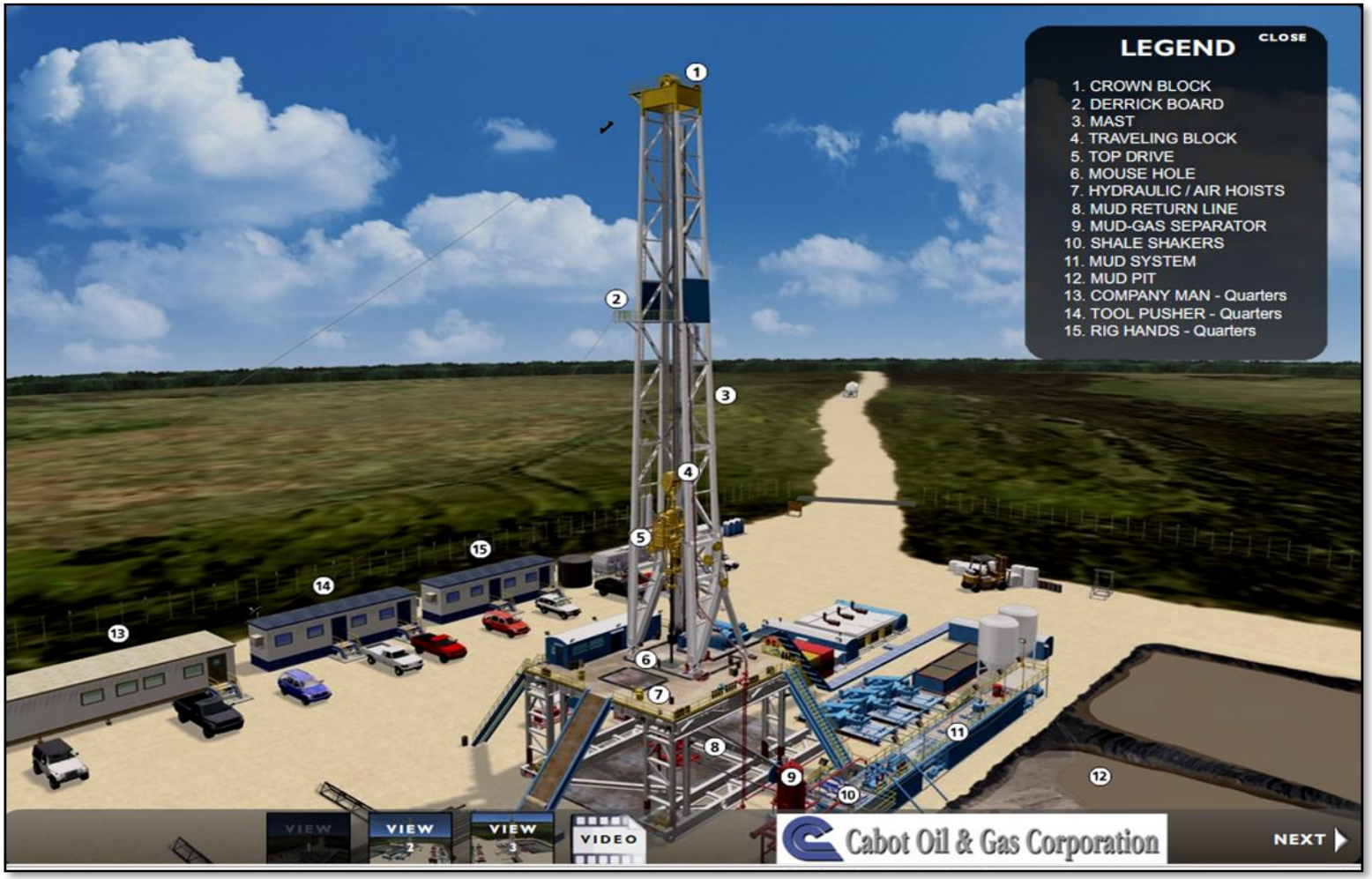
Overview

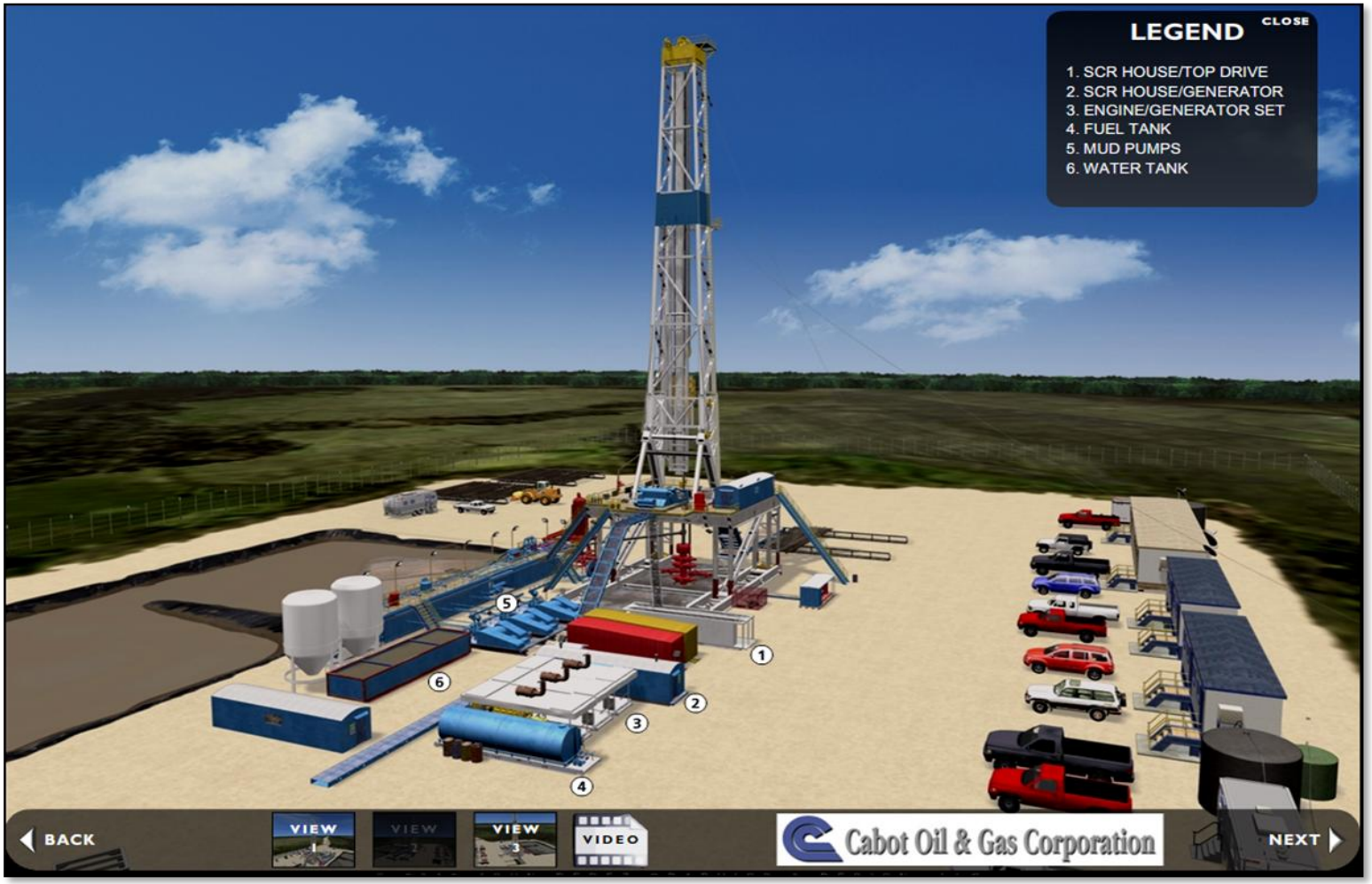
- Basic Rig Components and Functions
- The Drilling Process
  - Bits
  - Fluid (Mud) Systems
  - Directional Tools
  - Measurement While Drilling (MWD)
  - Casings
  - Cements
- Today’s Challenges
  - Temperature
  - Pressure
  - Extended Reach
  - Multi-Laterals
  - Pad Wells

