



Crude/Condensate Assessment Methodology

Updated Oct 28, 2015

1. Modify wording in Chapter 1, Article 12.

Relevance of Rim Assessment Methodology

The purpose of all price assessments in reports issued by Rim Intelligence is to provide an indication to energy market players as to the levels at which transactions can take place so that trades can be done with high transparency and at reasonable prices. To achieve this purpose, we have set up “General Procedures for Price Assessment” as follows, and “Price Assessment Methodology” for each report. Detailed in the “General Procedures for Price Assessment” and “Price Assessment Methodology” for each report are processes and standards that we deem are necessary to achieve the above purpose. By following these processes and standards in making price assessments, we consider our Assessment Methodology to be appropriate.

Chapter 1: General Procedures for Price Assessment

Article 1: Purpose of price assessment

The purpose of all price assessments in our reports is to provide an indication to energy market players as to the levels at which transactions can take place so that trades can be done with high transparency and at reasonable prices.

Article 2: Conducting price assessment

To achieve the purpose outlined in Article 1, we have set up the following guidelines in our “General Procedures for Price Assessment”, and “Price Assessment Methodology” for each report. We follow these guidelines in making price assessments.

- Trades considered for price assessment
- Assessment window
- Priority in price assessment
- Selection of players providing market information
- Method of information gathering
- System of review by supervisor
- Reliability and adequacy of market information
- Policy of maintaining consistency in price assessment
- Trades not considered for price assessment
- Process of regular reviews and amendments to Assessment Methodology
- Changes/Amendments to price assessments
- Quantity
- Reasons for using specific units for quantity (barrel etc.)

Article 3: Transactions considered for price assessment

For each price index, our price assessment is based on quantities, delivery period and areas with the most liquidity. Further, details such as the value and quantity on which the assessment is based, market information which is used as a reference, and other platforms such as the Rim Trading Board and specific markets including trades carried out in Exchanges are included in the methodology of each report.

Article 4: Assessment window

For each price index, the time window considered appropriate for our price assessment is that which is deemed to be the most convenient and effective during trading hours in Asia, including Japan.

Article 5: Priority in price assessment

For each price index, among traded prices in transactions that take place between agreed parties or in other markets, bids and offers, the priority as to which price is considered first for assessment is determined and details are given in the methodology of each report.

Article 6: Selection of players providing market information

When selecting players to obtain information from, we take into account the quantity handled and the amount of influence on the market, without any bias towards buyers or sellers. We gather market information from many players including Majors, oil and gas producers, oil companies, traders, dealers and end-users. Each report team determines that there is no bias in the players it obtains information from in terms of area and the type of information they have. Should the player be deemed biased, the reporter and team leader may, after obtaining approval from the president, remove him from the list of players providing market information.

Article 7: Method of information gathering

Our reporters possess suitable quality and skill from a fair and neutral standpoint. Reporters carry out information gathering mainly by telephone but also by email and chat. To ensure the credibility of the player from whom information is gathered, the reporter will call the player's company directly to confirm that the player is indeed working for that company.

Article 8: Role of Supervisor

Two or more supervisors are assigned to each report. Before each report is issued, at least one of the supervisors checks if the price assessment and its basis are in line with the Assessment Methodology and to ensure that consistency is maintained. After the review is conducted, a proof of the review in the form of an email sent by the supervisor to each report team is kept in the folder of each team.

Article 9: Selection of supervisor

When assigning a supervisor other than the president, in principle, the supervisor is selected from outside the relevant report team and has knowledge and experience in the product and market for which price assessment is conducted. The selection of supervisors requires approval from the board of directors.

Article 10: Maintaining quality of supervisor review

For reports for which the supervisor is not the president, the president conducts spot checks to maintain the quality of the supervisor's review. After a spot check, a proof of the spot check in the form of a PDF document signed by the president will be kept in the president's folder.

Article 11: Maintaining consistency in price assessment

Besides reviews by supervisors, assessment simulation is conducted regularly to maintain consistency among reporters in price assessment.

Article 12: Reliability and adequacy of market information

Each reporter performing price assessment determines whether a trade was done by the parties involved and whether the information was suspicious or unusual by checking with the relevant parties and other multiple parties, with further investigation carried out if necessary. If unusual market information regarding a trade by parties involved or suspicious information is found, additional information gathering will be carried out before making a judgment as to whether or not to remove the information for consideration for price assessment. Major issues are to be reported promptly to the supervisor and the president. Of these, important professional judgments will be recorded in each report team's information gathering memo, assessment process sheet etc. If it is necessary to check whether the information provided is suspicious, we may consider obtaining information from the back office.

For certain markets with low liquidity, market information for price assessment may be obtained from a single source. Even in such a situation, we follow processes detailed in our Assessment Methodology to determine if such market information can be used for price assessment. We do not disregard the information in making price assessment merely because it is obtained from a single source.

Players giving market information are expected to provide all relevant information that meets the conditions for price assessment stated in our Assessment Methodology, which is published on our website.

Article 13: Making our Assessment Methodology available

The Assessment Methodology approved by the board of directors is published on our website, whereby external market players involved in trading, players providing market information and our subscribers can access.

