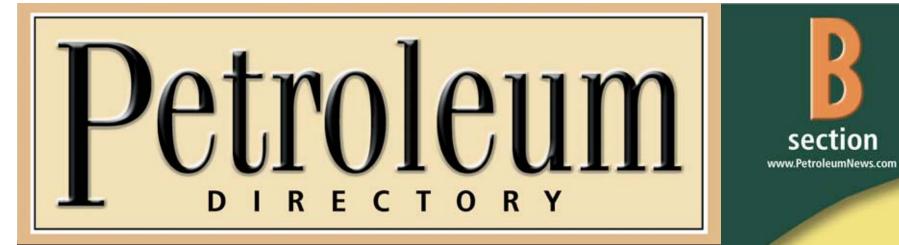
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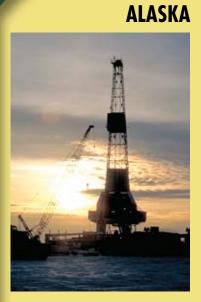
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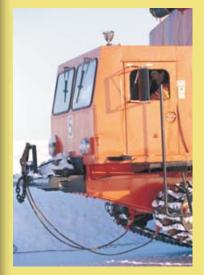
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CONTINENTAL U.S.





COURTESY

A wide spectrum of safety-related training

PRISM's high-tech campus has established a role well beyond aircraft fire fighting

By ALAN BAILEY

Petroleum Directory Contributing Writer

uickly and efficiently rescuing people from a major fire and extinguishing the flames requires courage, skill and a high degree of professionalism. In fact the response to any kind of emergency depends on qualified people who know exactly what they're doing.

That's the underlying philosophy behind the safetyrelated training that the Pacific Rim Institute of Safety and Management, known as PRISM, provides in its state-ofthe-art training center in Kenai, Alaska. PRISM offers a wide range of courses and accredited certifications ranging from aircraft rescue fire fighting to health and safety. The training center's location near the Kenai airport enables convenient access from elsewhere in Alaska and around the Pacific Rim.

"(The PRISM Training Center) is a public/private partnership between AAI Engineering Support Inc. and the City of Kenai," Patrick Truitt, director of logistics programs at AAI Engineering Support Inc. told Petroleum News. "It has been jointly funded by the federal government, the State of Alaska, the City of Kenai and AAI Engineering Support Inc."

AAI Engineering Support Inc. is a major worldwide provider of technical and training services for government and industry. It is headquartered in Hunt Valley, Md. David Burnett of Kenai is the onsite director of the PRISM facility.

Opened in 1998

The PRISM Training Center opened in 1998 in response to a federal directive to start using so-called hotfire trainers for mandated airport fire training, Truitt said. Hot-fire trainers use propane fueled burners to simulate aircraft and industrial fires, instead of the traditional practice of creating a fire by burning various fossil fuels.

"Alaska was one of the 13 states that was selected to host one of these (hot-fire) sites," Truitt said. The hot-fire



The PRISM Training Center in Kenai, Alaska, opened in 1998 in response to a federal directive to start using so-called hot-fire trainers for mandated airport fire training.

The other airplane mock-up sits at the center of a fire pit that uses liquid propane to simulate a fuel spill fire from a crashed airplane.

"The fire pit itself is 125 feet in diameter and uses 800 gallons a minute of liquid propane," Burnett said. "The liquid propane can reach temperatures in excess of 1,800 degrees — it all depends on how you apply your (fire fighting) agent."

PRISM's outdoor industrial structure simulates the type of fire emergencies that you would find in oil fields.

"If there's a fuel spill they might come in with foam," Truitt said. "We use a training foam that's very realistic but that's not harmful to the environment."

> Sensors in the mock-ups measure the direction and proximity of the foam or water so that the computer can determine when to turn off the flames.

"That allows the computer to sense that the students are applying the agent the correct way," Truitt said. "If they are doing it incorrectly, the fire will not go out or it will re-flash."

Industrial interior fires

A building with natural gas burners enables instructors to create many types of interior fires.

"The industrial interior building is three stories in height," Burnett said. "It houses three props — a bilge pump, a generator fire and a commercial

fighting.

'We have a fully accredited firefighter 1 and firefighter 2 academy," Truitt said. "It's (also) fully certified on basic safety training. We do full seafarer's (safety) training. We have a lot of courses that are geared for petroleum, mining and other general industry ... right down to 'how do you drive a forklift truck?""

