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Critical Observations on, and Mechanisms Available to Reduce the Cost of Holding and Financing Strategic Inventories of Oil.

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Introduction:

At the opening of the US SPR conference in Houston in November 2004, Ambassador William Ramsay reminded us that oil security preparedness and strategic stockpiling enhance energy security, and are vital in today's globalized markets. Various speakers highlighted the growing oil import dependence of industrialized/industrializing economies, as well as the narrowing margin of spare oil production capacity over current and future demand. Furthermore oil had to travel over ever greater distances to reach the market, increasing exposures to the means of transportation and their ownership. Various political hot-spots which coincided with sources of future oil supply created a feeling of vulnerability and disquiet. It is therefore understandable that the greater weight of opinion at the time was one favouring the expansion of strategic stocks. In the intervening 2 years, events globally will have done little to alleviate these concerns, yet in his opening address, Ambassador Ramsay also reminded us of the need to reassess the IEA stockholding policies as the world evolves.

At this conference we wish to present what may be a dissenting opinion about the need to continue expanding physical stocks of oil, as we believe that a number of factors conspire to demand a much closer and critical evaluation of current practices.

Of course we cannot argue against holding strategic stocks, but if the purpose of holding strategic stocks is to secure ourselves against both physical supply disruptions and/or the risk of sharply increased prices (we believe that both are valid objectives addressed by having a strategic stockpile), occurring as a result of a disruption or gross speculative forces, then there is a case for differentiating policies and practices applicable to the management of Strategic Inventories to better address these dual concerns.

- Our first question is whether member governments' binding each other to the costs associated with a common global stockholding policy is consistent with markedly different national policies on energy consumption, pricing, taxation and individual governments' commitment to take the energy/environment interface seriously. One is reminded of a remote parallel during the Nineties where in Europe, central banks were free to set monetary policies and the level of interest rates and Governments their fiscal policies, at the same time as binding member countries together in the embrace of the (ultimately doomed) fixed exchange rate mechanism.
- Governments will, in a "Business as Usual" environment, project increasing growth in demand for energy in the future, immediately draw the conclusion that this translates into ever-greater vulnerability to supply disruptions and

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- plan to expand stockholding accordingly. Yet we know that growing consumption is not sustainable, the issue of emissions is looming large now and we will need to make a quantum leap in our thinking about future energy use. In the mean time each producer-inspired disruption, regardless of how small the disruption is in the context of the level of stocks already held, or how short-lived, is seized upon as a reason to contemplate the next new storage facility. Add to that a very low likelihood that strategic stocks will be released, or that the conditions for triggering a release are either clear or consistent, and the inevitability with which calls are made for more stocks to be held, seems at odds with reality.
- A look at the cost of applying the current “90 days rule” (many members hold well in excess of this level of oil stocks) leads us to question whether we are allowing a mood of vulnerability and concerns about oil supply to spill over into a less than rational allocation of capital in storing ever more oil. While global cooperation by member states in emergency situations is essential, we question the appropriateness of the “90 days rule” coming as it does alongside additional strategic inventories held by private oil companies, as well as whether more should not be done to cooperate in a different global framework to build and manage strategic stocks in a pro-active and cost-effective manner, alongside pooling risk, storage locations and oil, to thereby decrease member-specific risk and exposure to supply/price disruptions.
- In applying a 90 days + practice of storing oil, it appears to us that a situation akin to first deciding on the insurance premium and then worrying about (as opposed to calculating) the risk, has been created:
 - a) Referring back to the previous conference, various insightful presentations grappled with the issue of risk, in one case evidence was presented that of 24 recorded supply disruption events since 1950, all involved less than 10% of the daily global oil production, and 75% of these disruptions lasted for less than 6 months and involved less than 1Mio bbls/day of global oil production. More recent events regarding Hurricane Katrina and the Russian Gas supply threat, were recovered well and with minimal application of global reserves.
 - b) While we recognise that individual members’ unique strategic vulnerabilities differ, and have not sought within the scope of this presentation to answer the question of just what number of days stocks represents a reasonable risk-based “insurance” premium, we propose the formation of a forum in cooperation with the IEA and member Governments to address the question, in which we would be happy to participate.
 - c) We have some thoughts on the matter though, and that is that for an “average” member, the answer lies between holding a nail-biting 15 days of net imports and a worrisome 45 days. Whatever the appropriate risk premium is, clearly lies at the heart of any process to review stockholding policies in a changing energy environment.

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So what difference does it make? It is useful to highlight the costs of holding strategic inventories to get a perspective on the alternatives - we have tried to create a generic picture of costs, which will vary by individual member country depending on the ratio of crude or products stored, whether in above ground tanks or underground, salt dome or rock cavern storage etc. Costs will also vary by region, cost of finance, land and construction etc. We have used a constant cost of capital and interest of 8% p.a. – even though US\$ interest rates during most of 2003 – 5 were well below this level, shareholders would normally expect a return in excess of the rate of interest. Backwardation prevailing at that time also added significantly to the effective cost of holding oil stocks, which at time exceeded 10% p.a. And historically, we believe 8% to be a fair “pacer” for the decision to commit capital to (static) assets.

