Resilience of the shale production

Philippe Charlez, Total
05/04/2016 – ASPO
Shale oil production is resilient

**Resilience**

Low and delayed impact of production with respect to reduction of activity

**Source:** Baker Hughes

**Source:** EIA

- Monterey
- Haynesville
- Woodford
- Austin Chalk
- Marcellus
- Utica
- Delaware
- Yeso & Glorieta
- Granite Wash
- Wolfcamp
- Bonespring
- Niobrara-Codell
- Spraberry
- Bakken
- Bakken
- Eagle Ford
Shale gas production is resilient

Source: ITG

Barnett shale

Barnett + Haynesville + Marcellus
Shale gas production is resilient: production per rig

Source: EIA

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Resilience factors (UFDsim)

Existing export pipe 1 Bcf/day

Core area 3000 km² 3000 wells

Production (Bcf/day) vs Critical rig number

Plateau = 1 Bcf/day

First resilience factor is well number

70% in 3 yrs

3.3 Bcf/well

Time (years)

Daily production (MMcf/day)

Cumulated production (Bcf)

Resilience factors (UFDsim)

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Second resilience factor is operational performances.

Third resilience factor is well/géological performances.

Resilience factors (UFDsim)

Critical rig number

Production (Bcf/day)

Plateau = 1 Bcf/day

10 years

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Resilience of the US main gas plays (UFDsim)

Barnett

14788 wells

EUR UFD<sub>sim</sub> = 1,97 Bcf
EUR actual = 2,17 Bcf

Haynesville

3699 wells

EUR UFD<sub>sim</sub> = 6,48 Bcf
EUR actual = 6,72 Bcf

Marcellus

6835 wells

EUR UFD<sub>sim</sub> = 7,5 Bcf
EUR actual = 7,42 Bcf

Source EUR actual is Wood Mac
Resilience of the three american gas plays (UFDsim)

Cumulated production (Bcf/day)

Date | Decline
--- | ---
2015 | 19%
2016 | 16%
2017 | 15%
2018 | 13%
2019 | 11%
2020 | 10%
2021 | 10%
2022 | 9%
2023 | 9%
2024 | 8%

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Resilience of the two American oil plays (UFDsim)

### Production (Mbopd)

#### Eagle Ford

- **EUR calc = 428 kbbls**
- **EUR actual = 249 kbbls**
- **12499 wells**

#### Bakken

- **EUR calc = 592 kbbls**
- **EUR actual = 419 kbbls**
- **10164 wells**

### Date Decline

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