



## **RIM Crude Oil Price Assessment Methodology**

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### **Price Assessment Principle**

**RIM price assessments indicate the current range in which a standard spot transaction could take place on the day of publication.**

**RIM understands values of commodities change even in the absence of deals. RIM defines prices as measures to indicate fluctuating values of commodities.**

**RIM understands values of commodities are determined by a variety of factors such as supply-demand fundamentals, production costs, conditions in other markets and players' speculation.**

**RIM understands the latest transactions, bids/offers and buying/selling interest represent current values of commodities.**

**RIM understands values of commodities are determined by competition among sellers and competition among buyers. RIM considers higher bids to be closer to the current values than lower bids. RIM considers lower offers to be the closer to current values than higher offers.**

**RIM understands prices for each transaction reported from any party are to be translated into prices based on standard terms and conditions such as cargo sizes, timing of delivery or loading, product specifications and payment terms.**

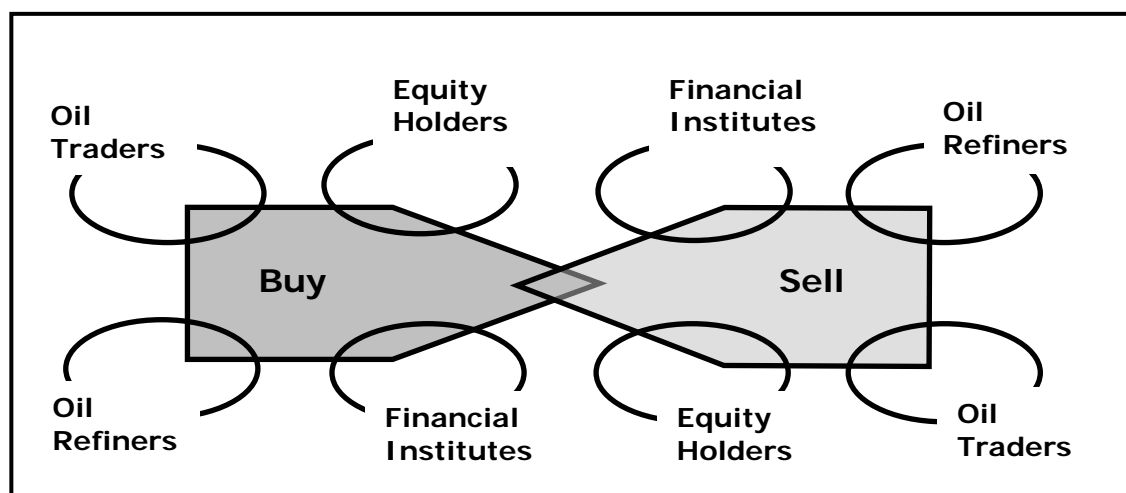
## CONTENTS

●	<b>Assessment Principle</b>	<b>1</b>
●	<b>Cash/Paper Crude</b>	<b>3</b>
xx	Cash WTI	5
xx	BFO	5
xx	DTD Brent	5
xx	Cash Dubai	5
xx	Dubai Swaps	6
xx	DME/Dubai swap	6
xx	Murban OSP Swaps	7
xx	DTD/Dubai Swaps	7
●	<b>Physical Crude</b>	<b>8</b>
xx	AG Crude	9
xx	Asian Crude	10
xx	African Crude	12
xx	Other Crude	13

## CASH/PAPER CRUDE

RIM assesses values of cash WTI, cash \*BFO, cash Dubai and four swaps contracts: Dubai swaps, Tapis paper, \*Oman MOG swaps and \*Murban OSP swaps, as of 2:30 PM in Tokyo time. All prices are assessed based on information collected in the course of market research by RIM reporters each business day.

