RIM INTELLIGENCE CO.

Products Assessment Methodology

Updated Oct 3 2016

Changes and Modifications on items in Asia Bunker Fuel Oil:

1. Methodology to date for FOB South Korea spot gasoil prices stated that Rim assessed gasoil with varying levels of sulfur content. Among the grades listed was sulfur content of 0.2% … that was incorrect. Rim assesses spot prices for gasoil on an FOB Korea basis with sulfur content of 0.001%, 0.05%, 0.3% and 0.5%. Differentials are to the daily assessment for Singapore paper swaps.

2. Methodology to date for FOB Taiwan spot gasoil prices stated that Rim assessed gasoil with varying levels of sulfur content. Among the grades listed was sulfur content of 0.2% … that was incorrect. Rim assesses spot prices for gasoil on an FOB Korea basis with sulfur content of 0.001%, 0.05%, 0.25% and 0.5%. Differentials are to the daily assessment for Singapore paper swaps.

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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 maintained 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 Principle for Products Report

Price Assessment Principle for Products 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.

A month is divided into two half-months:
First half (H1): first 15 days of the month
Second half (H2): all days after the 15th of the month

Rim uses either barrel (bbl) or metric ton (mt) as units for measurements of transactions based on oil products. Prices are shown in $/bbl or $/mt.

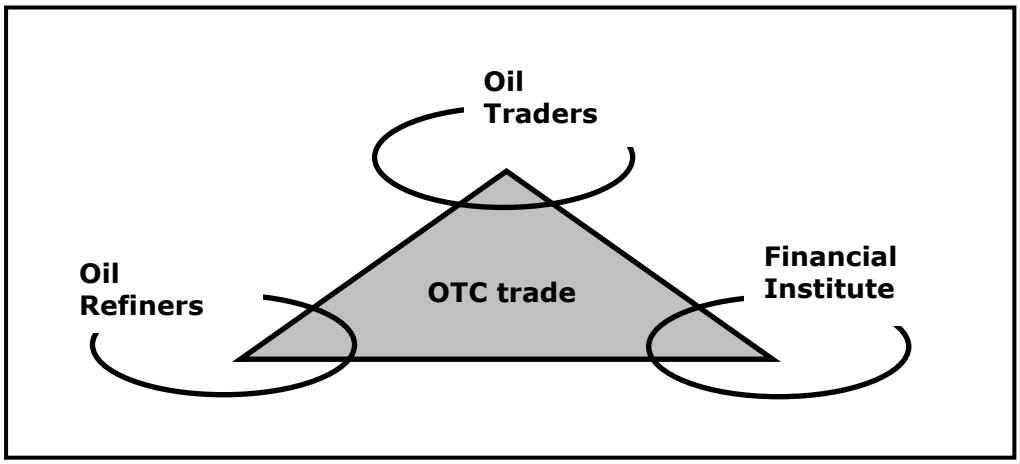
- Gasoline, jet fuel/kerosene, gasoil and A-fuel oil prices are $/bbl.
- Naphtha prices loading in Singapore are $/bbl; Japan delivered prices is $/mt.
- Fuel oil, LSWR, and bunker fuel prices are $/mt.

Volume
Volume is defined below according to grades and loading ports.
Rim Intelligence Co, hereafter referred to as Rim, defines the conversion between barrels and metric tons as follows after taking into consideration actual trading conditions.

- MR-size cargo (200,000-300,000bbl or 30,000-35,000mt)
- SR-size cargo (30,000-50,000bbl or 5,000-6,000mt)
- LR-size cargo (500,000-800,000bbl or 80,000-100,000mt)

SINGAPORE PRODUCTS PAPER SWAPS VALUES

STRUCTURE of the SINGAPORE PRODUCTS PAPER SWAP MARKETS



Rim understands that the Singapore Products Paper Swaps market is structured with three groups of business parties: Financial Institutes, Oil Traders and Oil Refiners. Rim assesses values of Singapore Products Paper Swaps at which a standard transaction could take place through "over-the-counter" method of trade. Trade takes place as buying interest and selling interest match with each other.

Rim defines the three Singapore Products Paper Swaps market business parties as follows:

Oil Trader	A company that trades physical oil products as its main trading item and the Singapore Products Paper Swaps as a hedging tool against risks associated with its trading of physical oil products.
Oil Refiner	A company that produces and sells oil products as its main business operation and trades the Singapore Products Paper Swaps as a hedging tool against risks associated with its production and sales of physical oil products. Oil refiners also buy oil products to cover occasional shortfalls and trade the Singapore Products Paper Swaps to hedge against risks associated with purchases of physical oil products.
Financial Institute	A company that trades the Singapore Products Paper Swaps as one of its trading items. A Financial Institute that trades the Singapore Products Paper Swaps typically holds positions in physical oil products markets as well.

Rim assesses values of Singapore products paper swaps (Naphtha, Kerosene<jet fuel/kerosene>,regrade, 0.05% sulfur gasoil, 180cst 3.5% sulfur fuel oil and 380cst 3.5% sulfur fuel oil) once a day at 17:30 Tokyo time. All values are for available swaps contracts for settlements based on daily price quotations for physical cargo assessments. All prices are assessed based on information collected in the course of market research by Rim reporters each business day.

Assessment Window	Rim's assessment window for Singapore products paper swaps values closes at 17:30 Tokyo time.
Price Unit	Values for naphtha, jet fuel/kerosene, regrade and gasoil are $/bbl on an FOB Singapore basis. Values for 180cst and 380cst 3.5%S are $/mt on an FOB Singapore basis.
Time Window	Rim assesses values of Singapore products paper swaps for three forward months. The front month starts from 20 days before the 1st day of the next month. Ex: the January swaps contract is no longer assessed on Jan 12.
Standard Size	Values of naphtha, jet fuel/kerosene, regrade and gasoil paper swaps are for a contract for 50,000bbl, and values of fuel oil paper swaps are for a contract for 5,000mt, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.

SINGAPORE CRACK MARGINS

Rim assesses values of Singapore crack margins (Naphtha, Kerosene<jet fuel/kerosene>, 0.05% sulfur gasoil, 180cst 3.5% sulfur fuel oil and 380cst 3.5% sulfur fuel oil) once a day at 17:30 Tokyo time. All values are for available crack margins for settlements based on daily price quotations for physical cargo assessments. All prices are assessed based on information collected in the course of market research by Rim reporters each business day.

Paper Swaps values for oil products – Paper Swaps values for Dubai crude oil
= Products crack margins

Paper Swaps values for Dubai crude oil are decided in the course of market research by Rim reporters each business day as of 17:30 Tokyo time and are updated on the English Website of Rim Intelligence.

Assessment Window	Rim's assessment window for Singapore products crack margins closes at 17:30 Tokyo time.
Price Unit	Values for naphtha, jet fuel/kerosene and gasoil are $/bbl on an FOB Singapore basis. Values for 180cst and 380cst 3.5%S are translated into $/bbl.
Time Window	Rim assesses values of Singapore products crack margins for three forward months. The front month starts from 20 days before the 1st day of the next month. Ex: the January swaps contract is no longer assessed on Jan 12.
Standard Size	Values of naphtha, jet fuel/kerosene, and gasoil crack margins are for a contract for 50,000bbl, and values of fuel oil crack margins are for a contract for 5,000mt, which Rim considers standard. Values of fuel oil are shown in terms of $/bbl by dividing 6.5. Values for contracts for smaller or larger volumes may be considered.

Rim FOB Singapore Oil Products Price Assessment Methodology

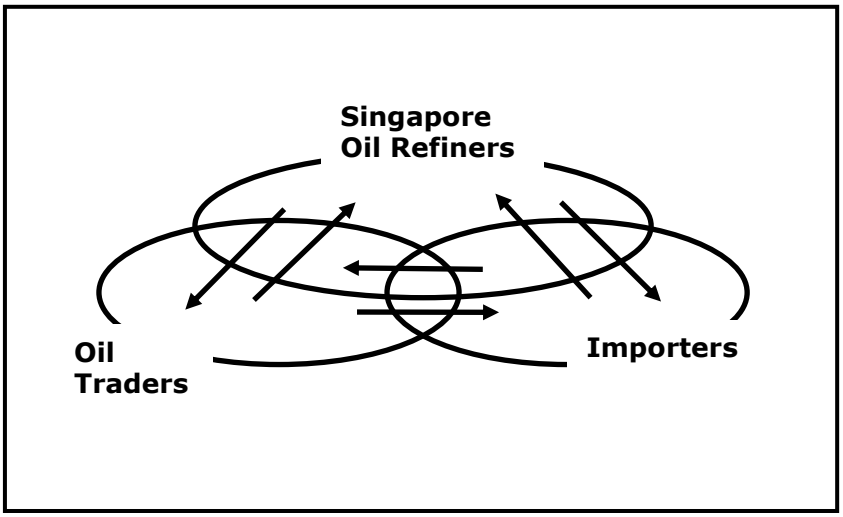
FOB SINGAPORE SPOT PRICES

Rim assesses FOB Singapore spot prices for physical cargoes of gasoline, naphtha, jet fuel/kerosene, gasoil, and fuel oil on a fixed price basis and a floating price basis.