The complete range of courses includes topics such as hazardous materials, hazardous painting, emergency medical technician, first aid and the use of the incident command system. PRISM offers a U.S. Coast Guard approved marine safety curriculum.

The training center provides many practical training classes as well as national and Alaska state certifications.

"We do all the safety management courses," Truitt said. "(People) have to have certifications in first aid and in fire fighting." Other certifications for industrial environments include forklift operation, rigging and hazardous material handling, he said.

In fact PRISM has teamed up with Beacon Occupational Health and Safety Services Inc. to provide a complete suite of work-related health screening and safety training services.

The Training Center provides student record management, so that their training and certification status can be determined.

Expanding customer base

Presently the training center serves municipal fire departments and most of the airports in Alaska. The military has also trained at the PRISM facility.



The hot-fire trainer facility at the PRISM campus uses propane from a large tank in an underground bunker. The propane flows through nozzles distributed in two aircraft mock-ups

trainer facility at the PRISM campus uses propane from a large tank in an underground bunker. The propane flows through nozzles distributed in two aircraft mock-ups, a mock-up of an outdoor industrial facility and a building for interior structure fires.

"It's all computer controlled - all electronic valving for the propane," Truitt said. "We have a set of computer controls that control all the different burners completely across all of the facilities."

An operator in the facility's control center manages the fires from a computer console. The computer has been programmed to trigger the appropriate propane valves for many different fire scenarios. One airplane mock-up, for example, consists of a simulated Boeing 737, configured to create 10 types of airplane fire, including engine and cabin fires.

"(Let's say) I'm in the airplane and I'm going to have an aircraft engine fire," Truitt said. "We just program the engine fire, where we want it and when to start it."

kitchen."

The props can represent different types of rooms. For example, the kitchen

can simulate a domestic kitchen or a kitchen on a boat, as well as an industrial situation, Truitt said. Instructors can also set up a smoke maze in the building, so that people can practice confined space rescues in poor visibility smoke generators create artificial smoke that's not dirty or toxic.

Although the fire simulators can produce some spectacular blazes, the use of gas burners ensures the safety of all participants in the training.

"If anything goes wrong we can instantly shut it down," Truitt said. "If someone panics there are buttons (throughout the facilities) that they can push within an arms length to shut it down."

Broad range of courses

The training center's schoolhouse with its high-tech classrooms supplements the fire fighting facilities and supports a huge range of safety-related courses - the scope of the training extends a long way beyond just aircraft fire

"The Air Force actually brings in their staff and their fire equipment in a C-130 ... and use our burn facilities," Truitt said.

PRISM provides safety training and certification for personnel from several major companies in the Alaska oil industry. PRISM plans to continue growing its business by expanding its curricula to include those associated with new areas of industrial training such as issues involved with homeland security.

The center is also anxious to build on its public/private ownership by continuing its excellent relationship with the City of Kenai and forging closer relationships with both the State of Alaska and the federal government --- marine safety and homeland security seem obvious areas in which PRISM could help.

It's all a question of equipping people with the skills for dealing with safety issues.

"Safety and Safety Management Training --- that's what we do," Truitt said.

Editor's note: Alan Bailey owns Badger Productions in Anchorage, Alaska.

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Dowland-Bach

6130 Tuttle Pl. P.O. Box 230126 Anchorage, AK 99523 Contact: Lynn Johnson, president Phone: (907) 562-5818 Fax: (907) 563-4721 Email: lynn@dowlandbach.com Web site: www.dowlandbach.com

The Fairweather Companies 2000 E. 88th Ave. Anchorage, AK 99507 Contact: Bill Penrose Phone: (907) 258-3446 Fax: (907) 279-5740 Website: www.fairweather.com *The Fairweather Companies provide project management, engineering, drilling, permitting, logistics, and operational services to the exploration and production sectors of the petroleum industry.*

FMC Energy Systems

700 W. International Airport Rd. Anchorage, AK 99518-1122 Contact: Alan McArthur, area mgr. Phone: (907) 563-3990 Fax: (907) 563-5810 Email: alan.mcarthur@fmcti.com Supplier of wellheads and Christmas trees, to API specifications, with repair facility and service organization to support all North Slope and Cook Inlet locations.