Article 14: Regular review of Assessment Methodology

Our Assessment Methodology is reviewed at least once a year (during the board of directors' meeting held in October) or when substantial changes have taken place in the market. After each review, we may consider making amendments to our Assessment Methodology if deemed necessary. When reviewing our Assessment Methodology, we may consider views obtained from external market players and our subscribers.

Article 15: Amendments to Assessment Methodology

If amendments to our Assessment Methodology that affect the price assessment process are deemed necessary, discussions are conducted within each report team and amendments are submitted to the board of directors for approval. After the amendments are approved, a notice of the amendments and the effective date will be placed in our reports in principle one month before, but at least two weeks prior to the effective date.

After the amendments are approved, the Assessment Methodology with the amendments reflected has to be approved by the board of directors by the effective date.

When making amendments to our Assessment Methodology that affect the price assessment process, we accept inquiries regarding such amendments from external market players and our subscribers. These inquiries are, in principle, published in our reports or on our website, but if the party making the inquiries requests us not to do so, we may not disclose the details for confidentiality reasons.

For amendments to our Assessment Methodology that do not affect the price assessment process, after approval by the board of directors, the amendments will be announced in our reports and effected promptly.

Article 16: Amendments/Changes to price assessment

Price assessments in our reports will not be amended after they are published, except for typing and spelling mistakes.

Chapter 2: Price Assessment Methodology for Crude/Condensate Report

Purpose of price assessment:

The purpose of price assessment is to reflect the actual market in which standard spot buying and selling take place on the day of publication.

Definition of price:

Even if no transactions take place, the value of a commodity may change. The price reflects the changing values of a commodity. The value of a commodity may change depending on supply/demand, production costs, the situation in other markets, and players' perspectives.

Assessment method:

Price assessment basically takes into account information on deals done, bids/offers and supply/demand situation obtained on the day of publication. Top priority is given to the latest deals done and bid/offer levels within the assessment window. In the absence of deals, bids and offers, buying and selling indications are used as a reference.

Values of commodities are determined by competition among sellers and buyers. Higher bids to be closer to market values than lower bids, and lower offers are considered to be closer to market values than higher offers.

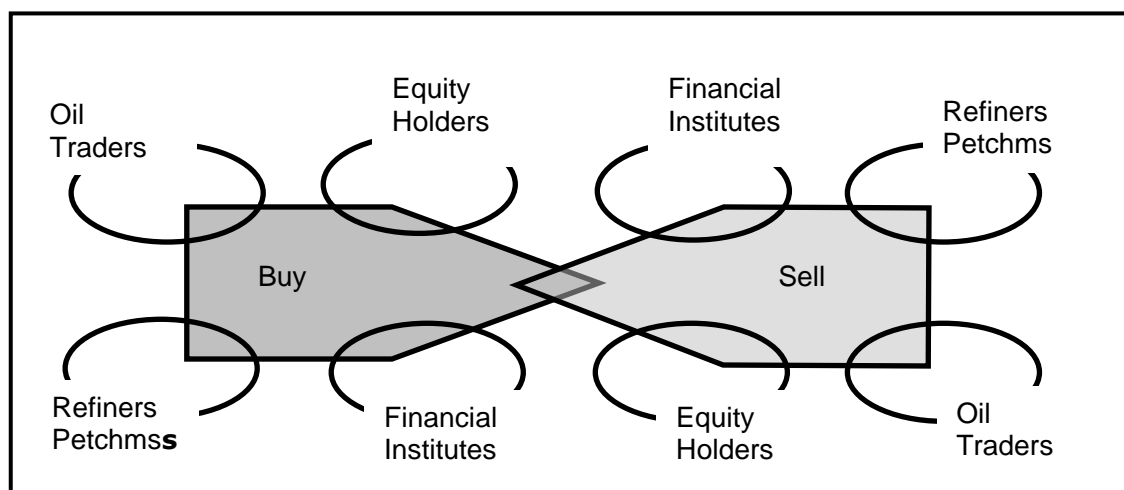
Standard conditions such as cargo volume, loading or delivery period, quality and payment period are taken into account in price assessment.

All price units for crude/condensate are in US dollar per barrel (\$/bbl). The oil industry typically trades by using the \$/bbl unit, and Rim follows this convention.

Cash/Paper Crude

Rim assesses values of cash WTI, cash *BFO, DTD Brent, cash Dubai and the following swaps contracts: Dubai swaps, DME/Dubai, Murban OSP swaps, DTD/Dubai and Singapore Crack Margins, as of 15:30 Tokyo time. All prices are assessed based on information gathered through market research by Rim reporters each business day.