## STRUCTURE of the CASH CRUDE (FUTURES/FORWARD) MARKETS

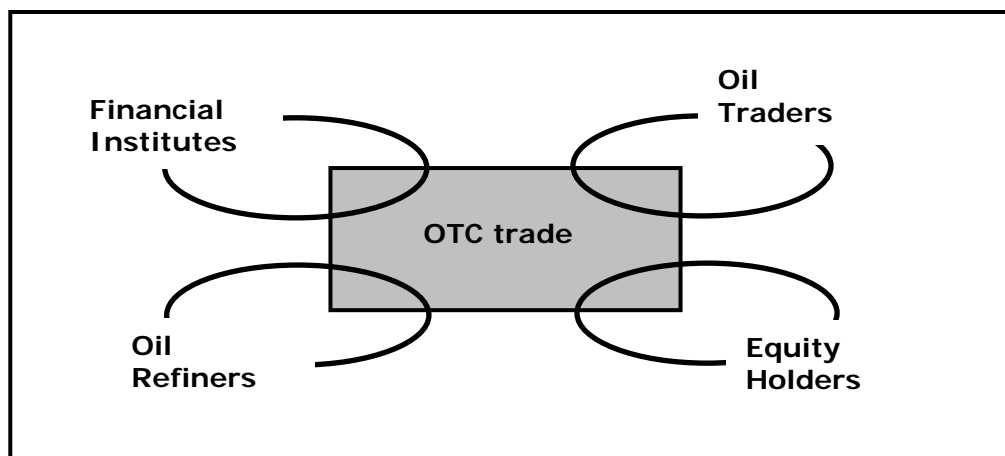


RIM understands that Cash Crude Oil markets are structured with four groups of business parties: Oil Traders, Oil Refiners, Financial Institutes and Equity Holders. Trade takes place as buying interest and selling interest match with each other.

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

<b>Oil Trader</b>	A company that trades physical crude oil 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.
<b>Oil Refiner</b>	A company that buys physical crude oil as feed material 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.
<b>Financial Institute</b>	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 values typically holds positions in physical crude oil markets as well.
<b>Equity Holder</b>	A company that holds equity in oil fields from which it produces and/or sells physical crude oil 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.

## 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 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:**

<b>Oil Trader</b>	A company that trades physical crude oil 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.
<b>Oil Refiner</b>	A company that buys physical crude oil as feed material 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.
<b>Financial Institute</b>	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 values typically holds positions in physical crude oil markets as well.
<b>Equity Holder</b>	A company that holds equity in oil fields from which it produces and/or sells physical crude oil 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.

**<Cash WTI >**

<b>Assessment Window</b>	RIM's assessment window for cash WTI crude oil closes at 2:30 PM Tokyo time on the day of publication.
<b>Price Unit</b>	All prices are in \$/bbl.
<b>Time Window</b>	During the period from the first day to the 25th of the month, the front-month refers to the following month of the current calendar 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 of the current calendar month.
<b>Standard Size</b>	All prices are for cargoes of 500,000bbl. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were the standard volume.

**<BFO >**

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

<b>Assessment Window</b>	RIM's assessment window for BFO crude oil closes at 2:30 PM Tokyo time on the day of publication.
<b>Price Unit</b>	All prices are in \$/bbl.
<b>Time Window</b>	During the period from the first day to the 9th day of the month, the front-month refers to the current calendar month. During the period from the 10th to the last day of the month, the front-month shifts to a month to the following month of the current calendar month.
<b>Standard Size</b>	All prices are for cargoes of 500,000bbl. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were the standard volume.

**<DTD Brent >**

<b>Assessment Window</b>	RIM's assessment window for DTD Brent crude oil closes at 2:30 PM Tokyo time on the day of publication.
<b>Price Unit</b>	All prices are in \$/bbl.
<b>Time Window</b>	The front-month refers to that for Brent crude futures traded on the Intercontinental Exchange.
<b>Standard Size</b>	All prices are for cargoes of 500,000bbl. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were the standard volume.

**<Cash Dubai >**

<b>Assessment Window</b>	RIM's assessment window for cash Dubai crude oil closes at 2:30 PM Tokyo time on the day of publication.
<b>Price Unit</b>	All prices are in \$/bbl.
<b>Time Window</b>	The front-month refers to a month after the following month of the current calendar month.
<b>Standard Size</b>	All prices are for cargoes of 500,000bbl. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were the standard volume.

