Critical D&C issues with Rick Fontova, Enventure

Industry is primed for a breakthrough

RICK FONTOVA IS senior vice president for Enventure Global Technology.

DC: From your perspective at Enventure, what do you see as the most critical issue facing the drilling and completion industry today?

Fontova: Costs are skyrocketing. They’re actually increasing at a faster pace than the price of oil, and that has many of the major operators, especially those working in frontier areas, very concerned. In fact, many have started cutting back drilling programs. Although the industry is in a “boom,” we’re already starting to see the effects of astronomical costs, especially in drilling and completions. In order for the industry to continue at this pace, we must find a way to either drill and complete wells differently or bring costs down.

DC: What are some ways we can, if not reduce costs, then at least slow the pace of increase?

Fontova: Technology has traditionally been that vehicle. Just when we think well costs are going through the roof, the industry has always come up with some new technology or a more efficient way of doing things, whether it’s MWD/LWD, new drill bits, etc.

The industry’s ready right now — it’s primed for a breakthrough. Expandables combined with liner/casing drilling and other technologies clearly have the opportunity to bring costs down so that the industry can continue to explore frontier areas. Enventure is working with several operators looking at the feasibility of combining technologies and how can we bring them to fruition. There is a continued sense of urgency in many operators to do this sooner rather than later.

DC: Can you elaborate on these collaborations with operators?

Fontova: Operators are encountering challenges in deepwater. They’re developing major projects that were completed and produced in the late ’80s and early ’90s. Now that they’re going back to do the redevelopment work, they’re finding it extremely challenging. Keeping new holes open after drilling previously produced sections is something they haven’t really faced before.

So they’re looking for different ways to re-drill and re-complete wells through unstable zones depleted from years of high completion rates. They might drill through them without problem, but once they come out of the hole to run casing or to log, the wellbore becomes unstable. There are also tar zones, salt zones, etc — all of these things are now time-dependent. Finding a way to drill, case and evaluate in one trip instead of sequential steps is a real driver. They say that necessity is the mother of invention. That statement is truer than ever in deepwater, much more so than it was just a few years ago.

DC: What’s been dubbed the “Holy Grail” of well development is the mono-bore well. What progress do you expect to be made towards the single-diameter well over the next couple of years, and what are the critical stumbling blocks?

Fontova: With the success of the field appraisal well that Enventure drilled in Oklahoma in the spring of last year, we overcame many of the obstacles that previously existed. It showed that we could indeed run and expand consecutive liners without losing ID. I think you will see single-diameter wells drilled and completed within the next couple of years.

This technology won’t be an off-the-shelf tool kit — it’s very modular — enabling our customers to apply it in a variety of ways. You can’t approach mono-diameter technology in the same manner as the contingency use of existing solid expandable technology. Designing a single-diameter wellbore takes planning. We work with operators to engineer the right solution, selecting the right combination of tools for their application.

DC: What are some challenges you’re working over?

Fontova: Like everything else in the industry right now, there are long-lead items for specialty tools that require enhanced manufacturing and therefore planning. Suppliers are all busy right now. Currently we’re reviewing well programs that will be drilled 2-4 years in the future. This technology application must come together in a well-thought-out design that provides a reliable solution.

The technology itself is past the “stumbling block” stage. It’s a matter of planning the wells. This type of expandable technology is very new, but it’s welcomed. It’s something that people have been waiting for, and it’s something that’s been embraced with open arms.

DC: What about acceptance among operators? Ours is not an industry known for its acceptance of new ideas in a radical fashion. Has Enventure spent a good deal of time educating operators over the last 10 years?

Fontova: Absolutely. And from the beginning, the concept of a mono-diameter well was immediately embraced. Some people have referred to it as the Holy Grail because on paper, it’s such a simple, yet revolutionary, concept. Going from the concept to reality brings a different set of challenges. Although the concept is accepted, we’re now going through the specifics of how exactly it’s
run and in what combination with other downhole tools and services. I foresee that in the near future, there will be efficiency gains so that the technology will be common in the drilling world rather than a “high-end” tool.

**DC:** What advances in drilling and completion technology can lead to more efficient recovery of existing resources? What technologies will make possible economic development in fields, especially in difficult wells?

**Fontova:** In deepwater, I think the major change you will start to see is a split between production/development wells and exploration wells because their objectives are so different.

In exploration wells, there will be a movement towards extreme slim drilling and drilling from small ships. The focus will be on how cheaply they can get to the reservoir and get the data, therefore not need a massive conduit back to surface. Because there’s always a high degree of unknown in exploration drilling, there’s always more risk involved.

