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Wednesday, October 29, 2014



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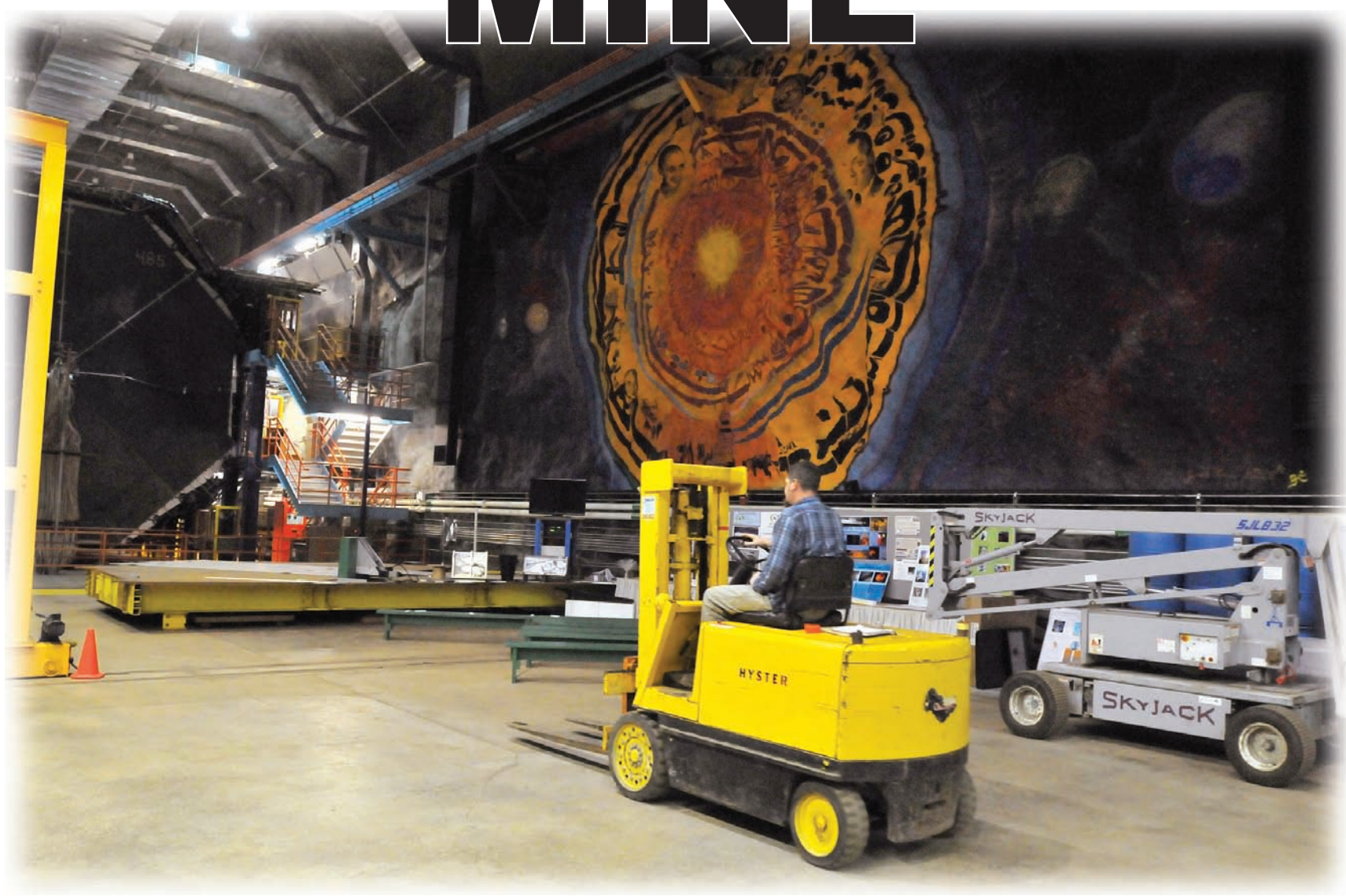
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MINEW

WEDNESDAY, OCTOBER 29, 2014 • PAGE 3

SOUDAN UNDERGROUND MINE



MARK SAUER/MESABI DAILY NEWS

After decades of producing high grade iron ore, the Soudan Underground Mine has found new life as a high-tech research facility and historic site.

EVER-EVOLVING

ANGIE RIEBE
MESABI DAILY NEWS

SOUDAN — Life stands still in the reaches of the Soudan Underground Mine.

Remnants of mining equipment — and fragments of workers' daily life — sit abandoned in the vast tunnels just as they were left the day mining stopped there more than 50 years ago.

Those reminders of the arduous work forged underground decades ago are frozen in place in dusty, rusty time.

But deep in the belly of the mine, life persists.

It flourishes. Far beneath the surface, where miners had labored, another set of workers has been breaking ground.

Scientists, for years now, have been drawn to the mine as a home for their laboratories, where the results of their labor have contributed to a greater understanding of the universe.

And it doesn't stop there.

An unexpected discovery in recent years has enticed more researchers into the subterranean depths of the mine.

It is here that miners half a century ago did something incredible — without even knowing it.

In searching for ore to extract, they unintentionally left a passageway for modern minds to unearth mysterious new life.

Or — shall we say — a convincing link to old life. Really, really old life. Ancient, in fact.

Life that could one day lead not only to breakthroughs in biotechnology on our planet, but also in the study of Mars.

Life that could even, perhaps, assist with the future of a particular industry — mining.

Jim Essig boards the "cage" that has long been the transport down the mine's vertical No. 8 shaft.

The same elevator that carried Soudan miners underground rattles down

SEE SOUDAN, PAGE 5



Soudan Underground Mine State Park Manager Jim Essig talks with Mesabi Daily News reporter Angie Riebe during a tour into levels of the mine not open to the general public.

Cover by Faye Akerman • Pagination and Design by Debbie Conaway
Mesabi Daily News



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MESABI DAILY NEWS

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WHEN MINING STOPPED IN SOUDAN



An open pit mine dug in the 1880s shows visitors the early days of mining.



Rusting equipment and rotting wood show the passage of time in the Soudan Underground Mine.



A corroded battery still sits on a shelf in an underground miners' lunch room.



More than 30,000 visitors a year use the same equipment to get to the Soudan Underground Mine as the workers did when the mine was in operation.



A miner in the 1930s placed his palm print in a patch of concrete inside the Soudan Mine.



**Mark Sauer/
Mesabi Daily News**

A pair of boots abandoned in 1962 sit on the floor of level 25.



Soudan Underground Mine State Park Manager Jim Essig talks about the history of the mine.



The original phone system on level 12 of the Soudan Underground Mine still sits in working order after the mine was shut down in 1962.



The lunch room on level 25 is almost exactly as it was left in 1962.



Equipment sits where it was left when the Soudan Underground Mine ceased production in 1962.



Coils of power cable remain where they were placed by the last Soudan mine employees in 1962.

MARK SAUER/MESABI DAILY NEWS

SOUDAN

FROM PAGE 3

to level 12. Here, one of the pumping stations works steadily to keep the mine dry. Removing ground water was an important part of mining operations, and today it remains necessary to allow visitors and researchers access below ground.

Essig begins to talk on this recent day about the Soudan Underground Mine; about how the horizontal tunnels called drifts branch outward from the shaft, kind of “like a tree” to the stopes where ore bodies are located; how miners dug their way down, one level at a time, at this mining operation that launched 130 years ago.

But before he can talk about how Soudan’s opening in 1884 marked the beginning of mining in the state — and of one of the richest iron ore deposits in the world. And before he can tell how its first ventures were in open pits; how the narrow, vertical shape of the ore body made for dangerous and difficult labor leading

to underground operations in the late-1880s, and how it was a fully underground enterprise by 1891. And before he can talk about his affinity for this historic place that became a state park in 1963 after U.S. Steel donated the property to the state. Before all that, it becomes evident as Essig is suddenly sidetracked.

The Soudan Underground Mine State Park manager’s attention is grabbed by the sound of one of the two cages ascending the shaft. It’s late morning on this weekday and tours down to the 27th level, the only one open to the public, are going on, and other workers are in need of rides to and from the surface.

“Watch this,” he says as the rumble grows louder. The cage shoots by on its way up the shaft. “I love this place!” says Essig, a smile lighting his face.

Essig has been manager for eight years; prior to that he was assistant manger. All together, he’s spent 25 years taking care of the Soudan mine.

“No two days are ever the same,” says Essig, who grew up a farm boy and was naturally interested in the workings

of the mine. And that’s just the way he likes it.

The Soudan mine was an “experiment” in nearly every element of its operation from the start. Many different mining techniques and technologies were employed during its lifespan from the 1880s to the early-1960s to extract and haul out the iron ore that was unique to the location.

But the Soudan miners were not the first ones to see potential in the area’s rock. Early prospectors noted there was evidence of jasper and quartz mining taking place prior to European exploration.

The early underground miners at Soudan worked by the light of candles mounted on their helmets; mules kept in underground stables did the hauling, later replaced by carts on rail tracks that transported the rock to the shaft to be lifted above ground. Steam generation was also used prior to 1924, when the mine was electrified and the current hoist used to maneuver the cages was installed.

The iron ore that was

SEE SOUDAN, PAGE 6 An electrical box on level 25.



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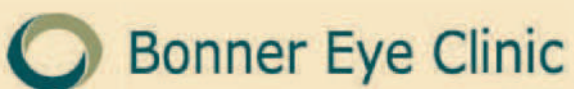
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Rusting rail tracks on level 25 stretch into the darkness.



The passage of time and water show in some off-limits areas of the Soudan Underground Mine.

MARK SAUER/MESABI DAILY NEWS

SOUDAN

FROM PAGE 5

drilled, blasted and chipped out of the mine was a very high grade ore. It was special, Essig said, because it had an extra molecule of oxygen. Oxygen is a critical component in the steel-making process, and ore from Soudan was added in small amounts to ore from other mines across the country to help burn off impurities to produce high-grade steel.

By the early-1960s, however, new technologies had been developed to inject oxygen into the steel-making process, reducing the value of Soudan's high oxygen ore. And, along with the great cost of extracting the ore, the mine struggled to compete with others using cheaper open pit methods, including those on the Mesabi range.

Thus, in 1962, the Soudan Underground Mine ceased operations, with the last stockpiled ore shipped the following year.

"There was no need for the extra oxygen molecule anymore," Essig said. The mine yet has a reserve of more than 1.5 million tons of ore still in the ground.

Essig takes his visitors on this day farther down one of the drifts on Level 12, where the tunnels extend a half mile or so from the shaft.

The only illumination comes from the lights on their helmets and a flashlight Essig totes.

An abandoned ore car used to haul rock out along the rail system sits eerily abandoned. There are various carts remaining on many of the levels, along with pipes and other dust-

coated equipment that has rested where it was left decades ago.

When Essig came to the mine 25 years ago, he found many items left behind by miners, including a newspaper from the 1930s. However, after years of surviving in the mine's cool, humid climate, it disintegrated once it reached the surface. The lesson was to leave the mine's artifacts alone, he said.

Back at the shaft, Essig calls the hoist operator requesting a cage. Essig and the operator use bell signals to communicate to what level the cage will descend.

On Level 22, a glimpse into the life of the Soudan underground miners is found. "Here's the lunchroom," says Essig, opening the wooden door leading into a small enclosed cavern cut into the rock. Inside: A wood table and benches where miners took their breaks.

Magazines, a tobacco tin, remnants of a Christmas tree and a calendar from 1962 were left behind in the lunchroom by miners the day operations stopped in Soudan, Essig said.

When Essig started at the mine, "I knew a lot of the old guys," he said. Many of the other park employees also had connections to the mine and mining. But there are fewer and fewer of the old miners around, and Essig worries that those connections to the past are being lost.

He can only hope future employees will treat the mine with the same respect of those who have listened first-hand to the accounts of those whose lives centered around the mine.

The mine also presents an interesting challenge when it comes to



Soudan Mine State Park Manager Jim Essig shows off sections of the mine which remain as they were in 1962.

maintenance. The 1924 hoist, for instance, is not something that can be easily repaired. "You can't just run to the hardware store," Essig said. Parts oftentimes have to be fabricated, he noted.

In 1966, the Soudan Mine was designated a National Historic Landmark, which recognized its important role in the industrial development of the United States and its value for preserving and interpreting a piece of America's cultural heritage.

Starting in 1979, the Division of Parks and Recreation began working with the University of Minnesota to use of the Soudan Underground Mine as a laboratory for physics research.

The depth of the mine shields equipment from cosmic radiation and other high-energy interference that would

hamper data collection. Also, the age of the surrounding rock — which geologists estimate at 2.7 billion years old, making it the oldest rock on the North American continent — means it emits virtually no radioactive particles of its own.

Caverns were excavated at the mine's 27th level — its lowest level at 2,341 feet below the surface. One of the experiments that has been collecting data for years is the MINOS (Main Injector Neutrino Oscillation Search) that is studying subatomic particles called neutrinos. MINOS is one of several projects being conducted worldwide to study the particles and their role on the structure of the universe. Studying neutrinos at Soudan — as well as at a new facility in Ash River, could yield crucial information about the early moments of the

universe, according to scientists.

Miners of yesteryear could have never imagined their work site would one day be home to research on things such as proton decay and dark matter. Nor would they likely have known that the tunnels they dug would one day serve as an important hibernation spot for bats.

For decades, bats — particularly little brown myotis — have been living in the mine, using the No. 8 shaft that extends to the 27th level and Alaska Shaft, the two shafts still open, as points of access. The Soudan mine, in fact, with its consistent temperatures and high humidity, is home to the largest population of wintering bats in the state, with estimates for up to 12,000 bats living in the drifts and stopes. The mine is also important habitat for migrating bats in the spring, and

the University of Minnesota and the Division of Parks and Recreation have been conducting bat research there since the 1980s.

Bats across the country are experiencing massive population losses from a disease known as white-nose syndrome. Bats that hibernate in the Soudan mine haven't suffered from the affliction, and there's even hope that research at the mine could lead to a cure.

"Some of the fungus we have underground is closely related to the fungus that causes white nose," Essig said. "It could serve as a competitor to keep the other from establishing itself."

And the life thriving deep below the surface could have many more uses in days to come.

Several years ago, University of Minnesota researchers stumbled

SEE SOUDAN, PAGE 7

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MARK SAUER/MESABI DAILY NEWS

Most levels of the Soudan Underground Mine have changed little since the mine was closed in 1962.

SOUDAN

FROM PAGE 6

Upon something rather unexpected down in the 27th level.

In 1962 miners, believing they would continue on to a Level 28, drilled bore holes to sample the rock for new ore veins. One day, researchers visiting the mine came across the bore holes.

The iron mined at Soudan was formed before oxygen was abundant in Earth's atmosphere, and water — lacking oxygen — had been seeping out of the holes for decades, slowly creating colorful iron-oxide structures after coming in contact with air.

Perhaps, scientists surmised, this water could be from an ancient ocean. This water, which they suspect is more than 2 billion years old, is teeming with bacteria.

It appears, Essig said, that one of the types of bacteria devours iron and gives off iron oxide. The other consumes iron oxide and gives off energy. "They consume each other's by-product. The two are symbiotic to each other," he said. It's a sort of "perpetual machine."

And the initial research comes with all sorts of possibilities.

Formations found in the mine are similar to those observed in images on the surface of Mars, believed to have iron-oxid-rich soil, and could lead to a better understanding of that

planet.

Research could pave the way to compounds that could inhibit bacteria, particularly those that are resistant.

The discovery could have commercial applications, such as forming new ways to make fuels.

And wouldn't it be amazing, says Essig, if study of the bacteria could steer the way toward solving environmental issues attached with sulfide mining. "It could turn into a big use if it could consume sulfides," he said.

The Soudan mine additionally offers a one-of-a-kind location for researching the microbes that are doing things at the mine that haven't really been studied before. The bacteria found in the water appear to be distant relatives of bacteria commonly found in the ocean.

And getting to the 27th level of the mine is easier than the ocean floor. Many underground today are not accessible.

But not the Soudan Underground Mine. The mine is far from extinct.

Essig remembers taking Louie Cvetan down to the physics lab in 2000. The former Soudan miner worked there from 1936 until the day it closed.

Louis looked around for a bit. Then he said something Essig will never forget:

"If it wasn't for what we did here," said old miner, "we wouldn't have any of this."



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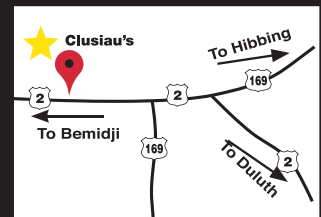
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Mining future workforce in Range high schools

TONY POTTER
HIBBING DAILY TRIBUNE

HIBBING — Decades after iron ore was discovered in Northeastern Minnesota, mining is still at the top of the local workforce food chain and has become a focus for educating youth.

Students, such as Nashwauk-Keewatin High School (NKHS) senior Aaron Carroll, are being given hands-on experiences with mining and engineering equipment and technology before they have to make important decisions regarding their future education and career paths.

“These classes give us an idea of if this is how we want to make a living,” said Carroll. “If this is really what we want to do for the rest of our lives.”

Joe Gabardi, who teaches industrial arts at NKHS, said the equipment that has become available to students since he was hired by the district in 2007 is what makes the difference.

“What the students can do with our equipment is endless,” he said. “They can virtually make anything they want, which is pretty awesome.”

Due to the Applied Learning Institute (ALI), Carl D. Perkins grants, the City of Nashwauk and other generous individuals and organizations, NKHS has been able to place state-of-the-art technology in front of its students.

Some of the equipment purchased by the school district in recent years includes hydraulic tubing benders, a milling machine and a water jet cutting machine. NKHS is one of only three high schools in the United States to own a water jet, Gabardi said.

He noted that the school district added a production management class this year to give students a better understanding of what it is like to work in the mines.

“We want students to learn a lot of hands on, but they also need to be able to problem solve and think on their feet,” Gabardi said.

The generosity of organizations such as ALI and Perkins grants have also benefited other area schools, including Hibbing High School (HHS). The purchase of equipment — from data acquisition devices to work benches and 3D desktop prototyping printers — has helped HHS create four new mining and engineering classes.

The first of the four classes is introduction to engineering. It began in the fall of 2007 after an Engineering Advisory Committee, which consists of teachers, engineers and local business, was formed to encourage more students to pursue engineering careers, according to Carl Sandness, HHS physics, chemistry and pre-engineering teacher.



TONY POTTER/HIBBING DAILY TRIBUNE

Senior Aaron Carroll uses a plasma cutter to saw a piece of steel in half recently at Nashwauk-Keewatin High School.

went so well that the Engineering Advisory Committee decided the school district needed to add a second class. It's titled introduction to industrial technology. The class provides students with a hands-on experience of what it is like to work in the machining industry, Sandness said.

After student interest for the first two classes “shot through the roof,” HHS created introduction to science and engineering to give students the opportunity to take two full years of engineering-related courses.

“The class is quite different from the others, and is really cool because it deals with advanced computer programming,” Sandness said. “It teaches students how to control temperatures and move objects with a computer with the click of a button.”

The newest class, applied physics for



SEE FUTURE, PAGE 9 Senior Blake Mickelson welds a project together at Nashwauk-Keewatin High School.

MINING RELATED HIGH SCHOOL CLASSES

A wide variety of mining and engineering classes are offered at Iron Range high schools, including:

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- Auto
 - Metals
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- Small engines
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- Introduction to Engineering
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MINE V

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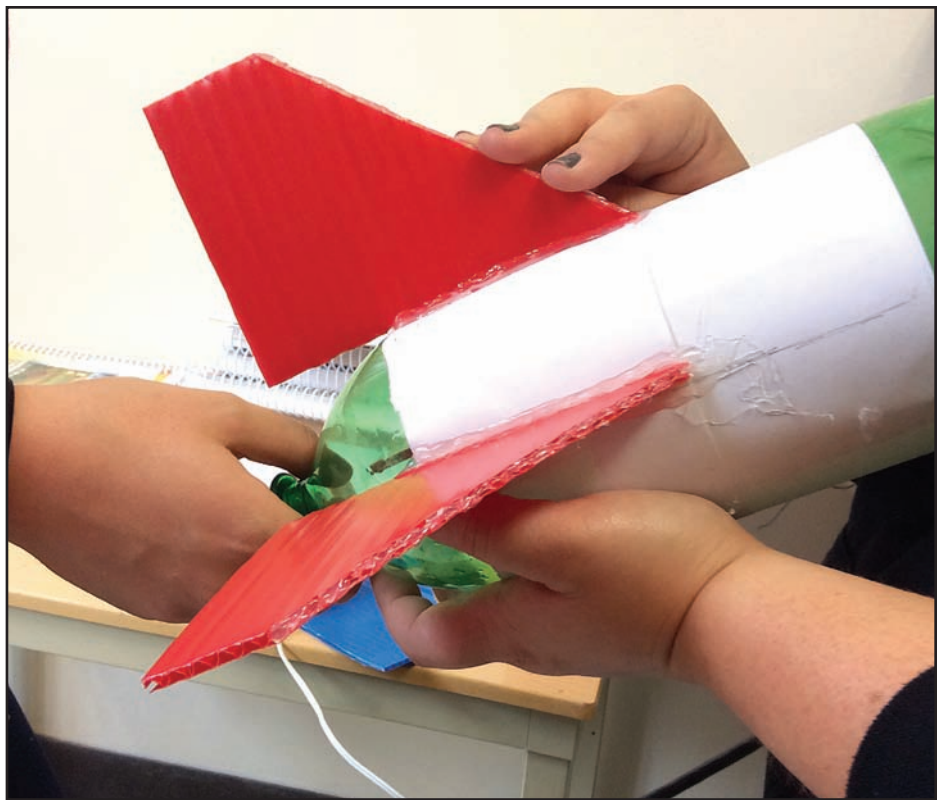
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SUBMITTED

An Introduction to Engineering student makes a balance that can measure the weight of a set of keys. The trick to the project — all components of the balance were required to be edible.



SUBMITTED

A student in the Applied Physics for Technology class makes a pop bottle rocket to be propelled by air and water at Hibbing High School. A NASA simulation program was used to predict what ratio would give the best launch and the student's prediction was tested outside.

FUTURE

FROM PAGE 8

technology, was added this year. It provides students with a computer-programming course, which is a requirement to enroll in engineering courses at four-year colleges and universities, Sandness said.

He said he is pleased that he and other HHS instructors have the ability to teach students a wide-variety of engineering-related topics.

"They give students a snap shot of what engineering is," Sandness said. "Their first question is always, 'what do engineers do?' They don't just driving trains ... engineers are everywhere and do lots of things."

Since the push toward offering mining and engineering courses at local high schools began in 2007, HHS and NKHS combined have received more than \$1 million in grants used for equipment.

"Our region has been very kind to us," Sandness said. "It has graciously came up with the money necessary for us to offer these courses which are critical to the future of our students."

He said since 2007, HHS has had as many as 17 students from one class indicate they were planning to pursue engineering degrees and more than 20 students have already gone onto become engineers.

Gabardi said that 1 in every 3 of his students from 2006 to 2013 went on to attend a technical school.

"I am floored at what they've done," he said. "Most of them came into my shop without having welded or touched an engine before."

Gabardi said he too appreciates what the community has done to help make this educational movement possible.

"It's phenomenal. It's huge. We've received lots of money," he said. "And I don't know of another city that steps up to help their high school like Nashwauk has."

Carroll said he feels privileged to have experienced such a high quality of education during his high school career.

"I've learned a lot about a potential career," he said, adding his future is still undecided. "These classes are a lot of fun, and the skills are also good to have in everyday life."



TONY POTTER/HIBBING DAILY TRIBUNE

Teacher Joe Gabardi assists students with an auto project at Nashwauk-Keewatin High School.



