

Helium's next big source

Desert Mountain Energy believes Arizona's Holbrook Basin will become one of the world's leading sources of helium

By Nick Parkinson



Central Holbrook Basin



Erwin Olian is hopeful of striking gold again when Desert Mountain Energy (TSX.V - DME), starts drilling for helium in Arizona's Holbrook Basin in early 2019. Olian is Chairman and CEO of the Canada-based company involved in exploration of the "Saudi Arabia of Helium", with the aim to become a convenient, alternative source of the in-demand gas for US customers.

The Holbrook Basin has several of the world's richest producing helium gas fields, including the Pinta Dome and the Navajo Springs. Concentrations of helium gas range up to 8% to 10%, compared to the industry benchmark of 0.3% to 1%.

DME has 39,742 acres under lease as part of its Heliopolis Project in the Holbrook Basin, with additional leases pending, and is excited about what it might find in the underexplored area.

Between 1961 and 1976, 9.23 billion cubic feet (bcf) of helium gas was produced from 22 wells located in the eastern Holbrook Basin, with Pinta Dome being the most productive (6.5 bcf). Low helium prices, coinciding with the end of the space race, led to

the end of production in 1976.

The Holbrook Basin may become another important helium source with the US Bureau of Land Management (BLM) set to be used exclusively by the US government from September 2021.

Olian (*pictured inset*) is optimistic about the Holbrook Basin's chances due to its anticlinal features, favorable reservoir rocks and impermeable caprock traps throughout the Basin.

Anticlines (arch-shaped folds with the oldest beds at their core with rock layers that become progressively older towards the center of the folds), structural domes

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and stratigraphic traps are favorable for sourcing oil and natural gas, as well as helium.

The area is a salt basin, with salt and anhydrite acting as capping mechanisms

to trap helium in the reservoir rocks.

“We think several of these anticlinal traps are actually larger than what is hosted at the Pinta Dome, and potentially could host reservoirs of helium gas equal or exceeding what is already being produced,” Olian told *gasworld*.

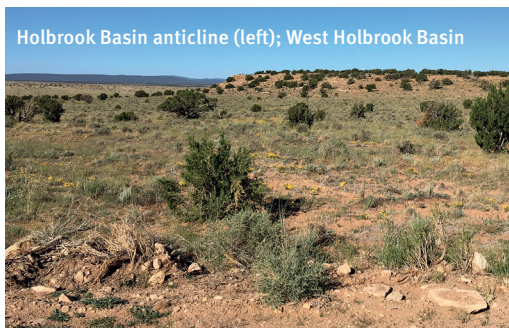
“So we are pretty bullish and think that the numbers could be very exciting.

“We are anticipating the first well to be drilled in the first quarter of 2019. Right now, we are doing targeting work and we are going to be doing some seismic studies in the Fall and we've been on the ground regularly.

“Our plan is to be in the position to drill some time close to the 1st of the year. We are still in the process of prioritizing all of our targets amongst those six different areas throughout the Basin. Three of our areas in the east are not too far from Pinta Dome, the other three go through Holbrook into the western part of the Basin.

“It was very high grade, close to 10% helium, in the gas between 1961 to 1976. So you are talking about some of the highest grade helium in the world, in large quantities.

“That helium was all essentially produced from three fields: the Pinta



Holbrook Basin anticline (left); West Holbrook Basin

Dome, Navajo Springs and East Navajo Springs fields. Those fields, looking at the logs of all those wells, it appears they are about 90% produced out. I know there's some interest for infill drilling and new wells in the basin and that could result in significant new production. A number of companies are looking at that business model and good luck to those guys.

"We chose a different model, which is to look within the basin for all of the potential structural traps that could effectively serve as effective trapping mechanisms to secure the helium in situ in the ground.

"Because of the small size of the helium atom and its light weight, helium tends to escape gravity very quickly moving up through Earth's crust, into the atmosphere and dissipates into space.

