METHODOLOGY AND SPECIFICATIONS GUIDE

Platts Forward Curve-Oil

(Latest Update: February 2012)

OIL DERIVATIVES METHODOLOGY GUIDE

Platts' oil derivatives assessments reflect the value of swaps, or financially settled derivatives, in the over-the-counter markets at the close of trading in Asia, Europe and the US. These assessments, which reflect the value of swaps trading in bilateral markets, are published in Platts Forward Curve-Oil (PFC-Oil), a real-time information add-on to Platts' real-time news service, Platts Global Alert. PFC Oil is the first globally comprehensive and independently-produced series of oil forward price curves.

These assessments are produced by a team of derivative reporters around the world, who collect data from traders and brokers active in the forward markets.

MARKET METHODOLOGY

GENERAL ASSESSMENT PRINCIPLES

PFC Oil assessments reflect a market on close value in each major region where assessments are published. Platts' assessments reflect tradable values, in line with the best available bids and offers standing at the close of the assessment process.

Daily swap assessments reflect actual business, and prominence is given to confirmed trades and indications when producing an assessment. Platts believes that every commodity has a tradable value, however, and endeavors to produce an assessment of the value at which a commodity could trade, even if for any given day it has not done so. These assessments are arrived at through considering bids and offers, from all participants, as well as indirectly from time spreads and trading patterns in related markets.

Platts is committed to bring transparency to the market. Platts is completely independent of the market, and does not produce its assessments in alliance or partnership with any other participant in the market.

- Assessments reflect the value of market on close
- Assessments are a reflection of firm bids, offer and deals, and are subject to careful review
- Information will be cross checked to ensure data integrity.
- Transactions done after the assessment closing time will be disregarded.
- Bids/offers on swaps received by Platts after the published cut-off times will also be disregarded and not published.
- Illiquid markets may be assessed relative to more active benchmarks and will still reflect market on close values
- Platts only evaluates information from sources considered credible and creditworthy.
- In most markets, the front-month swap will be assessed throughout the calendar month prior to the rollover.
- Rollovers are on the first working day of the month, quarter or year, when the first assessed swap period advances to the following month quarter or year. Brent weekly Contract for Difference swaps (CFDs) roll on the Thursday of each week.
- Balance month swaps are assessed until the 15th of the month. After such time, balance month bids and offers will continue to be posted on PGA, but the information may not be used for assessment purposes.

DISCLOSURE

What Platts subscribers do with the information provided is entirely at their own discretion, and Platts accepts no liability for the results of their use. Assessments are provided for information purposes, and should not be construed as a solicitation or offer to buy or sell any commodity, securities or related financial instruments.

ASIA PACIFIC

In Asia, PFC Oil assessments reflect a market on close value at 16:30 Singapore time for all published forward curves. Bids/offers and trades are published throughout the day on Platts electronic screen service (eWindow), Platts Global Alert page 3 and page 190.

Initial spread bids and offers in the Singapore fuel oil/distillates swaps markets must be submitted no later than 16:15:00 local Singapore time. The cut-off is applicable to spreads including jet/gasoil regrade, east/west gasoil spreads, 180/380 CST viscosity and all time spreads. Platts will consider incremental price changes made to spreads up to 16:30:00 local Singapore time.

Initial outright swaps bids and offers (eg. December paper) must be submitted no later than 16:20:00 local Singapore time. Platts will consider incremental price changes made to outright swaps positions up to 16:30:00 local Singapore time.

EUROPE

In Europe, PFC Oil assessments reflect a market on close value at 16:30 London time for all published forward curves. Participants may register an interest to trade swaps through the Platts electronic screen service (eWindow), Platts Global Alert page 5 or page 3 and if so, the information must be communicated no later than 16.15:00 London time for all spread assessments, and 16.20.00 for all outright swap indications..

All bids and offers expire at 16:30:00 London time. All these timings are subject to change following proper communication by Platts.

