



Purpose of Resource Classification, Fundamental Principles and System Applications

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**CCOP EPPM Program Workshop on UNFC Resource Classification (for
Oil, Gas and Minerals) organized in cooperation with UNECE**

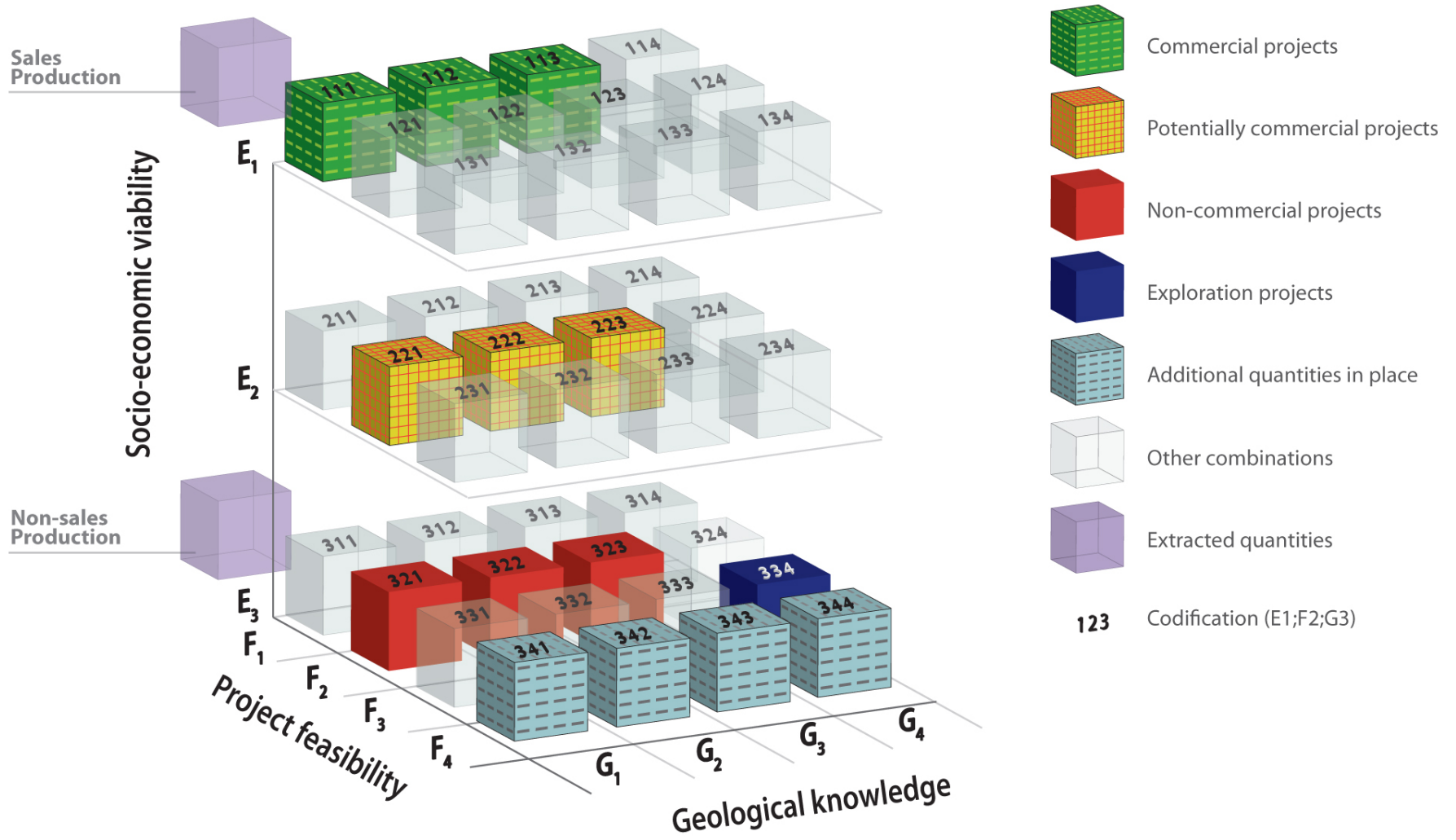
9-10 February 2012, Bangkok, Thailand

Acknowledgement

- Sigurd Heiberg,
Chairperson, UNECE Committee on Sustainable Energy
Advisor Corporate Strategy, Statoil



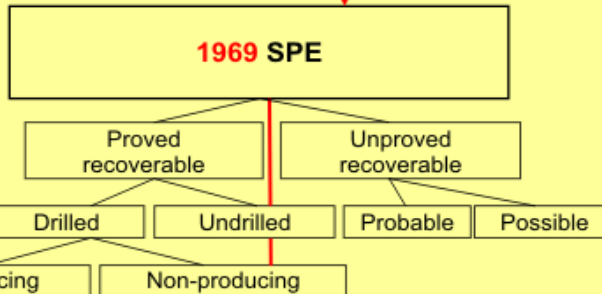
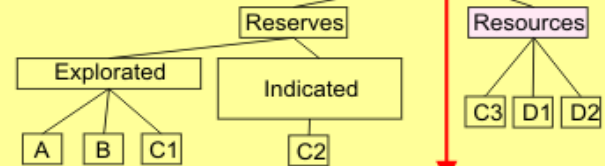
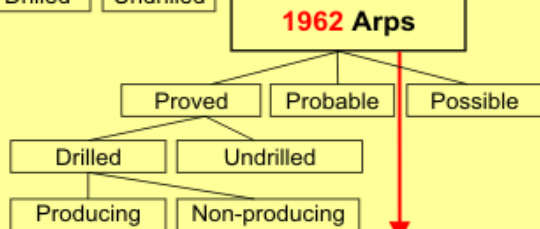
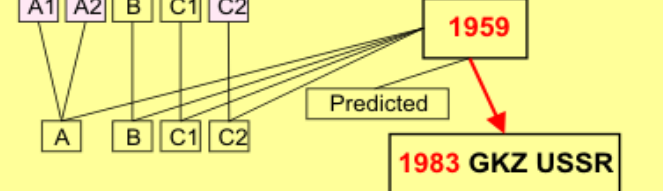
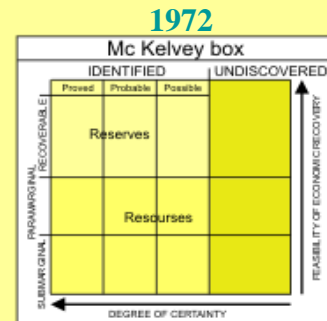
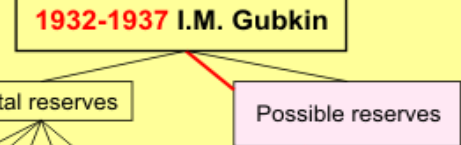
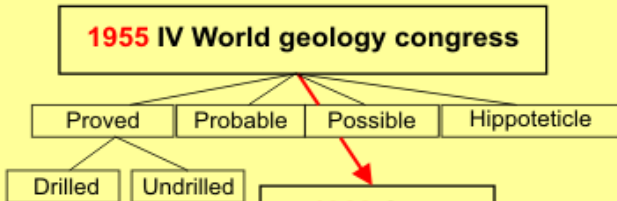
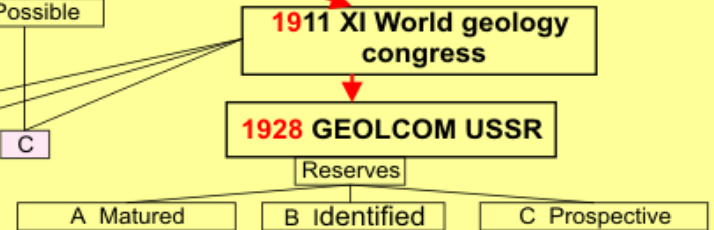
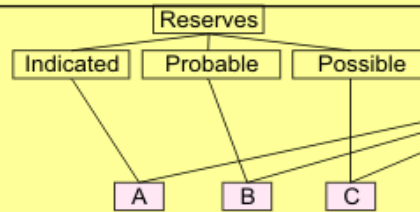
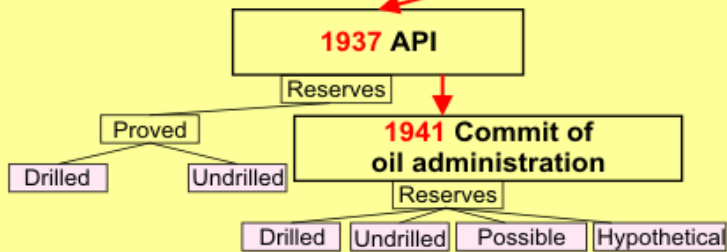
UNFC 2009



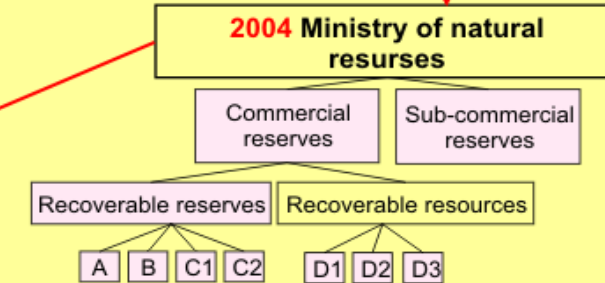
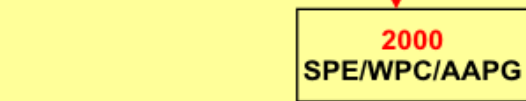
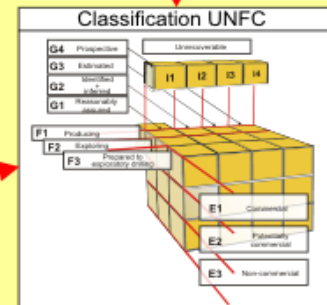
Market economics

1907 London mines institute

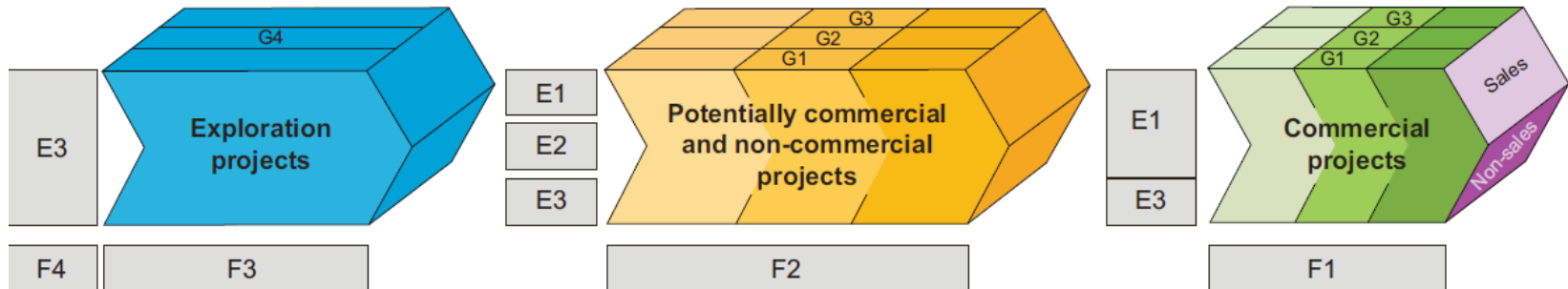
States economics



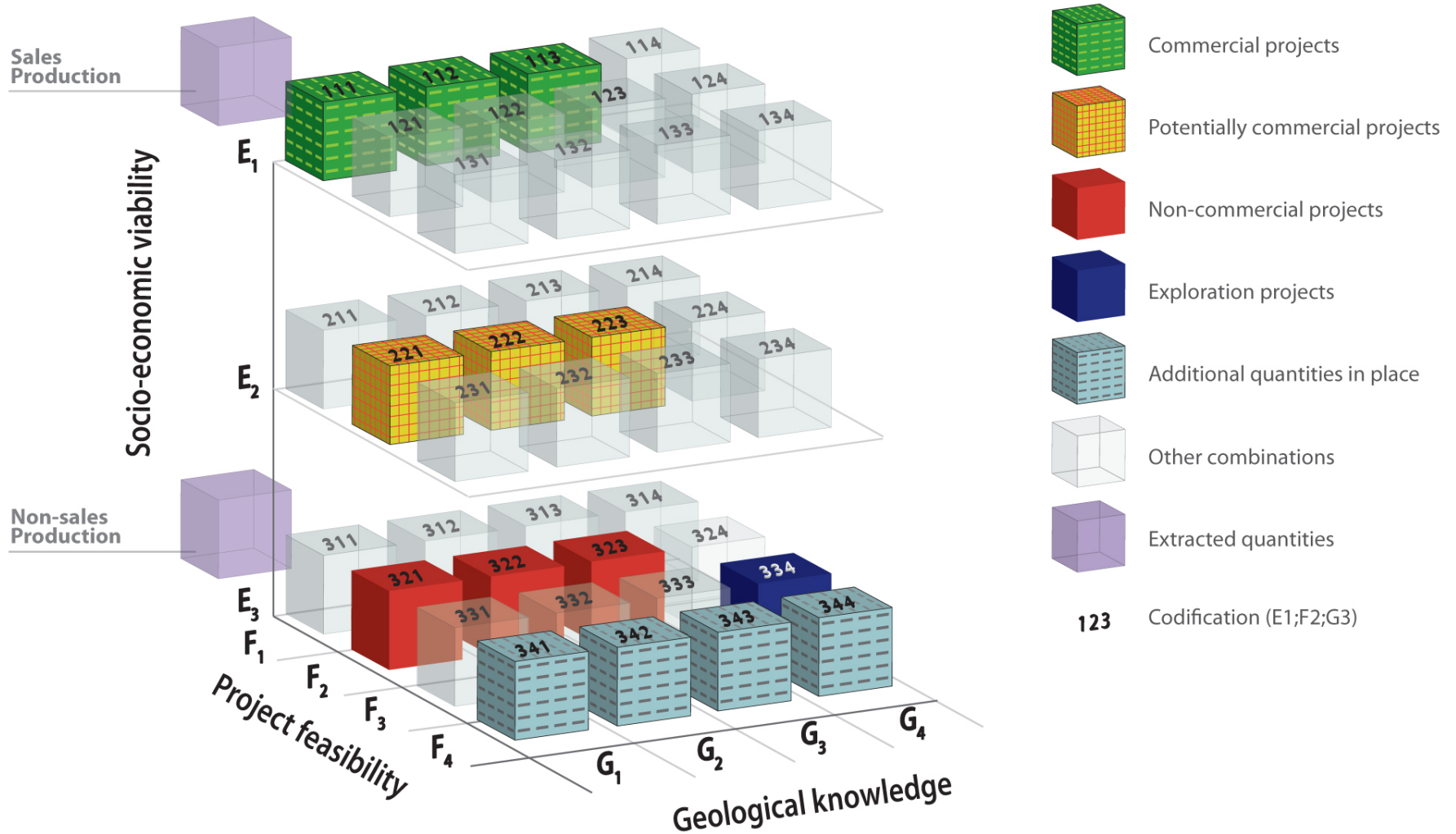
1997-2004



The value chain that became visible in the 1980's was followed by the balanced score card in the 1990's. This caused restatements of reserves



The project value chains are at the base of UNFC





To move quantities through the UNFC value chain may require the accumulation of substantial amounts of information

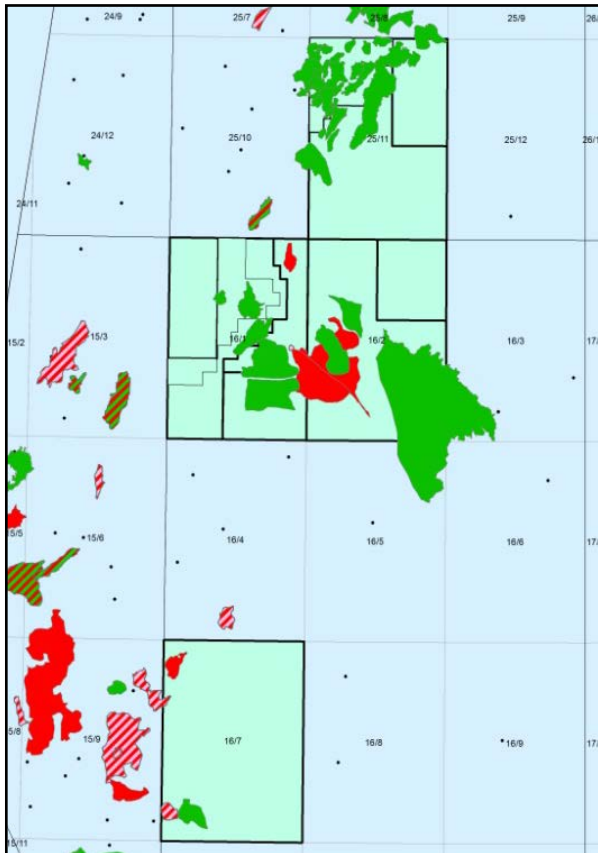
The number of companies involved from the start to the successful result of exploration for petroleum in the eastern margin of the Viking Graben in the North Sea are many.

A case history of the Utsira High and the biggest discovery in the world in 2011.