In the absence of information of deals, bids and offers on a fixed price basis, the fixed price assessments indicate the price range in which a transaction on a floating price basis could be locked into with available derivative products, such as futures contracts and paper swaps based on periodical average of published quotations.

All prices are assessed based on information collected in the course of market research by Rim reporters each business day.

STRUCTURE of the FOB SINGAPORE SPOT MARKET



Rim understands that the FOB Singapore Physical Oil Products Market is structured with three groups of business parties: Singapore oil refiners, Oil traders and Asian importers/refiners. Rim assesses physical oil product prices at which a standard spot transaction could take place.

Rim defines the three business parties in the FOB Singapore Physical Oil Products Market as follows:

Singapore Refiner	A company that produces and sells oil products at its refining facilities in Singapore, and also buys oil products to cover occasional shortfalls.
Oil Trader	A company that buys and sells oil products in the international market.
Importer	A company outside of Singapore that buys on an FOB Singapore basis for resale into respective domestic markets. Refiners of countries other than Singapore are also considered to be importers.

Rim defines a standard FOB Singapore spot market transaction as follows:

Case 1	A Singapore refiner sells an oil products cargo to a trader on a spot basis.
Case 2	A Singapore refiner sells an oil products cargo to an importer on a spot basis.
Case 3	A Singapore refiner sells an oil products cargo to another Singapore refiner on a spot basis.
Case 4	A trader sells an oil products cargo to a Singapore refiner on a spot basis.
Case 5	A trader sells an oil products cargo to an importer on a spot basis.
Case 6	A trader sells an oil products cargo to another trader on a spot basis.
Case 7	An importer sells an oil products cargo to a Singapore refiner on a spot basis.
Case 8	An importer sells an oil products cargo to a trader on a spot basis.
Case 9	An importer sells an oil products cargo to another importer on a spot basis.

Gasoline
Rim assesses FOB Singapore spot gasoline prices for 92 research octane number (RON) grade, 95 RON grade and 97 RON grade. The premiums are to daily assessments for FOB Singapore spot 92 RON prices. Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore 92RON = Fixed Value
*Fixed Value of 92RON does not contain premium.

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for FOB Singapore spot gasoline prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB Singapore spot gasoline prices are $/bbl.</td></tr>
<tr><td>Time Window</td><td>FOB Singapore spot gasoline prices are for cargoes to be loaded during the period from 20 to 35 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB Singapore spot gasoline prices are for an MR-size cargo, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Loading Port</td><td>FOB Singapore spot gasoline prices are for cargoes to be loaded at major ports in Singapore.</td></tr>
<tr><td>Quality Specifications</td><td>FOB Singapore spot gasoline prices are for cargoes of which quality is equivalent to the following specifications.
<table>
<tr><td colspan="2">Research Octane Number</td><td>92, 95, 97</td></tr>
<tr><td colspan="2">Lead Content</td><td>Max 0.013gpb/l</td></tr>
<tr><td rowspan="5">Distillation Temperature;</td><td>10% evaporated</td><td>Max 74 degree C</td></tr>
<tr><td>50%</td><td>Max 127 degree C</td></tr>
<tr><td>90%</td><td>Max 190 degree C</td></tr>
<tr><td>Final Boiling Point</td><td>Max 225 degree C</td></tr>
<tr><td>Residue</td><td>Max 2.0%</td></tr>
<tr><td colspan="2">Copper Corrosion 3h at 50 degree C</td><td>Max 1</td></tr>
<tr><td colspan="2">Sulfur Content</td><td>Max 0.05%</td></tr>
<tr><td colspan="2">Existent Gum</td><td>Max 4mg/100ml</td></tr>
<tr><td colspan="2">Benzene Content</td><td>Max 5%</td></tr>
<tr><td colspan="2">MTBE Content</td><td>Max 10%</td></tr>
<tr><td colspan="2">Color</td><td>Undyed, orange</td></tr>
</table>
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Naphtha
FOB Singapore spot naphtha prices are calculated based on Rim CFR Japan spot naphtha price assessments. The formula is as follows:

FOB Singapore spot naphtha prices =
CFR Japan naphtha/9–*freight rates for the Singapore-Japan route)
*The freight rates are for an MR tanker on the Singapore-Japan route.

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim's assessment window for FOB Singapore spot naphtha prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB Singapore spot naphtha prices are $/bbl.</td></tr>
<tr><td>Time Window</td><td>FOB Singapore spot naphtha prices in the publications released during H1 of a month are for cargoes to be loaded during the period from the 9th to the 24th of the next month. FOB Singapore spot naphtha prices in the publications released during H2 of a month are for cargoes to be loaded during the period from the 25th of the next month to the 8th of a month after the next.</td></tr>
<tr><td>Standard Size</td><td>FOB Singapore spot naphtha prices are for MR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Delivery Port</td><td>FOB Singapore spot naphtha prices are for cargoes to be loaded at major ports in Singapore.</td></tr>
<tr><td>Quality Specifications</td><td>FOB Singapore spot naphtha prices are for cargoes of which quality is equivalent to "the open specifications".

<table><tr><td>Paraffin Content</td><td>Min 65%</td></tr><tr><td>Sulfur Content</td><td>Max 0.065%</td></tr><tr><td>Olefin Content</td><td>Max 1%</td></tr><tr><td>Specific Gravity at 60 degree F</td><td>0.65-0.74</td></tr></table>Extract from the open specification
*Specifications for other properties are to meet specifications that are commonly required in international trading.

REFERENCE: Full-range naphtha<table><tr><td>Paraffin Content</td><td>78-82%</td></tr><tr><td>Olefin Content</td><td>Max 1%</td></tr><tr><td>Specific Gravity at 60 degree F</td><td>0.68-0.70</td></tr></table></td></tr>
</table>

Jet fuel/Kerosene
Rim assesses FOB Singapore spot jet fuel/kerosene prices. The premiums are to the daily assessment for Singapore paper swaps values. Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for FOB Singapore spot jet fuel/kerosene prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB Singapore spot jet fuel/kerosene prices are $/bbl.</td></tr>
<tr><td>Time Window</td><td>FOB Singapore spot jet fuel/kerosene prices are for cargoes to be loaded during the period from 20 to 35 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB Singapore spot jet fuel/kerosene prices are for MR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Delivery Port</td><td>FOB Singapore spot jet fuel/kerosene prices are for cargoes to be loaded at major ports in Singapore.</td></tr>
<tr><td>Quality Specifications</td><td>FOB Singapore spot jet fuel/kerosene prices are for cargoes of which quality is equivalent to the Joint Fuel System Check List, also known as Jet A-1 Check List. The JFSCL is issued by International Air Transport Association.

<table><tr><td>Distillation Temperature;
Initial Boiling Point
10% Evaporated</td><td>Max 205 degree C</td></tr><tr><td>Flash Point</td><td>Min 37 degree C</td></tr><tr><td>Sulfur Content</td><td>Max 0.3%</td></tr><tr><td>Smoke Point with naphthalene content of maximum 3.0%</td><td>Minimum 19mm</td></tr><tr><td>Copper corrosion 2h at 100 degree C</td><td>Maximum 1.0</td></tr><tr><td>Saybolt color</td><td>Minimum 18</td></tr></table>Extract from IATA’s JFSCL
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Gasoil

Rim assesses FOB Singapore spot gasoil prices for grades with a sulfur content of 0.001%, 0.05% and 0.5%. The premiums are to the daily assessment for Singapore paper swaps value (0.05%S gasoil). Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for FOB Singapore spot gasoil prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB Singapore spot gasoil prices are $/bbl.</td></tr>
<tr><td>Time Window</td><td>FOB Singapore spot gasoil prices are for cargoes to be loaded during the period from 20 to 35 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB Singapore spot gasoil prices are for MR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Delivery Port</td><td>FOB Singapore spot gasoil prices are for cargoes to be loaded at major ports in Singapore.</td></tr>
<tr><td>Quality Specifications</td><td>FOB Singapore spot gasoil prices are for cargoes of which quality is equivalent to the following specifications.