Structure of the Cash Crude (Futures/Forward) Markets

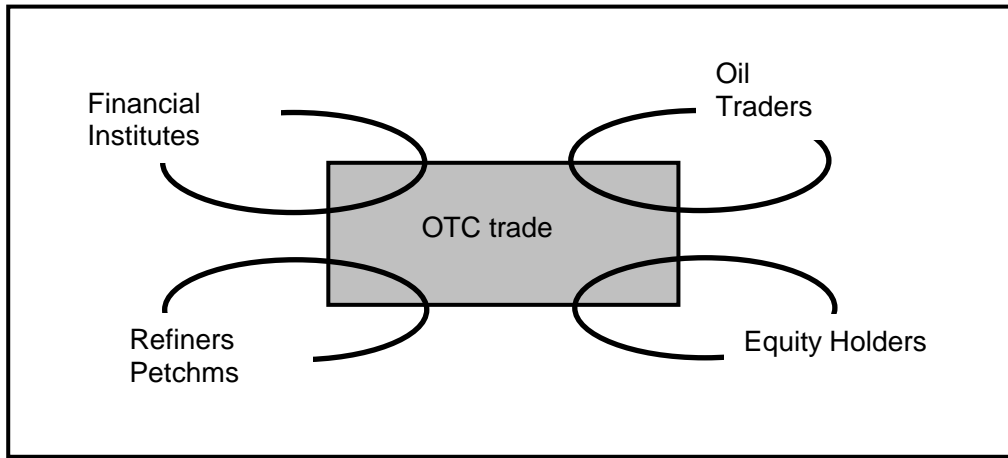


Rim understands that Cash Crude Oil markets are structured with four groups of business parties: Oil Traders, Oil Refiners/Petrochemical firms, Financial Institutes and Equity Holders. A transaction takes place as buying interest and selling interest match with each other.

Rim defines the four cash crude oil market business parties as follows:

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|------------------------------------|---|
| Oil Trader | A company that trades physical crude oil/condensate as its main trading item and derivative products based on crude oil values as a hedging tool against risks associated with its trading of physical crude oil/condensate. |
| Oil Refiner/ Petrochemical firm | A company that buys physical crude oil as feed stocks to run its refining facilities and trades derivative products based on crude oil values as a hedging tool against risks associated with its purchases of physical crude oil. A petrochemical firm mainly buys condensate for use at its condensate splitters, but sometimes resells condensate. |
| Financial Institute | A company that trades derivative products based on crude oil values as one of its trading items. A Financial Institute that trades derivative products based on crude oil and naphtha values typically holds positions in physical crude oil markets as well. |
| Equity Holder | A company that holds equity in oil and gas fields from which it produces and/or sells physical crude oil/condensate into the international market and trades derivative products based on crude oil values as a hedging tool against risks associated with sales of physical crude oil/condensate. |

Structure of the Crude Oil Swaps Market



Rim understands that the Crude oil swaps market is structured with four groups of business parties: Financial Institutes, Oil Traders, Oil Refiners/Petrochemical firms and Equity Holders. Rim assesses values of crude oil swaps at which a standard transaction could take place through “over-the-counter” method of trade.

Rim defines the four business parties in the swaps market as follows:

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|------------------------------------|---|
| Oil Trader | A company that trades physical crude oil/condensate as its main trading item and derivative products based on crude oil values as a hedging tool against risks associated with its trading of physical crude oil/condensate. |
| Oil Refiner/ Petrochemical firm | A company that buys physical crude oil as feed stocks to run its refining facilities and trades derivative products based on crude oil values as a hedging tool against risks associated with its purchases of physical crude oil. A petrochemical firm mainly buys condensate for use at its condensate splitters, but sometimes resells condensate. |
| Financial Institute | A company that trades derivative products based on crude oil values as one of its trading items. A Financial Institute that trades derivative products based on crude oil and naphtha values typically holds positions in physical crude oil markets as well. |
| Equity Holder | A company that holds equity in oil and gas fields from which it produces and/or sells physical crude oil/condensate into the international market and trades derivative products based on crude oil values as a hedging tool against risks associated with sales of physical crude oil/condensate. |

<Cash WTI>

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|-------------------|--|
| Assessment Timing | Rim's assessment for cash WTI crude oil settles at 15:30 Tokyo time on the day of publication. |
| Price Unit | All prices are in \$/bbl. |
| Time Window | During the period from the first day to the 25th of the month, the front-month refers to the following month. During the period from the 26th to the last day of the month, the front-month shifts to a month after the following month. |
| Standard Size | All prices are for cargoes of 500,000bbl. Values for contracts for smaller or larger volumes may also be considered. |

<Cash BFO>

*BFO refers to the three grades, Brent, Forties and Oseberg.

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| Assessment Timing | Rim's assessment for cash BFO crude oil settles at 15:30 Tokyo time on the day of publication. |
| Price Unit | All prices are in \$/bbl. |
| Time Window | The front-month refers to the prior month of the front-month for Brent crude futures traded on the Intercontinental Exchange. The front-month shifts to the following month in line with the contract expiry for ICE Brent. |
| Standard Size | All prices are for cargoes of 500,000bbl. Values for contracts for smaller or larger volumes may also be considered. |

*The above change will be effective from Apr 16, 2013.