.....it starts with the first licence awarded in Norway

1965 -71

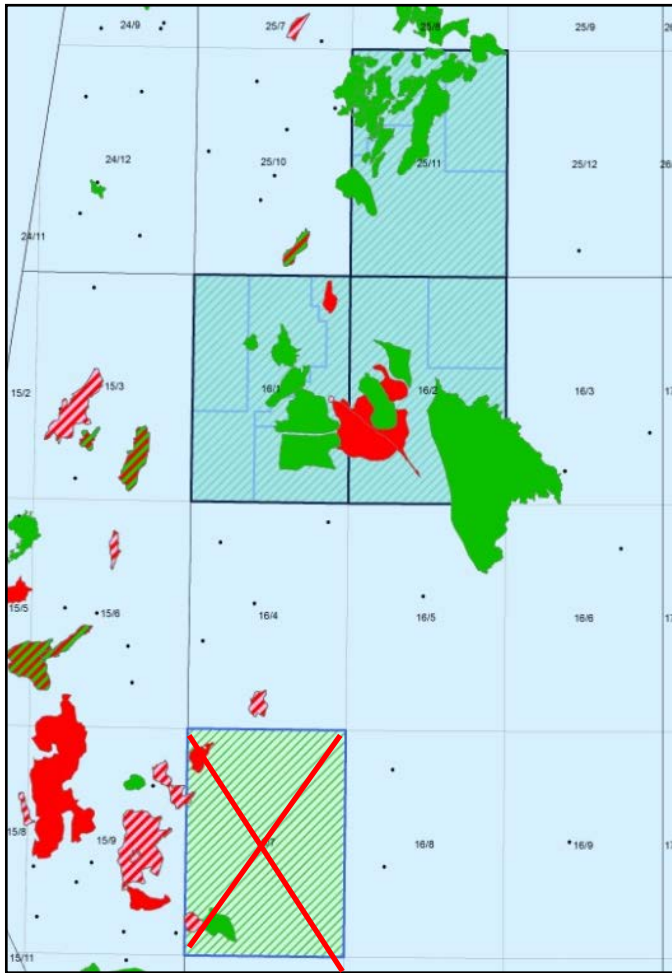
PL 001



- Production licence PL 001 was awarded 1965 to Exxon.
- Well 25/11-1 in 1967 proved the Balder discovery.
- Balder Field was developed and on-stream in 1999

1971- 74

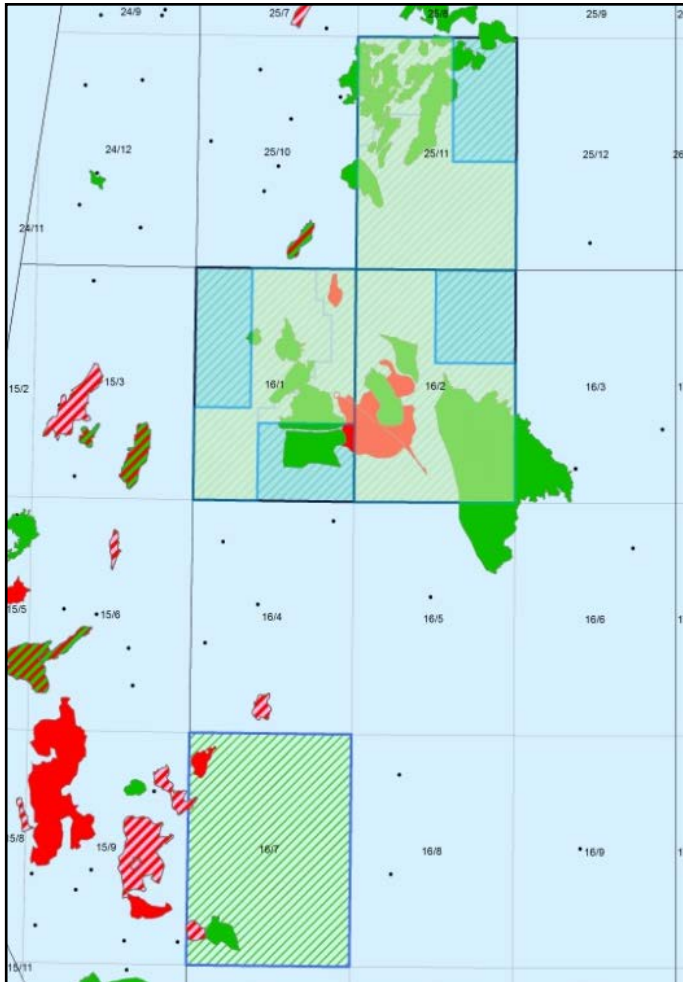
PL 001



- 1971:
- Entire block 16/7 relinquished
- Later three small discoveries here

1974- 77

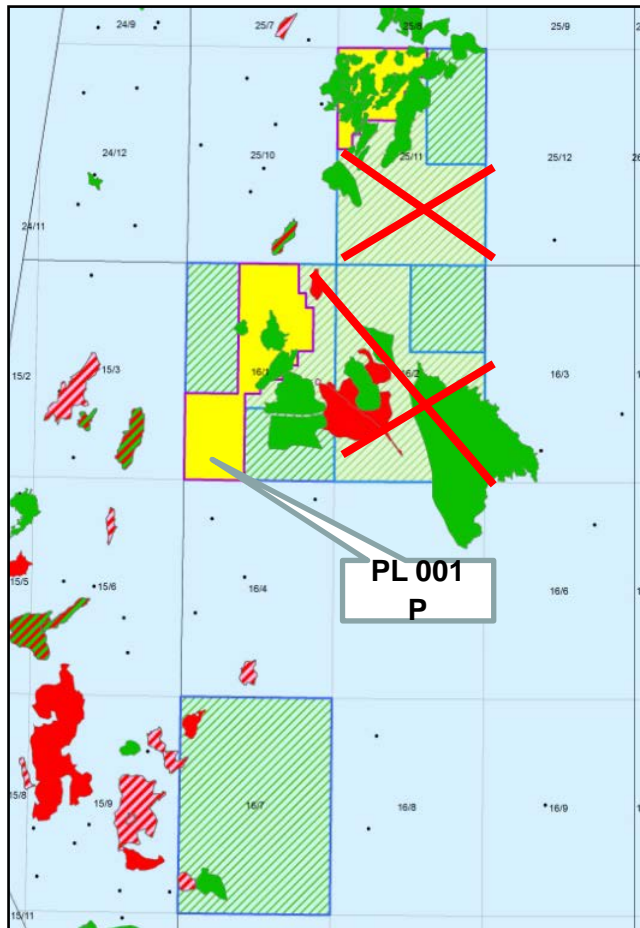
PL 001



- 1974:
- Parts of blocks 16/1, 16/2 and 25/11 were relinquished:
- This area includes now:
 - eastern part of later Grane discovery,
 - a small southern part of later Luno and entire Luno South discoveries

1977 - 1994

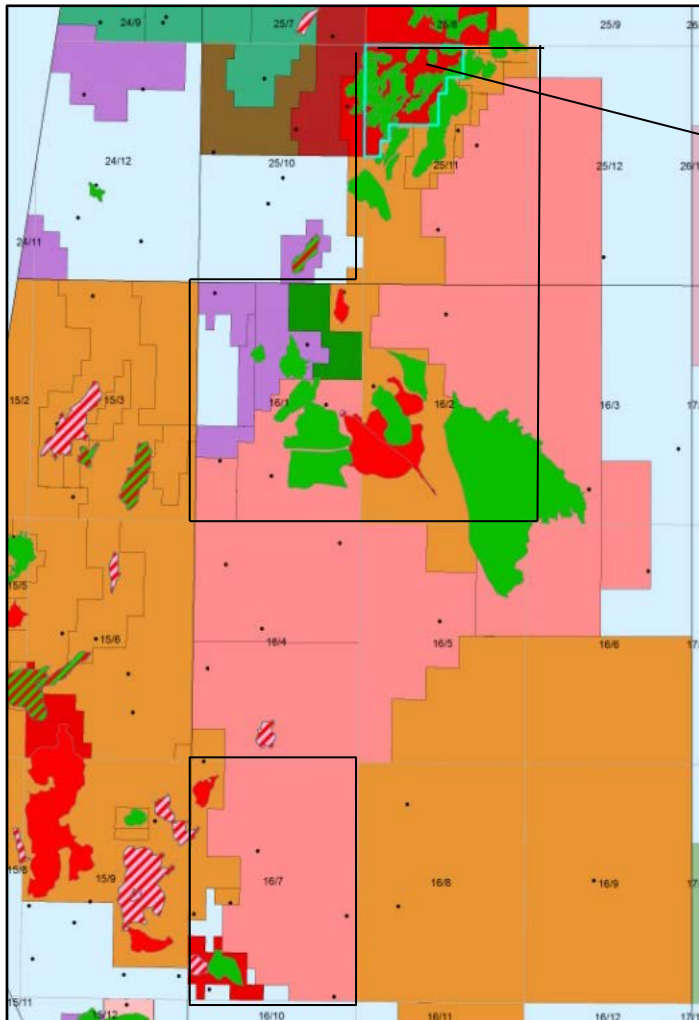
PL 001



- 1977
- Part of 25/11 and rest of block 16/2 were relinquished:
- This area includes what is now
 - Southern part of later Grane discovery,
 - Main part of later Luno discovery,
 - Main part of Johan Sverdrup giant discovery 2010
 - several small discoveries

PL 001

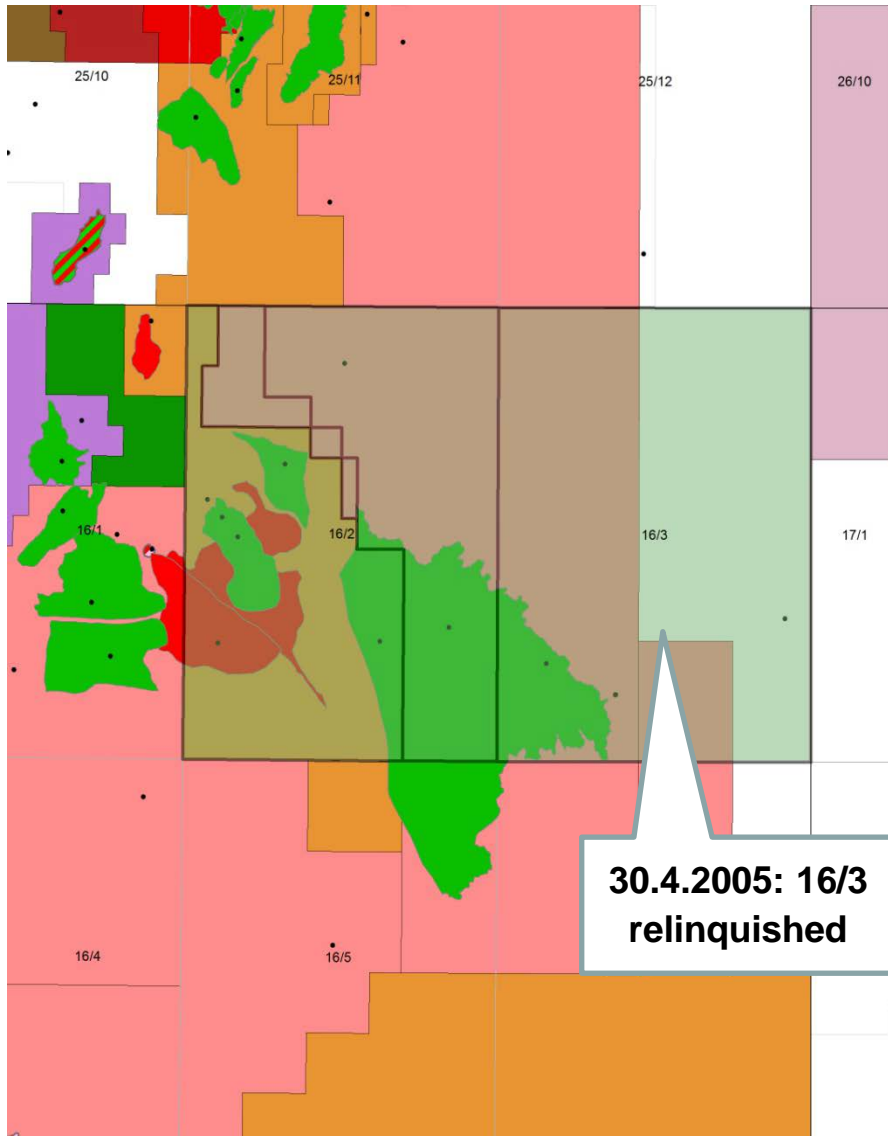
as per 10.11.11



PL 001

- Current licences and discoveries

PL 265



2001: Awarded (NST 2000), 27. April.

2 blocks 16/2 and 16/3

Participants:

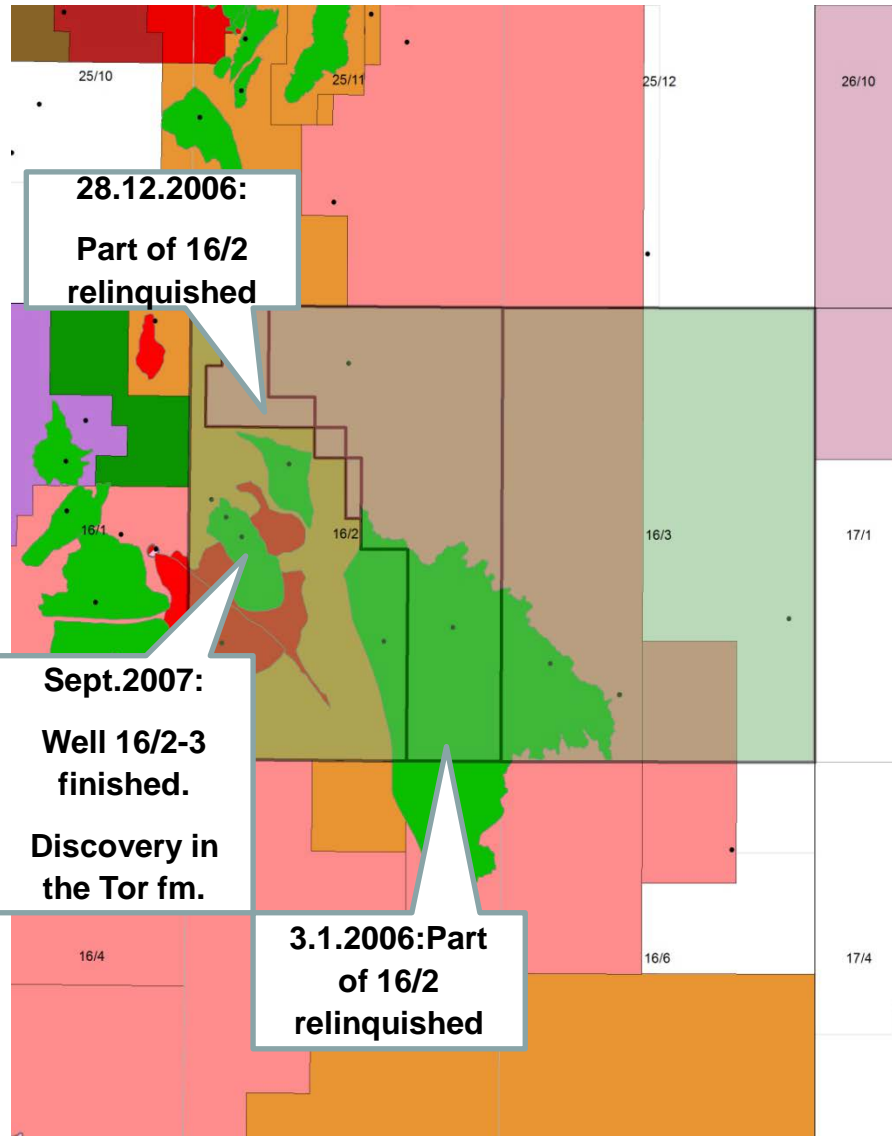
Statoil (0,60%), Exxon (25 %) and Enterprise (15 %).

In May Petrofarmed in 30 % from Statoil.

14.10: Well 16/2-2 (dry) was finished

2005: 30.4.: Relinquished block 16/3

PL 265



2006: 3.1.: Relinquished additional 45 % of licence in block 16/2.

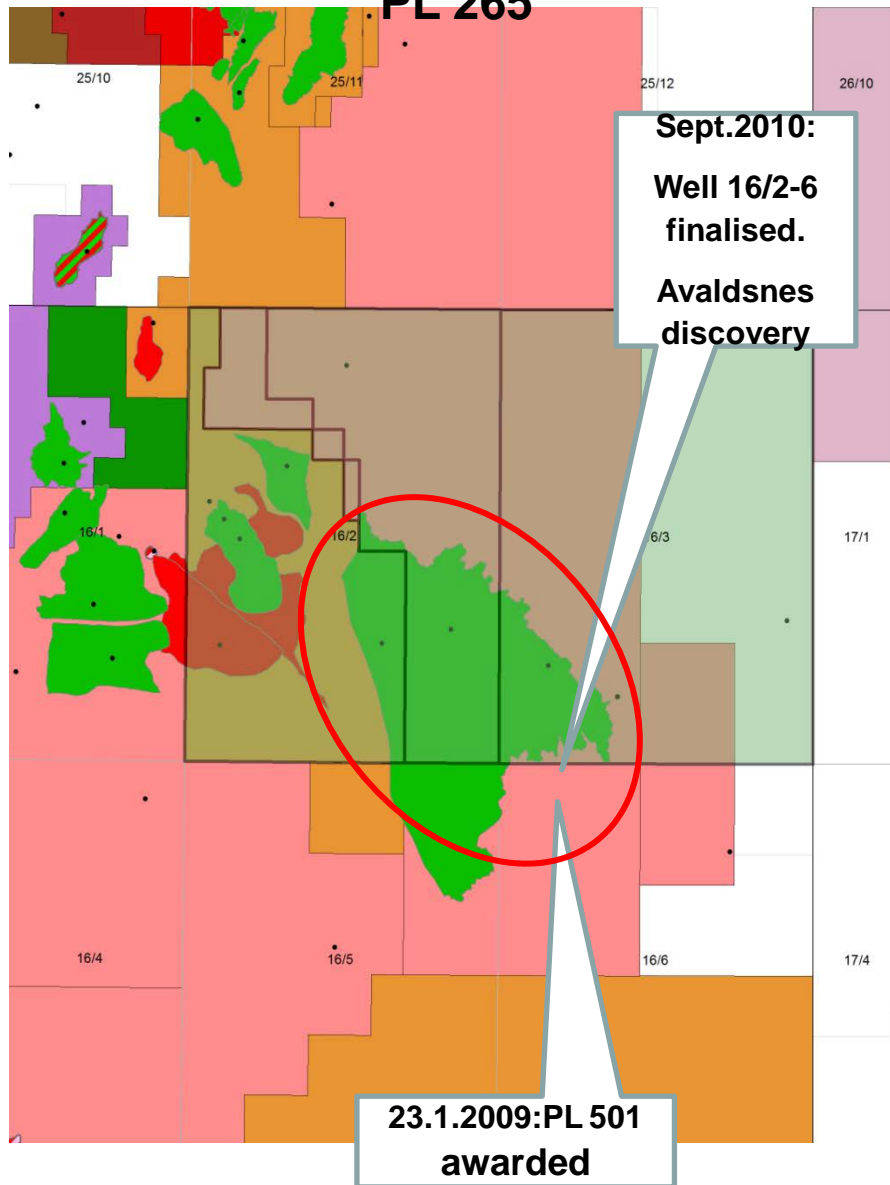
Participants now are: Statoil (O), Petoro (both 30 %) and Det norske (40 %).

