## In Unconventional Man With Unconventional Vision

Honoring Harold Hamm, Chairman and CEO, Continental Resources, Inc.

## An Interview with Harold Hamm

The Contrarian Conquers the Unconventional:
Oilman Harold Hamm and his Exploration of North Dakota

By Andrea Winkjer Collin

The story of North Dakota begins with geology." This is the opening sentence in Professor Elwyn B. Robinson's *History of North Dakota*, which remains the definitive history of the state 46 years after its publication. The challenges of the varied land formations created by this geology, along with Northern Plains weather patterns, have dominated the history of the settlement of the state. This land and weather have dictated that those conquering these challenges possess the legendary pioneer spirit which sets them apart from the ordinary.

About those pioneers who challenged the Great Plains, Robinson wrote, "Pioneering in North Dakota, with its hardships, dangers, and isolation, as well as its opportunities, placed a premium on certain traits: courage, optimism, energy and ambition, aggressiveness, and compassion."

The fact that today North Dakota is the nation's largest producer of more than a dozen crops is testament to the fortitude and innovation of its state agriculture pioneers.

But a different brand of pioneer has been needed to solve the mystery of tapping the wealth of another commodity left by North Dakota's geological formations – its energy resources, especially oil. It was 61 years ago on April 4, 1951, when the Clarence Iverson #1 well, located four miles south of the Williams County town of Tioga, put North Dakota on the map as an oil-producing state. The challenge that followed has been how to produce these vast oil reserves to be commercially successful.

One of these pioneers is Harold Hamm, chairman and chief executive officer of Continental Resources, Inc., which today is the largest leaseholder in the Bakken oil field in North Dakota and Montana.

A self-proclaimed "contrarian," Hamm has had a presence in North Dakota since 1988. He has brought his unique brand of Robinson's pioneer characteristics of courage, optimism, energy and ambition, aggressiveness and compassion to help conquer the unconventional oil fields of the Bakken Formation.

North Dakota recently became the third largest oil-producing state in the country, behind Texas and Alaska. It reached a record high of 200 drilling rigs in December 2011, and the annual monthly average rig count increased from 126 in 2010 to 182 rigs in 2011.

In the past five years, North Dakota's annual oil production rose from 45,121,213 barrels in 2007 to 152,907,010 barrels in 2011. And, today there are more oil rigs operating in the United States than in the rest of the world combined.

Over the past 25 years, Hamm has spent a significant amount of time in North Dakota. Continental Resources employs some 150 people

in North Dakota, South Dakota and Montana. In late March, the company officially moved its headquarters from Enid, the town

"I grew up on a farm in a rural area, working with livestock and in the fields. It was a good preparation for what lay ahead for me."

where Hamm started Continental Resources, to Oklahoma City.

In February, Hamm reflected on his life and his exploration of North Dakota in an interview with the State Historical Society of North Dakota Foundation.

#### A family of 15

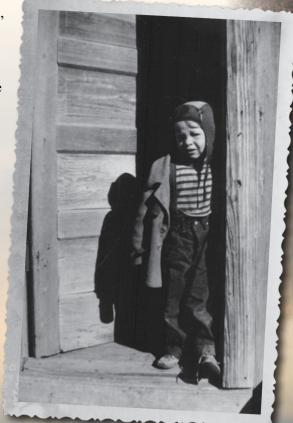
Hamm was born on December 11, 1945, the youngest of 13 children born to Leland and Jane Hamm. He was not brought into a life of

wealth and privilege. His father was a sharecropper, working near Lexington, Oklahoma, located 37 miles south of Oklahoma City. Of his early years, Hamm likes to tell audiences, "I wasn't born in a log cabin. We got one after we came into some money."