<DTD Brent>

| | |
|-------------------|---|
| Assessment Timing | Rim's assessment for DTD Brent crude oil settles at 15:30 Tokyo time on the day of publication. |
| Price Unit | All prices are in \$/bbl. |
| Time Window | The front-month refers to the prior month of the front-month for Brent crude futures traded on the Intercontinental Exchange. The front-month shifts to the following month in line with the contract expiry for ICE Brent. |
| Standard Size | All prices are for cargoes of 500,000bbl. Values for contracts for smaller or larger volumes may also be considered. |

<Cash Dubai>

| | |
|-------------------|--|
| Assessment Timing | Rim's assessment for cash Dubai crude oil settles at 15:30 Tokyo time on the day of publication. |
| Price Unit | All prices are in \$/bbl. |
| Time Window | The front-month refers to a month after the following month of the day of publication. |
| Standard Size | All prices are for cargoes of 500,000bbl. Values for contracts for smaller or larger volumes may also be considered. |

<Dubai Swaps>

When prevailing prices for Dubai swaps lack in the market, reporters may use related indications such as the Exchange of Futures for Swaps (EFS) for WTI and Brent crude and the EFS values for Brent and Dubai to assess the swaps values.

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| Assessment Timing | Rim's assessment for Dubai crude swaps settles at 15:30 Tokyo time on the day of publication. |
| Price Unit | All prices are in \$/bbl. |
| Time Window | The front-month refers to the current month of the day of publication. The front-month shifts to the following month on the first business day of the month. |
| Standard Size | All prices are for contracts of 50,000-200,000bbl. Values for contracts for smaller or larger volumes may also be considered. |

<DME/Dubai>

*The DME/Dubai swaps contract refers to the price spread between DME swaps values and Dubai swaps values.

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| Assessment Timing | Rim's assessment for the DME/Dubai swaps settles at 15:30 Tokyo time on the day of publication. |
| Price Unit | All prices are in \$/bbl. |
| Time Window | The front-month refers to the current month of the day of publication. The front-month shifts to the following month on the first business day of the month. |
| Standard Size | All prices are for contracts of 25,000-500,000bbl. Values for contracts for smaller or larger volumes may also be considered. |

<Murban OSP Swaps>

*The Murban OSP swaps contract refers to the price spread between Dubai swaps values and the monthly official selling price for Murban crude.

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| Assessment Timing | Rim's assessment for the Murban crude OSP swaps settles at 15:30 Tokyo time on the day of publication. |
| Price Unit | All prices are in \$/bbl. |
| Time Window | The front-month refers to the current month of the day of publication. The front-month shifts to the following month on the first business day of the month. |
| Standard Size | All prices are for contracts of 25,000-500,000bbl. Values for contracts for smaller or larger volumes may also be considered. |

<DTD/Dubai>

*The DTD/Dubai swaps contract refers to the price spread between DTD Brent swaps values and Dubai swaps values.

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|-------------------|---|
| Assessment Timing | Rim's assessment for the DTD/Dubai swaps settles at 15:30 Tokyo time on the day of publication. |
| Price Unit | All prices are in \$/bbl. |
| Time Window | The front-month refers to the prior month of the front-month for Brent crude futures traded on the Intercontinental Exchange. The front-month shifts to the following month in line with the contract expiry for ICE Brent. |
| Standard Size | All prices are for contracts of 25,000-100,000bbl. Values for contracts for smaller or larger volumes may also be considered. |

<Singapore Crack Margins>

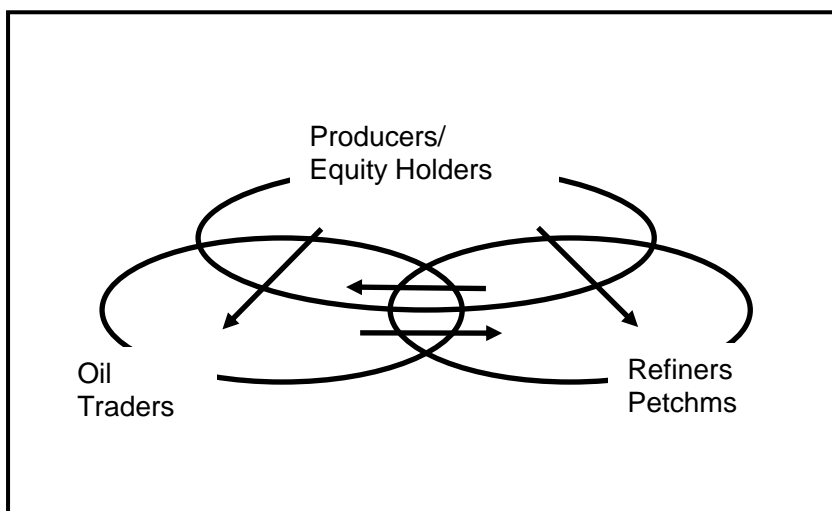
*The Singapore Crack Margins swaps contract refers to the price spread between swaps values of naphtha, jet fuel, gasoil, 180cst fuel oil and 380cst fuel oil against Dubai swaps values and DTD Brent swaps values.

