NABORS

Performance Drilling in a Down Market

AADE AMERICAN ASSOCIATION of DRILLING ENGINEERS

"The Industry forum for Drilling practices and technology"

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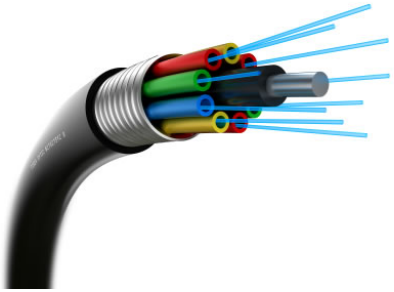
Flashback to 1995

Communication in 1995

- Voice:
  - Sprint
  - Worldcom
  - Pacific Bell
  - Ameritech
  - AT&T
- Internet (ISP's):
  - AOL
  - MSN
  - Earthlink
  - Netscape
  - Compuserve
- Data = Pager Plans:
  - Skytel
  - Weblink
  - Arch Wireless
  - Metrocall

Communication Today

- Internet/Phone/Data:
  - Comcast
  - AT&T
  - Time Warner
  - Century Link
  - Charter
  - Verizon
  - Cox
  - Optimum
  - Frontier
  - Suddenlink



Lessons Learned

- Those who owned the wire, fiber, and satellites now control the internet.
- Integrated services made better sense to consumers
- Customers preferred the ease of one invoice.
- In many cases, the systems are now linked.
- Additional add-ons & automation now possible

