

Specifications Guide

Asia Pacific and Middle East Crude Oil

Latest update: October 2023

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Definitions of the trading locations for which Platts publishes daily indexes or assessments

The following specifications guide contains the primary specifications for S&P Global Commodity Insights' Platts crude oil assessments in Asia Pacific and the Middle East. All the assessments listed here employ Platts Assessments Methodology, as published at https://www.spglobal.com/commodityinsights/plattscontent/_assets/_files/en/our-methodology/methodology-specifications/apag-crude-methodology.pdf

These guides are designed to give Platts subscribers as much information as possible about a wide range of methodology and specification questions.

This guide is current at the time of publication. Platts may issue further updates and enhancements to this guide and will announce these to subscribers through its usual publications of record. Such updates will be included in the next version of this guide. Platts editorial staff and managers are available to provide guidance when assessment issues require clarification.

Persian Gulf

Assessment	Code	Mavg	Pavg	Wavg	Contract Basis	Location	Delivery Period	Min Size	Max Size	Currency	Uom	Conv
Dubai, Oman and Upper Zakum												
Dubai M1	PCAAT00	PCAAT03			FOB	Fateh	M+2	25,000	500,000	US \$	Barrels	
Dubai M2	PCAAU00	PCAAU03			FOB	Fateh	M+3	25,000	500,000	US \$	Barrels	
Dubai M3	PCAAV00	PCAAV03			FOB	Fateh	M+4	25,000	500,000	US \$	Barrels	
Dubai M1 vs Dubai	DBDDC00	DBDDC03			FOB	Fateh	M+2	25,000	500,000	US \$	Barrels	
MEC M1	AAWSA00	AAWSA03			FOB	Fateh	M+2	25,000	500,000	US \$	Barrels	
MEC M2	AAWSB00	AAWSB03			FOB	Fateh	M+3	25,000	500,000	US \$	Barrels	
MEC M3	AAWSC00	AAWSC03			FOB	Fateh	M+4	25,000	500,000	US \$	Barrels	
Upper Zakum	AAOUQ00	AAOUQ03			FOB	Zirku Island	M+2	25,000	500,000	US \$	Barrels	
Upper Zakum M1 vs Dubai	DBDUZ00	DBDUZ03			FOB	Zirku Island	M+2	25,000	500,000	US \$	Barrels	
Brent/Dubai	AAJMS00	AAJMS03								US \$	Barrels	
Oman M1	PCABS00	PCABS03			FOB	Mina Al Fahal	M+2	25,000	500,000	US \$	Barrels	
Oman M2	AAHZF00	AAHZG00			FOB	Mina Al Fahal	M+3	25,000	500,000	US \$	Barrels	
Oman M3	AAHZH00	AAHZI00			FOB	Mina Al Fahal	M+4	25,000	500,000	US \$	Barrels	
Oman M1 vs Dubai	DBDOC00	DBDOC03			FOB	Mina Al Fahal	M+2	25,000	500,000	US \$	Barrels	
Murban M1	AAKNL00	AAKNM00			FOB	Fujairah/Jebel Dhanna	M+2	25,000	500,000	US \$	Barrels	
Murban M2	MBNSA00	MBNSA03			FOB	Fujairah/Jebel Dhanna	M+3	25,000	500,000	US \$	Barrels	
Murban M3	MBNSB00	MBNSB03			FOB	Fujairah/Jebel Dhanna	M+4	25,000	500,000	US \$	Barrels	
Murban M1 vs Dubai	AARBZ00	AARBZ03			FOB	Fujairah/Jebel Dhanna	M+2	25,000	500,000	US \$	Barrels	
Murban QP	AASVA00						M+2			US \$	Barrels	
Al Shaheen	AAPEV00	AAPEV03			FOB	FSO Asia/Africa	M+2	25,000	500,000	US \$	Barrels	
Al Shaheen vs Dubai	AAPEW00	AAPEW03			FOB	FSO Asia/Africa	M+2	25,000	500,000	US \$	Barrels	
Other Persian Gulf Crudes												
Umm Lulu	AUFAA00	AUFAA03			FOB	Zirku Island	M+2	500,000	500,000	US \$	Barrels	
Umm Lulu M1 vs Dubai	DBDUL00	DBDUL03			FOB	Zirku Island	M+2	500,000	500,000	US \$	Barrels	
Das Blend	AAXOF00	AAXOF03			FOB	Das Island	M+2	500,000	500,000	US \$	Barrels	

Persian Gulf

Assessment	Code	Mavg	Pavg	Wavg	Contract Basis	Location	Delivery Period	Min Size	Max Size	Currency	Uom	Conv
Das Blend M1 vs Dubai	DBDDS00	DBDDS03			FOB	Das Island	M+2	500,000	500,000	US \$	Barrels	
Qatar Land	AAKNP00	AAKNQ00			FOB	Umm Said	M+2	500,000	500,000	US \$	Barrels	
Qatar Land vs OSP	AAKUJ00	AAKUK00			FOB	Umm Said	M+2	500,000	500,000	US \$	Barrels	
Qatar Land M1 vs Dubai	QALDA00	QALDA03			FOB	Umm Said	M+2	500,000	500,000	US \$	Barrels	
Qatar Marine	AAKNR00	AAKNS00			FOB	Halul Island	M+2	500,000	500,000	US \$	Barrels	
Qatar Marine vs OSP	AAKUH00	AAKUI00			FOB	Halul Island	M+2	500,000	500,000	US \$	Barrels	
Qatar Marine M1 vs Dubai	QAMDA00	QAMDA03			FOB	Halul Island	M+2	500,000	500,000	US \$	Barrels	
Banoco	AAKNT00	AAKNU00			FOB	Ras Tanura	M+2	500,000	500,000	US \$	Barrels	
Banoco vs OSP	AAKUD00	AAKUE00			FOB	Ras Tanura	M+2	500,000	500,000	US \$	Barrels	
DFC (Asia close)	ADFC A00	ADFC A03			FOB	Ras Laffan	M+2	500,000	500,000	US \$	Barrels	
DFC (London close)	ADFC D00	ADFC D03			FOB	Ras Laffan	M+2	500,000	500,000	US \$	Barrels	
DFC vs Dated Brent	ADFC C00	ADFC C03			FOB	Ras Laffan	M+2	500,000	500,000	US \$	Barrels	
DFC vs Dubai	ADFC B00	ADFC B03			FOB	Ras Laffan	M+2	500,000	500,000	US \$	Barrels	
Qatar LSC (Asia close)	AARB B00	AARB B03			FOB	Ras Laffan	M+2	500,000	500,000	US \$	Barrels	
Qatar LSC (London close)	AARB A00	AARB A03			FOB	Ras Laffan	M+2	500,000	500,000	US \$	Barrels	
Qatar LSC vs Dated Brent	AARB C00	AARB C03			FOB	Ras Laffan	M+2	500,000	500,000	US \$	Barrels	
Qatar LSC vs Dubai	AARB D00	AARB D03			FOB	Ras Laffan	M+2	500,000	500,000	US \$	Barrels	
South Pars (Asia close)	AARAV00	AARAV03			FOB	Assaluyeh	M+2	500,000	500,000	US \$	Barrels	
South Pars (London close)	AARAU00	AARAU03			FOB	Assaluyeh	M+2	500,000	500,000	US \$	Barrels	
South Pars vs Dated Brent	AARAW00	AARAW03			FOB	Assaluyeh	M+2	500,000	500,000	US \$	Barrels	
South Pars vs Dubai	AARAX00	AARAX03			FOB	Assaluyeh	M+2	500,000	500,000	US \$	Barrels	
Basrah Medium M1	BSMAM01	BSMAM31			FOB	BOT/KOT	M+1	1,000,000	1,000,000	US \$	Barrels	
Basrah Medium M1 vs OSP	BSMBM01	BSMBM31			FOB	BOT/KOT	M+1	1,000,000	1,000,000	US \$	Barrels	
Basrah Medium M2	BSMAM02	BSMAM32			FOB	BOT/KOT	M+2	1,000,000	1,000,000	US \$	Barrels	
Basrah Medium M2 vs OSP	BSMBM02	BSMBM32			FOB	BOT/KOT	M+2	1,000,000	1,000,000	US \$	Barrels	
Basrah Heavy M1	AALZC00	AALZC03			FOB	BOT/KOT	M+1	1,000,000	1,000,000	US \$	Barrels	
Basrah Heavy M1 vs OSP	AALZJ00	AALZJ03			FOB	BOT/KOT	M+1	1,000,000	1,000,000	US \$	Barrels	
Basrah Heavy M2	AALZD00	AALZD03			FOB	BOT/KOT	M+2	1,000,000	1,000,000	US \$	Barrels	
Basrah Heavy M2 vs OSP	AALZK00	AALZK03			FOB	BOT/KOT	M+2	1,000,000	1,000,000	US \$	Barrels	

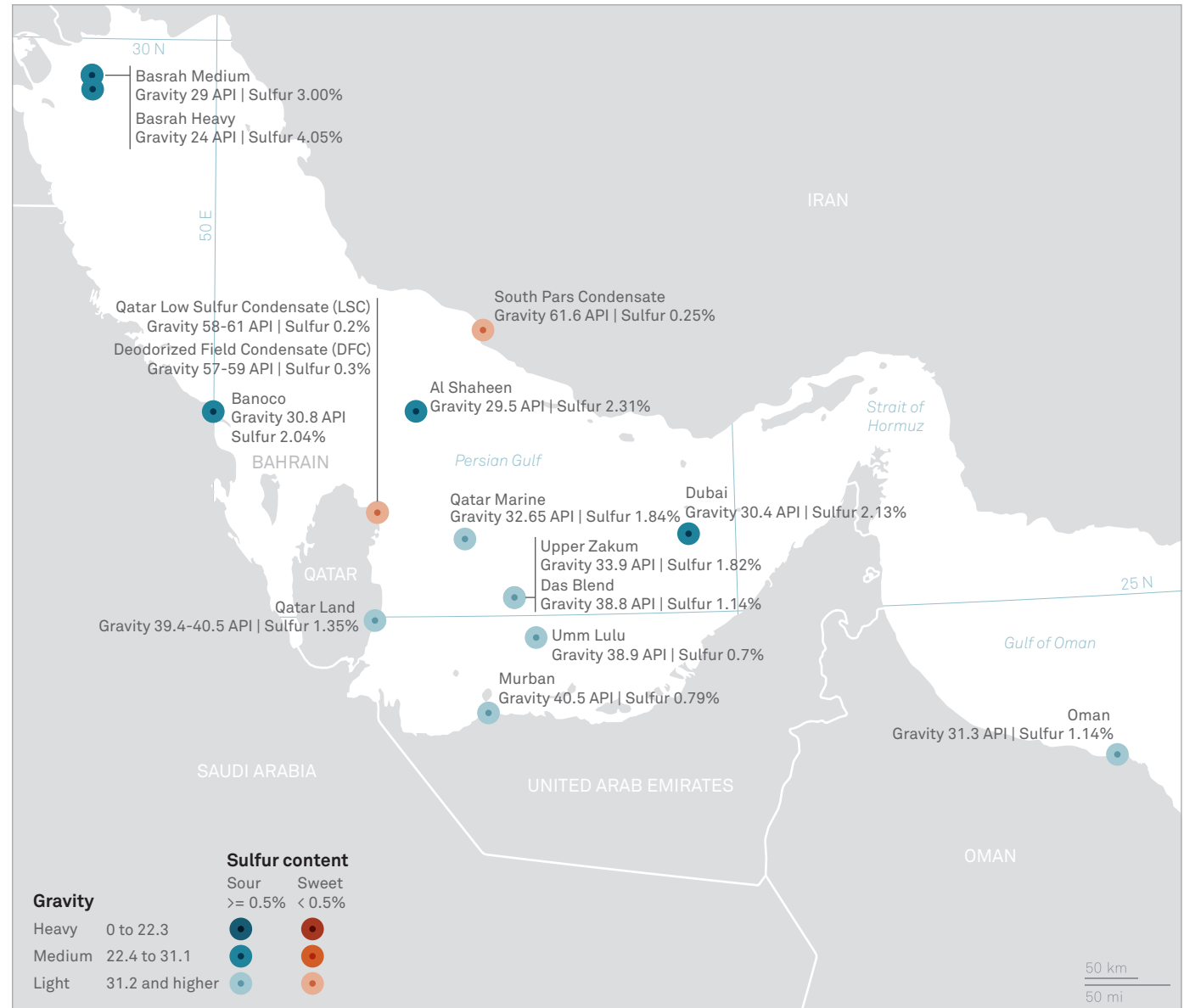
Persian Gulf

Dubai, Oman, Upper Zakum, Al Shaheen and Murban

Platts assesses destination-free physical Dubai, Oman, Upper Zakum, Al Shaheen and Murban in its Middle East Crude benchmark basket (MEC). The assessments for Dubai (MEC), Oman and Murban reflect loadings for three forward months, starting two months forward from the month of assessment. For example, in April, Platts assesses June, July and August for liftings of these crudes. The rollover of assessment occurs on the first working day of the month. Platts would assess June as front-month on April 30 and roll the coverage of front-month from June to July on May 1. In May, Platts publishes assessments for July, August and September. Platts Dubai assessments will reflect the most competitive crude in the basket.