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| Assessment Timing | Rim's assessment for the Singapore Crack Margins swaps settles at 17:30 Tokyo time on the previous day of publication. |
| Price Unit | All prices are in \$/bbl. |
| Time Window | The front-month refers to the current month of the day of publication up to the day that is 19 days before the end of the month. The front-month shifts to the following month the next day. |
| Standard Size | All prices are for contracts of 50,000bbl. Values for contracts for smaller or larger volumes may also be considered. |

Physical Crude/Condensate

Rim assesses spot values of Crude Oil/Condensate produced in the Middle East, Asia, Africa and Other areas by monitoring prices for certain grades transacted in the Middle East, Asia, Africa markets and other markets.

Structure of the Physical Crude Oil/Condensate Market



Rim understands that the physical crude oil/condensate markets are structured with three groups of business parties: Producers/Equity holders, Traders and Refiners/Petrochemical firms. Rim assesses physical crude oil/condensate prices at which a standard spot transaction could take place. Meanwhile, Rim will scrap assessments of crude oil/condensate grades with low spot liquidity, or crude grades whose spot transactions did not emerge at least for six months.

Rim defines a standard physical crude oil/condensate spot market transaction as follows:

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| Case 1 | A producer sells a crude oil/condensate cargo to a trader on a spot basis. |
| Case 2 | A producer sells a crude oil/condensate cargo to a refiner/petrochemical firm on a spot basis. |
| Case 3 | A trader sells a crude oil/condensate cargo to another trader or a refiner/petrochemical firm on a spot basis. |
| Case 4 | A refiner/petrochemical firm sells a crude oil/condensate cargo to another refiner/petrochemical firm or a trader on a spot basis. |

Rim defines the three business parties in the physical crude oil/condensate market as follows:

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| Producer | A company that produces and exports crude oil/condensate. |
| Equity Holder | A company that holds equity in oil and gas fields from which it produces and/or sells physical crude oil/condensate into the international market. |
| Oil Trader | A company that buys and sells physical crude oil/condensate in the international market. |
| Oil Refiner/ Petrochemical firm | A company that buys physical crude oil/condensate as feed stocks to run its refining facilities/condensate splitters. |

1. Middle East Crude/Condensate

Rim assesses spot values of the following grades based on deals, offers and bids reported by 15:30 Tokyo time. All prices are assessed based on information gathered through market research by Rim reporters each business day. Reporters take into account quality differences of the below-indicated crude grades, which vary occasionally reflecting market fundamentals of downstream refined oil products and petrochemical products.

Dubai, Oman, Murban, Das, Upper Zakum, Qatar Land, Qatar Marine, Al Shaheen, Banoco Arab Medium, Basrah Light, Iran Light, Iran Heavy, Masila, Marib Light and D.F. condensate (D.F.C), L.S. condensate(L.S.C.), Basrah Heavy

Premiums and Discounts

Premiums/discounts for each grade are to be assessed based on official selling prices set or agreed on by governments or equivalent authorities, whole month Dubai quote values and Dated Brent crude values.

Outright Values

The outright price is comprised of two components; premiums or discounts and the official selling prices or benchmark crude values indicated in the table below. In the event that there are no transactions based on flat prices, reporters may use crude swaps values available in the market to assess the outright values of crude oil/condensate.

| Grade | Benchmark | Grade | Benchmark |
|-----------------|---|--------------------|--|
| Dubai | Whole month Dubai quote | Al Shaheen | Whole month Dubai Quote |
| Oman | OSP by Oman's Ministry of Oil & Gas and Whole month Dubai quote | Banoco Arab Medium | OSP for Arab Medium by Saudi Aramco |
| Murban | OSP by Abu Dhabi National Oil Corp | Basrah Light | OSP by Iraq's State Oil Marketing Organization |
| Iran Light | OSP by National Iranian Oil Co | Iran Heavy | OSP by National Iranian Oil Co |
| Upper Zakum | OSP by Abu Dhabi National Oil Corp | Masila | Dated Brent |
| Qatar Land | OSP by Qatar Petroleum | Marib Light | Dated Brent |
| Qatar Marine | OSP by Qatar Petroleum | D.F. condensate | Whole month Dubai Quote |
| L.S. condensate | Whole month Dubai Quote | Das | OSP by Abu Dhabi National Oil Corp |
| Basrah Heavy | OSP by Iraq's State Oil Marketing Organization | | |

*D.F.condensate is Deodrised Field condensate

*L.S.condensate is Low Sulphur condensate

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| Assessment Window | Rim's assessment window for the Physical Crude/Condensate <Middle East Crude/Condensate> closes at 15:30 Tokyo time on the day of publication. |
| Price Unit and structure | All prices are in \$/bbl on FOB. |
| Time Window | Rim uses a discrete window for its assessment of Middle East crude oil. All prices are for cargoes to be loaded in the month after the following month of the day of publication. |
| Standard Size | All prices are for cargoes of 500,000bbl. Values for contracts for smaller or larger volumes may also be considered. |
| Loading Ports | All prices are for cargoes to be loaded at main exporting ports of each crude/condensate grade. |

2. Asian Crude/Condensate

Rim assesses spot values of the following grades based on deals, offers and bids reported by 15:30 Tokyo time. All prices are assessed based on information gathered through market research by Rim reporters each business day. Reporters take into account quality differences of the below-indicated crude grades, which vary occasionally reflecting market fundamentals of downstream refined oil products and petrochemical products.