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NEVER-ENDING PENSION DISPUTE

BRIAN AROLA
HIBBING DAILY TRIBUNE

KEEWATIN — Amid countless back-and-forths, no one seems to dispute that it was unfortunate what happened to the pensions of 165 workers at the now defunct National Steel Pellet Co. in Keewatin. From there it gets foggy. What's clear is that the miners lost at least half of what they thought they earned when the independent federal agency Pension Benefit Guaranty Corp (PBGC) took over the pensions in 2002.

A decade's worth of struggles has ensued, with the miners wanting answers from those they deem to have either done something to cause the pension loss, or didn't do nearly enough.

Through the swarm of accusations, political undertones and document sharing, the blame among the Hard Rock Miners group of workers is alternately placed on the shoulders of the United Steelworkers of America (USWA) or the PBGC.

Gerald Gangl is among the leaders of the group of aggrieved miners, and his persistence for the cause isn't dampened by the fact he himself was unaffected in the pension purge. His son, however, was affected, losing nearly half his pension overnight when the PBGC swooped in.

"I told them at more than one meeting, I'm here until my boy gets his pension or there's no more avenues to turn down," he said.

Gangl's motivation stems from what he says is a clear injustice, a matter of a corporation with all the resources not doing the right thing for its employees.

He said his former employer of 40 years, the Hanna Mining Co., is still paying him a pension since he retired in the early 1990s. That, he said, is how employees who risk health and hazard should be treated.

At the heart of the grievances for the group of miners is the question of just how funded — or underfunded — their pensions were at the time of bankruptcy.

The group holds a document showing that 88.3 percent of the funds needed to pay benefits as proof the plan wasn't underfunded. By invoking the "anti-cutback" rule used



This 1942 photo shows the National Steel Corp. furnaces and stockpiles in Detroit.

SUBMITTED

by the U.S. Department of Labor, they say that benefits already earned can't be taken away from them.

But when the PBGC took over on Dec. 2, 2002, National Steel's Chair/CEO Mineo Shimura stated in a release that the pensions were severely underfunded.

"We were aware that this action eventually could occur due to the significant under funding of our plans, large ongoing funding requirements, market conditions and our bankruptcy filing," he said in the release to employees.

"We do not expect that the PBGC's action will impact our plan to reorganize the company. We continue to have good liquidity and will continue to provide our customers with the service and quality that they demand."

Taking the under funding into account, the actual figure for the pensions turned out to be around 47 percent.

John Rebrovich, assistant to the director of United Steelworkers District 11, said the fund was only ever listed at about 75 percent around when the pensions were lost, but the figure was based on over estimates from National Steel at the time.

"After the PBGC took it over, they applied their assumptions, which are much more conservative than National had applied, and the funding went to 47 percent," he

said. Even before the funding level was determined, the Hard Rock Miners had questions about the union's role in the process.

Gangl and the others say they're sure the union didn't do enough to keep the pensions from PBGC.

The union did, however, do something. In a document dated Jan. 3, 2003, the PBGC filed a motion of opposition against action the USWA had taken to intervene in the court case between the agency and National Steel Corporation.

The copy of the filing sent to USWA representatives outlined the congressional process that allowed PBGC to terminate pension funds regardless of what the union wanted.

"Congress's chosen method by which PBGC may seek termination of a pension plan — including the designation in the statute of the proper parties to such an action — should not be subordinated to what is, in essence, USWA's dissatisfaction with National Steel's inability to support its pension plans financially," the filing stated.

With the filing being just a month after PBGC announced its intention to take over the pensions, Rebrovich said there was nothing the union could do before, during or after to save the pensions.

The Hard Rock Miners allege the union com-



mingled the pensions away and handed them over to the union, and point to a phone conversation with a PBGC higher up as proof.

According to the group, the PBGC employee alluded to a meeting he attended where the union admitted to giving up the pensions before they had to.

Tidbits of new leads like this are what spurs the group on even when it looks unlikely a resolution might be possible, Gangl said.

"Every time we think we're dead in the water, something happens to keep us going," he said.

To Rebrovich, the group's multiple attempts seem like the workings of conspiracy theorists.

"Why they keep these conspiracy theories coming, I have no idea," he said. "It's only a few of them, but your guess is as good as mine.

We've jumped through many hoops for the last 12 years, and everything

they accuse us of just doesn't have any merit to it and it never will."

The group still holds out hope their efforts will produce a solution, Gangl said, as it's a matter of right and wrong.

"And we haven't talked to anybody who doesn't think this wasn't wrong at the core," he said.

But the accusations leading to little progress may be wearing on some.

The Hard Rock Miners held a meeting in early September at Keewatin City Hall to update those affected on their work. The event caused some spirited exchanges between people in the group and union representatives in attendance.

Some of the group threw their hands up and left, expressing frustration with the bickering that didn't seem to be making any progress.

The problem with progress, Gangl said, is that the group is working against groups with

unlimited resources. "Sometimes we get some pretty good stuff," he said. "But it only goes so far, and then someone slams the door on you."

He said the election season might offer a chance to drum up interest in the topic enough for a politician to take up their cause.

Rebrovich said when it comes to protecting pensions, progress has already been made to make sure the unfortunate situation doesn't happen again.

"Our union has been trying to fix our bankruptcy laws, which don't benefit the workers and retirees," he said. "However, we are making some progress as Sen. (Al) Franken has introduced a bill to try to fix some of the wrong doing."

The legislation, introduced in July, would put workers' interests near the top of priorities when companies go under — something that wasn't necessarily the case a decade ago.

Although portions of the pensions were lost, it also could've been far worse if the union didn't work to keep the plant from a shutdown, Rebrovich said. Instead of a complete shut down, KeeTac opened in National Steel Pellet Co.'s place.

"If it did shut down and another company bought it out of bankruptcy, the company that bought it would have no obligation to hire the former employees nor would they have to give any of the benefits," Rebrovich said.

The group of aggrieved miners don't feel lucky for what they got, Gangl said, because they still don't have what they think they earned.

Now more than 10 years past when the pensions were taken away, he said the group may not feel closer to their goal of restoring what was lost, but they'll keep going nonetheless.

"All they want is justice," he said. "No one wants anything they didn't earn."



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FEDO**

Hibbing Area
Chamber of Commerce
President



Hibbing Chamber of Commerce Director Lory Fedo poses on an overlook with the HibTac pit behind her.

MARK SAUER/MESABI DAILY NEWS



Melissa Koschak, Lory Fedo, and Ella Champion show their support for mining at the Hibbing Chamber of Commerce office in Hibbing.

'Mining jobs are great jobs'

Not long ago, a friend and I were walking in a downtown area on the East Range. My friend is from Michigan and we like to antique shop together.

We usually start at one end of the Iron Range and end at the other, hitting every thrift and antique store we can find.

Anyways, there were several people hanging out on the sidewalk who looked to be down on their luck — which was a little odd for a Saturday morning.

My friend asked, "Lors are they poor miners?"

My response was swift and probably a little too intense. (I just can't help myself — probably had too much coffee.)

I said, "Oh heck no! Mining jobs are great jobs. People here and across our country strive to get a job at the mines because they pay well, they provide benefits, training and are steady and reliable employment."

My friend went on to say, "But I heard that the mining companies are not hiring many local people anymore."

That comment really threw me for a loop.

I said, "Wow, that simply is not true. Many of my friends and neighbors work

for the mines. For the record, iron mining directly employs more than 4,000 people in the region and many thousand more in vendor companies. The proposed new mines will create thousands of new jobs once they are underway and even more jobs in spin-off industries and construction."

I think she figured out that arguing with a Chamber of Commerce executive on this issue was pointless and we continued with our shopping.

Not too long after that conversation, I met with a visitor from the Twin Cities in my office.

He said to me, "I don't think it is right that all of Minnesota taxpayers should get stuck with a bill to clean up PolyMet."

I told him, "The REALITY is that "clean up" is addressed in the Minnesota permit process. In fact, PolyMet is required to set aside adequate funds for clean up before they even begin to mine. End of story—no need to worry."

I am describing these discussions to you because you have all had similar conversations. The naysayers and anti-

mining folks are working hard, they are well funded and they are getting their message out.

Your conversations are important and all of us, together, need to unite and fight hard for the economic future of ourselves and our children. Whether we are mining iron ore, copper, palladium or nickel, mining is and will be a huge part of OUR future — that is worth fighting for.

As you are talking to others here are more FACTS to share:

- According to the U. S. Bureau of Labor Statistics, today the average mining wage job is \$83,359. Compare this number to the average annual wage for all industries in the US, which is \$50,475.
- Every American depends on more than 100 pounds of minerals per day.
- Metals, both ferrous and non-ferrous, are essential for our modern way of life.
- Mining will happen — the questions are by who, where, how and meeting what standards?

The lengthy permitting process for new mines in Minnesota stonewalls investment and simply takes too long. It has cost more than \$70 million and taken more than nine years to date for PolyMet's

environmental review. And it's still not done. We can and need to do better.

According to the Iron Mining Association, the total economic benefit of iron mining is \$3 billion to the state and region's economy. Imagine the benefits if new mining projects and expansions proceed.

Iron mining taxes contribute heavily to education in Minnesota. In 2012, contributing \$49.1 million — \$36.6 million to K-12 and \$12.5 million to the University Trust Fund. If mining expands, that funding will expand with it.

According to PolyMet's website, the PolyMet Mining project will generate an estimated \$515 million in wages, benefits and spending for just St. Louis County. That's a benefit of \$1.4 million daily or more than \$10 billion over the 20-year permit.

Whether it is PolyMet Mining to the east or Magnetation to the west, all of these projects benefit the entire Range and the state of Minnesota and are an important part of our future.

Lory Fedo is president of the Hibbing Area Chamber of Commerce.

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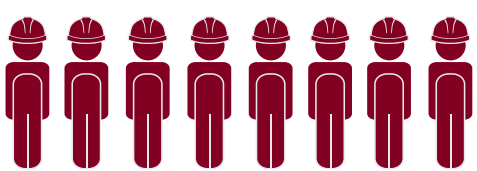
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million



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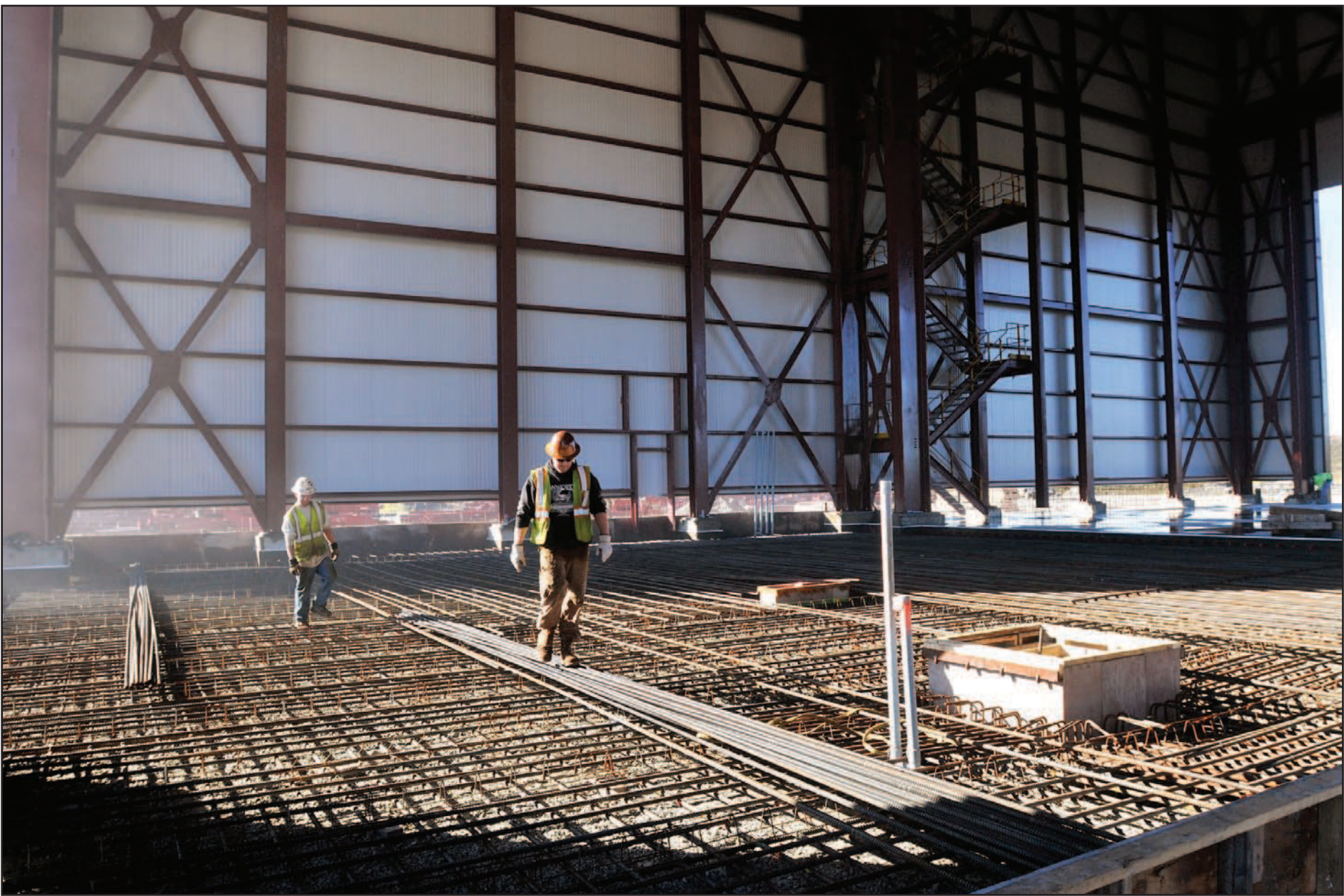
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www.IronOreAlliance.com

ESSAR STEEL PROJECT



MARK SAUER/MESABI DAILY NEWS

Construction workers form a complex pattern of rebar to give strength to the thick concrete foundation which will be used for the Essar Steel crusher building.

Funding in Place; construction ramps up, with 2015 production in sight

BILL HANNA
MESABI DAILY NEWS

NASHWAUK — The ghosts of Butler Taconite, left behind when the taconite plant closed on June 10, 1985, are being exorcised just outside of Nashwauk.

And in the next several months they will really be scattering.

The needed funding has been secured and construction of the India-based Essar Steel Minnesota \$1.8 billion project has resumed and will ramp up at a frenetic pace over the next few months.

The goal: A production start-up in the second half of 2015.

“We want to get a lot of work done in the next

30 to 60 days before winter settles in. Then we can get some shelter for work in the winter months,” said Mitch Brunfelt, assistant general counsel and director of government and public relations for Essar Steel Minnesota, during a visit to the site.

On a recent brilliant autumn day, the sparkling sunshine beaming down on workers at the Essar construction site was most fitting.

After all, the project had been in a 26-month limbo, with a dark fiscal cloud hovering over it. A bond deal to finance a major portion of the venture had been scapped. Work was sporadic, at best. So, too, were pay-



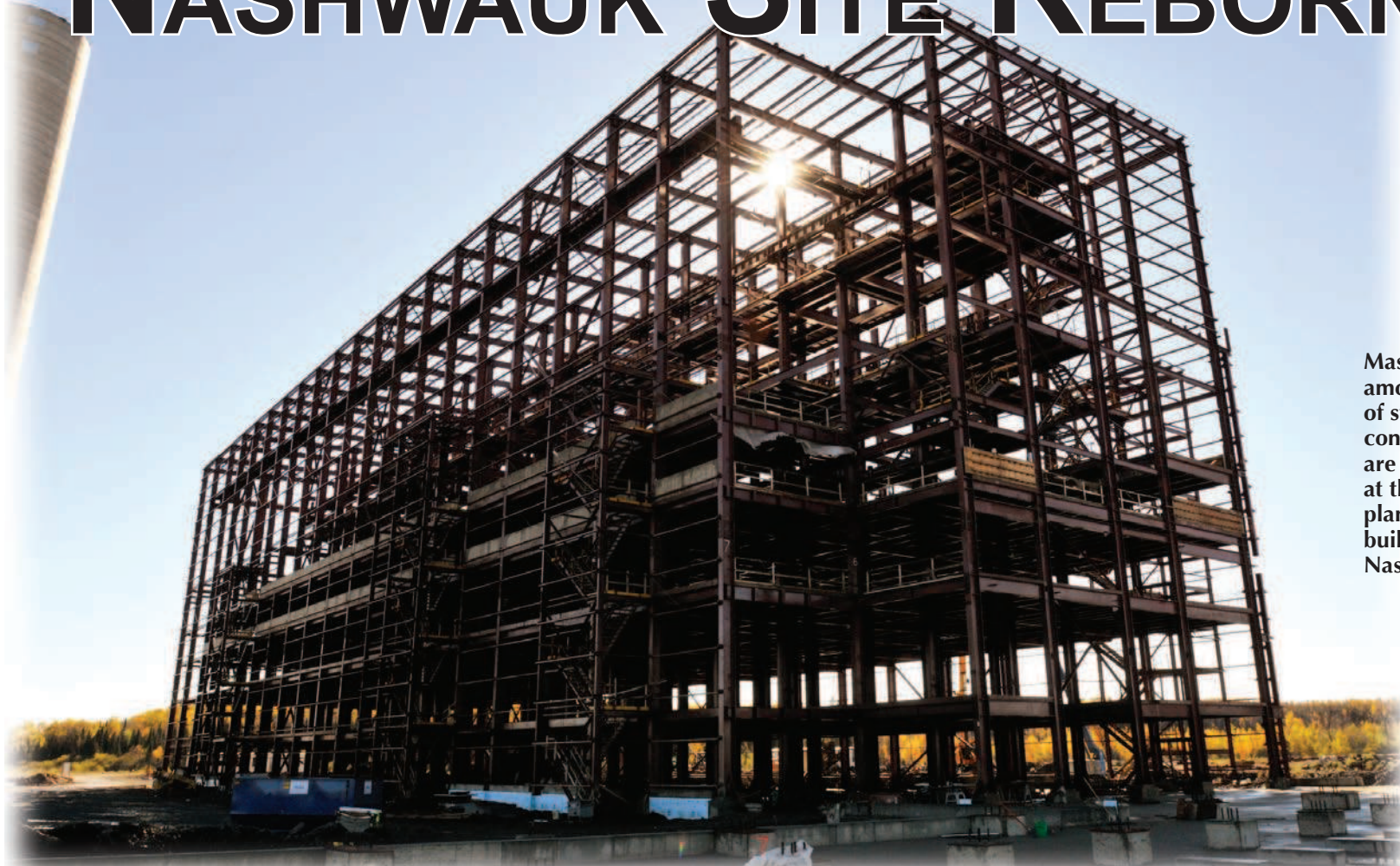
SEE ESSAR, PAGE 16 Mitch Brunfelt of Essar Steel poses on a ridge overlooking the Essar Steel site.



One of numerous buildings under construction at Essar Steel sits on top of a hill.

ESSAR STEEL

NASHWAUK SITE REBORN



Massive amounts of steel construction are underway at the Essar plant being built in Nashwauk.



Rebar is cut to length in the crusher plant being built at the Essar Steel site.

Building crews are moving into full swing with steel and concrete work.



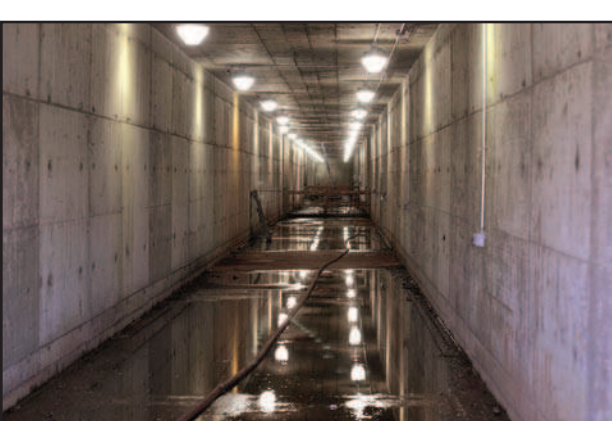
Essar Steel in Nashwauk is still in the early stages of construction, but work is expected to pick up rapidly.



Materials are on location and work is starting to progress at Essar Steel.



Building materials are laid out mapping where the new facilities will be.



Underground tunnels connect areas of the new plant to streamline transporting ore to the crusher.

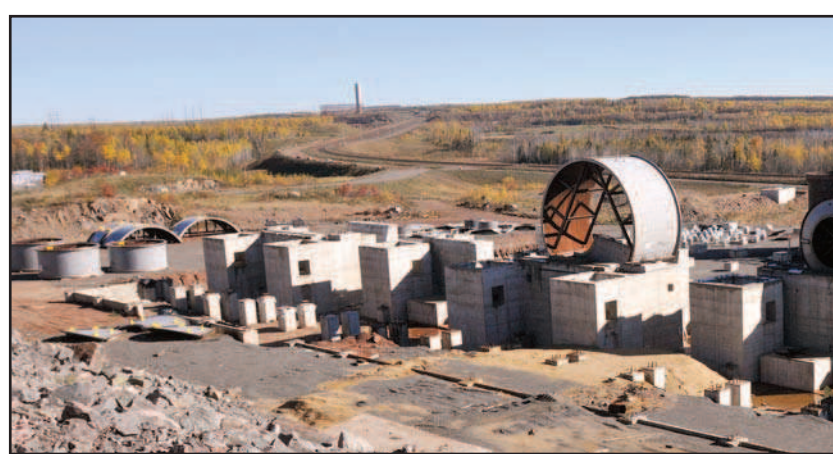
**Mark Sauer/
Mesabi Daily News**



Piles of steel construction material is laid out in strategic locations around the Essar Steel site waiting to be assembled.



A worker is dwarfed by the towering height of the crushing plant.



The Essar Steel Plant being built in Nashwauk is expected to bring hundreds of jobs to the West Range.



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The Essar plant is being built from the ground up.

MARK SAUER/MESABI DAILY NEWS

ESSAR STEEL MINNESOTA

- ❑ Essar acquired the mine project in 2007 from Minnesota Steel Industries. At the time it consisted of only permits and mineral rights.
- ❑ Production start-up planned for second half of 2015.
- ❑ Will provide \$180 million annually in new tax revenues for the state.
- ❑ 70-year projected mine life.
- ❑ Ore body has measured aggregate of approximately 2 billion tons of magnetite iron resources.
- ❑ \$1.8 billion capital investment in the region. About \$1 billion already put into project.
- ❑ Will produce 7 million tons of pellets annually.
- ❑ Project will create 350 full-time jobs.
- ❑ It will have flexibility to produce standard, flux and direct-reduced grade pellets and will be the only facility in the United States with that capability.

MINE V

ESSAR

FROM PAGE 13

ments to vendors. That all changed on Oct. 1 when the company announced a major milestone — the big bucks had been secured for the big project.

“This truly is a momentous occasion for our company and for the Iron Range as we now have in place the necessary financing to complete this historic project which will be a tremendous economic engine to the benefit of the Iron Range and its residents for the next several decades,” said Madhu Vuppuluri, Essar’s president and CEO, in announcing the good news.

Brunfelt said vendors have been made whole. All payments owed have been made, except for a few where the details are being finalized.

The financial package provides \$800 million needed to complete the project. It comes from equity contributions of sponsor Essar Global Fund Limited and debt financing. About \$1 billion has already been

put into the venture. Engineering for the project is nearly 100 percent complete; procurement orders are about 90 percent released; and construction is about half done. And the rich ore body is just waiting to be extracted up to 150 feet deep on a 4,160-acre tract that

has already been pre-stripped of overburden. The entire Essar Steel Minnesota site is 19,200 acres.

That puts Essar on pace to be another producing taconite plant on the Range next year, officials have said.

Here’s a snapshot look

at the project:

- Essar acquired the mine project from Minnesota Steel Industries in 2007.