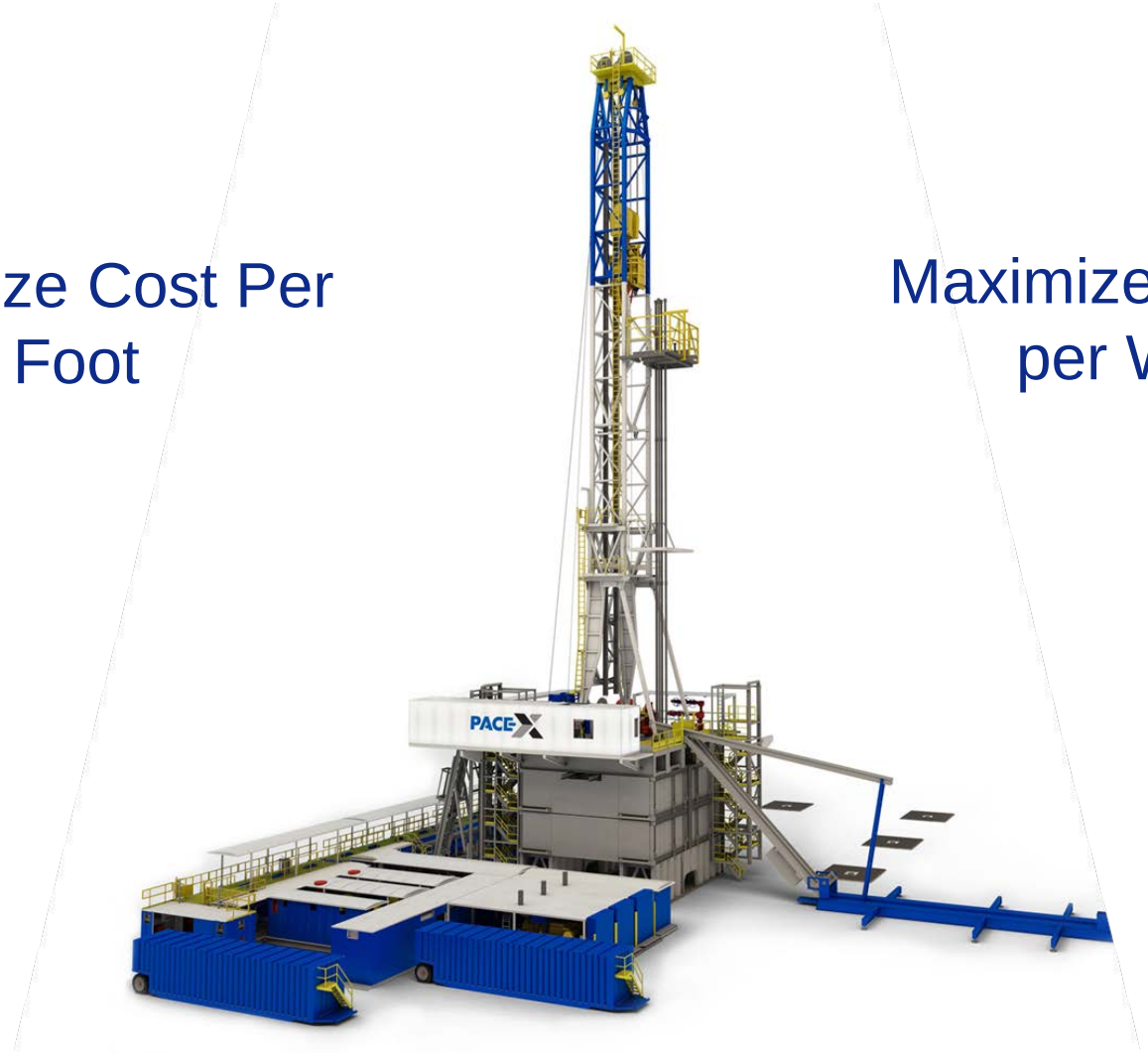
Drilling Rig Operation of 1995

- Drilling Rig
- TD rental
- EDR rental
- Directional Services
- MWD
- Mud Logging
- Mud Engineer
- Drill bit
- Drilling Fluid
- Choke
- Rotating Head
- BOP tester
- Phone/Pager
- Rig Site Housing
- Solids control
- Gas Buster
- Nipple up
- Etc.

Operator Goal

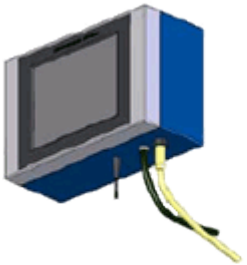
Minimize Cost Per Foot

Maximize Barrels per Well



Operator Benefits of Integration

> Redundant equipment, wiring and displays are eliminated



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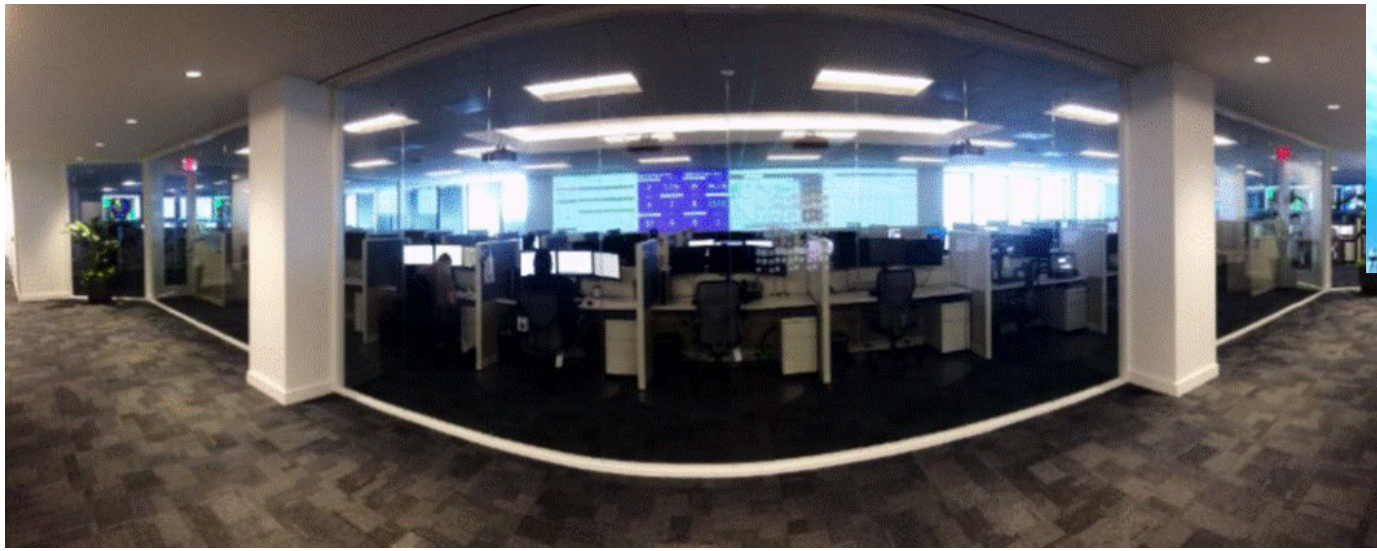
Operator Benefits of Integration