The Rig

http://www.cabotog.com/comm_education.html



The Rig


LEGEND
CLOSE
1. SCR HOUSE/TOP DRIVE
2. SCR HOUSE/GENERATOR
3. ENGINE/GENERATOR SET
4. FUEL TANK
5. MUD PUMPS
6. WATER TANK
BACK
VIEW
VIEW
VIEW
VIDEO
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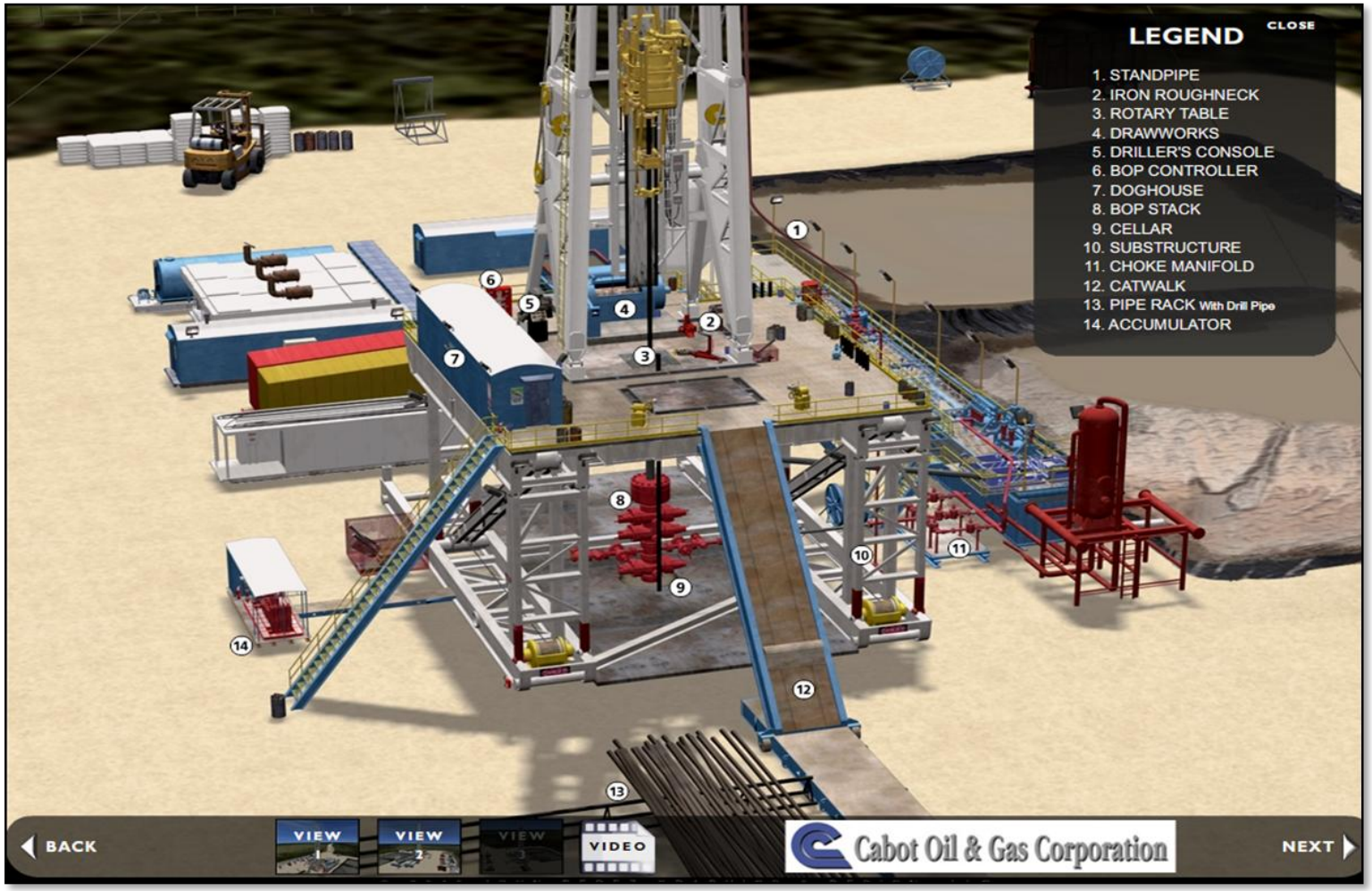
NEXT