(Indonesian Crude/Condensate)

Minas, Cinta, Widuri, Duri, Lalang, Handil Mix, Attaka, Belida, Ardjuna, Arun Condensate, Walio, Senipah Condensate

(Others)

Tapis, Labuan, North West Shelf Condensate, Mutineer Exeter, Kutubu, Laminaria, Varanus, Gippsland, Cossack, Van Gogh, Pyrenees, Seria Light, Daqing, Enfield, Vincent, Bach Ho Light, Bach Ho Heavy, Rang Dong, Su Tu Den, Kikeh, Kitan, T.G.T. (Te Giac Trang), Chim Sao, Miri, Kimanis

Premiums and Discounts

Premiums/discounts for each grade are to be assessed based on the Indonesian Crude Price (ICP), DTD Brent and the official selling prices set or agreed on by the Chinese government.

Outright Values

The outright price is comprised of two components; premiums or discounts and the official selling prices and published quotes indicated in the table below. In the event that there are no transactions based on flat prices, reporters may use crude swaps values available in the market to assess the outright values of crude oil/condensate.

| Grade | Benchmark | Grade | Benchmark |
|------------------|---|--------|-------------|
| Indonesian Crude | OSP by Pertamina (Indonesian Crude Price) | Tapis | Dated Brent |
| Seria Light | None | Labuan | Dated Brent |

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|-----------------|-------------|---------------|-------------------------------|
| NWS Condensate | Dated Brent | Daqing | OSP by the Chinese government |
| Kutubu | Dated Brent | Laminaria | Dated Brent |
| Varanus | Dated Brent | Gippsland | Dated Brent |
| Bach Ho Light | Dated Brent | Bach Ho Heavy | Dated Brent |
| Cossack | Dated Brent | Rang Dong | Dated Brent |
| Mutineer Exeter | Dated Brent | Su Tu Den | Dated Brent |
| Enfield | Dated Brent | Vincent | Dated Brent |
| Van Gogh | Dated Brent | Pyrenees | Dated Brent |
| Kikeh | Dated Brent | Kitan | Dated Brent |
| T.G.T. | Dated Brent | Chim Sao | Dated Brent |
| Miri | Dated Brent | Kimanis | Dated Brent |

<Indonesian Crude Basket Price>

- Indonesian Light Crude Basket Price (ILCB)
- Indonesian Medium Crude Basket Price (LMCB)
- Indonesian Medium-Heavy Crude Basket Price (IMHCB)

| | Crude grades of the basket price |
|-------|--|
| ILCB | The average price of Belida, Attaka, Handil Mix |
| IMCB | The average price of Minas, Cinta, Widuri |
| IMHCB | The average price of Minas, Cinta, Widuri and Duri |

*Indonesian Crude Basket Price is not a price assessment, but an average of some components from Rim price assessments.

<Rim Special Crude Basket Price>

- Crude Basket Price for China Products (BPCP)

| | Crude grades of the basket price |
|------|--|
| BPCP | The average price of Dubai, DTD Brent, Cinta, to which the Chinese government refers when adjusting domestic retail prices for refined products. |

*Crude Basket Price for China Products is not a price assessment, but an average of some components from Rim price assessments.

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| Assessment Window | Rim's assessment window for Physical Crude/Condensate <Asia Crude/Condensate> closes at 15:30 Tokyo time on the day of publication. |
| Price Unit and structure | All prices are in \$/bbl FOB. |
| Time Window | Rim uses a discrete window for its assessment of Asian crude oil. If publication is in the first half of the month, all prices are for cargoes to be loaded in the following month. If publication is in the second half of the month, all prices are for cargoes to be loaded in the month after the following month. |
| Standard Size | All prices are for cargoes of 200,000-600,000bbl. Values for contracts for smaller or larger volumes may also be considered. |
| Loading Ports | All prices are for cargoes to be loaded at main exporting ports of each crude/condensate grade. |

3. African Crude/Condensate

Rim assesses spot values of the following grades based on deals, offers and bids reported by 15:30 Tokyo time. All prices are assessed based on information gathered through market research by Rim reporters each business day. Reporters take into account quality differences of the below-indicated crude grades, which vary occasionally reflecting market fundamentals of downstream refined oil products and petrochemical products.

Bonny Light, Brass River, Qua Iboe, Agbami, Cabinda, Djeno, Girassol, Hungo, Nemba, Dalia, Pazflor, Zafiro, Doba, Nile Blend and Dar Blend

Premiums and Discounts

Premiums/discounts for each Bonny Light, Brass River, Qua Iboe, Agbami, Cabinda, Djeno, Girassol, Hungo, Nemba, Dalia, Pazflor, Zafiro, Doba and Dar Blend are to be assessed based on Dated Brent crude values. Nile Blend is to Minas ICP (Indonesian Crude Price) value.