- It will provide 350 full-time jobs.

- Company currently has 80 employees locally at its administrative offices in Hibbing and

SEE ESSAR, PAGE 17



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MARK SAUER/MESABI DAILY NEWS

Construction crews are trying to get as much cement work in as they can before cold weather slows down construction.

ESSAR

FROM PAGE 16

on the project site.

- Wage and benefits package will continue to be on par with those at other Iron Range mines.

- The project is the largest economic development venture on the Iron Range in more than four decades.

- These are the main local/regional contractors and vendors working on the project: Hammerlund Construction of Grand Rapids, Northern Industrial Erectors of Grand Rapids, Rice Lake Construction of Deerwood, Minn., Hoover Construction of Virginia, Seppi Bros. Concrete of Virginia, Bougalis of Hibbing, JK Mechanical of Nashwauk, SEH of Virginia and Braun Intertec of Hibbing.

- It will provide \$180 million annually in tax revenues for the state.

- It has a 70-year projected mine life.

- The ore body has a measured aggregate of approximately 2 billion tons of magnetite iron resources.

- The electric utility provider is the Nashwauk Public Utilities Commission. Minnesota Power will be supplying the power to the Nashwauk PUC, which in turn will supply Essar. The project will generate in excess of \$30 million in annual revenues for Minnesota Power.

- It will produce 7 million tons of pellets annually.

Here's a snapshot look at the mine process once it's up and running:

- Raw ore will be mined at the pit and trucked to the primary crusher.

- The product will go from the primary crusher to the grizzly screen to the secondary crusher to the concentrator process.

- Ore will be reduced to a concentrate which will be transported as a slurry through a pipeline to the pellet plant.

- A balling process will produce green pellets.

- Green pellets will go to an indurating machine (a large kiln where they will be hardened into actual taconite pellets).

- Pellets will be shipped by rail at the Essar site to the Duluth/Superior Port for transport across the Great Lakes to steelmaking facilities for customers.

The views from various vantage points of the Essar site are spectacular. Looking out to where the initial mining will occur, the site appears to touch the horizon.

And because the M.A. Hanna Mining Co. tore down, scrapped and sold off parts and pieces of the Butler plant, Essar is creating a brand-new footprint.

"This isn't a brownfield project (using previous structures or prior work). This is a greenfield project. It's all going to be brand new," Brunfelt said proudly.

So the ghosts of the Butler plant will have to find new residences.



Rebar for the foundation of the crushing plant at Essar Steel are laid into place.

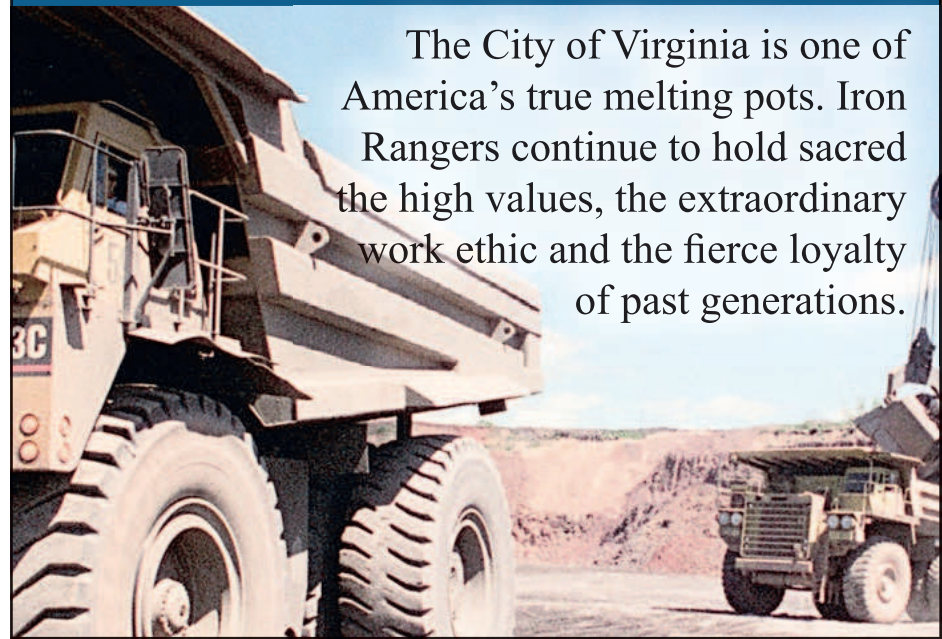


Progress is expected to pick up rapidly as crews get to work on the main Essar plant in Nashwauk.

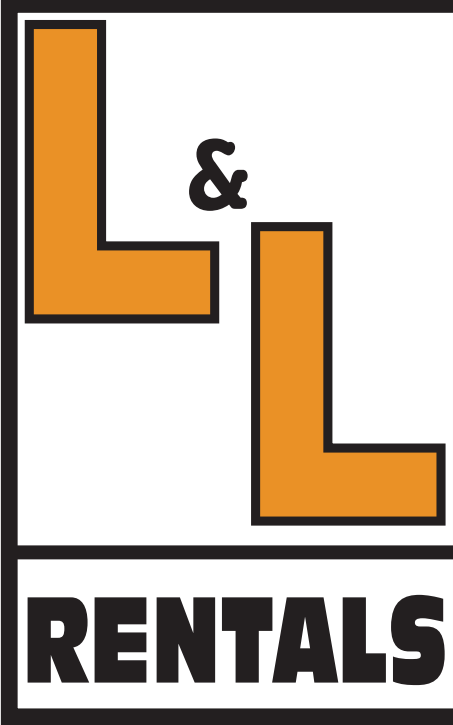
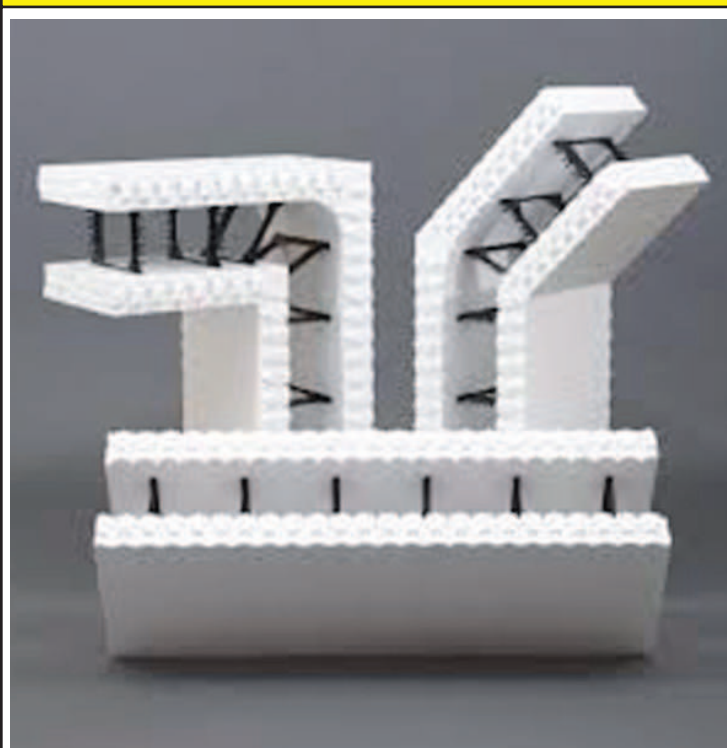


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Michael Silver is chairman and president of American Elements, a manufacturer and distributor of engineered and strategic materials.

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American Enterprise CEO Michael Silver is shown experiencing a zero gravity flight.

The connection between green technology and mining can make the U.S. a world leader in clean energy.

The Environmentalists' Catch-22

America can no longer afford a simplistic dialogue that pits environmentalists and the mining industry against one another as mortal enemies.

All environmentalists agree that we need to build a more sustainable future that is not dependent on burning fossil fuels to provide the energy to power humanity. Yet underlying this desire is an inconvenient truth that is also a Catch-22 for environmentalists.

The technologies through which we will build the sustainable future desired by the green movement are dependent on raw materials that must be mined. Not surprisingly, these same environmental activists zealously oppose all mining.

Environmental advocates find themselves in this trap in part due to a major blind spot in our larger cultural discussion around technological progress. We often talk about innovation almost entirely in terms of things like apps and algorithms; essentially nonphysical creations. We have largely forgotten the fundamental role that materials science plays in high technology.

To put it simply: We have forgotten that every product we build is made out of physical stuff with essential scientific properties — stuff that has to come from somewhere. And the stuff that next-generation technologies like electric cars, wind turbines, fuel cells, LED lights and solar energy panels are made of comes from somewhat exotic minerals that must be mined.

Until World War II, the elements required for technological innovation had fairly familiar names: Copper, because of its ability to carry and conduct electricity long distances, or iron because of its structural properties as steel. These metals, or more properly elements, allowed us

to build steam engines and combustion cars and to wire our cities for electricity.

Beginning in the 1970s, though, we began to make discoveries in materials science that formed the basis for small electric motors that could run cars and photon-collecting materials that could generate electricity. Our elemental toolbox moved further down the periodic table, and greater technological capabilities followed.

The connection between the expanded elemental palette and technological progress is not coincidental. The individual structure of each element gives rise to unique properties that make new applications possible. The metal element neodymium allows us to make much stronger magnets than before, and these magnets are essential to electric generators for wind turbines and motors for electric vehicles. High-energy-density rechargeable batteries, such as those used in electric vehicles, depend on lithium. Solar cells require indium and gallium. To deny this would be as absurd as insisting that we could have built the railroads without the steel industry, or launched the computer age without silicon.

Opposing new mines in the U.S. that harvest these critical elements will not prevent all mining. This shortsighted approach will simply cause two situations; both harmful to the country and the planet.

First, without the mining of the more exotic elements, new energy technologies we will have to keep mining fossil fuels like coal in the U.S., further poisoning our atmosphere and contaminating land and water sources. Second, bans on new mining in this country will ensure that mining takes place in locales with relatively poor environmental

records, such as China and Africa.

If our goal is to minimize environmental harm in the process of acquiring these essential mineral resources, there is no better place than in the U.S., where mining is highly regulated, transparent and based on the safest, most

state-of-the-art process. The not-in-my-backyard mentality will also leave America dependent on foreign powers for materials critical to technological innovation, and consequently for our energy security.

The connection between green technology and mining can make

the U.S. a world leader in clean energy. Trying to regulate mining out of existence is not only shortsighted but irresponsible. To save our planet we must find ways to use the resources it grants us to do so, and environmentalists can help ensure that we become responsible

stewards of green-technology elements.

Silver is chairman and president of American Elements, a manufacturer and distributor of engineered and strategic materials. The article is from the Dow Jones Reprint Service.

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and the copper connection

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Growing its footprint with EnergyForward

LISA ROSEMORE
HERALD REVIEW

In an average month, Minnesota Power provides more than 550 megawatts of power to its mining customers, according to Patrick Mullen, Minnesota Power vice president of marketing, corporate communications and energy supply. That power comprises approximately 45 percent of Minnesota Power's retail revenue.

In an earlier interview, Mullen stated that some of the largest electrical loads in the nation on are on the Mesabi Iron Range, loads which are directly related to mining operations.

And in 2005, more than 90 percent of power generated by Minnesota Power came from coal.

In 2007, legislation signed into law, the Next Generation Energy Initiative, calls for the state "to reduce per capita use of fossil fuels by 15 percent by 2015, and to derive 25 percent of the total energy used in the state from renewable power sources by 2025."

So with the push for utilities to generate more power with renewable sources, how is Minnesota Power addressing the need to balance reliable, low-cost power with environmental needs?

With EnergyForward.

According to an information sheet from Minnesota Power, "EnergyForward was shaped through a compre-

hensive analysis of costs and customer needs today and in the future, along with surveys, public meetings and other feedback — all playing out against the nation's increasing demand for emission-free energy and changing environment regulations."

Powering the mines and other industrial customers can't be done with 100 percent renewables, said Mullen. But Minnesota Power is well on its way to a goal of providing power with one-third coal, one-third renewables and one-third natural gas.

Minnesota Power "got its feet wet" with wind generation, as Mullen described it, with Taconite Ridge in Mountain Iron, a 25-megawatt wind farm. Taconite Ridge features 10 wind turbines and sits on land leased from U.S. Steel. The wind turbines run 30 percent of the time.

Looking to the wind-rich west, Minnesota Power developed the Bison Wind Energy Center in North Dakota.

"Our Bison Wind Energy Center in North Dakota is comprised of four separate projects, including Bison 1, 2, 3, and 4," Mullen said. "The projects in total comprise of 165 wind turbines that have the capacity to generate 500 megawatts of power. Together, these turbines used 2 million pounds of copper, or 1,000 tons of copper. This helps demonstrate how dependent we are on the rich natural resources that we have in northeast-

ern Minnesota and why non-ferrous mining is so important."

Almost all renewables require nonferrous metals such as copper, he added.

Bison 4 is scheduled for completion by the end of the year, Mullen said, explaining that the turbines at Bison run 40 percent or more of the time.

Minnesota Power has also invested in hydro power, which is a return

to its roots. At an event at the Sawmill Inn in Grand Rapids earlier this summer, a Minnesota Power official pointed out that Minnesota Power got its start years ago through generating hydroelectricity.

Minnesota Power has several hydroelectric stations, which Mullen said generate approximately 110 megawatts of electricity. Minnesota Power

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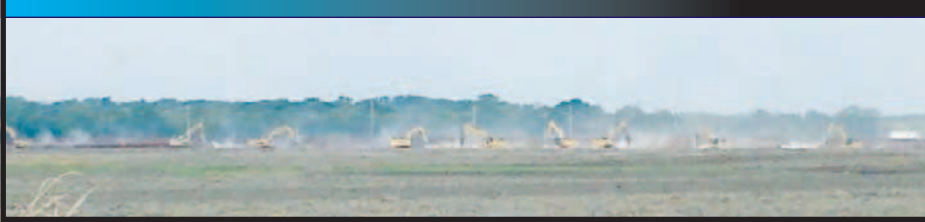
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MARK SAUER/MESABI DAILY NEWS

Wind turbines spin on a ridge in Minntac in Mountain Iron.

ENERGY

FROM PAGE 19

has also signed a power purchase agreement with Manitoba Hydro, which will deliver 250 megawatts of power to Minnesota Power starting in 2020.

Minnesota Power released a statement addressing permit applications for a transmission line, the Great Norther Transmission Line, in April.

The statement said the transmission line will deliver "clean, emission-free hydroelectricity generated by Manitoba Hydro to meet growing and changing energy demands. The project advances Minnesota Power's EnergyForward strategy of increasing its generation diversity and expanding its renewable energy portfolio."

While Minnesota Power is making strong progress towards diversifying its power generation capabilities, coal is not going away any time soon.

Coal is a strong baseload resource, said Mullen and Minnesota Power continues to invest in making sure coal generation is as clean as possible.

In 2009, Minnesota Power completed a retrofit of Unit 3 at the Clay Boswell Energy Center in Cohasset. Started in 2007, the utility spent more than \$240 million on the emission control project.

Last year, on Oct. 31, 2013, ground was broken at Boswell for another

project, an environmental improvement project for Unit 4. The project, estimated at \$431 million, is expected to reduce mercury emissions by up to 90 percent, sulphur dioxide capture is expected to be increased to 98 percent and particulate capture is expected to be increased to 99.8 percent. Completion is projected for June 2016.

During his comments at the groundbreaking last year, Al Hodnik, presi-

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The second of two Minnesota Power substations at Essar Steel.



One of two Minnesota Power substations which will be used to power the Essar site in Nashauk.

EnergyForward was shaped through a comprehensive analysis of costs and customer needs today and in the future, along with surveys, public meetings and other feedback — all playing out against the nation's increasing demand for emission-free energy and changing environment regulations.

ENERGY

FROM PAGE 20

dent and CEO of Allete, Inc., Minnesota Power's parent company, said that Unit 4 will be one of the cleanest units in the nation when the retrofit is complete.

There was "a healthy debate about No. 4," Hodnik said at the time and that there were those suggesting that the coal-burning unit should be shut down.

Minnesota Power's largest industrial customers were in support of the project and the affordability of electricity for the utility's customers had to be considered as well, he said.

"Our electricity flows to the highest number of industrial customers in the nation," Hodnik pointed out at the time.

One industrial customer will be Essar Steel Minnesota. The taconite plant under construction near Nashauk will be a customer of the Nashauk Public Utilities Commission, which in turn receives its power from Minnesota Power. In a statement after Minnesota Power completed transmission lines to the project, it was estimated when it reaches full production, the Essar facility will require about 110 megawatts of electricity. An Essar official said it will generate revenues in excess of \$30 million annually for MP.

As well as providing low-cost, reliable energy, Minnesota Power takes its environmental stewardship very seriously, said Mullen. They want to have an energy mix that will meet society's needs.

"We have to do it right."



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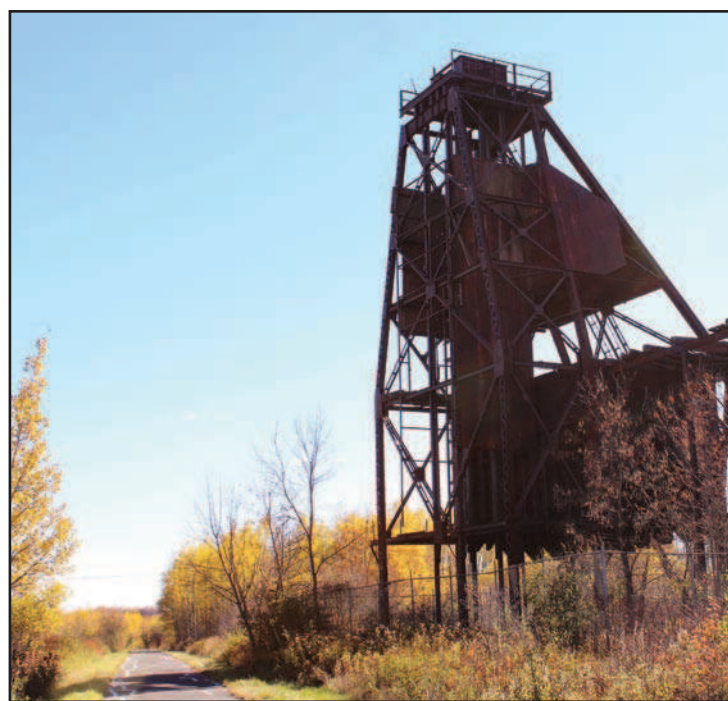
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MARIE TOLONEN/CHISHOLM TRIBUNE PRESS

Dave Pessenda and Ed Waters, volunteers with the Chisholm Beautification Association, look over a mock up of the proposed development of the Bruce Mine Headframe site.



Pictured here is the Bruce Mine Headframe. The historic metal structure is from the days of underground mining on the Iron Range, and is the last remaining headframe on the Mesabi Range.

PRESERVING MINING HISTORY

Group works for Bruce Mine Headframe

MARIE TOLONEN
CHISHOLM TRIBUNE PRESS

CHISHOLM — Just east of Chisholm, along Highway 169 and the Mesabi Trail, stands the towering the Bruce Mine Headframe. It's a reminder that underground mining once flourished on the Mesabi Range of northeastern Minnesota.

A group of volunteers from the Chisholm Beautification Association (CBA) have embarked on a project to preserve this piece of history — the last of its kind on the Mesabi Range.

Headed by Dave Pessenda, a committee, which includes Ed Waters, Ed Simons and Roger V. Johnson, has formed and spent the past three years conducting research on the headframe,

Pessenda, Waters and Simons are all former miners, while Johnson is retired from the Minnesota Department of Natural Resources (DNR) Land and Minerals Division.

The project has received backing in the form of resolutions of support from the Chisholm City Council and Balkan Township Board of Supervisors, according to Pessenda.

Most recently, the city council granted a request from the CBA to work out a long-term lease with St. Louis County in order to move ahead with development of the historical site.

Plans are to construct a road, parking lot and walking path to the headframe and provide an overlook site to the adjacent Monroe Pit.

The Bruce Mine Headframe is significant in that it is the only one remaining on the Mesabi Range. There are only three left on the entire Iron Range, one on the Vermilion Range in Tower and another on the Cuyuna Range, said Pessenda.

Waters said the DNR has reviewed the plans, which he said consist mostly of landscaping.

"The reason low-impact development is preferred is because there are iron ore deposits at that site, meaning at some point mining could resume there," added Waters.

Pessenda said the CBA Board of Directors continues to brainstorm about ideas for the development of

the Bruce Mine Headframe site. There has been some talk about adding a kiosk with information on underground mining and perhaps a memorial to all the miners who lost their lives while working in the dangerous conditions of early underground mining.

By developing the Bruce Mine Headframe site, Pessenda said the CBA felt it would tie it in to other links to mining history in Chisholm such as Minnesota Discovery Center, Minnesota Museum of Mining and the Iron Man Memorial Statue.

The headframe was constructed in 1926 by International Harvester Company. The steel structure held the sheave wheels for cables that lowered and raised the cages and skips from the underground mining operation taking place far below the surface.

At one time, ore was raised to the surface at the frame and loaded onto tram cars on an oval track that ran beneath the frame. From there, it was either stockpiled or processed and shipped by rail to waiting ore carrier ships on Lake Superior.

The Bruce Mine Headframe was once part of a complete mining complex including a dry house, engine house, sintering plant and 12 two-story frame houses with fireplaces for workers.

All grounds were seeded and streets and alleys were graded, giving the area the complete appearance of a typical mining town of the 1930s.

Geologist Stan Krukowski contacted Waters this past summer, seeking information on the Bruce Mine Headframe.

In a memo to Waters, Krukowski wrote that he was part of a team developing a Mining in Society merit badge for the Boy Scouts. Krukowski went on to explain the requirements of earning such a badge, which included having to "visit a mining exhibit, tour a mine, research the history of a local mine, and that sort of thing."

The Bruce Mine Headframe was one example on a list Krukowski was in the process of compiling with details on mining museums and exhibits. He noted that he had 400

entries thus far and in listing the states in alphabetical order had only gotten to Minnesota.

Bruce Quick of Keewatin was one of the first private individuals to donate money for the preservation effort. His father, George Quick, was a mine captain at the Bruce Mine.

Quick was born at the Bruce Mine Location and lived there from 1927 to 1936. He recalled attending the Monroe School in the nearby Monroe Location.

"It'll be beneficial to Chisholm, a memorial — more or less — to the miners who worked there," said Quick, who is a veteran and member of American Legion Post 247 of Chisholm.

The Bruce Mine Headframe was added to the national historic register in 1978, said Pessenda.

It was around that time that newspaper publisher Veda Ponikvar wrote an article calling for the preservation of the Bruce Mine Headframe.

In the Jan. 24, 1978, edition of the Tribune-Press, Ponikvar wrote: "The Bruce headframe, like the great open pits, is symbolic of those men who worked, and too often died, in the red earth of the Mesabi. And for that one reason, if not for any of the many others, it should be saved."

She wrote how it was a hazardous place to work, like most Mesabi underground mines, and went on to pen the story of a miner who died and two who were trapped in cave-ins.

"Valentine Mattson, a 36 year-old Finn and father of two, died when the roof of an underground room gave way," it reads. "Mattson and his partner Oscar Tiskinen were bracing the roof with timbers when the slide occurred, burying Mattson. Tiskinen had the good fortune to be out of the room at the time."

It continues: "Just two months previously, in July 1927, Nick Bozanich was trapped by a slide. Given up for dead, the papers reported his demise only to have to change the story to a more happy ending. Bozanich survived for 46 hours in a 10 by 10 room until he was dugout. Miraculously, some timbers prevented the entire room from being buried. After his

ordeal, the unruffled Bozanich's first request was for a cigarette."

Ponikvar wrote about the sintering plant, which made the Bruce unique to others on the Mesabi Range.