28.12.: Additional relinquishment

2007: September; well 16/2-3 finished, discovery in Torfm.

Participants now are : Statoil and Petoro (30 %), Det norske (30 %) and Talisman (10 %)

PL 265



2009: PL 501 awarded, 23.1.

2010: 1. January: Talisman selling to Lundin 10%

20.9.: 16/2-6 finished – The Avaldsnes discovery.

Initial estimate: 100 million Sm³ o.e. (oil). Three appraisal wells and one exploration well later:

Giant Johan Sverdrup discovery:

1.5 – 3.3 billion barrels!

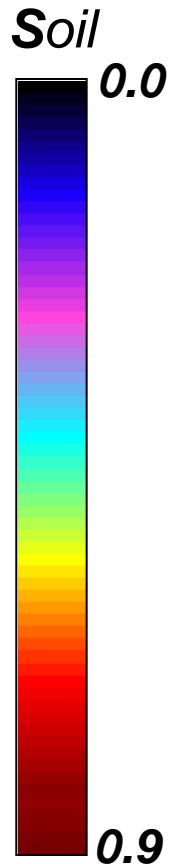
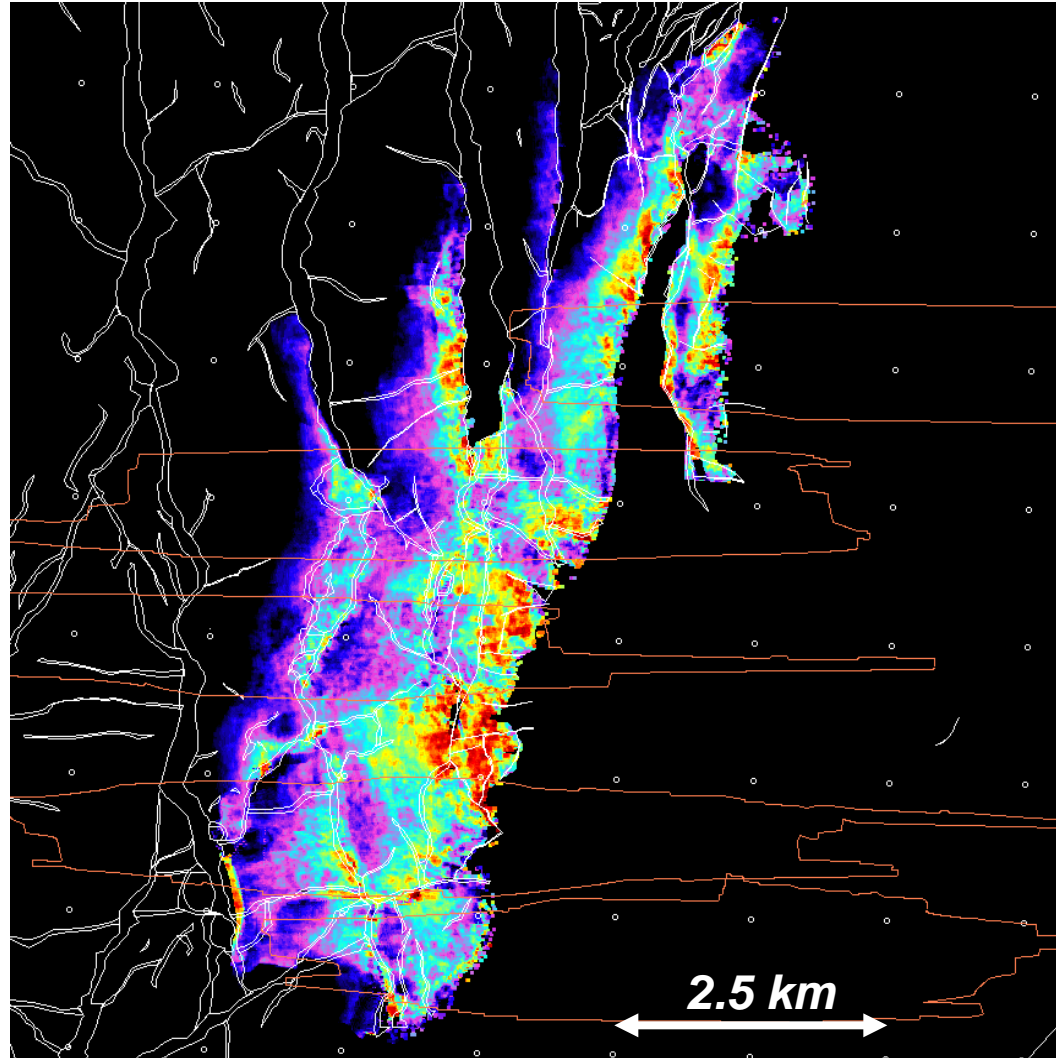
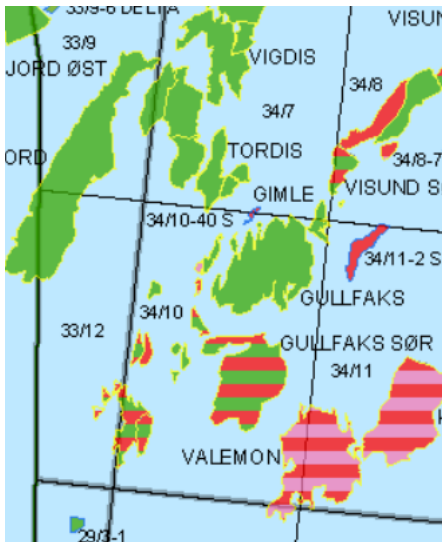


Paradigm: New player introducing innovative new play model

- The last player in, Lundin, provided the right model for the Utsira South High, 45 years after the first licence was awarded:
 - Reservoir in fractured and deeply weathered basement in combination with overlying weathered detritus deposited in Upper Jurassic.

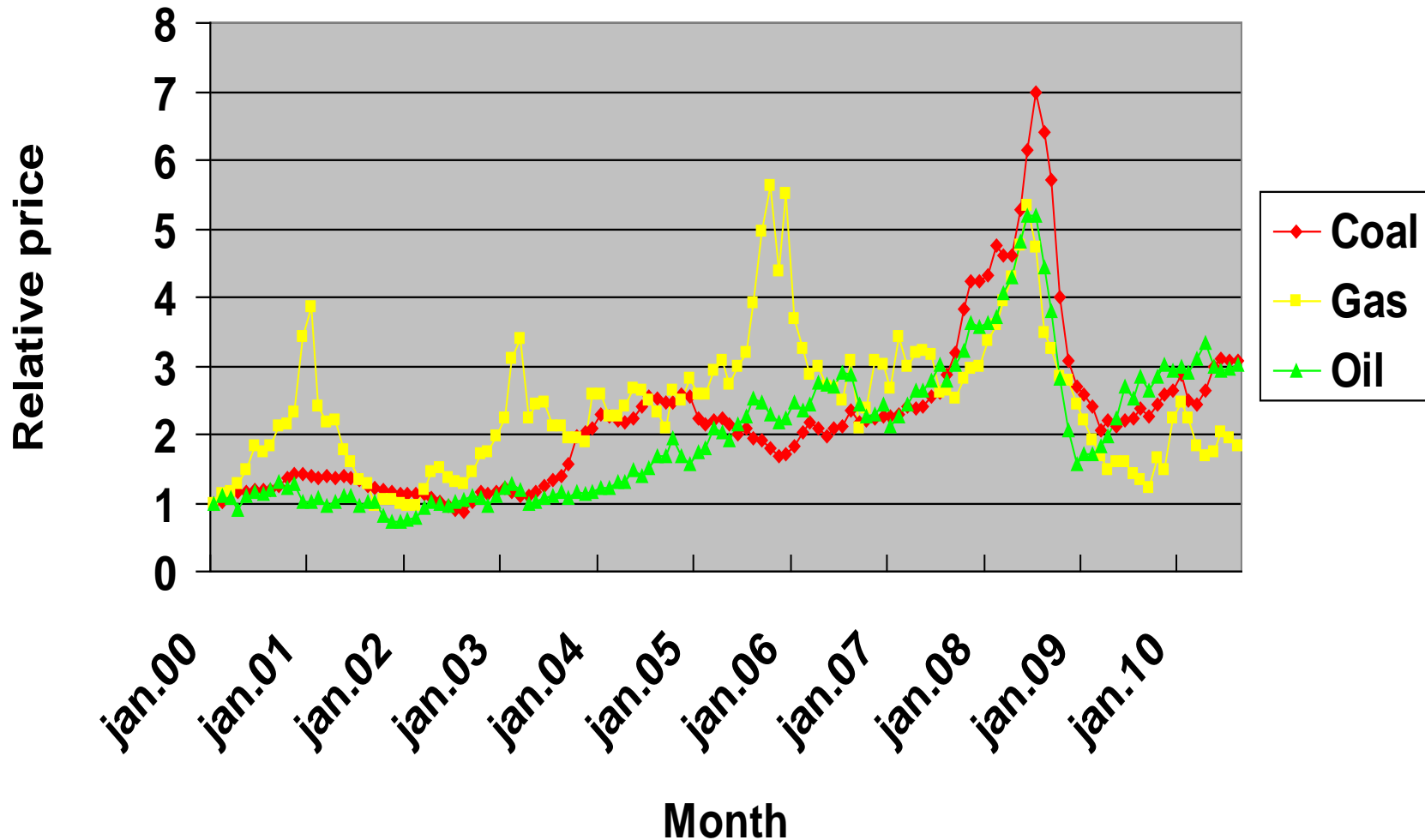


(Mapping) technology changed over the life of the Gullfaks Field, Norway



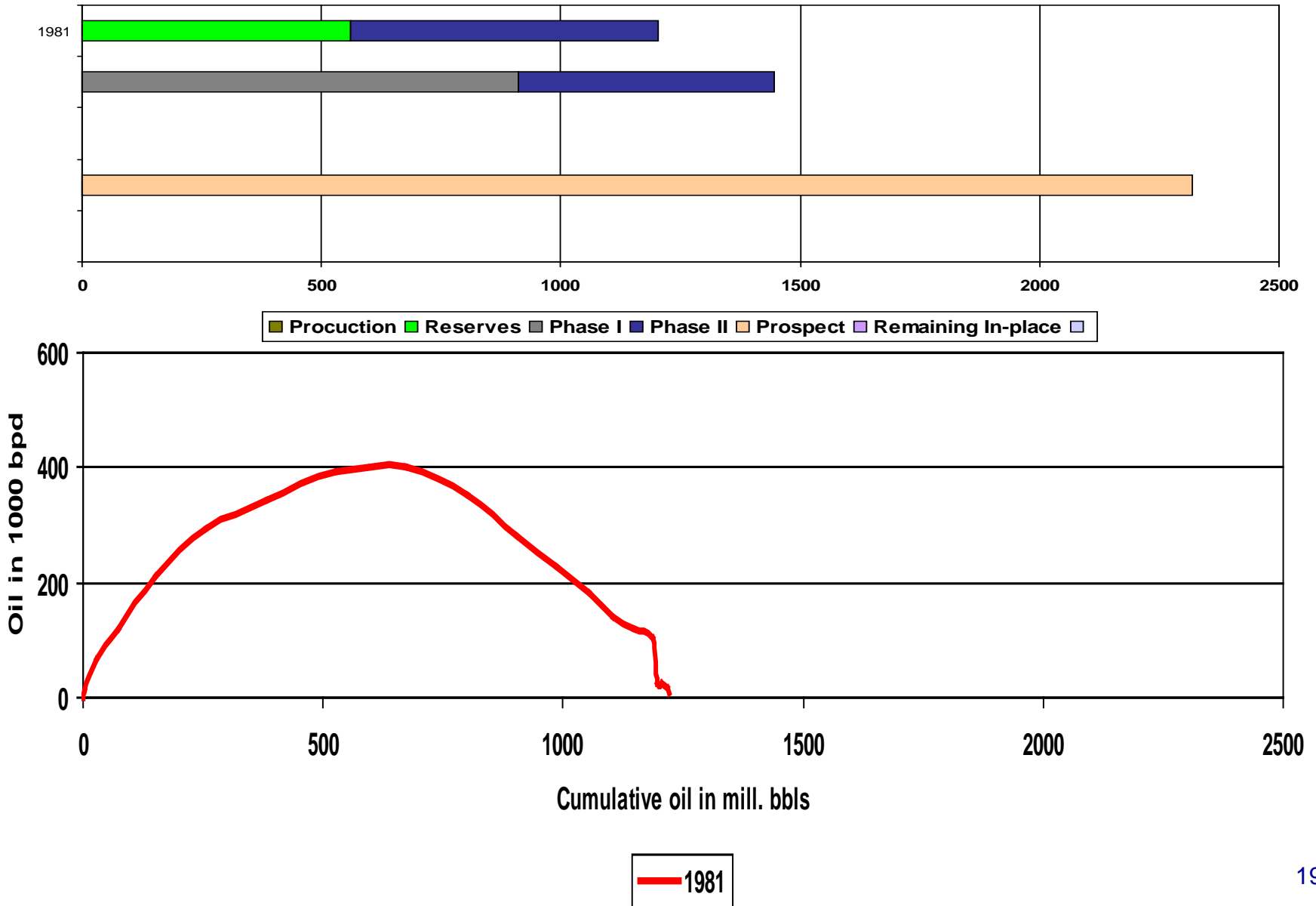
**Average Oil saturation - Tarbert Fm –
2005 (4D inversion)**

Prices of coal, gas and oil relative to January 2000 – Volatility adds risk, cost and reduces efficiency



