

Secondary target now in the spotlight

# Unconventional Uteland Butte Sparks New Utah Activity

By LOUISE S. DURHAM, EXPLORER Correspondent

**G**eologic intervals that may have looked a bit ho-hum when pierced by the drill bit on its way to the Real Target can, on second look, yield some pleasant surprises.

The Uteland Butte Member of the Eocene Green River Formation in the Uinta Basin in Utah is one of these.



VANDEN BERG

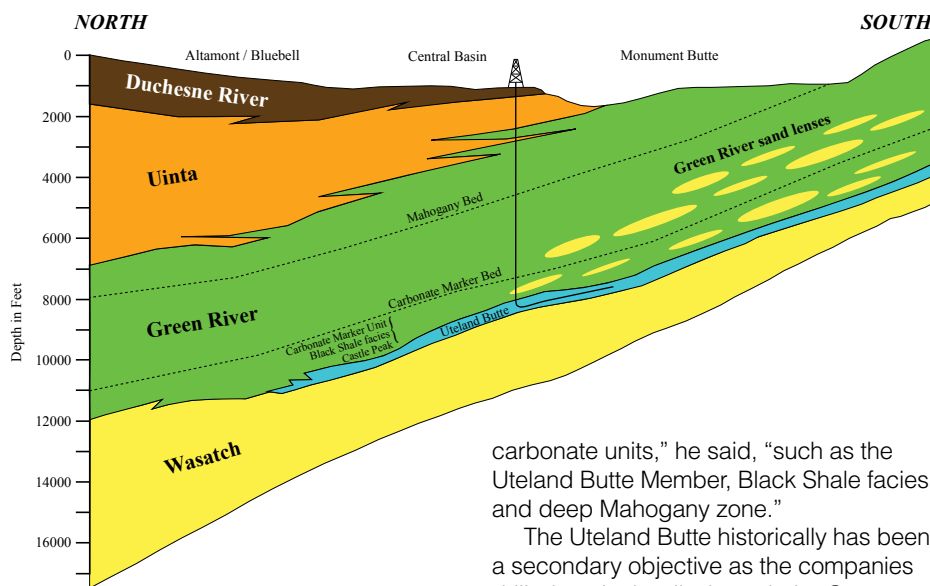
It's the basal member of the Green River, above the Upper Paleocene to Lower Eocene Wasatch Formation, which is predominantly a sandstone with red, green and gray shales deposited in a fluvial setting.

In contrast, the Uteland Butte is indicative of a lacustrine environment and is mainly limestone, dolomite, organic rich calcareous mudstone and siltstone, with some thin sandstones, according to AAPG member Michael Vanden Berg.

Vanden Berg is a research geologist in the Energy and Minerals Program at the Utah Geological Survey. He currently serves as president of the AAPG Rocky Mountain Section.

The unconventional Uteland Butte zone ranges in thickness from less than 60 feet to more than 200 feet.

"The Green River Formation in the Uinta Basin has been studied for over 50 years since the first hydrocarbon discoveries," Vanden Berg said. "But early



studies focused on the many conventional sandstone reservoirs currently producing large quantities of oil and gas.

"Little information exists on the more unconventional crude oil production potential of thinner, organic-rich shale/

carbonate units," he said, "such as the Uteland Butte Member, Black Shale facies, and deep Mahogany zone."

The Uteland Butte historically has been a secondary objective as the companies drilled vertical wells through the Green River and into the Wasatch, which was the main target.

"They would often perforate the Lower Green River along with the Wasatch," Vanden Berg said.

"However, there is a Uteland Butte field

in the central portion of the basin that is productive from localized sand beds," he noted, "but this is unusual."

### Pressure Points

Vanden Berg described an active scene today, noting that over the past few years, companies have been targeting the thinner carbonate beds in the Uteland Butte with horizontal drilling.

"In particular they're going after a single dolomite bed in the upper part of the unit, which has 20 to 30 percent porosity but very low permeability," Vanden Berg said. "That's where the horizontal drilling comes in – and the hydraulic fracturing."

He noted that production from these wells averages 500 to 1,500 Boe/d from horizontal legs up to 4,000 feet long.

"Overpressure seems to be key to the success of the Uteland Butte," Vanden Berg said. "Most of the production is within the overpressure zone."

"That's why Newfield (Exploration Co.) has taken the lead, because they have acreage in the overpressure area, whereas other companies are either further south, west, or east," he commented.

"Most companies are operating outside the reservoirs overpressured zone, which is hurting the economics of the Uteland Butte play," Vanden Berg said."



Photos, graphic courtesy of Michael Vanden Berg

See Uteland, page 12

## We're expanding our business And your horizons

BG GROUP



BG Group is a world leading exploration and production organisation, with an enviable portfolio of existing assets and future projects, across more than 20 countries. With some of our largest projects coming on stream over the next two years and with our eye on future exploration plans, we require a significant quantity of world class talent, to help support the delivery of our ambitious growth programme.