Platts reflects the value of these crude grades, as expressed through bids, offers and trading activity in partial cargo sizes of 25,000 barrels each and full cargoes of 500,000 barrels reported in the Platts Market on Close assessment process or in the broader market. In partials trade, a physical convergence to a full 500,000-barrel cargo occurs when the same buyer and seller have traded 20 partials. Sellers cannot nominate destination-restricted cargoes to buyers in the event of physical convergence in the partials market.

Dubai: Platts Dubai assessments reflect market activity in Dubai partials and full cargoes. Platts Dubai assessments take into consideration partials trading activity from market participants only if they are willing to accept or declare a cargo of Dubai crude or alternate delivery of Upper Zakum, Oman, Al Shaheen or Murban crude with a Quality Premium upon convergence to a full cargo. The seller must declare the grade at the point of execution of the 20th partial trade with the buyer. Platts publishes daily outright Dubai assessments for cargoes loading two (M+2), three (M+3) and four (M+4) months from the month of publication, as well as a spread between benchmark Platts Dubai (M+2) versus same-month Dubai futures.



Source: S&P Global Commodity Insights

Oman: Platts Oman assessments reflect market activity in Oman partials and full cargoes. Platts Oman assessments take into consideration partials trading activity from market participants only if they are willing to accept or declare a cargo of Oman crude or alternate delivery of Murban crude with a Quality Premium upon convergence to a full cargo. The seller must declare the grade at the point of execution of the 20th partial trade with the buyer. Platts publishes daily outright Oman assessments for cargoes loading two (M+2), three (M+3) and four (M+4) months from the month of publication, as well as a spread between benchmark Platts Oman (M+2) crude versus same-month Dubai futures. Oman blend trades on an outright basis on the Dubai Mercantile Exchange and at a differential to Platts Dubai in the spot market.

Oman/Dubai derivative spread: The Oman/Dubai spread is a derivative instrument and is settled on the differential between Oman and Dubai assessments for the month concerned. This spread is traded in the over-the-counter market and has no physical delivery.

Upper Zakum: Platts Upper Zakum assessments reflect market activity in Upper Zakum partials and full cargoes. The grade typically trades in the spot market at a differential to Platts Dubai. Platts Upper Zakum assessments take into consideration partials trading activity from market participants only if they are willing to accept or declare a cargo of Upper Zakum crude or alternate delivery of Murban crude with a Quality Premium upon convergence to a full cargo. The seller must declare the grade at the point of execution of the 20th partial trade with the buyer. Platts publishes daily outright Upper Zakum (M+2) assessment as well as its spreads against same-month Dubai futures.

Al Shaheen: Platts Al Shaheen assessments reflect market activity in Al Shaheen partials and full cargoes. The grade typically trades in the spot market at a differential to Platts Dubai. Platts Al Shaheen assessments take into consideration partials trading activity from market participants only if they are willing to accept or declare a cargo of Al Shaheen crude or alternate delivery of

Murban crude with a Quality Premium upon convergence to a full cargo. The seller must declare the grade at the point of execution of the 20th partial trade with the buyer. Sellers of cargoes of Al Shaheen in the MOC process should inform buyers of the loading dates of the specific nominated cargo as soon as possible, and at the latest before the end of the last trading day of the month of trade execution. Platts publishes daily outright Al Shaheen (M+2) assessment as well as its spread against same-month Dubai futures.

Murban: Platts Murban assessments reflect market activity in Murban partials and full cargoes. Platts Murban assessments take into consideration partials trading activity from market participants only if they are willing to accept or declare a cargo of destination-free Murban upon convergence to a full cargo. Effective August 2022, Platts assesses Murban crude independent of the monthly quality premium applicable to delivery of Murban crude oil upon physical convergence of Dubai, Upper Zakum, Oman, or Al Shaheen partials in the Platts MOC process.

Platts publishes daily Murban outright assessments for cargoes loading two (M+2), three (M+3) and four (M+4) months from the month of publication. The grade typically trades for loading M+2 at a differential to Platts Dubai in the spot market as well as on an outright price basis on ICE Futures Abu Dhabi. Platts also publishes a spread between M+2 Murban crude versus same-month Dubai crude futures.

Murban Quality Premium: Platts publishes a daily Quality Premium (QP) for Murban crude oil applicable to the grade upon physical convergence in Dubai, Upper Zakum, Oman or Al Shaheen partials. The QP is paid by a buyer to a seller for the nomination and delivery of a cargo of Murban crude oil into a physical convergence of Dubai, Al Shaheen, Upper Zakum or Oman partials during the Platts MOC assessment process. Platts publishes a daily Murban QP at 50% of the net price differences between Platts Murban (M+2) and Platts Oman (M+2) assessments over 15 business days prior to the day of publication. Platts publishes the Murban QP prior to 11 am Singapore time each day. For example, on Feb. 1,

Platts would publish the Murban QP, applicable to declarations of April-loading cargoes, at 50% of the spread between the daily Platts Murban (M+2) and Platts Oman (M+2) assessments over 15 publication days ending on and including Jan. 31. Similarly, the Murban QP published on Feb. 2 for declarations of April-loading cargoes will reflect data over 15 publication days ending on and including Feb. 1. A QP of zero is announced if 50% of the observed price difference between the grades over the 15 publication days is less than 50 cents/b. The Murban QP applicable for payment from a buyer to the seller will be the QP published on the day of the convergence. For example, if a seller declares a Murban cargo upon convergence on Feb. 24, the buyer will pay the Murban QP published on Feb. 24 that would reflect data over 15 publication days ending on and including Feb. 23.

Persian Gulf Market on Close publishing principles: Offers for Al Shaheen, Murban, Oman and Upper Zakum crude grades submitted for publication in the MOC assessment process should not be lower than an existing bid for Dubai crude. Similarly, bids for Dubai, Oman, Upper Zakum and Al Shaheen crude grades should not be higher than an existing offer for Murban crude in the MOC process. When a bid for Dubai is equal to or higher than any bids for Murban, Oman, Al Shaheen or Upper Zakum, the Dubai bid must be taken out first under Platts guidelines. When an offer for Dubai is equal to or higher than any offers for Murban, Oman, Al Shaheen or Upper Zakum, the offers for Murban, Oman, Al Shaheen or Upper Zakum must be taken out first under Platts guidelines. When a Murban offer is equal to or lower than offers for Dubai, Oman, Al Shaheen or Upper Zakum, then the Murban offer must be taken out first under Platts guidelines. When a Murban bid is equal to or lower than any bids for Dubai, Oman, Al Shaheen or Upper Zakum, the bids for Dubai, Oman, Al Shaheen or Upper Zakum must be taken out first under Platts guidelines.

Derivatives: Dubai crude futures financially settle on the monthly average of benchmark Platts Dubai assessments and trade on multiple exchanges and over-the-counter markets. Platts assesses Dubai futures, Brent/Dubai exchange of futures

for swaps (EFS), Brent/Dubai exchange of swaps for swaps (ESS) and their related calendar spreads for various periods starting from one month forward from the month of publication. Platts also assess three months of Oman crude futures starting from one month forward from the month of publication.

Platts' assessments of Dubai and Oman futures are independent of physical assessments of the two benchmarks.

More information on the Platts assessment of Dubai and Oman crude futures is available in the Specifications Guide Global Platts Forward Curve Products here: <https://www.spglobal.com/commodityinsights/en/our-methodology/methodology-specifications/oil>.

Trading volumes assessed: Platts assessments for Dubai, Oman, Upper Zakum, Al Shaheen and Murban reflect bids, offers and trades in 25,000-barrel partial cargoes during the Market on Close assessment process. The value of 25,000-barrel partial cargoes takes precedence over larger parcel sizes, such as a full 500,000-barrel cargo, in the assessment process.

Convergence of partials to a full cargo: Once a buyer acquires 20 partial cargoes of 25,000 barrels each of the same grade (Dubai, Oman, Upper Zakum, Al Shaheen or Murban) from a single seller within the calendar month, the partials converge into a physical cargo of 500,000 barrels. Neither the seller nor the buyer has the right to deny delivery or to refuse lifting. However, both parties may mutually agree to book out of the contract on the basis of the Dubai, Oman, Upper Zakum, Al Shaheen or Murban assessments published on the last publication day of the calendar month.

Cash settlement: Any partial position amounting to less than 500,000 barrels by the calendar month's end is understood to be cash settled, unless both counterparties mutually agree to deliver/take delivery of a smaller top-up cargo. Partial contracts are settled based on Platts assessments published on the last working day of each calendar month.

Pricing of terminal operational tolerance: For Dubai basket cargoes (Dubai, Upper Zakum, Al Shaheen, Oman and Murban), that are declared upon convergence in Dubai partials, the deviation of up to 1,000 barrels in operational tolerance, which is subject to terminal performance will be priced on Platts Dubai assessments published on the last working day of each calendar month. For example, the operational tolerance for cargoes loading in July will be priced off the assessment of May 31. For Oman basket cargoes (Oman and Murban) that are declared upon convergence in Oman partials, the deviation of up to 1,000 barrels in operational tolerance will be priced on Platts Oman assessments published on the last working day of each calendar month. For both Dubai and Oman partials mechanism, operational tolerance pricing for Murban will also factor in the month's quality premium.

Terms and conditions: Terms and conditions must be declared at seller's option upon transaction of the 20th partial. Only Oman's Ministry of Energy and Minerals General Terms and Conditions (GT&C) or Shell's GT&C may be declared for Oman cargoes, as is standard practice in the physical cargo market. ConocoPhillips' GT&C are required for Dubai cargoes. For Al Shaheen cargoes, standard GT&C are required while ADNOC's GT&C may be declared for Murban crude. Any of these terms and conditions, however, should not allow for further optionality over cargo size. A physical cargo created by 20 partial cargoes would be 500,000 barrels min/max (excluding 1,000 barrels in operational tolerance).

Pricing basis: Bids and offers published in the Middle East MOC process for full cargoes that are OSP related can either state pricing basis as per Bill of Lading or Month of Nomination. Where bids and offers do not state the pricing basis, the seller may nominate either Bill of Lading or Month of Nomination as the basis for the cargo at confirmation of trade.

Loading date nominations: Buyers and sellers should not nominate cargoes with loading dates ending in the last two calendar days of a month. This is to avoid slippage risk - the risk that end-month loading dates of a cargo will spill over into the

next month with different pricing implications. For example, a cargo loading in August which has 31 days should have its nominated laycan no later than ending on August 29, e.g. an August 28-29 loading cargo. For a cargo loading in September, which has 30 days, the nominated laycan should end no later than Sept. 28 i.e. a Sept. 27-28 loading cargo.

Partial contracts leading to a full cargo delivery should contain an assurance of delivery for the month originally specified. Buyers of 20 partials retain the flexibility to negotiate with a seller for differing volumes for loading in part cargoes, or to request a book-out of some or the entire volume, subject to mutual agreement.

For Al-Shaheen cargoes, sellers should pass loading dates to buyers as soon as possible and at the latest before the end of the last trading day of the month of trade execution. For other grades, buyers typically nominate loading dates in the month after trade execution.

Trading counterparties: Affiliates or closely related trading parties will be deemed part of the same parent company for partials trading considerations. If subsidiaries/offshore entities of parent company "A" trade with company "B", those partials will be added and considered as part of the total partials trading position of parent company "A".