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721 W. First Ave. Anchorage, AK 99501 Contact: Brad Billon Phone: (907) 274-5526 Fax: (907) 279-6729 Email: bbillon@miswaco.com **SWACO** Anchorage, AK 99501 Contact: Dana Rhodes Phone: (907) 274-5541 Email: danarhodes@midF.com MI SWACO combines Alaska know-how and global strength to provide the oil industry with a full-service drilling partner

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Nordic-Calista Services

4700 Business Park Blvd., Bldg. E, #19 Anchorage, AK 99503 Phone: (907) 561-7458 Fax: (907) 563-8347 Contact: Phil Snisarenko, Operations Mgr. Email: Nordic@gci.net Nordic-Calista Services provides innovative, reliable workover/drilling rigs specifically designer for arctic conditions. We strive to maximize productivity and efficiency while promoting safety and environmentally-conscious drill practices.

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management and non-destructive testing.

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9898 Bissonnet St., Ste. 362 Houston, TX 77036 Contact: Dan Huston, vice president Phone: (713) 981-4650 Fax: (713) 981-4650 Email: hunter3d@wt.net Web site: www.hunter3dinc.com Hunter 3-D is a geophysical consulting company based in Houston, Texas. We interpret seismic, gravity and magnetic data for projects in Alaska and worldwide.

Michael Baker Jr.

4601 Business Park Blvd., Ste. 42 Anchorage, AK 99503 Contact: John M. Eldred, business unit mgr. Phone: (907) 273-1115 Fax: (907) 273-1699 Email: jeldred@mbakercorp.com Website: www.mbakercorp.com Juneau office: 175 Franklin St., Ste. 420 Juneau, AK 99801 Contact: McKie Campbell, sr. environmental mgr. Phone: (907) 463-3171 Fax: (907) 463-3107 Email: mckie@gci.net Engineering skills include civil, structural, mechanical, electrical, project manage-ment, GIS, and hydrology. Energy services include CMMS (computerized maintenance management), managed operation and maintenance, training/competency services, and other related energy services.

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509 W. 3rd Ave. Anchorage, AK 99501–2237 Contact: Frank Weiss Phone: (907) 276-2747 Fax: (907) 279-4088 Web site: anvilcorp.com Other office: Kenai 50720 Kenai Spur Hwy, Mile 24.5 Kenai, AK 99611 Phone: (907) 776-5870 Fax: (907) 770-5871 Multi-discipline engineering and design services including construction management for petro-chemical and heavy industrial client projects.

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2000 E. 88th Ave. Anchorage, AK 99507 Contact: Bill Penrose Phone: (907) 258-3446 Fax: (907) 279-5740 Website: www.fairweather.com The Fairweather Companies provide project management, engineering, drilling, permitting, logistics, and operational services to the exploration and production sectors of the petroleum industry.

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137 E. Arctic Ave. Palmer, AK 99645 Contact: John H. Riggs, general mgr. Phone: (907) 745-6988 Fax: (907) 745-0591 Email: gne@mtaonline.net Website: www.greatnorthernengineering.com Anchorage office: 561-0200 Kenai office: 283-5199 Great Northern Engineering (GNE) is a full-service engineering firm specializing in industrial power and petro-chemical engineering. Complete engineering services in mechanical, electrical, civil, structural, rotating equipment, and corrosion engineering. Consulting services in project design, preparation of project documents, bid assistance, project management, cost estimating and inspection services.

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testing, inspection services, quality control and asset management.

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139 E. 51st Ave. Anchorage, AK 99503 Contact: Richard Rearick, architectural mgr. Contact: Willey Wilhelm, engineering mgr. Contact: Tony Hoffman, survey mgr. Phone: (907) 273-1830 Phone: (800) 955-1830 Fax: (907) 273-1831 Email: lcmfanch@alaska.net Other Offices: Barrow: (800) 478-8213 Email: ktoovak@lcmf.com Alpine: (907) 670-4739 Email: alp1035@ppco.com Arctic specialized architectural and engineering design for all structures; water/sewer, fuel and transportation systems design; contractor support surveying and permitting for oil and gas development; dredging operations, remote site land and hydrographic surveying.

