

THE TECHNOLOGY REPORT

Device raises controversy among drillers

By Joe Simmacher
Staff Writer of The News

Executives with Geophysics International Corp. say they have a technology — Petro-Sonde — that can cut in half the number of dry holes drilled each year in oil exploration. Critics say the company's Petro-Sonde is just the latest black box developed to extract money out of the oil industry.

"The amazing thing is that with this machine, we can practically produce the same data without having to drill a hole," said Ricardo Villasenor, Geophysics International's president.

Villasenor believes Geophysics International has made a practical breakthrough in electrotellurics, the analysis of the Earth's electrical field.

The sun constantly emits streams of ionized gas particles — called solar wind. Villasenor said Petro-Sonde is designed to measure the surface intensity of radiation that is created as geologic formations deep within the earth deflect the solar wind. Unlike existing well-logging technology, Petro-Sonde works without first having to drill, Villasenor said.

"Several major companies are working on the same technology," Villasenor said. "The only difference between them and us is that we have



The Dallas Morning News: Juan Garcia

President Ricardo Villasenor displays Geophysics International Corp.'s Petro-Sonde device.

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already found a way to interpret those signals.

Geophysics International's "breakthrough" has created a storm of controversy within the geological community. Villasenor said he isn't free to fully explain how Petro-Sonde works until Geophysics International is awarded patents on its technology. Critics argue that Geophysics isn't offering details because they're simply selling a black box.

One thing seems certain: Petro-Sonde has its supporters and critics, with few choosing to remain on the fence.

"There's no way they can do what they claim to be able to do and obey the physical laws as we know them," Jeff Copley, an Austin geophysicist, said in the Nov. 15 edition of *U.S. Geophysical News*. The Petro-Sonde debate was the lead story in the geophysics publication.

George Keller, professor of geophysics at the prestigious Colorado School of Mines, is another doubter. "I've looked at what they've done, and I don't think what they're doing can possibly work," Keller said.

However, Ross Hill, a Tulsa based geologist who has used Petro-Sonde for 18 months, said the device is a new "strong aid" for the industry, if not a cure-all. Hill said he has successfully used Petro-Sonde as a district geologist with Southport Exploration in Tulsa. (Southport has since been purchased by oil firms in Houston and Michigan.)

Hill said he has effectively used Petro-Sonde in 15 to 20 wells and has suggested the device to others. Members of the oil community, however, won't discuss the device's success rate. "The bottom line is: If it's as good as we think it is, why tell everybody else," Hill said.

Experience is the key to operating Petro-Sonde, Hill said. Because users are measuring minute changes in the earth's electrical field, even changes in barometric pressure can sway results.

Jack G. Elam, an independent Midland geophysicist, is one of Petro-Sonde's vocal supporters. Elam, a 40-year veteran of the oil business with a doctorate in geophysics, has been using Petro-Sonde for two years.

"It's not a black box," Elam said.

Petro-Sonde is best used as a complementary exploration tool to locate "the best place to drill" in known geological areas, Elam said. And the tool also can be used to map a particular oil field's boundaries once a commercial well has been found, he said.

Elam tested Petro-Sonde for Geophysics International but said he has not received any money from the company for the tests. The device has evolved considerably in the two years he has used

it, Elam said. Petro-Sonde is especially important given America's maturing oil fields and falling oil prices, Elam said. "It' could even allow me to explore for \$15 oil, and we may be faced with that shortly," he said.

Because Petro-Sonde logs underground geologic formations, its use isn't limited to oil and natural gas exploration, GI's Villasenor said. The Dallas company has signed a letter of intent with China to map dangerous voids in coal mines created by underground water pressure, he said.

Chinese coal miners have been killed in mines when they drilled into the pressure-filled voids, which exploded, Villasenor said. The Chinese spent eight months to drill 32 wells to map the region. Given enough information to calibrate their equipment, a GI team

was able to map the same region in one week using Petro-Sonde, Villasenor said.

Geophysics International and the Chinese are now negotiating further Petro-Sonde work.

Critics question how Petro-Sonde can interpret electrotelluric signals with less-sophisticated equipment than other machines that can't do the work. Chris Bachman, GI's sales director, said his company's equipment converts the earth radiation to audible frequencies. The ear of a trained operator is the best device for interpreting the electrotelluric data.

"Our instrument has electrical antenna that can detect any frequency within that (electrotelluric) field, obtain the characteristics of it and transmute it into an audible signal," Villasenor said.

The Colorado School of Mines' Keller believes that the frequencies Petro-Sonde operators say they are hearing are sub-audio.

Dallas oilman Jerry Conser founded Geophysics International two years ago. A Dallas oilman since 1978, Conser found and set out to market the Petro-Sonde technology. Petro-Sonde is based on technology that grew out of Sky lab research of the '70s, he said. Carl Caber, one of the inventors of radar, developed Petro-Sonde, GI's Bachman said.