Price assessment: Platts physical assessments of Dubai, Upper Zakum, Al Shaheen, Oman and Murban crudes reflects bids, offers and trades on a fixed-price basis for partial cargoes and fixed- or floating-price basis for full cargoes in the Platts MOC process. In addition, Platts also takes into consideration bids, offers and trades for physical cargoes heard in the broader market as well as relevant information from the futures market on exchanges or through brokers. In the event of a wide bid/offer spread, Platts does not average the bid and offer. Platts evaluates market conditions and establishes an assessment that in its editorial judgment reflects the transactable level of crude. Deals at unusually high- or low-price levels may be

scrutinized by Platts to discern whether it is fit for consideration in the assessment purposes.

Bids and offers with unusual terms and conditions will typically not be considered in the assessment process. Prior to submitting a bid or an offer, companies must inform Platts of trade restrictions with any counterparty for financial or legal reasons. Bids and offers submitted by counterparties unable to trade with each other may cross, allowing other traders to arbitrage the difference. Companies should inform Platts in advance if a broking house is submitting a bid or offer on their behalf. The principal remains responsible for performance even when a representative broker has acted on their behalf. Representative broking houses will have similar execution responsibilities and bear similar exposures as their principals for non-performance of concluded trades, whether cash settled or physically delivered.

Other Persian Gulf crude grades

In addition to the grades listed above, Platts also publishes spot assessments Das Blend, Umm Lulu, Qatar Land, Qatar Marine, Banoco Arab Medium, Basrah Medium and Basrah Heavy, Deodorized Field Condensate, South Pars condensate and Qatar Low Sulfur Condensate at 16:30 Singapore time or 0830 GMT.

The assessments for these grades reflect cargoes loading two calendar months from the month of publication. For example, in March, the assessments reflect cargoes loading in May. On the first working day of April, the assessments roll over to reflect barrels loading in June.

Umm Lulu: The grade from Abu Dhabi typically trades for loading M+2 at a differential to Platts Dubai. Platts M+2 Umm Lulu assessments reflects cargoes of 500,000 barrels consisting of an outright price and a differential versus same-month Dubai futures.

Das Blend: The grade from Abu Dhabi typically trades for loading M+2 at a differential to Platts Dubai. Platts M+2

Das Blend assessments reflects cargoes of 500,000 barrels consisting of an outright price and a differential versus same-month Dubai futures.

Qatar Land and Qatar Marine: These grades typically trade M+2 at a differential to Platts Dubai or versus Qatar Petroleum's OSP that's based on the average of Platts Dubai assessments. Platts M+2 assessments for the two grades reflect cargoes of 500,000 barrels and consist of an outright price for both grades and their differentials to same-month Dubai futures as well as their respective OSPs.

Banoco (Bahrain National Oil Co) Arab Medium: The grade from Bahrain is similar in quality to Saudi's Arab Medium. Banoco Arab Medium typically trades for loading M+2 as a differential to Saudi Aramco's Arab Medium OSP for Asia. Banoco Arab Medium's assessment reflects cargoes of 500,000 barrels and factors in average of Oman and Dubai futures, existing OSP differential, spot differentials and expected OSP adjustments.

Basrah Medium and Basrah Heavy: Platts publishes assessments for Basrah Medium and Basrah Heavy for two consecutive months from the month of publication.

For each grade, Platts publishes a differential to Iraq's Asia OSP for the month of loading as well as an outright price. For example, in November Platts publishes outright prices and differentials to the OSP for Basrah Medium and Basrah Heavy cargoes loading in December (M+1) and January (M+2). The prices are assessed on an FOB basis from Al Basrah Oil Terminal (BOT) or Khor al-Amaya Oil Terminal (KOT) and reflect cargoes of 1 million barrels traded on a destination-free basis. Spot market trades for crudes with regional restrictions in place are normalized in value to reflect open destination. Platts outright assessments for Basrah Medium and Basrah Heavy reflect traded values for the grades, without any adjustment due to compensation via a de-escalator that a buyer may receive after loading due to quality differences.

Deodorized Field Condensate: Spot assessments for DFC (previously known as Ras Gas condensate) reflect barrels loading two calendar months from the date of publication. For example, on January 3, Platts assessments reflect barrels loading in March. Assessments take into consideration DFC traded in typical 500,000-barrel cargoes. DFC is assessed as a fixed price and as a differential to Platts Dubai at Asian close 16:30 Singapore time, and as a differential to Platts Dated Brent at London close 16:30 local time.

South Pars condensate: Iran's South Pars condensate is produced from gas fields and exported from the Persian Gulf port of Assaluyeh. South Pars has gravity of 61.6 API and a sulfur content of 0.25%. South Pars condensate is assessed as a fixed price and as a differential to Platts Dubai at Asian close 16:30 Singapore time, and as a differential to Platts Dated Brent at London close 16:30 local time.

Qatar Low Sulfur Condensate: Qatar LSC (previously known as Dolphin condensate) is exported from Ras Laffan port in cargoes of 500,000 barrels, and typically traded at a differential to Platts Dubai, or as a differential to a basket of Platts FOB AG naphtha, kerosene, and gasoil assessments. Qatar LSC has typical gravity of 58-61 API, and a sulfur content of 0.20%. This condensate is assessed as a fixed price and as a differential to Platts Dubai at Asian close 16:30 Singapore time, and as a differential to Platts Dated Brent at London close 16:30 local time.

Far East Russia crude grades

Far East Russian crude grades primarily trade in the spot market at a differential to the Platts Dubai benchmark. Platts Far East Russian crude assessments reflect the value of cargoes loading two months ahead from the month of publication. So, on April 1, Platts would assess cargoes for loading in the month of June. They are assessed at 16:30 Singapore time as a fixed price and as a differential to Platts Dubai.

Sokol: The Sokol crude oil assessments reflect cargoes loading out of the DeKastri terminal on eastern Russia's Sakhalin Island. The prices assessed reflect cargoes being delivered to main ports in Japan and South Korea on a CFR basis, in accordance with typical market practice. Cargoes delivered elsewhere, including eastern China, are normalized for delivery in Japan/South Korea. Sokol crude oil is produced at Russia's Sakhalin I oil field, and has a typical API gravity of 39.7, sulfur content of 0.17%. The standard cargo size for Sokol is 700,000 barrels. Platts also publishes Sokol differential to Dated Brent.

Sakhalin Blend: Sakhalin Blend is a mixture of low sulfur crude and gas condensate from the Kirinskoye field. Sakhalin Blend is produced from the Molikpaq production platform off the northeast of Sakhalin Island in Russia's Far East and sold by Sakhalin Energy in cargoes of up to 750,000 barrels. The prices assessed reflect cargoes delivered to main ports in Japan and South Korea on a CFR basis, in accordance with typical market practice. Cargoes delivered elsewhere, including eastern China, are normalized for delivery in Japan/South Korea. Platts also publishes Sakhalin Blend differential to Dated Brent.

ESPO (Asia): Platts publishes two assessments for East Siberian Pacific Oil (ESPO) crude oil exported from the Russian Far East port of Kozmino at the Singapore close: ESPO M1 and ESPO M2. ESPO M1 assessments reflect cargoes loading two months ahead from the month of publication, while ESPO M2 assessments reflect cargoes loading three months ahead from the month of publication. Prices are assessed on a FOB basis and reflect cargoes from 80,000 mt to 140,000 mt normalized to 100,000 mt. The API gravity for ESPO is approximately 34-35 degrees with a sulfur content of 0.58%-0.65%. Platts also publishes ESPO assessments at London close.

Asia Pacific

Assessment	Code	Mavg	Pavg	Wavg	Contract Basis	Location	Delivery Period	Min Size	Max Size	Currency	Uom	Conv
Asian Dated Brent	AAXPG00	AAXPG03			FOB	North Sea	10-M+1	600,000	600,000	US \$	Barrels	
ADB Strip Middle East (Asia close)	AARBW00	AARBW03					M+2			US \$	Barrels	
ADB Strip Middle East (London close)	AARBY00	AARBY03					M+2			US \$	Barrels	
ADB Strip Asia (Asia close)	AARBV00	AARBV03					M+2			US \$	Barrels	
ADB Strip Asia (London close)	AARBX00	AARBX03					M+2			US \$	Barrels	
ADB Strip M3 (Asia close)	ADBS003	ADBS033					M+3			US\$	Barrels	
Ardjuna (Asia close)	PCACQ00	AAFZM00			FOB	Ardjuna Terminal	M+2			US \$	Barrels	
Ardjuna (London close)	AAPBF00	AAPBF03			FOB	Ardjuna Terminal	M+2			US \$	Barrels	
Ardjuna vs Dated Brent	AAPBG00	AAPBG03			FOB	Ardjuna Terminal	M+2			US \$	Barrels	
Ardjuna vs ICP	PCACR00	PCACR03			FOB	Ardjuna Terminal	M+2			US \$	Barrels	
Attaka (Asia close)	PCAAJ00	PCAFZB00			FOB	Santan Terminal	M+2	50,000	100,000	US \$	Barrels	
Attaka (London close)	AAPBB00	AAPBB03			FOB	Santan Terminal	M+2	50,000	100,000	US \$	Barrels	
Attaka vs Dated Brent	AAPBC00	AAPBC03			FOB	Santan Terminal	M+2	50,000	100,000	US \$	Barrels	
Attaka vs ICP	PCAAK00	PCAAK03			FOB	Santan Terminal	M+2	50,000	100,000	US \$	Barrels	
Bach Ho (Asia close)	PCAHY00	PCAHZ03			FOB	Chi Linh FSO	M+2	300,000	500,000	US \$	Barrels	
Bach Ho (London close)	AAPAJ00	AAPAJ03			FOB	Chi Linh FSO	M+2	300,000	500,000	US \$	Barrels	
Bach Ho vs Dated Brent	AAPAK00	AAPAK03			FOB	Chi Linh FSO	M+2	300,000	500,000	US \$	Barrels	
Banyu Urip (Asia close)	PCAFQ00	PCAFQ03			FOB	Gagak Rimang FSO	M+2	650,000	900,000	US \$	Barrels	
Banyu Urip (London close)	AAPBR00	AAPBR03			FOB	Gagak Rimang FSO	M+2	650,000	900,000	US \$	Barrels	
Banyu Urip vs Dated Brent	AAPBU00	AAPBU03			FOB	Gagak Rimang FSO	M+2	650,000	900,000	US \$	Barrels	
Banyu Urip vs ICP	PCAQQ00	PCAQQ03			FOB	Gagak Rimang FSO	M+2	650,000	900,000	US \$	Barrels	
Belida (Asia close)	PCAFI00	PCAFI03			FOB	Belida Terminal	M+2	50,000	100,000	US \$	Barrels	
Belida (London close)	AAPBP00	AAPBP03			FOB	Belida Terminal	M+2	50,000	100,000	US \$	Barrels	
Belida vs Dated Brent	AAPBQ00	AAPBQ03			FOB	Belida Terminal	M+2	50,000	100,000	US \$	Barrels	
Belida vs ICP	PCAFM00	PCAFM03			FOB	Belida Terminal	M+2	50,000	100,000	US \$	Barrels	
Cossack (Asia close)	PCAGZ00	PCAGZ03			FOB	Okha FPSO	M+2	450,000	650,000	US \$	Barrels	
Cossack (London close)	AAPAB00	AAPAB03			FOB	Okha FPSO	M+2	450,000	650,000	US \$	Barrels	
Cossack vs Dated Brent	AAPAC00	AAPAC03			FOB	Okha FPSO	M+2	450,000	650,000	US \$	Barrels	
Daqing (Asia close)	PCAAZ00	AAFZD00			FOB	Luda/Dalian	M+2			US \$	Barrels	
Daqing (London close)	AAPAV00	AAPAV03			FOB	Luda/Dalian	M+2			US \$	Barrels	
Daqing vs Dated Brent	AAPAW00	AAPAW03			FOB	Luda/Dalian	M+2			US \$	Barrels	
Dar Blend (Asia close)	AARAB00	AARAB03			FOB	Marsha Bashayer terminal, Sudan	M+2	600,000	1,000,000	US \$	Barrels	
Dar Blend (London close)	AARAA00	AARAA03			FOB	Marsha Bashayer terminal, Sudan	M+2	600,000	1,000,000	US \$	Barrels	
Dar Blend vs Dated Brent	AARAC00	AARAC03			FOB	Marsha Bashayer terminal, Sudan	M+2	600,000	1,000,000	US \$	Barrels	
Duri (Asia close)	PCABA00	AAFZE00			FOB	Dumai terminal	M+2	50,000	700,000	US \$	Barrels	
Duri (London close)	AAPBL00	AAPBL03			FOB	Dumai terminal	M+2	50,000	700,000	US \$	Barrels	
Duri vs Dated Brent	AAPBM00	AAPBM03			FOB	Dumai terminal	M+2	50,000	700,000	US \$	Barrels	
Duri vs ICP	PCABB00	PCABB03			FOB	Dumai terminal	M+2	50,000	700,000	US \$	Barrels	
ESPO M1	AARWF00	AARWF03			FOB	Kozmino	M+2	80,000 mt	140,000 mt	US \$	Barrels	
ESPO M1 vs Dubai	AASEU00	AASEU03			FOB	Kozmino	M+2	80,000 mt	140,000 mt	US \$	Barrels	
ESPO M2	AAWFE00	AAWFE03			FOB	Kozmino	M+3	80,000 mt	140,000 mt	US \$	Barrels	
ESPO M2 vs Dubai	AAWFG00	AAWFG03			FOB	Kozmino	M+3	80,000 mt	140,000 mt	US \$	Barrels	
Ichthys Field Condensate	ICFCA00	ICFCA03			FOB	FPSO Ichthys Venturer	M+2	650,000	650,000	US \$	Barrels	