The Rig


LEGEND
CLOSE
1. STANDPIPE
2. IRON ROUGHNECK
3. ROTARY TABLE
4. DRAWWORKS
5. DRILLER'S CONSOLE
6. BOP CONTROLLER
7. DOGHOUSE
8. BOP STACK
9. CELLAR
10. SUBSTRUCTURE
11. CHOKE MANIFOLD
12. CATWALK
13. PIPE RACK With Drill Pipe
14. ACCUMULATOR
BACK
VIEW 1
VIEW 2
VIEW 3
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The Drilling Process

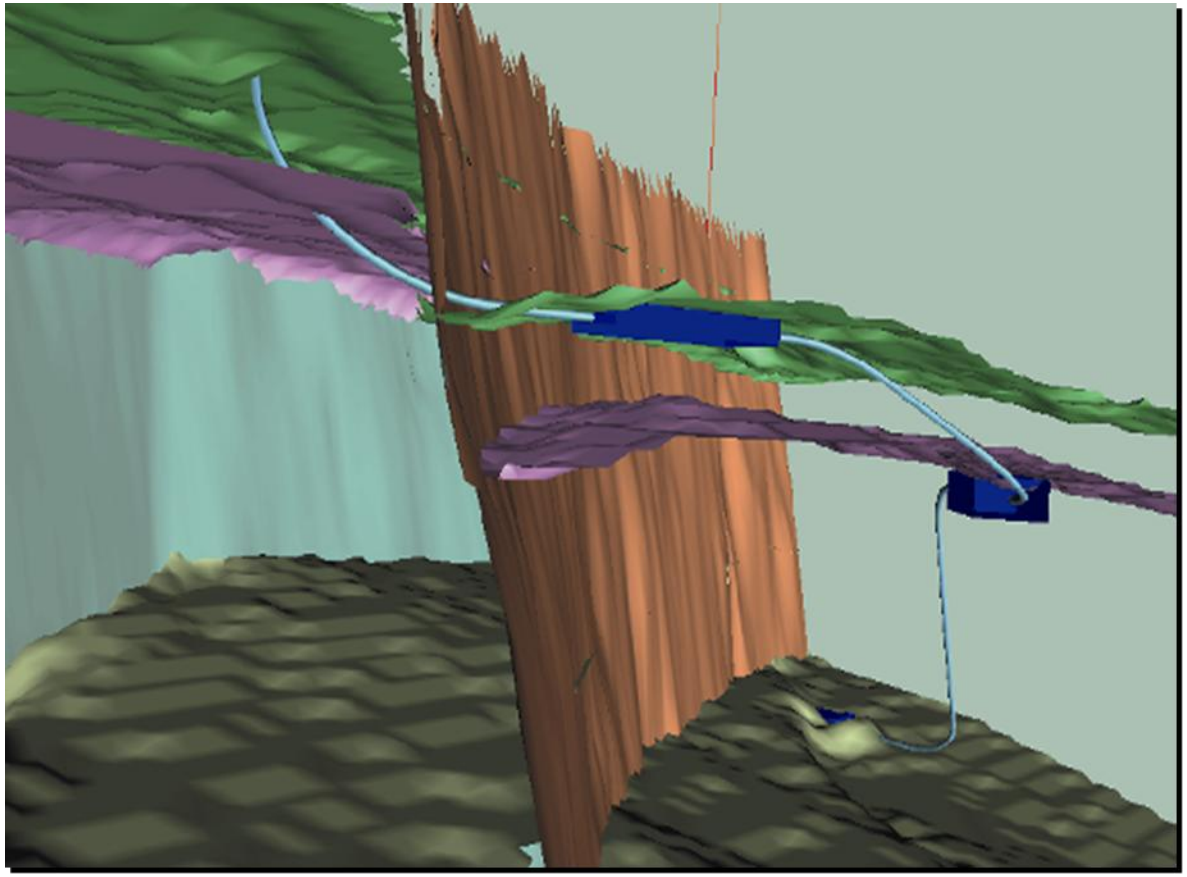
- Bits
  - Roller Cone and Fixed Cutter

The Drilling Process

- Fluid Systems/Mud
  - Cool the bit, carry cuttings, hold formation back
  - Water Based Mud
  - Oil Based Mud
  - Synthetic Mud
- Directional Tools
  - Allow for non-vertical drilling
  - Bent Housing Motors
  - Rotary Steerable

