



Shale Gas & Tight Oil Technology Evolution & Revolution

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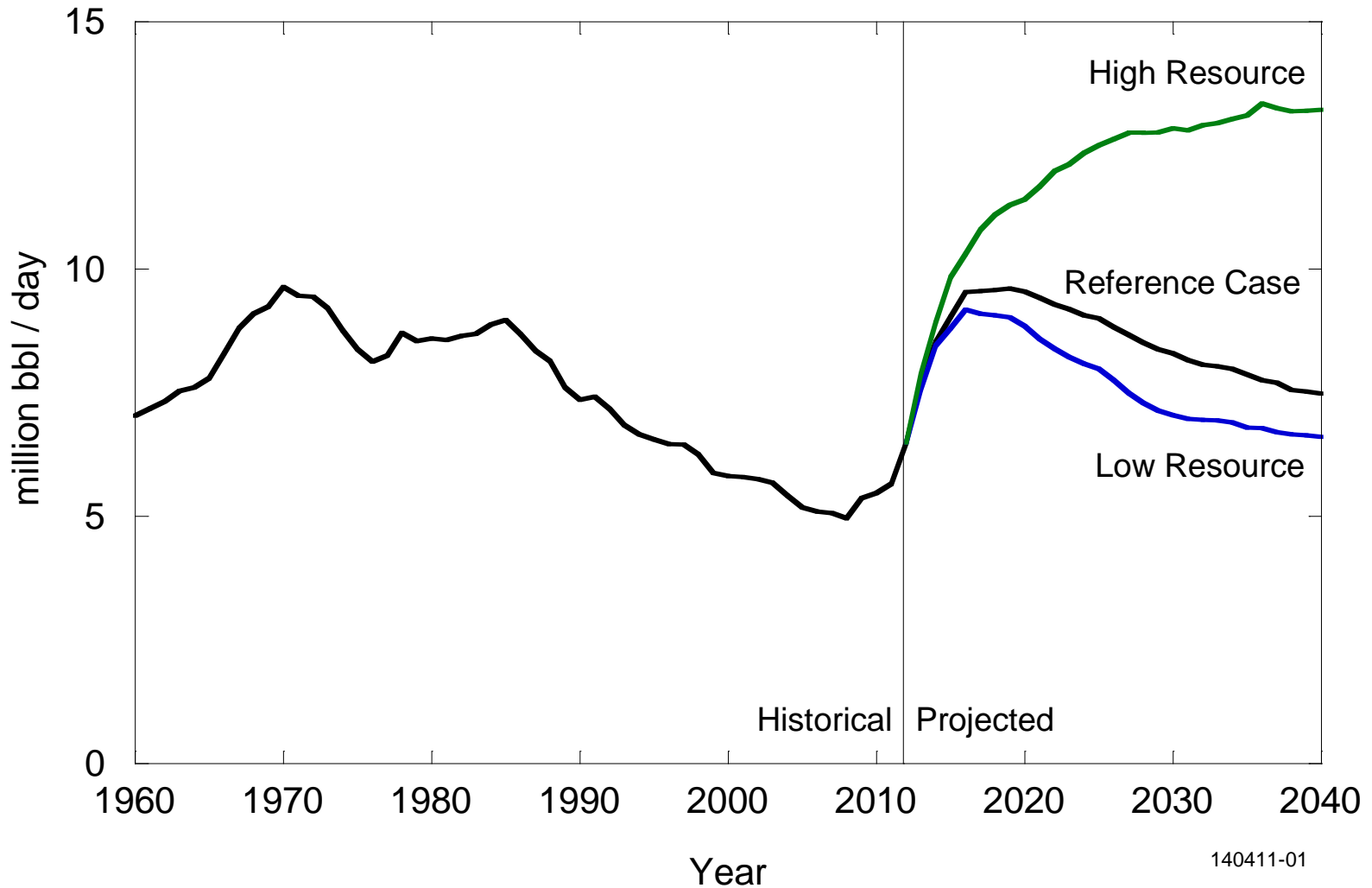


Schlumberger is a provider of hydraulic fracturing services. We

- develop and provide fracture fluid chemicals
- design and execute hydraulic fractures
 using our own personnel and equipment
- treat oilfield wastewater for reuse or discharge