Asia Pacific

Assessment	Code	Mavg	Pavg	Wavg	Contract Basis	Location	Delivery Period	Min Size	Max Size	Currency	Uom	Conv
Ichthys Field Condensate vs Dated Brent	ICFCB00	ICFCB03			FOB	FPSO Ichthys Venturer	M+2	650,000	650,000	US \$	Barrels	
Kikeh (Asia close)	AAWUH00	AAWUH03			FOB	Kikeh FPSO	M+2	300,000	600,000	US \$	Barrels	
Kikeh (London close)	AAOZX00	AAOZX03			FOB	Kikeh FPSO	M+2	300,000	600,000	US \$	Barrels	
Kikeh vs Dated Brent	AAOZY00	AAOZY03			FOB	Kikeh FPSO	M+2	300,000	600,000	US \$	Barrels	
Kimanis (Asia close)	AASCL00	AASCL03			FOB	Sabah Oil and Gas Terminal	M+2	300,000	600,000	US \$	Barrels	
Kimanis (London close)	AASCN00	AASCN03			FOB	Sabah Oil and Gas Terminal	M+2	300,000	600,000	US \$	Barrels	
Kimanis vs Dated Brent	AASCM00	AASCM03			FOB	Sabah Oil and Gas Terminal	M+2	300,000	600,000	US \$	Barrels	
Kutubu (Asia close)	PCAFJ00	PCAFJ03			FOB	Kumul Marine Terminal	M+2	650,000	650,000	US \$	Barrels	
Kutubu (London close)	AAPAD00	AAPAD03			FOB	Kumul Marine Terminal	M+2	650,000	650,000	US \$	Barrels	
Kutubu vs Dated Brent	AAPAE00	AAPAE03			FOB	Kumul Marine Terminal	M+2	650,000	650,000	US \$	Barrels	
Labuan (Asia close)	PCABL00	AAFZG00			FOB	Labuan Crude Oil Terminal	M+2	300,000	600,000	US \$	Barrels	
Labuan (London close)	AAPAP00	AAPAP03			FOB	Labuan Crude Oil Terminal	M+2	300,000	600,000	US \$	Barrels	
Labuan vs Dated Brent	AAPAQ00	AAPAQ03			FOB	Labuan Crude Oil Terminal	M+2	300,000	600,000	US \$	Barrels	
Tupi DES Qingdao	LUQDA00	LUQDA03			DES	Qingdao	M+3	1,000,000	1,000,000	US\$	Barrels	
Tupi DES Qingdao vs Dubai	LUQDD00	LUQDD03			DES	Qingdao	M+3	1,000,000	1,000,000	US\$	Barrels	
Tupi DES Qingdao vs Dated Brent	LUQDB00	LUQDB03			DES	Qingdao	M+3	1,000,000	1,000,000	US\$	Barrels	
Miri Light (Asia close)	PCABQ00	AAFZI00			FOB	Miri Crude Oil Terminal	M+2	300,000	600,000	US \$	Barrels	
Miri Light (London close)	AAPAR00	AAPAR03			FOB	Miri Crude Oil Terminal	M+2	300,000	600,000	US \$	Barrels	
Miri Light vs Dated Brent	AAPAS00	AAPAS03			FOB	Miri Crude Oil Terminal	M+2	300,000	600,000	US \$	Barrels	
Nanhai Light (Asia close)	PCAFR00	PCAFR03			FOB	Huizhou	M+2			US \$	Barrels	
Nanhai Light (London close)	AAPAF00	AAPAF03			FOB	Huizhou	M+2			US \$	Barrels	
Nanhai Light vs Dated Brent	AAPAG00	AAPAG03			FOB	Huizhou	M+2			US \$	Barrels	
Nile Blend (Asia close)	AAPLC00	AAPLC03			FOB	Marsha Bashayer terminal, Sudan	M+2	600,000	650,000	US \$	Barrels	
Nile Blend (London close)	AAPAL00	AAPAL03			FOB	Marsha Bashayer terminal, Sudan	M+2	600,000	650,000	US \$	Barrels	
Nile Blend vs Dated Brent	AAPAM00	AAPAM03			FOB	Marsha Bashayer terminal, Sudan	M+2	600,000	650,000	US \$	Barrels	
North West Shelf (Asia close)	PCAGX00	PCAGX03			FOB	Dampier	M+2	325,000	650,000	US \$	Barrels	
North West Shelf (London close)	AAPAH00	AAPAH03			FOB	Dampier	M+2	325,000	650,000	US \$	Barrels	
North West Shelf vs Dated Brent	AAPAI00	AAPAI03			FOB	Dampier	M+2	325,000	650,000	US \$	Barrels	
Senipah (Asia close)	AAEOE00	AAEOF00			FOB	Senipah Terminal	M+2	200,000	300,000	US \$	Barrels	
Senipah (London close)	AAPBD00	AAPBD03			FOB	Senipah Terminal	M+2	200,000	300,000	US \$	Barrels	
Senipah vs Dated Brent	AAPBE00	AAPBE03			FOB	Senipah Terminal	M+2	200,000	300,000	US \$	Barrels	
Senipah vs ICP	AAEOK00	AAEOL00			FOB	Senipah Terminal	M+2	200,000	300,000	US \$	Barrels	
Shengli (Asia close)	PCABY00	AAFZJ00			FOB	Qingdao	M+2			US \$	Barrels	
Shengli (London close)	AAPAX00	AAPAX03			FOB	Qingdao	M+2			US \$	Barrels	
Shengli vs Dated Brent	AAPAY00	AAPAY03			FOB	Qingdao	M+2			US \$	Barrels	
Sakhalin Blend (Asia Close)	AARB00	AARB03			CFR	Japan/Korea	M+2	700,000	750,000	US \$	Barrels	
Sakhalin Blend (London Close)	AAREN00	AAREN03			CFR	Japan/Korea	M+2	700,000	750,000	US \$	Barrels	
Sakhalin Blend vs Dated Brent	AARDN00	AARDN03			CFR	Japan/Korea	M+2	700,000	750,000	US \$	Barrels	
Sakhalin Blend vs Dubai	AARCN00	AARCN03			CFR	Japan/Korea	M+2	700,000	750,000	US \$	Barrels	
Sokol (Asia close)	AASCJ00	AASCJ03			CFR	Japan/Korea	M+2	700,000	750,000	US \$	Barrels	
Sokol (London close)	AAPAN00	AAPAN03			CFR	Japan/Korea	M+2	700,000	750,000	US \$	Barrels	
Sokol vs Dated Brent	AAPAO00	AAPAO03			CFR	Japan/Korea	M+2	700,000	750,000	US \$	Barrels	
Sokol vs Dubai	AASCK00	AASCK03			CFR	Japan/Korea	M+2	700,000	750,000	US \$	Barrels	

Asia Pacific

Assessment	Code	Mavg	Pavg	Wavg	Contract Basis	Location	Delivery Period	Min Size	Max Size	Currency	Uom	Conv
Su Tu Den (Asia close)	AARAR00	AARAR03			FOB	Su Tu Den terminal	M+2	200,000	500,000	US \$	Barrels	
Su Tu Den (London close)	AARAQ00	AARAQ03			FOB	Su Tu Den terminal	M+2	200,000	500,000	US \$	Barrels	
Su Tu Den vs Dated Brent	AARAS00	AARAS03			FOB	Su Tu Den terminal	M+2	200,000	500,000	US \$	Barrels	
Tapis (Asia close)	PCACB00	AAFK00			FOB	Terengganu Crude Oil Terminal	M+2	300,000		US \$	Barrels	
Tapis (London close)	AAOZV00	AAOZV03			FOB	Terengganu Crude Oil Terminal	M+2	300,000		US \$	Barrels	
Tapis vs Dated Brent	AAOZW00	AAOZW03			FOB	Terengganu Crude Oil Terminal	M+2	300,000		US \$	Barrels	
Vincent (Asia close)	AARAK00	AARAK03			FOB	FPSO Ngujima-Yin	M+2			US \$	Barrels	
Vincent (London close)	AARAJ00	AARAJ03			FOB	FPSO Ngujima-Yin	M+2			US \$	Barrels	
Vincent vs Dated Brent	AARAL00	AARAL03			FOB	FPSO Ngujima-Yin	M+2			US \$	Barrels	
WTI M1 (Asia close)	AAFFU00	AAFFV00			ex-tank	Cushing	M+1	25,000	25,000	US \$	Barrels	
WTI M2 (Asia close)	AAFFW00	AAFFX00			ex-tank	Cushing	M+2	25,000	25,000	US \$	Barrels	
WTI M3 (Asia close)	AAFFY00	AAFFZ00			ex-tank	Cushing	M+3	25,000	25,000	US \$	Barrels	
WTI Midland DES Singapore	WTMSA00	WTMSA03			DES	Singapore	M+3	1,000,000	1,000,000	US\$	Barrels	
WTI Midland DES Singapore vs Dubai	WTMSD00	WTMSD03			DES	Singapore	M+3	1,000,000	1,000,000	US\$	Barrels	
WTI Midland DES Singapore vs Dated Brent	WTMSB00	WTMSB03			DES	Singapore	M+3	1,000,000	1,000,000	US\$	Barrels	
WTI Midland DES Yeosu	WTMYA00	WTMYA03			DES	Yeosu	M+3	2,000,000	2,000,000	US\$	Barrels	
WTI Midland DES Yeosu vs Dubai	WTMYD00	WTMYD03			DES	Yeosu	M+3	2,000,000	2,000,000	US\$	Barrels	
WTI Midland DES Yeosu vs Dated Brent	WTMYB00	WTMYB03			DES	Yeosu	M+3	2,000,000	2,000,000	US\$	Barrels	
Dubai CFR North Asia	PCAQA00	PCAQA03			CFR	North Asia	Loading M+2	500,000	500,000	US \$	Barrels	
Oman CFR North Asia	PCAQJ00	PCAQJ03			CFR	North Asia	Loading M+2	500,000	500,000	US \$	Barrels	
Upper Zakum CFR North Asia	PCAQB00	PCAQB03			CFR	North Asia	Loading M+2	500,000	500,000	US \$	Barrels	
Qatar Marine CFR North Asia	PCAQC00	PCAQC03			CFR	North Asia	Loading M+2	500,000	500,000	US \$	Barrels	
Murban CFR North Asia	PCAQE00	PCAQE03			CFR	North Asia	Loading M+2	500,000	500,000	US \$	Barrels	
Basrah Medium M2 CFR North Asia	BASNA00	BASNA03			CFR	North Asia	Loading M+2	1,000,000	1,000,000	US \$	Barrels	
ESPO CFR North Asia	PCAQD00	PCAQD03			CFR	North Asia	Loading M+2	80,000 mt	140,000 mt	US \$	Barrels	
Forties CFR North Asia	PCAQF00	PCAQF03			CFR	North Asia	Loading M+2	600,000	600,000	US \$	Barrels	
Dalia CFR North Asia	PCAQG00	PCAQG03			CFR	North Asia	Loading M+2	950,000	950,000	US \$	Barrels	
WTI MEH CFR North Asia	PCAQH00	PCAQH03			CFR	North Asia	Loading M+2	2,000,000	2,000,000	US \$	Barrels	
LOOP Sour CFR North Asia	PCAQI00	PCAQI03			CFR	North Asia	Loading M+2	2,000,000	2,000,000	US \$	Barrels	

Asia Pacific

Asian Dated Brent

Platts Asian Dated Brent (ADB) assessment is published on a daily basis and reflects the value of Dated Brent at Asian market close (16:30 Singapore time). The ADB reflects the price prevailing during the close of market in Asia taking into account the rise or fall in the movement in the cash BFOE instrument, from the time of assessment of Dated Brent at the prior trading day's European market close at 16:30 London time, until Asian close. This movement is determined by valuation of Brent cash and futures markets by the close in Asia. Dated Brent reflects loading for cargoes 10 days to a month ahead of the day of publication. The ADB is therefore a dated assessment. The price is underpinned by instruments such as BFOE and futures which are cyclical in nature and therefore roll at the end of the calendar month.