US

In the US, PFC Oil assessments reflect a market on close value at 15:15 New York time, 14:15 Houston time for US Atlantic, Gulf Coast and West Coast markets. Participants may register an interest to trade swaps via Platts Global Alert page 400 and if so, this must be done by no later than 15:00 New York time, 14:00 Houston time.

BRIEF EXPLANATIONS

Balance Month: A balance month swap is financially settled using the relevant physical market assessment or futures market values available on every remaining publishing day in the month, including the day of publication itself. Balance month swaps are assessed in some markets, and they are available until 15th of each month.

Month: A calendar month swap is financially settled using the relevant physical market assessment or futures market values available on every publishing day in the month. Monthly swaps roll on the first publishing day of each month.

Quarter: A calendar quarter swap is financially settled using the relevant physical market assessment or futures market values available on every publishing day in the quarter. A "Q3" refers to July, August and September, and so on. Calendar quarters roll four times a year, on the first publishing days of January, April, July and October.

Years: A calendar year swap is financially settled using the relevant physical market assessment or futures market values available on every publishing day in the relevant physical market assessment or futures market values, published on every day in the year.Yearly swaps, also known as "annuals", roll on the first publishing day of each year.

EUROPEAN MARKETS

CRUDE OIL

Crude swaps are traded on a 24 hour basis in London, Singapore and New York. Brent is generally regarded as the most actively traded followed by West Texas Intermediate and Dubai. Crude swaps are traded as much as 10 years forward, but the most liquid markets are traded up to four years forward.

Brent frontline swaps: A Brent frontline swap is a calendar month derivative that is settled using the ICE Brent futures contract. The swap is financially settled using the closing price on each day of the month, for whichever futures contract is most prompt on each day (with the exception of the expiration date of the front month's futures contract when the future's contract referenced is that for the second month). Daily Brent frontline swaps are calculated using mean adjusted values for the number of trading days that each futures contract spends as the front month (with the exception of the front monht's expiry date). This is done by calculating the exact number of trading days within each month, which will vary according to the calendar month.

DFLs (Dated-to-Frontline): An active swaps market exists in trading the difference between Platts Dated Brent assessments and the ICE front line futures contract. This market, known as Dated to Frontline, has been supplemented by the Dated to BWAVE market, the latter being the difference between Dated Brent and the daily trade-weighted Brent average reported by the ICE for their futures monthly contracts. BWAVE pricing is therefore for each future delivery month, not necessarily the front month, whereas frontline is for whichever delivery month is the front month during the swap period. Dated-to-Frontline implies the differential between the daily Platts Dated Brent assessment for dated or physical cargoes, and the ICE settlement for the front-month ICE future for that day. Although a value can be attributed to this after each day's assessment/calculation, the value then has to be aggregated for the period over which the Dated-to-Frontline swap has been written. This is so that the two parties to the swap can exchange a cash settlement at each of the stated pricing points in the bilateral swap contract. To give an example, a Q3 Brent Dated-to-Frontline swap hedges the differential between the two values throughout the calendar quarter, i.e. throughout July, August and September. This quarter will therefore include front-month daily settlements during that calendar quarter from the August, September, October and November futures delivery months. The Dated-to-Frontline swaps are assessed thirty six forward months, twelve forward quarters and three calendar years.

Brent CFDs: Brent CFDs (Contract for Difference) are swaps, assessed by Platts for each of eight weeks ahead of the day of publication. They represent the market differential in price between the Dated Brent (BFOE) assessment and a forward month cash contract ie forward month BFOE (Brent Forties Oseberg Ekofisk) cash contract, over the contractual period of the swap. The first weekly balance is on a forward week basis on Thursday and Friday and becomes a balance week quotation between Monday and Wednesday.

Dated Brent swaps: Dated Brent swaps are also assessed longer term over each of the six forward months, four forward quarters and three full calendar years.

Urals CFD (Med and NWE): Urals CFDs are swaps assessed by Platts for each of the forward three months for each of Urals Mediterranean and NWE ahead of the day of publication for . They represent the market differential between the Urals assessment (for each the Mediterranean and NWE) over the contractual period and Dated Brent (BFOE) over the same period.