<table>
<tr><td colspan="2">Flash Point</td><td>Min 60 degree C</td></tr>
<tr><td colspan="2">Distillation Temperature; 90% evaporated</td><td>Max 360 degree C</td></tr>
<tr><td colspan="2">Pour Point</td><td>Max 5 degree C</td></tr>
<tr><td colspan="2">Cold Filter Plugging Point</td><td>Max –1 degree C</td></tr>
<tr><td colspan="2">Carbon Residue (10% btms)</td><td>Max 0.1%</td></tr>
<tr><td colspan="2">Cetane Index</td><td>Min 48</td></tr>
<tr><td colspan="2">Kinematic Viscosity at 40 degree C</td><td>Max 4.5 mm2/sec</td></tr>
<tr><td rowspan="3">Sulfur Content</td><td>0.001%S</td><td>Max 0.001%</td></tr>
<tr><td>0.05%S</td><td>Max 0.05%</td></tr>
<tr><td>0.5%S</td><td>Max 0.5%</td></tr>
</table>
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Fuel Oil

Rim assesses FOB Singapore spot fuel oil prices for the following grades; 180cst 3.5%S fuel oil and 380cst 3.5%S fuel oil. The premiums are to the daily assessments for Singapore paper swaps values (180cst and 380cst, respectively). Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for FOB Singapore spot fuel oil prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB Singapore spot fuel oil prices are $/mt.</td></tr>
<tr><td>Time Window</td><td>FOB Singapore spot fuel oil prices are for cargoes to be loaded during the period from 20 to 35 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB Singapore spot fuel oil prices are for MR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Delivery Port</td><td>FOB Singapore spot fuel oil prices are for cargoes to be loaded at major ports in Singapore.</td></tr>
<tr><td>Quality Specifications</td><td>FOB Singapore spot fuel oil prices are for cargoes of which quality is equivalent to the following specifications.

<table>
<tr><td>Sulfur Content</td><td>HSFO</td><td>Max 3.5%</td></tr>
<tr><td>Flash Point</td><td>All Grades</td><td>Min 66 degree C</td></tr>
<tr><td>Pour Point</td><td>All Grades</td><td>Max 24 degree C</td></tr>
<tr><td rowspan="2">Carbon Residue</td><td>180cst</td><td>Max 16%</td></tr>
<tr><td>380cst</td><td>Max 18%</td></tr>
<tr><td>Water Content</td><td>All Grades</td><td>Max 0.5%</td></tr>
<tr><td>Ash Content</td><td>All Grades</td><td>Max 0.1%</td></tr>
</table>
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Rim FOB South Korea Oil Products Price Assessment Methodology

FOB SOUTH KOREA SPOT PRICES

Rim assesses FOB South Korea spot prices for MR-size cargoes and SR-size cargoes. Grades that are assessed are as follows:

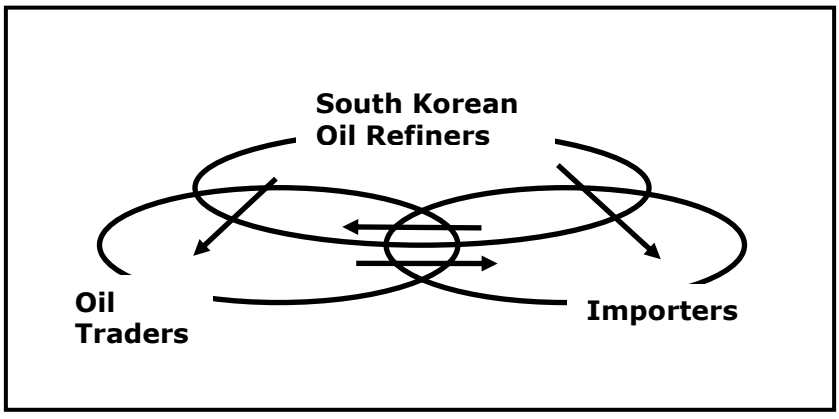
MR-size cargo	SR-size cargo
92RON gasoline	91RON gasoline
92RON gasoline for blending purpose	Kerosene
Jet fuel/Kerosene	Gasoil-0.001%S
Gasoil-0.001%S	A-fuel oil
Gasoil-0.05%S	LS A-fuel oil
Gasoil-0.3%S	LSFO-0.3%S
Gasoil-0.5%S	
Fuel oil-3.5%S (380cst)	
LSFO-0.3%S	

In the absence of information of deals, bids and offers on a fixed price basis, the fixed price assessments indicate the price range in which a transaction on a floating price basis could be locked into with available derivative products, such as futures contracts and paper swaps values.

All prices are assessed based on information collected in the course of market research by Rim reporters each business day.

MR-size Cargo Price Assessment

STRUCTURE of the FOB SOUTH KOREA MR-size CARGO MARKET



Rim understands that the FOB South Korea MR-size cargo oil products market is structured with three groups of business parties: South Korean oil refiners, Oil traders and Importers. Rim assesses FOB South Korea MR-size cargo prices at which a standard spot transaction could take place.

Rim defines the three business parties in the FOB South Korea oil products market as follows:

South Korean Refiner	A company of South Korea that produces and exports oil products at/from its refining facilities in South Korea.
Oil Trader	A company that buys and sells oil products in the international market.
Importer	A company that imports oil products and resell into domestic markets. Refiners of countries other than South Korea are also considered to be importers.

Rim defines a standard FOB South Korea MR-size cargo spot market transaction as follows:

Case 1	A South Korean refiner sells an oil products cargo to a trader on a spot basis.
Case 2	A South Korean refiner sells an oil products cargo to an importer on a spot basis.
Case 3	A South Korean refiner sells an oil products cargo to another South Korean refiner on a spot basis.
Case 4	A trader sells an oil products cargo to a South Korean refiner on a spot basis.
Case 5	A trader sells an oil products cargo to an importer on a spot basis.
Case 6	A trader sells an oil products cargo to another trader on a spot basis.
Case 7	An importer sells an oil products cargo to a South Korean refiner on a spot basis.
Case 8	An importer sells an oil products cargo to a trader on a spot basis.
Case 9	An importer sells an oil products cargo to another importer on a spot basis.

Gasoline

Rim assesses FOB South Korea spot gasoline prices for MR-size cargoes of the 92 research octane number grade. The premiums are to the daily assessment for FOB Singapore spot 92RON gasoline prices. Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore 92RON Gasoline Prices = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for FOB South Korea spot gasoline prices for MR-size cargoes closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB South Korea spot gasoline prices are $/bbl.</td></tr>
<tr><td>Time Window</td><td>FOB South Korea spot gasoline prices for MR-size cargoes are for cargoes to be loaded during the period from 25 to 40 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB South Korea spot gasoline prices are for MR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Loading Port</td><td>FOB South Korea spot gasoline prices are for cargoes to be loaded at major ports in South Korea.</td></tr>
<tr><td>Quality Specifications</td><td>FOB South Korea spot gasoline prices are for cargoes of which quality is equivalent to the following specifications.
<table>
<tr><td colspan="2">Lead Content</td><td>Max 0.013gpb/l</td></tr>
<tr><td colspan="2">Density at 15 degree C</td><td>Min 0.72～0.74 mg/cm3</td></tr>
<tr><td rowspan="4">Distillation Temperature</td><td>10% evaporated</td><td>Max 70 degree C</td></tr>
<tr><td>50% evaporated</td><td>Max 125 degree C</td></tr>
<tr><td>90% evaporated</td><td>Max 175 degree C</td></tr>
<tr><td>Final Boiling Point</td><td>Max 225 degree C</td></tr>
<tr><td colspan="2">Residue</td><td>Max 2.0%</td></tr>
<tr><td colspan="2">Copper Corrosion 3h at 50 degree C</td><td>Max 1</td></tr>
<tr><td colspan="2">Sulfur Content</td><td>0.001%-0.05%</td></tr>
<tr><td colspan="2">Vapor Pressure at 37.8 degree C</td><td>MAX 10</td></tr>
<tr><td colspan="2">Existent Gum</td><td>Max 5mg/100ml</td></tr>
<tr><td colspan="2">Benzene Content</td><td>Max 1%</td></tr>
</table>
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Jet fuel/Kerosene

Rim assesses FOB South Korea spot jet fuel/kerosene prices for MR-size cargoes. The premiums are to the daily assessment for Singapore paper swaps values. Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim's assessment window for FOB South Korea spot jet fuel/kerosene prices for MR-size cargoes closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB South Korea spot jet fuel/kerosene prices are $/bbl.</td></tr>
<tr><td>Time Window</td><td>FOB South Korea spot jet fuel/kerosene prices are for cargoes to be loaded during the period from 25 to 40 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB South Korea spot jet fuel/kerosene prices are for MR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Delivery Port</td><td>FOB South Korea spot jet fuel/kerosene prices are for cargoes to be loaded at major ports in South Korea.</td></tr>
<tr><td>Quality Specifications</td><td>FOB South Korea spot jet fuel/Kerosene prices are for cargoes of which quality is equivalent to the Joint Fuel System Check List, also known as Jet A-1 Check List. The JFSCL is issued by International Air Transport Association.

