



## Shale Gas Assets - Overpriced Or a Liquid Turn for Mining Giant BHP?

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*This is a guest post by Dr. Ruud Weijermars, geologist, senior partner, and strategy advisor at Alboran Energy Strategy Consultants, and by Matthew Hulbert, Lead Analyst for European Energy Review, consultant to a number of governments and Forbes energy writer.*

Australian mining giant BHP has lost a quarter of its former market capitalization since its acquisition of US shale acreage from Petrohawk and Chesapeake last year. The company is keen to point out that worldwide economic conditions have impacted the price and volume of the commodities that BHP extracts and sells on a global basis. BHP's US shale gas assets are part of its declining performance. Having paid a whopping \$19bn for the shale plays in 2011, BHP now faces serious write downs. Ruud Weijermars and Matthew Hulbert ask the serious question whether the lost value simply is a result of changed market conditions - or was the acreage already worth much less at the actual time of its purchase by BHP?

BHP management concedes it is currently assessing the near-term gas price effect on the value of its gas properties acquired last year from Chesapeake (CHK) and Petrohawk (HK). To many industry analysts this is no surprise; the economic fundamentals of US shale gas production and reserves were already questioned long before the BHP sales went through. Petrohawk had never managed to earn any operational profit from its shale gas assets over its 15 years of operations. HK sold gas below the full-cycle production cost and its accumulated losses amounted to some \$1 billion when the company was bailed out by BHP last year.

In short, Petrohawk was a 'precursor' to Chesapeake's recently publicized cash-flow crunch predicament. The lack of access to financing, combined with overleveraged debt and lack of operational earnings from gas wells meant one thing: sell assets quickly. One can confidently conclude that HK shareholders were remarkably lucky to receive a very handsome price – twice the market value - for their distressed gas assets in June 2011.

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In our opinion, a significant portion of HK's formerly 'approved' gas reserves more likely than not was overdue for downgrading to 'contingent' resources by the time of their sale to BHP. In ball park terms, that's the difference between gas assets that can be produced commercially at current prices, and those which can't (see Box 1).

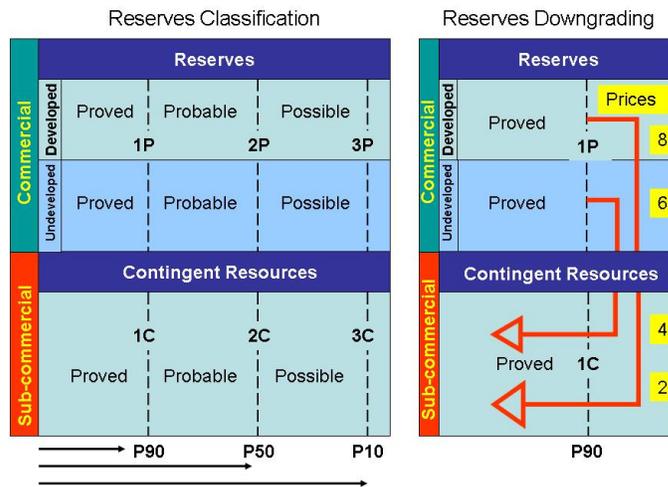
### **Box 1- Reserves Classification and Downgrading Principles**

(Left) Proved reserves classification (according to PRMS/SEC) are those P90 volumes that can be produced with reliable technology and with economic profit using 12 month averaged market prices over the past reporting year.

(Right) Downgrading of proved reserves to PRMS contingent resources is mandatory when depressed US natural gas prices render shale gas plays sub-commercial (yellow

labels, indicated in \$/Mmbtu). Projects that do not meet the economic hurdle are relegated to Contingent Resources - it is an off/on switch, so 1P moves to 1C, 2P to 2C and 3P to 3C.

In the past, operators may have used different price/costs for Probable and Possible reserves versus that used for Proved. Under PRMS and SEC 2009 this is no longer allowed - all reserves technical categories use the same economic criteria - so 100% move to Contingent Resources when the project cash flows are negative (undiscounted). There is always some issue on whether projects economics are based on Proved or 2P internally, but as far as the SEC is concerned, must be based on Proved.



The core of the problem with shale acreage valuation is that the net present value of gas reserves has become as volatile as the gas price itself. But companies have been slow in exercising due diligence if not outright reluctant to depreciate assets. In spite of the low gas prices in 2009, 2010 and 2011, companies like Chesapeake and Petrohawk continued to aggressively book proved undeveloped reserves (PUDs). Both Petrohawk and Chesapeake needed these new reserves on their balance sheets - without these reserve additions, they would have landed into collateral default. And although SEC rules mandate companies must duly impair PUDs when overall project cost have become uneconomic, PUDs now account for nearly half of CHK's (and former HK's) proved reserves. Chesapeake's reported proved reserves comprised 42% PUDs in 2009, and the proportion grew to 47% in 2010, and settled at 46% in 2011.