"Because of the high moisture content of Bruce, ore, often 30 percent, International Harvester decided to invest in the plant to dry the ore prior to shipment. Besides producing a low moisture product, the sintering process provided one more important advantage. The fine hematite ore became fused during the heating with the end product a more course or chunkier ore. The sintered ore closely resembled the clikers which are left after coal is burned."

Along with private donations, the CBA plans to apply for grant money from the Chisholm Community Foundation and Iron Range Resources and Rehabilitation Board (IRRRB) to help cover the cost of preservation of the Bruce Mine Headframe.

This isn't the first time the CBA has taken on a history preservation project. The non-profit founded in 2005 took on the task of raising funds for the restoration of the 1930s era stone-wall in Chisholm's Memorial Park. The wall is 10 feet high and 4 feet thick and encompasses 52 acres, according to the CBA website.

The wall restoration project was a major under taking, which was split into three phases. CBA Chair Carole Gornick said a committee said the group identified the areas of the wall most needing attention for the project. Grants from the Chisholm Community Foundation, Iron Range Resources and Rehabilitation Board, various fundraisers and donations from private individuals were used to restore "The Great Wall of the North."

The CBA, as its name indicates, also works on improving the aesthetics of the community by painting houses for people in need, purchasing new signage to point out landmarks around town and raising funds and caring for flowers along Lake Street.

Photos of their various projects are available on the group's website at www.chisholmbeautification.org.

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Herc-U-Lift expanding into mining industry

NATHAN BERGSTEDT
HERALD-REVIEW

The mining industry is well known for its use of gigantic machines designed to sculpt the surface of the earth to their whim.

But of course, if you consider the fact that the industry wouldn't exist if it was strictly a line-up of humongous earth movers, you realize that it takes all manners of machines to make the industry hum.

Herc-U-Lift has, for more than 40 years, been supplying customers in Minnesota, Wisconsin, North Dakota, South Dakota, and Iowa with the forklifts and other material-handling machines. With a branch in Grand Rapids, the company is just starting to break out into the mining industry, seeing it as an opportunity to grow even further.

"You can't believe how many different kinds of businesses use forklifts," said John Uhan, Herc-U-Lift Territory Manager in northern Minnesota, noting further that he's worked with grocery stores, car dealerships, auto parts stores, carpet stores, etc. When asked who their main customer



GREAT LAKES INTEGRATED

Mitsubishi is just one of the companies that Herc-U-Lift works with to supply forklifts and other material-handling machines with their customers.

base was, Uhan said that there was no such person or company, due to the wide range of industries that require some amount of material-handling machines.

Despite the fact that mining is a primary industry across north-east Minnesota, Uhan said that Herc-U-Lift hasn't spent a lot of time

and effort to break into that market in the past. Over the last three years that he's been with the company, he added that companies like Magnetation and Minntac are definitely going to be a part of Herc-U-Lift's future.

"I'm always trying to grow our market share in the mines, that's for

sure," said Uhan.

Most recently, Herc-U-Lift rented out a 36,000-pound forklift to the contractor working on Magnetation's Plant 4, which is being built just outside of Grand Rapids.

The construction industry has been a big market for Herc-U-Lift throughout their history,

particularly for the larger machines that they sell. It's the most efficient way to get building materials above the first floor.

With Herc-U-Lift looking to expand their business into the primary industry of the Iron Range, starting small with just a couple companies, Uhan compared

it to how the company began more than 40 years ago.

"We started basically with two guys selling a couple of used forklifts, and right now we have seven branches and almost 200 employees."

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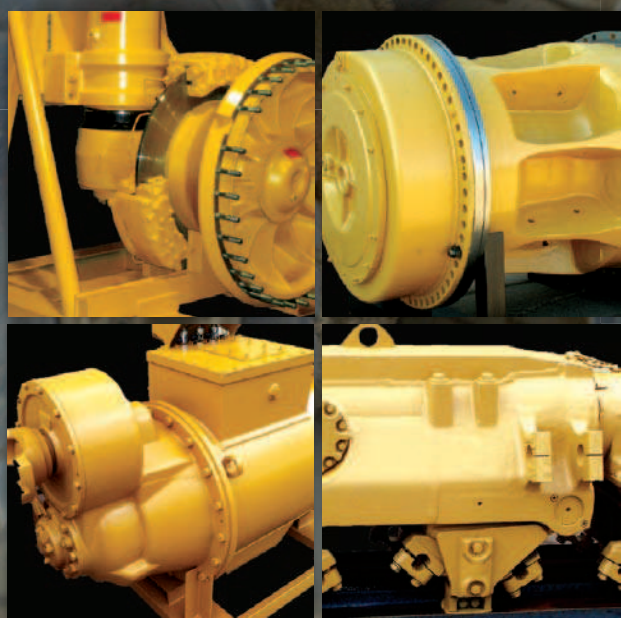
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BILL HANNA
MESABI DAILY NEWS

VIRGINIA — Two wall hangings in Mitch Robertson's office at TRITEC are always within eyeshot of the successful business man.

And for good reason. They are oh so symbolic of his life's priorities.

One is a photo of family enjoying a vacation day in a pool in Florida.

What, a vacation day ... for Robertson?

Time away wasn't really part of his annual routine for several years, he said — the demands of business in a competitive marketplace for a steel fabrication company had determined that.

And there also was the closing of LTV Mining in 2001, which shut down about 60 percent of TRITEC's business.

Robertson was pretty much emotionally and physically fried. He was running on empty, drained by work overload and future uncertainty.

Then a Florida vacation served as an intervention. Robertson was recharged in business, and, most importantly, in his personal life. He was able to properly reshuffle his life's perspective.

"I don't want to go back to that place," he said of the time when his attention was not properly focused.

The photo has prominent wall space, directly in front of Robertson's desk and at his eye level.

"I look at it often. It's a good reminder," Robertson said.

The other wall item is a sign with an image of "The Duke," John Wayne — perhaps the original "man's man."

"Courage is being scared to death, but saddling up anyway," reads the plaque. The words reflect Robertson's hard-driving business and work philosophy.

"I'm always nervous," Robertson said with a voice



MARK SAUER/MESABI DAILY NEWS
TRITEC President Mitch Robertson proudly poses with the new mine truck bed manufactured by his company in Virginia.



Employees get ready to attach the truck bed to a series of cranes to move it to a truck.

SEE TRITEC, PAGE 27

Adding Product Value on the Range



TRITEC employees smile and point to the gigantic project they just finished.



The new mine truck bed dwarfs the semi used to transport it to Hibbing Taconite.



TRITEC owner Mitch Robertson gives a thumbs-up for the company's largest project to date to be rolled out of the shop.



The floor at the shop is given a final sweep before the company's first 240-ton truck bed is pulled out for delivery.



The truck bed is secured for transport to Hibbing Taconite.

**Mark Sauer/
Mesabi Daily News**



The first Esco truck bed manufactured at TRITEC is lifted between a pair of cranes.



Tritec employees clap and take pictures as the new mine truck bed they manufactured in Virginia gets underway on its trip to Hibtac.



MARK SAUER/MESABI DAILY NEWS

A welder finishes the edge on a gigantic exhaust stack being built at TRITEC.



A worker cleans a welded joint on an exhaust stack section.

TRITEC

FROM PAGE 25

inflection visited by his West Virginia twang. "I try to deal with it the best I can."

So does the John Wayne quote capture Robertson's business personality at times? "Oh ya, often," he said. "Got to keep saddling up."

The business saddle fits really well right now for Robertson. TRITEC is on a good ride.

The company partnered with ESCO, a 100-year-old company headquartered in Portland, Ore., to build four production truck boxes for Hibbing Taconite — adding manufacturing value to a mining prod-

uct on the Iron Range.

The first one went out the big bay door of TRITEC several weeks ago, with little room to spare. It was quite a "WIDE LOAD, COMING THROUGH," moment for Robertson and his 70 employees who cheered and celebrated outside the plant.

And why a contract from ESCO for the additional three truck boxes that are now in design and production?

"Quality work. We did it right. I knew it right away when we pinned it. We were right on," Robertson said.

TRITEC and ESCO also received national attention last summer when ESCO produced a pink truck bed in honor of those who have been afflicted by breast cancer

and TRITEC made the lining.

The work for ESCO will help boost TRITEC's revenue sales for 2014 to about \$15 million, which is considerably up from \$9 million last year and \$11 million in 2012. And that translates to a payroll of about \$1.7 million for the year.

"These are great jobs, with compensation on the level with the mines. I want to keep good people around. It's rewarding when I see employees roll up with new trucks or toys," Robertson said.

The biggest business problem now is a good one — more space. Expansion is needed. The company intends to grow to the former Staver Foundry site,

SEE TRITEC, PAGE 28

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A semi bed is driven under the newly finished TRITEC mine truck bed.

MARK SAUER/MESABI DAILY NEWS



Employees watch as the new truck bed is rolled out of the shop for the first time.



TRITEC President Mitch Robertson poses in his Virginia office.

TRITEC

FROM PAGE 27

which is within a stone's throw from the current facility. Plans were for that to happen this fall, but details on the project with the city are yet to be finalized.

"We're stymied by space. We have no more room. We had hoped to have moved into that (Staver) site still this year. But now it will be 2015," Robertson said.

Robertson's upbringing was in West Virginia.

He speaks fondly of those days and the state that was popularized by singer/songwriter John Denver in "Take Me Home, Country Roads," with the signature lyric, "Almost heaven, West Virginia ..."

He keeps some West Virginia friends close, and speaks well of Bluefield State College, where his management skills were book-learned before he would exercise them in the real world of private business.

He still carries the dialect of the West Virginia hills. But his roots are now firmly planted on the Iron Range.

He journeyed to the Range in 1991, working for U.S. Steel for about five years, "helping with their pelletizing machines."

The company wanted him to transfer for a job in Utah, but he declined. "I wanted to start my own job shop," Robertson said.

And he did in partnership with Ed Williams and Marvin Saltzman,

who also own Nelson Williams Linings Inc., in Mountain Iron.

Robertson would marry a Range lady. And he and Jody now have three children — son, Gage, 19, daughter, Savannah, 17, and another son, Pryce still at home.

He would settle in well in northern Minnesota's outdoors, with his father-in-law providing plenty of encouragement for a sportsman's life.

And his work office sanctuary has plenty of reminders that a bad day fishing or hunting outdoors is better than a good day at work.

"Jody's side of the family instilled a greater love of the outdoors in me," Robertson said.

Robertson's mother, Bettie, provided the common sense needed to help ground her son, Mitch, while his father, Grover, gave him the business venture gene.

"Dad was a risk taker," Robertson said.

At age 48, Robertson has no intention of slowing down or separating himself from the business he loves.

"I see myself having a presence here in the office and on the floor for a long time. If I spent two weeks on a beach somewhere I'd be bored on my ass," Robertson said.

Time for another "Bud," and some stories of West Virginia. He is generous in distributing both.

Then a moment of reflection.

"I've been blessed. I know that every day," Robertson said.

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GUEST COLUMN

**LARRY
LEHTINEN**
Magnetation
President/CEO



SUBMITTED
Magnetation President and CEO Larry Lehtinen is shown during ceremonies for the company's new plant on the western Iron Range.

Be grateful for our 'geologic elephants'

We call Northeastern Minnesota God's Country for its naturally beautiful lakes, streams, and forests. The beauty goes deeper than that however.

Beneath the surface of the land, we are uniquely blessed geologically. Only a select few countries in the world have supersized mineral deposits known in the exploration business as "elephants." In Minnesota we have two such "geologic elephants" that we know of so far.

The first and most famous is the mighty Mesabi Iron Range, which helped the USA win two world wars and fueled the industrialization of the U.S. leading to its present day superpower status.

Minnesota's second mineral "elephant" is the copper-nickel deposits contained in a rock formation called

the Duluth Complex. The Duluth Complex, stretching from Duluth to Ely, is one of the largest deposits of its kind in the world, formed during a cataclysmic geologic event that would nearly split North America into two separate continental plates.

The rift started but failed. It was a very rare event indeed that left Minnesota with this second "elephant" mineral deposit — one that today would be the envy of most every country in the world if they were aware of its magnitude.

Interestingly, the failed rift also produced what may be our most precious geologic blessing, Lake Superior and its vast supply of fresh water.

As a mining engineer and fourth generation native of Northeastern Minnesota, I certainly appreciate the importance of our natural resources

here on the Range.

My great-grandfather Albert Lehtinen arrived at Ellis Island from Finland in March 1896 and made his way to Tower Soudan where he found work as an underground iron ore miner.

By 1903, however, he was blacklisted due to his labor organizing and moved to Palo, where he scratched out a living for his family on a 160-acre homestead with what could only be called subsistence farming.

But he made it, and five generations later his descendants, my sons Matt and Lucas Lehtinen, my son-in-law Jonathan and I have regained the family standing in iron mining with the success of Magnetation, a new iron ore mining company of which I am sure Albert Lehtinen would be very proud.

The Minnesota iron mining industry

has been and continues to be a world leader in technological innovation in the iron ore business. Modern mineral processing and pelletizing of iron ore were originally developed here. The Trout Lake concentrator southeast of Coleraine was, in the early 1900s, the world's largest and one of the first iron ore mineral processing plants.

The taconite process, including concentration of the ultra-hard Biwabik Iron Formation and thermal induration of the resulting magnetite concentrate, was developed by Dr. E.W. Davis of the University of Minnesota and put initially into practice on the east end of the Mesabi Iron Range at the pilot plants of Reserve and Erie Mining companies.

Mesabi Nugget, a company I founded in 2001 remains the world's

SEE ELEPHANTS, PAGE 30

"The Range is our home, and mining is what we do."

Mining creates good middle class jobs, puts food on the table, and sends our kids to college. Mining brings us growth, opportunity and prosperity. Make no mistake. We have the brains and the technology to do mining the right way, as good stewards of the environment we all treasure — committed to the future of our region for generations to come."

**Congressman
Rick Nolan**





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Construction at the new Magnetation plant.

ELEPHANTS

FROM PAGE 29

first commercial-sized rotary hearth furnace making pig iron nuggets. Further, Magnetation's Plant 1 near Keewatin was the first in the world to commercially produce hematite concentrate from abandoned iron ore tailings stockpiles.

In Minnesota, we should all be proud of and grateful for the geologic blessings bestowed upon us here in God's Country.

The mighty Mesabi is a super deposit of iron that originally contained about 40 billion tons of iron formation with an average grade of about 38 percent iron. Not super rich on average, but quite extensive stretching 120 miles from Grand Rapids to Babbitt.

There are only a handful of other super deposits of iron ore around the world, many much bigger and richer than the Mesabi. There is the vast Carajas of Brazil, the Pilbara of West Australia, the El Mutun of Bolivia, the Kuruman of South Africa, the Labrador Trough of Eastern Canada, the Simandou of West Africa, and the Itabirites of Brazil to name only a few.

To be clear, the iron ore industry of Minnesota, although the largest source of iron ore in the USA at about 40 million tons per year of output, is small by present day global standards. For example the four largest global iron ore producers, known as the "Big Four" collectively produce more than 75 percent of the total seaborne iron ore trade. This year Vale from Brazil, the largest of the Big Four, will produce 320 million tons of iron ore, followed by Rio Tinto at 290 million tons, BHP at 183 million tons and Fortescue Group at 155 million tons. By 2017, the Big Four will collectively produce more than 1.15 billion tons of iron ore, which will be 80 percent of the total global seaborne iron ore traded. Iron ore production is highly concentrated in a small number of producers — far more so than any other commodity, including oil.

What do the stunningly large global figures of production mean to the small but precious iron ore industry here at home? For one thing, the Big Four are very low-cost producers expanding at a high rate with apparent intentions of driving the world iron ore price down, thereby putting high-cost producers out of business. In fact, the price of iron ore has collapsed this year from \$140 per ton last December down to \$77 per ton in early October

2014.

To survive in this dog eat dog iron ore world, one must also be a low-cost producer, innovating to make high quality products that serve the needs of our customers.

We need supportive government policies and actions that help us compete. To survive and prosper, our minerals industry of the future needs more free market capitalism policies. We need and expect reasonable government regulations and oversight, but in many ways what we need is for government to set the stage then get out of the way and let entrepreneurial innovation and good old fashioned American ingenuity and hard work do its thing.

At Magnetation we are a good case study in what policy makers can expect if entrepreneurs are unleashed and enabled by fast, effective and efficient environmental permitting. The result has been the creation of more than 500 jobs for families and 300 percent year-over-year growth of revenue and investment over a six year period, with more to come. This growth has also produced impressive increases in tax and royalty revenues for the state and, most importantly, economic prosperity for hundreds of families in the region.

Unfortunately, most projects have not had the same success and speed as Magnetation. Many good projects such as PolyMet and the Sandpiper and Keystone oil pipelines are just not moving forward due to environmental opposition.

We need to remember that we do mining and industrial projects here in the USA cleaner than anywhere in the world. The suppression of industrial production here at home causes dirtier production abroad, to the detriment of our global ecosystem. The cleanest thing for the planet is to maximize minerals and oil and gas production in America using our technology and standards.

Some say the minerals are here and aren't going anywhere. That may be true, but the capital and people who put capital to work to extract the minerals are mobile. We need government policies and actions that create an environment enabling innovators and entrepreneurs to do what they were meant to do — start companies, build mines and factories, produce quality goods and services, create jobs, and generate prosperity for all the stakeholders of our precious resources and geologic blessings.

As you enjoy God's Country in Northeastern Minnesota, be grateful for our precious "elephants."

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'We have a wealth of resources ... we're all pretty blessed'

BILL HANNA
EXECUTIVE EDITOR

VIRGINIA — Mining is in Kelly Osborne's DNA — and that now includes his new adventure as CEO of Twin Metals Minnesota.

"I'm personally very excited to be part of the Twin Metals team and to be involved in a project like this," he said during an interview last July after he was named to his new position.

Osborne is also president and CEO at Duluth Metals Limited. Duluth Metals is the 60 percent majority partner in the TMM joint venture with Antofagasta holding the other 40 percent.

The Twin Metals project, within the vast mineral-rich Duluth Complex on the Iron Range, would develop an underground mine to extract copper/nickel/precious (strategic) metals.

It has the potential create thousands of direct jobs, many more indirect spin-off positions and more than 2 million hours of construction. Osborne's more than 30

years in the mining industry was praised by Chris Dundas, who is TMM chairman and executive chairman of Duluth Metals.

"We are very excited about the extensive international mining experience Kelly Osborne brings to the Twin Metals Minnesota joint venture," Dundas said.

"The TMM project is one of the best development-stage and precious metals projects in the world, and Kelly's leadership and experience will help advance the project towards permitting, construction and operation."

And Osborne's mining experience is not only extensive, but it also has a global reach.

Prior to joining Duluth Metals in 2012 as chief operating officer, Osborne was senior vice-president of Underground Operations in Indonesia with Freeport-McMoRan Copper & Gold and from 2006-2010 he was vice-president of Underground Operations in Indonesia for the company.



KELLY OSBORNE



MARK SAUER/MESABI DAILY NEWS

Bruce Ziminske and Jim Snodgrass keep an eye on drill operations as they bore through the last 11 feet of a test hole.

He was responsible for the operation and capital development of two underground mines in Indonesia, including a \$4.7 billion capital budget for the mines, an annual operating budget of \$180 million and a workforce of 2,400 employees and 750 contractors.

And before joining Freeport, he worked with several other mining-related companies in Chicago, Montana, Texas and South Dakota.

Osborne has always had a great appreciation of the

mining process, the minerals it puts into the marketplace and the products that are then manufactured. But that respect for his profession was heightened greatly during his time in Indonesia.

"Mining gives people hope ... minerals provide hope. We take for granted the stuff made from minerals that make our lives easier," Osborne said.

"The people in countries like Indonesia want the same things ... we're all connected that way. They have a very

hard life and they don't want to stay like that."

Osborne said spending those years in Indonesia really heightened his love of country.

"I was blessed to have had the opportunity to work outside our country. Now I appreciate our country even more. We have a wealth of resources ... we're all pretty blessed," the Twin Metals and Duluth Metals president and CEO said.



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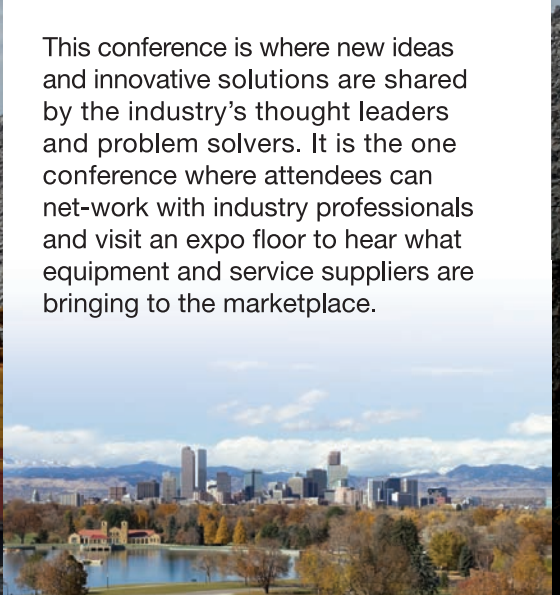


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GUEST COLUMN

**KELLY
OSBORNE**
Twin Metals Minnesota
CEO



SUBMITTED
Kelly Osborne was named president and CEO of Twin Metals Minnesota last July. He is also president and CEO of Duluth Metals Limited. He brings more 30 years of mining experience to Twin Metals, which is developing a copper/nickel/precious metals mine project near Ely and Babbitt.

PREFEASIBILITY STUDY CONFIRMS PROJECT HOLDS MAJOR JOB CREATION

Over the past two years, Twin Metals Minnesota (TMM) has been conducting a Prefeasibility Study (PFS) for our proposed underground copper-nickel mining project in northeast Minnesota. In late August, Duluth Metals Limited, the majority partner in the TMM joint venture, released highlights from the PFS Technical Report, which confirms that the TMM Project offers an extraordinary job creation and economic development opportunity for the region and the entire state.

The TMM Project is among the world's most promising copper-nickel mining developments due to the magnitude of Minnesota's mineral resource and the project's location in a region that has a strong mining history, world-class labor force, and extensive mining infrastructure, including existing roads, rail lines, ports, power and water supplies.

The competitive advantages Minnesota offers are key to the TMM Project's projected long-term economic success.

The PFS Technical Report is based on a projected initial 30-year mine plan of operation, focused on underground mining at what are known as the Maturi and Maturi SW mineral deposits, located approximately nine miles southeast of Ely and 11 miles northeast of Babbitt. These mineral deposits contain an estimated 1.2 billion tons of measured and indicated mineral resources.

The mine plan estimates an average production rate of 50,000 tons of ore per day, generating marketable copper and nickel concentrates. The PFS Report further estimates that the initial capital investment to build the TMM Project will be \$2.77 billion, with a total capital investment



Twin Metals Minnesota workers work with mineral core samples.

of \$5.41 billion over the first 30 years of mine operations.

The TMM Project will generate strong job growth in both the construction phase and mining operations. The PFS Technical Report estimates that during a roughly three-year construction phase, the TMM Project will require 12 million labor hours, nearly three times more than the labor hours required to build the new Vikings stadium.

When operational, the TMM Project will create approximately 850 full-time jobs in a wide variety of skill areas. Based on research conducted at the University of Minnesota-Duluth, the TMM Project will also generate approximately 1,700-1,900 additional indirect jobs in the region's economy.

The PFS Technical Report outlines the TMM Project's initial physical configuration, identifying four major mining facilities: The underground mine site, concentrator site, tail-

ings storage facility (TSF) and utility corridors. The project's initial physical configuration outlined in the PFS Report could change as the project proceeds through future phases of development.

Underground Mine Site: The underground mine site is located at the Maturi and Maturi SW mineral deposits. A variety of facilities will be constructed underground, including primary crushers, conveyors, pumping stations and electrical substations.

