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MINES & QUARRIES

Mining Phosphate in the Gem State

What do French fries and the phosphate industry have in common? The J.R. Simplot Company — the privately owned food and agribusiness company, headquartered in Boise, Idaho. Each year, this global conglomerate mines two million tons of phosphate ore at its Smoky Canyon open-pit mine in southeastern Idaho. Simplot's agribusiness operations keep busy producing over three billion pounds of french fries for McDonald's each year.

IDAHO SCENARIO

Nicknamed the Gem State, the largest volume of industrial mineral produced in the state of Idaho today is phosphate. Operating only a few open-pit mines, three companies produce 5.5 million tons of ore per year. To put that in perspective, there are a mere four states and that allow nine companies which mine phosphate rock ore in the United States, and Idaho accounts for 12 percent of the nation's total output.

Simplot's Smoky Canyon Mine was developed in 1982 and went into production in 1984. Phosphate

mining there is anything but straightforward. Just ask Dennis Facer, Smoky Canyon's Mine Manager.

"I'm not in the business of mining ore, I move overburden material. Greater than 75 percent of what we move is overburden. The rest is the ore; and that part is complicated.

"There are seven different seams or layers of ore that alternate with waste. One of the largest waste layers contains selenium and has to be handled differently to prevent environmental contamination. And we're in the thrust belt of the Rockies, so the phosphate seams can be hard to follow at times," says Facer.

FOLLOWING THE TRAIL

Removing the various waste layers, including the 50- to 100-foot upper layer of tough chert material, are two Hitachi EX3600s.

"We use the 3600s for almost everything," explains Facer. "They'll dig the overburden to the next ore layer. They'll move waste. And they'll move the ore that's already been pushed down onto the stockpile." Dozers are used to clean the waste off the ore and push the ore down."

Figuring out where the various layers start and end can be challenging. Ore layers can range from three to twelve feet thick. Sometimes the division is well defined — like an orange clay seam or a mud seam. Other times the difference in materials is subtle. It's an on-the-job learning process, with each area of the mine having its own characteristics.

"We work a thousand feet of strike at one time and work it down to the bottom. We work our way in, take all the seams down, then drop down 30 feet, and do it again. From the top to the bottom can be up to 1,000 feet," says Facer.

After the phosphate rock has been mined, it is crushed and ground on-site to remove the clays and tailings. Water is added to the milled ore, turning it into a slurry, which is pumped 87 miles through an underground pipeline to the company's Don plant.

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Smoky Canyon's two Hitachi EX3600s typically load their 150-ton trucks in three passes.

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we move dirt at Fort McMurray

“My first contract was in the low four-figure range,” says Alphonse Hutchings, president of Cow Harbour Construction Ltd. “I moved my first dirt for Suncor with a rubber-tired backhoe and a five-ton truck. Today, we move 100-million meters of dirt a year, with multiple Hitachi excavators and shovels loading a mix of haulers from 30-ton artics to 240-ton trucks. We’re going to continue to grow, and everything is a positive note here.

“I came to Fort McMurray from Newfoundland on vacation to see what the Oil Sands were about, and there were so many opportunities that I moved my family after getting a job at Suncor. Soon, I got the opportunity to switch from employee to contractor, and I’ve never looked back. The work has been good, and now that the value of oil processed from the sands has been realized, it’s simply a boom around here,” says Hutchings.

“We are now close to 800 employees, and we’re keeping Suncor happy by meeting or beating all deadlines in a safe, organized manner.

“We want to be loyal to Suncor, and loyal to our employees and suppliers. We are eager to have good working relationships. At the end of the day, we want to realize a profit for the company, the employees,

and Suncor with safety always as the Number One priority. We also go out of our way to ensure that tomorrow’s relationships are built today.”

Hutchings continues, “We like our work force to live in Fort McMurray; we’re ‘local people.’ And that’s a big thing here because most of the operations related to the Oil Sands have work camps, for which the companies pull workers from all over North America. All our employees live in the commu-

nity, are very involved as volunteers, and pay taxes locally. We have not used work camps.

“Our attitude toward safety goes hand in hand with hiring local people. In 2006, we won three safety awards, including the President’s Prism award for an outstanding safety record. We hope to be nominated again for 2007 safety awards.”

Hutchings concludes, “In order for us to move the overburden dirt our contracts require, we’ve got to



Cow Harbour management includes: Wallace Herritt, Equipment Manager; Alphonse Hutchings, President; Rod Hutchings, VP Operations; and Keith McGrath, General Manager of Operations.

Fast Track to Success

A fast-track connection might be the best description of Alphonse Hutchings’ relationship with Suncor Energy. In 1967, Suncor’s predecessor became the first company to successfully produce and market oil from the Oil Sands.

In 2006 the company averaged 234,000 barrels of oil a day. That’s approximately 3,587,000,000 gallons of oil per year — all earmarked for consumption in North America.

The oil-sands properties are open-pit mined, with huge amounts of overburden removed — primar-

ily dirt — to reveal the pay zone of oil sands, or bitumen-impregnated sands. Suncor mines the Oil Sands themselves, and then processes the bitumen by separating it from the sand, then “coking” it to knock out excess carbon and bringing the gravity up to the level of conventional crude.

Based on the escalating price of a barrel of crude, there isn’t just one multibillion-dollar project in development around Fort McMurray, there are nearly a dozen. Between now and 2018, the oil-sands sector plans to spend \$100 billion to expand production.



have good equipment. We try to have what we consider to be the best. That's why we chose the Hitachi excavators and shovels. We have continued to build our Hitachi fleet one at a time, based on the outstanding performance we've experienced in the past."