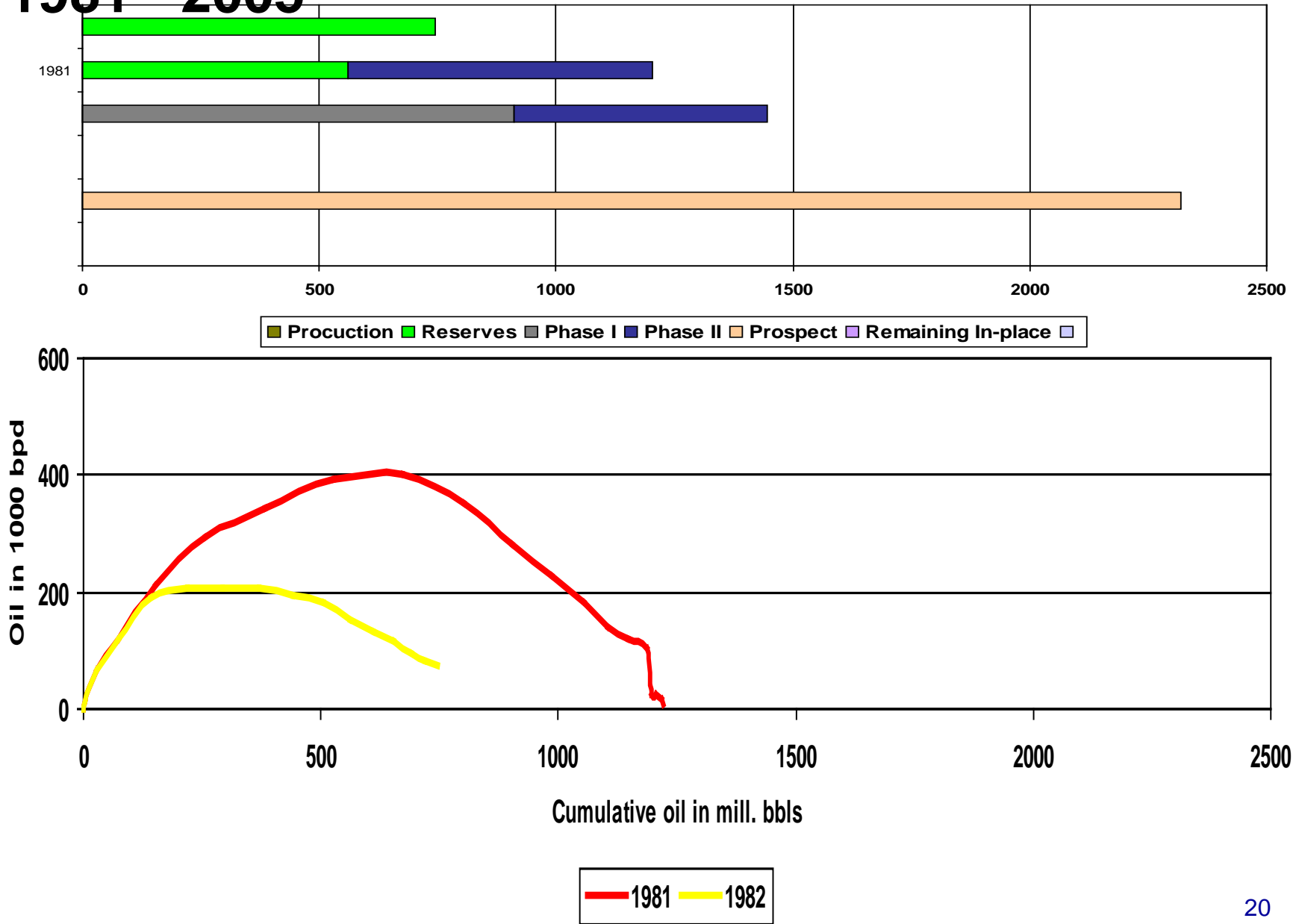


Gulfaks forecasts and production 1981 - 2005



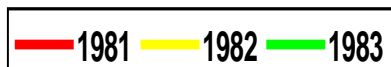
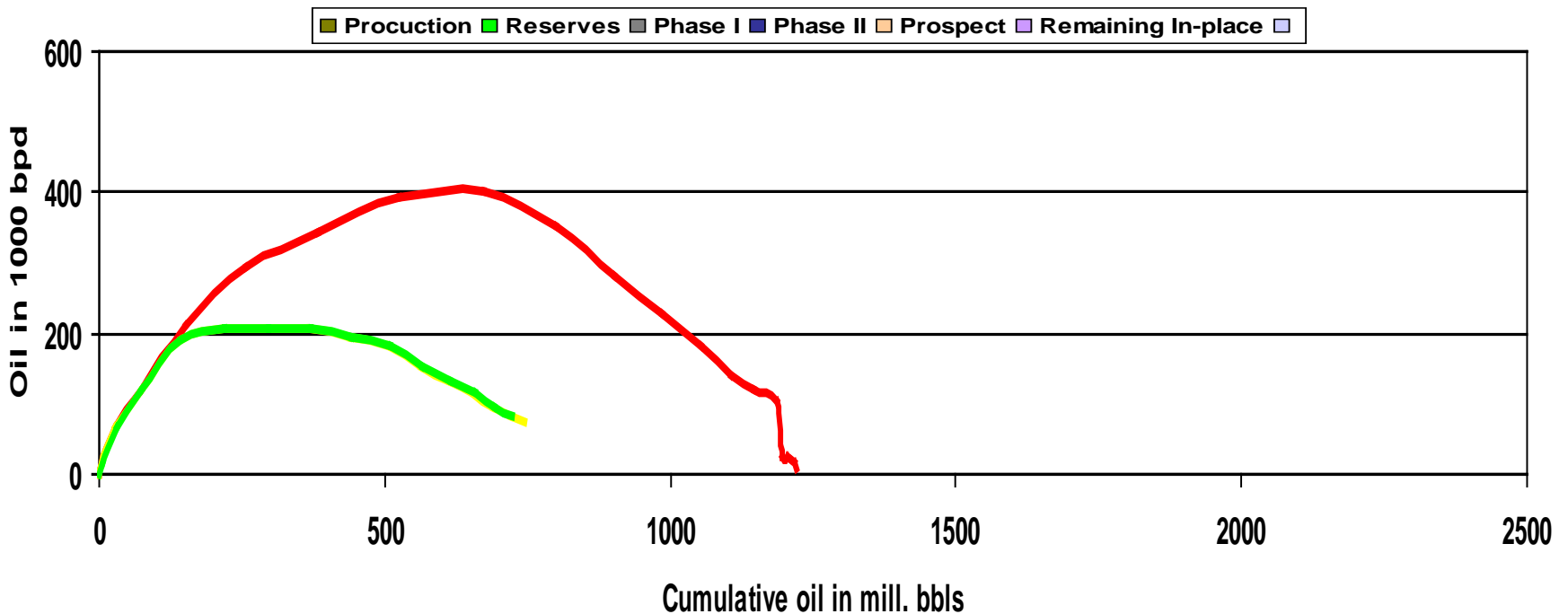
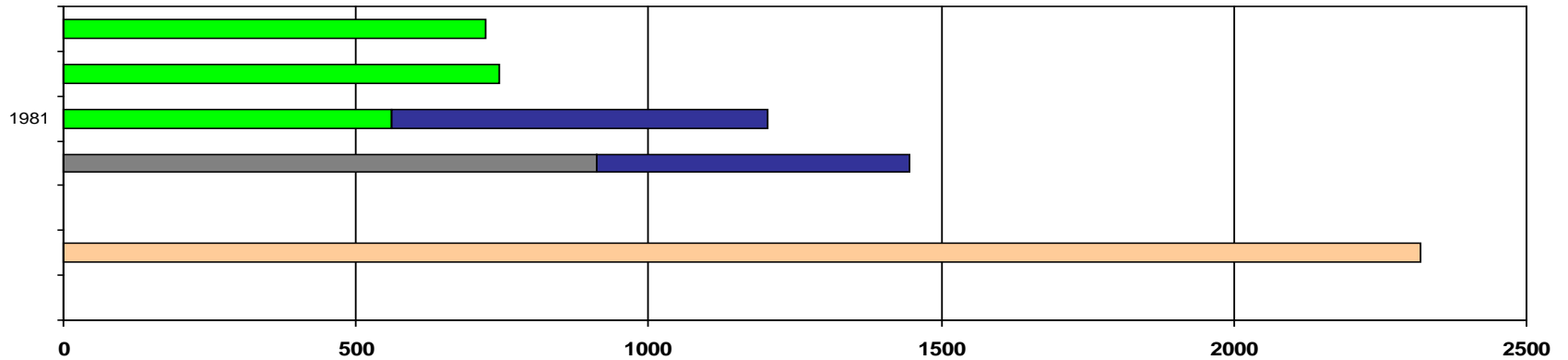


Gulfaks forecasts and production 1981 - 2005



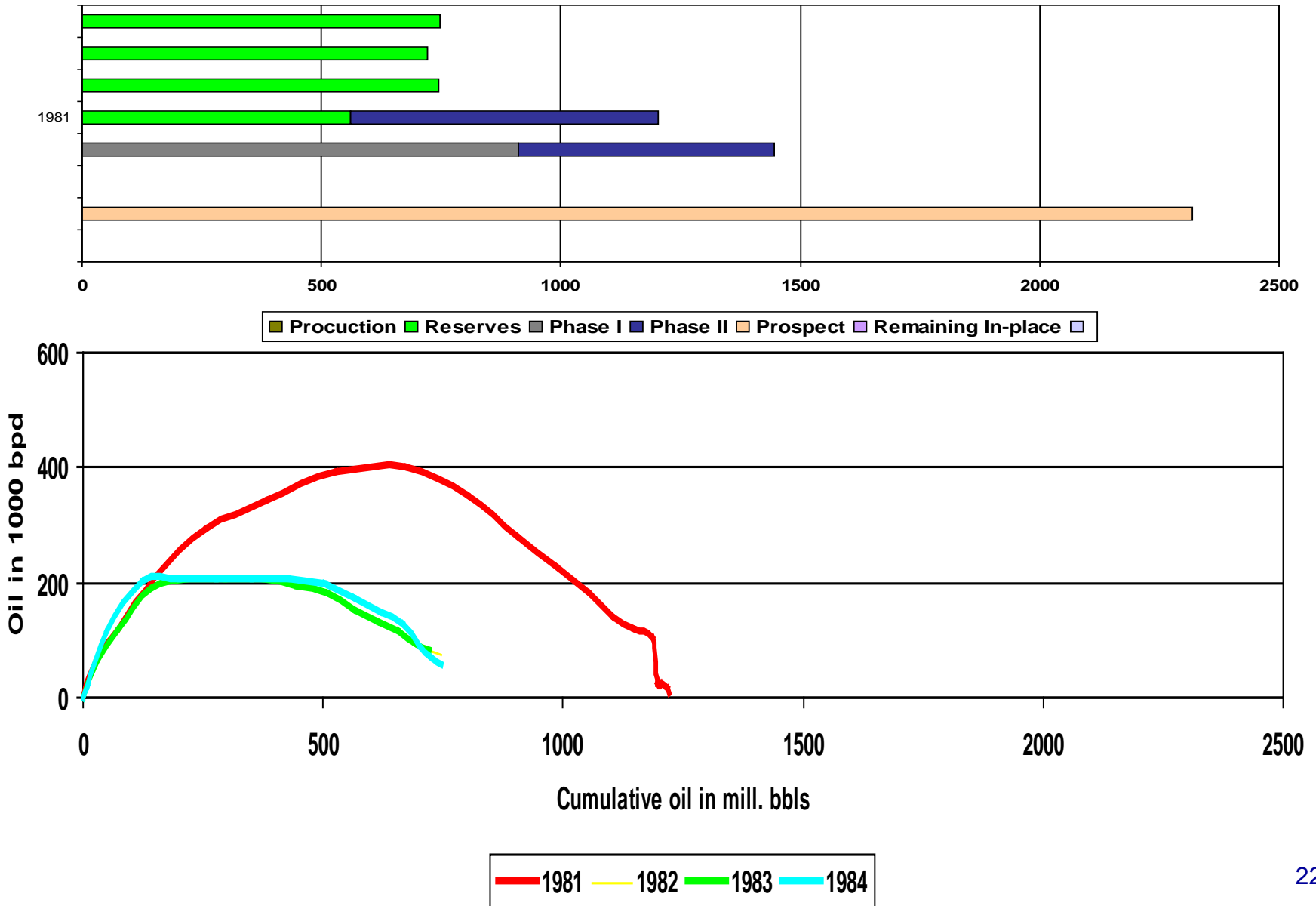


Gulfaks forecasts and production 1981 - 2005



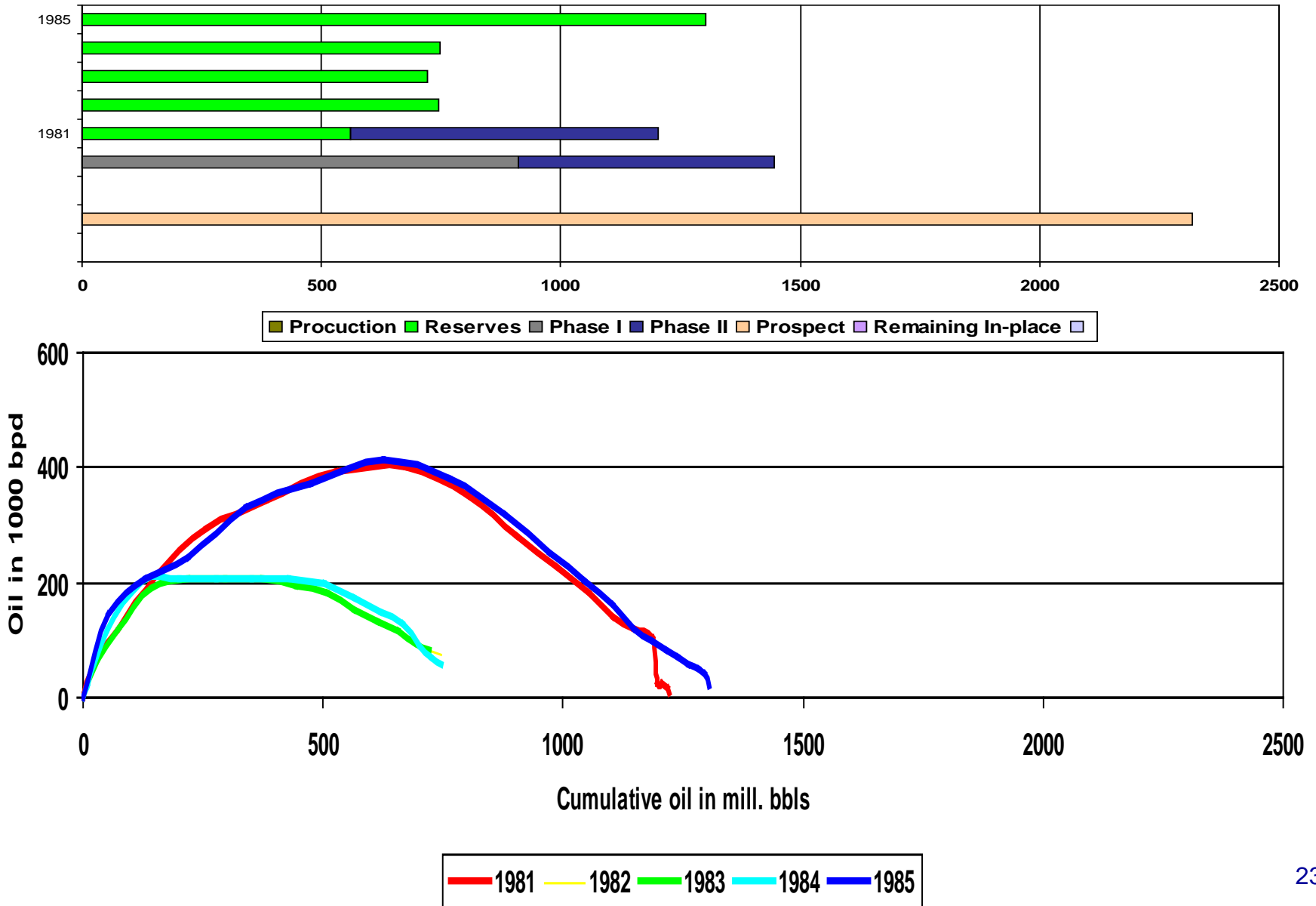


Gulfaks forecasts and production 1981 - 2005



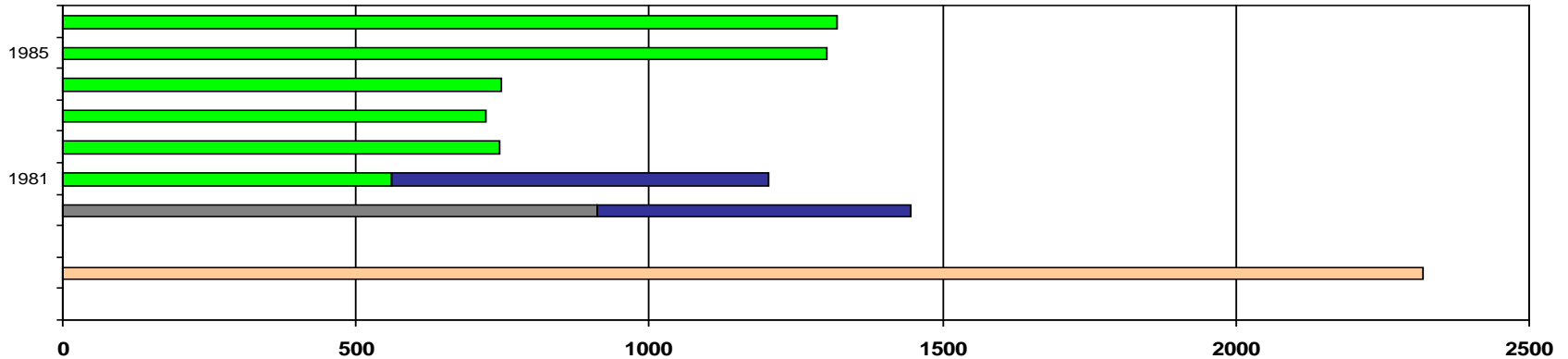


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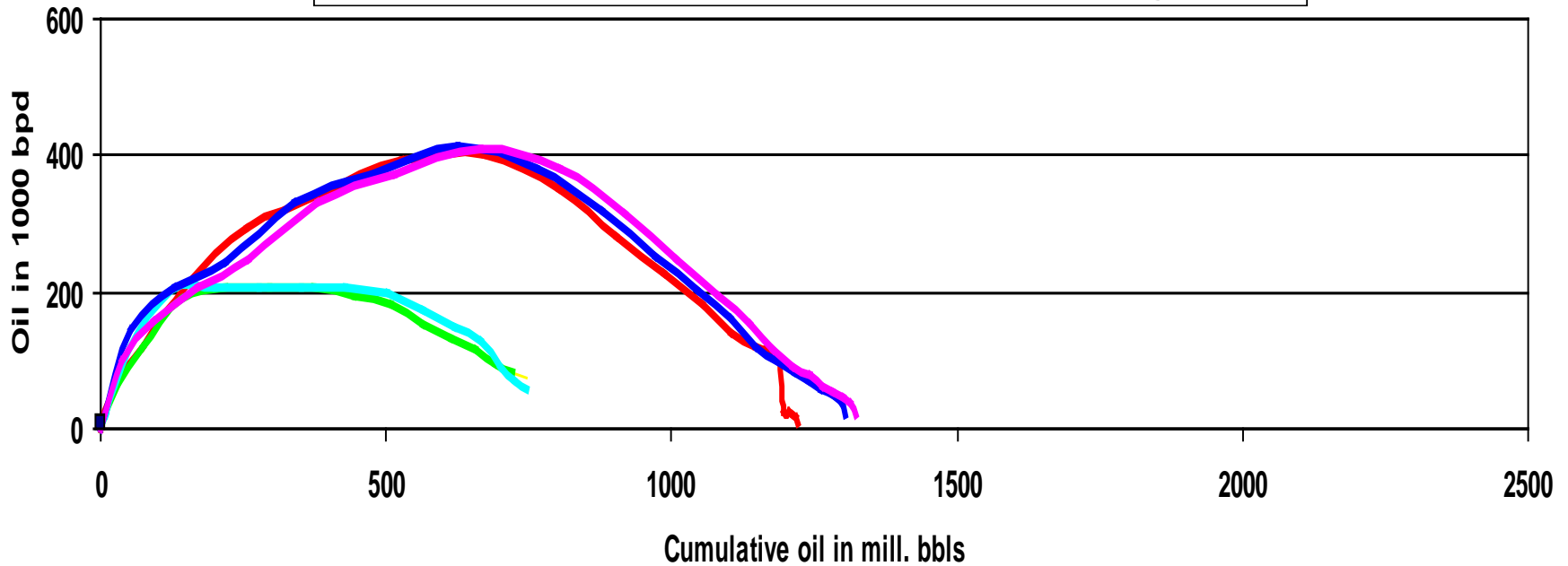