Keeping the wells pumping

Oilfield Improvements' products bring major cost benefits for well operators

By ALAN BAILEY

Petroleum Directory Contributing Writer

S ometimes a simple invention can solve an expensive problem — and provide an inventor with a great business opportunity. Take for example the wheeled rod guide, a device that steers the sucker rods that pass down the tubing of a rod-pumped oil well.

Hughes Coston, president of Oilfield Improvements Inc. and inventor of the wheeled rod guide, told Petroleum News that he started in the oil business by drilling an oil well in north-eastern Oklahoma in the late 1970s.

"The way that I got into business was that I had my own (oil) production," Coston said. "I borrowed a drilling rig to drill my first well."

As Coston's oil production business grew, he encountered problems with wear in oil wells where the well sucker rods rubbed against the well tubing.

"I kept wearing a hole in the tubing at a certain depth in one particular well and I tried different types of rod guide and they didn't help," Coston said. "I came up with the idea of a wheeled rod guide at night — I woke up and said 'I'm going to try this'."

When Coston implemented his innovative rod guide design he found that time between well servicing increased from one month to six months.

In fact the wheeled design proved so successful that in 1982 someone approached Coston to form a partnership to manufacture and sell the guides. The new business, called Oilfield Improvements, flourished — eventually Coston bought out his partner and became the sole owner of the company.

Replace rod couplings

Oilfield Improvements' wheeled rod guides consist of 27 to 29-inch rods with polyethylene wheels slotted in. The wheels enable the guides to roll along the inside of the well tubing. The guides fit into a string of sucker rods.

"They replace the couplings that normally would hold the sucker rods together," Coston said.

The alignment of the wheels along the length of the

guides enables the guides to support reciprocating well pumps. The guides come in a variety of sizes, to support all combinations of tubing and sucker rod diameters.

Because the guides replace rod couplings, it's easy to fit the guides on-site. In addition, people can easily and cheaply replace worn wheels.

UltraFlow guides

In addition to manufacturing its hallmark wheeled rod guides,

Oilfield Improvements manufactures UltraFlow guides. This type of guide consists of a plastic tube that slides onto a sucker rod. Plastic vanes project outwards from the tube to deflect the rod away from the well tubing. Gaps between the vanes enable oil to flow up the well tubing.



Hughes Coston, president of Oilfield Improvements Inc., displays the company's rod guides. The big rod is for 6 5/8-inch tubing, while the smaller rod is for 1.9-inch tubing. The rod guides were manufactured for Amoco Canada. Coston is standing standing in front of the company's 12,000 square foot plant in Broken Arrow, Okla.

Reduce steel costs

rod."

With the recent escalation in the price of steel, many people are seeing major cost benefits in using Oilfield Improvements' products.

"Rods have become so expensive — the price of steel

has almost doubled," Coston said. "... so we're saving people

thousands of dollars in ... the cost of rods and tubing."

Reduced rod and tubing wear can also have a dramatic impact on the cost of servicing wells.

"To service a well that's 10,000 feet deep you're talking sometimes \$15,000 to \$25,000," Coston said. "... if you can prevent (the well) from going down twice a year you've saved \$30,000 to \$40,000 ... our guides cost pennies compared to those kinds of costs."

And Oilfield Improvements minimizes costs by contracting out the manufacture of the parts for the guides. "I have different suppliers that supply the parts and Oilfield Improvements' wheeled rod guides consist of 27 to 29-inch rods with polyethylene wheels slotted in. The wheels enable the guides to roll along the inside of the well tubing. The guides fit into a string of sucker rods.

using wheeled guides.

"In deeper wells you don't want to have to go in there and spend that \$20,000 (on servicing), so you're willing to spend \$5,000 on wheeled rod guides," Coston said.

The cheaper UltraFlow guides can supplement the wheeled guides or, in a simple application, work by themselves to keep the sucker rods clear of the well tubing.

Computer analysis

With something of a science around determining the type of rod guide to use and the placement of the guides, Oilfield Improvements offers a free computer analysis of a customer's rod guide requirements. A computer program uses a well's directional survey together with information such as the pump stroke length to calculate the interaction between the sucker rods and the well tubing.

"If (the customer) has a directional well and they're wanting to figure out how to run that most efficiently, we put their data ... from the directional survey ... through the computer," Coston said. "It gives us how much side load there is in each section of that well that they've surveved."

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Typically a well operator will place several guides on each rod — the number of guides required depends on the length of the sucker rods and the stroke of the pump.

