MARSH

Storing-up Problems for the Future – The Risks of Long-term Oil Storage

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In September 2015, we highlighted in our report – *The Contango Conundrum* – the concerns of marine insurers regarding the issue of commodity storage at sea and its impact on bulk carrying vessels, notably oil tankers. Since then, market uncertainty has again increased the attractiveness of long-term storage, and a steady rise in oil prices is anticipated over the coming months, but the risks of storing oil offshore remain.

RISING OIL PRICES INCREASING ATTRACTIVENESS OF LONG-TERM OIL STORAGE

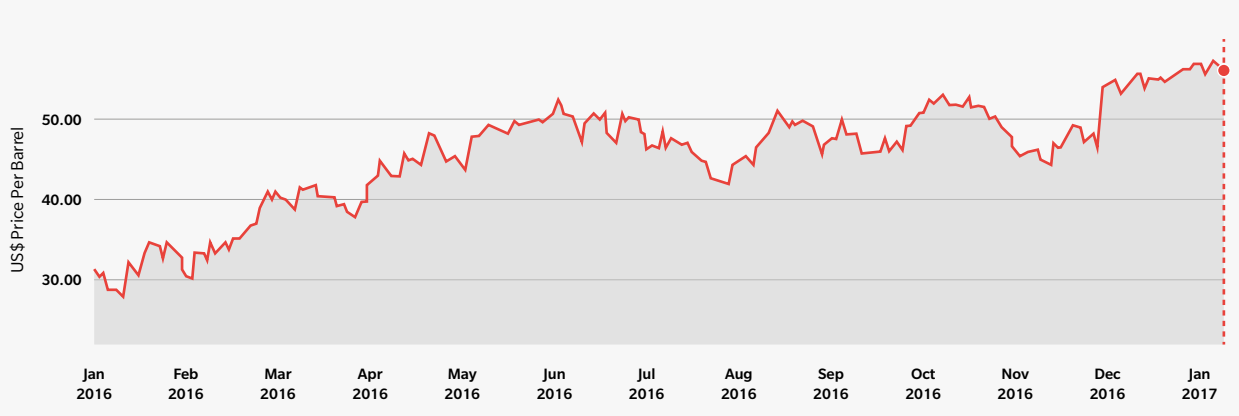
Since the publication of our previous report, market uncertainties have led to erratic patterns of trading, with crude oil generally strengthening in price as traders see oil as a better investment than many other commodities. Vacillations by the OPEC countries in setting limits to crude production, and the stance likely to be taken by the new Trump administration over fossil fuel production in the US, have increased the attractiveness of oil being purchased at a price agreed now, but with delivery delayed to a specified date in the future.

For example, the future delivery of oil in 11 months' time is currently being quoted on the world's exchanges at approximately US$4.00 more per barrel than deliveries.[1] This 11-month delay bonus would be more than enough to justify hiring oil tankers to store oil at sea by the seller until the delivery date, which is often several months into the future.

Futures contracts are bought by traders in expectation that the future open market, or "spot" price at that time of delivery, will be higher than the price agreed under the futures contract. This enables the buyer to take delivery of the oil at the price settled upon when the contract was agreed, in the hopes of realizing a profit when the trader sells the oil on the market that prevails at that time of delivery.

In January 2016, the spot price of Brent crude dipped briefly below US$30 per barrel, having been as much as US$107.45 per barrel only 18 months earlier. During the past 12 months, as many economic headwinds and concerns have buffeted the markets, the oil price (despite a brief, sharp dip in April) has otherwise been slowly recovering lost ground, and is expected to steadily rise over the coming months. This has led to future delivery prices being marked up, which has made the storage of oil an increasingly commercially attractive proposition for traders. Although the market has changed, the risks involved in the long-term storage of crude oil at sea remain.

FIGURE 1 **Price of Brent Crude Oil (US$ per barrel)**
Source: Bloomberg



[1] CME Group, Crude Oil Futures Quotes, available at http://www.cmegroup.com/trading/energy/crude-oil/light-sweet-crude.html, accessed 10 January 2017.

There are the following two key issues to consider:

- **Problem 1:** Where do sellers store the oil until the date of delivery to the buyer?
- **Problem 2:** If the trader selling the oil needs to obtain financing from banks or other institutions, are those financiers aware of the risks associated with the long-term storage of crude oil at sea?

One of the attractions of a futures contract for buyers is that, until the delivery date, the buyer is not in possession of the commodity and does not have to worry about storing it. However, once that delivery date arrives, it becomes their property and will remain so until the oil is sold on to others.

Despite the oil price slowly rising, freight rates for hiring oil tankers remain subdued. Therefore the attractiveness to both vessel owners and oil traders in using oil tankers solely as storage vessels has, if anything, increased.

Not for the first time, the industry has a situation where there are two willing partners in what becomes a maritime marriage of convenience. Oil traders charter idle or low-earning oil tankers to store their oil, and shipowners benefit from a cost-effective way of employing their tankers by simply anchoring the vessels and offering these otherwise idle or low-earning ships to be used as floating storage units.