Timing spreads: Each of the crude swap assessments has its own timing structure, demonstrating how accentuated the backwardation or contango is in each of the markets. This timing structure, expressed as spreads between months or different strips of months, changes constantly, and a fairly active swaps market has developed around it. Swaps may be traded on a month against month basis, as well as quarter-against-quarter and less commonly, year against year.

Quality spreads: Crudes such as West Texas Intermediate and Dubai are often traded at a differential to Brent, and swaps may be written against the forward value of the spread between these two grades. Thus swaps will be written on the Brent-WTI and Brent-Dubai spreads.

WTI/Brent spreads: WTI/Brent swaps settle their value using the difference between front-line futures contracts for each month, quarter or annual period trade. As an example: a WTI/Brent swap for calendar March will include settlements for both crude futures from the April and May delivery months, which both trade as frontline at different times over the calendar month. During Q3, a WTI/Brent swap would be financially closed using exchange settlements for crude futures in the August, September, October and November delivery months (all of the months which trade as frontline at different times during the calendar third quarter). WTI/Brent swaps are assessed for thirty six calendar months, twelve forward quarters and three calendar years.

Brent/Dubai EFS (Exchange of Futures for Swaps: This enables holders of ICE Brent futures to exchange their Brent futures position for a forward month Dubai crude swap, similar to the Brent EFP (where parties convert a futures position into a Brent forward or "25-day"cargo). The difference here is that the ICE Brent position thus is converted into a Dubai monthly swap, plus they receive a premium for the quality spread. As Dubai is not an exchange-traded crude, unlike Brent or WTI it is possible to hear of April/March EFS, where April ICE is exchanged for March Dubai swaps, even though March Brent futures have expired by that point. The EFS is assessed for two calendar months forward.

Example

A June swap made up of 9/21 of 'July' delivery month futures ($64.24/bbl) and 12/21 of 'August' delivery month futures ($64.76/bbl) would produce a value of $64.54/bbl. That is to say, that in the example calendar month of June there are 21 trading days. The July futures contract expires on June 14. Therefore, there are nine full trading days where July is the front-month futures contract and twelve days where August is the front-month futures contract.

July Brent futures $64.24/bbl * (9/21) = $27.53/bbl and the August futures at $64.76/bbl * (12/21) = $37.01/bbl. Add the two together to get the June Brent swap of $64.54/bbl.

This takes into account the roll between the first and second forward months around the 15th of each month. The Brent frontline swaps are assessed for six calendar months, six forward quarters and three calendar years.

London 16:30 Platts assessment for ICE Brent futures

Platts assesses on a daily basis the value of ICE futures prevailing values at 16:30 London time. Platts assessments reflect the exact tradeable and repeteable value of Brent futures for the front three months exactly at that time. Platts uses all information available to assess outright futures prices at 16:30 London time exactly. Platts' editorial team reviews all relevant electronic data such as the ICE trading platform screen and review both outright flat price trades as well as inter-month spread trades prevailing at 16:30.

Further to this, Platts reporters look at current market trends in the immediate period before and after 16:30. This is to ensure that the Platts assessment reflects a prevailing and representative value at 16:30 rather than an unusual trade occurring at that time or earlier. This is of critical importance when liquidity is reduced.

The 16:30 London time futures assessments are evaluated at this time to ensure that Brent futures or those assessments linked to futures values are in line with all other timestamps across Platts crude and refined products assessments. The Brent contract traded on the ICE platform settles at a different time.

Platts' 16:30 assessments of Brent futures are incorporated into the Brent frontline swap calculations (see above).

PRODUCTS

The growth of the European product swaps market started as an alternative to basis risk trading, and the lack of actively traded future exchanges for particular products. European product swaps are often settled against the monthly average of oil products assessments published in the daily publication, Platts European Marketscan.