Directional Drilling

Directional Drilling



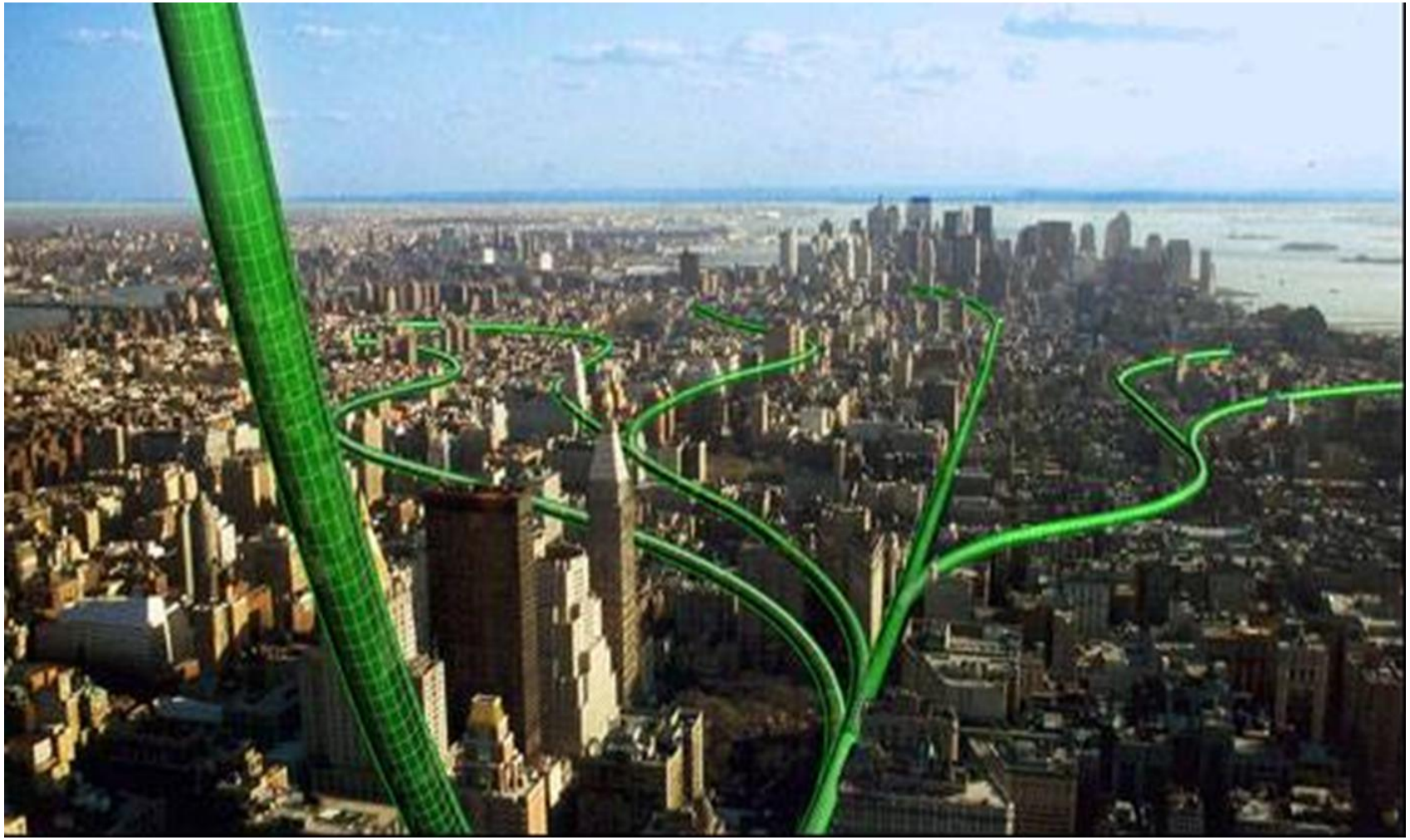
The Drilling Process

- MWD
  - Allow for real-time analysis of the formation
  - Send instant data back to surface for Geologists and Petrophysicists
  - In or out of formation
- Casing
  - Layers of protection, hold formation back
  - Provide base for rig and well
- Cement
  - Protects freshwater zones
  - Provide isolation between formation and casing