Oddly enough, once a company has sunken the cost for well development of a PUD, the developed proved reserves need only be impaired if the annual cash flow turns negative, which would require gas sales to dip below operating expenses. In the well's subsequent life-cycle, SEC rules leave room for continued classification of a well's resources as reserves, as long as annualized cash flows remain positive. This encouraged companies to continue quickly sinking cost in wells that may not, in fact, ever have been economic (on a full cost basis) in the first place. By doing so, companies quickly 'prove' the reserves of a new shale gas play, and the acreage value rises. This also means that many US shale gas companies have essentially ignored full cycle economics. The sunk cost game continues even today.

Investors still appear prepared to bear the cost, but may not be fully aware of the additional risk.

With gas prices plummeting, the SECs former 'premium label' of proved reserves has lost its stable foundation. In fact, full cycle economics for the majority of US shale gas plays has been

largely negative for the past four years. The SEC has been lenient and one might speculate that overly aggressive reserve reporting appeared an affordable governance risk for shale gas operators. There has been no favourable gas price for adding proved reserves, yet unconventional gas companies have booked reserves by operating aggressively on a sunk cost basis. As a result, US shale gas investments have now become less secure than the reported reserves suggest – something investors seem to have glossed over far too lightly.

What has become a point of growing risk for any shale investors is that they are saddled up with acreage for which cumulative net cash flow over the life-cycle of the project has turned dramatically negative. The sunk cost has artificially inflated the acreage value. When gas prices collapsed in 2008, the industry's main focus was to find creative solutions for looming liquidity problems. The solution offered by companies now is to spin off assets and cash out. The 2011 acreage sales to BHP duly came as blessed relief for the financial backers of Chesapeake and Petrohawk, easing liquidity worries and providing an affirmation for the supposed 'net present value' of their shale assets.

But what shale players really needed much more than shifting sub-economic acreage off their balance sheets was a rapid rise in gas prices. Alas, continued oversupply of natural gas in an isolated North American market pushed prices lower, well below production costs. As a result, positive net present value has evaporated in the vast majority of US shale acreage, only speculative 'future value' remains.

The strikingly large number of assets up for sale suggests vendors see no positive cash flow coming out of these plays anytime soon. Indeed, hardly any of the uneconomic US shale gas acreage can provide valuable collateral for cash transactions. Asset sales by cash-starved shale companies can only be completed by cash-loaded counterparties that don't have to go hunting for external financing. Any financial broker worth their salt would want to see all of the claimed net present value of acreage in place at the time of purchase; testing for compliance with proved reserves reporting guidelines is certainly part of that requirement. One wonders - who will buy any of these inflated shale gas reserves?

Regrettably, the SEC has not been vigilant in scrutinizing reserve reporting practices of the US shale gas industry. Its new reserves reporting guidelines, effective 2009, require companies to promptly downgrade reserves if any of their acreage is no longer capable of commercial gas production over a trailing 12-month pricing window. This downgrading of PUDs is supposed to be done by industry 'self-regulation'. But everyone involved in the shale gas business has the sword of Damocles dangling above their heads: whereas proved reserves are established 'net present value' collateral, contingent resources are not – it's a binary on/off switch. The avoidance of downgrading proved reserves to contingent resources means the evaporation of a company's debt collateral is averted. It's not like the financiers behind companies like HK and CHK ever want to hear of reserves downgrades either, proved reserves provide the main vehicle to support corporate debt. Who would put their heads in the reserves impairment noose with collateral default as an immediate outcome?

BHP management has had an opportunity to comment on the content of this article. BHP says it did not rely on Petrohawk's and Chesapeake's gas reserves figures and conducted its own independent analysis, with total unproved resources being the largest value of the acquired properties. BHP further says its Petrohawk acquisition was largely driven by its liquids content and value -- in line with BHP CEO's assertion at a recent APEA conference in Australia.

We contend that our analysis is sound: HK's production was 95% natural gas liquids at the time of its sale to BHP, and its portfolio of proved reserves was extremely lean on liquid reserves. The Permian basin acreage acquired by BHP was not developed at all by Petrohawk at the time of the sale. BHP says Permian production is now 80% liquids. BHP management may have played a

smart hand by recognizing undeveloped liquid resources, which could put its newly acquired shale acreage firmly in the black.

On the other hand, if BHP shareholders feel the company overpaid for shale assets, they may well decide to press for recourse and attempt to recover losses from CHK and Petrohawk's sellers. The first step would be a probe for compliance with SEC and FASB reserve accounting rules at the time of their lucrative sell-out to BHP. Although both companies had part of their reserves affirmed by outside consultants, if auditing firms would refuse to affirm the PUDs they would likely have been replaced – the shale gas industry is well-known to be rife with undue pressure on external reserve auditors.

Whatever the outcome of the final reserves write-downs, readers should perform their own due diligence analysis considering the risk premium for companies having primary assets in newly evolving shale plays with unproven reserves.

All in all, the impending reserves write-downs would be a good sign of industry's compliance with SEC reporting rules – setting a much needed standard for self-regulation by due diligence as intended by the SEC. The shale gas industry dearly needs such a move -- to uphold best practices for sustained investor trust.

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