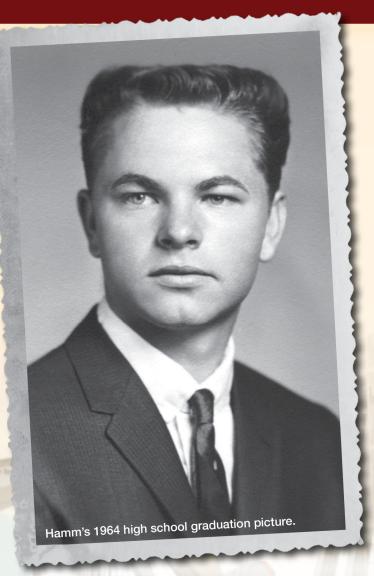
Growing up on a farm in a rural area, he worked with livestock and in the fields. "It was a good preparation for what lay ahead for me."

His family stuck together to help each other. "We all worked for our family unit, and if somebody needed something we'd jump in and help. My parents were generous. They worked closely with the church, and as people had needs around us we would help, give what little we had, whatever was needed. Even with 13 kids in our family a lot of times we'd take people in who didn't have a home, to help them get by."

Today, Hamm sees the good that came from those circumstances. "Some degree of hardship is good in anybody's life. If everything was



Harold Hamm was raised near Lexington, Oklahoma.



great and we had no challenges, we wouldn't know how to meet adversity and overcome it. Certainly looking back on my life there were a lot of adverse situations that our family would try our best to overcome. We weren't a lot different from any other family growing up in that time. There were a lot of poor folks who didn't have much, and if you had your health and family you felt blessed. And, we certainly did."

When he was 17 years old, Hamm moved 130 miles north to attend high school in Enid. Nearby were the oilfields around the town of Hennessey. "When I came to Enid, I'd never been around an oil field, and a new technology, the fracture stimulation of what's called river cracks, was pumping fresh water into the Mississippian Formation. This had caused quite a boom in 1960."

It was a unique time in Enid's history and it had an impact on him. "I came there in 1962, and I was able to see this oil and gas development and be around oil people and sense who they were."

The impressions he was forming were reinforced one day at a high school assembly. "There on the stage was a gentleman wearing a white shirt with his sleeves rolled up, working a potter's wheel." It was John Frank of nearby Sapulpa, who owned Frankoma Pottery Company.

"He kneaded a large amount of clay on the wheel, built a vase, a beautiful vase, tore it down, then started over. All the time he talked about his love of the arts and building things. That was his passion. He spoke to everybody, but I thought he was talking directly to me. He talked about finding something in our lives that we could be passionate about and to follow that dream."

That caught Hamm's attention. "I thought, 'Well, gosh, what could I be passionate about? I'm going to high school. I'm working at a truck-stop pumping gas and fixing flats.' But I looked at the oil and gas development running from south and northeast of Enid. What I saw was very unique. I determined that was something I could be very passionate about. That captured my imagination as a young man."

Eager to learn more, he wrote a thesis paper on oil in his high school distributive education class. The more research he did the more he was enthralled with this ancient resource.

"I also saw these oil people around me who were charismatic and big-hearted. But it went deeper than that. These were big people. Frank Phillips and the Gettys and Skellys and all those people here in Oklahoma from the oil and gas industry had given their entire fortunes away developing Oklahoma. I wanted to be a part of that. I thought that if I could take an idea, a concept, and develop that concept and create it by being a little bit smarter than anyone else had been before me, perhaps I could unlock this hidden treasure and create a vast





"Early on I learned about oil in North Dakota.
People from there would tell me about
the winters, what it was like to operate
equipment there, some of the challenges,
and also the great fields there."

amount of wealth. That thought grasped my mind and I decided to go with it. I have never lost that dream."

He started on his dream at the bottom, working for Potter Oil Company and later for a short while Champlin Petroleum. He then had an opportunity to buy his own service equipment with a \$1,000 loan. "I started a little service company with one truck and built that company up, but I wanted to find oil and gas. I wanted to be an explorationist and so I started learning as much as I could. I learned from everybody I was around, all facets of the business, the engineers, geologists and geophysicists, just everybody."

In 1971, Hamm stepped out and drilled a wildcat well. "I bought some leases on an idea, a prospect, a geologic concept in Alfalfa County. The well was about five miles

from existing production and it came in extremely well, producing about 75 barrels an hour. I developed this little field of about six million barrels of oil."