<table>
<tr><td>Distillation Temperature;
Initial Boiling Point
10% Evaporated</td><td>Max 205 degree C</td></tr>
<tr><td>Flash Point</td><td>Min 37 degree C</td></tr>
<tr><td>Sulfur Content</td><td>Max 0.3%</td></tr>
<tr><td>Smoke Point with naphthalene content of maximum 3.0%</td><td>Minimum 19mm</td></tr>
<tr><td>Copper corrosion 2h at 100 degree C</td><td>Maximum 1.0</td></tr>
<tr><td>Saybolt color</td><td>Minimum 18</td></tr>
</table>

Extract from IATA's JFSCL
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Gasoil

Rim assesses FOB South Korea spot gasoil prices for MR-size cargoes of the grades with a sulfur content of 0.001%, 0.05%, 0.3% and 0.5%. The premiums are to the daily assessment for Singapore paper swaps values (0.05%S gasoil). Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for FOB South Korea spot gasoil prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB South Korea spot gasoil prices are $/bbl.</td></tr>
<tr><td>Time Window</td><td>FOB South Korea spot gasoil prices are for cargoes to be loaded during the period from 25 to 40 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB South Korea spot gasoil prices are for MR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Loading Port</td><td>FOB South Korea spot gasoil prices are for cargoes to be loaded at major ports in South Korea.</td></tr>
<tr><td>Quality Specifications</td><td>FOB South Korea spot gasoil prices are for cargoes of which quality is equivalent to the following specifications.
<table>
<tr><td colspan="2">Flash Point</td><td>Min 60 degree C</td></tr>
<tr><td colspan="2">Distillation Temperature; 90% evaporated</td><td>Max 360 degree C</td></tr>
<tr><td colspan="2">Pour Point</td><td>Max 5 degree C</td></tr>
<tr><td colspan="2">Cold Filter Plugging Point</td><td>Max –1 degree C</td></tr>
<tr><td colspan="2">Carbon Residue (10% btms)</td><td>Max 0.1%</td></tr>
<tr><td colspan="2">Cetane Index</td><td>Min 48</td></tr>
<tr><td colspan="2">Kinematic Viscosity at 40 degree C</td><td>Max 4.5 mm2/sec</td></tr>
<tr><td rowspan="4">Sulfur Content</td><td>0.001%S</td><td>Max 0.001%</td></tr>
<tr><td>0.05%S</td><td>Max 0.05%</td></tr>
<tr><td>0.3%S</td><td>Max 0.3%</td></tr>
<tr><td>0.5%S</td><td>Max 0.5%</td></tr>
</table>
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Fuel Oil
Rim assesses FOB South Korea spot fuel oil prices for MR-size cargoes of the two grades; 380cst with a sulfur content of 3.5% and fuel oil with a sulfur content of 0.3%. The premiums for 3.5%S are to the daily assessment for Singapore paper swaps values (380cst) and those for 0.3%S are to the daily assessment for Singapore paper swaps values (180cst).

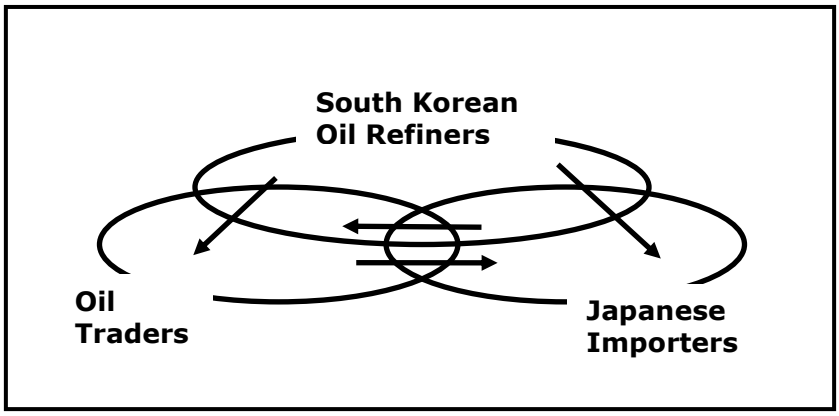
Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for FOB South Korea spot fuel oil prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB South Korea spot fuel oil prices are $/mt.</td></tr>
<tr><td>Time Window</td><td>FOB South Korea spot fuel oil prices are for cargoes to be loaded during the period from 25 to 40 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB South Korea spot fuel oil prices are for MR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Loading Port</td><td>FOB South Korea spot fuel oil prices are for cargoes to be loaded at major ports in South Korea.</td></tr>
<tr><td>Quality Specifications</td><td>FOB South Korea spot fuel oil prices are for cargoes of which quality is equivalent to the following specifications.
<table>
<tr><td rowspan="2">Sulfur Content</td><td>HSFO</td><td>Max 3.5%</td></tr>
<tr><td>LSFO</td><td>Max 0.3%</td></tr>
<tr><td>Flash Point</td><td>All Grades</td><td>Min 66 degree C</td></tr>
<tr><td>Kinematic Viscosity at 50 degree C</td><td>All Grades</td><td>Max 380cst</td></tr>
<tr><td>Pour Point</td><td>All Grades</td><td>Max 24 degree C</td></tr>
<tr><td>Carbon Residue</td><td>All Grades</td><td>Max 16%</td></tr>
<tr><td>Water Content</td><td>All Grades</td><td>Max 0.5%</td></tr>
<tr><td>Ash Content</td><td>All Grades</td><td>Max 0.1%</td></tr>
<tr><td colspan="3">*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table></td></tr>
</table>

SR-size Cargo Price Assessment

STRUCTURE of the FOB SOUTH KOREA SR-size CARGO MARKET



Rim understands that the FOB South Korea SR-size cargo oil products market is structured with three groups of business parties: South Korean oil refiners, Oil traders and Japanese importers. Rim assesses FOB South Korea SR-size cargo prices at which a standard spot transaction could take place.

Rim defines the three business parties in the FOB South Korea oil products market as follows:

South Korean Refiner	A company of South Korea that produces and exports oil products at/from its refining facilities in South Korea.
Oil Trader	A company that buys and sells oil products in the international market.
Japanese Importer	A Japanese company, such as trading houses and refiners, that imports oil products and resell into domestic markets.

Rim defines a standard FOB South Korea SR-size cargo spot market transaction as follows:

Case 1	A South Korean refiner sells an oil products cargo to a trader on a spot basis.
Case 2	A South Korean refiner sells an oil products cargo to a Japanese importer on a spot basis.
Case 3	A South Korean refiner sells an oil products cargo to another South Korean refiner on a spot basis.
Case 4	A trader sells an oil products cargo to a South Korean refiner on a spot basis.
Case 5	A trader sells an oil products cargo to a Japanese importer on a spot basis.
Case 6	A trader sells an oil products cargo to another trader on a spot basis.
Case 7	A Japanese importer sells an oil products cargo to a South Korean refiner on a spot basis.
Case 8	A Japanese importer sells an oil products cargo to a trader on a spot basis.
Case 9	A Japanese importer sells an oil products cargo to another Japanese importer on a spot basis.

Gasoline

Rim assesses FOB South Korea spot gasoline prices for SR-size cargo of the 91 research octane number (RON) grade. The premiums are to the daily assessment for FOB Singapore spot 92RON gasoline prices. Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore 92RON Gasoline Prices = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for FOB South Korea spot gasoline prices for small-tanker cargoes closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB South Korea spot gasoline prices are $/bbl and Yen/kl.</td></tr>
<tr><td>Time Window</td><td>FOB South Korea spot gasoline prices are for cargoes to be loaded during the period from 20 to 35 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB South Korea spot gasoline prices are for SR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Loading Port</td><td>FOB South Korea spot gasoline prices are for cargoes to be loaded at major ports in South Korea.</td></tr>
<tr><td>Quality Specifications</td><td>FOB South Korea spot gasoline prices are for cargoes of which quality is equivalent to the Japan Industrial Standard (JIS) K-2202 specification. The research octane number for gasoline that Rim assesses is greater than 91 and MTBE content of nil, levels that are widely accepted in Japan’s oil industry as the standard.

