Submission to Senate Committee on "Australia's future oil supply and alternative transport fuels"

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No doubt the committee will hear much about:

- global oil supplies and future projections of liquid fuel demand
- divergent views about whether these demand projections are realistic
- divergent views about whether the supply projections are obtainable
- divergent views on resources and resource endowments, both in Australia and overseas
- divergent views on why the oil price is relatively high and being sustained over US$ 50.00 per barrel for WTI
- global "peaking" of production or extractive capacity
- the demise of mature basins
- the potential and promise of unconventional resources
- Australia's potential and limitations to arrest the decline of its liquid fuels supply

They will become aware of the statements by senior industry executives who themselves paint various canvases concerning oil supply, reserves and resources. Some of these views are contradictory.

Comfort may overrule reality when they are shown graphs and charts alluding to the vast global resources of hydrocarbons locked up in known coal deposits, oil shales and oil sands and the potential of deep water domains and the Arctic.

Taking comfort in the perceived adequacy of the physical resources is a no-win argument.

The reality today is that the oil and gas industry is working "flat out" – seeking new efficiencies everyday to reduce costs, maximise oil recovery, development, transportation to market and refining capacity. The industry appears "stretched" in all corners of the world, including Australia. The amount of human effort expended to add per unit of incremental oil production to the existing production base, which itself is under depletion, is increasing; or, the amount of new capacity added for the human effort expended, is declining.

We face shortages of skilled manpower, equipment (for example rigs), and delayed or protracted access to areas with petroleum potential and so on – there is only so much we can do in the time available. Our industry is risky, has typically long lead times from concept, financing, discovery, development and initial production – the more significant and material the project, typically the longer it takes to "bring on stream".

The committee will recognize the limits to activities and global production – we can best summarise this by the concept of the "rate of conversion" – the speed with which we can convert known or speculative resources to capacity – capacity referring to the production of products required by the consumers.
There are many "choke points" which affect the "rate of conversion" – some are summarised on the attached slides (copyright to K.Skipper and the CPI)

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Successful exploration practices are about the ….

- **"Rate of Conversion" of *speculative* Resources to production capacity – my view**

  (function of: investment, profitability, access, security, resource habitat & distribution, markets, refining capacity, technology, financing capability, environmental issues, activity levels, success, demographics, work force, rigs, tankers, trucks, tires etc)

  These may also be called "Choke Points" or "Bottlenecks"

- **Range of Scales for "Rate of Conversion"**

Field level	**5% to 25% EUR p.a. (reserve level)**
Basin level	**5% p.a.**
Regional level	**1% ??p.a.**
Oil sands (@3MMbopd)	**< 1% p.a.**

After Skipper, 2001, AAPG Memoir 74

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"Rate of Conversion"

*" A continuous improvement in the **rate of conversion** of resources, the **rate** of utilization of reserves and the ultimate recovery **rate** will ensure a steady increase in the output of crude oil and a significant growth in the output of natural gas"*

Chen Geng, Chairman of the Board, PetroChina, March 16, 2005