Every oilman's dream is that his first well is

successful. Hamm's dream was realized. "That's where it started. That field enabled me to go to college, something I hadn't had the opportunity to do before. I didn't go for the degree, I just went for the knowledge and to develop the skill set in geology that I used to find more oil and gas. It served me very well."

Hamm's first well was successful, enabling him to go to college to study geology 10 years after high school.



Hamm's company changed its focus from gas to oil in the late 1980s, and turned its attention to the Williston Basin.

He attended classes at Phillips University in Enid.
Because of the opportunity he and others in his family had to go to college, Hamm has been a strong supporter of higher education. "It's very important. My family was in a cycle of poverty that we could have never gotten away from without education. I've been very involved in wanting to strengthen higher education."

And just as John Frank encouraged him when he was in high school, Hamm has spoken to students over the years, hoping that he might also inspire some of them to find their passion.

#### North to Dakota -

Early in his career Hamm learned about oil in North Dakota. "The oil and gas business is a pretty close-knit group. People who worked up north would tell me about the winters, what it was like to operate equipment there, some of the challenges, and also the great fields there."

Through the 1980s, Hamm's company had been involved primarily in oil development in the Midcontinent area of Oklahoma, producing about two-thirds gas and one-third oil. "That's what the Mississippian rocks here will give you."

But, when the country had a glut of natural gas in the late 1980s, Continental Resources decided to change its emphasis to the discovery of oil. "We did a study of all the basins in the country, and the Williston Basin came up as one that produced oil and not a lot of gas. That caught our interest."

Hamm remembered a conversation he had with a longtime engineer friend from Tulsa. "He and his wife had been traveling through the Rocky Mountain Region and he pointed out to her the large oilfields and what company operated them. Pretty soon his wife looked at him and asked, 'Why are all these companies operating here the major oil companies?' He replied, 'Well, they weren't major oil companies when they found those fields. Those large fields were company makers.' So, I went up there to find oil and as an explorationist to find really large fields. That was my focus."



#### Early Williston Basin success -

His interest in Williston Basin oil came at a time when many companies had left the area when the boom of the late-1970s ended. In 1989, he found oil in the Mid Fork field near Lustre, Montana. Four years later he started drilling in the Cedar Hills Red River B Field in the far southwest corner of North Dakota.

"In 1993, there were only four rigs running in the state. It was out of favor for exploration."

Hamm saw what was happening in Canada at the time and he thought that North Dakota should consider emulating it.

"There was a new concept up there, kind of a novel idea at the time, which was called horizontal drilling. In 1993, Saskatchewan had passed an incentive that there was no tax on the first 100,000 barrels produced, so it was a great trigger for horizontal drilling. It had really taken off. The rig count had sprung up to about 300. Considering that the Williston Basin straddles the United States-Canadian border, we felt the same rocks were on the United States side and maybe the same thing could happen here."

He met with many state officials in North Dakota. "Our message was 'let's help get something started over here. Let's see if horizontal drilling will work here, as well."

Then-Governor Ed Schafer was one of those with whom Hamm met. "He not only grasped the idea, he really ran with it," Hamm said of Schafer. "He actually went into the legislative committee meetings and urged them to go forward with the idea. This was unique to me. I had seen governors operate in other states, but I'd never seen that before."

In 1995, North Dakota adopted a tax incentive trigger for horizontal drilling. Today, nearly all wells drilled in the state are horizontal.

Continental Resources drilled its first horizontal wells in North Dakota in Cedar Hills. "We had drilled vertical wells but we felt we needed something else. Unless they were highly fractured, vertical wells there were hard to get to produce economically. We felt that in these thin bed reservoirs like the Cedar Hills field in the Red River B formation horizontal drilling would turn it on. It had good porosity but very low permeability, so the oil would not flow through the rock very well."

Horizontal drilling did work. "It worked extremely well. There was a high cost to do this work and we were in a \$20 per barrel pricing environment, so it was still tough to make all this come together. But it did, and soon we had a pretty nice development going on."

"I've been a contrarian, só to speak. I came into this work through the service business and learned it the hard way with a lot of mentors, geologists, geophysicists and engineers. Learning it was a bit unconventional."