> Drillers are best equipped to execute directional commands of the Operator/Directional Driller.

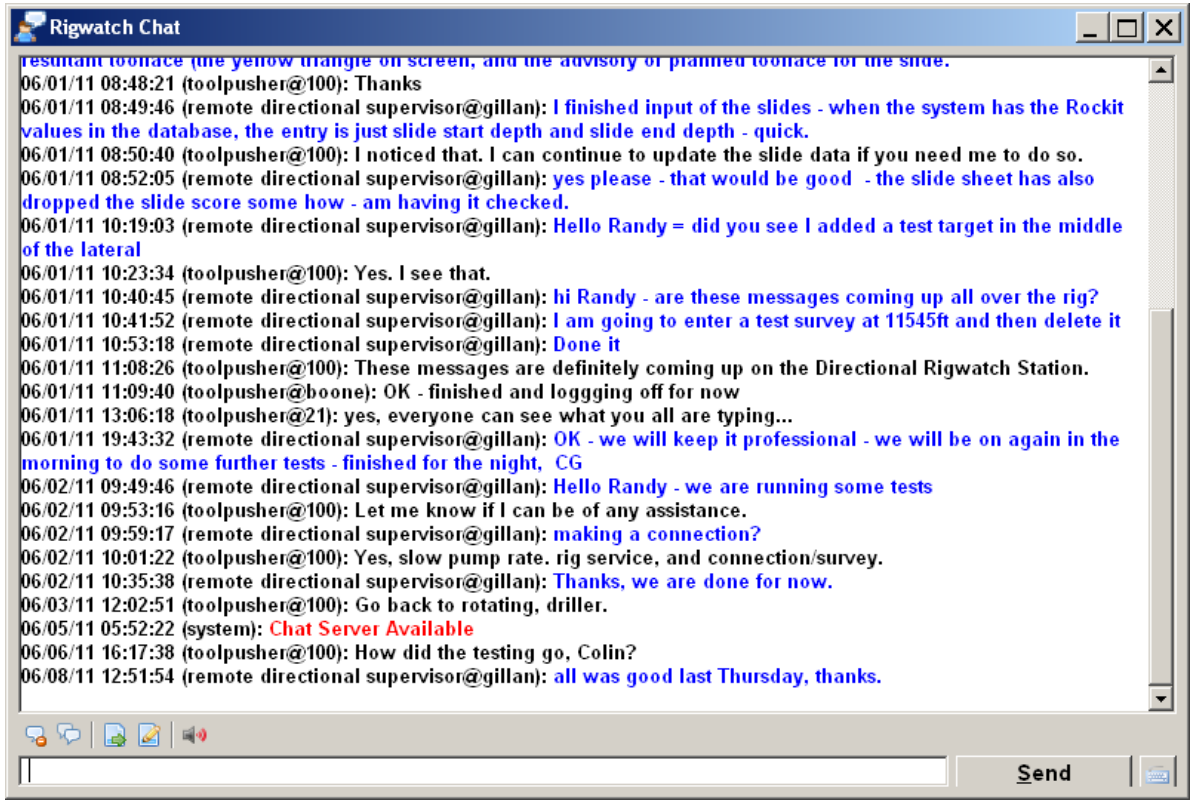
Operator Benefits of Integration

- Real time “connection” to remote operations center is critical to success.
- With low count of rigs/operator, few can execute in scale to make this cost effective.
- Microwave antennae with satellite back-up ensures reliability.