**<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.

<b>Assessment Window</b>	RIM's assessment window for Dubai crude swaps closes at 2:30 PM Tokyo time on the day of publication.
<b>Price Unit</b>	All prices are in \$/bbl.
<b>Time Window</b>	The front-month refers to the current calendar month of the day of publication. The front-month shifts to the following month on the first business day of the month.
<b>Standard Size</b>	All prices are for contracts of 50,000-200,000bbl. Prices for smaller or larger contracts are to be translated into estimated values that the prices could be if the contracts were within the standard volumes.

**<P.Tapis>**

\*Tapis paper was suspended as of May 2, 2011.

**<DME/Dubai>**

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

\*DME/Dubai swaps should be read as "DME/Dubai" from 11th from November, 2007

<b>Assessment Window</b>	RIM's assessment window for the DME/Dubai swaps closes at 2:30 PM Tokyo time on the day of publication.
<b>Price Unit</b>	All prices are in \$/bbl.
<b>Time Window</b>	The front-month refers to the current calendar month of the day of publication. The front-month shifts to the following month on the first business day of the month.
<b>Standard Size</b>	All prices are for contracts of 25,000-500,000bbl. Prices for smaller or larger contracts are to be translated into estimated values that the prices could be if the contracts were within the standard volume.

**<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.**

<b>Assessment Window</b>	RIM's assessment window for the Murban crude OSP swaps closes at 2:30 PM Tokyo time on the day of publication.
<b>Price Unit</b>	All prices are in \$/bbl.
<b>Time Window</b>	The front-month refers to the current calendar month of the day of publication. The front-month shifts to the following month on the first business day of the month.
<b>Standard Size</b>	All prices are for contracts of 25,000-500,000bbl. Prices for smaller or larger contracts are to be translated into estimated values that the prices could be if the contracts were within the standard volume.

**<DTD/Dubai>**

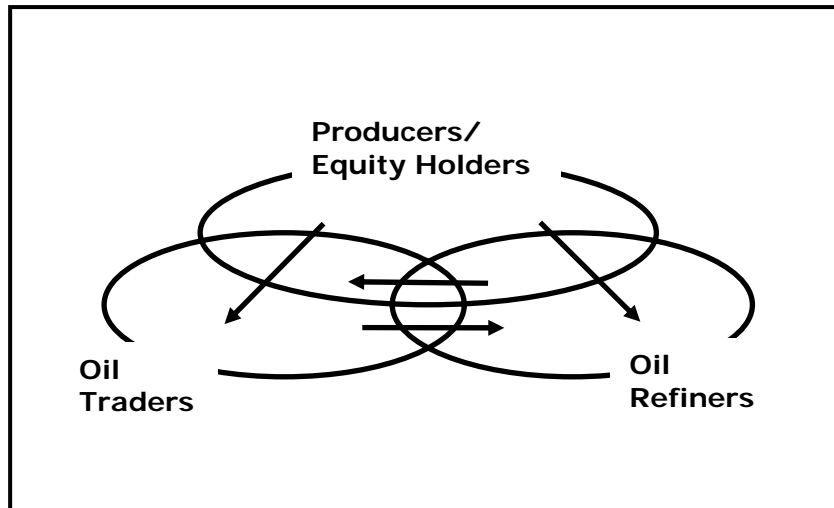
**\*The DTD/Dubai swaps contract refers to the price spread between DTD Brent swaps values and Dubai swaps values.**

<b>Assessment Window</b>	RIM's assessment window for the DTD/Dubai swaps closes at 2:30 PM Tokyo time on the day of publication.
<b>Price Unit</b>	All prices are in \$/bbl.
<b>Time Window</b>	The front-month refers to the current calendar month of the day of publication. The front-month shifts to the following month on the first business day of the month.
<b>Standard Size</b>	All prices are for contracts of 25,000-100,000bbl. Prices for smaller or larger contracts are to be translated into estimated values that the prices could be if the contracts were within the standard volume.