#### 'Breaking the Code' in the Bakken –

The years 2002 and 2003 found Continental Resources in the Elm Coulee Field of the Bakken Formation in Richland County, in the northeast corner of Montana. "We broke the code there." Hamm said, using his term for how they figured out what worked in that oil field. This included hydraulic fracturing, which had just begun to be used with horizontal drilling in the area, with promising results.

He was ready for a new challenge. "I thought that if this works here, where's the rest of it? Let's figure it out. We felt like North Dakota could be as good or better than Elm Coulee." Hamm put his geologists to work, mapping the Bakken Formation across the entire Williston Basin. They then visited the Core Depository at the University of North Dakota, which is operated by the North Dakota Geological Survey and contains cylindrical rock cores taken from virtually every oil well drilled in North

To commemorate the 60th anniversary of the discovery of oil in North Dakota, Continental Resources erected two monuments to recognize the Robert Heuer 1-17R well in Divide County. At left, Hamm shakes hands with Robert Heuer of Noonan, North Dakota, as Lt. Governor Drew Wrigley looks on. Below, Hamm speaks at the dedication of the monu-

ment in October 2011 at the Di-

vide County Pioneer Village in

**Crosby.** Susan Tadewald Photography

Dakota's Williston Basin. "We laid out all the cores that cut the Bakken, even though there weren't many of them. While we were there looking at those cores we

actually saw staining down in the Three Forks Formation. I never did forget that, seeing the staining and wondering how it got there. Was it generated in the Three Forks or did it come from Bakken?"

Based on what they saw in the cores, they leased some 300,000 acres across the Nesson Anticline in northwestern North Dakota. They went back to a dry hole in Divide County, the Robert Heuer 1-17R. "We entered an old dry hole so we could quickly get into the zone. It was a pretty short lateral, not real long at all."

Using an assumed business name, Jolette Oil, Ltd., Hamm hoped people would think it was a Canadian decided that this had potential to be huge, so we'd do it on the sly. That winter was brutal, with snowstorms that covered up all the roads several times. But, I remember being there during the fracturing job and watching the



pressures and the zone take the treatment like it did. I thought, 'Gosh, this is going to be phenomenal.'"

Hamm said it was one of those moments in life. "You just realize that you are on top of something that is going to be huge with potential."

The Robert Heuer 1-17R was the first commercially successful well in the North Dakota Bakken that was horizontally drilled and fracture stimulated.

In 2011, as part of the commemoration of the 60th anniversary of oil discovery in North Dakota, Continental Resources erected two monuments recognizing the significance of the Robert Heuer 1-17R well. One was placed at the actual well site near Noonan, and the other at the Divide County Pioneer Village in Crosby.

#### Trial and error-

Based on the results of the Robert Heuer 1-17R, Continental Resources leased several hundred thousand more acres in the Bakken and kept on working.

"While we were treating the Robert Heuer 1-17R the pressures were different than what we experienced in Montana. So the same techniques that we used over in Montana didn't apply, didn't transport very well to those wells in North Dakota. We had to adapt to those conditions, those pressures there that were completely different. We tried a couple of different things that didn't work, so we went through quite a learning phase. The entire industry did."

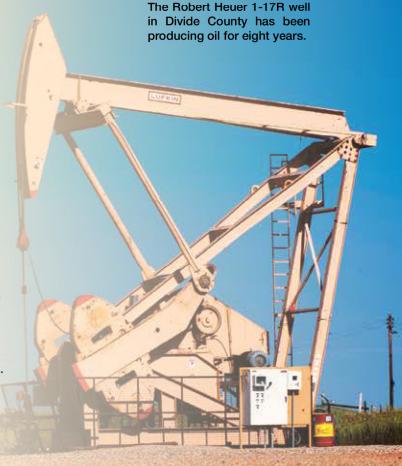
Hamm said it wasn't like turning the switch on, it was breaking the code. "We see the importance of that every time it's tried. We went through it in Montana, and had to go through it again in North Dakota. So from the time of that completion in early 2004 through the next three years, there was a lot of trial and error."

They drilled other wells in the North Dakota Bakken that weren't commercially successful.