As well as reducing rod and tubing wear, UltraFlow guides prove effective in preventing rod or tubing stacking near the bottom of a well during the upstroke and downstroke actions of a reciprocating pump. The guides can also scrape out paraffin deposits in the upper parts of a well.

And UltraFlow guides work with any type of rod pumping system.

"Our (rod guides) can be used in reciprocating wells and they can be used in wells where they spin the sucker rods to produce the oil," Coston said.

Unlike other types of plastic guide, UltraFlow guides can be fitted in the field — a major advantage in reducing installation costs.

"Most (types of rod guide) are molded on (to the sucker rods)," Coston said. "You take your sucker rod to a plastic place ... they injection mold guides onto the we assemble them," Coston said. "Business-wise it's been a smart decision because other people can make things cheaper than we can."

Also, because customers can fit both the wheeled guides and the UltraFlow guides themselves, Oilfield Improvements can ship the guides to anywhere in the world for on-site installation.

"If a guy's in Australia (for example) he can buy our guides, put them in his pickup truck and when he gets to his well put them on," Coston said.

Types of application

The well characteristics determine what type of rod guide to use in a particular application — the cost of the guides needs to be balanced against the potential savings in well maintenance.

The wheeled guides cost more than the UltraFlow guides but last much longer. So wheeled guides prove especially cost-effective in demanding situations such as the bottom of a deep well or around the bends of a deviated well. A sharp bend in a well, for example, may require relatively short sucker rods coupled together The calculated side loads enable Oilfield Improvements assess whether rod guides are needed and, if so, what type to use and where to place them, to minimize well operating costs.

"We actually have some places where there's 1,000 pounds for every 25 feet (of well), and then you need a wheeled rod guide," Coston said.

So, Oilfield Improvements has established a flourishing niche business that helps customers reduce their well operating costs. And with a continuing need to minimize the cost of producing oil, Coston sees a bright future for his company.

"We work with people who have production with rodpumped wells," Coston said. "They can do without our product, but it's gonna be expensive." ●

Editor's note: Alan Bailey owns Badger Productions in Anchorage, Alaska.

M-I SWACO delivers complete fluids, drilling waste management package

More than 1 million barrels of slurry have been injected at Alpine with near-zero downtime

By JIM REDDEN

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For Petroleum Directory

n the spring of 1999, industry, government and media representatives assembled at what is now

ConocoPhillips' Alpine field for the unveiling of an Alaska first: a three-story oilfield module designed to dramatically reduce the environmental impact of drilling on the North Slope.

Five years later, the handiwork of M-I SWACO has eclipsed even the most optimistic projections. The so-called G.I.S. drill cuttings grind and injection unit has injected more than 1 million barrels of slurry with an astounding record of near-zero downtime, says M-I SWACO Anchorage-based Project Engineer John Murphy.

The high-profile project is but one of a string of milestones Houston-based M-I SWACO has realized in the nearly four decades it has served the Alaska oil and gas industry. The world's leading provider of drilling, reservoir drill-in and completion fluids and drilling waste management equipment and associated services is owned 60 percent by Smith International and 40 percent by Schlumberger.

Complementing the grind and inject module is a dry bulk handling facility and a liquid drilling and completion fluid plant, which to date has mixed and delivered well over 310,000 barrels. The Alpine project also showcases another M-I SWACO innovation that is helping operators throughout Alaska achieve all their economic and technical objectives, while simultaneously attaining the highest level of environmental performance. The M-I SWACO Integrated Fluids Engineering*, or IFE, program is a cradle-to-grave approach designed to lower production costs, maximize drilling efficiency, increase production, while dramatically reducing environmental impact.

Associated products and services a natural grouping

The unique fluids engineering concept is rooted in the conviction that the associated products and services represent a natural grouping at the well site. Accordingly, it was perceived that the holistic management of these activities and the better team-working and overall enhanced wellsite efficacy it would foster could not only improve drilling efficiency and costs, but also health, safety and environmental performance. This natural grouping includes drilling, reservoir drill-in and completion fluids; solids control and filtration equipment; and waste treatment and remediation equipment and services. This grouping is natural to the extent that the performance of individual components is interdependent. Consequently, the joint management and execution of these processes with combined resources increases the opportunities for improved results.