<table>
<tr><td colspan="2">Lead Content</td><td>Max 0.013gpb/l</td></tr>
<tr><td colspan="2">Density at 15 degree C</td><td>Min 0.783 mg/cm3</td></tr>
<tr><td rowspan="5">Distillation Temperature;</td><td>10% evaporated</td><td>Max 70 degree C</td></tr>
<tr><td>50%</td><td>75-110 degree C</td></tr>
<tr><td>90%</td><td>Max 180 degree C</td></tr>
<tr><td>Final Boiling Point</td><td>Max 220 degree C</td></tr>
<tr><td>Residue</td><td>Max 2.0%</td></tr>
<tr><td colspan="2">Copper Corrosion 3h at 50 degree C</td><td>Max 1</td></tr>
<tr><td colspan="2">Sulfur Content</td><td>Max 0.001%</td></tr>
<tr><td colspan="2">Vapor Pressure at 37.8 degree C</td><td>0.45-0.80 Kgf/cm2</td></tr>
<tr><td colspan="2">Existent Gum</td><td>Max 5mg/100ml</td></tr>
<tr><td colspan="2">Benzene Content</td><td>Max 1%</td></tr>
<tr><td colspan="2">Color</td><td>Undyed, orange</td></tr>
</table>
Extract from JIS K-2202
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Kerosene
Rim assesses FOB South Korea spot kerosene prices for SR-size cargoes. The premiums are to the daily assessment for Singapore Paper Swaps values. Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for FOB South Korea spot kerosene prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB South Korea spot kerosene prices are $/bbl and Yen/kl.</td></tr>
<tr><td>Time Window</td><td>FOB South Korea spot kerosene prices are for cargoes to be loaded during the period from 20 to 35 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB South Korea spot kerosene prices are for SR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Loading Port</td><td>FOB South Korea spot kerosene prices are for cargoes to be loaded at major ports in South Korea.</td></tr>
<tr><td>Quality Specifications</td><td>FOB South Korea spot kerosene prices are for cargoes of which quality is equivalent to the Japan Industrial Standard (JIS) K-2203 specification. The Saybolt color scale for kerosene that Rim assesses is greater than 30, a level that is widely accepted in Japan’s oil industry as the standard.

<table><tr><td>Flash Point</td><td>Min 40 degree C</td></tr><tr><td>Distillation Temperature;
95% evaporated</td><td>Max 270 degree C</td></tr><tr><td>Smoke Point</td><td>Min 23mm</td></tr><tr><td>Copper Corrosion 3h at 50 degree C</td><td>Max 1</td></tr></table>Extract from JIS K-2203
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Gasoil
Rim assesses FOB South Korea spot gasoil prices for SR-size cargoes of the grade with a sulfur content of 0.001%. The premiums are to the daily assessment for Singapore paper swaps values (0.05%S gasoil). Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for FOB South Korea spot gasoil prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB South Korea spot gasoil prices are $/bbl and Yen/kl.</td></tr>
<tr><td>Time Window</td><td>FOB South Korea spot gasoil prices are for cargoes to be loaded during the period from 20 to 35 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB South Korea spot gasoil prices are for SR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Loading Port</td><td>FOB South Korea spot gasoil prices are for cargoes to be loaded at major ports in South Korea.</td></tr>
<tr><td>Quality Specifications</td><td>FOB South Korea spot gasoil prices are for cargoes of which quality is equivalent to the Japan Industrial Standard (JIS) K-2204 specification for No1 and No2 grades.

<table>
<tr><td colspan="2">Flash Point</td><td>Min 60 degree C</td></tr>
<tr><td colspan="2">Distillation Temperature;
90% evaporated</td><td>Max 360 degree C</td></tr>
<tr><td colspan="2">Pour Point</td><td>Max 5 degree C</td></tr>
<tr><td colspan="2">Cold Filter Plugging Point</td><td>Max –1 degree C</td></tr>
<tr><td colspan="2">Carbon Residue (10% btms)</td><td>Max 0.1%</td></tr>
<tr><td colspan="2">Cetane Index</td><td>Min 48</td></tr>
<tr><td colspan="2">Kinematic Viscosity at 40 degree C</td><td>Max 4.5 mm2/sec</td></tr>
<tr><td>Sulfur Content</td><td></td><td>Max 0.001%</td></tr>
</table>
Extract from JIS K-2204
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

A-Fuel Oil

Rim assesses FOB South Korea spot A-fuel oil prices for SR-size cargoes of the two grades categorized by sulfur content: AFO (with a sulfur content of 1.0%) and Low-sulfur AFO (with a sulfur content of 0.1%). The premiums are to the daily assessment for Singapore paper swaps values (0.05%S gasoil). Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for FOB South Korea spot A-fuel oil prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB South Korea spot A-fuel oil prices are $/bbl and Yen/kl.</td></tr>
<tr><td>Time Window</td><td>FOB South Korea spot A-fuel oil prices are for cargoes to be loaded during the period from 20 to 35 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB South Korea spot A-fuel oil prices are for SR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Loading Port</td><td>FOB South Korea spot A-fuel oil prices are for cargoes to be loaded at major ports in South Korea.</td></tr>
<tr><td>Quality Specifications</td><td>FOB South Korea spot A-fuel oil prices are for cargoes of which quality is equivalent to the Japan Industrial Standard (JIS) K-2205 specification for category 1. The sulfur level for A-fuel that RIM assesses is less than 1.0% for AFO and less than 0.1% for LSAFO, levels that are widely accepted in Japan’s oil industry as the standard.

<table><tr><td>Flash Point</td><td>Min 60 degree C</td></tr><tr><td>Kinematic Viscosity at 50 degree C</td><td>Max 20cst</td></tr><tr><td>Pour Point</td><td>Max 5 degree C</td></tr><tr><td>Carbon Residue</td><td>Max 4%</td></tr><tr><td>Water Content</td><td>Max 0.3%</td></tr><tr><td>Ash Content</td><td>Max 0.05%</td></tr></table>Extract from JIS K-2204 Category 1
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Fuel Oil

Rim assesses FOB South Korea spot fuel oil prices for SR-size cargoes of fuel oil with a sulfur content of 0.3%. The premiums are to the daily assessment for Singapore paper swaps values (180cst). Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for FOB South Korea spot fuel oil prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB South Korea spot fuel oil prices are $/mt and Yen/kl.</td></tr>
<tr><td>Time Window</td><td>FOB South Korea spot fuel oil prices are for cargoes to be loaded during the period from 20 to 35 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB South Korea spot fuel oil prices are for SR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Loading Port</td><td>FOB South Korea spot fuel oil prices are for cargoes to be loaded at major ports in South Korea.</td></tr>
<tr><td>Quality Specifications</td><td>FOB South Korea spot fuel oil prices are for cargoes of which quality is equivalent to the Japan Industrial Standard (JIS) K-2205 specification for category 3. The sulfur level for fuel oil that Rim assesses is less than 0.3%.

<table><tr><td>Flash Point</td><td>Min 66 degree C</td></tr><tr><td>Pour Point</td><td>Max 24 degree C</td></tr><tr><td>Carbon Residue</td><td>Max 16%</td></tr><tr><td>Water Content</td><td>Max 0.5%</td></tr><tr><td>Ash Content</td><td>Max 0.1%</td></tr></table>*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

CFR Japan Equivalent Values

Rim indicates CFR Japan equivalent values based on SR-size cargo prices and assessments of spot freight rates of an SR-size clean tanker for the South Korea-to-Tomakomai (Hokkaido), South Korea-to-Keihin (Tokyo Bay), South Korea-to-Nagoya, and South Korea-to-Kanmon (Kyushu) route. (All freight rates shown in the report are based on information collected in the course of market research by Rim reporters.)

SR-size Clean Tanker Freight Assessment

Benchmark
South Korea to Tomakomai (Hokkaido, North Japan) South Korea to Keihin (Tokyo Bay) South Korea to Nagoya South Korea to Kanmon (Kyushu, South Japan)

Assessment Window	Rim's assessment window for SR-size clean tanker freights closes at 18:30 Tokyo time.
Price Unit	SR-size clean tanker freights are $/bbl.
Standard size	SR-size cargo.
Loading Port	Major ports in South Korea

The CFR Japan equivalent values are calculated into Yen/kl, based on the following formula. Freight between South Korea-to-Nagoya is applied.