"So the key to finding helium is to find the structural traps that has caused the helium to remain in the ground. It's becoming clearer that on Earth there aren't that many places where there has been abundant production of helium combined with the presence of effective trapping mechanisms.

"In the Holbrook Basin you have got a serendipitous combination of all three of the geological factors required to trap helium. Thus, one would hope to find associated with potential commercial deposits of helium.

"We have combed the entire Holbrook Basin and identified seven anticlinal structures that we feel potentially could host commercial high-grade helium deposits. We secured leases on six of them, the seventh being the structure that is occupied by the Pinta Dome at Navajo Springs and East Navajo Springs."

DME has called its Holbrook Basin project 'Heliopolis' after the ancient Egyptian city meaning *City of the Sun* (helium makes up 24% of the sun).

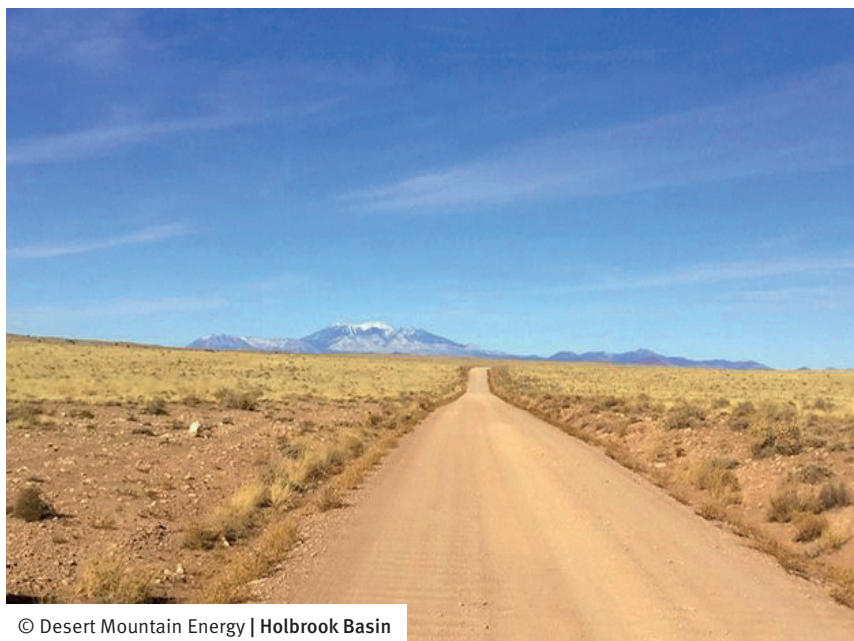
DME believes it has the potential for 50 wells as part of Heliopolis, covering six distinct areas.

Hunting for helium

Drilling for helium and the potential for the project excites Olian, who was previously involved with African Queen Mines before it changed its name to Desert Mountain Energy in March this year after the company's acquisition of helium, oil and gas properties in Arizona and Oklahoma. While at African Queen Mines, and its predecessor Pan African Mining Corp, Olian was on the hunt for gold. Now he is on the trail of helium, which has seen rising prices. ▶

NEED TO KNOW: HELIUM (He)

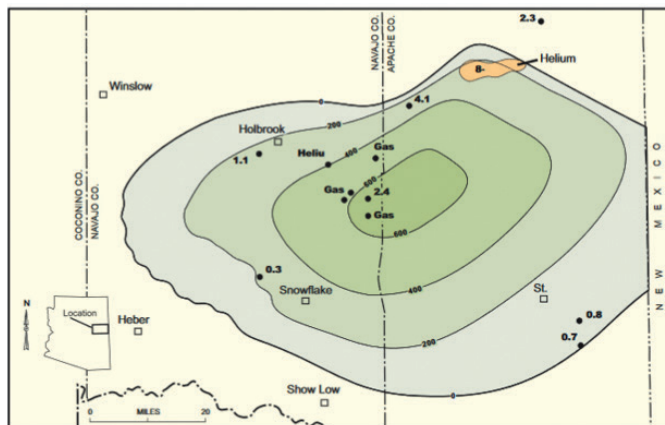
- Helium was discovered in 1868 by astronomers
- It is produced as a by-product of natural gas processing and LNG production
- He has the lowest boiling point of all known elements: -269°C. Its liquid state is the coldest of any element, making it the world's best coolant
- It is non-flammable, non-radioactive, odourless and lighter than air, so is actively being lost to space
- For every 191,000 particles of air about you, one is helium
- America is the world's leading helium supplier, with approximately 55% share of global supply in 2016, followed by Qatar with 32%
- Supply is limited to just six large multi-national companies
- About 6.2 billion cubic feet of helium is used globally every year
- The current global bulk liquid helium market is thought to be worth over \$1.5bn