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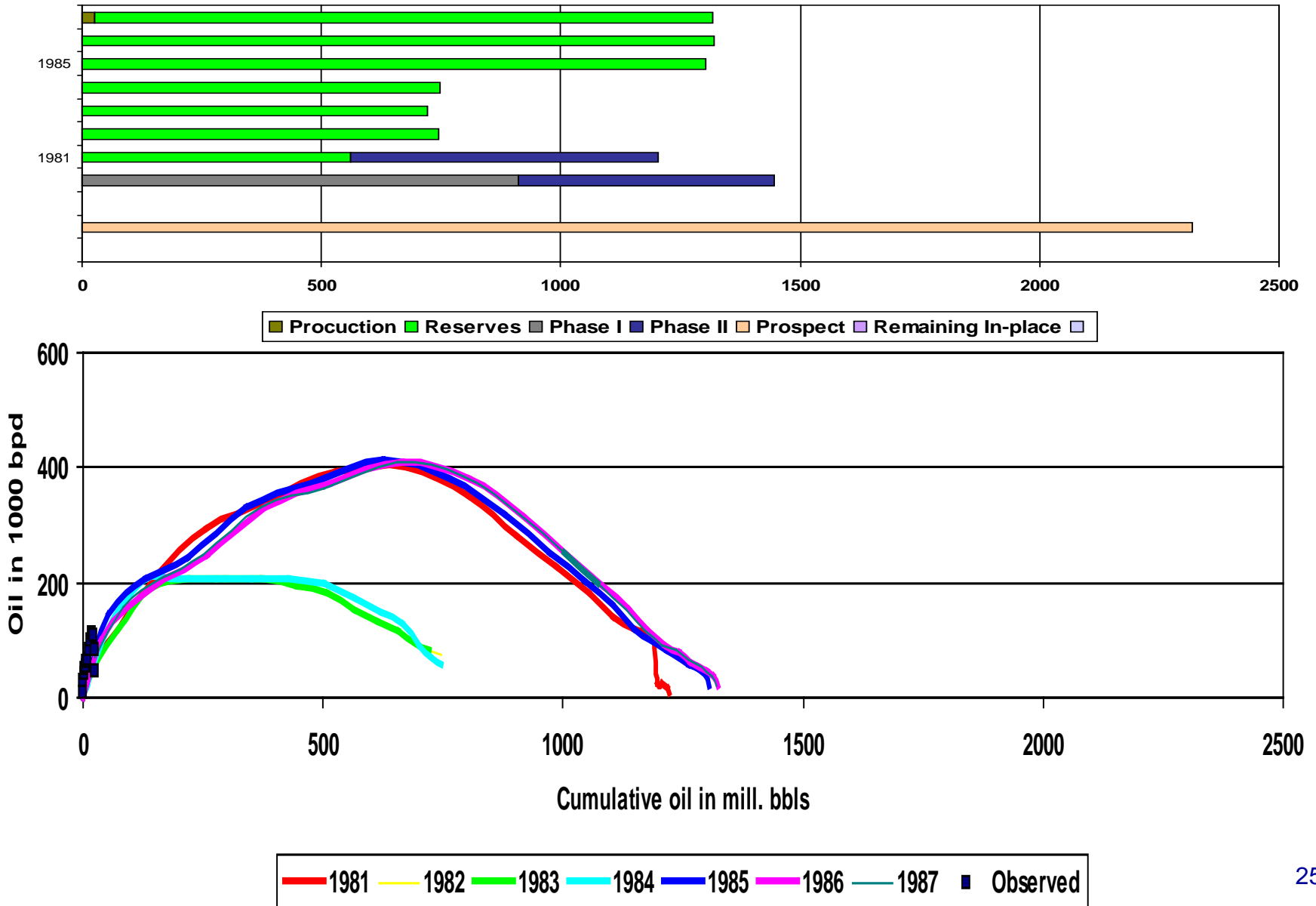
■ Production ■ Reserves ■ Phase I ■ Phase II ■ Prospect ■ Remaining In-place ■



— 1981 — 1982 — 1983 — 1984 — 1985 — 1986 ■ Observed

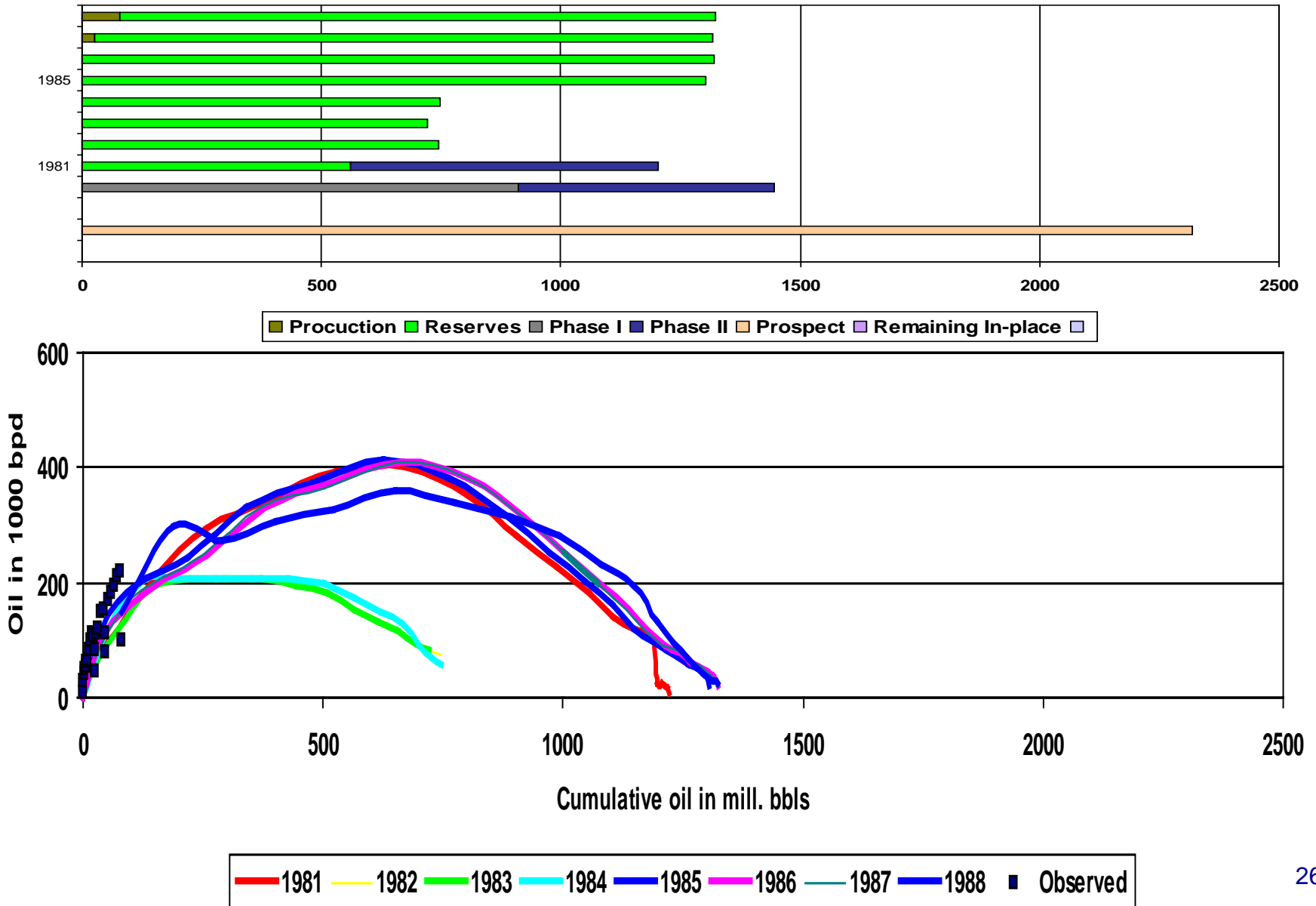


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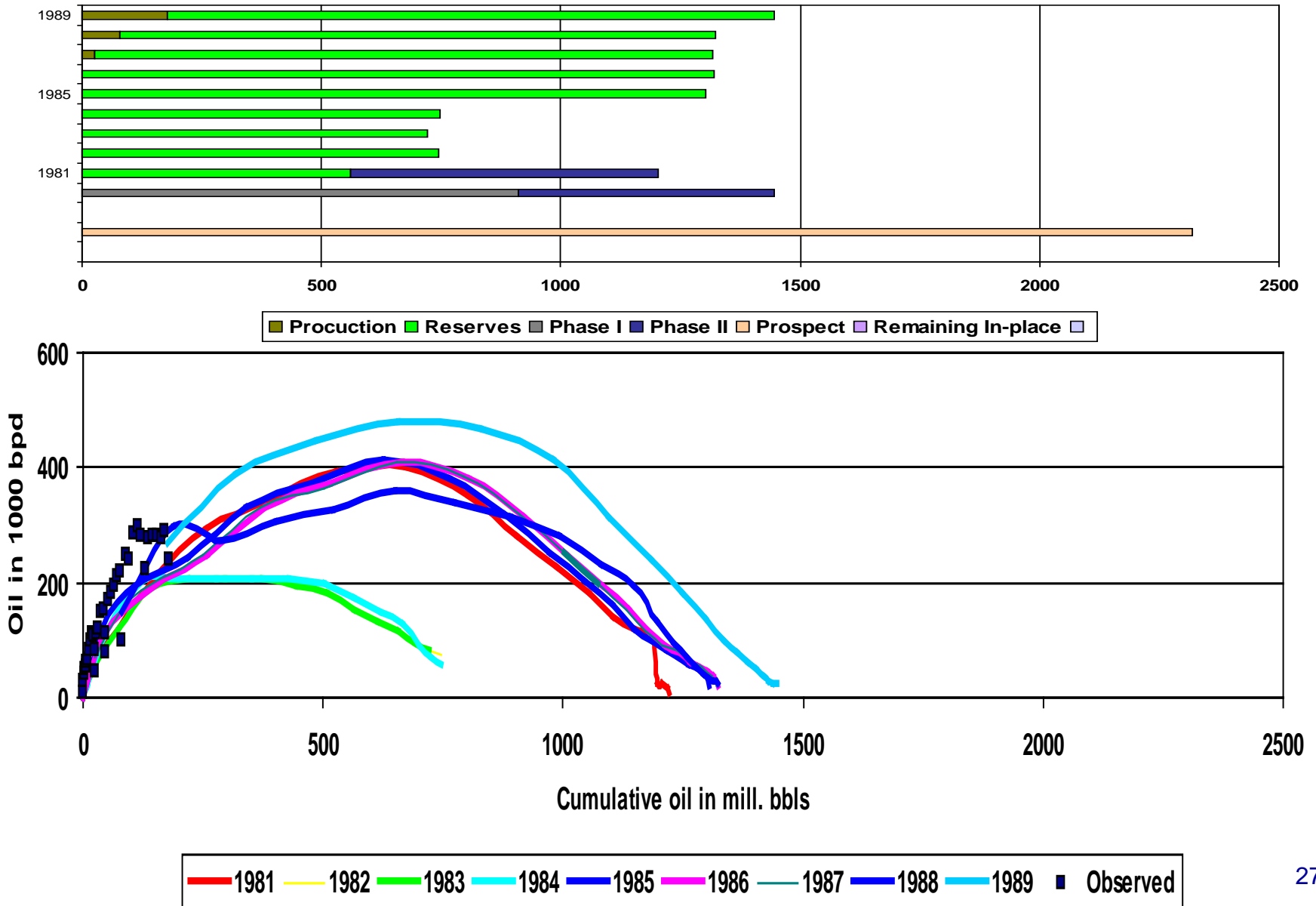


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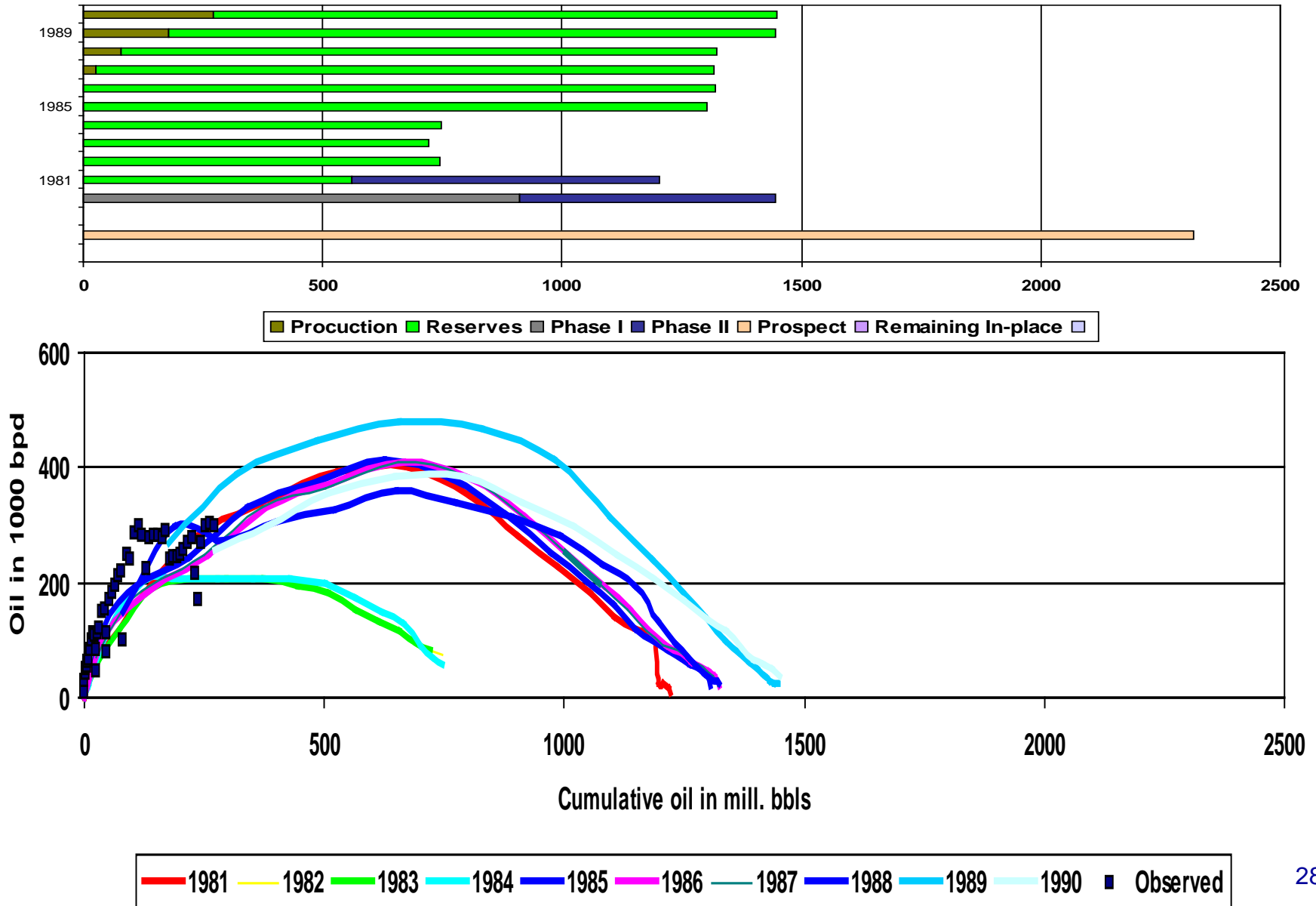


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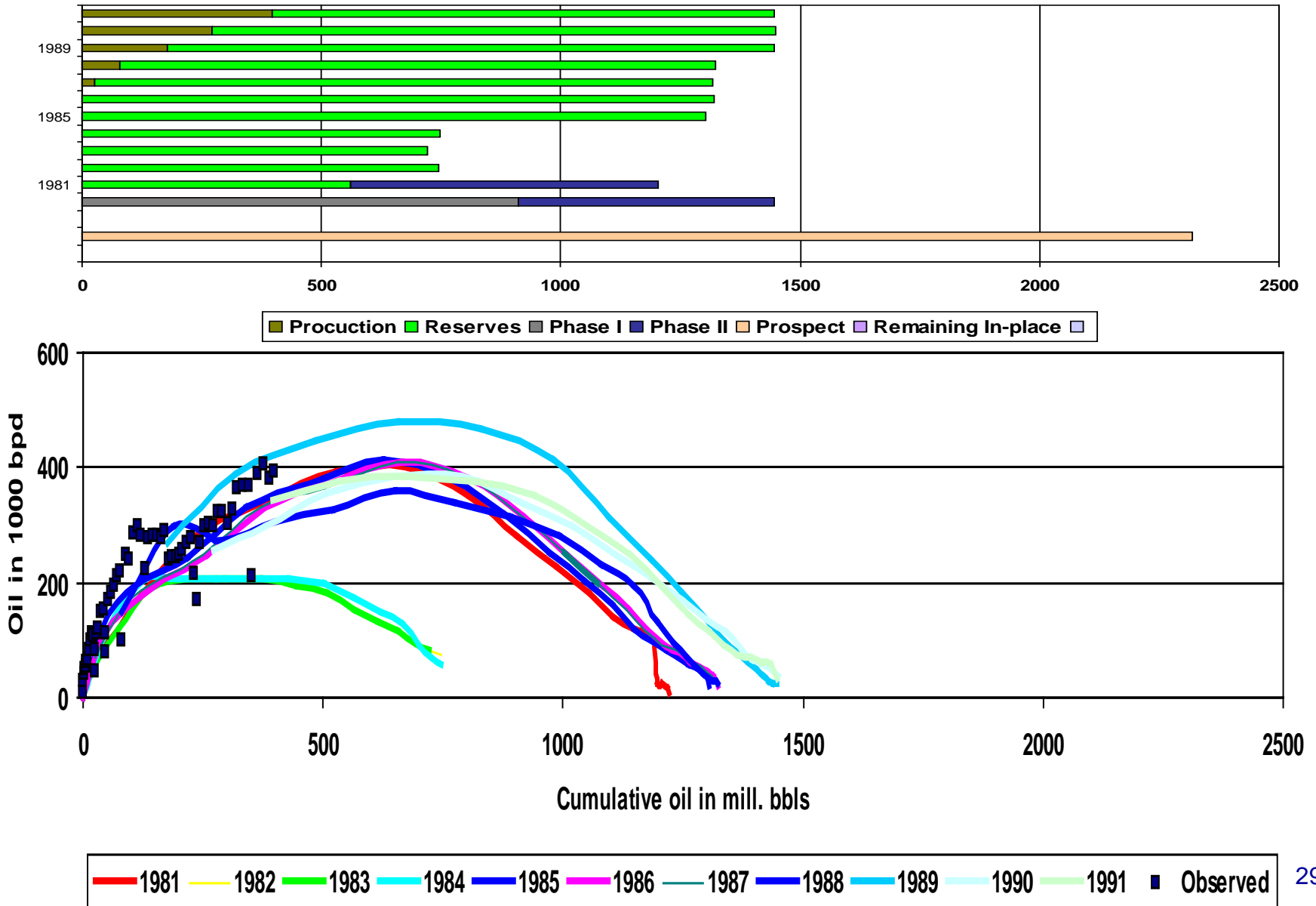


