

## **Opening Statement**

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**Senate Energy and Natural Resources Committee Natural Gas Forum**

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Good morning and thank you for the opportunity to speak with you today. I'm Marc Edwards, Senior Vice President of Halliburton's Completion and Production division and I want to share with you some of the recent advancements in Halliburton's segment of the US natural gas industry.

Halliburton plays a significant role in the development of unconventional oil and natural gas resources, especially shale, coalbed methane and tight gas, which has completely changed the worldwide energy picture. Every day, Halliburton is engaged in one way or another in drilling or completing 75 to 90 percent of all the wells in the US.

Halliburton performs almost 40 percent of all the hydraulic fracturing treatments in the US. Today, we work with operators to complete a fracturing stage every 5 minutes, 24 hours a day. A single horizontal wellbore may have up to 20 fracturing stages in order to fully stimulate the formation and maximize oil and gas production.

All of this activity not only translates into an abundance of energy and increased security for the US but also major economic benefits and reduced emissions of greenhouse gases. According to an API study, in 2011, the oil and natural gas industry directly provided 2.6 million jobs with over \$220 billion in wages, salaries and other benefits. In 2012, Halliburton alone hired 13,000 people in North America and spent over \$12 billion buying supplies and equipment from US vendors.

There can be no doubt that technology is making all the development of new energy resources possible, as well as cleaner, quieter, and more efficient, which is especially important as shale development is now occurring in more densely populated areas. Horizontal drilling coupled with multi-stage fracturing makes production economically viable.

Over the past several years, Halliburton has dedicated an abundant amount of resources toward improving the sustainability of the overall well completion

process. For example, the requirement for fresh water in fracturing is a major concern. We have developed technology that allows us to completely eliminate the need for fresh water in the drilling and completion process. Our CleanWave service enables us to treat non-potable water, making it usable at the wellsite, and our recent chemistry developments enable using the water to formulate a high performance fracturing fluid.

Regarding fracturing fluids, our CleanStim formulation is the only complete system on the market comprising only ingredients sourced from the food industry. It provides an extra measure of safety at the wellsite for people and the environment.

In densely populated areas, the amount of space required for oil and gas production is an issue. The amount of space required is being dramatically reduced through pad drilling by operators and through our Frac of the Future equipment. Our high efficiency Q10 pumps and SandCastle vertical storage bins can reduce the wellsite size required from about 10 acres to as little as three acres. This size reduction is accompanied by a reduction in noise and emissions through using fewer diesel engines. Reducing the number of pumping units required is reducing truck traffic to and from the wellsite.

In addition, we're actively converting our pumping units to use a combination of diesel and clean burning natural gas. Fewer diesel engines and dual fuel capability can help further reduce overall emissions.

A real need as we go forward is for the industry, the public and regulatory agencies to work together to support the development of regulations and processes based on peer reviewed and risk-based science. We are making progress in that endeavor in that all involved are beginning to pursue scientific answers to questions being raised about safety and the environment. To that end, Halliburton recently commissioned environmental consulting firm Gradient to prepare a National Human Health Risk Evaluation report, which we have submitted to the EPA as part of its ongoing study on hydraulic fracturing. We have prepared a summary for you and a link to the full report that we have submitted for the record. Maintaining and increasing the level of cooperation and engagement will help take us further toward our energy goals for the future.

Thank you for the opportunity to participate in today's roundtable. I would be happy to answer any questions.