© Desert Mountain Energy | Holbrook Basin



East Holbrook Basin (left); map of area



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► “We enjoy the potential for making new discoveries,” Olian said.

“For me, that’s exciting. It’s always been the focus of what our company has done in the past when it was in the gold mining business.”

Just as striking gold can make you rich, supplying helium can be a lucrative business with the noble gas’ rising price. The average price of \$279.95 per million cubic feet (MMscf) at August’s BLM annual auction was a rise of 135% from the previous year.

“I think that was a stunning increase and far exceeded what most people anticipated,” Olian told *gasworld*.

“We had been talking to sources in the industry who felt that 50 to 55% over the next 12 months or 18 months might be in line with the supply and demand. I don’t think anybody projected a 135% increase and it’s caught everyone by surprise.

“It has raised a lot of issues because it’s not clear whether these prices are going to sustain themselves and create a new base, and move higher off of this base, or whether there will be a bit of a retraction or normalisation where the prices drift back to something under \$200 again.”

Industry concerns over supply and demand are not dampening Olian’s optimism for the future of helium.

“The reason I’m optimistic is I see the growth in the high-tech sector and continued growth for applications for helium,” Olian said.

“There’s a lot of work going on with helium in new areas and uses are only going to expand, so based on that alone and demographic growth, you are going to have a continually growing demand for helium. I think with diminishing supplies of the National Helium Reserve suggests that there will be continual upward bias in helium price and pressure on supply.

“Supply can cope with the demand only in the sense that I believe uses for helium are actually being frustrated by lack of supplies so I think people will tend to look for alternative ways, other coolants for functions, because they know that helium is expensive and is getting more expensive.

“Projections by the US Geological Survey say the supply of helium is actually going to be declining and that’s by as much as 20% over the next several years. You have what I feel is one of the biggest dislocations in any commodities market that I can ever recall seeing: you have demand growing, surging, from all kinds of different applications, at the same time as the absolute supply of helium appears to be contracting so it’s quite a remarkable macro-dynamic in reference to the pricing for helium. I think that the industry needs to adjust to the new reality that the demand side is so strong with new high-tech buyers entering the markets I don’t see how it is going to retract to a substantial degree.”

Olian is also not worried about competition from overseas suppliers of helium, such as Gazprom from Russia and Helium One in Tanzania after the BLM closes.

“Our feeling is the Holbrook Basin in Arizona is in close proximity to all the US high-tech buyers as well as US aircraft industry, so we’re not really concerned about anyone else because we know we will be able to sell all the helium we can possibly produce to US buyers close by without having to worry about transportation expenses, import and export duties,” Olian said.

“We have a significant advantage over some of the foreign producers in that sense. There are so many buyers in North America for our product.

“We don’t have to worry about what guys are doing in Russia and Tanzania, because who is Google going to buy from? Guys next door in Arizona where they know there’s a secure and safe supply, or people elsewhere?”

“With respect to the Russian helium, I don’t know how much of that is even going to make it into the US market, if any. With the demand in China and throughout Asia, the Russian stuff is going to get sold there so I don’t know how much of that is going to end up over here.

“We don’t have a great ambition to be a big boy in the industry. We just want to be successful and have some fun doing it. I really believe the scope of what we can accomplish is going to be dictated by the quality of the gas that exists there, and the quantity.” 