**PHYSICAL CRUDE**

RIM assesses spot values of AG Crude oil and Asia Crude oil by monitoring prices for certain grades transacted in the Arab Gulf market and Asian market.

**STRUCTURE of the PHYSICAL CRUDE OIL MARKET**



RIM understands that the physical crude markets are structured with three groups of business parties: Producers/Equity holders, Traders and Refiners. RIM assesses physical crude oil prices at which a standard spot transaction could take place.

RIM defines a standard physical crude oil spot market transaction as follows:

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

RIM defines the three business parties in the physical crude oil market as follows:

<b>Producer</b>	A company that produces and exports crude oil.
<b>Equity Holder</b>	A company that holds equity in oil fields from which it produces and/or sells physical crude oil into the international market.
<b>Oil Trader</b>	A company that buys and sells physical crude oil in the international market.
<b>Oil Refiner</b>	A company that buys physical crude oil as feed material to run its refining facilities.



## 1. AG Crude

RIM assesses spot values of the following grades as of 2:30 PM Tokyo time. All prices are assessed based on information collected in the course of 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.

Dubai, Oman, Murban, Lower Zakum, Umm Shaif, 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.)

### Premiums and Discounts

Premiums/discounts for each grade are to be added to official selling prices set or agreed on by governments or equivalent authorities 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:

Grade	Benchmark	Grade	Benchmark
Dubai	Whole month Dubai quote	Al Shaheen	Whole month Dubai Quote
Oman	OSP by Oman Oil & Gas Co and Whole month Dubai quote	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
Lower Zakum	OSP by Abu Dhabi National Oil Corp	Iran Light	OSP by National Iranian Oil Co
Umm Shaif	OSP by Abu Dhabi National Oil Corp	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 Marin	OSP by Qatar Petroleum	D.F condensate	Whole month Dubai Quote
L.S. condensate	Whole month Dubai Quote		

\*D.F.condensate is Deodrised Field condensate

\*L.S.condensate is Low Sulpher condensate

<b>Assessment Window</b>	RIM's assessment window for the Physical Crude <AG Crude> closes at 2:30 PM Tokyo time on the day of publication.
<b>Price Unit and structure</b>	All prices are in \$/bbl on FOB.
<b>Time Window</b>	RIM uses a discrete window for its assessment of AG crude oil. All prices are for cargoes to be loaded in the

	month after the following month of the current calendar month.
<b>Standard Size</b>	All prices are for cargoes of 500,000bbl. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were the standard volume.
<b>Loading Ports</b>	All prices are for cargoes to be loaded at main exporting ports of each grade.

## 2. Asian Crude

RIM assesses spot values of the following grades as of 2:30 PM Tokyo time. All prices are assessed based on information collected in the course of 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.

### (Indonesian Crude)

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

### (Others)

Tapis, Labuan, Thevenard, North West Shelf Condensate, Mutineer Exeter, Kutubu, Laminaria, Varanus, Gippsland, Cossack, Van Gogh, Pyrenees, Le Gendre, Seria Light, Daqing, Nanhai Light, Xi Jiang, Panyu, Enfield, Sty Barrow, Vincent, Bach Ho, Rang Dong, Su Tu Den

### Premiums and Discounts

Premium/discount for each grade is to be added to the Indonesian Crude Price (ICP), DTD Brent and the official selling prices set or agreed on by the Chinese and Vietnamese 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 trade lacks a prevailing fixed price, reporters may use crude swaps values available in the market to assess the outright values of crude oil.