The M-I SWACO cuttings grinding and injection unit at the Alpine field continues to roll up milestones.

Regional Manager Billon said M-I SWACO over the years has made a concerted effort to position itself as the one company in Alaska that can provide operators the complete package of fluids, drilling waste management and associated engineering services.

exploit synergies in technology and delivery inherent in this natural grouping of products and services.

The program was employed on 30 onshore and offshore wells in Alaska in 2003 — a total that is forecast to double this year. The advantage of the Integrated Fluids Engineering program is clearly reflected in the Alpine project, which thus far has helped drill more than 80 wells totaling more than 1 million feet of hole, says Alpine IFE Coordinator Rob Reinhardt. drill-in fluid. The latter has been employed in the production intervals of Alpine wells, resulting in a two- to three-fold increase in production over earlier wells drilled with water-base fluid systems. The success of the system led ConocoPhillips to acknowledge it with a 2003 "Mark of Excellence" award. Elsewhere on the North Slope, the VersaPro system established two state records for the longest liner and footage drilled. Formulated specifically for the Schrader Bluff area, the system was used in Alaska's first quad-lateral. The four intervals ranged from 3,843 to 7,249 feet in length with a cumulative footage of 27,743 feet. Total footage for the well was 34.798 feet. That project also highlighted another new M-I SWACO innovation: the proprietary OptiBridge* bridging agent selection software package. "The program was used to select the optimum size and concentration of bridging agents and a modified high-temperature, highpressure test was employed to maintain adequate bridging," said M-I SWACO

Project Engineer Mark Dick.

Company's goal a complete package of services

Regional Manager Billon said M-I SWACO over the years has made a concerted effort to position itself as the one company in Alaska that can provide operators the complete package of fluids, drilling waste management and associated engineering services.

"We have developed an infrastructure in Alaska that is second to none. Complementing our comprehensive portfolio of drilling, reservoir drill-in and completion fluids are some of the most highly trained and accomplished wellsite engineers in the industry. When you add our drilling waste management resources and capabilities and our emphasis on new, cost-effective technologies, M-I SWACO is well positioned to deliver solutions to all our clients' drilling, production and waste management needs," he said.

One such solution can be found in the Cook Inlet where the IFE program and a fit-for-purpose cuttings re-injection unit, or CRI, reduced disposal costs some 37 percent while dramatically minimizing environmental impact. Installed in 2000, the CRI system reduced waste management costs by more than \$137 per barrel when compared to the economics associated with the traditional method of transporting cuttings to shore for disposal. It marked the first total zero discharge application in the Cook Inlet.

New drilling waste management and solids control

Drilling and Waste Management Operations Manager Dana Rhodes said M-I SWACO remains Alaska's leading company for cuttings grinding and injection. In addition, the company has introduced to the Alaskan industry a number of new drilling waste management and solids control technologies, including its revolutionary Verti-G* cuttings dryer, the 5500 and MagnaDrive* centrifuges and the Super Auto Choke*.

"We also provide a rather unique service with our solids-control vans. These are 40-ft tractor trailers equipped with a centrifuge, shaker and pumps designed for processing drilling fluids. This is a much more mobile system than the typical fluid processing system configuration," said Rhodes. Unique to the M-I SWACO approach to drilling waste management is looking at wastes not as a commodity to be treated and disposed of, but rather one that could be transformed into a beneficial resource. That methodology has taken hold in Alaska where treated drill cuttings now are being converted into something useful. "In Alaska, beneficial reuse normally is what we call gravel wash. The cuttings generated during the drilling of a well are rinsed with fresh water over a 20 to 50-mesh screen and stored until a TCLP and paint filter test are performed. Once the cuttings are deemed non-hazardous they are used for pad and road maintenance," said Rhodes.

The process begins in the well planning stages and extends through completion, including the ultimate disposal of solid and liquid waste. The total fluids management approach goes well beyond shared infrastructure and personnel to "Despite the logistical complexities of a roadless development, the drilling efficiency and productivity shown by M-I SWACO and the Alpine rig teams is unmatched in all of Alaskan drilling operations," he said.

Alpine also augments the distinction of M-I SWACO as the industry's recognized leader in the introduction and application of new fluid technologies. Regional Manager Brad Billon specifically points to the FloPro* rheologically engineered reservoir drill-in fluid and the VersaPro* mineral oil-base reservoir

*mark of M-I L.L.C.