Expandable technology, especially single-diameter expandables, would allow an operator to drill to a certain depth, then continue drilling through unforeseen problems without losing ID.

And if you can continue to case off those problem zones without losing ID, you can do things that weren’t possible before. Utilizing a single-diameter technology will allow slimming the well up top so smaller rigs can be used, and operators will be able to pursue more aggressive zones, such as new deepwater discoveries below salt. I believe both conventional and single-diameter expandables will play a key role in that type of exploration.

On the development side, expandable combined with extended-reach drilling will enable smaller, more efficient surface structures and allow wells to be drilled from central locations. This will drive the overall cost of billion-dollar developments down.

Additionally, technologies like liner/casing drilling and managed pressure drilling are available as individual offerings. However, if applied together, service companies could provide operators the high production rates they need from deepwater development wells in a more cost-effective manner.

**DC:** Is Eaventure working on ways to incorporate new technology with casing drilling?

**Fontova:** Yes, we are. We’re looking into possible applications with both operators and other technology providers. We’re identifying the challenges and finding that there actually aren’t that many. Existing expandable casing technology and existing liner drilling technologies can come together rather quickly and is something we are looking into right now.

**DC:** Managed pressure drilling is something that Drilling Contractor has covered extensively. Have you had the opportunity to employ expandables in a managed pressure situation, and will it be any different than an open-circulation system?

**Fontova:** It really shouldn’t be. Managed pressure drilling helps you get to target by minimizing overburden as you drill through. In combination with expandables, it would allow operators to continue running more casing strings. The two sometimes conflict as the technologies have the same objective — minimize the number of casing strings needed to get to TD. However, there’s nothing within these two systems that would prevent us from working towards a synergetic solution.

**DC:** The reason that MPD prevents the need for telescoping of casing strings is a fundamentally different reason than with expandables.

**Fontova:** It would minimize the number of strings, in turn minimizing telescoping because you can conceivably get to a target depth with less strings of casing by virtue of managing the differential between pore pressure and fracture gradient.

**DC:** When you addressed the audience at the 2007 IADC Annual Meeting last November, you discussed the very low percentage of R&D investment in the oil and gas industry, compared with other industries such as software and pharmaceuticals. What can we do to encourage more investment in R&D for drilling and completions?

**Fontova:** The cooperation between operator and service company has always been a challenge. At one time,
operators funded most of the R&D. Now, service companies have picked up that part of spending. Although recently we have started to see R&D budgets increase, I think we still need more collaboration between the two. If we can align what both parties are looking for in the long term — maybe focus on just two or three big things — I think we can make a step-change in drilling costs.

Joint industry projects appear to be effective at getting multiple companies, both operators and service companies, to work together towards a common objective. In many instances, the problem one operator faces is the same as another. When they come together and say, ‘Let’s solve these common challenges,’ it really makes it easier for the service company to know where to focus.

DC: It’s hard to be too critical of operators’ R&D considering that this technology developed out of an operator’s R&D (Enventure is a joint venture between Shell and Halliburton).

Fontova: Yes, and in this case, the partnership did accelerate the technology and the acceptance. This is probably one reason why solid expandable technology has been noted as one of the most rapidly accepted technologies in the last 15 or 20 years.

DC: To sum it up, what is your overall vision for the well of the future?

Fontova: Again, I would split exploration wells and development/production wells. Exploration wells will be able to be drilled off of supply boat vessels as opposed to generation-5 drillships. Not all, but many, will start to resemble taking a blood sample from your finger — very small, very quick. You get the sample, put on a band-aid, then analyze what you find.

With development wells, there will always be an intent to make them slimmer and more cost-effective while allowing the hydrocarbon to be produced at optimum rates. There are so many benefits to making the wells slimmer: the bits are smaller, you use less fluid, there’s less cuttings, less environmental impact, etc.

External forces are driving the industry to be more efficient. Technologies like single-diameter expandables will meet that need.

DC: Would a slimmer wellbore have the capacity operators need for volumetric flow rates?

Fontova: Very few wells actually require production casing/tubing bigger than 7 in. as just about anything can be produced at significant rates through 7-in. production. A 9 5/8-in. single-diameter expandable system like Enventure is developing, will enable this type of production. We’re also continuing to modify expandable technology as its applications are broadening. For example, we’re looking at expanding against formations, which would eliminate the need for cement in certain applications.

This is just one example of areas where we continue to see expandables develop and accomplish feats beyond what was originally intended for the technology. As the industry becomes more comfortable with it, you will see even more diverse and innovative applications.

We’re getting requests to do more and more with expandables, and we’re excited to see the technology is taking us.

For video from this Q&A session, go online to www.drillingcontractor.org.