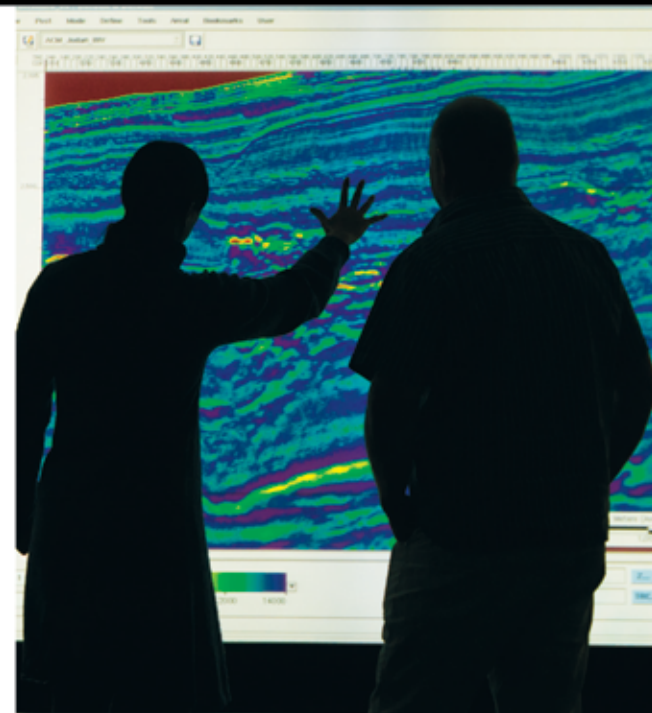
### Worldwide Subsurface Geoscience and Petroleum Engineering Opportunities – Exploration & Developments

BG Group is a highly technical business and our Exploration & Developments functions are the focal point for all subsurface activities. They are staffed by a large, multi-disciplinary team of technical experts, spread across the world. So if you are a globally mobile, experienced Geologist, Geophysicist, Production Technologist, Reservoir Engineer, Petrophysicist or Petroleum Engineer, then we would be keen to talk to you.

To register your interest, visit our careers website and post your CV against job reference ADV1437 (Development roles) or ADV1438 (Exploration roles).

BG Group values diversity and is committed to equal opportunities; applications are welcome from all suitably qualified candidates.

A world leader in natural gas



[www.bg-group.com/careers](http://www.bg-group.com/careers)



Overlooked by past operators – and even some geologists – the Uteland Butte is indicative of a lacustrine environment and is mainly limestone, dolomite, organic rich calcareous mudstone and siltstone, with some thin sandstones. It also has become a hot target “with significant potential” in Utah, and the subject of intense research and investigation.

**Warning: Our data has gone mobile**  
(You may never return to the office)



## Uteland from page 10

### Making It Better

Right now, the Utah Geological Survey is evaluating how to make these fringe areas of the Uteland Butte more productive.

“We see significant potential in the fringe area,” Vanden Berg noted. “The question we want to answer is what is the best way to complete these horizontal wells to unlock that potential.”

There’s a whole lotta research going on.

Vanden Berg is principle investigator for a newly launched three-year-long program funded by the National Energy Technology Laboratory – Liquid-Rich Shale Potential of Utah’s Uinta and Paradox Basins: Reservoir Characterization and Development Optimization.

The overall goal of the study is to provide reservoir-specific geological and engineering analyses of:

- ▶ Emerging Green River Formation tight oil plays, such as the Uteland Butte Member, Black Shale facies and others in the Uinta Basin.
- ▶ Established yet understudied Cane Creek shale (and possibly other shale units) of the Pennsylvanian-age Paradox Formation in the Paradox Basin.

### Hands-On Experience

If you were on the scene during the recent AAPG Annual Convention and Exhibition in Pittsburgh, you may have examined a Uteland Butte core that Vanden Berg transported in for a core poster session.

The core, which is from the productive carbonate zone in the Uteland Butte, was acquired from the Bill Barrett 14-3-45 BTR well in southwestern Altamont Field.

“The horizontal drilling objective, as analyzed in the core, is a five-foot interval of fractured dolomite, with porosities between 14 and 26 percent, interbedded with organic-rich limestone,” Vanden Berg noted.

“The TOC values for the 60 feet of recovered core range between 2 and 5 percent, while Ro (vitrinite reflectance) values range between 0.7 and 1.1, indicating these rocks are self-sourcing.”

Not to worry if you missed the Uteland Butte core-viewing opportunity in Pittsburgh. Word has it that you’ll have another chance during a session at the upcoming AAPG Rocky Mountain Section meeting in Salt Lake City in September.

Now, get **geoLOGIC**’s value-added data almost any place, any time, any way you want it. Available through **gDCweb** on your tablet, smartphone or computer.

With 30 years of data experience behind it, **gDC** is the source for high quality, value-added well and land data from across Western Canada and the Northern United States. Another plus – our data is accessible through an expanding range of industry software utilizing our own easy-to-use **gDC GIS** and our **geoSCOUT** software.

View, search, import and export well, land and production data, documents, logs and more from almost anywhere. For more information visit our website at [www.geoLOGIC.com](http://www.geoLOGIC.com)



Leading the way with customer-driven data, integrated software and services for your upstream decision-making needs.

geoSCOUT | gDC | petroCUBE at [www.geoLOGIC.com](http://www.geoLOGIC.com)



**West Side Story**  
A sweet 'Beast' in the Niobrara

See page 6