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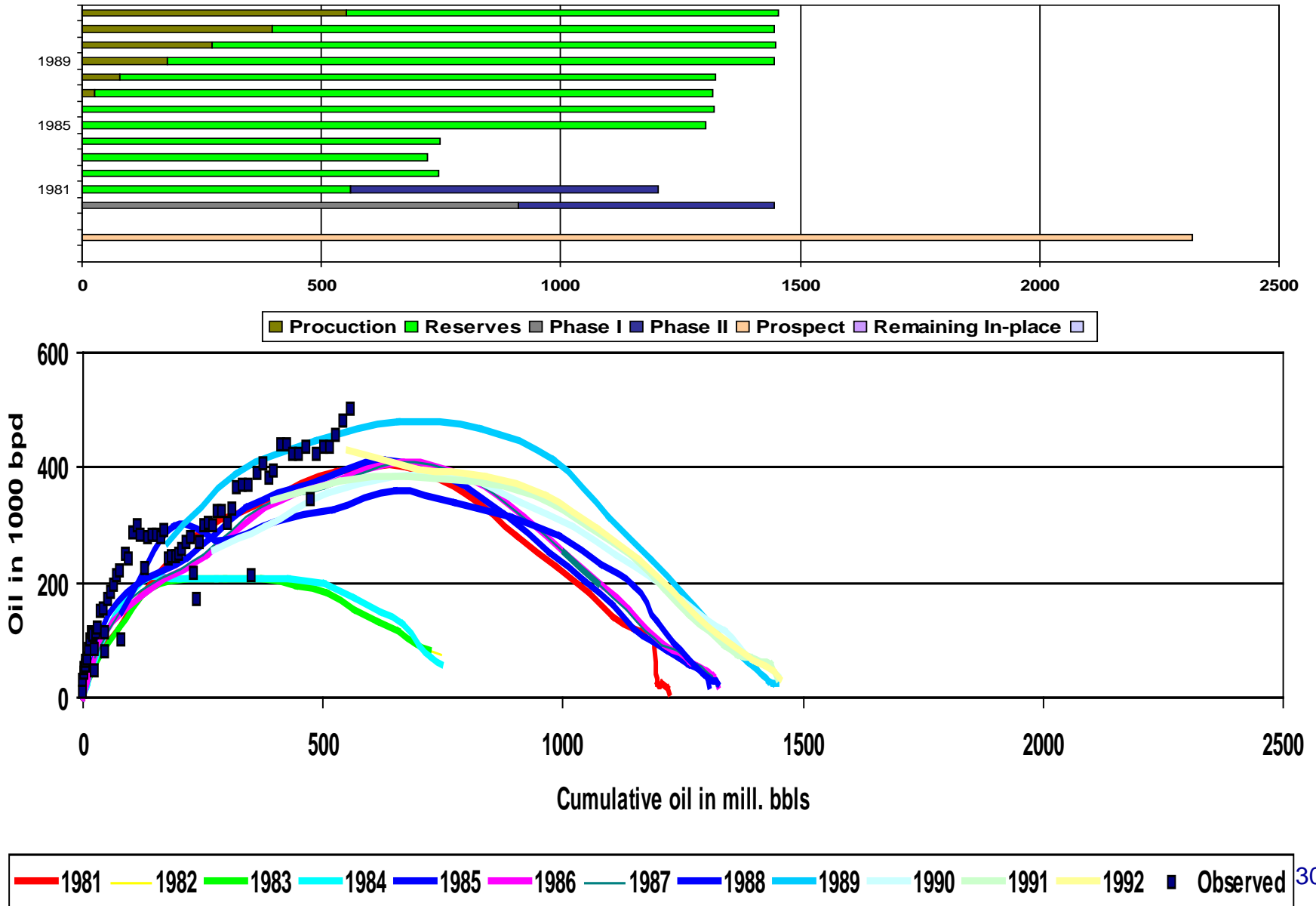


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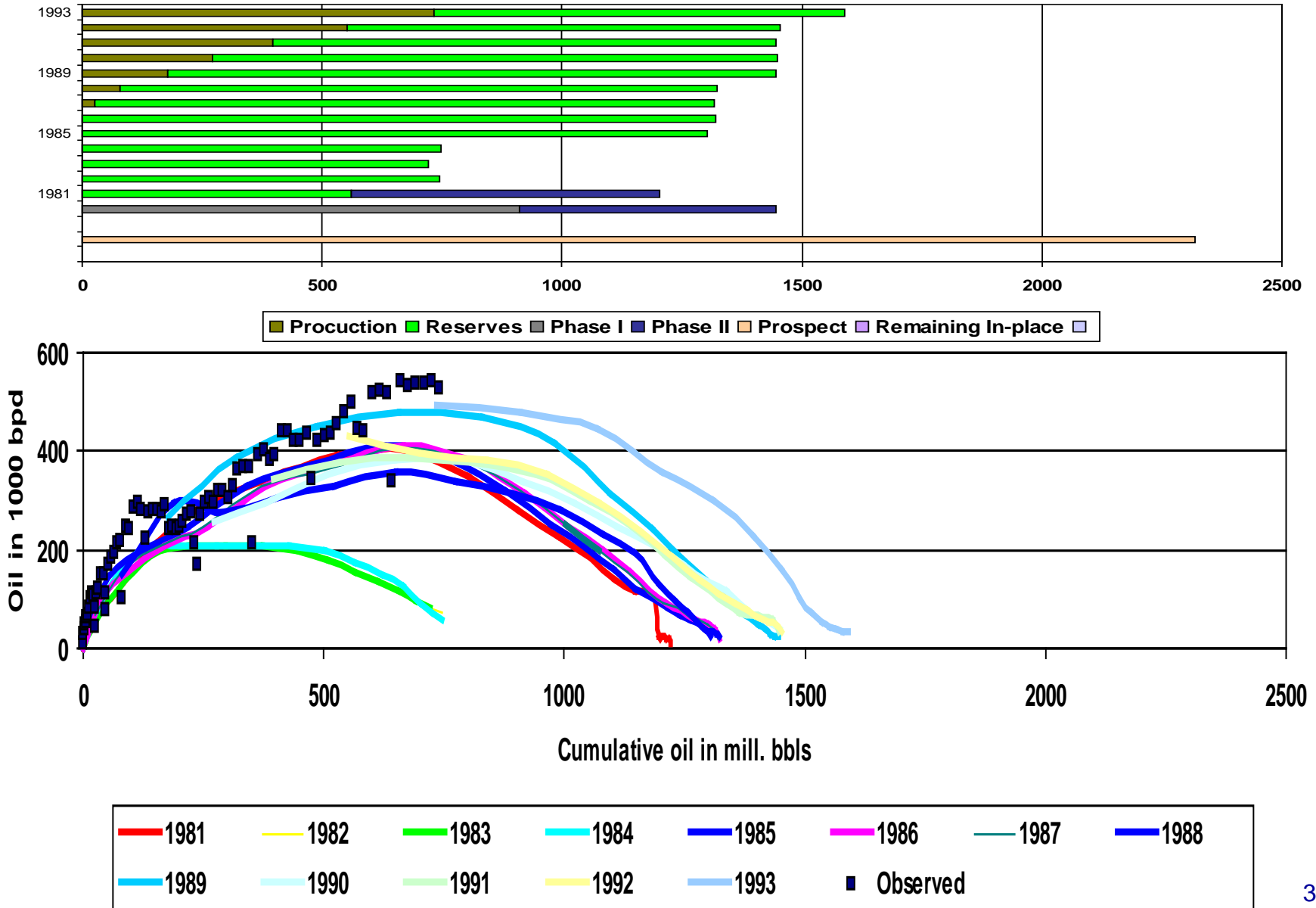


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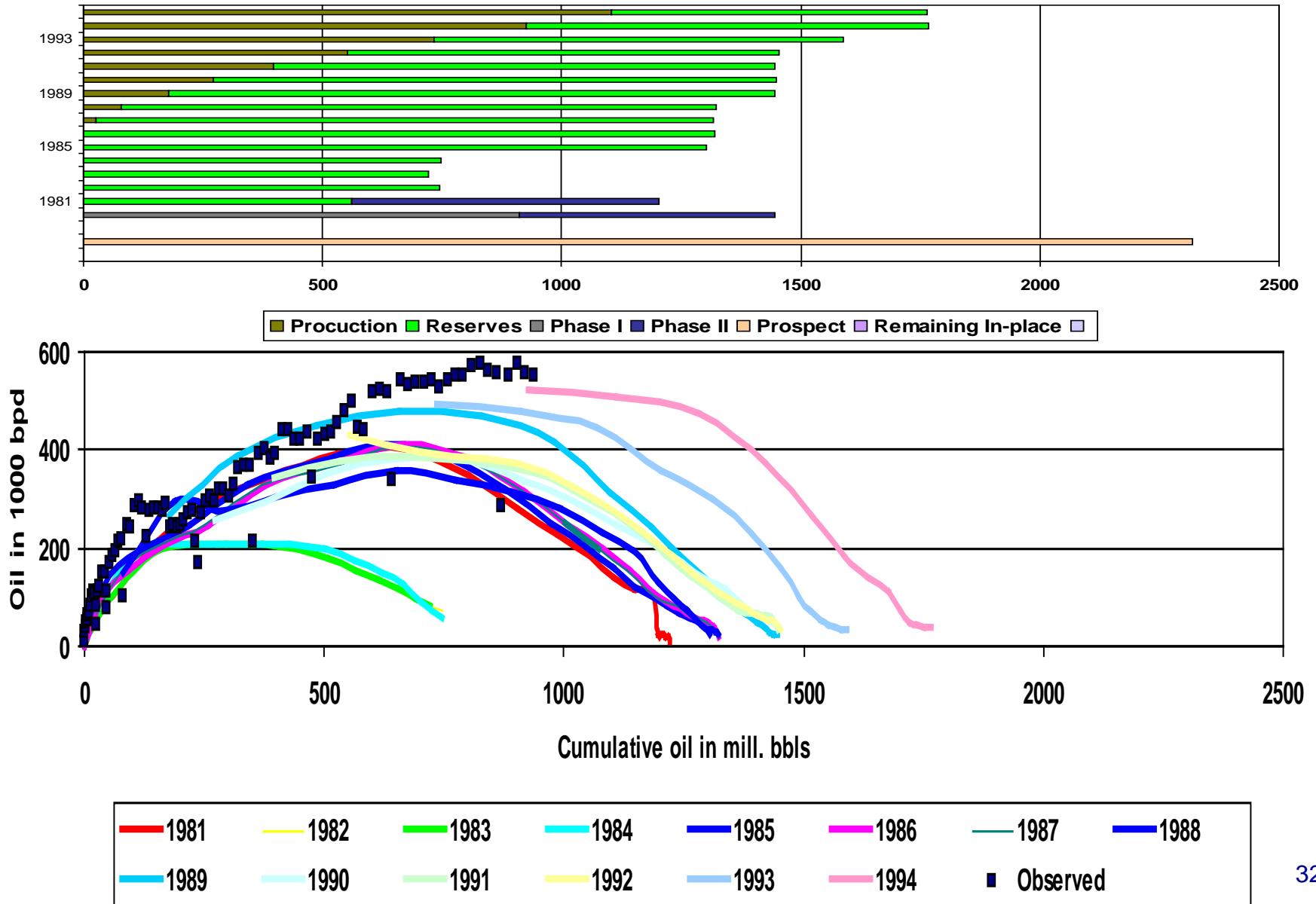


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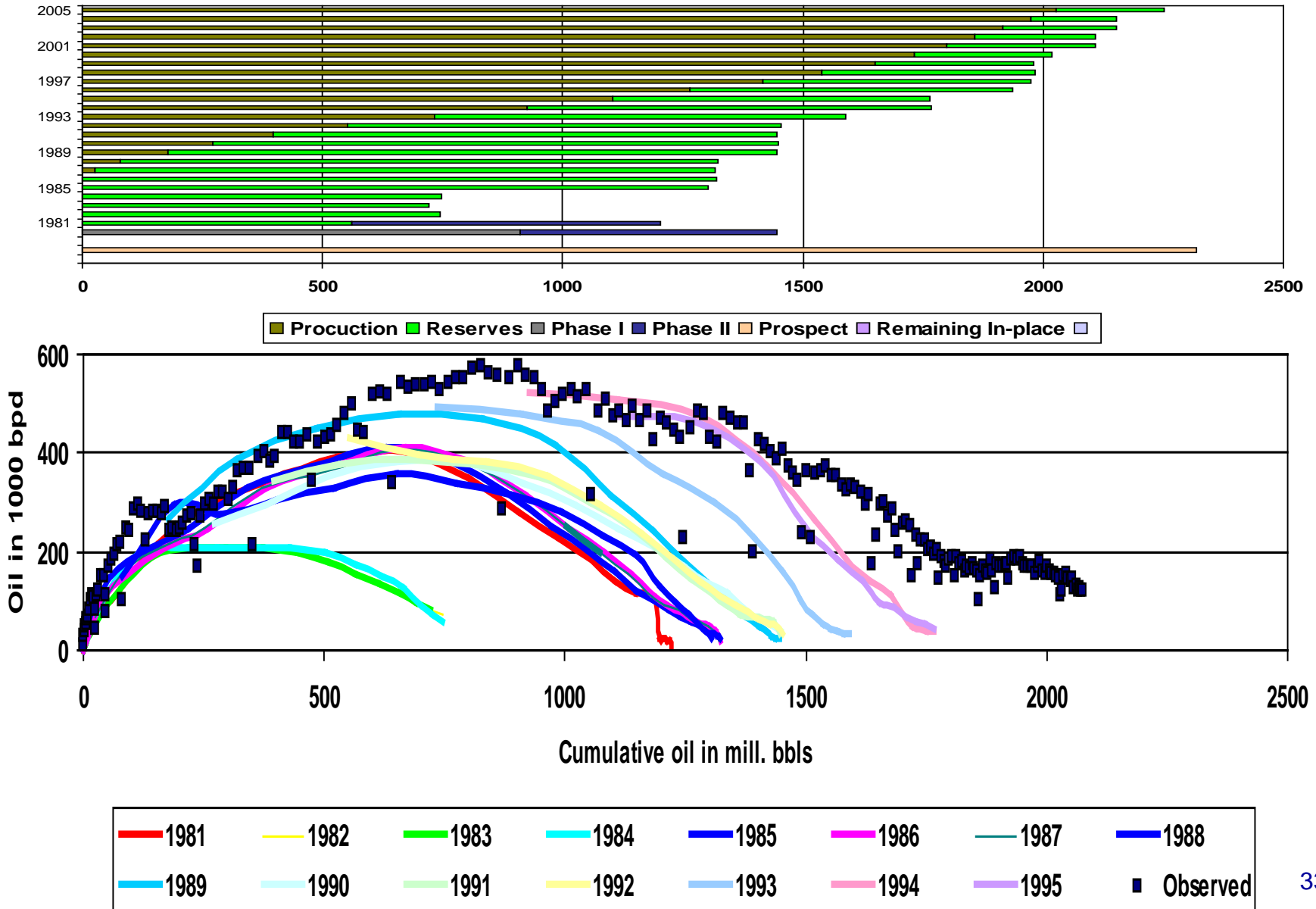


