

# Worker Safety Issue

## PROTECTION from GAS EMISSIONS

### ALERT PLUS with the TECHNOLOGY "ACE"

By: CHRIS BISCHOF

When it comes to the oilfield, there's one concern that rises to the top of everyone's list: Worker Safety. It's too often true that if something can go wrong it will. As a result, a lot of effort has gone into identifying workplace hazards that can jump out and strike at any moment. Some of the greatest dangers are invisible. Invisible yet deadly. Gases, for example. Gases found in the underground reservoirs that are released by the drilling process. Some, such as hydrogen sulfide, can be lethal in minutes.

#### *How are Workers Protected from the Dangers of Escaping Gases?*

Several technologies are put into play against this threat. Mainly, through the use of electronic detection equipment that sniffs out trouble before it overwhelms workers. The detection equipment must function as the "canary" in the oil and gas fields, alerting workers that a dangerous gas is leaking and escaping into the atmosphere.

Gas detection goes back to 1815 when Sir Humphry Davy of England invented the flame safety lamp. The flame in the lamp reacted to the presence and absence of methane and oxygen. Unfortunately, the flame itself triggered about a third of all gas explosions.

A big step was made in 1926 with the introduction of the catalytic combustion sensor, which measures the "lower explosive limit" or LEL of gases. Known as the Standard Oil Electric Vapor Indicator, it was developed by Dr. Oliver Johnson at Chevron to prevent explosions in petroleum storage tanks. Variations of this device remained in use for 50 years.

In 1927, the first interferometer – which uses the principle of light diffraction in air to indicate the presence of dangerous gases – was developed in Japan. It was designed to prevent explosions in coal mines and on oil tankers.

Dr. Ziro Tsuji of the Institute of Physical & Chemical Research in Japan developed the prototype of the interferometer. In 1938 he started the Riken Keiki Company,



Alert Plus crew installing an Aegis in Wyoming's Jonah Field

which today is known as RKI. In 1970, Riken delivered some highly successful new LEL monitors.

Another form of leak detection in use today is the "forward looking infrared" or FLIR camera. The infra-red camera technology is sensitive to temperature differences between the leaked gas and the atmosphere into which it flows.

The oil & gas boom, driven by hydraulic fracturing, combined with public concerns about methane leaking from drilling sites opened an opportunity for more competitors. A company that appears poised to jump into the lead of leak-detecting, safety equipment is Alert Plus, of Pinedale, Wyoming. The company was founded in 2012 by Loren Wilcox (CEO) who by that time had logged 25 years in the natural gas sector, and Matt Murdock (COO) who spent over 20 years managing an international NGO and overseeing project development with multiple agencies and governments.

The goal of Alert Plus is to develop products that increase worker safety with low-cost, easy-to-use, gas monitoring systems. They have already produced a winner: the Aegis 400. Since reaching its current state of development, the Aegis 400 was selected as one of 12 Colorado Cleantech Companies in 2014. In 2015, it was a finalist presenter at the Propel Energy Tech Forum in Calgary. And, it won the Product Award for Excellence in Health & Safety in this year's Rocky Mountain Oil & Gas Summit. The future looks bright for this company.

#### *What should an award-winning safety product do?*

To deliver in the field, a top-notch leak-detection system must possess several capabilities:

- 1) It must monitor continuously for leaks in remote fields which may be served by unreliable electrical and communications systems.
- 2) It must function effectively in cold weather; be easy to put in place, and easy to operate and maintain at complicated worksites.
- 3) It must be adaptable to old and new equipment and networks.
- 4) It must increase safety, save time and save money for clients.
- 5) It must respond rapidly and automatically to critically dangerous conditions.

► continued, pg 18

# Worker Safety Issue

PROTECTION from  
GAS EMISSIONS

**ALERT PLUS**  
with the  
TECHNOLOGY "ACE"

## The Evolution of Change

When it comes to safety, much is expected of the equipment, and so far, it appears that Alert Plus is up to the job. As the technology of leak detection advanced, it was found that the most effective means of reducing emissions and reducing safety incidents in the oil & gas industry was through full-time monitoring. Competing technologies, such as FLIR cameras, are expensive and labor intensive. Their monitoring is irregular, not continuous and FLIR monitoring is impaired by long delays between visits when dangerous events can occur.