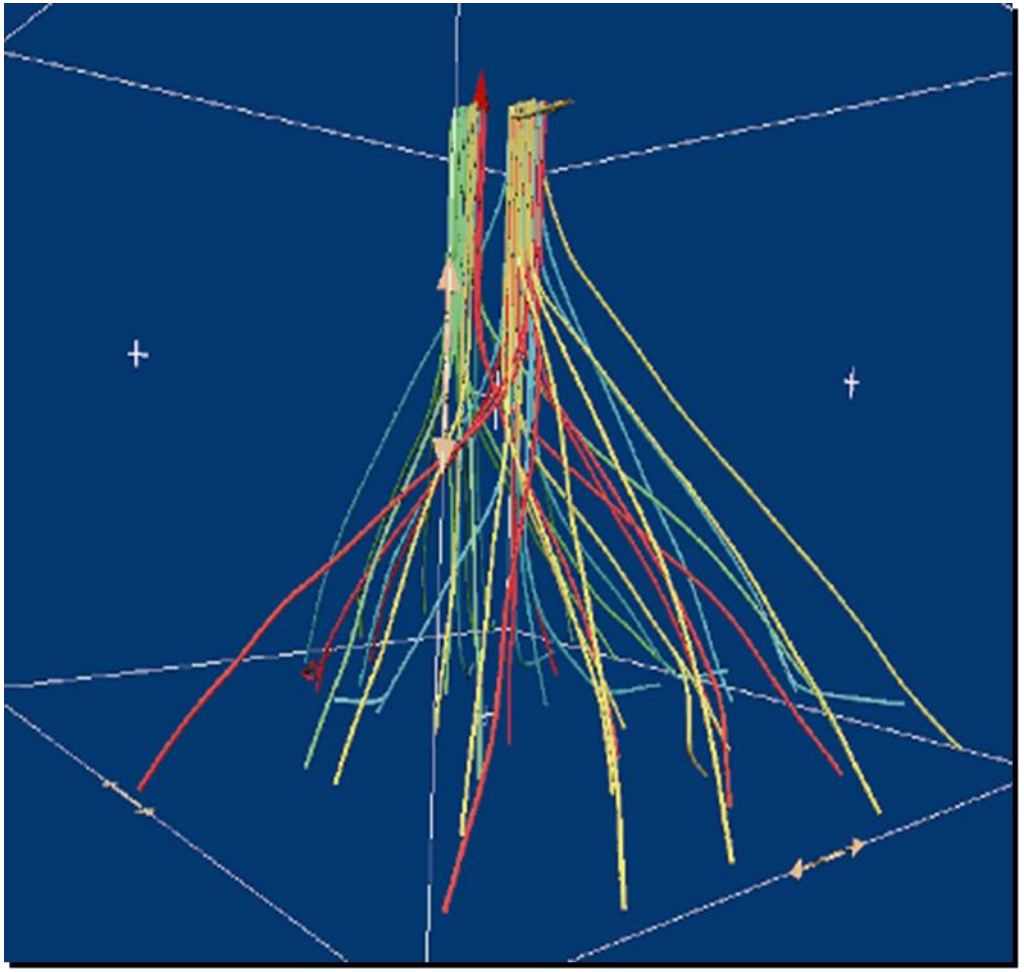
Today's Challenges for Horizontal Drilling

- Temperature and Pressure
  - Affects everything(bits, mud, tools, pipe, cement, etc.)
- Extended Reach
  - Overburden drilling
  - Maximize wellbore contact with formation
- Multi-Laterals
  - Same as extended reach
  - TAML levels 1-6
- Pad Well Drilling
  - Collision Avoidance

Multi-Laterals



Pad Well Drilling



Pad Well Drilling with Multi-Laterals