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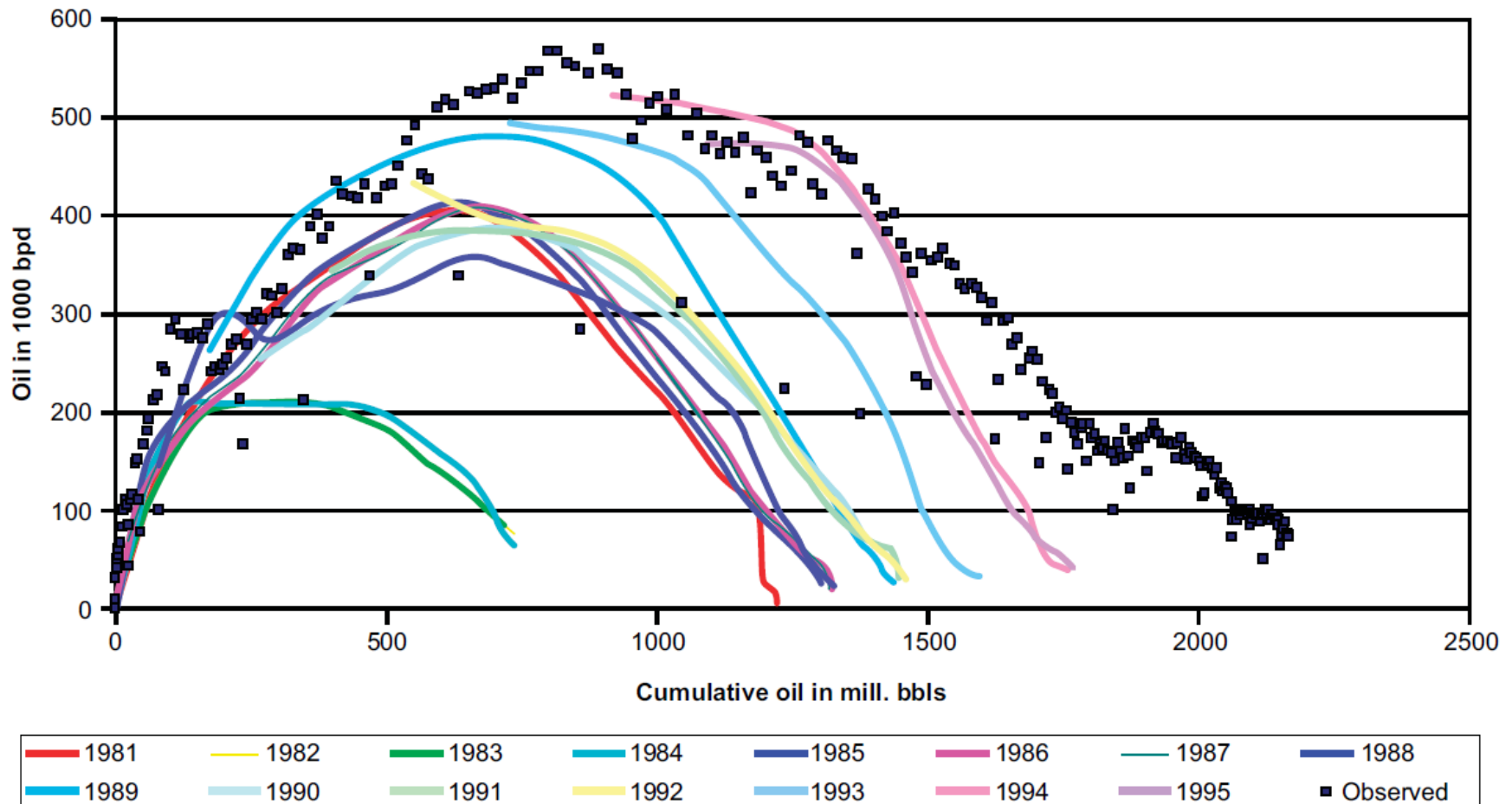




Gulfaks forecasts and production 1981 - 2005



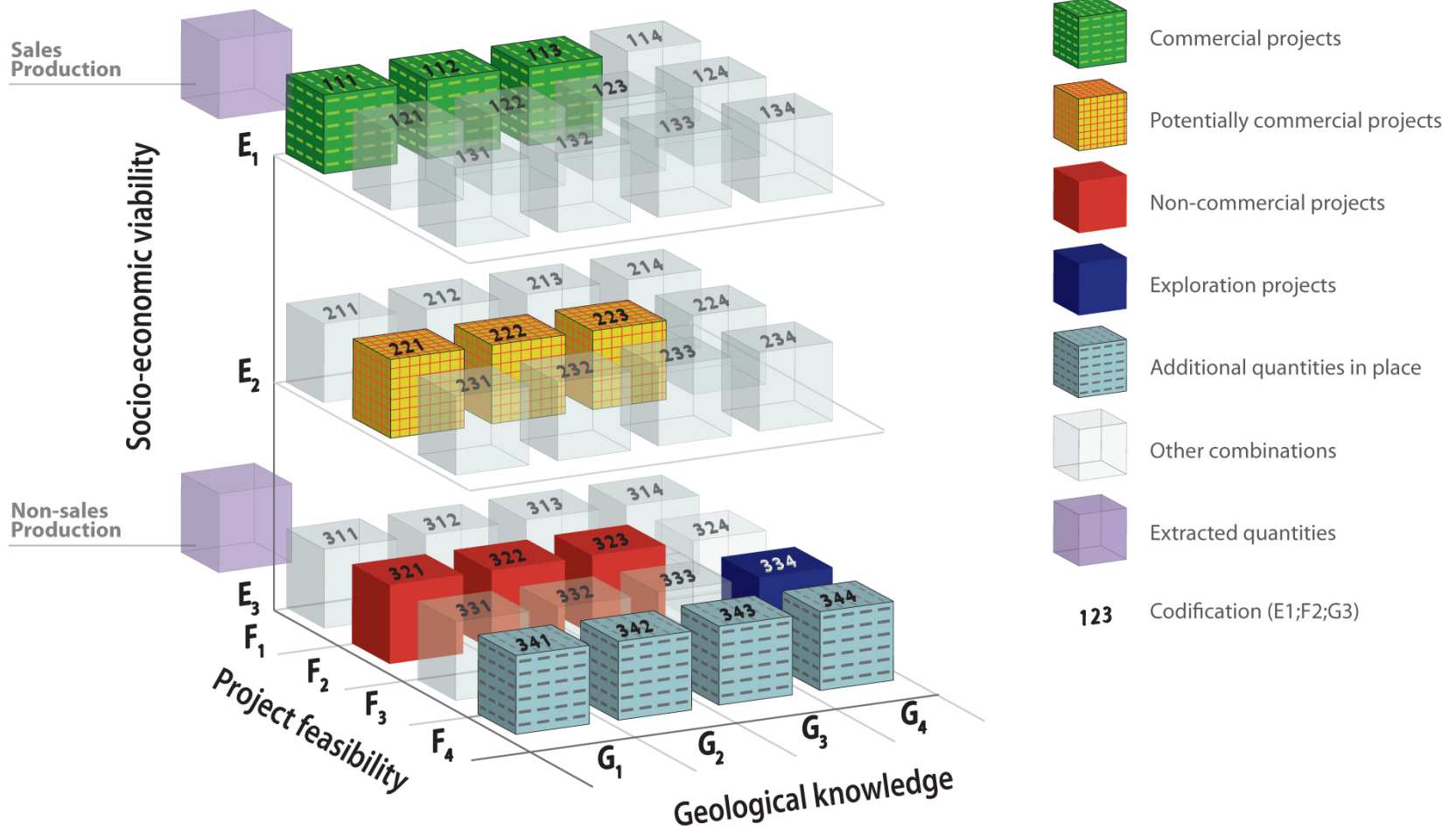
The Gullfaks development is a series of projects adapting to new information



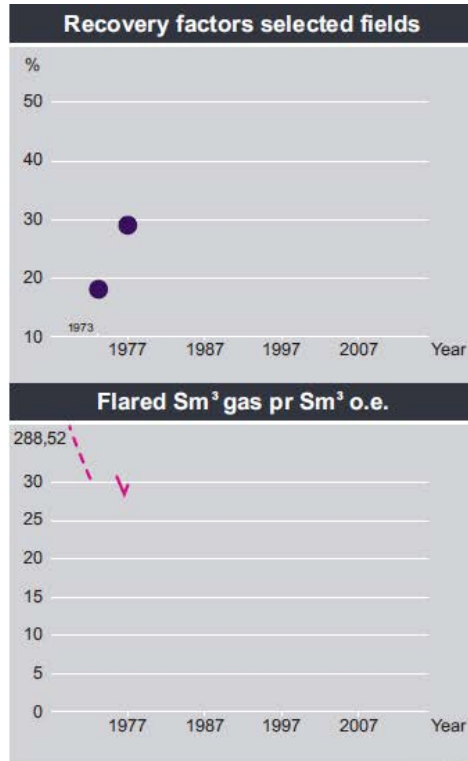


Production is a process, not a project

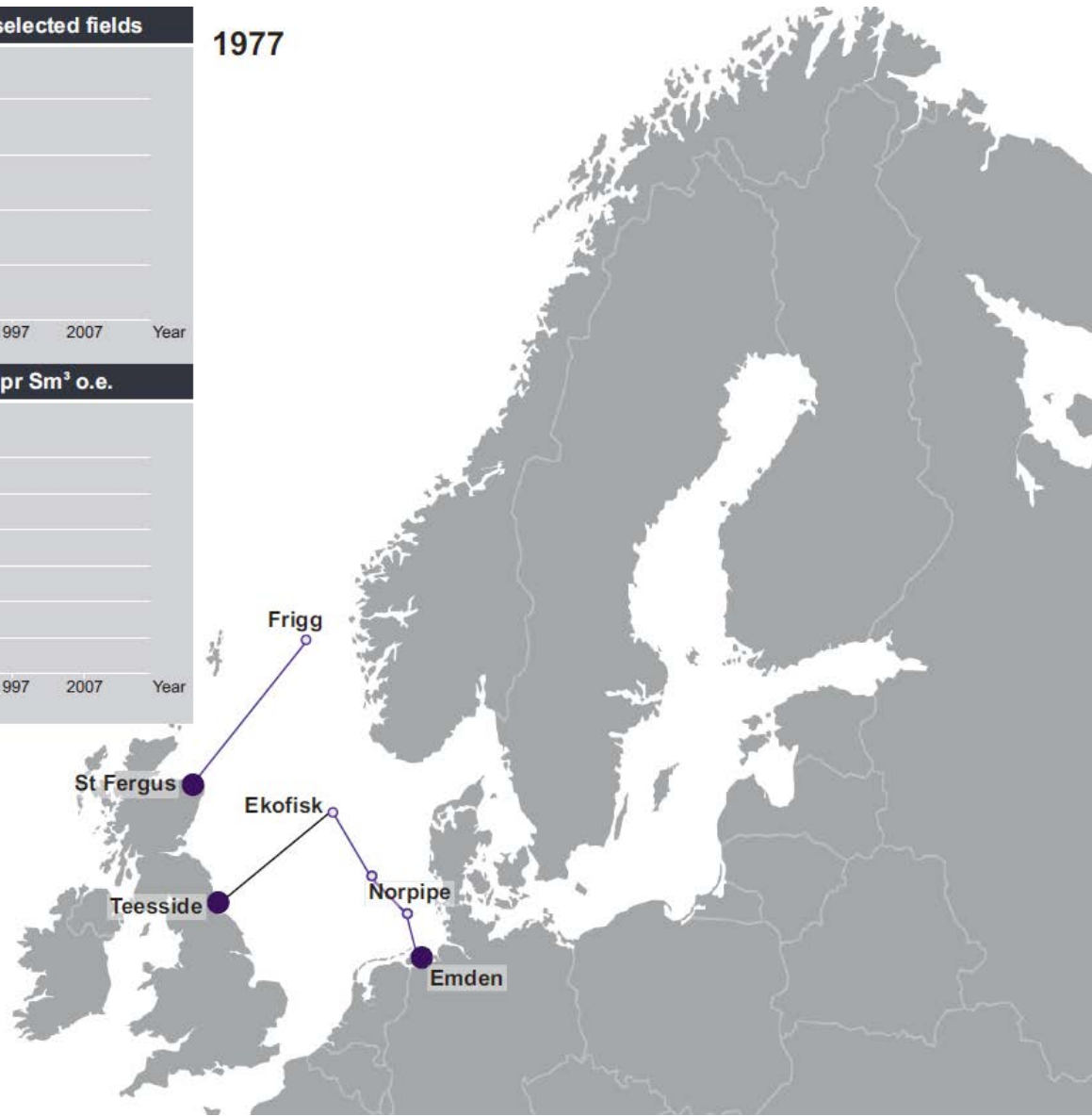
UNFC 2009 helps designing the process



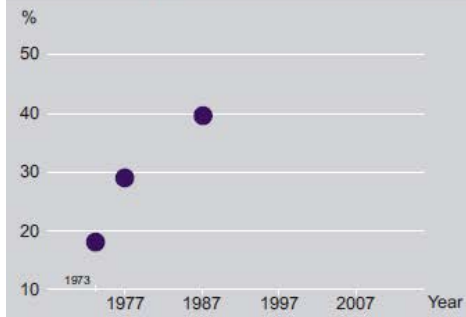
...so is the development of a country



1977

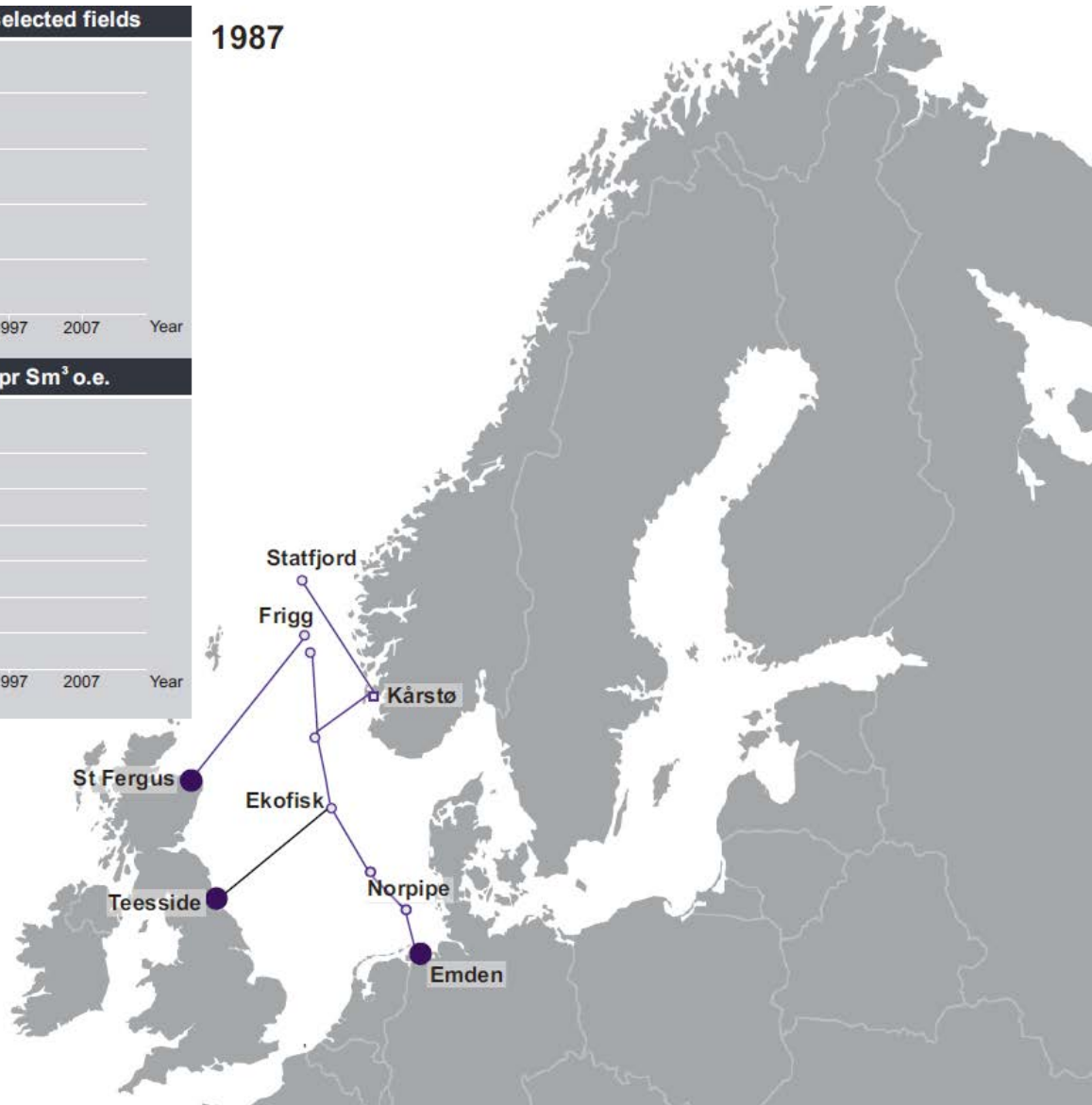


Recovery factors selected fields

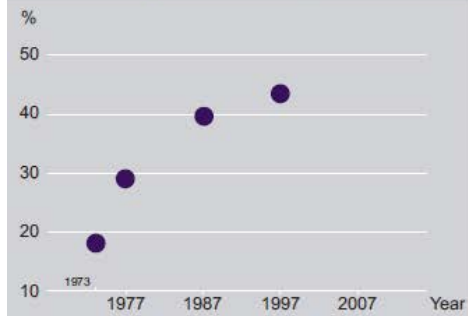


1987

Flared Sm^3 gas pr Sm^3 o.e.