Concentrator Site: The concentrator processes the mineralized ore from the underground mine into marketable copper and nickel concentrates. The concentrator site is proposed approximately 2.5 miles west of the underground mine site and south of the Ely airport, and will include the concentrator plant, primary mine portal, temporary ore stockpiles and a process water pond.

Tailings Storage Facility-



SUBMITTED

TMM

FROM PAGE 32

ity: The tailings storage facility is proposed south of Babbitt, adjacent to the Peter Mitchell Mine. The TSF will store approximately 50 percent of the tailings produced at the concentrator, with the other 50 percent returned to the underground mine as paste backfill. The TSF will also include a concentrate filtration plant, intermediate pond, electric power substation and concentrate shipping facility.

Utility Corridors: The Project's utility corridors will connect the underground mine site to the concentrator site, and the concentrator site to the TSF. The utility corridors will serve multiple infrastructure needs, including the transport of concentrate and tailings, water pipelines, service and contact roads, and a rail extension to an existing railroad.

Twin Metals Minnesota is dedicated to protecting northern Minnesota's unique natural environment and recreational resources, and is strongly committed to developing an environmentally sound mining project.

The initial locations of the four major mine facilities found in the PFS Technical Report were chosen under the environmental principles of minimizing surface and waste impacts, protecting air and water quality, siting locations near existing mining or industrial facilities, avoiding environmentally sensitive areas, and seeking "brownfield" redevelopment opportunities.

The completion of the PFS is an important milestone in the development of the TMM Project, but much work remains. We are now moving forward into the project's next phase, development of the Mine Plan of Operation (MPO). The MPO is the formal mine plan proposal, and involves further detailed engineering, environmental assessment and economic analysis. When complete, the MPO will be submitted to state and federal regulatory agencies to begin the thorough and extensive process of formal environmental review.

Twin Metals Minnesota is grateful for the interest in the TMM



A Twin Metals Minnesota worker zeroes in on a core sample removed from the company's exploratory drill site.

SUBMITTED

Project, and the support provided by communities, organizations and individuals throughout northern Minnesota and across the state. We look forward to continuing to provide project information throughout the development process. We encourage you to follow our progress by visiting the TMM website — www.twin-metals.com.

Kelly Osborne is CEO, of Twin Metals Minnesota. TMM is a joint venture company, 60 percent owned by Duluth Metals and 40 percent by Antofagasta PLC, formed to pursue an underground copper, nickel and platinum group metals mining project in northeastern Minnesota.



A Twin Metals worker enters data from core samples while another employee looks on.

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GUEST COLUMN

**DAVID
DILL**

State Representative



SUBMITTED

State Rep. David Dill, DFL-Crane Lake, is shown speaking on the floor at his desk in the House of Representatives.

Range delegation defends the 'Motherland'

Every day folks on the Minnesota Iron Range go to work and feed the world with taconite for a litany of consumer goods, automobiles, trains, defense equipment and much more.

Thanks to great demand for our regional minerals and coupled with advancements in technology the Range is now on its fifth generation of adding value to Minnesota's iron ore.

Seems rather simple here at home but down in St. Paul and over in

Washington it gets complicated.

EPA, MPCA, BWSR, DNR, Congress, 201 state legislators, the governor, lieutenant governor, the alphabet groups of the environment community, outdoor groups and private landowners all have a say in when, where and how mining is done in Minnesota.

Then there is the money! Mining generates incredible economic opportunity and taxes. When a ton of ore is

removed from the ground, many get paid, landowners, State of Minnesota, Permanent School Fund, Permanent University Fund to name a few.

Mining companies pay occupation taxes to the state's general fund, but the big tax on mining, the production tax, stays local thanks to some very insightful people many years ago. The current tax per ton is \$2.56 (2013) per ton on pellets or comparable iron units shipped. That amounts to nearly

\$102 million per year based on current production. The money is distributed through a formula in Minnesota law to schools, cities, towns, grants, and business loans.

With that kind of money at play our backyard is always on someone's radar screen.

A recent example of trouble in St. Paul was when the House Republicans tried to rob \$60 million of the

SEE DILL, PAGE 35

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DFL State Reps. David Dill of Crane Lake, left, and Tom Anzelc of Balsam Township confer on the state House floor in St. Paul.

DILL

FROM PAGE 34

Doug J. Johnson Economic Development Trust Fund. Those folks thought it was easy money to help balance billions of dollars in statewide deficits. They failed.

They failed because the Iron Range Legislative Delegation consisting of Rep. Tom Anzelc, Chairman, Sen. David Tomassoni, Sen. Tom Saxhaug, Sen. Tom Bakk, Rep. Tom Rukavina, Rep. Carly Melin and me.

The Delegation spent considerable time explaining (fighting for you) to other legislators why the fund exists and why it is our money, not theirs and certainly not intended to supplement state budgets or deficits. The simplest answer is that "the money comes from production taxes on mining in-lieu of property taxes." If the mines paid property taxes, there would be little if any value remaining to tax after the mining.

The realm of operation for the Range Delegation is committee chairmanships, knowledge of mining and taxes, our communities' needs, relationships with our colleagues on both sides of the aisle and numbers.

Numbers are very important. There are eight of us now with the addition of Rep. Radiovich, five in the House and three in the Senate. It takes 68 votes to pass a bill in the House and 36 votes in the Senate. When

it comes to defending the "Mother Land" from attacks, we strategize and vote together.

Your legislators matter! Just a single vote can change the complexion of how raids, like the one on the Doug Johnson Fund, was averted and what the future of the Iron Range economy will be.

Rep. Joe Radinovich was added to the Range Delegation due to redistricting. former Rep. Rukavina retired and Jason Metsa was elected. The Range Delegation is as strong as ever and fighting to preserve our heritage and way of life.

New technology in ferrous mining, worldwide demand for non-ferrous precious metals located in our communities (copper/nickel) and a renewed interest in manganese on the Western Range and things look promising. Challenges lay ahead — environmental permitting, value of metals, taxes on non-ferrous mining.

Mining happens because we have the metals, it's needed around the world, and our workforce is dedicated, diligent and determined. These qualities are to be proud of.

All of us are proud to be your legislators and business agent in St. Paul. It's a real privilege.

David Dill represents House District 3A, which includes portions of Cook, Lake and St. Louis counties in the northeastern part of the state.



Pictured is the Minnesota House of Representatives at the State Capitol in St. Paul.

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what would become The Boldt Company over the next 125 years of construction, customers, community and innovation. Serving the region's mining industry primarily from its office in Cloquet, Minnesota, Boldt draws on the extensive expertise of its mining team—along with 125 years of construction experience—to help clients successfully face all challenges that arise.

Recently, as the mining industry has looked to adopt new ferrous technology and develop non-ferrous precious minerals such as copper and nickel, Boldt has used its conceptual planning expertise to help customers conduct feasibility studies, conceptual budgeting, construction planning, workforce forecasts and evaluations of labor resources for new major greenfield mines and plants.

Boldt utilizes new technology and adapts to trends in the mining industry, but it is still driven by its founding values: honesty, fairness, hard work, performance and a love of construction.

When Martin Boldt opened his carpentry shop in 1889, he decided that delivering value to his customers meant founding his business on values. From that idea came the words Martin used in a city directory advertisement: "Honest and Reliable Contractor." Those four simple words represented the solid philosophy Martin built his company on and fueled

Boldt's mining team has been around the block once or twice—with an average of 20 years of experience, this group can handle just about anything. From using Lean scheduling tools to plan for shutdowns and creating accurate budgets for small and major capital projects, to installing new equipment and enhancing maintenance reliability and start-up times, Boldt's mining team can effectively complete any project, no matter how difficult or complex.

Some of Boldt's other mining services include:

- General construction
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- Equipment installation/rigging
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- Steel erection and structural modifications
- Concrete work
- Shutdowns and turnarounds
- Site-specific safety programs
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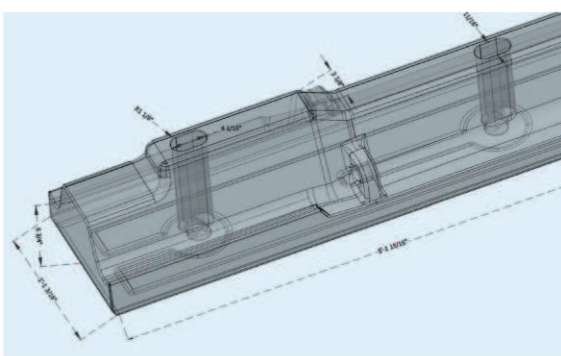
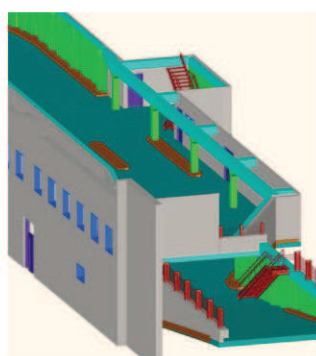
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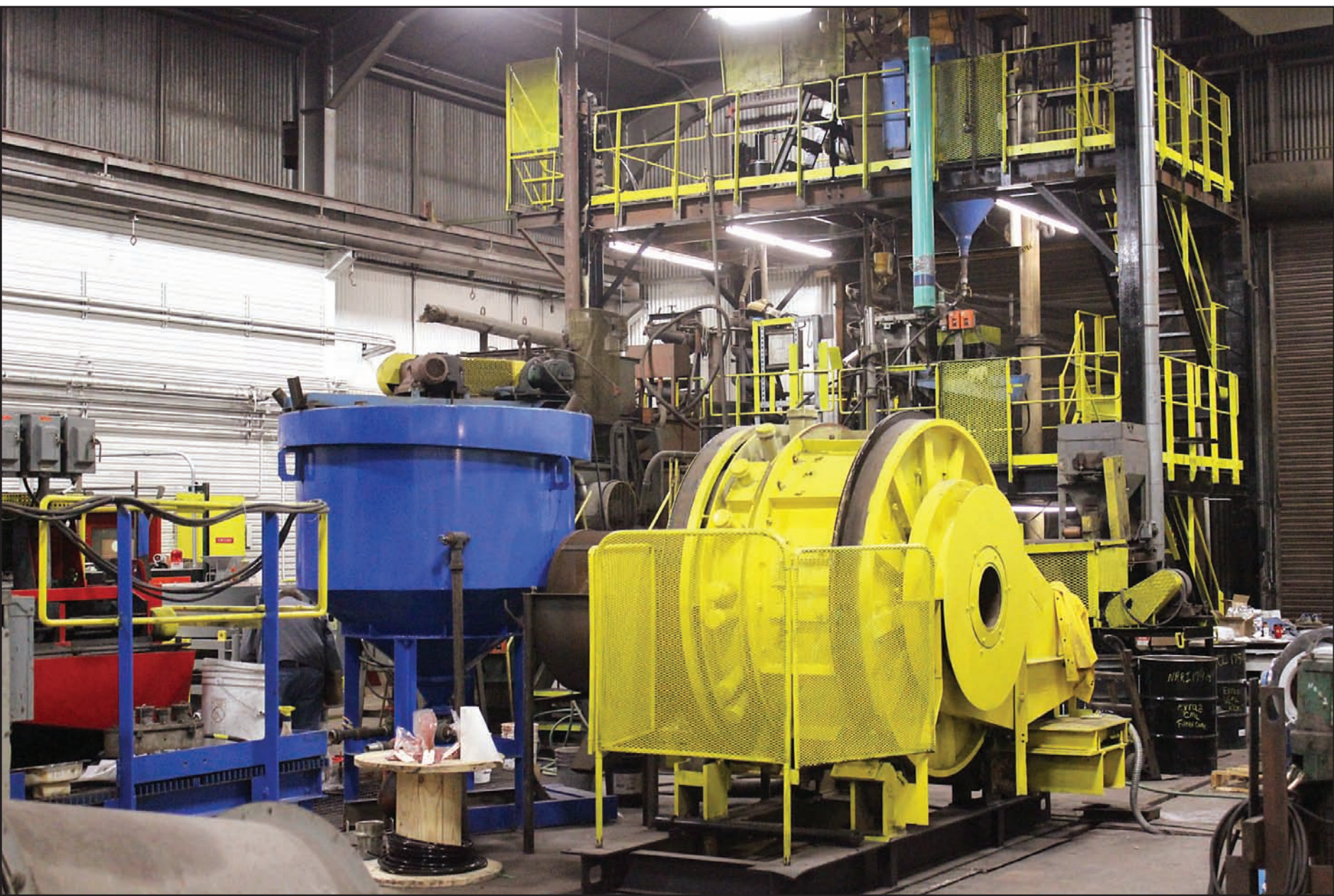
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COLERAINE LAB



BRIAN AROLA/HIBBING DAILY TRIBUNE

The NRRI Minerals Lab in Coleraine features heavy equipment, seen here, that simulates most aspects of a full mining operation at a smaller scale.

WHERE TESTS BECOME REALITY

BRIAN AROLA
HIBBING DAILY TRIBUNE

COLERAINE — Tucked along Highway 169, just across from Greenway High School's football field in Coleraine, lies a research facility that's affected the lives of Iron Rangers more than they likely realize.

The complex, consisting of more than 15 buildings which some were at one point an iron mining train depot, now serves as the Natural Resources Research Institute's (NRRI) Minerals Lab, which is part of the University of Minnesota-Duluth (UMD). Pick a mining company in the region, and they have likely passed through the lab for one purpose or another — leaving no question of its impact on the Iron Range.

Dick Kiesel, of Hibbing, has served as director of the NRRI minerals lab for nearly two years after starting at the lab in 2001, and recently led a walkthrough of the sprawling facility.

The trip starts with a map, not necessarily updated to the minute, of projects all around the world that sought help in Coleraine.

Minnesota looks like a pin cushion with the amount of flags sticking out.

"We've kind of got things covered when it comes to mining and minerals up here," Kiesel said. "It's a fairly comprehensive facility that

can cover all the bases."

The bases include research into iron ore pellet induration and sintering, liberation characteristics, and a bunch of other projects that wouldn't ring a bell for the layperson.

Describing what became or might become of the work might flick a switch though.

One of the newer projects underway at the lab involves the proposed Highway 53 bridge in Virginia. Before anything can be planned, let alone built, drill core needs to be tested to make sure a bridge would be safe.

"The drill core comes here, and we have geologists look at the drill core," Kiesel said. "We evaluate and assess the mineralogy and decide which ones we should carry on further for more testing."

Testing before doing is a must with any major mining undertaking, and doing them at a scale of the real thing at the lab is an invaluable tool for companies, said Rolf Weberg, NRRI director.

"That's why Coleraine is so central," he said. "It's a big pilot area that we can build these processes at a scale that can be tested."

On the walkthrough, Kiesel points out metals being run through Davis Tubes, and, later on, a larger scale in magnetic separators. The Davis Tubes, named after University of Minnesota professor E.W. Davis,



The C.W. Niemi Research Building, named after the mining pioneer who fought to keep the building up and running as a research facility, is the check-in point of any trip to the Coleraine Minerals Research Lab.

removes the magnetic portion of ore in a sample, but the magnetic separator does the same on a more representative scale.

Just like mining companies need to test before doing, they also need to make sure the sample they're asking to be analyzed is representative of the potential mining area.

"They know the weight going in and they know the magnetic portion going out," said Kiesel. "They get a percent weight recovery that tells us whether that ore is mineable, has value and things like that."

For mining purposes, the more weight the



Flags pinned on a map at the Coleraine Minerals Research Lab show some of the projects in the country and world where the lab performed research.

SEE LAB, PAGE 39

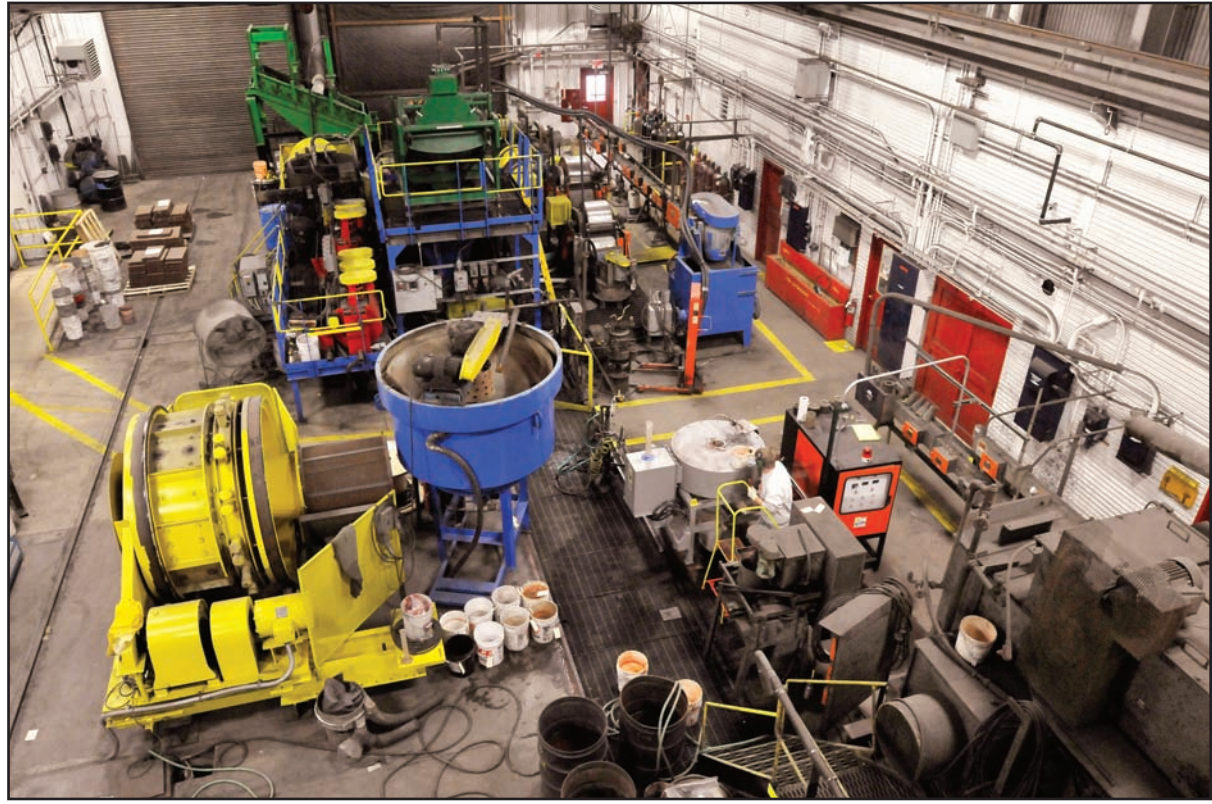


Tim Kemp pours a powdered ore sample onto a scale at the Coleraine Minerals Research Lab.

DOING MINERAL RESEARCH



David Haugen adds water to a wet high intensity magnetic separator.



The Coleraine Minerals Research Lab has a full range of taconite production equipment on a small scale for training.



Shaun Gram and Donny Reiser pour a slurry of minerals through a low intensity magnetic separator at the Coleraine Minerals Research Lab.



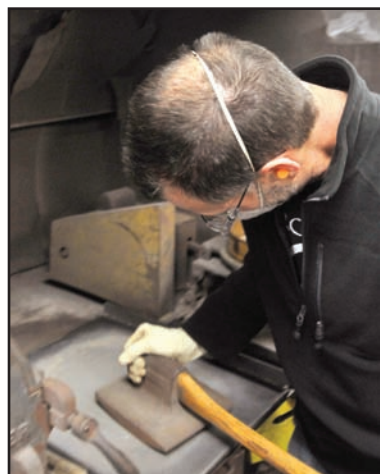
Coleraine Minerals Research Lab employee McKeon Roberts separates ore samples.



Chemist Julie Mutchler checks on a chemical reaction while running a test.



Pat Casey adjusts a test furnace. The furnace can be fired with different fuel mixtures to simulate mine operations.



Jay Gilpin uses a flat weight to crush an ore sample into a micro-fine powder.



Chemical solutions are heated in a test oven.

**Mark Sauer/
Mesabi Daily News**



BRIAN AROLA/HIBBING DAILY TRIBUNE

A worker at the lab performs tests with Davis Tubes, a device that separates magnetic properties in solutions. The process can be the first step toward determining the viability for mining in a sample.

LAB

FROM PAGE 37

better. The first couple buildings in Coleraine give off much more of a science lab vibe than a mining mine, but that's far from the case once you enter the mineral processing pilot plant.

If you woke up in the room, you'd think you were in a mine, as equipment big and bigger rumble and workers go about their daily tasks.

"All of this equipment is designed to simulate and mimic a taconite plant," Kiesel said. "It allows us to run larger scale demonstration tests."

One piece of equipment, the wet high-intensity magnetic separator (WHIMS), is basically what Magnetation uses to recover non-magnetic iron.

It's technology like the WHIMS that Kiesel thinks can extend the shelf life of mines in the area, as oxidized iron stockpiles up waiting to be recovered.

"Many of the taconite plants on the Range right now are reaching the point where they're coming close to their life of mine," he said.

"But their life of mine is based on magnetic iron. There's a considerable amount of oxidized, non-magnetic iron that's left out there that could carry these taconite plants for many decades in the future."

In order for the mines to start utilizing the stockpiles, the NRRI minerals lab needs to do the research ahead of time.

"It's something we need to be in at the ground floor, that gives them the opportunity to implement it when the times right," Kiesel said.

The NRRI minerals lab has an interest in sustaining the mining industry. In fact, it's pretty much in the organiza-

tion's mission statement, Weberg said.

The goal of NRRI is to foster sustainable development and resources to create jobs in the area, he explained, and the mining industry fits into all of that.

"There's good, healthy relationships with the mining companies," he said. "It's a collective future, so we're trying to reach out and have a constructive relationship."

Of course the other consideration for the facility is the environmental side of mining operations. For that, the NRRI minerals lab has construction under way on a new renewable energy center.

SEE LAB, PAGE 40



Dick Kiesel, director of the NRRI Minerals Lab in Coleraine, holds samples of nuggets processed at the facility.

AROUND THE IRON RANGE AROUND THE WORLD

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LAB

FROM PAGE 39

When completed in the first quarter of 2015, the building, which has tracks on the ground as a clear reminder of its depot past, will feature a kiln to burn biofuel to research the best alternatives to coal. The research could lead to less reliance on heavy pollutants for energy companies, and potentially the mines too.

Weberg said the natural resource center is an example of how NRRI adapts and evolves ahead of and at times because of the markets they serve.

At the forefront of the changing landscapes is alternative iron sources, Kiesel said as he completed his walk through the facility and back to the beginning at the C.W. Niemi Research Building.

Niemi was the long-time U.S. Steel mining engineer who recognized the value of the NRRI minerals lab in Coleraine. Just after the property was a train depot, the mining company operated it for research, and Niemi convinced U.S. Steel to donate it to the university system instead of shutting the doors.

In that same spirit of continuing on the important work, Kiesel said the lab has the right mix of young and old to sustain research for years to come.

"We have a decent secession plan, and we're making sure our butts are covered for the future," he said of the 41 total employed at the lab.

The projects and companies asking for help aren't running out any time soon either, Kiesel added, despite the lab not doing much advertising.

"I always call us 'the best kept secret,'" he said. "Our history has been not to advertise or promote, so I hate to say it, but we really haven't had to advertise our services."

In many ways the work, and the sparsity of similar institutions, speaks for itself, Weberg said.

"I think it's a globally recognized capability," he said. "There's not many places in the world and the country that offer what we offer."

And with buildings still under construction, and research into what could be the next boon to extend the industry — non-magnetic iron stockpiles — work at the NRRI minerals lab in Coleraine is never the same and never dull, Kiesel said.

As the mining industry changes, so does the research — which is one of the best parts of the job at the lab, he said.