"It took everything we could think of to get around that curve. In some of the really good areas we didn't have that problem and it would just come at you. But in most of them, even along the highly productive areas of the Nesson Anticline, it took different techniques."

Hamm says the oil industry shares a lot of data. "This is a great industry we're in. It really is. It may cost our company a whole lot to learn these things, but eventually it is shared with everybody else. So in the North Dakota Bakken we were learning a lot, we learned from others, and others learned from us. But through the whole process we broke the code and we continue to improve the wells today. It's not over."

Today, Continental Resources is working to lessen the environmental footprint with its Eco-Pad™ technology, which drills four wells into different formations from the same location. This is a technology Hamm pioneered in the mid-



"I remember being there during the fracturing job of the Robert Heuer 1-17R well. It was one of those moments that you just realize that we are on top of something that was going to be huge with potential."

1980s with wells under the city of Enid. "When I came up with the idea of Eco-Pads™ in North Dakota, I had already done that 20 years earlier."

#### Comprehending the potential -

In the eight years since the Robert Heuer 1-17R proved that oil discovery in the North Dakota Bakken could be commercially successful, Hamm has tackled other challenges. One has been to more accurately quantify the amount of oil that exists in the North Dakota Bakken, and another has been to help convince North Dakotans

to help convince North Dakotans that this current oil play is going to remain for the long-term.

The United States
Geological Survey made
an estimate in 2008, based
on 2007 data, of 4.3 billion
barrels of recoverable oil in
the Bakken. Hamm's staff was
skeptical. "It's been phenomenal
finding out how much oil can be

recovered in the Bakken. That first estimate excited us and a lot of people. But pretty soon we realized that there was going to be a whole lot more oil than that."

Hamm put together a team to tackle this. "We spent several months assessing the size of this play. In October of 2010 we announced our estimate that the field contained

24 billion barrels recoverable with the technology at this time."

That estimate included 20 billion barrels of oil and 4 billion barrels of natural gas. Their announcement that the Bakken contained six times more than the USGS estimate brought out some naysayers.

"The reaction was very mixed because a lot of people didn't have the data we had. We published a white paper that listed the criteria, the data, the method and how we

came to the numbers. It showed that 48,000 wells would have to be drilled to fully

develop the resource. At that time the industry drilled about 1,500 wells a year, so that was going to take a

long time to develop."

He is pleased that the USGS has indicated a willingness to reassess this estimate, hopefully this year.

"This is particularly good with the advent of the Three Forks and the lower benches. Not as much was known

about them at that time of the first estimate. Now we know there are four benches, thrusting the development down in the Three Forks that's oil saturated, so this is an addition. It looks like my 24 billion barrels are a little bit conservative. Of course, now we're also seeing the production confirming our estimates on where we thought



ourtesy of The Bisi

that would be going."

Hamm's 2010 estimate also helped define infrastructure needs so planning could proceed. "We didn't want the boom environment to overcome everybody."

Throughout 2010, Hamm traveled across North Dakota, speaking to community leaders, legislators and colleagues in the oil industry about the potential of this resource play.

"Many people seemed to think, 'here we are with another dream that is going to be quickly gone.' They didn't want to spend money on infrastructure, or build motels and RV parks or expand their restaurants. They had been burned before in the early '80s. So I toured the state for almost one year telling people about the play, that this was very significant and it was going to be around for 30 or 40 years from now. It was a whole different deal.