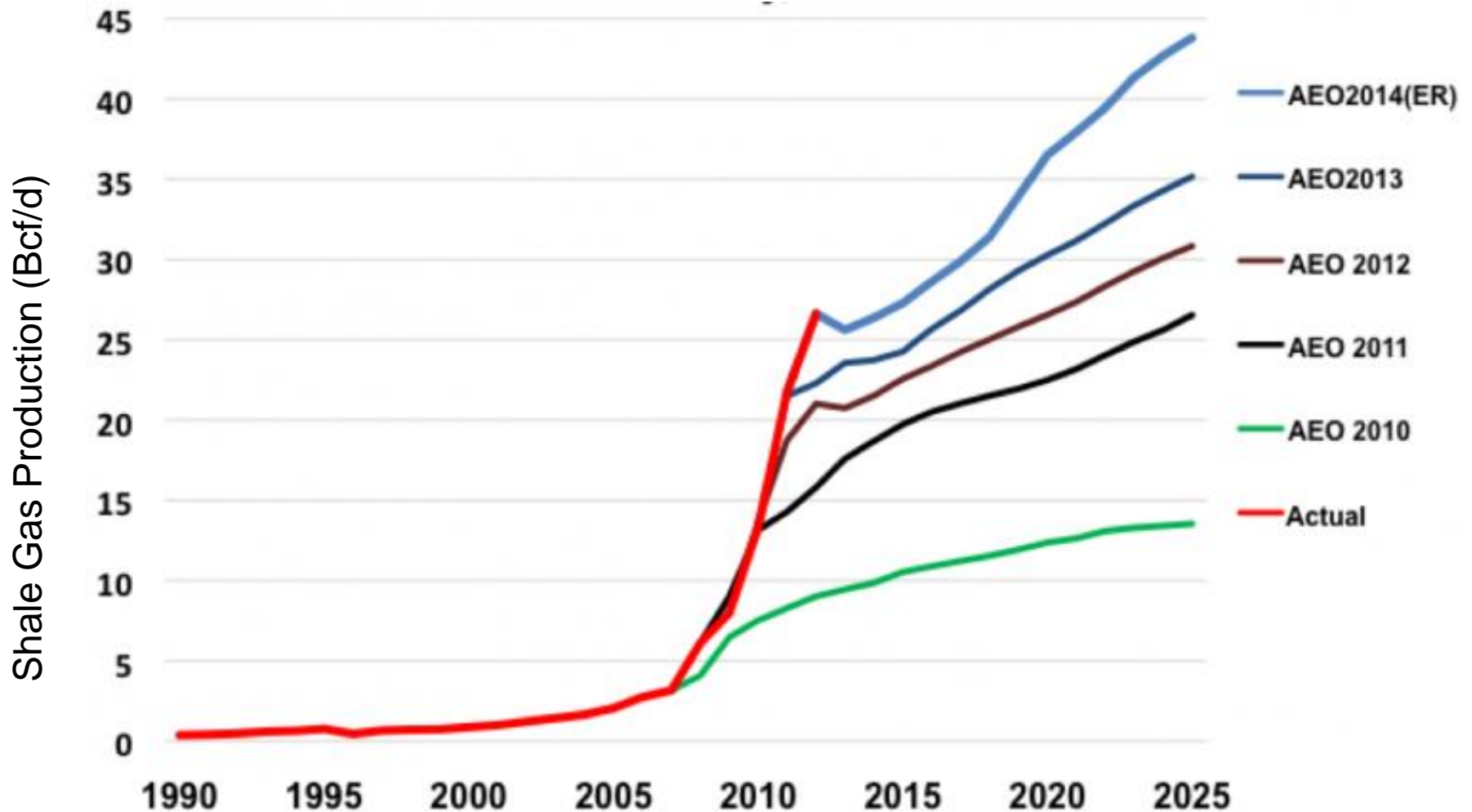
US Energy Information Administration Crude Oil Production Projections



140411-01

EIA Shale Gas Estimates Have Been Reliably Conservative

Projections of EIA Annual Energy Outlooks 2010-2014 vs Actual



Source: EIA, Annual Energy Outlook 2014, Early Release, Historic Data

Evolutionary Changes

Improved Operational Efficiency

- Surface Operations
- Well Construction

Improved Environmental Performance

- Provision of Water
- Fracture Fluid Chemicals
- Groundwater Pollution
- Induced Seismicity, Fugitive Methane, Air Pollution

Can be modeled by XX% per year improvement.