Grade	Benchmark	Grade	Benchmark
<b>Indonesian Crude</b>	OSP by Pertamina (Indonesia Crude Price)	<b>Griffin</b>	Suspended from Sep 2010
<b>Tapis</b>	Dated Brent	<b>Seria Light</b>	None
<b>Labuan</b>	Dated Brent	<b>Le Gendre</b>	Dated Brent
<b>Thevenard</b>	Dated Brent	<b>Benchamas</b>	suspended from Oct 2008

<b>NWS Condensate</b>	Dated Brent	<b>Daqing</b>	OSP by the Chinese government
<b>Kutubu</b>	Dated Brent	<b>Nanghai Light</b>	Dated Brent
<b>Laminaria</b>	Dated Brent	<b>Xi Jiang</b>	OSP Minas by Pertamina (Indonesia Crude Price)
<b>Varanus</b>	Dated Brent	<b>Panyu</b>	OSP Minas by Pertamina (Indonesia Crude Price)
<b>Gippsland</b>	Dated Brent	<b>Bach Ho</b>	OSP by the Vietnamese government
<b>Cossack</b>	Dated Brent	<b>Rang Dong</b>	OSP by the Vietnamese government
<b>Mutineer Exeter</b>	Dated Brent	<b>Su Tu Den</b>	Minas quotation
<b>Enfield</b>	Dated Brent	<b>Sty Barrow</b>	Dated Brent
<b>Vincent</b>	Dated Brent	<b>Van Gogh</b>	Dated Brent
<b>Pyrenees</b>	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)**

<b>Crude grades of the basket price</b>	
<b>ILCB</b>	The average price of Belida, Attaka, Handil Mix
<b>IMCB</b>	The average price of Minas, Cinta, Widuri
<b>IMHCB</b>	The average price of Minas, Cinta, Widuri and Duri

**< RIM Special Crude Basket Price >**

- **Crude Basket Price for China Products (BPCP)**

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

<b>Assessment Window</b>	RIM's assessment window for Physical Crude <Asia Crude> closes at 2:30 PM Tokyo time on the day of publication.
<b>Price Unit and structure</b>	All prices are in \$/bbl FOB.
<b>Time Window</b>	RIM uses a discrete window for its assessment of Asian crude oil. During the period from the first day to the 15th of the month, all prices are for cargoes to be loaded in the following month of the current calendar month. During the period from the 16th to the last day of the month, all prices are for cargoes to be loaded in the month after the following month of the current calendar month.
<b>Standard Size</b>	All prices are for cargoes of 200,000-600,000bbl. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were within the standard volumes.
<b>Loading Ports</b>	All prices are for cargoes to be loaded at main exporting ports of each grade

### 3. African Crude

RIM assesses spot values of the following grades as of 2:30 PM Tokyo time. All prices are assessed based on information collected in the course of 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.

**Bonny Light, Brass River, Qua Iboe, Agbami, Cabinda, Djeno, Girassol, Hungo, Nemba, Dalia, Zafiro, 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, Zafiro and Dar Blend are to 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, Zafiro and Dar Blend are comprised of two components; premiums or discounts and dated Brent crude values. The outright price for Nile Blend is comprised premiums or discounts and Minas ICP. These are indicated in the table below:

<b>Grade</b>	<b>Benchmark</b>	<b>Grade</b>	<b>Benchmark</b>
<b>Bonny Light</b>	Dated Brent	<b>Girassol</b>	Dated Brent
<b>Brass River</b>	Dated Brent	<b>Hungo</b>	Dated Brent
<b>Cabinda</b>	Dated Brent	<b>Nile Blend</b>	ICP Minas by Pertamina

<b>Djeno</b>	Dated Brent	<b>Dar Blend</b>	Dated Brent
<b>Nemba</b>	Dated Brent	<b>Qua Iboe</b>	Dated Brent
<b>Agbami</b>	Dated Brent	<b>Dalia</b>	Dated Brent
<b>Zafiro</b>	Dated Brent		

<b>Assessment Window</b>	RIM's assessment window for the Physical Crude <Africa> closes at 2:30 PM Tokyo time on the day of publication.
<b>Price Unit and structure</b>	All prices are in \$/bbl on FOB.
<b>Time Window</b>	RIM uses a discrete window for its assessment of African crude oil. During the period from the first day to the 20th of the month, all prices are for cargoes to be loaded in the following month of the current calendar month. During the period 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 of the current calendar month.
<b>Standard Size</b>	All prices (Bonny Light, Brass River, Qua Iboe, Agbami, Cabinda, Djeno, Girassol, Hungo, Nemba, Dalia and Zafiro) are for cargoes of 950,000bbl. A price of Nile Blend and Dar Blend cargoes of 600,000bbl to 1,000,000 bbl. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were the standard volume.
<b>Loading Ports</b>	All prices (Bonny Light, Brass River, Qua Iboe, Agbami, Cabinda, Djeno, Girassol, Hungo, Nemba, Dalia, Zafiro, Nile Blend and Dar Blend) are for cargoes to be loaded at main exporting ports of each grade.