The reduced cost involved with anchoring a tanker and effectively laying it up, albeit with a cargo of oil on board, has proven attractive to ship operators, due to reduced manning, port fees, and fuel costs, as well as reduced engine wear on their vessels. As a result, traders will find some tanker operators as willing partners in deals to store oil for a few, sometimes several, months at sea. But laying up a tanker with oil stored on board is not without risk, and the risks associated with oil storage at sea are often not fully considered by oil traders or their financiers.

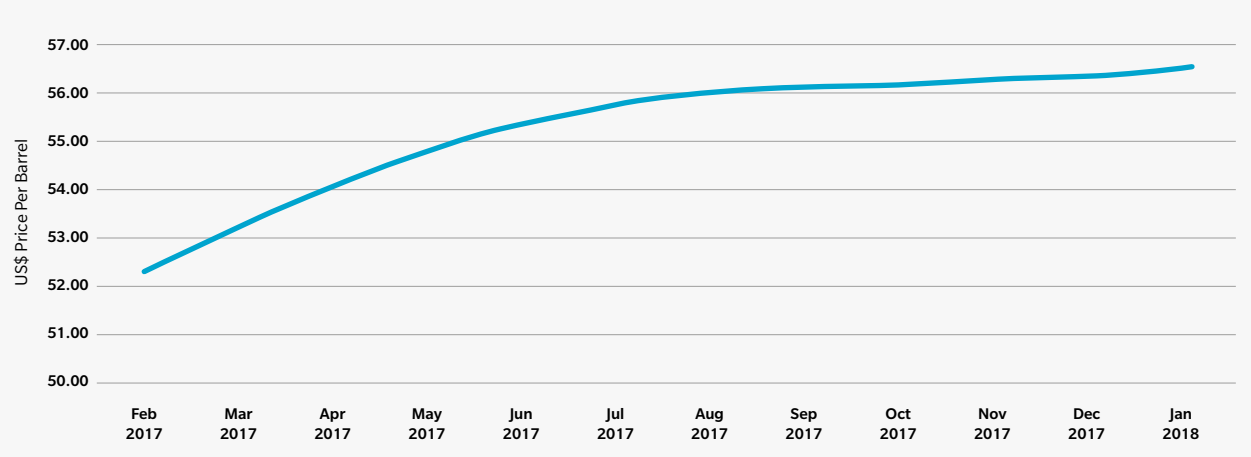
THE RISKS OF LONG-TERM STORAGE

When traders sell oil with a future delivery date, it is on the premise that, at that delivery date, the oil will be in good condition, in full quantity, and uncontaminated. These requirements are risked when storing oil at sea.

Crude oil is not a liquid, but technically a suspension of numerous hydrocarbon compounds. If not carefully maintained, it can start to break up into its constituent parts, reducing, and possibly destroying, its value.

If stored for long periods of time, undisturbed crude oil will begin to settle. The heavier hydrocarbons (such as bitumen) sink and coalesce at the bottom, while the lighter hydrocarbons (such as methane and ethane) rise to the top and, if permitted, escape the crude oil altogether as vapor.

FIGURE 2 Crude oil futures quotes, as of January 2017 (US$ per barrel)
Source: CME Group



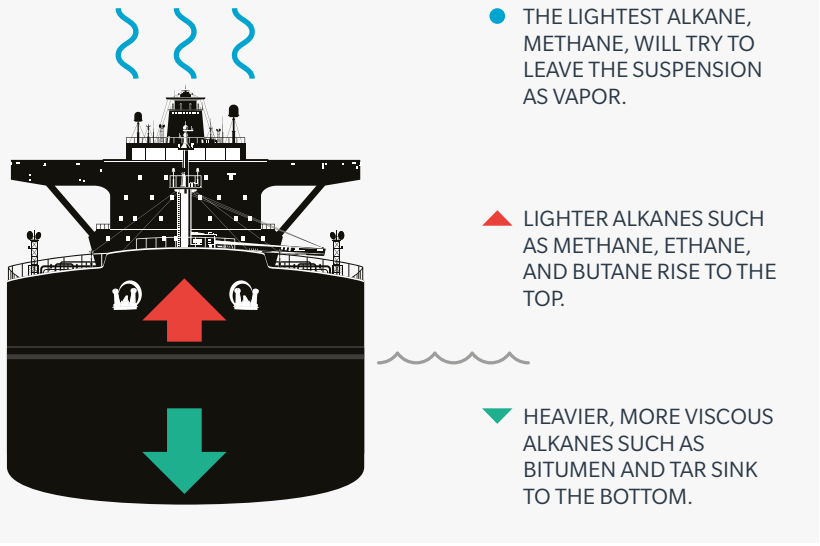
As such, the crude oil starts to degrade. This can lead to both quality claims as well as shortage claims due to excessive sediment (or sludge) forming at the bottom of the cargo, which becomes unpumpable, leading to residues remaining on board (ROB) issues.

