Industry Response Panel
Automatic Response System – Results

1. What is your industry segment?

1) Operator

6,3 %

2) Drilling Contractor

22 %

3) Equipment Manufacturer

49,6 %

4) Service Company

11 %

5) Others

11 %

IADC 75 YEARS

2. What market segment accounts for the majority of your operations/business?

1) Onshore conventional

23,8 %

2) Onshore unconventional (tight gas, shale, coalbed methane)

12,3 %

3) Offshore, less than 500-ft water depths

9,2 %

4) Offshore, 500-5,000-ft water depths

23,1 %

5) Offshore, water depths beyond 5,000 ft

31,5 %

3. How old are you?

1) Under 30

7,2 %

2) 31 - 40

27,3 %

3) 41 - 50

26,6 %

4) 51 - 60

23 %

5) Above 60

15,8 %

IADC 75 YEARS

4. Does a downturn market encourage or discourage implementation of automation?

1) Discourages: Can't afford the investment

17 %

2) Encourages: We must differentiate our selves and automation is a great differentiator

40 %

3) Depends on customer support/requirements

38,5 %

4) Don't know

4,4 %

5. What will accelerate the adoption from other industries of modern technology applications not used in drilling?

1) Skill sets of a new generation of drillers

`6,5 %`

2) Industry leaders to adopt and implement new technology

`43,9 %`

3) Oil company investment in more R&D

`10,8 %`

4) Need for improved efficiency

`36,7 %`

5) Not necessary: Drilling industry can implement its own solutions without input from outside

`2,2 %`

6. Of the following, which represents the <u>most desirable</u> deliverable from Drilling Automation?

1) Lower rig headcount

`12,2 %`

2) Faster drilling time to TD

`34,4 %`

3) Reduced NPT

`35,9 %`

4) Higher producing wells

`17,6 %`

7. Of the following, which represents the greatest immediate 'need' for the Drilling Industry?

1) Human Resources (e.g. skilled manpower)

26 %

2) Higher levels of drillfloor automation

44,3 %

3) Higher resolution of downhole instrumentation and control

18,3 %

4) Faster speed of data and communication

11,5 %

8. Hardware in the Loop (HIL) testing is a QA/QC method of validating software without necessarily having the 'big iron' immediately available. Where would you see its primary value as a testing method?

1) During the initial system development and engineering

48,1 %

2) During initial installation and commissioning of the system

18,3 %

3) Used as a method to validate modifications and/or software changes to a system in-service, prior to deploying the respective change

20,6 %

4) To troubleshoot unanticipated problems with software already in use and operation

7,6 %

5) Questionable value due to unsupported business case

5,3 %

9. What are the major barriers to uptake of automation in well construction?

1) Status quo - what we do today is fine?

`21,7 %`

2) Reliability is an issue?

`41,1 %`

3) Increase in operational efficiency has not been proven?

`37,2 %`

10. What percentage of rigs may in 20 years run autonomously?

1) None

`6,8 %`

2) Below 5%

`27,1 %`

3) Up to 30%

`38,3 %`

4) Higher than 30%

`27,8 %`

IADC 75 YEARS

11. What system in the next five years will be fully automated on 30% of drilling rigs?

1) Tubular handling

48,1 %

2) Drilling and tripping

26,3 %

3) Directional steering downhole

13,5 %

4) Well Control

3,8 %

5) Fluid systems and solids control

8,3 %

12. In 10 years, what should be the tasks of the modern drilling crew?

1) Same as today

6,2 %

2) Supervisory with manual incident handling

62,8 %

3) Purely maintenance and logistics - rig processes otherwise controlled from off-site

28,7 %

4) No crew on rig. Task force sent to rig only for inspection and maintenance

2,3 %

IADC 75 YEARS

13. What is the biggest obstacle to innovation in automated well control systems?

1) Safety risk

`██████████████████████████████` **22,1 %**

2) Contractual liability

`████████████████████████████████████████████` **37,4 %**

3) Lack of enabling technology

`███████████████████` **15,3 %**

4) Entrenched mentality (not on my rig)

`███████████████████████████████` **25,2 %**

14. What area of the BOP Control Systems needs the most attention or improvement?

1) HPU/hydraulic systems

18,5 %

2) Cables (umbilicals and connectors)

10 %

3) Control electronics and software

53,8 %

4) Valves

17,7 %

IADC 75 YEARS