ADB Strips: Published differentials to Dated Brent for Asia Pacific grades are measured against the underlying Dated Brent price for the corresponding month, or the ADB Strip. The underlying Dated Brent Strip is calculated using the Brent Frontline Swap plus the Brent Dated to Frontline Swaps, or DFL. In line with the ADB assessment, the value of the strip is time adjusted to reflect 16:30 Singapore time. The ADB Strip Asian assessment reflects two months ahead with a rollover date on the first working day of the month, in line with the assessments for Asia Pacific crude.

The ADB Strip Middle East assessment reflects two months ahead, with a rollover date on the first working day of the month.

The ADB Strip M3 assessment reflects the forward value of Dated Brent three months ahead of the date of publication at the 4:30 pm Singapore close (0830 GMT), with a rollover date on the first working day of the month.

Asia Pacific crude grades

Platts assesses all of its regional crude oil assessments on a monthly basis, two months ahead, with a rollover date on the

first calendar day of each month from January 1, 2023. For example, over January 1-31, the assessments would reflect cargoes loading in March. On February 1, the assessments would roll over to reflect cargoes loading in April.

The differential is assessed based on spot transactions and market information on cargoes and part cargoes. Assessments also consider bids/offers, and differentials to other actively traded crude, related paper markets and, in the case of Indonesian crude, official crude prices (ICPs). Crude markets are assessed at 16:30 Singapore time. The following are details of the specifications for the crude reported including loading ports. Sulfur content and API gravity may vary over time.

Methodology: Platts assesses crude grades on a fixed price basis, and where relevant, the spread to the crude grades' respective benchmarks. Most trades in the Asia Pacific region are conducted on a floating rather than fixed-price basis. The fixed price assessment reflects the sum of the floating price differential and the value of the underlying benchmark for the loading period as reflected in the respective ADB strip described in the previous section. The same approach is used for Indonesian crude grades where they trade in relation to their own ICP, which is only released after the cargo has loaded. In a typical example, a Duri cargo loading in April may trade at Dated Brent plus \$2/barrel. If the ADB Strip Asian assessment is at \$60/barrel, then the fixed price equivalent of Duri is \$62/barrel. Platts will also take all bids, offers and trades that occur during the MOC process for Duri into account when assessing the value.

Differentials to ICP: Platts assesses differentials to the ICPs for the following grades: Attaka, Ardjuna, Duri, Senipah and Belida. The premium/discount versus the ICP reflect cargoes loading two months forward from the date of publication.

Differentials to ADB Strip: Platts assesses market premiums or discounts for several Asia Pacific crude grades against the ADB Strip.

Tapis: The assessments reflect full cargoes of Tapis crude oil, which are 300,000 barrels, for lifting on a FOB basis from the Terengganu crude oil terminal, Malaysia. Tapis crude is produced offshore in the South China Sea, east of Peninsular Malaysia. It has an API gravity of 42.7 with a sulfur content of 0.04%.

North West Shelf condensate: The assessments reflect North West Shelf (NWS) condensate cargoes for lifting on a FOB basis from Dampier, Australia. NWS condensate is assessed on a flat price basis, and as a differential against Dated Brent. NWS condensate is produced offshore northwest Australia. It has an API gravity of 63 with a sulfur content of 0.003%. NWS condensate is typically sold in cargo sizes of 650,000 or 325,000 barrels.

Senipah condensate: The assessments reflect Senipah condensate cargoes for lifting on a FOB basis from the Senipah terminal, Indonesia. Senipah condensate is produced from the Jangkrik gas field, offshore East Kalimantan. It has an API gravity of 43.4 with a sulfur content of 0.463%. Senipah condensate is typically sold in cargo sizes of 200,000 to 300,000 barrels.

Ichthys Field Condensate: The assessments reflect Ichthys Field Condensate cargoes for lifting on a FOB basis from the FPSO Ichthys Venturer, Western Australia. Ichthys Field Condensate is assessed on a flat price basis, and as a differential against Dated Brent. Ichthys Field Condensate has typical API gravity of 48.9 with a sulfur content of 0.01%. It is typically sold in cargo sizes of 650,000 barrels.

Kikeh: The assessments reflect cargoes for lifting on a FOB basis from Sabah, Malaysia. Kikeh crude oil is produced at the Kikeh oil field off East Malaysia's state of Sabah and has typical API gravity of 37.61 and a sulfur content of 0.06%. The standard cargo size for Kikeh is 300,000-600,000 barrels.

Kimanis: The assessments reflect Kimanis cargoes for lifting on a FOB basis from Sabah, Malaysia. Kimanis crude oil is produced at the Gumusut-Kakap oil project off East Malaysia's state of Sabah. It has a typical API gravity of 38.61 with a sulfur content

of 0.06%. Kimanis is typically sold in cargo sizes of 300,000-600,000 barrels.

Miri: The assessments reflect Miri crude cargoes for lifting on a FOB basis from the Miri crude oil terminal, Malaysia. Miri crude is produced offshore northern Sarawak, Malaysia. It has an API gravity of 30.79 with a sulfur content of 0.14%. Miri crude is typically sold in cargo sizes of 300,000-600,000 barrels.

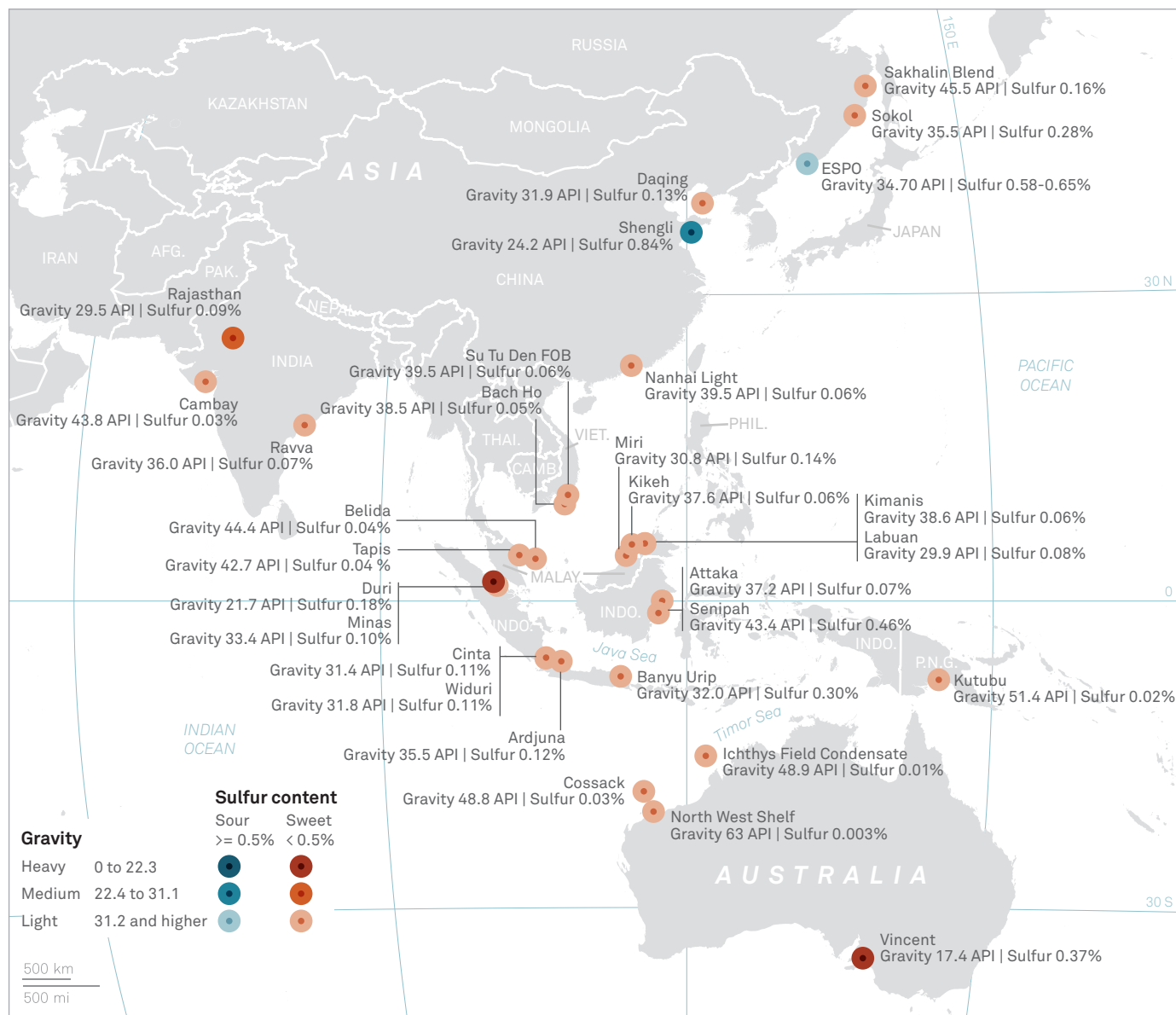
Labuan: The assessments reflect Labuan crude cargoes for lifting on a FOB basis from the Labuan crude oil terminal, Malaysia. Labuan crude is produced offshore Sabah, Malaysia. It has an API gravity of 29.92 with a sulfur content of 0.08%. Labuan crude is typically sold in cargo sizes of 300,000-600,000 barrels.

Banyu Urip: The assessments reflect Banyu Urip cargoes for lifting on a FOB basis from FSO Gagak Rimang offshore Central Java, Indonesia. Banyu Urip crude oil is produced at the Cepu field in Central Java. It has a typical API gravity of 32 with a sulfur content of 0.305%. Banyu Urip is typically sold in cargo sizes of 300,000-600,000 barrels.

Belida: The assessments reflect Belida crude cargoes for lifting on a FOB basis from a floating storage unit. Belida crude is produced offshore Indonesia in the South Natuna Sea. It has a typical API gravity of 44.4 with a sulfur content of 0.035%.

Attaka: The assessments reflect Attaka crude cargoes for lifting on a FOB basis from the Santan oil terminal, Indonesia. Attaka crude is produced offshore East Kalimantan. It has a typical API gravity of 37.2 with a sulfur content of 0.068%.

Duri: The assessments reflect Duri crude cargoes for lifting on a FOB basis from the Dumai terminal, Indonesia. Duri crude is produced inland on the island of Sumatra. It has a typical API gravity of 21.7 with a sulfur content of 0.182%. Duri crude is typically sold in cargo sizes of 50,000 -700,000 barrels.



Source: S&P Global Commodity Insights

Su Tu Den: Vietnam’s Su Tu Den assessments reflect typical cargo sizes of 300,000 barrels from a floating, production and storage terminal in the South China Sea. Su Tu Den has a typical API gravity of 39.5 and sulfur content of 0.06%.

Bach Ho: Bach Ho crude assessments reflect typical cargo sizes of 200,000- 300,000 barrels, has a typical API gravity of 38.50, sulfur content of 0.051%.

Daqing: The assessments reflect Daqing crude cargoes produced from the Daqing oil field in Heilongjiang, China. Daqing crude has a typical API gravity of 31.93 with a sulfur content of 0.13%.