"It is far, far, far from anything monotonous, and it allows us to be innovative and creative," he said. "We have an opportunity to do some exploration."



BRIAN AROLA/
HIBBING DAILY
TRIBUNE

Workers at the NRRI Minerals Lab go about their day in the room that most resembles a mining operation.



The lab is currently under construction renewable energy building sits in what used to be a train station for U.S. Steel. When completed in the first quarter of 2015, the facility's giant kiln will burn biomass.

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FROM CUYUNA MINE PIT TO THE EDGE OF SPACE

LISA ROSEMORE
HERALD REVIEW

Cape Kennedy. Cape Canaveral. The moon shot.

When thinking of the space race, especially for those in their mid-40s or older, those are just a couple things that come to mind.

"One small step for man, one giant leap for mankind." The Apollo astronauts. The lunar module.

And the Cuyuna Range?

So Minnesota's Cuyuna Range most likely does not come to people's minds when thinking about the space race dating back to the mid-20th Century, but a balloon launch from a mine pit near Crosby is cited in many published reports as signaling the start of the space race.

The project was called Project Manhigh.

According to History of Research in Space Biology and Biodynamics from the National Aeronautics and Space Administration (NASA), "concrete consideration of a manned (balloon) flight began in mid-1955."

The project, established by the U.S. Air Force in December 1955, was designed "to obtain scientific data on the behavior of a balloon in an environment above 99 percent of the earth's atmosphere," said a fact sheet about Project Manhigh from the National Museum of the U.S. Air Force. "It also investigated cosmic rays and their effects on humans. The program consisted of three balloon flights to the edge of space" using a "gondola" or capsule.

Three men, Col. John Paul Stapp and Maj. David G. Simons of Holloman Aeromedical Field Laboratory in near Alamogordo, N.M., and Otto Winzen, head of Winzen Research of Minneapolis, discussed the project at length, according to the NASA article.

Simons and Winzen were conducting balloon tests in northern Minnesota at the time and took time away from those tests to discuss Project Manhigh.

After working at length on the project on a shoestring budget, the first Manhigh flight was launched on June 2, 1957, from Fleming Field in South St. Paul, Minn., the NASA paper explained. The balloon flight reached 95,000 feet, but since special instrumentation was missing from the capsule, the height could not be recorded as an official altitude record.

The NASA paper went into great detail about the second flight, which took place on Aug. 19, 1957, from the Portsmouth Mine near Crosby on the Cuyuna Range. Simons was selected to man the second balloon flight and prior to the flight, "was subjected to complete physical examination in order to establish a basis of comparison with his post-flight physical condition."

"The exact site chosen for the launch was the 425-foot open pit of an iron mine outside Crosby, Minnesota, belonging to the M.A. Hanna Company," the article stated. "The pit-launch method afforded protection from winds, which particularly was necessary because of the greater size of the balloon used on this flight. To be exact, the balloon had a capacity of over three million cubic feet and was 200.2 feet in diameter when completely expanded by gas at floating altitude. Its total height at the time of inflation (including capsule and suspension system) was 350 feet."

The launch was originally scheduled for Aug. 15, 1957, but was postponed twice "because of predicted bad weather," the NASA article explained. Aug. 19 looked favorable, and the night of Aug. 18, Simons entered the capsule at the Winzen

Research plant in Minneapolis.

"He was sealed in and at once began pre-breathing of the special capsule atmosphere, which served to remove excess nitrogen from his bloodstream and thus gave protection against an attack of the 'bends' in case emergency decompression should occur at high altitude," the NASA paper told. "After a final check at the plant established that equipment was in working order, the capsule with Simons in it was piled on a truck and began the trip to Crosby, arriving shortly before daybreak."

But the launch wasn't going to go off without one more delay.

"The launch was delayed again at the last minute when a segment of reefing sleeve failed to come off and formed a band around the neck of the balloon," the NASA article said. "Mrs. Vera Winzen climbed a ladder held by guy wires and cut the band. Finally, at (9:22 a.m.), the balloon took off and rose rapidly, until after two hours and 18 minutes it reached floating altitude of about 100,000 feet."

Simons obituary — he passed away in April 2010 at the age of 87 — said there was a sign on one wall of the Manhigh capsule that said, "Have all the fun you want, but don't jump up and down."

The obituary also stated that Stapp reportedly shook Simons' hand just before take-off and said to him, "Major, you are about to reach the high point of your career."

The NASA article explained that the flight was originally expected to reach Miles City, Mont., but the flight never reached further than the eastern Dakotas. It also lasted longer than the expected 24 hours, nearly a half-day longer.

"Fortunately, in the early afternoon (of Aug. 20), Simons was able to begin a steady rate of descent," the NASA paper said. "He landed at (5:32 p.m.), in an alfalfa field in northeast South Dakota, and was immediately stuck with a hypodermic needle for another blood sample. The flight had lasted 32 hours and 10

minutes, but Simons had actually been 44 hours in the capsule, including the time spent in it before launch. As Mr. Winzen was quick to point out, this was longer than the time spent by Charles A. Lindberg in the first solo flight over the Atlantic."

The Air Force fact sheet stated that Simons reached 101,516 feet, establishing an altitude record for a manned balloon.

Simons brought back with him to Earth some observations. In several published reports, he related his observation that stars did not actually twinkle.

"Above me I saw something I did not believe at first," Simons was quoted as saying in the Sept. 2, 1957, Life Magazine article about his flight. "Well above the haze layer of the earth's atmosphere were additional faint thin bands of blue, sharply etched against the dark sky. They hovered over the earth like a succession of halos."

A third Manhigh flight was flown on Oct. 8, 1958, according to the Air Force fact sheet.

"Project Manhigh provided important information about the effects of high-altitude flight on humans in small capsules like those that would be flown in space," the sheet stated.

Today, the Portsmouth Mine Pit is now a lake. A mountain bike trail borders part of the lake, and a hill, aptly named Man High Hill, stands near the shore of the former pit.

And near Highway 6, a plaque gives recognition to the birthplace of manned space flight.



MAJOR DAVID
D. SIMONS

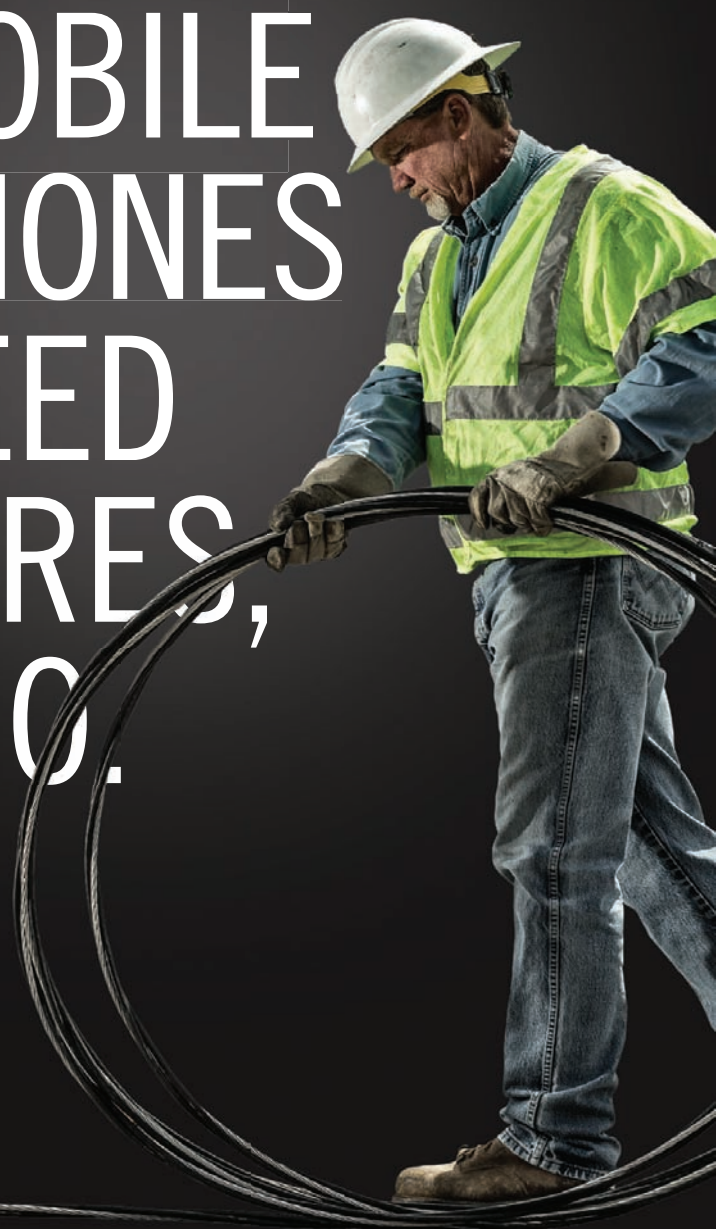


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KELLY GRINSTEINER
HIBBING DAILY TRIBUNE

HIBBING — Julie Lucas feels its vital to give back to the industry that supports her career.

An environmental manager at Hibbing Taconite, she said she's proud to be part of the mining industry and a member of the Minnesota Section of the Society for Mining, Metallurgy & Exploration (SME). She's been actively involved with the Northern MN Subsection for approximately five years.

"As a mining professional, I feel it is my responsibility to contribute time and energy to SME as the industry's primary professional society," said Lucas, past SME Northern Subsection chair.

SME is a growing organization, with membership now exceeding 15,000, a staff of nearly 50 at the headquarters in the Denver area, and steadily increasing roles in professional development and information exchange through publications, professional registration, accreditation, public education and continuing education.

SME is organized as regional sections across the United States, including the Minnesota Section, whose primary role is to hold an informative and educational annual conference in Duluth. Meanwhile, Northern Minnesota and Twin Cities Subsections provide additional opportunities for professional development through meetings, luncheons and short courses throughout the year, along with support for students, as well as interaction with the general public.



Deliberations at the Annual Business Meeting of the SME Minnesota Section. From left is: Treasurer Duane Kokkinen, Committee Member Dan Hestetune, Past Chair Joe Scipioni and former Northern Subsection Chair Julie Lucas.

The northern Minnesota iron ore industry is growing and diversifying, while proposals for copper-nickel mining in the region are advancing, noted Harvey Thorleifson, SME Minnesota communications chair. In southern Minnesota, silica sand, crushed stone, sand and gravel, and other commodities are mined at sites such as large mines within the Twin Cities.

"The mining community as a whole seeks to maximize economic and social benefits while minimizing environmental impacts," said Thorleifson. "In the state, there are industry organizations who speak for major businesses, public sector regulatory and economic development agencies,

SEE SME, PAGE 43



Professional Networking Luncheon at the 2014 SME Duluth Conference. Pictured are incoming SME MN Section Third Vice Chair Allyz Kramer, Speaker Ann Foss and outgoing SME Minnesota Section Director Jack Crosswell.



SME Minnesota Section Chair Adam Sersha presents a D. Kelly Campbell Tools of the Trade Awards to Kate Wehrs of University of Minnesota Duluth, one of the student awards presented at the 2014 SME Duluth Conference.

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SME

FROM PAGE 42

as well as educational institutions. Along with that spectrum of well-coordinated groups, the unique role of SME is to promote professional development and information exchange among mining industry people."

SME Northern Subsection is currently headed up by Adam Sersha, a process engineer at the ArcelorMittal Minnaca pellet plant and concentrator in Virginia. The chair is responsible for leading the team through the development of short courses for the Minnesota

Conference, providing networking and professional development opportunities for members, and coordinating social events for members.

It's a role Lucas held formerly, and professionally and personally grew from. She was elected to the position of second vice chair of the Minnesota Section a few months ago.

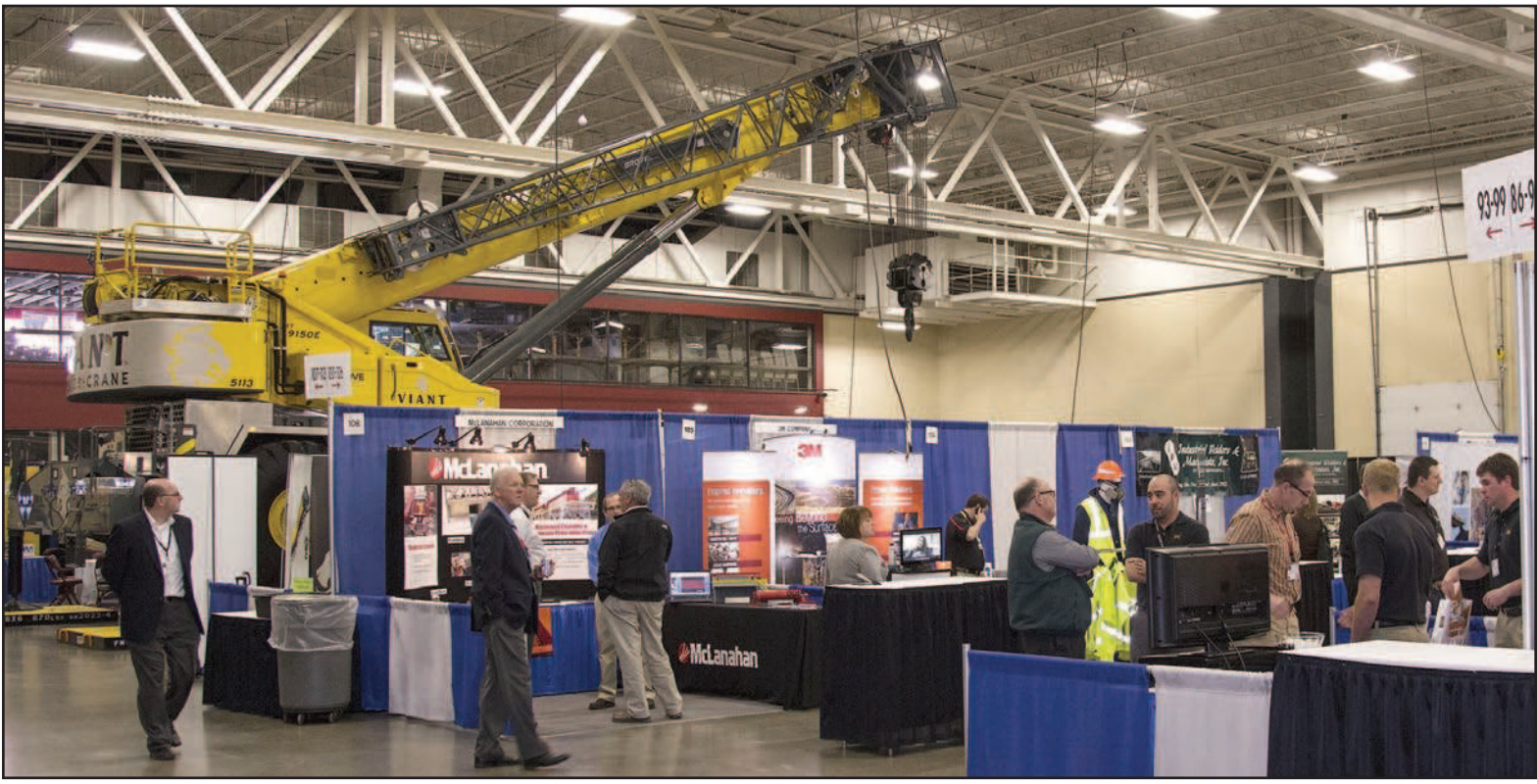
"Through my participation in SME, I have been given an opportunity to develop leadership and planning skills outside of my normal job," she said. "A whole wealth of information is at my fingertips through their website and more importantly, through the connections I've made."

SME has also expanded her view of the mining industry beyond Minnesota's borders and allowed her the opportunity to network with mining and environmental professionals throughout the nation.

"Our challenges are not unique to our area and this broadened network has generated ideas and allowed me to find solutions that I may not otherwise have found," said Lucas. "SME participation has exposed me to a greater world of mining and mineral processing and given me an appreciation for all of the work being done throughout the world to bring us the products we use every day."

Participation in SME is a choice, not a requirement, for Lucas.

"The leadership at Hibbing Taconite has been very supportive of my involvement," she said, noting that Hibtac General Manager Jack Crowell was formerly on the Minnesota Section Board of Directors as well. "My participation is optional for my



Equipment on display at the 2014 SME Duluth Conference Trade Show.

job, and the time and effort I put into it is in addition to my regular job — lots of evenings and weekends, especially as we ramp up for the Annual Conference in April."

And that annual conference is a highlight for most SME members.

This year's SME Duluth Conference was the 86th Annual Meeting of the SME Minnesota Section, held in cooperation with the 74th Annual University of Minnesota Mining Symposium.

The Duluth meeting is one of the larger SME meetings, according to Thorleifson, who was this year's outgoing SME Minnesota Section Chair. It was held last April 21-23 at the Duluth Entertainment Convention Center (DECC).

"While the SME National Conference now attracts over 7,000 people to sites such as Denver, the Duluth conference this year again attracted over 600 registrants and more than 200 exhibitors to the three-day conference," he said.

According to "Mining Engineering," the flagship SME periodical, Minnesota is the No. 3

non-fuel mining state in the United States.

"Things are booming here in Minnesota, resulting in the strong annual SME Minnesota Section Conference," said Thorleifson. "In addition, we are enormously excited to be able to look forward to hosting the SME National Conference in Minneapolis from February 28 to 28, 2018, which will be the same month that the Super Bowl will be in Minneapolis."

The theme of this year's Duluth Conference was "Minnesota Mining: Meeting the Global Challenge." Centered on this theme, the conference this year featured a major trade show, a tour to the Iron Range, three short courses, opening and closing half-day plenary sessions, six concurrent technical sessions over two half-days, a networking luncheon focusing on women in mining, and a gala banquet, where the Mining Professional of the Year Award was presented to Joe Scipioni.

The opening plenary featured astute remarks by SME President John Marsden and by Wells



Attendees at the Trade Show of the 2014 SME Duluth Conference.

Fargo economist Dr. Eugenio Aleman. The closing plenary featured a discussion with the Minnesota Governor's Mining Cabinet, facilitated by WDIO-TV journalist Renee Passel, and including Commissioner Tony Sertich of the Iron Range Resources and Rehabilitation (IRRRB), Commissioner Tom Landwehr of the Department of Natural Resources (DNR), and Commissioner John Linc Stine of the Minnesota Pollution Control Agency (MPCA).

"During these plenaries, we heard impres-

sive updates on the iron ore industry in our region, exciting news about our potential copper-nickel industry, and there were many other highlights, such as the unveiling of the Minerals Education Coalition 'Iron in our Electrical World' YouTube video, the second of the Minerals in our Electrical World series," said Thorleifson. "The 19-minute video will be a vital resource for high school teachers and students, while being an informative and entertaining source for anyone with an interest

in science."

The short courses this year were organized and hosted by the SME Northern Minnesota Subsection. They dealt with grinding mills, the evolution of mineland reclamation, as well as in situ treatment of mining-influenced water.

Thorleifson said the short courses were well attended and superbly presented.

"This is a great example of the importance of SME in professional education for the industry, along with key partners such as University of

SEE SME, PAGE 44

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Outgoing SME Minnesota Section Chair Harvey Thorleifson speaks to the plenary at the 2014 SME Duluth Conference.



Closing plenary panel at the 2014 SME Duluth Conference. From left is: WDIO-TV journalist Renee Passal, Department of Natural Resources (DNR) Commissioner Tom Landwehr, Minnesota Pollution Control Agency (MPCA) Commissioner John Linc Stine and Iron Range Resources and Rehabilitation (IRRR) Commissioner Tony Sertich.

SUBMITTED

SME

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Minnesota Continuing Education," he said.

Conference attendees also had the opportunity to trek to the Iron Range to tour Hibbing Taconite.

The Professional Networking Luncheon featured a panel whose speakers discussed "Changing the Trajectory of Women in Mining."

"The organizers indicated that the focus was on how women continue to grow and excel in leadership roles in the workplace," said Thorleifson. "Panelists exchanged personal and professional experiences, to challenge us all to continue the conversation on what women in industry are achieving, to encourage and support women pursuing their professional ambitions, and to highlight ways we can work together in fostering a workplace environment that taps into the business talent and technical expertise critical for a competitive workforce."

And there were also technical sessions — 60 half-hour talks in six concurrent sessions to be exact. Themes included: education, electrical and mechanical maintenance, environment, an industrial minerals session organized and hosted by the SME Twin Cities Subsection, mining, natural resource management, policy, process automation and IT, and processing.

Lucas has been attending the Annual Conference in Duluth since 2003.

"People in the industry don't always realize that a lot of the events they enjoy attending such as the Annual Minnesota Conference in Duluth are put together by volunteers," she said. "If I can help make a small piece of that happen, such as a short course or a technical session, then I've done my part to contribute back to the industry that supports my career."

Lucas said that SME has also given her an avenue to participate in community events, such as the Iron Range Earth Fest, with diverse teams representing all the Iron Range mining companies (active and proposed), engineering firms and other mining professionals.

"SME brings us together under common goals of supporting the mining industry and educating the public," she added. "And of course, there's the social aspect of meeting new people and networking more on the Iron Range."

Looking elsewhere, the SME Twin Cities Subsection has been holding a very successful conference in the autumn, focusing on silica sand, crushed stone, as well as sand and gravel. This year, 200 people attended a joint conference Oct. 7-8, in Eau Claire, Wis., co-hosted by SME Twin Cities Subsection and the SME Wisconsin Section, according to Thorleifson.

Looking ahead, Iron ore will continue to be the focus for SME.

"Minnesota has been iron ore country for over a century, so U.S. iron ore production is our principal theme every year, even though copper-nickel has tremendous potential on the horizon," said Thorleifson. "In addition to that, we now partner with Canadian Institute of Mining, Metallurgy and Petroleum (CIM) to host the North American Iron Ore Symposium every other year, alternating between Duluth and Montréal."

The 2013 Iron Ore Symposium was in Duluth, with both U.S. and Canadian iron ore industry speakers. Now SME is working with CIM to plan for the 2015 symposium in Montréal.

"Along with other activities, mining professionals in the region can look forward to continued growth in the SME Minnesota Section Conference in Duluth, thus reflecting the healthy state of the industry," said Thorleifson.

In 2015, the conference will be held on April 13-15 at the DECC, under the leadership of SME Minnesota Section Chair Adam Sersha.

Lucas said she would recommend participation in SME to fellow mining professionals — especially those seeking knowledge, connections and an opportunity to be part of a larger mining entity beyond the Iron Range.

"Miners throughout the country are facing the same challenges as we are here," she said. "And this society brings us all together to support the industry that supports us."



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Virginia Mayor



MARK SAUER/MESABI DAILY NEWS
Virginia Mayor Louis Russo poses with the city and Minntac in the background from the Mineview overlook.

Majority of new city's growth tied to mining

When Bill Hanna asked if I would be willing to write something for MINE V, I was honored but in somewhat of a quandary. I asked the natural question "what would or should I write about?"

Typical answer from Bill, "Whatever you would like to write about."

As I thought about his I realized a couple of things. My grandparents immigrated to Virginia in the early 1900s. I was born into a mining family, just as many people across the northeastern part of Minnesota — and this paper is featuring mining in this special edition.

So it is only natural for me to write about the City of Virginia and its role in mining.

Since moving back to the Range in the early 1970s, I was told that Virginia will succeed by reason of its geographical location (at the intersection of two major highways U.S. 169 and U.S. 53), but also for many other reasons.

Since the 1890s, and into the 1920s, Virginia has been the center of the Range and has been recognized as the established leader among its neighboring cities. By 1912, Virginia was the fifth largest city in the state. All through this period, Virginia was considered the metropolis of both the Mesabi and Vermilion ranges.

The history of Virginia, as it is with most of the communities on the Iron Range, begins with mining. The first ore discovered in the Virginia area is somewhat in dispute, but most attribute the discovery to the Missabe Mountain Mine in 1891. The discoveries came very quickly as the abundance of high grade iron ore started the rapid growth of the Mesabi Range.