Light ends:

Gasoline: The underlying physical basis for the gasoline swap in Europe is the Eurobob barge assessment as published in the European Marketscan. The current gasoline swaps curve is assessed for balance month, twelve forward months, four forward quarters and one calendar year forward on a daily basis. The average clip size for a gasoline barge swap is typically 5,000mt. Platts also assesses balance month, twelve forward months, four forward quarters and one calendar year forward on a daily basis for Premium gasoline 10ppm barge swaps using the Premium gasoline 10ppm assessment as the underlying physical basis.

Gasoline crack swaps are a differential swap to Brent and published in dollars per barrel. Like the swaps, the crack spreads are assessed for balance month, twelve forward months, four quarters and one calendar year ahead.

Naphtha: The underlying physical basis for the naphtha CIF Northwest European cargo swap is the CIF cargoes as assessed in Platts European Marketscan. Platts assesses naphtha swaps reflecting a lot size of 5,000 mt. The naphtha swap curve is assessed for balance month, twelve forward months, four forward quarters and one calendar year ahead on a daily basis.

Naphtha crack swaps are a differential swap to Brent and assessed in dollars per barrel. Like the outright naphtha swaps, the crack spreads are assessed for balance month, twelve forward months, four quarters and one calendar year ahead.

Propane:

The underlying physical basis for the CIF propane swap in Europe is the published assessments for CIF ARA propane cargoes. The LPG propane swaps are assessed on a daily basis as a dollars per metric ton outright value. Balance-month, four forward months and four quarters ahead are assessed.

Benzene:

European and US benzene (see below) are the only physically delivered forward market carried in PFC Oil, though Platts does publish physical forward assessments in a variety of other locations. Platts publishes European benzene CIF ARA, physical forward curve assessments, publishing three forward months and two forward quarters. The first month assessed is the second forward month. For example, the first month assessed in February would be for April deliveries. Each benzene forward trade typically reflects cargoes from 1,000mt to 5,000mt and is assessed in dollars per metric ton.

Middle distillates:

The middle distillate swaps complex is made up of two elements;

ICE gasoil futures and product spreads (gasoil, diesel, or jet fuel) to gasoil futures. To calculate flat price swaps, Platts take the product differential and adds it to the relevant ICE gasoil futures contract or frontline swap.

Example – to calculate the FOB ARA 0.1% Gasoil barge swaps for September:

September gasoil frontline ($650/mt) plus September gasoil barge swaps ($-4.50) = $645.50/mt.

Platts has stopped publishing calendar year, individual quarter or individual month middle distillate swap assessments that relate to, or settled against, the IntercontinentalExchange's 0.1% gasoil futures contract from January 2015 onwards. The change, which came into effect on January 3, follows the suspension of the 0.1% gasoil futures contract by the exchange for trading past the last day of January 2015.

Jet fuel: Jet swaps trade at a differential to the ICE gasoil contract and are priced off the Platts CIF NWE cargo assessments as published in the European Marketscan. The Jet swap is denominated in dollars per metric ton. The forward curve is assessed for thirty-six forward months, twelve forward quarters and three calendar years.

Diesel: Previously there were two grades of diesel swaps to reflect the specifications across many European countries. 50ppm sulfur diesel came into effect by 2005 but was discontinued on the last trading day of 2008 for both the Mediterranean and NWE as a response to EU regulations on the ULSD sulphur content.

To reflect the change to lower sulfur specifications across the EU, the 10ppm sulfur barge as well as cargo swaps became more heavily traded. The European Union had stipulated that sulfur free diesel fuels must be available from 2005 with the full introduction being mandatory in 2009. Several countries such as Germany, Benelux and the Netherlands have already switched to 10ppm diesel and this has helped to boost liquidity for those swaps assessments.

Effective October 1, 2008, in response to the EU sulfur regulations, Platts introduced an assessment for 10ppm CIF NWE cargo swaps. The swap is a differential swap to gasoil futures and is assessed in dollars per metric ton. The swap is priced against the Platts CIF NWE 10ppm cargo (basis Amsterdam) assessment as published in the European Marketscan. The forward curve is assessed for twenty-four forward months, eight forward quarters and two forward years.