Michael Baker Jr. Inc.: Energy and Engineering

Complex challenges are invitation to innovate

By SUSAN BRAUND

Petroleum Directory Contributing Writer

ichael Baker Jr. Inc. left cheechako status behind long ago; after 60 years of cold regions engineering in 5 Alaska, it has certainly attained the rank of sourdough and could be closing in

BAKER JR.

on the title of full-fledged pioneer. Starting up in 1940 as a surveying and

engineering consulting firm, the parent company, Michael Baker Corp., has its roots in civil infrastructure and transportation systems support, later expanding into civil, structural and mechanical engineering. Post-World War II, the company gained momentum and notoriety in pipeline, highway, tunnel and bridge design. Headquartered in Pittsburgh, Pa., Michael Baker Corp. has 4,500 employees in 30 states and 14 countries. It ranks in the top 10 percent among the nation's top 500 design firms.

"Michael Baker Jr. Inc. is a wholly

owned subsidiary of the Michael Baker Corporation," says Alaska Operations Manager John Eldred, "Over the years, Baker engineers have designed and managed diverse and innovative projects throughout the nation."

According to Eldred, the company has two focused markets: energy and engineering. Baker Engineering serves infrastructure clients through its transportation, architectural, environmental and civil groups; Baker Energy performs operations and maintenance related services for energy clients.

Energy

With an emphasis on effi- $\begin{bmatrix} \mathbf{w} \\ \mathbf{w} \end{bmatrix}$ ciency through technology, Baker Energy's Applied Technologies group deals with the more technical aspects of maintenance and operations. "We bridge the gap between the commissioning and start-up efforts through various kinds of training and technology. Before systems-go, we do walkthroughs and provide operations manuals and videos," says Eldred. "This is valuable to the client. Some clients are very proactive, and receive savings up front and on the back end. Others treat projects as major inventory events and start up is an after thought."



Developed at Michael Baker Jr. for the Alpine project, the innovative vertical loop concept sets up artificial terrain breaks that create a spill isolation function superior to valves.

The question, however, is, how deep is too deep into parts replacement and placement monitoring? When is it overkill? "Criticality and consequences of failure are good measures," he explains. "If you are going to do it right, you have to look at the individual pieces."

Operations

The operations end of the energy sector uses various models: "One model is basically an expert service provider. We provide experts - highly skilled manpow-

er," says Eldred. "This usually comes into play when the operators want to retain control, but doesn't want to directly employ the resources.'

The other model — Managed Services involves variations of control, from operating specific areas to running the entire operation

"Running the entire operation is our preferred model for the oilfield. We are the second largest operator in the Gulf of Mexico, but not an owner. As property managers we run it all: operations, maintenance, logistics and drilling. This model provides cost sharing, which brings everyone's costs down." Baker Energy has also taken this model onshore in the Texas Panhandle and the Powder River basin, and has full operational responsibility for a particular customer's producing fields in those regions.

2003. Baker was called within hours to assess the damage. "The design worked; it performed as expected. The pipeline moved in both horizontal and vertical directions, but within the limits of the design. The earthquake shifts and associated ground shaking did cause damage to the TAPS aboveground support system. We are now completing corrective redesign." The work will be implemented this summer.

Hydrology

A large part of Baker's recent engineering work has focused on hydrology. Baker water resources professionals provide all types of water resources related services, from river engineering to environmental assessments.

Baker currently plays a key role in the hydrologic work for ConocoPhillips Alaska's North Slope Alpine field, performing yearly spring breakup assessments. When ARCO Alaska (now

ConocoPhillips) began development of the Alpine field, Baker addressed several key civil engineering issues. As the Alpine pipeline crosses the Colville River Delta, siting was a particular challenge. Topography along the very flat pipeline route ranges from common tundra to a flooded and shallow lake ecosystem. The available meterologic or hydrologic data was limited.

Baker engineers developed a two-dimensional surface water model using data collected through hydrologic survey techniques. The study included cross-section surveys of the floodplain, channel cross-sections surveyed at twomile intervals, and other factors. Regulatory agencies readily accepted the model's findings. Baker continues to use this cost-effective surface water model using information collected over the last four years.

Pipeline expertise

"We're not a large pipeline designer; we tend to the technical details to make sure of design modeling, soil interactions and other leveraging design issues." says Eldred.