The Hitachis work at 95-percent availability, on average. This high level of performance, besides the fact that they are Hitachi, is based on the ongoing efforts of Wallace Herritt, Cow Harbour's Equipment Manager, to forecast appropriate preventive repairs and replacements on a scheduled basis with both his mechanic crew and Wajax Industries, his Hitachi dealer in Fort McMurray. Wajax ensures the needed parts are ready and assists as needed with providing technical advice or the technicians and equipment to do the actual repairs. Also both Cow Harbour and Wajax have mechanic crews dedicated to the various jobsites so that if a machine goes down, it is repaired and running again in the shortest time possible.

“We have continued to build our Hitachi fleet one at a time, based on the outstanding performance we’ve experienced in the past.”

— Alphonse Hutchings

“Our fleet of Hitachis performs quite well, and that’s in a pretty harsh environment of multiple shifts, abrasive sand, and really cold winters, followed by hot, dusty summers,” says Herritt. “We work hard to make sure they do perform well, and our Hitachi dealer has also been an important link in our success.”

Cow Harbour Construction Ltd. is serviced by Wajax Industries, Fort McMurray, Alberta.



Like all Hitachi units, the EX1900 works at 95-percent availability, on average.



The Hitachi fleet continues work even in harsh winters and hot, dusty summers.

Oil sand is a combination of sticky, thick crude oil, clay, water, and sand. *Courtesy Suncor Energy*



Suncor's Fort McMurray plant produces over 3.5 billion gallons of light crude a year. *Courtesy Suncor Energy*



Suncor's Commerce City, Colorado, refinery produces 3.7 million gallons of product a day. *Courtesy Suncor Energy*



Gem State

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There it is made into various fertilizer and feed-phosphate products as well as purified phosphoric acid. Every week, Smoky Canyon's underground pipeline moves the equivalent of 420 boxcars of concentrated phosphate ore.

JOHNNY-ON-THE-SPOT SERVICE AND SUPPORT

The mine has gone through four shovels during its history. They acquired their first EX3600 after their old electric shovel was retired unexpectedly. In a bind, Smoky Canyon turned to Arnold Machinery, their local Hitachi mining dealer. Arnold located a used EX3600 and rented it to them. It didn't have many hours on the hour meter, but it looked rough. "We were a little nervous about it," admits Facer. "We assembled it, put it to work, and were very impressed when it ran great. Eventually, we ordered a new one and then purchased the rental unit.

"We've been pretty happy with these machines. We had some engine overheating problems with the original engines, but Hitachi and Arnold took care of it through Hitachi's factory quality-assurance program. The new engines have way more power. Our operators are really happy about that. I've never seen a manufacturer do such a good job taking care of a customer in that respect. Arnold and Hitachi have been fantastic!"

Hitachi machines are not new to J.R. Simplot mines. Hitachi's fabled UH801s (predecessor of the EX1800) were used 25 years ago at other Simplot mines. And Smoky Canyon's sister phosphate mine in Vernal, Utah, runs an EX1800-3 they purchased in 1997. It currently has over 35,000 hours on it.



Dennis Facer, Mine Manager, Smoky Canyon Mine, with John Ragsdale, V.P. Mining Sales, Arnold Machinery.

Although initially forecast to have a 25-year life span, Smoky Canyon mine has no intention of closing up shop any time soon. They have discovered additional reserves, and will continue to work this productive yet challenging site for many years to come.

J.R. Simplot's Smoky Canyon Mine is serviced by Arnold Machinery, Idaho Falls, Idaho.



Reclamation in process: Working with the National Forest Service, the mine plants trees like lodgepole pine and quaking aspen. They are planted five years after grasses have come in and the reclaimed area has stabilized. The mine is also involved in the remediation of selenium contamination after the problem was discovered in 1997.

Bringing Earth's Resources to Life

The J.R. Simplot Company is one of the largest privately held firms in the U.S., with annual sales of more than \$3 billion. In addition to potatoes and phosphates, the company is one of the nation's largest beef-cattle producers and is divided into five divisions: Food Products, Agriculture, Turf & Horticulture, Land & Livestock, and Industrial.

Founded as a one-man operation more than 70 years ago by J.R. "Jack" Simplot, the company has grown into a global food and agribusiness conglomerate with products sold in every state and many foreign countries. J.R. Simplot now serves as Chairman Emeritus. He has been honored by the World Potato Congress and the Idaho Potato Hall of Fame.

J.R. quit school at the age of 14 to go into business for himself near the small farming community of Declo, Idaho. By the early years of World War II, Simplot's company had become the largest shipper of fresh potatoes in the country and was selling millions of pounds of dehydrated onions and potatoes to the military.

When wartime shortages made it difficult to buy fertilizer, Jack built a manufacturing plant in Pocatello and produced his own. In the early 1950s, the Simplot Company created and marketed the first commercially viable frozen French fries in the world.

Current board members include Simplot family members and business executives from diverse backgrounds.



Tell rubber to hit the road.

Hitachi excavators have longer lives, lower operating costs, and better breakout power than wheel loaders in most quarry environments. Plus, they're able to work in more widely varied conditions and even build ramps. A reputation for productivity and uptime has made Hitachi the most popular excavator in mines and quarries worldwide.

Tired of tire troubles? Send your rubber-tired loaders on their way. Learn more about Hitachi Zaxis and EX Series Excavators today at www.hitachimining.com.

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