Oil tankers used as storage units are exposed to the climatic conditions where they are anchored. In many locations, there can be considerable variations between daytime and night-time temperatures, which may lead to a loss of cargo due to venting (the release of gases into the atmosphere). This may well lead to cargo "shortages," as the volume of the cargo on board is slowly reduced due to this constant temperature change. The longer the oil is in storage on the vessel, the greater the possible loss from this cause.

When a vessel is laid-up, it may be a temporary situation, and the vessel would be kept in a reasonable state of readiness to re-commence navigation (known as a "warm" lay-up). In this situation, crew numbers are maintained and the vessel's machinery is kept active and fully operational. However, it may be put into a longer-term lay-up, in which crew manning levels and the machinery's readiness to re-activate are reduced (known as a "cold" lay-up).

In either case, the shipowner will need to have informed the vessel's classification society, in order that appropriate action can be taken and measures complied with to ensure the safety of the vessel, and that the vessel remains fully classed. The marine hull and protection and indemnity (P&I) insurers of the vessel would also need to be informed. Insurers will often add their own warranties and requirements when such requests to lay a vessel up are made. If the oil storage is to be for several months, a degree of "cold lay-up" can be anticipated. However, if oil is to be stored on board while the vessel is laid-up, the situation may become more complicated from an insurance perspective.

FIGURE 3 Long-term settling of oil cargoes can result in degradation and increased viscosity at the base



Certain questions will need to be answered, such as: How much of the vessel's machinery will need to remain operational in order to ensure the safe and effective storage of the oil? What manning levels will be necessary to be maintained?

As such, the trader may wish to employ a tanker vetting company to carry out inspections and ensure that only reputable ship operators are considered for storing the product. In addition, the location of the vessel that is hired for this purpose will be an important consideration. The vessel is expected to be moored at a satisfactory anchorage location outside of the port in an appropriate, prudent manner, where the perceived risks have been mitigated as far as practical. Certain locations will require additional risk considerations, such as:

- Vessels moored at an offshore lay-up location that is subject to violent weather patterns or near known shallows: These will require the ability to react swiftly to weather warnings and move the vessel if needed.
- Vessels near regular shipping lanes: Lights displayed by the vessel to avoid collision will need to be considered.
- Vessels in warm or tropical locations: Ensuring that the stored oil is protected from excessive temperature fluctuations (which will mean that at least some of the ship's machinery will need to remain operational) would become another important consideration, as well as the need to regularly "stir" the cargo of oil to avoid sedimentation.

In addition, with oil as a stored cargo, fire is an ever-present risk, but if the vessel is laid-up offshore, measures (both on the vessel and with local fire-fighting services) should be arranged to deal with a

fire should it occur on board. The classification society's requirements for on-board fire alarm systems and fire-fighting equipment, coupled with any additional requirements from the hull and P&I insurers can create an onerous list. Not adhering to these requirements, to the letter, at all times, could lead to insurance cover being removed or the class withdrawn.

THE CONSEQUENCES OF AN ACCIDENT

Should an accident occur, such as another vessel colliding with the moored storage tanker, the vessel operator will have numerous problems to handle. This could include the need for stabilizing the vessel, tackling any explosions or fires that break out, ensuring the crew are safe and accounted for, and seeking salvage assistance. However, such events can ultimately expose the oil trader to risks that may not have been considered. Should the vessel have had its class withdrawn or if the hull/P&I insurance had been breached in some way, then any loss or damage to the trader's oil may not be easily recovered from the vessel operator.

Many vessel owners operate under very tight profit margins, and an uninsured loss of any magnitude could cause them to be made insolvent. Should this happen, the oil trader seeking compensation may have to join a long list of creditors, if they are to receive compensation. The trader should also keep in mind that many of the risks for maritime vessels that are laid-up may be deemed as "perils of the sea," for which the vessel operator (under the terms of a charterparty or bill of lading), may not be liable. This would mean the trader would not receive compensation for the loss from the vessel operator.

Financiers should also carefully consider the possible risks of long-term oil storage upon a vessel. If the oil trader has purchased the oil stored on a vessel with money raised from a bank or other financier, then this could be a concern to those financiers, as their loaned money will likely have been secured on the asset itself. If, while it is stored at sea, the oil is lost, damaged, contaminated, or in any other way rendered unusable, then the asset upon which the loan was secured is no longer available, exposing the financier to a financial default of the trader.

CONCLUSION

Storing oil at sea may be a solution for oil traders who need to find suitable storage locations until the delivery date arrives. However, due to the traditional perils of the sea, it exposes the oil to a very specific set of risks.

While many traders and their financiers are aware of the some of the risks involved, the full extent of the risks may need to be considered separately by way of the trader's own insurances. Even if an accident occurs while the oil is stored at sea, then being able to recover such losses from vessel operators may not be done easily, if at all.

About Marsh

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