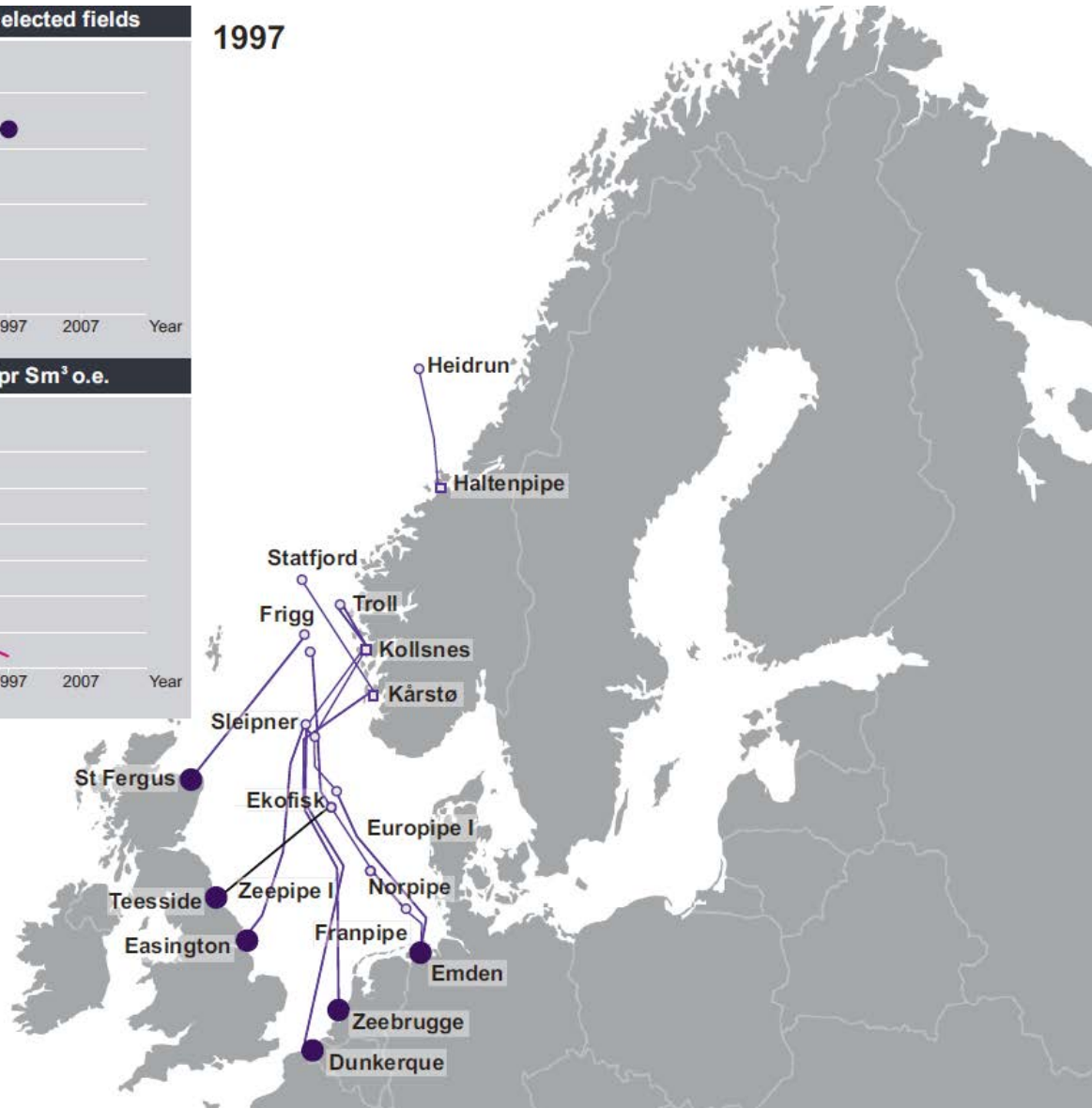
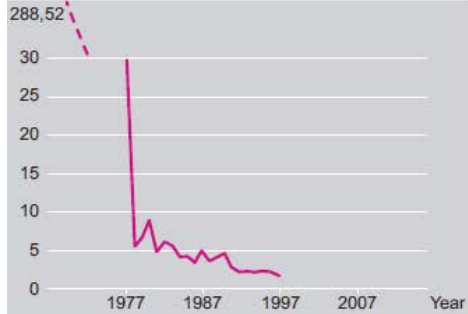


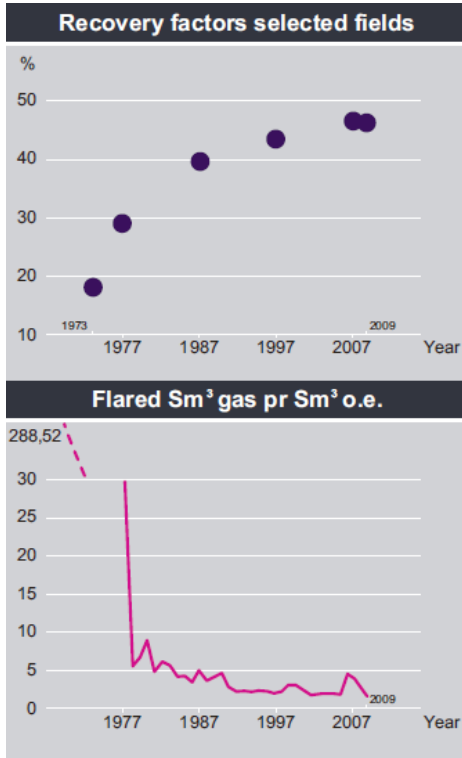
Recovery factors selected fields



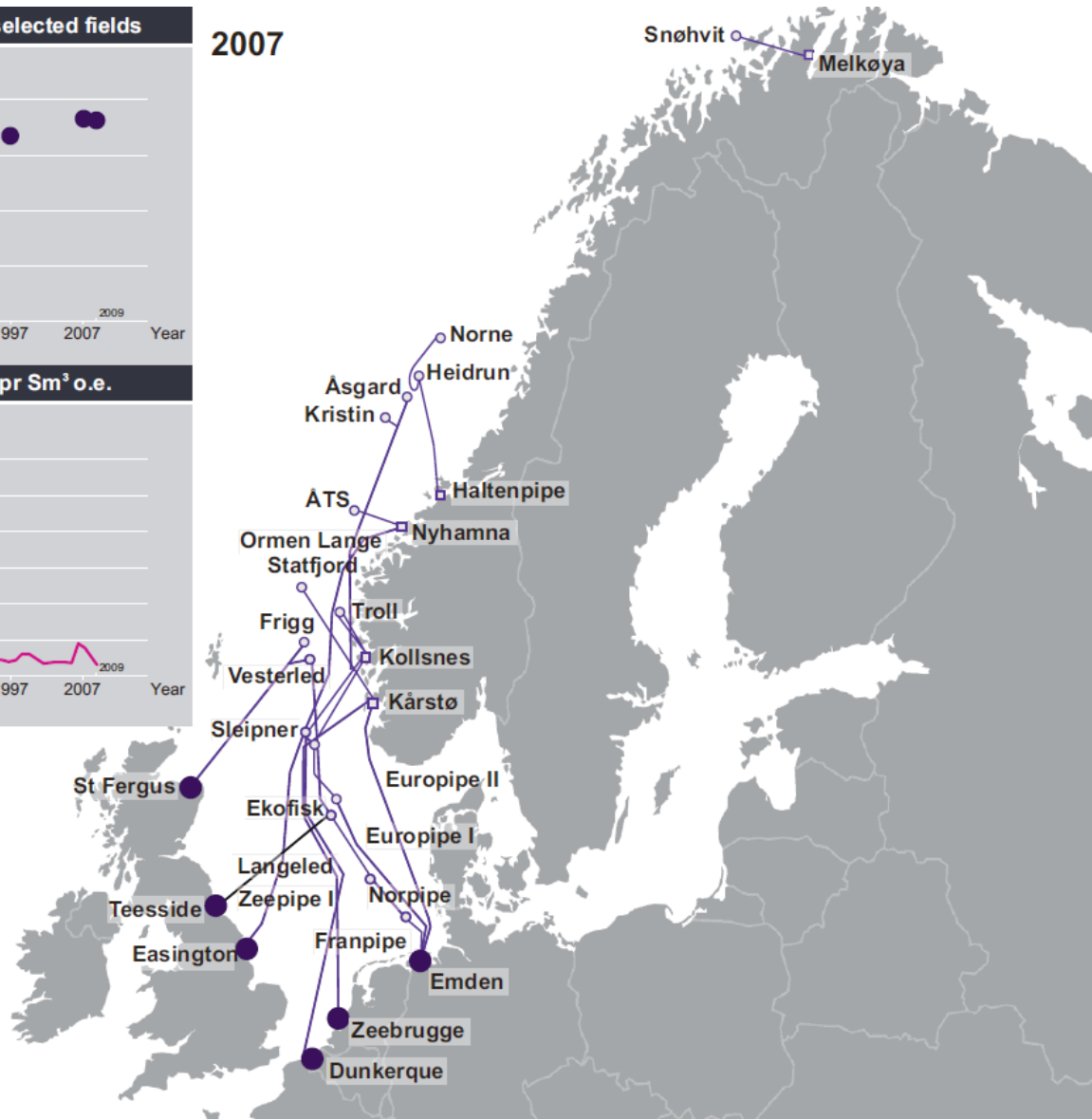
1997

Flared Sm^3 gas pr Sm^3 o.e.

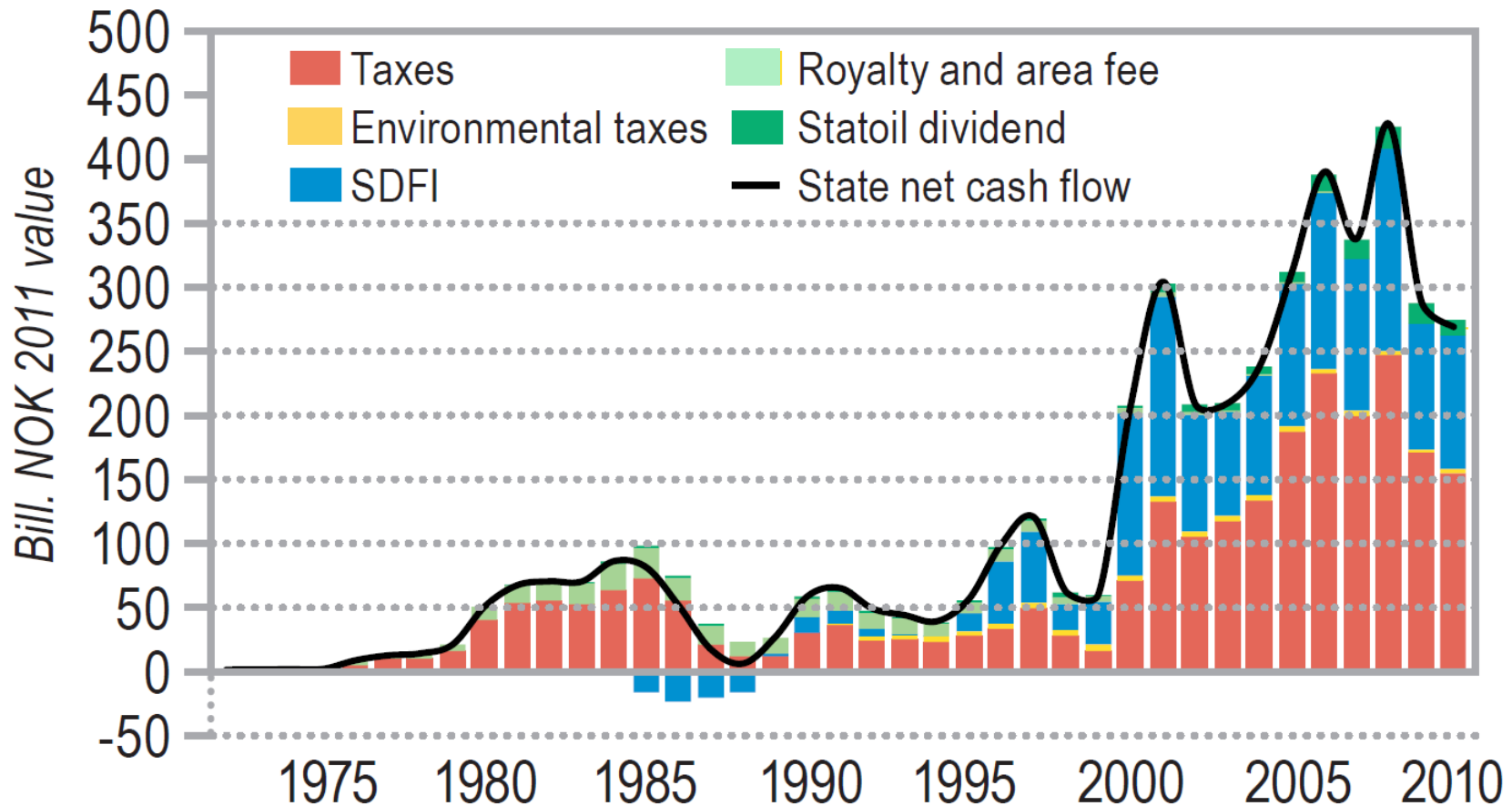




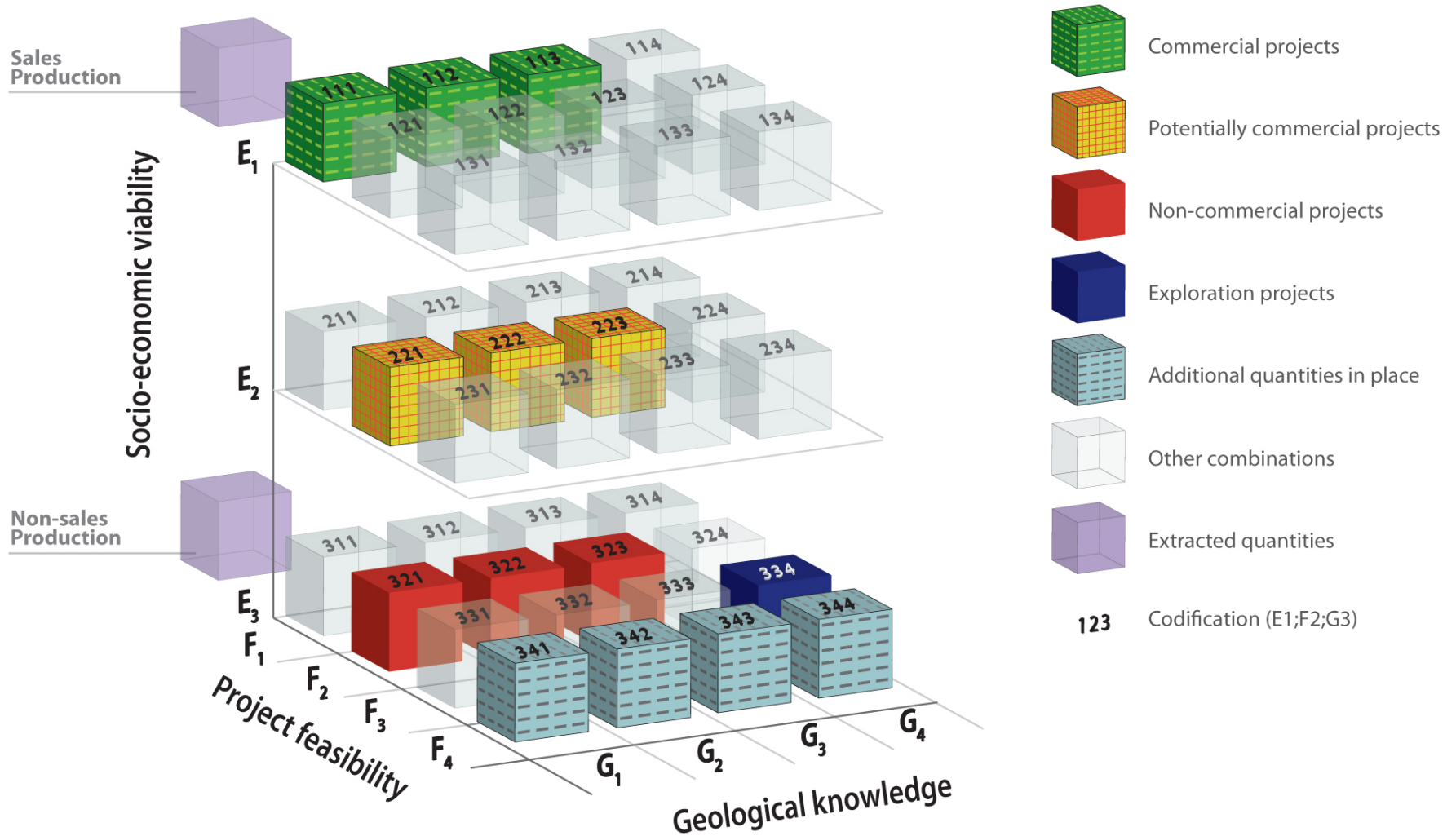
2007



The net government cash flow from petroleum activities shows improved fiscal efficiency

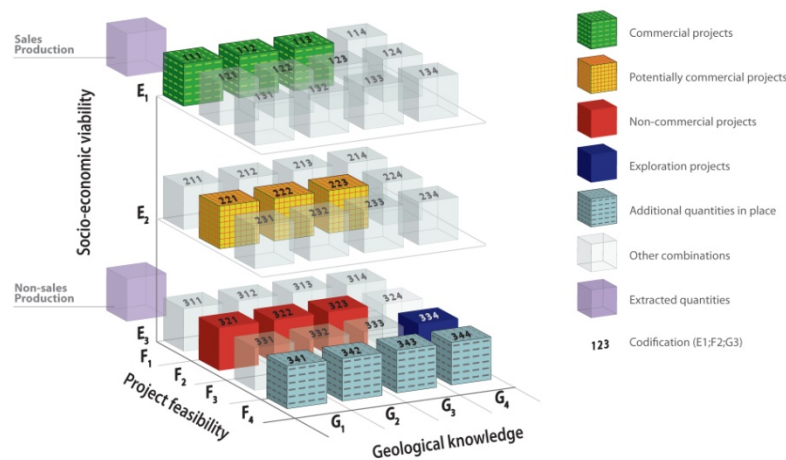


UNFC helps negotiating framework conditions in quantities gained or lost



Securing affordable and sustainable energy requires a common standard for developing:

- Long sighted policies for the global markets
- Government resources management for security and efficiency
- Industry processes to deploy technology, management and finance accordingly
- Appropriate cost effective allocation of financial resources





**The UN has the required
convening power**

Thank you

**Purpose of Resource Classification, Fundamental Principles and System
Applications**

Per Blystad, NPD

**CCOP EPPM Program Workshop on UNFC Resource Classification (for Oil, Gas and
Minerals) organized in cooperation with UNECE**

9-10 February 2012, Bangkok, Thailand