Gasoline
CFR Japan Equivalent Value =
[(FOB S Korea SR-size cargo prices) + (Freight)] x (Yen/$) x 6.2898
+ (Petroleum tax of Yen 2,800/kl) + (Import duty of Yen 934/kl)

Kerosene
CFR Japan Equivalent Value =
[(FOB S Korea SR-size cargo prices) + (Freight)] x (Yen/$) x 6.2898
+ (Petroleum tax of Yen 2,800/kl) + (Import duty of Yen 346/kl)

Gasoil
CFR Japan Equivalent Value =
[(FOB S Korea SR-size cargo prices) + (Freight)] x (Yen/$) x 6.2898
+ (Petroleum tax of Yen 2,800/kl) + (Import duty of Yen 750/kl)

A-fuel oil
CFR Japan Equivalent Value =
[(FOB S Korea SR-size cargo prices) + (Freight)] x (Yen/$) x 6.2898

Rim CFR China Oil Products Price Assessment Methodology

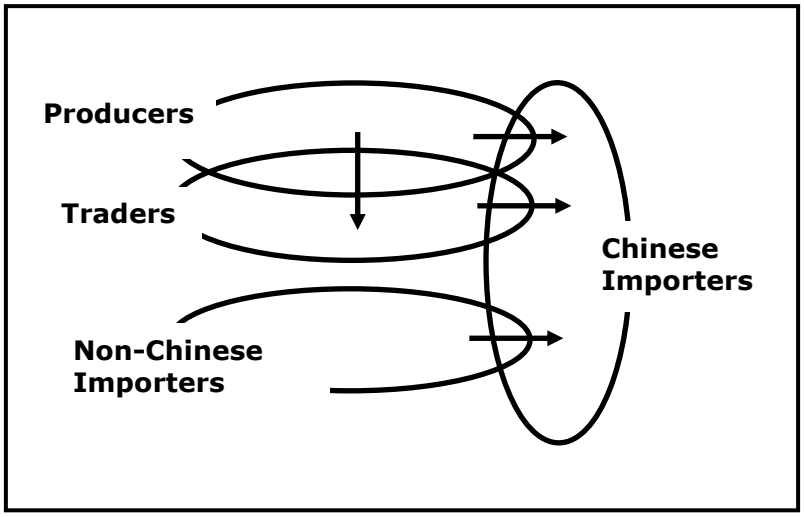
CFR CHINA SPOT PRICES

Rim assesses CFR China spot prices for physical cargoes of gasoline, gasoil and fuel oil on a fixed price basis and a floating price basis.

In the absence of information of deals, bids and offers on a fixed price basis, the fixed price assessments indicate the price range in which a transaction on a floating price basis could be locked into with available derivative products, such as futures contracts and paper swaps values.

All prices are assessed based on information collected in the course of market research by RIM reporters each business day.

STRUCTURE of the CFR CHINA OIL PRODUCTS MARKET



Rim understands that the CFR China market is structured with four groups of business parties: Producers, Traders, Non-Chinese Importers and Chinese Importers. Rim assesses physical oil product prices at which a standard spot transaction could take place.

Rim defines the four business parties in the CFR China oil products market as follows:

Producer	A company that produces and exports oil products.
Trader	A company that buys and sells oil products in the international market.
Non-Chinese Importer	A company outside of China that imports oil products for resale into respective domestic markets, and also sells oil products on a CFR China basis with an aim to reduce its stocks or to yield profit from the sales.
Chinese Importer	A company of China that imports oil products to meet its demanded supply into the domestic markets.

Rim defines a standard CFR China oil products market transaction as follows:

Case 1	A producer sells an oil products cargo to a Chinese importer on a spot basis.
Case 2	A producer sells an oil products cargo to a trader on a spot basis.
Case 3	A trader sells an oil products cargo to a Chinese importer on a spot basis.
Case 4	A non-Chinese importer sells an oil products cargo to a Chinese importer on a spot basis.

Gasoline
CFR China Equivalent Value =
[CFR China MR-size cargo prices ($/bbl) X Yuan/$ X 8.5 X1.01 (import duty) + 2,082 (consumption tax)] X1.17 (value added tax)

Gasoil
CFR China Equivalent Value =
[CFR China MR-size cargo prices ($/bbl) X Yuan/$ X 7.5 X1.01 (import duty) + 1,428 (consumption tax)] X1.17 (value added tax)

Fuel oil
CFR China Equivalent Value (M100) =
[CFR China MR-size cargo prices ($/mt) X Yuan/$ X1.01 (import duty) + 1,218 (consumption tax)] X1.17 (value added tax)
CFR China Equivalent Value (3.5%S) =
[CFR China MR-size cargo prices ($/mt) X Yuan/$ X1.01 (import duty) + 1,218 (consumption tax)] X1.17 (value added tax)

Gasoline

Rim assesses CFR China spot gasoline prices for the 93 research octane number (RON) grade in North and East China and the 92 RON grade in South China. The premiums are to the daily assessment for FOB Singapore spot prices of 92RON gasoline. Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore 92RON gasoline prices = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for CFR China spot gasoline prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>CFR China spot gasoline prices are $/bbl and Yuan/mt.</td></tr>
<tr><td>Time Window</td><td>CFR China spot gasoline prices are for cargoes to be delivered during the period from 25 to 40 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>CFR China spot gasoline prices are for MR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Delivery Port</td><td>CFR China spot gasoline prices are for cargoes to be delivered into main ports in north, east and south China.</td></tr>
<tr><td>Quality Specifications</td><td>CFR China spot gasoline prices are for cargoes of which quality is equivalent to the following specifications.
<table>
<tr><td colspan="2">Research Octane Number</td><td>93 and 92</td></tr>
<tr><td colspan="2">Lead Content</td><td>Max 0.005gpb/l</td></tr>
<tr><td rowspan="5">Distillation Temperature;</td><td>10% evaporated</td><td>Max 70 degree C</td></tr>
<tr><td>50%</td><td>Max 120 degree C</td></tr>
<tr><td>90%</td><td>Max 190 degree C</td></tr>
<tr><td>Final Boiling Point</td><td>Max 205 degree C</td></tr>
<tr><td>Residue</td><td>Max 2.0%</td></tr>
<tr><td colspan="2">Copper Corrosion 3h at 50 degree C</td><td>Max 1</td></tr>
<tr><td colspan="2">Sulfur Content</td><td>Max 0.005% (North, East)
Max 0.001% (South)</td></tr>
<tr><td colspan="2">Vapor Pressure at 37.8 degree C</td><td>0.75-0.90 Kgf/cm2</td></tr>
<tr><td colspan="2">Existent Gum</td><td>Max 5mg/100ml</td></tr>
<tr><td colspan="2">Olefin Content</td><td>Max 35.0%</td></tr>
<tr><td colspan="2">Aromatics Content</td><td>Max 40.0%</td></tr>
<tr><td colspan="2">Oxygen Content</td><td>Max 2.7%</td></tr>
<tr><td colspan="2">Benzene Content</td><td>Max 2.0%</td></tr>
</table>
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Gasoil

Rim assesses CFR China spot gasoil prices for gasoil with a sulfur content of 0.001%, supplied mainly from South Korea. The premiums are to the daily assessment for Singapore paper swaps values (0.05%S gasoil). Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for CFR China spot gasoil prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>CFR China spot gasoil prices are $/bbl and Yuan/mt.</td></tr>
<tr><td>Time Window</td><td>CFR China spot gasoil prices are for cargoes to be delivered during the period from 25 to 40 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>CFR China spot gasoil prices are for MR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Delivery Port</td><td>CFR China spot gasoil prices are for cargoes to be delivered into main ports in north, east and south China.</td></tr>
<tr><td>Quality Specifications</td><td>CFR China spot gasoil prices are for cargoes of which quality is equivalent to the following specifications.

<table><tr><td>Flash Point</td><td>Min 60 degree C</td></tr><tr><td>Distillation Temperature; 90% evaporated</td><td>Max 355 degree C</td></tr><tr><td>Pour Point</td><td>Max 0 degree C</td></tr><tr><td>Cold Filter Plugging Point</td><td>Max 4 degree C</td></tr><tr><td>Carbon Residue (10% btms)</td><td>Max 0.3%</td></tr><tr><td>Cetane Index</td><td>Min 45</td></tr><tr><td>Acidity</td><td>Max 7mgKOH/100ml</td></tr><tr><td>Kinematic Viscosity at 20 degree C</td><td>Min 3.0, Max 8.0 mm2/sec</td></tr><tr><td>Sulfur Content</td><td>Max 0.001%</td></tr></table>*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Fuel Oil

Rim assesses CFR China spot fuel oil prices for the 380cst 3.5% sulfur) grade, supplied mainly from Singapore and M100 fuel oil, supplied mainly from Far East Russia. The premiums are to the daily assessment for Singapore paper swaps values (380cst) for the former and Singapore paper swaps values (180cst) for the latter. Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for CFR China spot fuel oil prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>CFR China spot fuel oil prices are in $/mt and Yuan/mt.</td></tr>
<tr><td>Time Window</td><td>CFR China spot fuel oil prices are for cargoes to be loaded during the period from 25 to 40 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>CFR China spot fuel oil (380cst 3.5%S) prices are for LR-size cargoes and CFR China spot fuel oil (M100) prices are for MR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Delivery Port</td><td>CFR China spot fuel oil (380cst 3.5%S) prices are for cargoes to be delivered into main ports in south China and CFR China spot fuel oil (M100) prices are for cargoes to be delivered into main ports in north China.</td></tr>
<tr><td>Quality Specifications</td><td>CFR China spot fuel oil prices are for cargoes of which quality is equivalent to the following specifications.