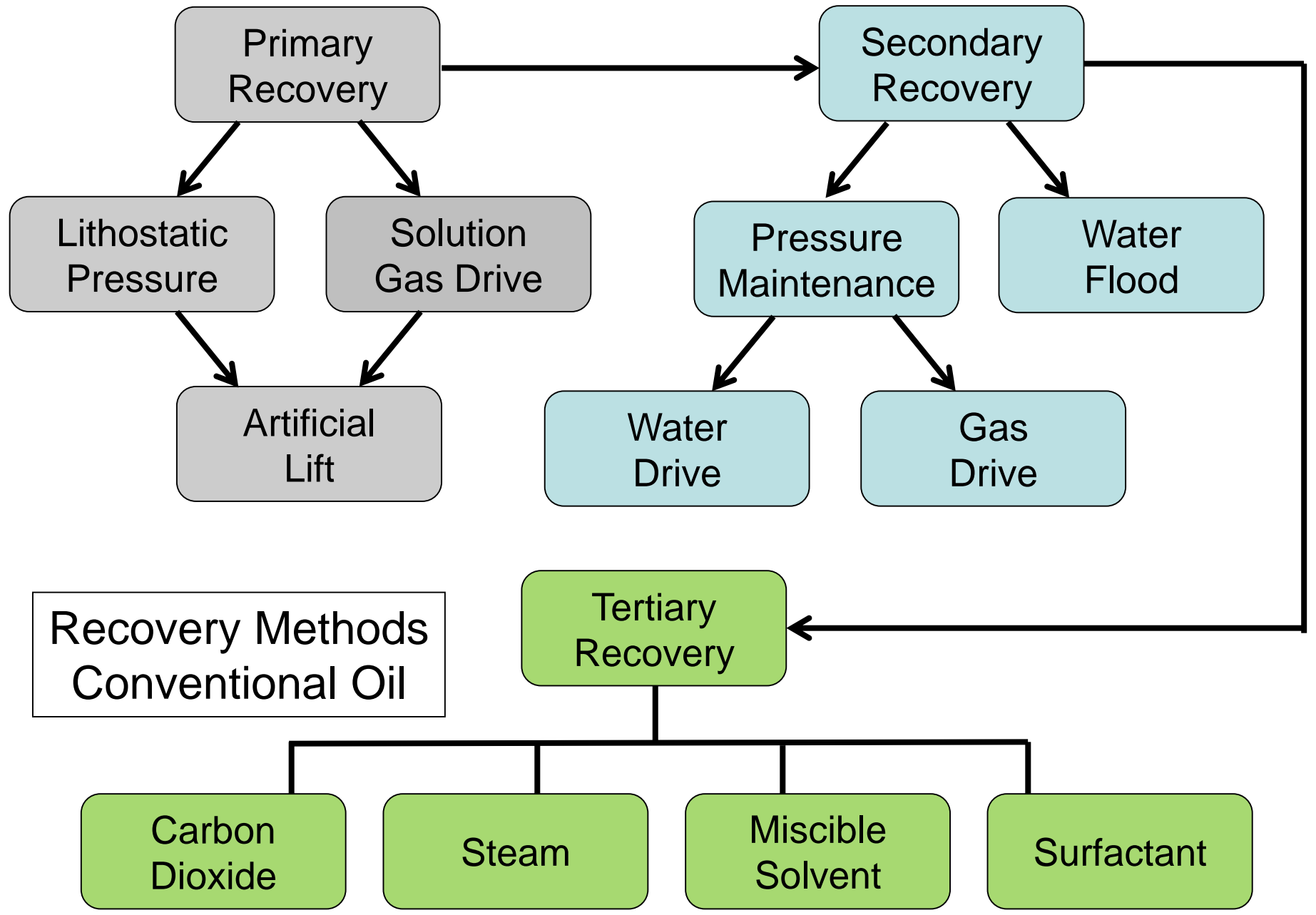
Revolutionary Change

- Breaking out of the Primary Recovery Trap

Cannot be modeled by YY% per year improvement.

The Pathetic Performance of Tight Oil Wells

	Conventional Oil Well	Tight Oil Well
Annual Decline Rate	5%	50%
Recovery Factor (EUR/OOIP)	50%	5%



Primary
Recovery



Lithostatic
Pressure

Solution
Gas Drive



Artificial
Lift

Recovery Methods
Tight Oil

Primary Recovery

Spindletop
Beaumont, Texas
10 January 1901

Well Depth: 1139 feet
Initial Production: 100,000 bbl/day

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