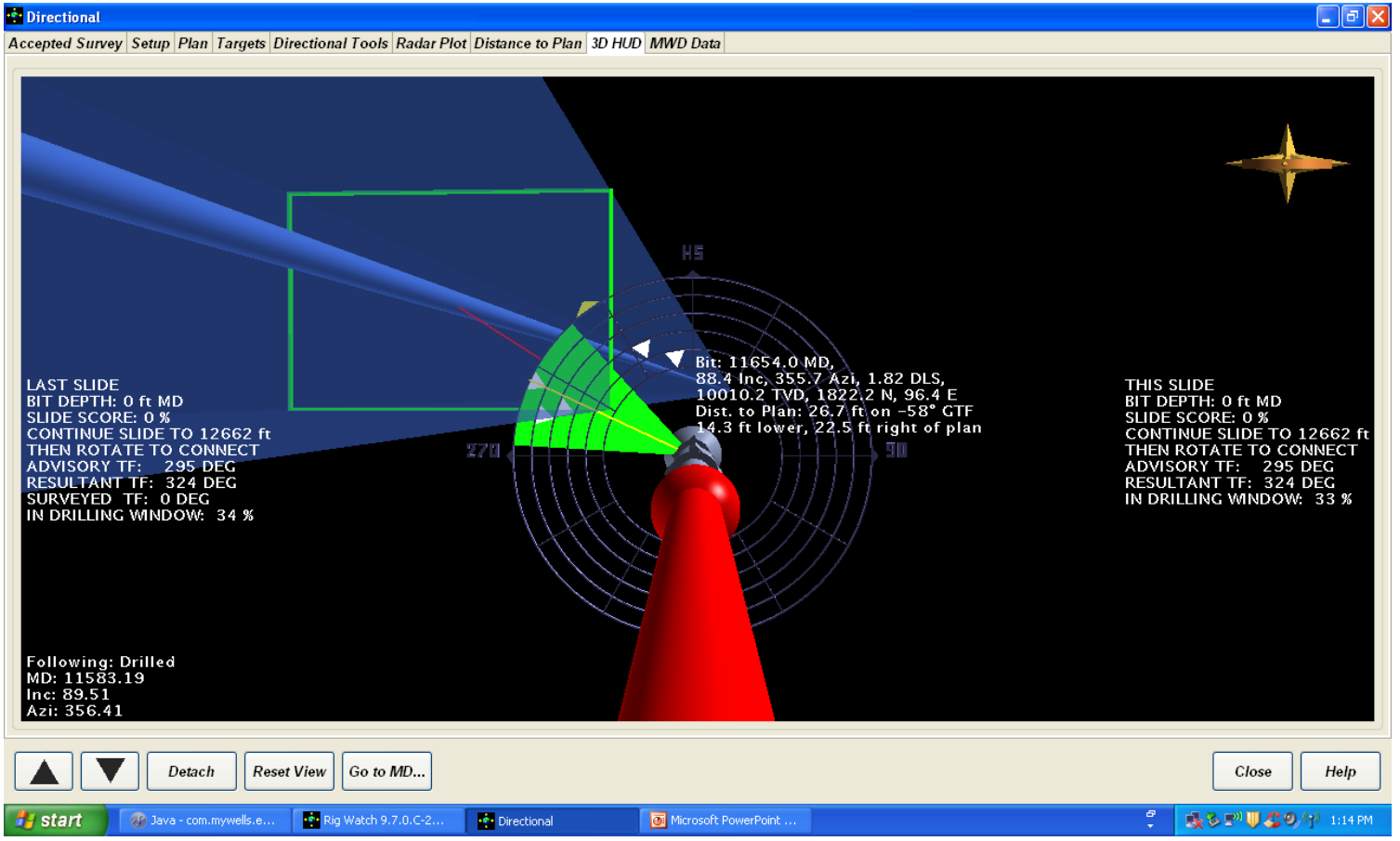
Operator Benefits of Integration

> Real time “chat” documents all commentary between the ROC and driller and ensures accountability.