Nanhai Light: The assessments reflect Nanhai Light crude cargoes produced in the South China Sea. Nanhai Light crude has a typical API gravity of 39.5 with a sulfur content of 0.06%.

Shengli: The assessments reflect Shengli crude cargoes produced from the Shengli oil field in Dongying, Shandong province, China. Shengli crude has a typical API gravity of 24.2 with a sulfur content of 0.84%.

Vincent: Platts assesses the value of heavy sweet crude grade Vincent, which is produced from fields offshore Exmouth, Western Australia. Vincent has a typical API gravity of 17.4, a sulfur content of 0.37%.

Cossack: The assessments reflect Cossack crude cargoes for lifting on a FOB basis from the Okha FPSO, Australia. Cossack crude is produced from the NWS project, off northwest Australia. It has a typical API gravity of 48.8 with a sulfur content of 0.03%. Cossack crude is typically sold in cargo sizes of 450,000-650,000 barrels.

Kutubu: The assessments reflect Kutubu Blend crude cargoes for lifting on a FOB basis from the Kumul Marine Terminal, Papua New Guinea. Kutubu Blend crude comprises crude

oil from the Kutubu, Moran and Gobe fields in the Southern Highlands of Papua New Guinea, and condensate from the PNG LNG project. It has a typical API gravity of 51.4 with a sulfur content of 0.02%. Kutubu Blend crude is typically sold in 650,000-barrel cargoes.

In addition to the Asia-Pacific grades listed above, Platts also publishes assessments for Dar Blend and Nile Blend crude grades from Sudan and South Sudan at Singapore close on an outright basis as well as a differential to Platts Dated Brent. Both grades typically trade in the spot market at a differential to Platts Dated Brent. The assessments follow the Asia-Pacific publication calendar reflecting cargoes loading two months ahead, on the first calendar day of each month.

Dar Blend: The Dar Blend assessment reflects cargoes for lifting on a FOB basis from Marsa Bashayer Export Terminal in Sudan. The sweet, acidic Dar Blend crude is produced from the Melut basin and is exported in cargo sizes of 600,000 up to 1 million barrels by state oil firms Sudapet, China National Petroleum Corp (CNPC) and Malaysia’s Petronas. Dar Blend has a typical API gravity of 25 and sulfur content of 0.11%.

Nile Blend: The Nile Blend assessment reflects cargoes for lifting on a FOB basis from Marsa Bashayer Export Terminal in Sudan. Nile Blend crude, which is exported in cargo sizes of 600,000- 1,000,000 barrels, has a typical API gravity of 32.76, and sulfur content of 0.045%.

Delivered Asia crude

WTI Midland: These assessments reflect WTI Midland cargoes delivered ex-ship (DES) in Singapore, reflecting deliveries in Southeast Asia, and DES basis Yeosu, reflecting deliveries in North Asia. At both locations, Platts assesses cargoes for delivery three months from the date of publication. For example, in October, Platts will assess outright prices and premiums for Platts WTI Midland cargoes for delivery in January.

Asia-Pacific crude

Crude	API	Sulfur (%)	Country	Location
North West Shelf	63.00	0.003	Australia	Dampier
Senipah	43.4	0.463	Indonesia	Senipah Terminal
Ichthys Field	48.9	0.01	Australia	FPSO Ichthys
Condensate				Venturer
Sakhalin Blend	45.50	0.160	Russia	Sakhalin Island
Cossack	48.80	0.030	Australia	Okha FPSO
Kutubu	51.40	0.021	New Guinea	Kumul Marine Terminal
Sokol	35.50	0.278	Russia	DeKastri Terminal
Belida	44.4	0.035	Indonesia	Belida Terminal
Tapis	42.70	0.044	Malaysia	Terengganu Crude Oil Terminal
Attaka	37.2	0.068	Indonesia	Santan Terminal
Miri	30.79	0.140	Malaysia	Miri Crude Oil Terminal
Kikeh	37.61	0.0585	Malaysia	Kikeh FPSO
Kimanis	38.61	0.060	Malaysia	Sabah Oil and Gas Terminal
Labuan	29.92	0.080	Malaysia	Labuan Crude Oil Terminal
Vincent	17.40	0.368	Australia	FPSO Ngujima-Yin
Ardjuna	35.5	0.119	Indonesia	Ardjuna Terminal
Banyu Urip	32.0	0.305	Indonesia	FSO Gagak Rimang
Nanhai Light	39.50	0.060	China	Huizhou
Bach Ho	38.50	0.0508	Vietnam	Chi Linh FSO
Su Tu Den	39.50	0.064	Vietnam	Su Tu Den terminal
Minas	33.40	0.102	Indonesia	Dumai terminal
Nile Blend	32.76	0.045	Sudan/South Sudan	Marsha Bashayer terminal
Daqing	31.93	0.130	China	Luda/Dalian
Cinta	31.40	0.110	Indonesia	Cinta Marine Terminal
Widuri	31.80	0.106	Indonesia	Widuri Marine Terminal
Shengli	24.20	0.840	China	Qingdao
Duri	21.7	0.182	Indonesia	Dumai terminal
Dar Blend	25.00	0.111	South Sudan	Marsha Bashayer terminal, Sudan

Platts DES Singapore and DES basis Yeosu WTI Midland assessments reflect light, sweet crude supplied directly from the Permian Basin on one or more of the following designated pipelines: BridgeTex, Longhorn, Midland-to-Echo I/II/III, Wink-to-Webster, Cactus I/II, EPIC, Gray Oak, and Permian Express. In addition to pipeline provenance, cargoes must meet the Platts WTI Midland specifications outlined below. Crude delivered as a result of the bids or offers published in the Platts MOC process must meet the Platts WTI Midland specifications. Platts will accept bids and offers for WTI Midland loading from other origin points, but these must be specified in the bid/offer terms and may be subject to normalization. All Platts WTI Midland sold in the Platts MOC process should not contain any previously cracked or refined material.

In Southeast Asia, Platts WTI Midland DES Singapore assessment reflects buyer's option to take delivery either at a Singapore terminal or by ship-to-ship (STS) transfer. Bids, offers and trades for other discharge ports may be published, and would be normalized to DES Singapore for the purpose of assessment.

In North Asia, Platts WTI Midland DES Yeosu assessment reflects buyer's option to nominate discharge ports within Japan, Korea, Taiwan and China (JKTC), as per standard charterparty options, or alternatively to take delivery by STS transfer.

For both assessments, buyers and sellers must provide a 10-day wide delivery window at the time of submitting their bids and offers to Platts for publication. Participants may submit bids or offers for delivery windows wider than 10 days, up to 15 days, with seller's option to narrow to a 10-day delivery window latest by 60 calendar days prior to the first day of the traded laycan. Sellers should narrow down to 5-day delivery window 15 days prior to the first day of the 10-day laycan. Wider laycans may be normalized to the standard for assessment purposes.

Platts DES Singapore WTI Midland assessments reflect deliveries of 1 million barrels partially discharged from a VLCC, with +/-5% operational tolerance at seller's option while the

DES basis Yeosu WTI Midland assessments reflect deliveries of 2 million barrels discharged from a VLCC, with +/-5% operational tolerance at seller's option. At both locations, bids, offers and trades for volumes up to 2 million barrels may be published during the Platts MOC assessment process and normalized to the respective standard.

For DES Singapore, participants must name at least one discharge port at the time of submitting their bids and offers to Platts for publication during the MOC process. Participants may also name additional discharge ports in their bids and offers. At the time of trade, buyers must declare the intended discharge port. Sellers should not unreasonably withhold buyer's request to nominate an alternative discharge port wherein the buyer agrees to cover any reasonable incremental delivery costs.

For DES basis Yeosu, buyers and sellers must name the basis port at the time of submitting their bids and offers to Platts for publication during the MOC process. Buyers may nominate delivery at any safe and sound alternative discharge ports within JKTC at a reasonable time prior to delivery, subject to payment of additional costs as per the charterparty contract for the vessel. Platts understands VLCC charterparty agreement for US crude shipments to North Asia typically include options for delivery at other regional ports priced as a lump sum freight differential to the basis port. Participants may submit bids or offers with non-standard charterparty options for publication, which may be normalized to the standard for assessment purposes.

Seller must name the delivery vessel either at the time of submitting their offer, or following a trade, nominate a vessel latest by 60 days prior to the first day of the 10-day delivery window. In offers with named vessels, the deal will be subject to buyer's acceptance of the nominated vessel. For offers with unnamed ship, the seller has the responsibility to meet the reasonable vetting requirements of a typical market participant in the discharge port nominated by the buyer at the time of trade. Seller may substitute the vessel with another meeting or exceeding the same approvals at any reasonable time before

delivery of the cargo by providing a written notice to the buyer. In addition, the vessel must also meet physical limitations of the nominated discharge port including draft or beam restrictions, as well as conditions set by the country of destination.

Any substitution in vessel or discharge port should not financially harm the counterparty.

At both locations, Platts publishes assessments on an outright basis as well as differentials to the whole month average of Platts Dated Brent and Platts Dubai assessments during the month of delivery. Platts considers for publication bids, offers and trades on other pricing basis and may normalize them to the reference assessment basis.

Counterparties in a trade reported during the MOC process must perform basis their typical bilateral trading and credit terms that have been applied and accepted by both counterparties in the open market.

Platts WTI Midland specifications

Platts global suite of WTI assessments, including both pipeline and cargo, reflects the Platts WTI Midland specifications:

Sulfur: 0.2% or less by weight as determined by ASTM Standard D-4294

Gravity: Not less than 40 degrees API, nor more than 44 degrees API as determined by ASTM Standard D5002

Mercaptans: 75 ppm or less as determined by ASTM Standard UOP-163

Iron: 10 ppm or less as determined by ASTM Standard D5708 Method B

Vanadium: 2 ppm or less as determined by ASTM Standard D5708 Method B

Nickel: 2 ppm or less as determined by ASTM Standard D5708 Method B

Vapor pressure: Less than 9.5 pounds per square inch at 100 F and 4:1 V/L ratio as determined by ASTM Standard D6377

Basic Sediment, water and other impurities: Less than 1% as determined by ASTM Standard D4007

Tupi (previously known as Lula): Platts assesses cargoes of Brazilian Tupi crude oil for DES delivery in North Asia, basis the eastern Chinese port of Qingdao for delivery three months from the date of publication. For example, in October Platts will assess outright prices and premiums for Tupi cargoes for delivery in January. Platts assessment reflects buyer's option to nominate discharge ports within Japan, Korea, Taiwan and China (JKTC) as per standard charterparty options, or alternatively to take delivery by ship-to-ship transfer.

Buyers and sellers must provide a 10-day wide delivery window at the time of submitting their bids and offers to Platts for publication. Participants may submit bids or offers for delivery windows wider than 10 days, up to 15 days, with seller's option to narrow to a 10-day delivery window latest by 60 calendar days prior to the first day of the traded laycan. Sellers should narrow down to 5-day delivery window 15 days prior to the first day of the 10-day laycan. Wider laycans may be normalized to the standard for assessment purposes.

Platts DES basis Qingdao Tupi assessment reflects deliveries of 1 million barrels partially discharged from a VLCC, with +/-10% operational tolerance at seller's option. Bids, offers and trades for volumes up to 2 million barrels will be published during the Platts MOC assessment process and may be normalized to the standard.

Buyers and sellers must name the basis port at the time of submitting their bids and offers to Platts for publication during

the MOC process. Buyers may nominate delivery at any safe and sound alternative discharge ports within JKTC at a reasonable time prior to delivery, subject to payment of additional costs as per the charterparty contract for the vessel. Platts understands VLCC charterparty agreement for crude shipments from the Americas to North Asia typically include options for delivery at other regional ports priced as a lump sum freight differential to the basis port. Participants may submit bids or offers with non-standard charterparty options for publication, which may be normalized to the standard for assessment purposes.

Seller must name the delivery vessel either at the time of submitting their offer, or following a trade, nominate a vessel latest by 60 days prior to the first day of the 10-day delivery window. In offers with named vessels, the deal will be subject to buyer's acceptance of the nominated vessel. For offers with unnamed ship, the seller has the responsibility to meet the reasonable vetting requirements of a typical market participant in the discharge port nominated by the buyer at the time of trade. Seller may substitute the vessel with another meeting or exceeding the same approvals at any reasonable time before delivery of the cargo by providing a written notice to the buyer. In addition, the vessel must also meet physical limitations of the nominated discharge port including draft or beam restrictions, as well as conditions set by the country of destination.