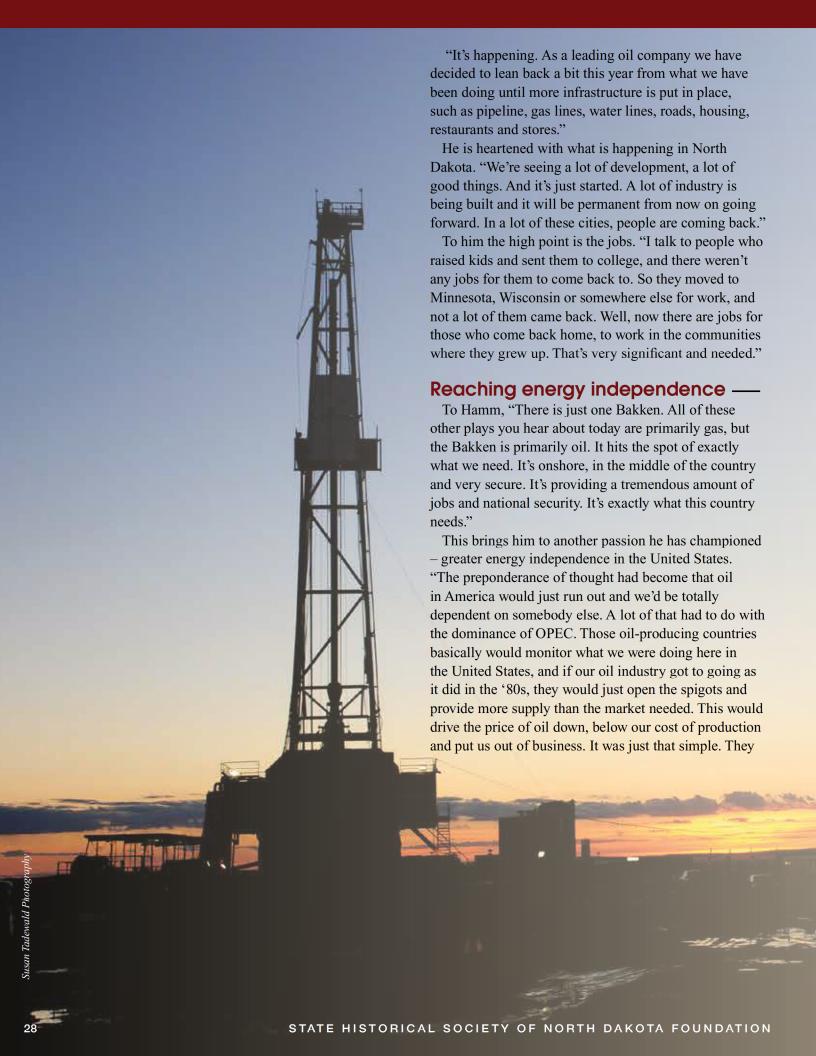
"Before it was just the price. We had a great price for a few years, but it went away and so did the play. But here we have a huge resource that isn't going away. It's going to be here and it's going to be developed. People need to know that."

Hamm is pleased that North Dakota is stepping up with massive investments in infrastructure in western North Dakota.

Hamm has spent a significant amount of time traveling across North Dakota and talking about the potential of the state's oil industry. He is shown on the previous page speaking at an oil conference in Bismarck in 2008. Hamm visited the University of North Dakota in December 2010, at right, examined core samples at the Geology Department, and below, talked to students.







did this over and over and over for 50 years and it was very aggravating.

"Eventually they ran out of that excess capacity, but by then most domestic producers had quit. They didn't know how to drill for oil, and they had lost the will to look for it."

When oil imports got as high as 60 percent, Hamm decided that more people needed to be talking about the importance and significance of domestic oil produced in the United States. He started in 2005, at about the same

and said, 'Gosh, we can't spend a lot of research money on that because it's a novel idea.'

"Today, that novel idea has 98 percent of the wells being drilled in North Dakota that are horizontal. They are not very novel anymore. And not unconventional any longer."

Like the earlier North Dakota pioneers who had their own codes to break with the challenges they faced in agriculture and construction and transportation, Hamm and the other oil pioneers did it in the Bakken oil field.

"I'm a contrarian. I was looking for oil when everybody

# "There is just one Bakken. It's onshore, in the middle of the country and very secure. It's providing a tremendous amount of jobs and national security. It's exactly what this country needs."

time the independent producers in the country made a "declaration of independence" that America could become energy independent.

"We stopped the decline, and by 2008 were adding back to the U.S. supply. I predicted we could get below 50 percent imports, even though everybody thought we could not. Today we are only importing 43 percent of our oil. Within 10 years we can be energy independent in North America with oil from Canada, Mexico and the United States.