Outright Values

The outright price for each Bonny Light, Brass River, Qua Iboe, Agbami, Cabinda, Djeno, Girassol, Hungo, Nemba, Dalia, Pazflor, Zafiro, Doba, and Dar Blend are comprised of two components; premiums or discounts and Dated Brent crude values. The outright price for Nile Blend is comprised of premiums or discounts and Minas ICP. These are indicated in the table below. In the event that there are no transactions based on flat prices, reporters may use crude swaps values available in the market to assess the outright values of crude oil.

| Grade | Benchmark | Grade | Benchmark |
|-------------|-------------|------------|------------------------|
| Bonny Light | Dated Brent | Girassol | Dated Brent |
| Brass River | Dated Brent | Hungo | Dated Brent |
| Cabinda | Dated Brent | Nile Blend | ICP Minas by Pertamina |

| | | | |
|--------|-------------|-----------|-------------|
| Djeno | Dated Brent | Dar Blend | Dated Brent |
| Nemba | Dated Brent | Qua Iboe | Dated Brent |
| Agbami | Dated Brent | Dalia | Dated Brent |
| Zafiro | Dated Brent | Pazflor | Dated Brent |
| Doba | Dated Brent | | |

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| Assessment Window | Rim's assessment window for the Physical Crude/Condensate <Africa> closes at 15:30 Tokyo time on the day of publication. |
| Price Unit and structure | All prices are in \$/bbl on FOB. |
| Time Window | Rim uses a discrete window for its assessment of African crude oil. If publication is from the first day to the 20th of the month, all prices are for cargoes to be loaded in the following month. If publication is from the 21th to the last day of the month, all prices are for cargoes to be loaded in the month after the following month. |
| Standard Size | All prices (Bonny Light, Brass River, Qua Iboe, Agbami, Cabinda, Djeno, Girassol, Hungo, Nemba, Dalia, Pazflor, Zafiro and Doba) are for cargoes of 950,000bbl. A price of Nile Blend and Dar Blend cargoes of 600,000bbl to 1,000,000 bbl. Values for contracts for smaller or larger volumes may also be considered. |
| Loading Ports | All prices (Bonny Light, Brass River, Qua Iboe, Agbami, Cabinda, Djeno, Girassol, Hungo, Nemba, Dalia, Pazflor, Zafiro, Doba, Nile Blend and Dar Blend) are for cargoes to be loaded at main exporting ports of each grade. |

4. Other Crude/Condensate

Rim assesses spot values of the following grades based on deals, offers and bids reported by 15:30 Tokyo time. The price is assessed based on information gathered through market research by Rim reporters each business day. Reporters take into account quality differences of the below-indicated crude grades, which vary occasionally reflecting market fundamentals of downstream refined oil products and petrochemical products.

Sokol, Sakhalin Blend and ESPO

Premiums and Discounts

Premiums/discounts for Sokol and Sakhalin Blend are to be assessed based on whole month Dubai quote value on CFR Yosu, South Korea. For ESPO, it is to whole month Dubai quote values on FOB Kozmino, Russia.

Outright Values

The outright price for Sokol, Sakhalin Blend and ESPO are comprised of two components; premiums or discounts and whole month Dubai quote values. It is indicated in the table below. In the event that there are no transactions based on flat prices, reporters may use

crude swaps values available in the market to assess the outright values of crude oil.

| Grade | Benchmark | price structure |
|----------------|-------------------------|-----------------|
| Sokol | Whole month Dubai quote | CFR Yosus* |
| Sakhalin Blend | Whole month Dubai quote | CFR Yosus* |
| ESPO** | Whole month Dubai quote | FOB Kozmino |

*The assessments for Sokol and Sakhalin Blend are based on CFR Yosus, but in case that deals or talks for other destinations are heard, Rim will assess the crude, considering the freight differentials between Yosus and the discharging ports.

**ESPO is East Siberian Pipeline Oil.

| | |
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| Assessment Window | Rim's assessment window for the Physical Crude/Condensate <Other Area> closes at 15:30 Tokyo time on the day of publication. |
| Price Unit and structure | For Sokol and Sakhalin Blend, the price is in \$/bbl on CFR Yosus. For ESPO, the price is on FOB Kozmino. |
| Time Window | Rim uses a discrete window for its assessment of other crude (Sokol, Sakhalin Blend and ESPO). All prices are for cargoes to be loaded in the month after the following month of the day of publication. |
| Standard Size | The price is for cargoes of 700,000 to 740,000bbl. Values for contracts for smaller or larger volumes may also be considered. |
| Loading Ports | The price is for cargo to be loaded at main exporting port of the grade. |

Azeri, Urals, Forties, Castilla Blend

Premiums and Discounts

Premiums/discounts for Azeri are to be assessed based on Dated Brent crude values on CFR South East Asia, including Indonesia and Thailand. For Urals and Forties, it is to Dated Brent crude values on CFR North East Asia, including Japan, South Korea and China. For Castilla Blend, it is to whole month Dubai quote values on CFR North East Asia, including Japan, South Korea and China.