Assumed stockholdings by:

- Government/Agencies: 1.5 Billion barrels
- Private Oil Companies: 2.5 Billion barrels
- Type: assumed 50/50 crude and products
- Cost of Inventory: Assume \$50/bbl. CIF
- Hardware Cost: Average of \$23.50/bbl, made up of:
 - a) Crude storage: Average \$15/bbl.
 - b) Products storage: Average \$30/bbl.
 - c) Plus Construction costs for both: \$1/bbl.
- **Total cost of Capital and Inventory: \$73.50/bbl.**
- Annual cost of capital and inventory at 8% p.a. = \$6.10/bbl
- Plus other annual costs (insurance, static losses, periodic outturn losses incurred with stock refreshments say every 4-5 years, in/out costs): \$0.38/bbl.
- **Total Annual Costs: \$6.48/bbl (10-20% p.a. of the typical price of oil) or given the typical level of Govt/Agency/Oilco. stocks, 5-10% of the value of annual oil consumption.**
- **This is an enormous insurance premium.**
- For the “first (physical) barrels” required in an emergency this may be worth it, but what about the declining value of every “additional barrel” beyond the “Insurance-relevant” prudent minimum, and up to the “last barrel” in the stockpile? For every additional barrel in a stockpile, you have a declining strategic value/likelihood of release, but a constant cost of holding it.
- The statement that it works in the “public good” to hold an ill-defined required volume of stocks does not rhyme with the reality of costs.

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Breaking this down into a few headline-grabbing totals:

	Government/Agency	Private Oilco/Others	Total
Hardware Costs	\$35.25 Bio	\$58.75 Bio	\$94 Bio
Inventory	\$75.0 Bio	\$125 Bio	\$200 Bio
Total Fixed Costs	\$110.25 Bio	\$183.75 Bio	\$294 Bio
Annual Costs	\$9.72 Bio	\$16.20 Bio	\$25.92 Bio

If you assume that some OECD members/Governments are holding 115 days of net imports as stocks and that our figure of 45 days is reasonable, then annual reductions of almost \$6Billion would be achieved. If this were a private company, the shareholders would be very interested to find the means to release such savings, if it did not harm the fundamental purpose of the enterprise.

Clearly the value of a 10-20% p.a. Strategic Insurance Premium is more justifiable for the “first barrel” likely to be required in response to an emergency, than the “last barrel” in that stockpile, as the probability of requiring it reduces...

The following illustration proves this point:

Leaving the debate about what constitutes too many or too few barrels of oil stockholding aside for the moment, we would identify two categories of strategic stockholding participants at present:

- a) Those who have oil/oil storage assets in excess of the 90 days requirement and;
- b) Those who don't/are building an oil stockpile.

In the case of (a) above, we believe that some strategic leeway exists to consider managing a percentage of the physical stockpile and/or the associated storage assets in a way to integrate them more closely with the market, and generate non-speculative returns which act to reduce the cost of holding stocks without downgrading the “strategicness” of the stockpile.

In case (b), we believe that rather than build physical stocks beyond 45/90 days, alternative lower-cost strategies will permit a Government to insure against price-shocks intended by holding physical stocks, as well as having enough oil to weather concerns about availability. An obstacle to these Optimization Strategies, is the passive model followed by most Governments in managing Strategic Inventory, or the lack of enabling/empowering legislation which sets out a mandate for the Government agency to manage stocks. What are the Optimization Strategies:

- Options Strategy;
- Contango/Storage Asset Optimization;

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- Backwardation/Inventory Optimization;
- Spread Optimization between different qualities held in a stockpile;
- Storing oil off-site and insuring Confiscation/Expropriation/Nationalization/Delivery Risk.
- Stock tickets will be the subject of a specialized debate during the conference.

Optimization Strategy – Options

- Applicable especially in the case of securing the price-mitigation objective of holding oil stocks;
- Applicable to that part of the oil stockpile which is not required to cover physical shortfall, allowing a balance of physical and price-objectives;
- As increased prices are assumed to constrain demand, options can be purchased “out of the money”. Also, as “last barrels” in a supply emergency are likely to have a lower probability of deployment, the out of the money premium is less likely to be incurred;
- Options can gain in value even if no emergency arises;
- There is no risk of loss such as is incurred in making a physical purchase of oil at a determined price, and then releasing it later at a lower price. There is also no opportunity of a gain on physical oil disposed;
- Stock-builders can buy calls, de-stockers can sell calls to generate revenue;
- The option can be applied to any grade of oil desired in an emergency;
- If the volume of demand from Governments for an options strategy were to drive up the cost, without attracting sellers, then at some point, if the cost of the options were to exceed the cost of holding physical stocks, the policy could be re-assessed;
- In the chart below, we have taken the forward swap level of WTI for the period 13-24 months into the future as a base, and determined the price of options struck at \$5, \$10 and \$20 Out of the Money (OOTM);
- The conclusion is that in all cases, acquiring options forward is cheaper than storing physical oil.