"I believe giving people the knowledge and belief that we did this here in America – the hard way – is a very important psychological boost."

He believes the success of unlocking the mystery of finding oil in the Bakken has played a big part in this change of attitude.

"The Bakken has had a lot to do with it. It is very satisfying to see this new attitude. A lot of people deserve credit for stepping up and saying, 'Gosh, we want to be part of this.' It's certainly good for the country, it's good for the companies, it's good for the state, and it's good for the people of North Dakota."

### The unconventional is now conventional -

When Hamm first experimented with horizontal drilling in North Dakota, it was considered unconventional. Likewise, the Bakken Formation has been considered an unconventional oil play. "When we were asking companies to help us develop new bit technology for horizontal wells to do the precision drilling that we needed to stay within a two-foot or three-foot zone, those companies came back

else was involved in natural gas. That was a contrarian move. In fact, about 85 percent of the rigs in the United States for a long time were looking for gas and only 15 percent were looking for oil."

And, while he is talking about the Bakken, the geologist in Hamm clarifies that is not accurate to describe it as a shale play.

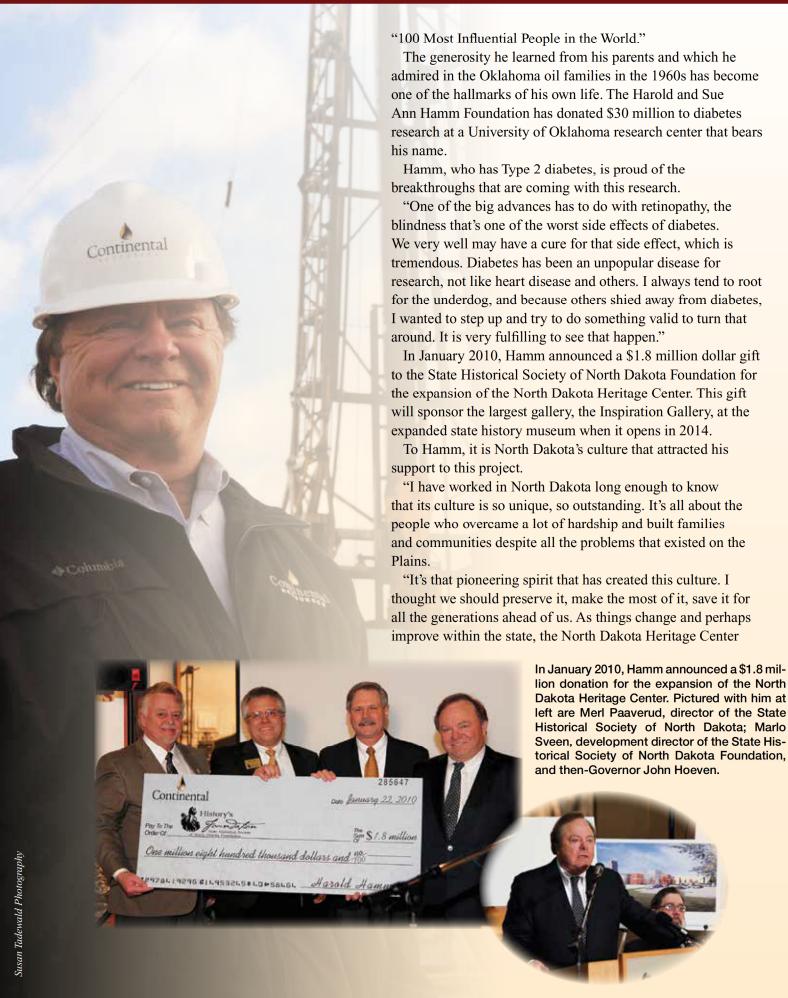
"What we have here is oil that generated from the shales, but actually it's locked up into a dolomite between the shales and also below in the Three Forks. So it went into rock and became almost impermeable. It is tight rock, adjacent to the shale, but it's not shale play. It's a tight rock play, tight oil play as we call it. So it's very unique, but the Bakken is not unconventional. Not anymore."

As for predicting the longevity of North Dakota's current oil play, Hamm compares it to the Permian Basin oil field in west Texas and southern New Mexico.