【380cst HSFO】
<table>
<tr><td>Sulfur Content</td><td>Max 3.5%</td></tr>
<tr><td>Flash Point</td><td>Min 66 degree C</td></tr>
<tr><td>Pour Point</td><td>Max 24 degree C</td></tr>
<tr><td>Carbon Residue</td><td>Max 16%</td></tr>
<tr><td>Water Content</td><td>Max 0.5%</td></tr>
<tr><td>Ash Content</td><td>Max 0.1%</td></tr>
</table>
*Specifications for other properties are to meet specifications that are commonly required in international trading.

【M100 FO】
<table>
<tr><td>Sulfur Content</td><td>Max 1.5%</td></tr>
<tr><td>Flash Point</td><td>Min 60 degree C</td></tr>
<tr><td>Pour Point</td><td>Max 24 degree C</td></tr>
<tr><td>Carbon Residue</td><td>Max 10%</td></tr>
<tr><td>Water Content</td><td>Max 2.0%</td></tr>
<tr><td>Ash Content</td><td>Max 0.14%</td></tr>
</table>
</td></tr>
</table>

Rim CFR Japan Oil Products Price Assessment Methodology

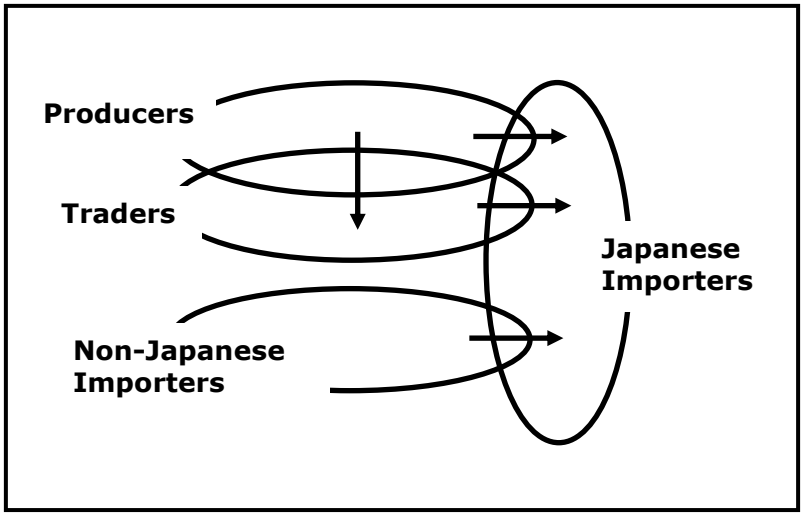
CFR JAPAN SPOT PRICES

Rim assesses CFR Japan spot prices for physical cargoes of naphtha, jet fuel/kerosene, gasoil, and fuel oil on a fixed price basis and a floating price basis.

In the absence of information of deals, bids and offers on a fixed price basis, the fixed price assessments indicate the price range in which a transaction on a floating price basis could be locked into with available derivative products, such as futures contracts and paper swaps values.

All prices are assessed based on information collected in the course of market research by Rim reporters each business day.

STRUCTURE of the CFR JAPAN OIL PRODUCTS MARKET



Rim understands that the CFR Japan market is structured with four groups of business parties: Producers, Traders, Non-Japanese Importers and Japanese Importers. Rim assesses physical oil product prices at which a standard spot transaction could take place.

Rim defines the four business parties in the CFR Japan oil products market as follows:

Producer	A company that produces and exports oil products.
Trader	A company that buys and sells oil products in the international market.
Non-Japanese Importer	A company outside of Japan that imports oil products for resale into respective domestic markets, and also sells oil products on a CFR Japan basis with an aim to reduce its stocks or to yield profit from the sales.
Japanese Importer	A company of Japan that imports oil products to meet its demanded supply into the domestic markets.

Rim defines a standard CFR Japan oil products market transaction as follows:

Case 1	A producer sells an oil products cargo to a Japanese importer on a spot basis.
Case 2	A producer sells an oil products cargo to a trader on a spot basis.
Case 3	A trader sells an oil products cargo to a Japanese importer on a spot basis.
Case 4	A non-Japanese importer sells an oil products cargo to a Japanese importer on a spot basis.

Naphtha
CFR Japan =
CFR Japan MR-size cargo prices ($/mt) X Yen/$ X 0.7

Jet fuel/kerosene
CFR Japan =
CFR Japan MR-size cargo prices ($/bbl) X Yen/$ X 6.29

Gas Oil
CFR Japan =
CFR Japan MR-size cargo prices ($/bbl) X Yen/$ X 6.29

Fuel Oil
CFR Japan =
CFR Japan MR-size cargo prices ($/mt) X Yen/$ X 0.975

Naphtha
Rim assesses CFR Japan spot naphtha prices for the open-spec naphtha.

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for CFR Japan spot naphtha prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>CFR Japan spot naphtha prices are $/mt and Yen/kl.</td></tr>
<tr><td>Time Window</td><td>CFR Japan spot naphtha prices and premiums are for cargoes to be delivered during the period shown below:

① If publication is in the first half of the month, assessment is for the second half of the next month and the first half and the second half of the month after.

② If publication is in the second half of the month, assessment is for the first and the second half of the month after and the first half of the month that is 3 months ahead.</td></tr>
<tr><td>Standard Size</td><td>CFR Japan spot naphtha prices are for MR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Delivery Port</td><td>CFR Japan spot naphtha prices are for cargoes to be delivered into main ports in Japan, such as Tokyo, Osaka, and Nagoya.</td></tr>
<tr><td>Quality Specifications</td><td>CFR Japan spot naphtha prices are for cargoes of which quality is equivalent to “the open specifications”.

<table><tr><td>Paraffin Content</td><td>Min 65%</td></tr><tr><td>Sulfur Content</td><td>Max 0.065%</td></tr><tr><td>Olefin Content</td><td>Max 1%</td></tr><tr><td>Specific Gravity at 60 degree F</td><td>0.65-0.74</td></tr></table>Extract from the open specification
*Specifications for other properties are to meet specifications that are commonly required in international trading.

REFERENCE: Full-range naphtha<table><tr><td>Paraffin Content</td><td>78-82%</td></tr><tr><td>Olefin Content</td><td>Max 1%</td></tr><tr><td>Specific Gravity at 60 degree F</td><td>0.68-0.70</td></tr></table></td></tr>
</table>

Jet fuel/Kerosene
Rim assesses CFR Japan spot jet fuel/kerosene prices. The premiums are to the daily assessment for Singapore paper swaps values. Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim's assessment window for CFR Japan spot jet fuel/kerosene prices closes at 18:30 PM Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>CFR Japan spot jet fuel/kerosene prices are $/bbl and Yen/kl.</td></tr>
<tr><td>Time Window</td><td>CFR Japan spot jet fuel/kerosene prices are for cargoes to be delivered during the period from 30 to 45 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>CFR Japan spot jet fuel/kerosene prices are for MR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Delivery Port</td><td>CFR Japan spot jet fuel/kerosene prices are for cargoes to be delivered into main ports in Japan, such as Tokyo, Osaka, and Nagoya.</td></tr>
<tr><td>Quality Specifications</td><td>CFR Japan spot jet fuel/kerosene prices are for cargoes of which quality is equivalent to the Joint Fuel System Check List, also known as Jet A-1 Check List. The JFSCL is issued by International Air Transport Association.

<table>
<tr><td>Distillation Temperature;
Initial Boiling Point
10% Evaporated</td><td>Max 205 degree C</td></tr>
<tr><td>Flash Point</td><td>Min 37 degree C</td></tr>
<tr><td>Sulfur Content</td><td>Max 0.3%</td></tr>
<tr><td>Smoke Point with naphthalene content of maximum 3.0%</td><td>Minimum 19mm</td></tr>
<tr><td>Copper corrosion 2h at 100 degree C</td><td>Maximum 1.0</td></tr>
<tr><td>Saybolt color</td><td>Minimum 18</td></tr>
</table>
Extract from IATA's JFSCL
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Gasoil
Rim assesses CFR Japan spot gasoil prices for gasoil with a sulfur content of 0.001%. The premiums are to the daily assessment for Singapore paper swaps values (0.05%S gasoil). Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for CFR Japan spot gasoil prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>CFR Japan spot gasoil prices are in $/bbl and Yen/kl.</td></tr>
<tr><td>Time Window</td><td>CFR Japan spot gasoil prices are for cargoes to be delivered during the period from 30 to 45 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>CFR Japan spot gasoil prices are for MR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Delivery Port</td><td>CFR Japan spot gasoil prices are for cargoes to be delivered into main ports in Japan, such as Tokyo, Osaka, and Nagoya.</td></tr>
<tr><td>Quality Specifications</td><td>CFR Japan spot gasoil prices are for cargoes of which quality is equivalent to the following specifications.