By 1912, Virginia's wealth and reputation was growing nationwide. By 1920, Mr. Albert Bickford, in writing about the history of St. Louis County, described some of the outstanding features of Virginia. He listed the following:

- The taxable valuation of Virginia is \$17 million. (The current taxable valuation is \$377 million.)
- The city has 26 miles of cement sidewalks, 8,000 planted trees, ... about 50 acres of parkland.

- The largest white pine sawmill in the world.
- The best automobile roads in the Northwest.
- The finest trolley line in the states.
- Many dependable iron ore mines.
- A large farmers' market place.
- An aviation field..
- Five hospitals.
- Eighty acres of experimental school farm.
- The purest and coldest water in the state.
- A new and up-to-date detention hospital.
- A modern incinerator plant.
- A \$8,000 band stand ... the best band in the state.
- Twelve miles of sanitary sewer, and the largest sewage disposal plant in the entire state;.
- Four miles of storm sewer.
- Four strong banks; two daily newspapers; all the fraternal lodges of modern times; 18 churches; the finest grade schools and vocational schools in the United States.

- One large flour mill.
- Three creameries.
- A splendid class of merchants.
- Four railroads.
- Four theatres, and a \$100,000 opera house.
- And, the best people on earth.

Most of those claims are now just a piece of our history, however the last claim, the best people on earth, is still valid. And, with those great people, particularly the staff and councils of the past few years, Virginia is again asserting itself and utilizing its geological position it is making a resurgence to its former place of prominence.

A listing of commercial projects that have been started or completed in the past three years and their economic impact follows:

- Menards (new store), \$8.9 million.
- Iron Trail Motors (expansion to dealership), \$475,000.
- Joy Global (new manufacturing and repair center for heavy equipment), \$26 million.
- TRITECH of Minnesota (expansion of welding/fabricating and engineering firm), \$1.9 million.
- Sundell Ophthalmic Medical

Clinic (new ophthalmic clinic), \$1.75 million.

- Ambulatory Surgery Center (an adjunct to Sundell Clinic), \$3 million.
 - Rooftop Helipad at the Essentia Virginia Hospital, \$.5 million.
 - Miskovich Dental Clinic (new dental clinic), \$1.725 million.
 - Idea Drilling (expansion to existing business), \$910,000.
 - Ulland Brothers (expansion and moving of business to Virginia), \$8.9 million.
 - Kunnari's Inc. (expansion and new building), \$385,000
 - Total New commercial construction: \$55,500,000
- On the drawing board:
- Virginia Coop Credit Union, \$1.21 million.
 - Carpenter Union Hall, \$350,000
 - Conveyor Belt Services (expansion of existing business), \$1.6 million.
 - Waschke Properties (expansion of dealership), \$1 million.
 - Thrifty White Drug (new building

and expansion), \$1.2 million.

- AEOA and Range Mental Health (joint facility), \$20 million.

• Proposed New Construction: \$25,370,000

Added to the commercial growth, the city invested a total \$18 million in a new waste-water treatment facility to handle the expected increase on our sewage system.

Furthermore, the city has been contacted by several other prominent businesses wanting to locate to Virginia once the Highway 53 realignment is finalized.

The potential of iron mining expansion and the anticipation of the advent of nonferrous mining in the area have certainly stimulated the huge interest in the City of Virginia as well as the surrounding area.

After nearly 100 years, Virginia is once again on the move.

And, as stated earlier, the majority of the new growth is due to the anticipated increase in MINING.

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MARK SAUER/MESABI DAILY NEWS

Lind Industrial Supply Inc. in Hibbing.

A Life in Mining

ANGIE RIEBE
MESABI DAILY NEWS

HIBBING — Mining has been part of Art Lind's life pretty much forever.

His dad was a miner. And his own relationship with the business measures 52 years.

"From '62 to the present, I've been connected to the mining industry in one form or another," he said on a recent day at his Hibbing office.

Even during his four years in the U.S. Coast Guard, Lind's service was tied to iron ore.

The 70-year-old is president and founder of Lind Industrial Supply, Inc., which turned 13 on Saturday. Lind was 57 when he launched the company in 2001. At that age, he was "confident" he had the knowledge to do it — and do it right.

And his venture has proved successful.

"Mining Supports Us," reads a sign displayed at Lind Industrial Supply's offices on Grant Street in Hibbing. The company, in its own way, supports mining.

It is a supplier of slurry pumps, cyclones, magnetic separators, valves, conveyor-related equipment and a variety of wear and abrasion-re-



Roger and Art Lind stand in front of their Hibbing company.

sistant products to local heavy industries — particularly the mines.

It represents and supports products from suppliers such as FLSmidth Krebs, Boundary Equipment, Triten Corp., Power Process Equipment, Temperform Corp., Almex Group, Douglas Conveying Innovation, and Ford Steel Co.

Lind Industrial Supply has products, including some 200 pumps, in all

of the Iron Range mines, said its owner. It also supplies materials to ore carriers and some power plants.

The equipment it provides to mines are "involved in every phase, from the crusher to pellet plants," said Lind's son, Roger, who is the company's vice president and has been with Lind Industrial since around 2005. The business' team includes the father and son, along

with office manager, Kristy Dobson.

Among the company's products that have been assisting mines with efficiency are metal magnetic mill liners. The wear-resistant, steel-encased magnets are held in place magnetically without the use of bolts or other fasteners. Ball chips and magnetic materials are attracted to the liner and form a protective layer. Not only are the liners

easy and safe to install, but they allow for less energy consumption, increase mill throughput and eliminate mill leakage. And they last a long time — usually eight to 10 years, compared to some liners that may have a one-year life, Lind said.

Lind's involvement in mining and mining services began when he was just a teenager.

The 1963 Hibbing



SUBMITTED

Art Lind, owner of Lind Industrial Supply, Inc., of Hibbing, is shown in 1966. During his four years in the U.S. Coast Guard, Lind served for two years aboard the United States Coast Guard Cutter Mackinaw.

High School graduate began working for Charter Inc., a mining and industrial supply company, when he was in senior high. He would work there while studying engineering at Hibbing Junior College, and he would later continue his education through Bemidji State University extension classes. He also worked for Bechtel Corp., a construction and engineering company.

Lind then enlisted in the Coast Guard, serving

SEE LIND, PAGE 47

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LIND

FROM PAGE 46

from 1966 to 1970. He left for boot camp just five days after marrying his wife.

Lind was stationed aboard the United States Coast Guard Cutter Mackinaw. The ice-breaker often served to break ice for freighters carrying iron ore on the Great Lakes. Lind was a yeoman, but also did deck watch. "I was at the helm in the Duluth shipping canal half a dozen times when we had recruits and cadets on board," he said.

The ship's crew was also involved in search and rescue missions, such as that of the SS Daniel J. Morrell, a freighter that wrecked during a storm on Lake Huron in November 1966. Its lone survivor, Dennis Hale, was rescued by the Coast Guard after spending almost 40 hours on a raft.

After his service, Lind worked for six months at Eveleth Taconite, and then took a job at Minntac. He was a millwright and then spent four years as a mechanical draftsman. While at the mine, he also taught conveyor belt splicing and hydraulics at an apprenticeship program.

In 1976, Lind returned to Charter Inc. "I went into sales for them." He would remain at the Hibbing company for 25 years, becoming its vice president and then president.

However, due to some changes there, Lind decided it was time to give launching his own



MARK SAUER/MESABI DAILY NEWS

Kirsty Dobson is the third member of the Lind Industrial team.

company a shot. And on Nov. 1, 2001, Lind Industrial Supply, Inc., went into business. "I was confident I could start my own company," said Lind, who initially worked out of his house. Lind Industrial now has an office/warehouse, providing it with the opportunity to expand as mining activity changes.

The company additionally instructs clients on how to adjust and maintain the equipment it supplies, and "with my drafting experience, we are able to do some reverse engineering on some products," said Lind, adding that the company works with local fabrication businesses.

Roger Lind worked sales for a number of years starting in 1994, and was also employed at Charter Inc. Between

the father and son, they have close to 70 years of hands-on experience and product-specific training and technical education.

Both father and son are also active in the Iron Mining Association of Minnesota. The elder Lind has served on its board of directors and Roger Lind has been a committee chairman.

Art Lind — "a born and bred Iron Ranger" who enjoys hunting and fishing — also belongs to the Engineers' Club of Northern Minnesota, and is a member of the local Society for Mining, Metallurgy & Exploration.

Lind foresees a bright future for the mining industry, "especially looking at what Magnetation is doing," he said of the local company that uses magnetic separation



Roger Lind and his father, Art Lind, pose with one of the industrial pumps they supply to area mining companies.



ANGIE RIEBE/MESABI DAILY NEWS

Art Lind, president of Lind Industries, Inc., of Hibbing, is pictured with his son, Roger Lind, vice president, and office manager Kristy Dobson.

technology to capture particles left from previous mining operations to produce an upgraded iron ore concentrate — creating value from waste.

And when the mines

are looking to upgrade their processes — with energy-saving products, such as more-effective slurry pumps — Lind Industrial Supply, Inc., will be there, said its founder.

"We had a very good year last year. The last three have been very good. We are looking forward to the next years to come," he said.

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A TALE of TWO BABBITTS



Babbitt Mayor Bernice Norregaard stands in front of the side dump ore truck she drove while working at Northshore Mining Co. The truck, and several other pieces of equipment, are part of a tourist stop featuring the history of mining in Babbitt.

MARK SAUER/MESABI DAILY NEWS

ANGIE RIEBE
MESABI DAILY NEWS

BABBITT — It could have been a ghost town — twice.

But New Babbitt (otherwise known as current-day Babbitt) would simply not succumb to a second demise by following in the path of its predecessor, Old Babbitt.

It's people were too "tenacious" to allow the town to fade away again, says Babbitt Mayor Bernice Norregaard.

Norregaard is one of those who toughed it out after Reserve Mining Co. filed for bankruptcy in 1986 — when the second version of the city seemed it could be headed toward joining the spirit of Babbitt's past.

Old Babbitt didn't make it on the map until 1920.

Its roots, however, date back to 1871 — the year prospector Peter Mitchell from Ontonogan, Mich., discovered taconite ore located near the present town of Babbitt. He would be a taconite mining pioneer of sorts after drilling the first test pit on the Mesabi Range.

But it wouldn't be until around 1916 that a pilot mine was constructed, followed by Mesaba Iron Co.'s construction of a commercial facility.

History was made in 1922 when the world's first plant to process taconite on a commercial scale opened. Taconite was transported along an old logging spur of the Duluth and Iron Range Railroad and shipped by steamer to the Ford Motor Co., in



A 28-ton piece of taconite sits as a landmark in Babbitt. The rock was removed from the Peter Mitchell Mine, where Peter Mitchell, in 1871, put down the first recorded test pit on the Mesabi Range.

Michigan.

In the meantime, homes had been cropping up about a mile and a half from the plant — northwest of modern-day Babbitt, which had actually been considered as the

original site. A boarding house and company offices were built, along with a general store, a small hospital, a two-room elementary school and a community building that served as a church.

The first town was named Argo after the ship that in Greek mythology carried Jason and Argonauts in their search for the Golden Fleece. It's been said the postal service objected to the name because

there was already a town called Argo in Minnesota's Winona County.

The name was then changed to Babbitt in honor of Judge K.R. Babbitt, a mining legal adviser, who died in 1920, and was responsible for the organization of Mesaba Iron Co.

By 1924, the company had built 25 houses in Babbitt and 16 in a location called Pleasant View. There were also 28 houses in "West" Babbitt, with building materials supplied by the mining company.

The mining company town was getting nicely situated.

Mining, however, would be short-lived.

The Ford Motor Co. wanted ore with a slightly higher iron content. Operating costs were high at the mine. It lacked the taconite processing technology to produce on a large scale and was not able to accommodate the higher grade product.

Thus, on June 10, 1924, the taconite plant closed.

Babbitt — which would later be known as Old Babbitt — became a ghost town.

Skip to 1939.

Reserve Mining Co., incorporated by Oglebay Norton Co., of Cleveland, acquired all holdings, including the first Babbitt plant. The firm initiated a study of low-grade minerals, but did not begin a new taconite plant immediately.

The venture was called Reserve Mining Co., because the owners, thinking taconite was a future resource that might not be needed for some years

until higher grade ore was depleted, decided to hold the site on reserve.

After years of study and planning, the mine was redesigned and a new village of Babbitt was born. In 1951, Reserve Mining began constructing its mining and processing facilities, with a pelletizing plant built near Lake Superior at Silver Bay.

The company constructed 80 houses on a new Babbitt town site, with plans for 1,288. New Babbitt is plotted on land that was once a certified seed potato farm owned by Dr. Charles Lemont of Virginia.

And then, in October 1955, Reserve Mining Co.'s facilities went into operation, making it the world's first taconite company to produce on a large-scale basis.

The next year, Babbitt is incorporated, with 614 homes built on the new site, first sold only to company employees. The mining company builds a shopping mall and community center. There's also a bank, churches, and a drug store. Students attend school in Ely until one is established in Babbitt.

The town is designed as a model community, with houses neatly laid out in semi-circle formations on wide streets that have names such as Elm Circle, Dogwood Lane, and Aster Circle.

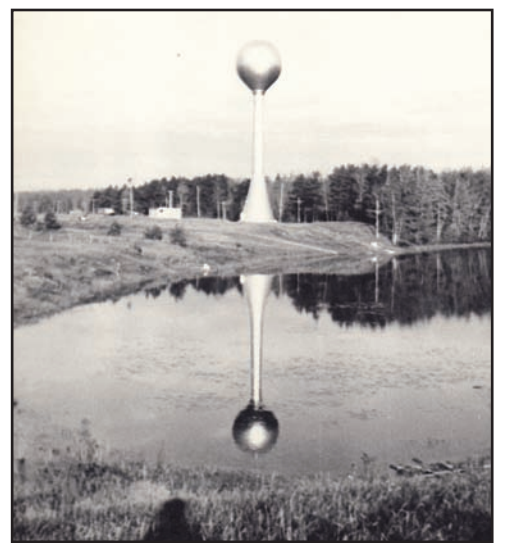
Babbitt eventually grows to a town of 3,700.

It's a thriving community, heavily reliant on the mine for employment.

By the 1980s, however, steel companies are struggling to become competi-

SEE BABBITT, PAGE 5

The little town that could and still is ...



The first Babbitt water tower.



Babbitt students on a class picnic in 1955.

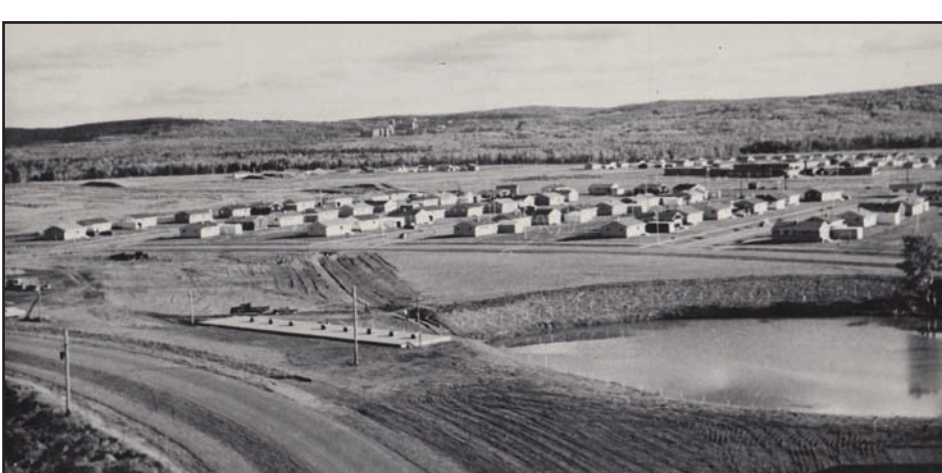
Photos courtesy of the Babbitt Historical Society



Senator Hubert Humphrey visiting the town on Babbitt on a Reserve Mining Co., train car.



A home in Babbitt in 1920.



The city of Babbitt being constructed on the site of an underground seed potato warehouse.



Babbitt Fourth of July parade, 1952.



Constructing the Argo Cemetery in 1939.



Houses pre-made in Biwabik are trucked in and set on foundations in Babbitt in the 1950s.



A fire in Babbitt in September 2011 destroyed the city's only grocery store and pharmacy.



Zup's grocery store in Babbitt was rebuilt after a fire destroyed the original building in 2011.

CITY OF BABBITT

MARK SAUER/MESABI DAILY NEWS



PHOTO COURTESY OF BABBITT HISTORICAL SOCIETY

Babbitt in 1964.

BABBITT

FROM PAGE 49

... tive with foreign markets and many are forced out of business.

Reserve Mining, however, has been struggling for many years with another issue — accusations that its refinery at Silver Bay was polluting Lake Superior.

The company had sought a state permit back in 1947 to discharge tailings into the lake. The company said the taconite tailings would be inert in the water, and engineers from the University of Minnesota said they would fall to bottom and stay there.

However, in 1956, commercial anglers near Silver Bay said they were catching fewer fish and there was gray slime in their nets. In succeeding years, Reserve received permits to increase its water intake from the lake and its discharge of tailings.

A Taconite Study Group, formed in the 1960s, said Wisconsin waters were being polluted. The case grew and became more complicated as a legal web was spun involving appeals and countersuits at various levels in the judicial system.

In the end, however, it was foreign competition, not pollution, that led to Reserve's demise.

The company initiated several layoffs and tried to meet competition with imported steel, but business continued to decline, and in 1986, Reserve Mining closed its operations.

The plant's closure was devastating to the community. Out of every 100 people employed in Babbitt, 85 lost their jobs.

"People were disappointed. They thought they'd been promised a job and retirement," Norregaard said. The consensus was: "We want our mine back."

Norregaard felt the same. A native of southern Minnesota, she had moved to Babbitt in 1966. Her ex-husband had a job at the mine, and Norregaard would later become a heavy equipment operator at Reserve, where she would work for more than seven years.

In fact, she said, in order to land the job, she sued for employment under the Civil Rights Act of 1964. "I was told I was the first to use the gender portion of the act," she said.

"I started working in the mines in 1974 and was laid off in 1982 during a partial shutdown" at Reserve, said Norregaard, who has served on the Babbitt City Council since 2000. "I had an 8-month-old baby and three girls in

school."

The closure of Reserve, however, only fostered the town's determination.

City officials, school administrators, business owners and residents joined forces to bring jobs, companies and business to the community.

A development association was formed to promote and help finance the creation of small business. The mayor formed a committee to seek assistance — private and governmental — and business loans were secured through the county and the Iron Range Resources and Rehabilitation Board.

"There were a lot of strong people on the council, and they courted businesses," Norregaard said.

A rubber plant that repurposed old tires into rubber mats moved into town. The company still operates in Babbitt as Black Iron Rubber. Other businesses located there, and Babbitt achieved the status of Star City.

The Star City program provides grants and other benefits, such as tax credits, to communities seeking economic development through private sector employment. "We were one of the first cities to acquire it," Norregaard said.

The community truly "came together to do what

it had to do to survive," said the mayor. "Most people were able to pick themselves up and look at new opportunities they wouldn't have taken otherwise."

For instance, some — including Norregaard — went back to school and attained two- or four-year degrees. "Many had dreamt of going to school" while working at the mine, she said. "But how do you give up a good-paying job?

... It really gave us opportunities."

Norregaard worked for four years as a reporter for the Ely Echo. "I was able to hang on."

But not everyone could. A number of residents moved away, and "our housing market was depressed," Norregaard said. "There were many foreclosures. The banks were selling houses for under \$10,000."

The listings were adver-

tised as far as Chicago. "A lot of retired folks" began buying the homes, turning Babbitt into "a kind of retirement town," she said.

But then, things started looking up when Cyprus Minerals Co., of Colorado, purchased the mining company, and operations reopened in 1989. Gov. Rudy Perpich had traveled to Colorado "to talk them into taking over," said the mayor.

SEE BABBITT, PAGE 52



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PHOTO COURTESY OF BABBITT HISTORICAL SOCIETY

Babbitt School students taking a cruise in the 1950s.

BABBITT

FROM PAGE 51

In 1990, the operation became Northshore Mining Co. Four years later, Cleveland-Cliffs (now Cliffs Natural Resources) purchased the property from Cyprus Minerals.

For Norregaard, "it was tough from '82 to '90 ... with four kids, and I had some health issues." But she returned to mining when Northshore opened — again driving trucks and working as a heavy equipment operator. She would stay on with the mine for 20 1/2 years.

At one time, Babbitt had a population of more than 3,500. Today it's at 1,501,

Norregaard notes. "You can't forget that one person," she said.

"Probably at least 40 percent (of the residents) are retired," and some have moved into assisted living. But, "we're starting to get some younger families in here. It's good to see little ones running around."

The town has "held together," thanks, in big part, "to the tenacity" of its citizens. "You can blame it on the resilience of the people," says Norregaard.

That continued resiliency was demonstrated a few years ago, when the town's only grocery store, Zup's, was destroyed by a fire, she said. "Neighbors were getting groceries for neighbors" who couldn't make it out of town to purchase them. "Everyone was pulling for (the store) to

reopen," which it did.

After Reserve shut down, the town acquired a new attitude, said its current leader. "We all realized the only thing that's constant in our lives is change — to expect the unexpected and go with the flow." And if something gets you down — "get up and try something else."

"I see Babbitt's future as very bright," Norregaard said. "There are opportunities with the copper/nickel mines. If you do it right, there are not a lot of health hazards." And she believes that such mining would be handled responsibly. "I think the mines benefit from being environmentally conscious."

Should that come to be, "a couple mines will be within the city limits and few will be outside," she said. Babbitt has

108 square miles of land, and Norregaard foresees it being "a hub for industries" that support the mines. It would "make economic sense" for those businesses to be located close to the plants, she noted.

"People here have a good work ethic." And they take pride in Babbitt, she said. "They keep their houses clean and neat." Even visitors take notice, said the mayor. "When we host politicians and CEOs, they always say how we keep trash out of sight and how the town looks so good."

The little community that grew out of a ghost town is certainly well and alive.

"I'm really proud of the town and its people," Norregaard said.

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Eveleth Taconite/ United Taconite 50 YEARS OF MINING

BILL HANNA
MESABI DAILY NEWS

EVELETH — When the history of Eveleth Taconite/United Taconite is traced back to the mine's opening five decades ago, it was owned and operated by the Ford Motor Co.

Ford's influence remains today in names of the mine's facilities — the Thunderbird Mine and the Fairlane Plant.

But when a big dip in the roller-coaster ride, which is often no journey of joy in the cyclical mining industry, hit Eveleth Taconite in 2003, the company filed for Chapter 11 bankruptcy protection, leading to the mine's closing.

The ignition just wouldn't fire any more for Ford Motor's Thunderbird and Fairlane on the Iron Range.

But soon, with the great help, connections and influence of former 8th District Democratic U.S. Rep. Jim Oberstar, China became a major player in reopening the mine as United Taconite — a partnership



Former Congressman Jim Oberstar, second from left, joins the celebration of the reopening of the Eveleth mine as United Taconite when Cliffs purchased the property in 2003.

SUBMITTED

SEE 50 YEARS, PAGE 54

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SUBMITTED

An historic achievement is recognized in 1968 at Eveleth Taconite.



Minnesota U.S. Sen. Hubert Humphrey, who also served as vice president from 1964-1968, is shown during a gathering at Eveleth Taconite.

50 YEARS

FROM PAGE 53

between Cliffs Natural Resources and the Laiwu Steel Group.

Eveleth Taconite and United Taconite have produced iron ore for 50 years now in Eveleth; with 10 years of ownership by Cliffs.

