Directional and Horizontal Drilling

Why
1) Multiple wells from a single location
2) Reaching inaccessible targets
3) Drilling relief wells to control blowouts
4) Sidetrack
5) Horizontal drilling for great reservoir recovery

Additional requirements
- Use of downhole motors and MWD tools
- Rubber protectors on the drill string for wear protection
- Lubricating additives in the mud to reduce torque and drag
- Higher hydraulics for effective hole cleaning
- Articulated drill pipe in short radius drilling
- Unique BHA for maintaining course and weight on bit
- Steering tools for preselected paths
- Deflection tools
- More Engineering calculations required, trajectory etc

Directional well profiles
- Build and hold
- Build, hold and drop
- Continuous build

Terms
- Target location, this is where you are planning for the hole to end up
- TVD, true vertical depth
- HD, horizontal departure
- KOD, Kick off depth, the point you kick off from the vertical
- TOD, turn off depth, the depth that the direction of the hole is changed
- BRA, Build rate angle, degrees in 100s of feet
  - 1-6 long radius
  - 6-35 medium radius
  - 1.5-3 per foot short radius
- DRA, Drop off angle, is an incremental decrease in inclination
- LA, Lead angle, initiate the turn of well with a lead to compensate for a walking bit