#### 4. Other crude

**RIM assesses spot values of the following grade as of 2:30 PM Tokyo time. The price is assessed based on information collected in the course of market research by RIM reporters each business day.**

#### **Sokol, Vityaz and ESPO**

##### **Premiums and Discounts**

Premiums/discounts for Sokol and Vityaz are to whole month Dubai quote value on CFR Yosu, South Korea. For ESPO, it is to whole month Dubai quote value on FOB Kozmino, Russia.

##### **Outright Values**

The outright price for Sokol and Vityaz are comprised of two components; premiums or discounts and whole month Dubai quote. It is indicated in the table below:

Grade	Benchmark	price structure
Sokol	Whole month Dubai quote	CFR Yosu
Vityaz	Whole month Dubai quote	CFR Yosu*
ESPO	Whole month Dubai quote	FOB Kozmino

**\*The assessments for Vityaz are based on CFR Yosu, but in case that deals or talks for other destinations are heard, RIM will assess the crude, considering the freight differentials between Yosu and the discharging ports.**  
**\*ESPO is East Siberian Pipeline Oil.**

<b>Assessment Window</b>	RIM's assessment window for the Physical Crude <other area> closes at 2:30 PM Tokyo time on the day of publication.
<b>Price Unit and structure</b>	For Sokol and Vityaz, the price is in \$/bbl on CFR Yosu. For ESPO, the price is on FOB Kozmino
<b>Time Window</b>	RIM uses a discrete window for its assessment of other crude (Sokol, Vityaz and ESPO). The price is for cargo to be loaded in the month after the following month of the current calendar month.
<b>Standard Size</b>	The price is for cargoes of 680,000 to 730,000bbl. Prices for smaller or larger cargo are to be translated into estimated values that the prices could be if the cargoes were the standard volume.
<b>Loading Ports</b>	The price is for cargo to be loaded at main exporting port of the grade.

## Azeri, Urals

### Premiums and Discounts

Premiums/discounts for Azeri are to dated Brent crude values on CFR South East Asia, including Indonesia and Thailand. For Urals, it is to dated Brent crude values on CFR North East Asia, including Japan, South Korea and China.

### Outright Values

The outright price for Azeri and Urals are comprised of two components; premiums or discounts and dated Brent crude values. It is indicated in the table below:

Grade	Benchmark	price structure
Azeri	Dated Brent	CFR South East Asia*
Urals	Dated Brent	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 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 both Azeri and Urals, in case that deals or talks on FOB Mediterranean**

**Sea and North West Europe (in case of Urals) are heard, RIM will assess the crude on CFR, adding the freight cost from the Mediterranean Sea.**

<b>Assessment Window</b>	RIM's assessment window for the Physical Crude <other area> closes at 2:30 PM Tokyo time on the day of publication.
<b>Price Unit and structure</b>	For Azeri, the price is in \$/bbl on CFR South East Asia. For Urals, the price is on CFR North East Asia.
<b>Time Window</b>	RIM uses a discrete window for its assessment of other crude (Azeri and Urals). The price is for cargo to be delivered in the month after the following month of the current calendar month.
<b>Standard Size</b>	The price is for cargoes of 1-mil to 2-mil bbl. Prices for smaller or larger cargo are to be translated into estimated values that the prices could be if the cargoes were the standard volume.
<b>Loading Ports</b>	The price is for cargo to be loaded at main exporting port of the grade in the Mediterranean Sea and North West Europe (in case of Urals).