The 10ppm FOB ARA barge swap is a differential swap to gasoil futures, and is assessed in dollars per metric ton. It is priced against Platts 10ppm diesel FOB ARA barge assessment as published in the European Marketscan. The forward curve is assessed for twenty-four forward months, eight forward quarters and two forward years.

The CIF cargo swap assessment for 10ppm diesel in the Mediterranean replaced the discontinued 50ppm CIF Med ULSD swaps. The new 10ppm CIF MED swap is priced against Platts' 10ppm diesel CIF MED assessment as published in the European Marketscan. The forward curve is assessed for twenty-four forward months, eight forward quarters and two forward years.

Gasoil: There are a number of different swaps location for gasoil including barges and cargoes in the northwest Europe. Platts assesses cargo swaps in the Mediterranean to reflect the exports coming out of the Black Sea ports. From October 1st 2007, Platts started to assess 0.1% gasoil FOB ARA barge swaps and 0.1% gasoil cargo swaps CIF NW Europe. From October 1st 2008, Platts also introduced an assessment for 0.1% sulfur gasoil CIF cargoes in the Mediterranean. These assessments reflect the introduction of lower sulfur specifications in gasoil from January 2008 following legislation from the European Union.

These assessments ran in parallel to ARA and NWE 0.2% gasoil assessments, which were discontinued both in NWE and the Mediterranean on the last trading day of 2008.

The 0.1% gasoil barge swap in the Antwerp/Rotterdam/Amsterdam market is priced against the Platts ARA barge assessment as published in the European Marketscan. The forward curve is assessed for twenty-four forward months, eight forward quarters and two forward years.

The 0.1% gasoil CIF cargo swap is priced against the Platts 0.1% gasoil CIF NWE cargo assessment. The forward curve is assessed for twenty-four forward months, eight forward quarters and two forward years.

The 0.1% cargo CIF swap in the Med is priced against the 0.1% CIF Med physical cargo assessment as published in the European Marketscan. The forward curve is assessed for twenty-four forward months, eight forward quarters and two forward years.

In addition to the differential swap values, Platts publishes flat price swap values and crack swap values for all 0.1% gasoil, ULSD and Jet swaps. Flat price swap values represent a value of the assessed underlying gasoil curve plus the relevant swap assessment. For crack swap values, these represent the difference between the flat price of the distillate swap and the Brent front line swap, with the exception of swap values for 0.1% gasoil.

Gasoil frontline crack swaps are derived from market information. The crack swaps are assessed in dollars per barrel. 0.1% gasoil, ULSD and Jet crack swaps are assessed for the respective length of the underlying distillate differential swap.

The published gasoil frontline crack forward curve is thirty-six forward months, twelve forward quarters and three forward years. The conversation factor used is 7.45 for gasoil and ULSD, while 7.86 is used for Jet.

Gasoil frontline swap:

These are calendar month gasoil swaps based on daily Platts ICE gasoil 16:30 values and the ICE gasoil futures contract settlements. To reflect the value prevailing at exactly 16:30 London time, Platts uses the Platts ICE gasoil values to establish the front three months of the gasoil curve in order to align with physical pricing in the middle distillates segment. The ICE gasoil settlement values are a calculated three minute weighted average closing at 16:30 London time, while the Platts ICE gasoil 16:30 values reflect a 16:30 London Time MOC assessment price and are used by the European Marketscan team for their European distillates products. Therefore, for the front three month of the ICE gasoil curve, the Platts ICE gasoil values are used to reflect 16:30 London time pricing, while for the rest of the curve, the ICE gasoil settlement intermonth spreads are used to create a gasoil frontline swaps curve.

Platts has stopped publishing calendar year, individual quarter or individual month middle distillate swap assessments that relate to, or settled against, the IntercontinentalExchange's 0.1% gasoil futures contract from January 2015 onwards. The change, which came into effect on January 3, follows the suspension of the 0.1% gasoil futures contract by the exchange for trading past the last day of January 2015.