Alert Plus' partners Tausha & Julie Harrington, David Yoder, Cynthia Dietzmann, Matt & Sarah Murdock & Loren Wilcox

Alert Plus found ways to overcome these limitations. Its leading product – the Aegis 400 – was created by real-life experience in remote, Rocky Mountain region, production fields. According to COO, Matt Murdock, Alert developed a gas detection system that can simultaneously detect multiple gases, ground water and temperature. The Alert system provides continuous monitoring that senses leaks, records leak data, and activates alarms that notify workers in real-time. The system provides the degree of monitoring that worksites must have to meet critical safety regulations. Furthermore, it's rugged and capable of continual, rapid detection and notification at temperatures down to -40F. Power requirements are low, which is critical in remote locations. It meshes easily with existing communications networks. It also benefits from being manufactured by RKI Instruments, Inc., a leading maker of gas detection equipment.

As a result of its relatively low cost, the Alert system offers a high return on investment. It adds further value to operations by shutting down well sites before dangerous incidents occur, which prevents the loss of both product and time. Moreover, it conforms to safety regulations, and with its emergency response capacity, it can shut down site operations according to standards set by the operator.

## What Challenges do Gas Detectors Face?

A lot of natural gas operations occur in remote and often cold locations. The sites are monitored and serviced by workers who visit them periodically. Ease of install at remote locations and custom programming, to meet the purposes of the operator, are key. The

systems must be reliable. It also must be able to provide continuous monitoring. If dangerous conditions arise, the gas detector must trigger an automatic shutdown of the site; thereby, protecting personnel,

the environment and the bottom line.

However, one of the biggest challenges for Alert Plus has not been in product development. Instead, the problem has been overcoming the inertia of risk-averse energy companies. They have stuck with older safety technologies rather than embracing new ways and new products. In the past, companies may not have had a compelling reason to consider alternate solutions. Existing products seemed to work well enough and allowed the energy companies to meet regulatory standards. However, the kind of change the company seeks may be ahead. For the price of one FLIR camera, Alert Plus can place 20 to 30 of its gas detectors – Aegis 400s – in multiple locations for 24/7 coverage.

Not long ago it seemed that Alert Plus was about to get its big break. The company placed its gas detectors with Ultra Petroleum in the Jonah Field (Wyoming).

Initial work was successful, and Ultra signed a purchase order for three units with the likelihood of a large, game-changing order to follow. Unfortunately, management turnover at Ultra led to reversals that brought things to a stop. The next trial and sale was with Western Wyoming Workforce Training Center. Multiple units were placed there. All has gone well. Since then, Enbridge Energy purchased and successfully tested the system. The early success may lead to a larger order once mainline enhancements are completed. Alert Plus also placed units with Questar Gas and Wexpro. The results were satisfactory and sales are expected.

Meanwhile, another obstacle has been regulation. It appears that existing safety rules have tipped things in favor of the companies that are now the leaders in gas detection equipment.

Moreover, new rules now under discussion at the Bureau of Land Management (BLM) might nudge things further in favor of existing safety equipment providers, most notably, the makers of FLIR cameras. However, Alert Plus has petitioned the BLM to rethink its ideas regarding its proposed Waste Prevention rule. In a letter to Wyoming Senator John Barrasso, member of the Committee on Energy and Natural Resources and Chairman of the Public Lands, Forests, and Mining Subcommittee, Alert's COO, Matt Murdock expressed his concerns about the proposed rule. Murdock pointed out that the rule creates an unfair barrier to entry for his company and others utilizing new technologies. It's hoped that his cogent letter will lead to more thoughtful regulation. Regulations that will include advancing technologies that will exceed safety standards, and do so at lower costs.

Hence, it's possible the continuous monitoring process offered by Alert will become a required operating procedure for operators. If that happens, the operators will be placing monitors in hundreds of locations.

Alert Plus and the Aegis 400 are bringing important advances into the realm of oil & gas safety. Though the government has been slow to recognize the merits of Alert Plus and its products, the company has been acknowledged a winner by its peers. Thus, it seems the market is almost ready for this continuous, rapid-detection and notification monitor. Therefore, given the quality of its product and the drive of its leadership team it looks like success is on the way. ■

Chris Bischof is the Executive Editor of the Bakken Oil Business Journal. Previously he worked as a securities analyst and financial writer. He lives in New York City. Chris can be reached at [exec.editor@bakkenoilbiz.com](mailto:exec.editor@bakkenoilbiz.com).