Any substitution in vessel or discharge port should not financially harm the counterparty.

Platts publishes assessments on an outright basis as well as differentials to the whole month average of Platts Dated Brent and Platts Dubai assessments during the month of delivery. Platts will consider for publication bids, offers and trades on other pricing basis and may normalize them to the reference assessment basis.

Counterparties in a trade reported during the MOC process must perform basis their typical bilateral trading and credit terms that have been applied and accepted by both counterparties in the open market.

US crude assessments at Singapore close: The assessments reflect the outright price in US dollars per barrel of WTI MEH, Light Louisiana Sweet, Southern Green Canyon and LOOP Sour at the close of the Asian MOC assessment process at 16:30 Singapore time (0830 GMT). Platts publishes the prompt month and next forward month for WTI MEH, LOOP Sour and LLS, and the prompt month for SGC. The assessments reflect the price prevailing at the close of the market in Asia, taking into account the rise or fall in the cash WTI market from the time of the assessment at US market close at 2:30 pm Eastern Standard Time until the Asian close.

CFR North Asia assessments at Singapore close: The assessments reflect the outright price in US dollars per barrel of Dubai, Oman, Upper Zakum, Qatar Marine, Murban, Basrah Medium M2, ESPO, Dalia, Forties, LOOP Sour and WTI MEH delivered into North Asia at 16:30 Singapore time (0830 GMT), including freight and any other relevant costs into North Asia. These assessments are published in addition to Platts existing assessments for all these grades. For the freight calculation, the conversion factor for barrels to metric tons applied for the grades are in line with prevailing qualities of the respective grades. The grades' qualities and respective conversion factors are reviewed periodically.

Crude grade	Conversion factor	API gravity (degrees)
Dubai	7.20	30.40
Oman	7.24	31.30
Upper Zakum	7.35	33.90
Qatar Marine	7.30	32.65
Murban	7.64	40.50
Basrah Medium	7.13	29.00
ESPO	7.39	34.70
Dalia	6.87	23.00
Forties	7.57	38.70
LOOP Sour	7.18	30.14
WTI MEH	7.77	43.40

Asian Market Parity Prices

Platts publishes Market Parity Prices for Indonesia's Minas, Cinta, Widuri and India's Cambay, Ravva and Rajasthan crude grades.

Details of the MPP methodology for these grades are published at: <https://www.spglobal.com/commodityinsights/en/our-methodology/methodology-specifications/oil/market-parity-prices>

Minas: Also known as Sumatran Light crude, Minas crude is produced inland on the island of Sumatra. It has typical API gravity of 33.4 with a sulfur content of 0.10%.

Cinta: This crude is produced offshore southeast Sumatra. It has typical API gravity of 31.1 with a sulfur content of 0.09%.

Widuri: This crude is produced offshore southeast Sumatra. It has typical API gravity of 32.5 with a sulfur content of 0.09%.

Cambay: Light, sweet Cambay is produced in the western Indian state of Gujarat. It has typical API gravity of 43.8 and sulfur content of 0.035%.

Ravva: This medium, sweet grade is produced from the Krishna Godavari Basin off the Indian east coast state of Andhra Pradesh. It has typical API gravity of 36 and sulfur content of 0.066%.

Rajasthan: This crude is produced in India's western state of the same name. It is a medium-heavy and waxy, sweet crude with typical API gravity of 29.50 and sulfur content of 0.086%.

Revision history

October 2023: Platts completed an annual review of this guide, making minor edits throughout for greater clarity. Updated guide to clarify Middle East crude cargo nomination laycans and procedures, and updated the guide to clarify Basrah Medium assessment used for CFR North Asia assessment.

February 2023: Platts updated this guide to reflect the new methodology for Murban Quality Premium effective Feb. 1, 2023.

January 2023: Platts updated this guide to remove references to OSP differential assessments for Abu Dhabi's Murban, Umm Lulu, Das Blend and Upper Zakum that were discontinued effective Dec. 31, 2022; to remove reference to Oman as the basis for Qatar Land and Qatar Marine OSP; to change the publication periods for all Platts assessments of Asia Pacific crude grades and certain North Africa crude grades from Jan. 3, 2023; to remove references to Handil Mix and Gippsland crude following the discontinuation of these assessments effective Jan. 3, 2023.

November 2022: Platts completed an annual review of the methodology guide and made edits for greater clarity and accuracy.

October 2022: Platts updated this guide to include an update on the assessment of Murban crude on the MOC independent of the monthly quality premium.

August 2022: Platts updated the link to the Market Parity Prices methodology guide.

July 2022: Platts updated this guide to include Qatar Land and Qatar Marine differentials to same-month Dubai futures. The assessments were launched on June 1, 2022. **January 2022:** Platts updated this guide to include Basrah Medium CFR North Asia assessments launched on January 3, 2022, added Wink-to-Webster and Midland-to-ECHO III pipelines to WTI Midland assessments' pipeline provenance for supplies directly from the

Permian Basin, and minor edits to the guide throughout.

December 2021: Platts updated this guide to include the new Ichthys Field Condensate assessments launched on Nov 9, 2021. Platts also removed references to Basrah Light assessments that were discontinued on Dec. 1, 2021.

November 2021: Platts updated this guide to remove references to the following assessments and their monthly averages that were discontinued on November 1, 2021: Basrah Light M2 (AALZB00), Basrah Light M2 spread versus OSP (AALZF00), Basrah Light CFR North Asia (PCAQK00) and Oman cash/OSP (PCABT00).

October 2021: Platts completed an annual review of this methodology guide in October 2021 and made edits throughout for greater clarity.

August 2021: Platts updated this guide to elaborate on the pricing of operational tolerance for cargoes delivered into the Platts Dubai and Platts Oman partials mechanisms; to reflect change of Basrah Light API and conversion factor used in CFR North Asia assessment to reflect amendment to the WTI Midland pipeline provenance standard, effective July 15, 2021; add the launch of differentials to front-month Dubai futures for Oman Blend, Upper Zakum, Das Blend, Umm Lulu, and benchmark Platts cash Dubai on June 1, 2021; and addition of Basrah Medium crude assessment from February 1, 2021.

April 2021: Platts updated this guide to provide clarity on its assessments of OSP differentials for Abu Dhabi's Murban, Upper Zakum, Das Blend and Umm Lulu grades.

January 2021: Platts updated this guide to reflect the change in the name of its Brazilian Lula crude assessments to Tupi effective January 4, 2021.

October 2020: Platts completed an annual review of this

methodology guide in October 2020 and made minor edits to the language for greater clarity. The Asian Market Parity Prices section was revised to reference the standalone Global Market Parity Prices Crude Oil guide. Platts also added ADB Strip M3 (Asia close), Banyu Urip and cargo sizes for several crude grades to the Asia Pacific table and description of Nanhai Light crude to the Asia Pacific crude section.

August 2020: Platts updated this guide to reflect implementation of Platts WTI Midland specifications globally from August 5, 2020.

July 2020: Platts updated this guide to reflect the change in the assessment methodology of Indonesia's Cinta and Widuri crude grades to a Market Parity Price model from July 1, 2020.

June 2020: Platts updated this guide to include the EPIC, Gray Oak and Permian Express crude pipelines to its list of pipelines reflected in Midland WTI cargo assessments globally, effective June 1, 2020. The guide was also updated to reflect the increase in the minimum threshold for Murban quality premium to 50 cents/b from 25 cents/b, effective April 1, 2020.

April 2020: Platts has added a section on Market Parity Prices under which the MPP calculation for Indonesia's Minas crude, as well as India's Cambay, Ravva and Rajasthan crude grades that were launched on April 1, 2020, can be found. Platts also updated the guide to reflect the discontinuation of its assessment of Nile Blend crude differential to Minas Indonesia Crude Price (ICP) with effect from March 2, 2020.

February 2020: Platts updated this guide to reflect the change in the assessment methodology of Indonesia's Minas crude to a Market Parity Price model, as well as discontinuing publishing the Asia Crude Index (ACX) from January 2, 2020 and added a section on delivered Asia crude for new delivered ex-ship assessments for US WTI Midland and Brazilian Lula crude grades that were launched on October 1, 2019. The Qatar

Land and Qatar Marine section was updated following Qatar Petroleum's announcement in December 2019 that it will issue prospective OSP differentials for the two grades from February 2020, from retrospective OSPs, and additional information was added to ADB Strip Asia.

May 2019: Platts has amended its assessment methodology for Sokol crude to assess the grade as a differential to the Platts Dubai crude benchmark from May 2, 2019. Platts completed an annual review of the Asia Pacific and Middle East Crude Oil methodology and specifications guide. Platts added references to Umm Lulu assessments, which were launched on March 1, 2019, in the Persian Gulf section. In the Asia Pacific section, Platts has added reference to the Asian Dated Brent Middle East Strip and updated the section on Australia Basin crude to reflect Vincent crude. In the Persian Gulf table, the price database codes for monthly average assessments for Brent/ Dubai, Oman M1 to M2 and Oman M1 vs OSP, and references to Umm Lulu and Umm Lulu vs OSP were added. The ADB Strip Middle East and ADB Strip Asia information were moved to the Asia Pacific table. The location column for some crude grades in the Persian Gulf and Asia Pacific tables were updated to specify the load ports, rather than countries. References to Enfield crude and Bach Ho vs OSP assessments, which were discontinued, were removed from the Asia Pacific crude table. The cargo sizes of ESPO CFR North Asia, Forties CFR North Asia and Dalia CFR North Asia in the Asia Pacific crude table were amended to reflect sizes in the FOB market. Platts has also updated the API gravity and sulfur content of Sokol, Minas, Cinta and Widuri grades in the Asia Pacific crude table based on latest available assays.

April 2019: Platts completed an annual update to sections 1 to 6 of Platts Methodology and Specifications Guides in April 2019 and moved these sections into a standalone Methodology Guide. The Global Crude Oil Specifications Guide was separated from the overall Methodology Guide and split into three regional guides for Asia Pacific and Middle East, Europe and Africa and Americas.

January 2019: Platts updated the North Sea and Urals & Mediterranean sections to include annual freight rates effective January 2, 2019. Platts also updated assessment names in the Urals & Mediterranean section to reflect changes to assessment names effective January 2, 2019. Platts removed assessments for Iran Light and Iran Heavy FOB Sidi Kerir, which were discontinued effective January 2, 2019 and added assessments for Iran Light and Iran Heavy FOB Kharg Island (Med) which were introduced also effective January 2, 2019. The ESPO assessment in the Urals & Mediterranean section was updated to reflect that effective January 2, 2019, ESPO will now be reflecting cargoes loading two months ahead in line with methodology changes to the Asia assessment and announced in Singapore. All changes conducted during this review were designed to get the guide in shape for publication early 2019 in order to reflect methodology changes due to take effect at the start of the upcoming year. Additionally, the accompanying EMEA Crude assessment table was updated to reflect all changes. In the Asia-Pacific and Persian Gulf sections: Platts removed references to Enfield crude after the assessment was discontinued in November 2018. Updated loading period reflected in Platts ESPO M1 and ESPO M2 assessments effective January 2019. Added references to Murban M2 and M3 assessments, launched on January 2, 2019. Removed reference to Vietnam's Su Tu Den crude differential to OSP which was discontinued in 2017.

October 2018: Platts completed an annual review of the global Crude Oil methodology and specifications guide. Platts reviewed all content, corrected typos and made minor edits to language. Platts also added new sections I to VI. In the Persian Gulf section Platts added reference to an assessment of Murban's spread versus front-month Dubai that was launched in July 2018. In the Asia Pacific section Platts corrected the explanation of how the Dated Brent Strip is calculated. Platts also added description of several Asia-Pacific crude oil grades that Platts currently assesses in the region. In the Americas, Platts updated the guide to reflect the addition of LOOP Sour differential assessments; new US crude assessments at the Asia close; the change in the Canadian cargo laycans assessed and the

underlying Canada Dated Brent strip; the clarification of its USGC Basrah Light assessment methodology; the change in the ANS differential basis; the addition of two new USGC Bakken assessments, and the renaming and redefinition of its existing North Dakota assessment; the renaming and broader scope of its WTI crude and Eagle Ford crude and condensate cargo assessments on the US Gulf Coast; the discontinuation of its FOB Houston Eagle Ford crude and condensate assessments; and the change in specification reflected in its Eagle Ford condensate assessments. In addition, the text on WTI CMA methodology was edited for further clarity and the assessment was added to the table. The Canada Dated Brent strip and Latin America strips were also added to the assessment tables. In the Americas section, the text and tables were also reorganized. In Europe, Platts updated the symbol tables, re-ordering the groupings and changing headings. Doba crude had its conversion factor changed; netback calculations were adjusted; and a US CIF delivered crude section was added.