Gasoil frontline swaps are calculated by adjusting the value for the proportion of days that each futures contracts trades as the front month (for example, in calendar May, approximately 33% will be the May gasoil futures contract and 66% will be the June month contract).

In line with the InterContinentalExchange, which changed the basis for its gasoil futures from 0.2% to 0.1% sulfur content in January 2008, the gasoil frontline swaps reflect 0.1% sulfur levels.

Platts is reviewing the potential for assessments associated with the exchange's new 10ppm futures contract, and we will issue an update on that proposal in due course.

Example

A September gasoil frontline swap of $655/mt takes 33.333% of September ICE gasoil futures ($649.50/mt) and 66.666% of October ICE gasoil futures (657.50/mt). September gasoil futures 649.50 * 0.3333% = 216.47mt and October futures 657.50/mt * 0.6666 = 438.29/mt. Add the two together to get the September gasoil swap. The calculation takes into account the gasoil futures expiry on or around the tenth of each month.

N.B In addition, gasoil frontline crack swaps, which reflect traded levels in the market and are assessed at 16:30GMT, are also taken into account for the gasoil frontline swaps calculations, therefore generating a more accurate gasoil frontline swaps value.

Heavy ends:

Platts assesses four different kinds of European fuel oil swaps.

1% Fuel oil FOB North West Europe (NWE) cargo swaps

3.5% Fuel oil FOB Amsterdam Rotterdam Antwerp (ARA) barge swaps

3.5% Fuel oil FOB Mediterranean (MED) cargo swaps

1% Fuel oil FOB ARA barge swaps

The high sulphur 3.5% FOB ARA swaps form the basis of all other fuel oil swap assessments. They are frequently traded on a flat-price basis. Other fuel oil swap assessments, however, are most commonly traded via a differential to the 3.5% fuel oil barge swap, specifically the 1% cargoes, the 1% barges and the 3.5% cargoes.

The differentials are as follows:

- 3.5% FOB ARA barges versus 3.5% FOB MED cargoes, termed the "MED differential"
- 1% FOB NWE cargoes versus 3.5% FOB ARA barges, termed the "hilo differential"
- 1% FOB ARA barges versus 1% FOB NWE cargoes, termed the "barge/cargo differential".

The 3.5% FOB ARA barge swaps and the 1% FOB NWE swaps are priced against the 3.5% and 1% FOB Rotterdam barges as published in Platts European Marketscan. The 1% FOB NWE cargo swaps are priced against the Northwest European cargoes in Platts Marketscan. The 3.5% FOB MED cargo swaps are priced against the FOB MED (basis Italy) 3.5% fuel oil assessment as assessed on Marketscan.

All European fuel oil swaps are assessed as dollars per metric ton. Each swap assessment contains the flat-price value of the swap, the relevant differential and the crack value. Cracks swaps are assessed in $/barrel and are automatically generated using the Brent frontline swaps. The cracks are published on each page alongside the flat-price for each fuel oil curve.

Forward curves for the 3.5% FOB ARA barge swaps and the 1% FOB NWE cargo swap assessments are assessed for thiry-six months forward, twelve quarters forward and three calendar years forward. The forward curves for the 3.5% FOB MED cargo swaps and the 1% ARA barge swap assessments are assessed for twenty-four months forward, eight quarters forward and two calendar years forward..

US MARKETS

CRUDE OIL

WTI Frontline Swaps: WTI frontline swaps are calendar month derivative that is settled using the CME's NYMEX WTI futures contract. The swap is financially settled using the closing price on each day of the month, for whichever futures contract is most prompt on each day (with the exception of the expiration date of the front month's futures contract when the future's contract referenced is that for the second month). Daily WTI frontline swaps are calculated using mean adjusted values for the number of trading days that each futures contract spends as the front month. This is done by calculating the exact number of trading days within each month, which will vary according to the calendar month. Platts assesses the first six months and first six quarters.