On Sept. 14, Cliffs Natural Resources held a celebration to mark that anniversary of Iron Range history.

The event was held at the Range Recreation Civic Center. Speakers included DFL Gov. Mark Dayton; 8th District Democratic Congressman Rick Nolan; DFLers state Sen. Tom Bakk of Cook, and Rep. Jason Metsa of Virginia; Jerry Fallos, representative for U.S. Sen. Amy Klobuchar; John Rebrovich of the United Steelworkers; Terry Fedor, Cliffs'



Minnesota Gov. Mark Dayton speaks at the Sept. 14 Cliffs Natural Resources celebration of 50 years of mining at Eveleth Taconite and United Taconite.

executive vice president of U.S. Iron Ore Operations; and Santi Romani, United Taconite general manager.

It was a festive event that included public tours, music, historic photos and other memorabilia, ice cream, chips, and bags of rock candy chocolates. And every visitor received a

medallion keychain to commemorate the anniversary.

"Our theme here today is 'Together United.' And that message is more than just words on a page ... it signifies the relationship we have with our employees and the surrounding community," said Fedor.



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AMFA

Serving manufacturers that serve the mines

KELLY GRINSTEINER
HIBBING DAILY TRIBUNE

We all know how important mining is to Northeastern Minnesota, but there's another "m" industry that's crucial to the state's and area's economy.

And like mining, this business sector is cyclical but often celebrates successes.

"Last year, manufacturing contributed over \$43 billion to our state's economy and employed over 300,000 workers," Gov. Mark Dayton boldly proclaimed last week during Minnesota Manufacturers Week, which is designed to educate the public about manufacturing's role in the state's economy.

Adding to that, manufacturing accounts for 16 percent of Minnesota's gross domestic product, and the industry accounted for \$19.3 billion in state exports last year.

Minnesota Manufacturers Week also is a chance to highlight opportunities for employment in the industry. In fact, more than 30 percent of all jobs in Minnesota are in manufacturing.

"Manufacturing accounts for one in nine jobs in the state, and each manufacturing job supports nearly two additional jobs elsewhere in the economy through supplier purchases and employee spending," said Commissioner Katie Clark Sieben of the Minnesota Department of Employment and Economic Development (DEED). About 307,000 people work in manufacturing in Minnesota, primarily in such areas as computer and electronic products, foods, fabricated metal products and machinery.

And the jobs pay well. Salaries in the sector are much higher than most other industries in the state because many manufacturing jobs require high-tech skills to operate advanced technology and computer-controlled equipment.

The average manufacturing position in the state paid \$59,565 last year — over \$10,000 more than the typical job in Minnesota, according to DEED.

The economic impact of manufacturers is substantial, and the industry is extremely important. And it's also tied to the Iron Range's top industry — mining.

"It should be no surprise that many AMFA members provide products and services for the mining industry," said Sandy Kashmark, executive director of Arrowhead Manufacturers & Fabricators Association (AMFA).

Founded in 1997, AMFA is a nonprofit organization dedicated to helping to strengthen and grow the manufacturing and fabrication industries in Northeastern Minnesota and Northwestern Wisconsin.

"The membership includes manufacturers like ME Elecmetal, a 185-employee foundry located in Duluth that produces wear parts for



SUBMITTED

AMFA Educational Trust provided a \$1,398 grant to Chisholm High School for purchase of a laptop computer capable of running EnRoute Pro 3D software, a program that is particularly suited to running the school's existing CNC wood router, this year. The funds also covered the cost of a set of 3D router bits. According to instructor Erik Kuusinen, "These enhancements to the classroom will greatly assist in teaching students how to design and make parts, as well as providing general exposure to CNC software." Pictured are, front: Erik Kuusinen of Chisholm High School and AMFA board members Jeremy Lehman and Mary Brandt; back: AMFA board members Elissa Hansen, Gene Betts, Gary Werkhoven, Todd Hanson, Sandy Bryant and Bill Grau.

nology and computer-controlled equipment.

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"The membership includes manufacturers like ME Elecmetal, a 185-employee foundry located in Duluth that produces wear parts for

mines," said Kashmark.

"The 45-employee company TRITEC Steel in Virginia is currently working on a contract for over-sized 'haul boxes' used by local mines. The family-owned Lehman's Machine in Iron is a two-man operation that

performs low-volume contract work for the mines and other industries."

And these are just three examples of the numerous manufacturers in the region that produce critical products and components to sup-

port the mining industry.

Now 129 members strong, AMFA provides member companies with networking opportunities, education, benefit programs, advocacy, industry promotion and more.

"In addition to manu-

facturers, the AMFA membership includes service providers," said Kashmark. "And these entities, too, play a role in the success of the mines."

Companies like Productivity and W.P. & R.S.

SEE AMFA, PAGE 57

AMFA

The AMFA Board of Directors will review membership applications from:

- Metal fabrication companies
 - Companies that supply the metal fabricating industry, such as: steel supply, tool supply, metal finishing, etc.
 - Service providers to metal fabricators, such as: financial institutions, insurance companies, consultants, educators, government agencies, etc.
 - High schools in the AMFA service region are encouraged to apply for FREE membership in AMFA
- And others ...

Source: www.amfa-mn-wi.org



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KELLY GRINSTEINER/HIBBING DAILY TRIBUNE

Mesabi Radial Tire, with the help of Michelin, introduced radial earthmover tires to Minnesota's mining industry almost 30 years ago. Today the company offers the full line of Michelin Earthmover tires to help customers achieve lower cost per hour, longer tire life and outstanding performance in the battle for increased productivity.

Decades of experience in mining, construction

KELLY GRINSTEINER
HIBBING DAILY TRIBUNE

HIBBING — When mining outfits, construction companies and other industries need somewhere to turn for total tire and wheel service, a Hibbing-based, family-owned business is often recommended and steps up to do the job — and do it well.

Serving the Iron Range since 1953, Mesabi Radial Tire Company is not only one of the oldest, but also the area's most respected earthmover tire distributor.

"We are a supplier of OTR tires (off the road) for the mining and construction industries of Minnesota and North Dakota," said Dave Cicmil, general manager. "In that capacity we are a full service provider of on-site tire performance programs and tire repairs."

The company offers the full line of Michelin Earthmover tires to help customers achieve lower cost per hour, longer tire life and outstanding performance in the battle for increased productivity.

Mesabi Radial Tire Company was founded in 1953 by Carl D'Aquila, and has continued to grow and increase in success since. Customers range from the shores of Lake Superior to the coal mines of North Dakota.

"MRT has evolved over the years representing a variety of

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- ❑ **Technical support** — technical support services are available when required.

MINE V

tire manufacturers and providing a diversified product mix including wheels and wheel assemblies, batteries and cast and forged steel products," said Cicmil. "Additionally, we repair and service large industrial tires and, over the last two years, we have become very data driven and now offer a complete suite of analytic tools and services which can dramatically extend tire life and reduce the operating costs of our customers."

Mesabi Radial Tire, with the help of Michelin, introduced radial earthmover tires to Min-

nesota's mining industry almost 30 years ago.

Even today, the company remains very focused on the mines, according to Cicmil.

"That's why we strive every day to work with our customers to improve their operating performance and reduce their operating costs," he added. "We believe that we have earned the trust of our local mining operators because we always put their interests first."

And, as we all know, the mining industry can be volatile. Cicmil said the company is well aware of it, adding

that is why they look at internal efficiencies and operate as best they can.

"Mines need to run on tires. We don't take that for granted," he said. "We work hard for our customers and that hard work helps us through those times. And, the more we can help them reduce their operating costs, the less volatile the industry will be."

In addition to the tacnite mining industry, the company's expertise is now being put to use in the coal mining industry in North Dakota.

"MRT provides sales and service to the iron mines on the Iron Range and the coal mines of North Dakota," noted Cicmil. "Additionally, we provide product and services to the construction and infrastructure industries."

The company also recently became the exclusively authorized dealer of Rimex for the Iron Range and North Dakota. Rimex is the world's premier provider of earthmoving rims and associated products to the mining and construction industries as well as the OEM (original equipment manufacturer) truck manufacturing industry.

Mesabi Radial Tire is more than just another earthmover tire and rim distributor. The company offers other services, including: contract maintenance, equipment failure emergency service, equipment operation training, equipment

servicing and repairs, and technical support.

The key to the company's 60-plus years of success comes down to maintaining quality relationships with its customers and suppliers. It's something personnel there takes pride in, said Cicmil.

"We sell and service Michelin tires and Rimex wheels, so we have aligned ourselves with the finest manufacturers in the industry," he said. "Recognizing the importance of the highest quality products and the most value-added services every day has allowed MRT to build its reputation as a best-in-class company and has allowed us to achieve our longevity."

The company has a team of eight people and two full-time affiliate partners from the leading tire technology firm in the world.

"Together, we share responsibilities and decades of experience in the mining and construction industries," said Cicmil. "And we are very customer concentric."

Mesabi Radial Tire planted its roots here, and continues to be family owned and operated. Jim D'Aquila, son of Carl, is current president and CEO.

"Our company and the family are deeply committed to Hibbing and the surrounding Iron Range region," said Cicmil.

Showing its commit-

ment to the community, the company is involved in support of a number of organizations, including: Range Mental Health Center, Fairview Range Medical Center, American Cancer Society and American Heart Association, as well as numerous community youth organizations.

Mesabi Radial Tire is also an active participant in the Tire Industry Association, the Lignite Energy Council and the Iron Mining Association.

Looking ahead, Cicmil said he views the future of mining throughout the region as "very positive."

"We will continue to grow stronger and to evolve, much as we have over the last 60-plus years," he added.

"We will continue to focus not only on the sale of tires and wheels, but we will push forth on our mission of becoming the leading value added services company in the industry by continuing to invest in our team and our analytical capabilities."

The D'Aquila family is deeply interested in remaining an independent company to assure that customers that they will remain in the center of Mesabi Radial Tire's focus.

"We are greatly appreciative of our customers," and Cicmil. "And we will work passionately to continue to earn their trust and confidence on a daily basis."

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AMFA

FROM PAGE 55

Mar Co. provide a ready supply of tooling, accessories and industrial supplies. Post-secondary education members provide the training needed by entry level workers as well as customized training for the incumbent workforce.

"The AMFA membership includes lending institutions, insurance providers, consultants and other agencies that specialize in meeting the needs of the mining industry," she explained.

Also like the mining industry, Kashmark said the manufacturing industry has faced a similar challenge in recent years — finding employees with the aptitude and skills needed to be successful on the job.

"Many AMFA projects and programs in recent years have focused on getting the word out to young people, along with parents and teachers, that manufacturing careers are high wage, high demand, and often, highly skilled," she said.

"The public is largely unaware that today's advanced manufacturing facility is not the dark, dirty, repetitious shop of yore."

Several efforts, like "Dream It. Do It." and "Tour of Manufacturing," have been launched in an effort to change public perception.

AMFA is also building relationships with K-12 schools in the region with an offer of free membership and free meeting attendance, according to Kashmark.

AMFA oversees an organization called the AMFA Educational Trust, an entity that addresses the workforce shortage from a different angle.

"This organization provides funding to local K-12 schools to support projects and programs that expose students to STEM education," she explained.

"Whether it be funding for a FIRST team or LEGO League team, the purchase of welders or tooling for 'shop class' or funding the cost of a field trip to visit a local manufacturer, the AMFA Educational Trust contributes



SUBMITTED BY AMFA

Superior Steel.

to increased awareness of skills that are well suited for a career in manufacturing."

It's AMFA membership that keeps it alive and thriving. This volunteer-driven organization is funded almost exclusively by membership dues.

Jeremy Lehman, vice president of Lehman's Machine, Inc., said his company has benefited greatly from networking at AMFA meetings.

"AMFA allows us to get our company name out to manufacturers that are potential customers," said Lehman, who also serves as president of AMFA Educational Trust. "We also connect with several current suppliers through AMFA."

The AMFA Educational



Trust enables Lehman's Machine to support area technical education programs to ensure availability of a skilled workforce not only for the company, but the region as a whole, he added.

"We have met a lot of like-minded people, and it's great to be able

to bounce ideas back and forth," said Lehman. "Manufacturing literally built this country, and we are grateful for the support of a local organization like AMFA."

AMFA contracts with Midwest Manufacturers Association, a "parent office" located in Elbow Lake, Minn., for services

like newsletter publication, database maintenance, and meeting coordination.

"Midwest Manufacturers' Association provides like services for four such associations that have a combined membership of over 450 companies employing over 30,000 people in manufacturing," said Kashmark. "Affiliation with the parent office enables AMFA to readily collaborate with manufacturers across the state."

For more information about AMFA, log on to www.amfa-mn-wi.org or contact Sandy Kashmark at Midwest@runestone.net or 877-330-2632.



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Not only did we balance the budget, but listed below are just a few of our other accomplishments:

JASON METSA

SENIORS

- Increased property tax refunds to 5,140 senior/disabled homeowners and another 5,400 seniors/disabled renters.
- 5% increase in nursing home state contributions.
- 6% increase to home health care workers giving our loved ones the opportunity to stay at home.

I voted to help the greatest generation.

JOB

- Minntac expansion permit.
- \$24,500,000 to repay the 21st Century Mineral Fund from Pawlenty's unallotment.
- \$7,100,000 to Hoyt Lakes to help Segetis in build a state-of-the-art \$105,000,000 biochemical plant. This will create 70 living wage jobs.

We have a lot of work left to do, but we're off to a good start.

WOMENS' ECONOMIC SECURITY ACT

- This law will help to close the gender gap in pay inequality and provide family leave for young mothers.

Women in my district make 64 cents to every dollar a man does. That's not right.

HIGHWAY/BONDING

- \$19,500,000 to move Virginia Public Utilities, Mesabi Trail, and snowmobile/ATV recreation trails for the Highway 53 relocation.
- \$1,000,000 for the North East Regional Corrections Center facility improvements in Saginaw.
- \$700,000 St. Louis County Sheriff's Rescue and Storage facility.
- \$3,000,000 to fund the Arrowhead Economic Opportunity Agency and Range Mental Health Center co-location.

MINIMUM WAGE

- We raised the wage to \$9.50 by 2015 to make sure the wage for all workers covers the basics.

Everyone who works 40 hours a week should be able to get by.

EDUCATION

- Increased school funding statewide to make the largest investment in our schools since the Minnesota Miracle.
- \$38,000,000 in bonding for Range schools.
- Funded all-day kindergarten for all families in Minnesota.
- Closed the funding inequality gap per pupil between metro and greater-Minnesota schools.

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PRO BLAST

Striving for quality, environmental compliance

TONY POTTER
HIBBING DAILY TRIBUNE

KEEWATIN — Joe Godwin started abrasive blasting and painting from his home in Penngilly nearly 20 years ago after discovering it was a need of mining companies, home and business owners, loggers, industrial plants and contractors.

Due to an ever-growing customer base, Pro Blast Technology, Inc. moved to a new facility in Keewatin in 2013 to continue meeting the demands of the community for quality, environmental-friendly services.

"We're very diversified in terms of what we offer," Godwin said, noting the company's use of polyurea is a big draw. "It protects steel chutes from wearing, and it's extremely slippery so it battles sticking ... even when it's cold out."

Polyurea is a type of elastomer used for coating or lining over concrete and steel for purposes of corrosion protection and abrasion resistance. Pro Blast is the only company in the area to use the technology, Godwin said.

"It's very abrasive. It's chemical resistant, and it's environmentally friendly," he said.

Like Pro Blast's other products, polyurea is known for its high quality.

"Mining companies typically turn to contractors for these services, but our product has a longer life," Godwin opined.

Pro Blast's other services include: abrasive blasting, painting and spray foam.

Abrasive blasting smoothens, shapes and cleans hard surfaces by forcing solid particles across the surface at high speeds. The process is used to remove rust and paint from industrial equipment, fabrication components, structural steel or pipe in preparation of painting or coating.

PRO BLAST: ADVANTAGES OF POLYUREA



Pro Blast Technology, Inc. is the only company on the Iron Range that uses polyurea for coating and lining over concrete and steel. The benefits of polyurea, include:

- No volatile organic compounds and little to no odor
- Extremely fast dry times
- Extremely abrasive resistant
- Can be applied extremely slippery or extremely rough
- United States Department of Agriculture (USDA) approved
- Weather tolerant as it cures from 25 degrees below zero up to 300 degrees, even in high humidity
- Excellent resistance to thermal shock
- Flexible
- Waterproof, seamless and resilient
- Unlimited thickness in one application
- Excellent bond strength to properly prepared surfaces
- Resistant to various solvents, caustics and mild acids
- Low permeability

MINE V

After the surface is properly prepared, Pro Blast also repaints equipment. Refinishing heavy equipment prolongs its lifespan and enhances its resale value, Godwin said.

"We apply finishes that rival those that come directly from a factory," he said. "Ninety-nine percent of people say 'wow, it looks new. I didn't expect it to look like that.'"

Pro Blast deals with spray foam as well.

The foam insulation is installed as a liquid so it can expand to fit the desired area, and allowing for creation of foam that is semi-rigid and soft to the touch or foam that is resistant to foot traffic and water.

Godwin said spray foam can be used for roofing; air barriers; insulation in walls, ceilings, attics, basements, pipes and tanks; and flotation for boats, ships, barges and floating docks.



TONY POTTER/HIBBING DAILY TRIBUNE

Owner Joe Godwin started Pro Blast Technology, Inc. in 1996 to meet the abrasive blasting and painting needs of mining companies, home and business owners, loggers, industrial plants and contractors.

And on top of quality, Pro Blast offers quantity. The company can service from 40,000 to 50,000 pounds of steel per day, Godwin said.

"Our customers keep coming back because they're pleased with our work every time," he said.

But Godwin said he is most proud of the work his company has done with the Minnesota Pollution Control Agency (MPCA).

"We work very diligently with the MPCA and are very careful to make sure we're not polluting," he said. "It's the law, but I strongly agree with it."

Godwin said he gets riled up when he hears of incidents such as when paint thinner is spilled and then left on the ground.

"Some people might say whatever and just move on, but I'm a 'what if' guy," he said. "I

know how much harm that can cause to the environment. It's not OK."

At the end of the day, continuing to provide quality, environmentally-compliant services is what is most important to Godwin.

"That is what it all boils down to," he said. "When we constructed this facility last year, we made every effort possible to make sure the operation was as green as possible."

Pro Blast TECHNOLOGY

New Location In Keewatin, MN

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GUEST COLUMN

MARY HESS
Aurora Mayor

MARK SAUER/MESABI DAILY NEWS
Aurora Mayor Mary Hess poses in front of the cities "We Support Mining" sign.



COMMUNITY'S BEEN DOWN, BUT NEVER OUT

The year was 2001, and I was employed at the State of Minnesota's Iron Range Resources & Rehabilitation Board.

Our commissioner had scheduled an all-staff meeting. The topic was the status of LTV.

We all realized that there were difficulties with the company and the commissioner was giving our staff an overview of the company's intentions and seemed quite optimistic of its intentions.

But, unfortunately, in the midst of the meeting, he received a call with the devastating news that LTV was filing bankruptcy and permanently closing.

I will never forget that day and the reactions in the room. It was fear, panic, anger, disbelief and sadness. We all, of course, had friends, relatives or immediate family who would be affected, actually changing their lives completely. Approximately 1,400 jobs would be lost, plus the spin-off jobs. Not only would these people lose their wages, but all of their benefits and insurance. Retirees also were severely impacted by this as they would lose their insurance and pensions would be affected.

This closure would have a profound impact on local businesses and the entire community and region immediately.

Some of these employees found work in other mines or other companies in the area, including Mesabi Nugget which went into production in 2005, some of them chose to go back to school and retrain, but many left. Where would there be 1,400 jobs? These people had families to support.

This area has experienced a dramatic economic decline and businesses and service agencies have suffered and are struggling. The City of Aurora has struggled and the costs keep going up. A few examples would be gas and oil prices, supplies, maintenance of buildings and equipment, equipment replacement, employee benefits, etc.

Of course, this expense become a burden on our citizens, the taxpayers. We always have street repair and infrastructure work, waterline breaks, street replacement, etc. This expense also becomes a burden on our citizens, the taxpayers.

Yes, fortunately, we have been able to complete several street projects with matching grants, but grants normally call for matching funds from the

city. Fortunately, we have an agency like the IRRRB that provides for this area, as well as eligibility for CDBG grants, etc.

As they say, "When the going gets tough, the tough get going!" That certainly has been the rule of thumb with the fine citizens of this community.

Even though experiencing tough times, in April, 2006 citizens of the community passed a school referendum for \$15.25 million for a new K-12 Mesabi East School offering the latest technology for students to succeed in today's highly technical world. I believe the total project cost was \$18 million-plus, and we received \$3 million from the IRRRB.

During this time, the City of Aurora also built a new Wastewater Treatment Plant to the tune of more than \$7 million. We were eligible for grants for this project, but not entirely. Again, a burden to our citizens, the taxpayers. This project was necessary due to an explosion that had taken place at the plant.

We have a new clinic now attached to the newly remodeled Northern Pines Hospital and Nursing Home. That complex provides a wide array of services.

As I said, we have completed several street and infrastructure projects through grants requiring matching funds. A Twins Grant, along with matching funds, enabled us to basically build a new ball field at the Pine Grove Park. This ball field is utilized by little league, the school and various organizations.

The city was able to sell a couple of the buildings we owned, thus getting those buildings and property on the tax rolls. Actually, three new commercial buildings are being currently constructed, one of which is a 46-unit Assisted Living and Memory Care Facility.

Aurora continues to have many functions, events and projects throughout the year. However, this would never be possible without the help of our volunteers. Our citizens take a lot of pride in this city and volunteering seems to be a number one priority.

As I attend meetings with various mayors throughout the state, I am proud to say that Aurora probably has the greatest network of volunteers. Each year we have a Volunteer Recognition Lunch and this past year we sent out 250 invitations. The citizens of this community are very proud and continue to have hope for the future.

The PolyMet project actually goes back a long time, as far back as 1989 when PolyMet leased the North Met mineral rights from U.S. Steel.

In 2000, PolyMet gained full rights to the North Met deposit and began feasibility studies. In 2004, PolyMet began the environmental review process. In March 2014, the U.S. Environmental Agency rated the SDEIS as EC2 — Environmental Concerns — among the highest ratings a project such as this can receive from the EPA.

Today, 10 years later with millions and millions of dollars spent by PolyMet, the Final Environmental Impact Statement is ongoing.

Now I appreciate the fact that we want to make certain this project is environmentally safe. Of course, we all want to assure safety of our waters, land, natural resources, wildlife and most of all human beings.

I have lived here most of my life. I have a daughter and her husband with two children living in Hoyt Lakes. I have brothers, nieces and nephews who love to hunt and fish and all of us truly love the outdoors and the beauty of this area. I also know that PolyMet officials want to make certain that this project is done right.

The State of Minnesota has the

toughest environmental laws in the nation. I am confident that the state departments involved and PolyMet have assured that all regulatory requirements have been met and that the entire project and process will be closely monitored.

The products we use in our everyday life, a list too long to note, are derived from copper/nickel/precious metals, all in our backyard. Why not mine here where it will be closely regulated?

The PolyMet project would create approximately 360 good-paying permanent jobs, hundreds of spin-off jobs and about 2 million hours of construction work. Also, the project would bring a great potential for new businesses in the area.

As mayor of the City of Aurora, we need permanent jobs. We need permanent residents. We need new businesses and we need to retain the businesses we have. The City of Aurora is preparing, currently working on housing development.

Aurora is a great place to live with friendly and hard working citizens. The city has a lot to offer and is a great place to raise a family.

It is time to move forward! We continue to remain optimistic towards the future of this area.

Proud to support our mining community!

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- ✓ Rentals
- ✓ New
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- Forklifts

- Generators
- Air Hammers
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- Tires
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- Welders



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