"We saw the beginning of the Permian Basin development in the 1950s, and 60 years later it's still going on. And, here we are celebrating the development of Williston Basin's Nesson Anticline 60 years later and it still is producing 100,000 barrels a day. That is very significant."

#### A legacy as a leader —

Today, the profession to which he aspired as a high school student has brought him extraordinary success. *Forbes Magazine* has called Hamm "the last American wildcatter." It has also brought him the wealth that has placed him on the annual *Forbes* list of the country's most wealthy individuals. This year he ranked 30th. In April, Hamm was named to *Time Magazine's* 2012 list of the



will let everybody know what their true culture was."

North Dakota's oil boom and strong economy have put the state on a national platform of attention that is unparalleled in the history of the state.

"When you look across North Dakota there is so much to be thankful for. It's tremendous what's going on in education and business. And, particularly with farming, you've got some of the best land anywhere in the Red River Valley.

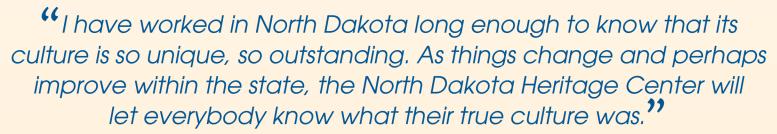
"I think it's high time that North Dakota step forward. It's natural to take a backseat, but it's time to take the front seat. It would be good for the state to build on the pride that obviously everybody has and to demonstrate that pride to the rest of our country and to the world. It's a very diverse, great state. There are so many good aspects, and the oil industry is just one part of it."

As for his legacy as the history of oil development in North Dakota continues to be written, Hamm is reluctant to take credit for the good his involvement and investments have generated.

"I hope when historians look at me I will be considered a leader, as someone with a vision from the beginning for the possibilities in North Dakota to develop something that would benefit the state and its people.

"The state is dealing with a lot of development issues now and it's easy to be negative. But we need to quickly and in a very positive manner turn those into positives for the state. We need to make sure that what we're developing is something that's good, is going to be around for an awfully long time, and will benefit North Dakotans for generations to come.

"I would like North Dakota to remember me for being a part of that."





Andrea Winkjer Collin is a Williston, North Dakota, native who has made Bismarck her home for the past 20 years. Through her business, Capital Communications, Inc., she provides development consulting services to the State Historical Society of North Dakota Foundation. Her other current projects include being editor of North Dakota Horizons magazine, senior editor of the North Dakota Blue Book, and writer for the State Bar Association of North Dakota. A book she wrote, Mr. Wheat: A Biography of U.S. Senator Milton R. Young, was published in 2010.

**Susan Tadewald** is proud to be from North Dakota. She was born in Bismarck and brought up in the countryside, where she found her love of the vast North Dakota prairie and its people. After graduating from the Minneapolis College of Art and Design in 1993, she established herself as a freelance photographer and graphic designer. She owns Susan Tadewald Photography in Minneapolis. Her photographs in this publication were taken October 26 and 27, 2011, in Williams and Divide Counties.

**Additional Photographs** - Continental Resources, Inc.; SHSND and the SHSND Foundation: *The Bismarck Tribune* and *The Grand Forks Herald* 

Design and Layout - Shelly Duppong, Clearwater Communications

Interview Transcription - Jim Davis, SHSND head of reference services



#### **VIDEO PRODUCTION**

Expansion Video – "The North Dakota Heritage Center: An Enduring Legacy, 'The Peoples Place'"

**Video Production - Basin Electric Power Cooperative** 

Editing and Writing – Virginia Nelsen, Executive Director, and Andrea Winkjer Collin, Development Consultant, SHSND Foundation

Harold Hamm Video – "An Unconventional Man With Unconventional Vision" Video Production – Basin Electric Power Cooperative

Writing and Editing – Andrea Winkjer Collin, Development Consultant, SHSND Foundation Narration – Rick Collin, former SHSND Communications and Education Director

Photography – Susan Tadewald, Tadewald Photography

Review and Editing – Virginia Nelsen, Executive Director, SHSND Foundation