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Optimization Strategy – Contango/Storage Asset Optimization:

- Contango = Forward prices for oil exceed the cost of storage and financing of the oil;
- Strategic Inventory Management Specialist purchases oil, places in Govt storage and grants first right of refusal to Govt to purchase the oil;
- Govt earns storage fees – could be used to fund call options strategy;
- No financing costs for Govt;
- Provides effective Govt oil stock with nil capital or underlying oil value exposure;
- If high stock levels held, then de-stock to create ullage?
- Net effect is reduced stockholding cost and/or increase in effective stock levels.

Optimization Strategy – Backwardation/Inventory Asset Optimization:

- Backwardation = prompt prices for oil continuously exceed forward prices;
- Therefore the value of prompt oil in storage, plus the interest that could be earned thereon, exceeds the forward purchase price of that oil (net of currency, freight, basis risks);
- Ideal “last barrels” strategy whereby Govt deposits oil with Strategic Inventory Management Specialist, who under co-guarantee of AA + financial institution, agree to re-deliver same/higher-grade oil by latest end of agreed depository period, Govt receives fixed rental for the oil;
- No oil or currency price-risk for Govt;
- Earnings and physical return of are oil risk-free;

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- Earnings equal to backwardation plus interest, minus hedging costs;
- Leads to reduced cost of stockholding.

Optimization Strategy – Capturing Relative Spreads:

Components		Change in			
Of Stockpile:	Range	In Stock	Value	Response %	Response 2
Mogas	10-20%	15%	-30%	Increase 5%	Revert
Gasoil	10-20%	15%	+30%	Reduce 5%	Revert
Jet	10-20%	20%	-	-	-
Fuel	15-25%	20%	-	-	-
Other	15-40%	30%	-	-	-

Result: no change to physical volumes, anomalous spreads captured by third party and result paid to Government, position reverts to the status quo before the transaction, after agreed period (3-6 months).

Note: Response 2 equals a later, hedged return to the previous level of stockholding.

Optimization Strategy – Holding Oil in Remote Locations:

- Current practice of bilateral agreements increases specific risk;
- Benefit of storing in a remote location: use of under-utilized storage, saves Capex, reduces storage cost;
- Risk: Access/deprivation/nationalization/expropriation risk;
- Insurance costs against these risks vary:
 - a) Western Europe: 0.5 – 0.75% p.a.
 - b) Eastern Europe, North America and Japan: 0.75 – 1.5% p.a.
 - c) Other Southeast Asia, North Asia and South Africa: 1.00 – 1.5% p.a.

Conclusions:

- If commonly adopted by Governments, a “pooling arrangement” of remotely held stocks will reduce specific risk;
- If the cost of insurance is less than cost of own on-land storage, consider;
- Some risk associated with the likelihood that insurance company may dispute payout.

Our Proposal in Conclusion:

- That the trend of greater stockholding by Governments/Agencies should be reversed, as their mandate to manage stocks is limited, a passive model of

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stock management implies a high opportunity cost; and members acting individually does not create the opportunity for reduced/portfolio risk management in stock policy;

- The partial sale/privatization of global oil inventories and associated capital assets to a global oil depository bank (GODB) created by the member countries, which will act as the guarantor/manager of physical supply and price-risks associated with oil disruptions;
- Each Government will retain an equity interest together with that of the subscribing banks, insurance companies, oil companies and Traders/Logistical specialists;
- A shareholders agreement which sets out the policy guidelines and guarantees applicable to minimum physical and price-hedges stocks, the management of these stocks, relative balances of crude and products, as well as setting out the tailor-made services that can be provided to individual customers to cover unique strategic risks and other requirements;
- Services and/or membership can be priced according to different needs (physical supply guarantees will be more expensive), however these costs will be offset by dividend income of the GODB;
- Just as the merger and growth of major oil companies led to a more efficient use of inventories and an increased ability to absorb risk in a portfolio context, so too Governments can reduce their locational, type and counterparty-specific risks through membership of the GODB;
- Membership fees can be varied on the basis of each member's energy efficiency an environmentally beneficial use of energy;
- The concept can be broadened to cover oil, coal, gas and renewables;
- The GODB will be able to raise funds more effectively than individual Governments, and borrowing will be backed by oil/oil infrastructure assets;
- Private enterprise and management techniques will be harnessed in an enabling framework which has as its objective, the efficient management of global strategic inventories of oil;
- Inventory gains and losses will be averaged;
- New members/needy countries will be able to gain immediate access to physical oil/price-insurance strategies through access to some of the "surplus" oil currently held, against payment of a rental/service fees;
- It puts Governments in charge/control of determining stockholding policy and the desired outcomes, rather than the physical management of oil stocks;

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We thank you for your attention.

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