For designing the first horizontal, directionally drilled pipeline in the Arctic, Baker received the Alaska and Northwest District Civil Engineering achievement of the Year award in 1999 for the section of the Alpine pipeline that passes under the Colville River. Another Alpine pipeline innovation was the vertical loop concept. The loops create artificial terrain breaks, creating a spill isolation function superior to valves.

During trans-Alaska pipeline construction in the 1970s the company provided mile-by-mile pipeline design north of the Yukon and the haul road. Baker was also the pipeline and arctic civil infrastructure engineer the ConocoPhillips Alpine project. On the Kenai-Kachemak Gas Pipeline, the company also performed conceptual engineering, route alternative studies, and final design, including GIS development, creating a series of layers using background satellite imagery, local and state highways, topography, wetlands, streams, land ownership status and locations of gas prospects. Baker created hard and soft copy maps to support further analysis, public meetings, and permit applications for the project and documents to supplement permit applications.



Additional Applied Technology services are comprehensive spare parts and maintenance reviews. A key Baker service is Computer Maintenance Management Systems, or CMMS. Baker performs the data build, develops the deep database

for spare parts and maintenance scheduling and provides reports and daily schedules of maintenance and parts needs, from major equipment down to nuts and bolts. "CMMS is very sophisticated and becoming more so. In fact, we are a global hoster, sort of the Yahoo for CMMS! We build the data base, maintain it, provide the data input and server, order reports and schedules," says Eldred. "CMMS in general allows you to operate, plan and maintain your operation in an orderly fashion, cutting out the peaks and valleys of maintenance swings and avoiding dangerous run-to-failure. The reliability increases the cost effectiveness of your operation. It works especially well for a smaller operator who does not want in-house IT people, server or data input."

For designing the first horizontal, directionally drilled pipeline in the Arctic, Michael Baker Jr. received the Alaska and Northwest District Civil Engineering achievement of the Year award in 1999 for the section of the Alpine pipeline that passes under the Colville River.

Engineering

Although Baker has been busy integrating its energy services expertise into the Alaska mix, it continues to offer its traditional buffet of engineering services but now concentrating more on fine-tuning engineering, design, and construction.

"Our technical expertise is in high-level specialty end engineering services, not straightforward design. We look at a lot of factors, and capability and years of experience go into it," says Eldred. "We know what's practical. There's value in knowing where to stop and not overdesign. People inherently over-design."

An example of the expertise available is the service provided when the trans-Alaska pipeline shut down after a 7.9 earthquake south of Delta Junction in November

Ask the pioneers

Baker is sought after for its experience and expertise. It is the newly selected technical consultant for the Office of Pipeline Safety in the Office of Homeland Security "Baker's current role is providing technical guidance on specialized issues. It's good exposure for us," says Eldred. "Baker brings a great deal of expertise to the table. If clients invest in our services early on, they experience value downstream. Our depth of experience adds value." •

Editor's note: Susan Braund owns Firestar Media Services in Anchorage, Alaska.

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700 G Street, 5th floor Anchorage, AK 99501 Phone: (907) 273-3900 Fax: (907) 273-3990 Contact: John Minier NANA/Colt offers project management, engineering, design, construction management, and procurement services to the oil industry.

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XTO Energy

810 Houston St., Ste. 2000 Fort Worth, TX 76102 Contact: Vaughn O. Vennerberg, II Phone: (817) 870-2800 Fax: (817) 870-0379 Other Office: XTO Energy, 52260 Shell Road, Kenai, AK 99611, Doug Marshall, production superintendent XTO Energy, established in 1986, is engaged in the acquisition and development of quality, long-lived producing oil and gas properties and exploration for oil and gas.

companysnapshots



The PRISM Training Center in Kenai, Alaska, supplies students with the equipment and materials appropriate to a particular training scenario.





Michael Baker's pipeline expertise was called upon within hours of the November 2003 earthquake near Delta Junction, Alaska. Although the Trans-Alaska Pipeline performed as designed, it did sustain some damage to the above ground support system. The company is completing a corrective redesign to be implemented this summer.

Hot-fire trainers at the PRISM Training Center use propane fueled burners to simulate aircraft fires.



With an emphasis on efficiency through technology, Baker Energy's Applied Technologies group deals with the more technical aspects of maintenance and operations.