WTI-Brent swaps: Used to measure the possible arbitrage of North Sea crude to the US, these swaps compare the two largest benchmark crude prices. The WTI-Brent swaps settle against the difference between frontline NYMEX WTI and frontline ICE Brent futures over a calendar period. Platts assesses first four months, first four quarters and first three years.

PRODUCTS

Light ends:

Gulf Coast conventional 87 grade differential swaps are used to hedge US refiner production and supplier purchases for shipment up the Colonial Pipeline to the US northeast. West Coast CARBOB unleaded differential swaps are used to hedge West Coast gasoline prices, which can swing widely away from NYMEX unleaded gasoline values due to quality, distance and shipping constraints. Both swaps are settled against the difference between Platts' physical assessments and the NYMEX front-month unleaded settlement price over a specified period. The curve extends to four forward months and four forward quarters.

Propane:

These are flat price swaps, expressed in cts/gal. Swaps are traded against physical assessments for Mount Belvieu, Texas which is pipeline delivered. A typical "clip" or traded size is 25,000/mt. LPG propane swaps are assessed three months and two quarters ahead.

Benzene:

US and European benzene (see above) are the only physically delivered forward market carried in PFC Oil, though Platts does publish physical forward assessments in a variety of other locations. Platts publishes the FOB US Gulf Benzene physical forward curve assessments, publishing three months and one quarter forward. All US Gulf benzene spot assessments are for 10,000bbl lots or greater and is assessed in dollars per metric ton. Assessments cover benzene conforming to ASTM D-2359/90 specifications.

Middle Distillates:

Gulf Coast No. 2 oil differential swaps settle against the difference between Platts USGC heating oil physical pipeline assessment and the front-month NYMEX heating oil contract during a specified period. Gulf Coast, Atlantic Coast and West Coast jet swaps settle against the difference between Platts jet 54 physical assessments in those regions and the front-month NYMEX heating oil contract during a specified period. Platts also publishes fixed-price equivalents for the distillate differential swaps. The curve extends to four forward months and four forward quarters. Gulf Coast Ultra-Low Sulfur Diesel swaps settle against the difference between Platts Gulf Coast ULSD physical pipeline assessment and the front-month NYMEX heating oil contract during a specified period.

Heavy ends:

High sulfur 3.0% fuel oil flat price swaps in the US Gulf Coast are often used for hedging utility grade fuel exported to Central America and Mexico, as well as to Singapore when the arbitrage is open. As the most liquid HSFO swaps market in the region, it is also used to hedge bunker resupply in the Houston and New Orleans markets. Low sulfur 1.0% flat price swaps in the US Atlantic Coast are used to hedge utility grade low sulfur fuel imported from Latin America and Europe. Swaps on other grades, such as 0.3%S high-pour, 0.7%S and 2.2%S, are much less liquid, and tend to trade at a differential to the 1%S swaps. USGC 3% swaps settle against the Platts 3%S physical barge assessment FOB US Gulf Coast. The USAC 1%S swaps settle against the Platts USAC 1%S waterborne physical assessment. The forward curves are assessed for four forward months, four forward quarters and two calendar years.

Biofuels:

Platts launched Chicago ethanol swap assessments for the first two calendar months on October 3, 2011. The Chicago ethanol swap is settled on the calendar month average of the Platts spot Chicago ethanol terminal assessments. The Chicago ethanol swap trades in lots of 1,000 barrels.

ASIA PACIFIC MARKETS

CRUDE OIL

Brent frontline swaps: Brent frontline swaps are calendar month derivative that is settled using the ICE Brent futures contract. The swap is financially settled using the closing price on each day of the month, for whichever futures contract is most prompt on each day. Daily Brent frontline swaps are calculated using mean adjusted values for the number of trading days that each futures contract spends as the front month. This is done by calculating the exact number of trading days within each month, which will vary according to the calendar month. Platts publishes the front 36 months, four quarters and three years of frontline Brent swaps in Asia.