Outright Values

The outright price for Azeri, Urals and Forties are comprised of two components; premiums or discounts and Dated Brent crude values. The outright price for Castilla Blend is comprised of premiums or discounts and whole month Dubai quote values. These are indicated in the table below. In the event that there are no transactions based on flat prices, reporters may use crude swaps values available in the market to assess the outright values of crude oil.

| Grade | Benchmark | price structure |
|-------|-------------|----------------------|
| Azeri | Dated Brent | CFR South East Asia* |

| | | |
|----------------|-------------|-----------------------|
| Urals | Dated Brent | CFR North East Asia** |
| Forties | Dated Brent | CFR North East Asia** |
| Castilla Blend | Dubai quote | CFR North East Asia** |

*The assessments for Azeri are based on CFR South East Asia, but in case that deals or talks for other destinations are heard, Rim will assess the crude, considering the freight differentials between South East Asia and the discharging ports.

**The assessments for Urals, Forties and Castilla Blend are based on CFR North East Asia, but in case that deals or talks for other destinations are heard, Rim will assess the crude, considering the freight differentials between North East Asia and the discharging ports.

For any of Azeri, Urals and Forties, in case that deals or talks on FOB Mediterranean Sea and North West Europe (in case of Urals and Forties) are heard, Rim may take such information into consideration to assess the crude on CFR, adding the freight cost from the Mediterranean Sea and North West Europe.

For Castilla Blend, in case that deals or talks on FOB Colombia are heard, Rim may take such information into consideration to assess the crude on CFR, adding the freight cost from Columbia.

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|--------------------------|---|
| Assessment Window | Rim's assessment window for the Physical Crude/Condensate <Other Area> closes at 15:30 Tokyo time on the day of publication. |
| Price Unit and structure | For Azeri, the price is in \$/bbl on CFR South East Asia. For Urals, Forties and Castilla Blend, the price is on CFR North East Asia. |
| Time Window | Rim uses a discrete window for its assessment of other crude (Azeri, Urals, Forties and Castilla Blend). All prices are for cargoes to be delivered in the month after the following month of the day of publication. |
| Standard Size | The price is for cargoes of 1-mil to 2-mil bbl. Values for contracts for smaller or larger volumes may also be considered. |
| Loading Ports | The price is for cargo to be loaded at main exporting port of the grade in the Mediterranean Sea, North West Europe (in case of Urals and Forties) and Columbia (in case of Castilla Blend). |

Crude/Condensate Methodology for Rim Trading Board

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| Time | 14:30~15:30 Tokyo time. Out of all bids/offers and deals transacted during the time window, we take the most recent deals and numbers into consideration for assessment. |
| Participants | Rim's crude/condensate team should be informed of all bids/offers and deal information via e-mail, telephone and instant messengers during the time window. When information is submitted through a broker, the broker should submit it to Rim. Players that are registered by Rim in advance are allowed to post bids/offers and deals to Rim Trading Board by themselves. |
| Items | The crude/condensate grades should be those that Rim assesses. However, Rim occasionally posts other crude grades that are not assessed by Rim, based on Rim's editorial judgment. |
| Standard size | As for physical cargoes, the minimum size should be 100,000bbl or above. For paper, 50,000bbl and above should be the minimum. Values for contracts for smaller volumes will not be considered. |
| Other conditions | <ol style="list-style-type: none"> 1) As to bids/offers and deals, spot differentials to each benchmark crude, (so-called floating prices) and/or fixed prices should be submitted. 2) Regardless of whether it is physical trade or paper trade, bids/offers and deals should be within the time window set by Rim. As for deals/bids/offers, which are conducted outside Rim's time window, Rim will decide whether to post them or not. 3) As to bids/offers, when a player hopes to set validity, the player should inform Rim of the intention and the details. 4) Apart from these items and policies, all guidelines are in line with Rim's Crude/Condensate Assessment Methodology. |
| Principle | <ol style="list-style-type: none"> 1) Rim occasionally reports information gathered from third party sources, instead of either the player that made a bid or offer, or the players that actually conducted deals. In this case, as long as Rim is able to confirm the information provided by the third party with the players that made bids/offers or the players that made the deal, Rim may update this information at Rim's discretion. 2) Regarding bids/offers and deals, Rim generally carries the company names involved. 3) Rim reserves the right to judge which information is posted. 4) Bids/offers should be firm. At Rim's discretion, Rim may impose a penalty on any players that make bids/offers within validity that intentionally does not implement the transaction, or repeatedly fails to do the transaction, when a counterparty is interested to do a deal at that level shown. 5) Rim refers bids/offers and deal information for assessment. However, Rim will take various factors, like market fundamentals and sentiment, into consideration when Rim determines assessment, therefore whether those bids/offers and deal information are fully reflected in assessment will be at Rim's discretion. |

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| Disclaimer | Rim Trading Board is for the sole purpose of providing information, not for any form of brokerage. Rim has no liability for the result or the process of the negotiation between sellers and buyers based on Rim Trading Board. All negotiations based on it should be made directly between sellers and buyers. Therefore all responsibilities for offers/bids and deals lie with the players involved. |
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