

HALLIBURTON

Halliburton Unit Receives Patent Based On BioComp Systems' Intelligent Neural Networks to Help Boost Oil and Gas Production

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HOUSTON/REDMOND, Wash.--(BUSINESS WIRE)--May 23, 2000--Halliburton Energy Services, Inc., a business unit of Halliburton Company (NYSE:HAL), and BioComp Systems jointly announced today the award of U.S. patent 6,002,985 describing methods for controlling the development of oil and gas reservoirs.

The patent is the result of development work completed at Halliburton's Technology Center in Duncan, Oklahoma, and is based on application of BioComp's self-optimizing neural network technologies. The patented methodology enables Halliburton to help maximize reservoir performance by providing faster, less expensive methods to accomplish the following:

-- Determine the potential benefits of pursuing development

options for completing reservoirs;

-- Optimize production of the reservoir with the cost of

stimulation and treatment;

-- Determine optimum systems for completion and treatment of the

wells;

-- Evaluate the performance (output) of the reservoir.

The new technology uses BioComp's neural networks to learn the relationships between the geological formations, drilling methods, completion and stimulation methods, and the oil and gas production from wells. Through these models, effective subsequent drilling, completion, and stimulation of the reservoir can be determined.

Evaluating and optimizing well completion procedures can be difficult because of insufficient understanding of the reservoir and completion dynamics. In many cases, a well completion is a compromise between optimum reservoir, well, completion, and operational factors. Neural network technology is a tool that can help improve well economics. Neural network models trained on reservoir, well, and completion information can predict well cumulative production with an acceptable degree of accuracy. Sensitivity studies of these networks show that for a given reservoir quality, the completion method can significantly affect the well's production outcome. Halliburton is already actively using output from neural networks coupled with reservoir understanding and sound engineering principles to help optimize operators' reservoir performance. It is a mainstay process of Halliburton's Sigma(SM) service.

For example, an operator in Roberts County, Texas, was faced with cancellation of further drilling plans due to poor performance of the first four wells in an infield drilling program. Halliburton conducted an in-depth study of completion methods, reservoir characteristics, and associated production from completions in the area. Neural network technology was used to interpret engineering data, evaluate well potential, and establish completion guidelines. Applying the new completion methods resulted in twice the gas production obtained using previous methods. Subsequent optimized completions supported further development of the field, potentially increasing recoverable reserves by 9 billion cubic feet.

"Neural network technology is part of Halliburton's growing portfolio of virtual intelligence tools," said Jody Powers, president of Halliburton Energy Services. "We're proud and excited about the possibilities for significant improvements in our customers' reservoir performance that this technology provides."

Carl Cook, president and CEO of BioComp Systems, noted, "Our advanced neural network technologies are a natural tie-in with Halliburton's reservoir understanding and design expertise. This combination delivers a real impact on the economics of oil and gas development."

BioComp Systems, Inc. is a privately held software and services company located in Redmond, Washington. With customers in over 40 countries, BioComp delivers intelligent systems, tools and technologies to commercial, industrial, medical, marketing and financial customers. BioComp Systems' World Wide Web site is available at <http://www.biocompsystems.com>.

Halliburton Energy Services provides products, services, and integrated solutions for oil and gas exploration, development, and production. Capabilities range from initial evaluation of producing formations to drilling, completion, production enhancement, and well maintenance -- for a single well or an entire field. With more than 300 service centers in more than 90 countries, the company possesses the global perspective that is increasingly important for energy exploration and production.

Founded in 1919, Halliburton Company is the world's leading diversified energy services, engineering, construction, maintenance and energy equipment company. In 1999, Halliburton's consolidated revenues were \$14.9 billion and it conducted business with a workforce of approximately 100,000 in more than 120 countries. The company's World Wide Web site can be accessed at <http://www.halliburton.com>.

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