Dubai swaps: The Dubai swaps market is often used to hedge heavy, medium sour crude cargoes from the Middle East and Rusia's Far East. Dubai swaps are settled against the average of Platts' front-month spot Dubai crude assessments as published in the Platts Crude Oil Marketwire. The Dubai paper assessment reflects a minimum of 50,000 barrels paper transactions. The forward curves is assessed for seven forward months, four forward quarters and three calendar years out. Platts publishes the front 36 months, four quarters and three years of Dubai swaps in Asia.

Brent-Dubai swaps: This enables holders of frontline ICE Brent futures swaps to exchange their position for a forward month Dubai crude swap, similar to the Brent EFP (where parties convert a futures position into a Brent forward or "21-day"cargo) and a Brent/Dubai EFS (where parties trade a Brent futures contract for a Dubai swap). In a Brent/Dubai swap, the Brent swap position is converted into a Dubai monthly swap, plus the seller receives a premium for the quality spread. Platts assesses the first 36 months, four quarters and two years of Brent/Dubai swaps.

PRODUCTS

Distillates: Singapore 0.5% sulfur gasoil and jet swaps settle against the FOB Singapore 0.5% sulfur gasoil and Singapore jet/kerosene assessments as published in the Platts Asia-Pacific/Arab Gulf Marketscan. Both products typically trade in 1 cent/barrel increments. The Singapore gasoil and jet paper assessment reflects a minimum of 50,000 barrels paper transactions. Platts also assesses Jet/Gasoil spread swaps, also known as the Regrade Swap. These settle against the difference between the 0.5% sulfur gasoil and Singapore jet/kerosene assessments as published in the Platts Asia-Pacific/Arab Gulf Marketscan. These forward curves are contain 12 forward months and four forward quarters.

FOB Singapore (MOPS) naphtha swaps: MOPS naphtha swaps are settled against Platts' FOB Singapore naphtha assessments (often referred to as the Mean of Platts Singapore, or MOPS) as published in the Asia-Pacific/Arab Gulf Marketscan. Naphtha swaps typically trade in 1 cent/barrel increments. The Singapore naphtha paper assessment reflects a minimum of 50,000 barrels paper transactions. These forward curves are contain 12 forward months and four forward quarters.

C+F Japan (MOPJ) naphtha swaps: MOPJ naphtha swaps are settled against Platts' C+F Japan naphtha assessments (often referred to as the Mean of Platts Japan, or MOPJ) as published in the Asia-Pacific/Arab Gulf Marketscan. Naphtha swaps typically trade in 5 cents/mt increments. The Japan naphtha paper assessment reflects a minimum of 5,000 mt paper transactions. These forward curves are contain three forward months.

Fuel oil swaps: High sulfur 180 centistokes fuel oil swaps and high sulfur 380 centistokes fuel oil swaps are settled against the FOB Singapore 180 CST and FOB Singapore 380 CST fuel oil assessments respectively as published in the Platts Asia-Pacific/Arab Gulf Marketscan. 180 CST and 380 CST fuel oil swaps typically trade in 5 cents/barrel increments. Platts also assesses the 180 CST/380 CST viscosity swaps. These will settle against the difference between the FOB Singapore 180 CST and 380 CST fuel oil assessments. These forward curves are contain 12 forward months and four forward quarters.

Saudi CP propane swaps: These swaps settle their value against the Contract Price set for each month by Saudi Aramco. The Saudi CP, which determines the value of all propane to be lifted each month on an FOB basis by its long term customers, is set only once a month, and is usually announced on the last Saudi business day of the month prior to coming into effect.

CRACK SPREADS

PFC oil assesses a series of crack spreads relative to the major Asian crude benchmarks. These are calendar monthly crack spreads which are swap-swap markets. We assess the following forward curves:All crack spreads are expressed as refined product minus crude oil, and extend as far forward as the refined product swap curves themselves.

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Plattswaps_crude (Dated-to-Frontline swaps, WTI/Brent, Dubai)

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