Operator Benefits of Integration

> Visualizations improve driller's capability and understanding.

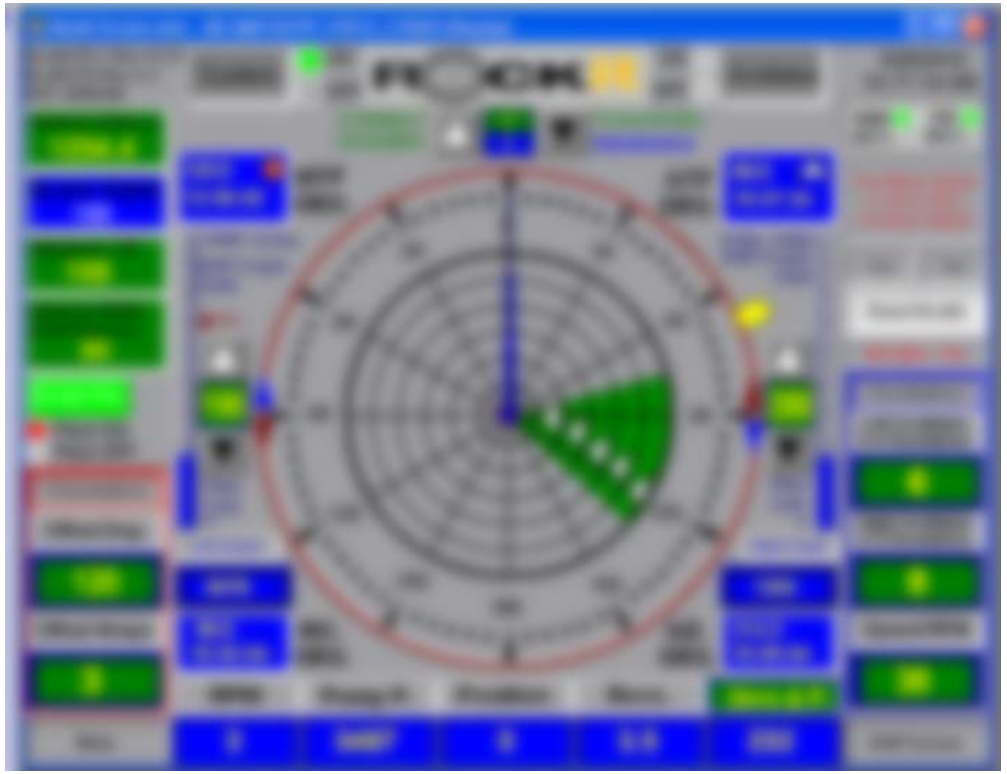


Operator Benefits of Integration

> In house simulators and offline competency assessments ensure success on location.

Operator Benefits of Integration

> Integration of rig controls system with downhole near-real-time data provides better wellbore placement



Operator Benefits of Integration

> Top Drive, Drawworks and Iron Roughneck controls are integrated, allowing repeatable best-in-class consistency.

Drilling Rig Operation of Today/Future

- Drilling Contractor as integrated service provider:
  - Rig & TD integrated
  - MWD/DD integrated
  - Digital Mud Logging integrated
  - Casing Running service
  - Super/auto choke provider
  - BOP testing provider
  - BOP Nipple up crews
  - Rotating head provider
- Drilling Fluid/Cuttings disposal contractor
- Bit contractor
- On-site housing contractor

Thank you for the opportunity to present to you today.