July 2018: Platts updated its guide to reflect 2018 Worldscales rates, the addition of several maps, the revision and clarification of text and the revision of cargo sizes in West Africa. Platts updated the Asia and Persian Gulf sections to reflect the addition of crude assessments at Singapore close for the following: Indonesia's Banyu Urip crude, Iraq's Basrah Light and Basrah Heavy crudes, US crude assessments and CFR North Asia crude assessments. The guide was also updated to reflect the discontinuation of Su Tu Den crude differential to OSP effective December 1, 2017. Platts edited and updated the text for Asia Pacific sections as well as quality chart for Asia-Pacific crudes as per latest available assays. Platts updated the guide to reflect the addition of Troll to BFOE and the inclusion of previously loaded oil in the delivered Urals and Mediterranean MOC markets. Additionally, Platts edited and updated the text and tables for the EMEA crude sections.

September 2017: Platts updated its guide to reflect additional methodology on its Dated Brent CIF Rotterdam assessment. Platts also completed an annual review of the Crude Oil

methodology and specifications guide. Platts reviewed all content and made minor edits to language. Guidance on outright, differential and spread price was clarified in reference to increments. In the Americas, Platts clarified calculation and loading details of Mexican crude prices and added in the OSP formula for Maya crude heading to the US West Coast. In addition, Platts has removed most Americas crude quality specifications from the text and compiled them into an Americas crude quality table, updated with details from latest assays. In the assessment tables, Platts added in a column for typical volume sizes, and deleted extraneous columns. Platts also clarified the rollover dates for ANS cargoes and the Latin America Brent Futures Strip calculations and removed redundant language for the Eagle Ford Marker. In the EMEA region, Platts updated the guide to include the Asgard and Alvheim condensate grades in the North Sea. Also, text on the delivery and loading dates on Dated Brent was clarified, alongside text on the Forward Dated Brent strips. Platts edited and updated the text for Persian Gulf and Asia Pacific sections, and in table corrected the loading period for ESPO and Sakhalin Blend and loading point for Senipah crude. Maps relevant to key crude oil assessments were also added.

April 2017: Platts updated the Crude Oil Methodology Guide to reflect the addition of the LOOP Sour crude assessments traded in cavern at the Louisiana Offshore Oil Port terminal on the US Gulf Coast.

January 2017: Platts completed an annual update to the Crude Oil Methodology Guide, published in January 2017. This update moved the location of certain passages in Sections I to VI for enhanced clarity and removed redundant references to STS and barge practices. Platts also updated Worldscale rates to reflect changes from 2016 to 2017. Platts updated the Crude Oil Methodology Guide to clarify around nomination procedure for Middle Eastern sour crude cargo deliveries and remove reference to the use of the Aframax Abu Dhabi-III as an alternative delivery point in the assessment process for loading of Upper Zakum cargoes. Platts updated the

Crude Oil Methodology Guide to include the Kimanis crude assessment and Murban Quality Premium. Removed references to discontinued Canadian crude postings, updated the new MOC timestamps and general review and update of Americas methodology. Platts also updated the European section throughout, including procedures around pre-loaded oil for Urals Mediterranean, changes to Cash BFOE contract months and the discontinuation of Azeri FOB Supsa. Platts made a variety of edits to its North Sea methodology section for further clarity around descriptions for BFOE, convergence practices, a note that Platts now published assessments for the value of three forward months of BFOE (instead of as four, previously). Platts also added information relating to its updated intraday BFOE assessments.

May 2016: Platts updated the Crude Oil Methodology Guide to include new assessments for WTI 2nd month and at the London close including: WTI MEH M2, WTI Midland M2, Light Houston Sweet M2, WTI MEH M1 (London), and WTI MEH M2 (London).

April 2016: Platts updated the Crude Oil Methodology Guide to reflect typical volumes for Latin American crude oil cargoes to: Escalante (1 million barrels), Roncador (750,000 barrels), Loreto (400,000 barrels), Oriente (360,000 barrels), Napo (720,000 barrels), Marlim (750,000 barrels), Castilla Blend (1 million barrels), and Vasconia (500,000 barrels). Prior to April 2016, Platts reflected typical volume sizes of 350,000 barrels except for Santa Barbara (350,000 barrels), Mesa 30 (350,000 barrels), Castilla Blend (500,000 barrels) and Magdalena (300,000 barrels). Additionally, Platts has updated the assessment period for Alaska North Slope (ANS) crude delivered into the US West Coast. Under the updated ANS methodology, Platts will roll its assessments forward to reflect deliveries in the second calendar month forward from the first publishing day on or after the 10th of each month. Platts also updated the Crude Oil Methodology Guide to reflect updated specifications of Basrah Light delivered into the US Gulf Coast. The updated specifications reflect a typical API gravity 29.5 and a maximum sulfur content of 3%. Prior to March 2016, Platts Basrah Light

reflected an API gravity of 31-35.5 and sulfur content of 2%. Platts also corrected minor typographical errors.

February 2016: Platts updated the Crude Oil Methodology Guide to reflect the addition of US crude export cargo assessments for Eagle Ford crude and condensate from Houston and Corpus Christi, Texas terminals as well as WTI Houston. Platts also added a new crude oil pipeline assessment for Western Canadian Select (WCS) ex-Nederland. Platts also removed references to Canadian crude oil postings that were discontinued effective July 31, 2015.

January 2016: Platts updated the Crude Oil Methodology Guide to reflect the inclusion of Al Shaheen and Murban in its Dubai and Oman crude oil benchmarks. Platts removed references to Stybarrow crude, which is no longer assessed. Platts started to assess Dubai and Oman derivatives independently of physical assessments with effect from December 1, 2015.

November 2015: Platts updated the Crude Oil Methodology Guide to reflect Brazilian Roncador crude oil with a typical gravity of 19.8 API, sulfur content of 0.935%. Platts assessments for Roncador have reflected crude of this general quality since 2013, when Roncador exports began to reflect a heavier, more sulfurous specification than had previously been typical for the crude. Prior to 2013, Roncador exports and Platts Roncador assessments had reflected crude with a lighter gravity of approximately 28.3 API, and a lower sulfur of generally 0.58%. Platts removed references to Kumkol crude, which is no longer assessed.

August 2015: Platts completed an annual update to the Crude Oil Methodology Guide in July 2015. In this update, Platts reviewed all content. Platts updated guidance around how to report information and expectations for contactability. Platts also consolidated guidance regarding review of reported trades and incorporated information regarding how Platts accounts for market structure in its crude oil assessments. In the specifications section of the guide, Platts reflected the

renaming of Flotta Gold assessment, in line with the change in name by the terminal operator, Talisman Sinopec Energy UK Ltd (TSEUK). Platts added the planned discontinuation dates of its existing Kumkol and Zarzaitine assessments. Platts incorporated netback calculations for Urals and Mediterranean assessments. Platts added its Baltic Urals crude short option methodology. Language has been clarified in the US pipeline crude assessments, US shale crude oils and Americas dated Brent and US crude assessments at London close. Latin America crude has added clarification around the monthly cash WTI assessments along with language to the Mexican crude contract pricing formulas. Language around Latin America assessments FOB has also been clarified. Platts updated this guide to include guidance regarding the inclusion of STS as a delivery option for Upper Zakum.

May 2015: Platts removed several European, Russian and West African crude oil specifications from the guide and replaced them with a table format. Previously, the crude oil specifications had appeared next to the crude oil's description. Now, the specifications appear separately in one table and are designed as a reference. Platts updated the description of its Dated Brent and North Sea crude assessment methodology to reflect North Sea cargoes loading a full month-ahead. This change to Platts Dated Brent and North Sea crude methodology also incorporated changes to Platts Cash BFOE; under Platts new methodology, full cargo date nominations are declared one month in advance. This change also impacted Platts Asian and American Dated Brent assessments, which also reflect loadings 10 days to a month-ahead. Platts further clarified the convergence and settlement expectations for BFOE partials published for assessment under its methodology. Platts updated the description of its West African assessment range to reflect the value of all West African crude assessments loading 25-55 days forward. Platts noted the addition of the Deodorized Field Condensate assessment and the Sakhalin Blend assessment. DFC will run alongside the existing Ras Gas assessment and will carry the historical data for Ras Gas when the Ras Gas assessment is discontinued on January 2, 2016.

The Sakhalin Blend assessment will run alongside the existing Vityaz Blend assessment and will carry the historical data for Vityaz when the Vityaz assessment is discontinued on January 2, 2016. Platts removed references to discontinued assessments for Lower Zakum and Umm Shaif following the launch of the Das Blend assessment and the removal of the codes associated with those assessments. Platts added information about its new WTI MEH assessment reflecting Midland grade WTI crude oil trading at the Magellan East Houston terminal. Platts also amended the guide to reflect the renaming of its Canadian Syncrude Sweet assessment to Syncrude Sweet Premium. This methodology guide was also updated to include further description of Platts' processes and practices in survey assessment environments. Platts made other minor edits throughout.

December 2014: Platts updated this guide making some minor edits. Platts also updated the methodology to reflect the use of full cargoes to assess Tapis and Minas crude oil markets from December 2014. As part of the change, Platts discontinued the use of the partials mechanism to assess Minas and Tapis. Platts updated the tables for Asia-Pacific crude to amend the cargo size of Minas to 100,000 barrels and Tapis to 300,000 barrels. Platts also updated the description of Angolan Dated Brent Strip codes AALGM00 and AALGN00 to their new description, the "15-45 Day Dated Strip". In North Sea crude, Platts added assessment codes for M4 cash BFOE at the London and Asia closes, M4 BFOE EFPs, and spreads with WTI.

July 2014: Platts completed an annual update to the Crude Oil Methodology Guide in July 2014. In this update, Platts reviewed all content. Platts consolidated guidelines around publishing information during the MOC assessment process into the MOC Data Publishing Principles section, and incorporated clarification guidance about how to express interest in bids and offers that were published in January 2014 and May 2014. Platts also incorporated clarifications around book-outs, circle-outs, and editorial review of reported trades. The guide was updated to add details regarding new assessments

for Das Blend crude; correct the implementation date for valuing Asian crudes versus the ADB Strip to September 2013; remove a reference to Oman quality specifications; add details regarding Minas and Tapis partials; update Platts QP calculations formula; remove references to Palanca/ Soyo, Kole, and Rabi Light, which are no longer assessed; update descriptions of Urals CIF Rotterdam and CIF Augusta; incorporate additional Azeri Light descriptions; revise Urals CFD descriptions; clarify language describing the US and Canadian pipeline rolls; update latest available API and sulfur specifications for SGC and Poseidon; create separate sections for US and Canada cargo assessments for more clarity; include descriptions of its new Bakken basin assessment; remove certain background commentary around US shale markets that was not strictly relevant to methodology itself; remove references to Canadian crude postings that are no longer published; add explanations of Latin strips; add definitions for Isthmus to USWC and Olmeca to Europe; and incorporate descriptions of Platts' 3:15 futures assessments. Platts also made minor typographical edits throughout the text for clarity.

November 2013: Platts updated this guide, making minor edits through the text. Platts also updated its methodology for Middle Eastern crude oil, noting a change where full cargos converge on the 20th partial between a buyer and seller, forming cargos of 500,000 barrels each. Platts added information regarding its new Light Houston Sweet (LHS) assessment, which had previously been published in a separate document. Platts also added details regarding assessments for Akpo, Bonga, Pazflor, Plutonio and Djeno crude oils.

August 2013: Platts revamped all Oil Methodology and Specifications Guides, including its Crude Oil guide, in August 2013. This revamp was completed to enhance the clarity and usefulness of all guides, and to introduce greater consistency of layout and structure across all published methodology guides. Methodologies for market coverage were not changed through this revamp, unless specifically noted in the methodology guide itself.