<table><tr><td>Flash Point</td><td>Min 60 degree C</td></tr><tr><td>Distillation Temperature;
90% evaporated</td><td>Max 360 degree C</td></tr><tr><td>Pour Point</td><td>Max –2.5 degree C</td></tr><tr><td>Cold Filter Plugging Point</td><td>Max –1 degree C</td></tr><tr><td>Carbon Residue (10% btms)</td><td>Max 0.1%</td></tr><tr><td>Cetane Index</td><td>Min 45</td></tr><tr><td>Kinematic Viscosity at 40 degree C</td><td>Max 4.5 mm2/sec</td></tr><tr><td>Sulfur Content</td><td>Max 0.001%</td></tr></table>*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Fuel Oil

Rim assesses CFR Japan spot fuel oil prices for 380cst 3.5% sulfur grade, 0.3% sulfur grade, and M100 fuel oil. The premiums are to the daily assessment for Singapore paper swaps values (380cst) for 3.5%S and for Singapore paper swaps values (180cst) for 0.3%S and M100. Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim's assessment window for CFR Japan spot fuel oil prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>CFR Japan spot fuel oil prices are in $/mt and Yen/kl.</td></tr>
<tr><td>Time Window</td><td>CFR Japan spot fuel oil prices are for cargoes to be loaded during the period from 30 to 45 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>CFR Japan spot fuel oil prices are for MR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Delivery Port</td><td>CFR Japan spot fuel oil prices are for cargoes to be delivered into main ports in Japan, such as Tokyo, Osaka, and Nagoya.</td></tr>
<tr><td>Quality Specifications</td><td>CFR Japan spot fuel oil prices are for cargoes of which quality is equivalent to the following specifications.

【380cst FO】
<table><tr><td>Sulfur Content</td><td>Max 3.5%</td></tr><tr><td>Flash Point</td><td>Min 66 degree C</td></tr><tr><td>Pour Point</td><td>Max 24 degree C</td></tr><tr><td>Carbon Residue</td><td>Max 16%</td></tr><tr><td>Water Content</td><td>Max 0.5%</td></tr><tr><td>Ash Content</td><td>Max 0.1%</td></tr></table>
【0.3%S FO】
<table><tr><td>Sulfur Content</td><td>Max 0.3%</td></tr><tr><td>Flash Point</td><td>Min 66 degree C</td></tr><tr><td>Pour Point</td><td>Max 24 degree C</td></tr><tr><td>Carbon Residue</td><td>Max 16%</td></tr><tr><td>Water Content</td><td>Max 0.5%</td></tr><tr><td>Ash Content</td><td>Max 0.1%</td></tr></table>
【M100 FO】
<table><tr><td>Sulfur Content</td><td>Max 1.5%</td></tr><tr><td>Flash Point</td><td>Min 60 degree C</td></tr><tr><td>Pour Point</td><td>Max 24 degree C</td></tr><tr><td>Carbon Residue</td><td>Max 10%</td></tr><tr><td>Water Content</td><td>Max 2.0%</td></tr><tr><td>Ash Content</td><td>Max 0.14%</td></tr></table>
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Rim FOB Japan Oil Products Price Assessment Methodology

FOB JAPAN SPOT PRICES

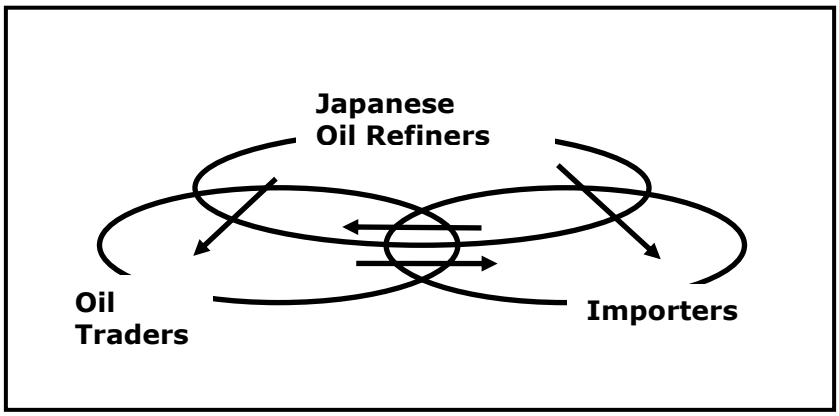
Rim assesses FOB Japan spot prices for MR-size cargoes of jet fuel/kerosene, gasoil, and fuel oil on a fixed price basis and a floating price basis.

In the absence of information of deals, bids and offers on a fixed price basis, the fixed price assessments indicate the price range in which a transaction on a floating price basis could be locked into with available derivative products, such as futures contracts and paper swaps values.

All prices are assessed based on information collected in the course of market research by Rim reporters each business day.

MR-size Cargo Price Assessment

STRUCTURE of the FOB JAPAN MR-size CARGO MARKET



Rim understands that the FOB Japan MR-size cargo oil products market is structured with three groups of business parties: Japanese oil refiners, Oil traders and Importers. Rim assesses FOB Japan MR-size cargo prices at which a standard spot transaction could take place.

Rim defines the three business parties in the FOB Japan oil products market as follows:

Japanese Refiner	A company of Japan that produces and exports oil products at/from its refining facilities in Japan.
Oil Trader	A company that buys and sells oil products in the international market.
Importer	A company that imports oil products and resell into domestic markets. Refiners of countries other than Japan are also considered to be importers.

Rim defines a standard FOB Japan MR-size cargo spot market transaction as follows:

Case 1	A Japanese refiner sells an oil products cargo to a trader on a spot basis.
Case 2	A Japanese refiner sells an oil products cargo to an importer on a spot basis.
Case 3	A Japanese refiner sells an oil products cargo to another Japanese refiner on a spot basis.
Case 4	A trader sells an oil products cargo to a Japanese refiner on a spot basis.
Case 5	A trader sells an oil products cargo to an importer on a spot basis.
Case 6	A trader sells an oil products cargo to another trader on a spot basis.
Case 7	An importer sells an oil products cargo to a Japanese refiner on a spot basis.
Case 8	An importer sells an oil products cargo to a trader on a spot basis.
Case 9	An importer sells an oil products cargo to another importer on a spot basis.

Jet fuel/kerosene
FOB Japan =
FOB Japan MR-size cargo prices ($/bbl) X Yen/$ X 6.29

Gas Oil
FOB Japan =
FOB Japan MR-size cargo prices ($/bbl) X Yen/$ X 6.29

Fuel Oil
FOB Japan =
FOB Japan MR-size cargo prices ($/mt) X Yen/$ X 0.975

Jet fuel/Kerosene
Rim assesses FOB Japan spot jet fuel/kerosene prices for MR-size cargoes. The premiums are to the daily assessment for Singapore paper swaps values. Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim's assessment window for FOB Japan spot jet fuel/kerosene prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB Japan spot jet fuel/kerosene prices are $/bbl and Yen/kl</td></tr>
<tr><td>Time Window</td><td>FOB Japan spot jet fuel/kerosene prices are for cargoes to be loaded during the period from 25 to 40 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB Japan spot jet fuel/kerosene prices are for MR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Delivery Port</td><td>FOB Japan spot jet fuel/kerosene prices are for cargoes to be loaded at major ports in Japan.</td></tr>
<tr><td>Quality Specifications</td><td>FOB Japan spot jet fuel/kerosene prices are for cargoes of which quality is equivalent to the Joint Fuel System Check List, also known as Jet A-1 Check List. The JFSCL is issued by International Air Transport Association.

<table>
<tr><td>Distillation Temperature;
Initial Boiling Point
10% Evaporated</td><td>Max 205 degree C</td></tr>
<tr><td>Flash Point</td><td>Min 37 degree C</td></tr>
<tr><td>Sulfur Content</td><td>Max 0.3%</td></tr>
<tr><td>Smoke Point with naphthalene content of maximum 3.0%</td><td>Minimum 19mm</td></tr>
<tr><td>Copper corrosion 2h at 100 degree C</td><td>Maximum 1.0</td></tr>
<tr><td>Saybolt color</td><td>Minimum 18</td></tr>
</table>
Extract from IATA's JFSCL
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Gasoil

Rim assesses FOB Japan spot gasoil prices for MR-size cargoes of CARB DIESEL and gasoil with a sulfur content of 0.001%. The premiums are to the daily assessment for Singapore paper swaps values (0.05%S gasoil). Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for FOB Japan spot gasoil prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB Japan spot gasoil prices are $/bbl and Yen/kl.</td></tr>
<tr><td>Time Window</td><td>FOB Japan spot gasoil prices are for cargoes to be loaded during the period from 25 to 40 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB Japan spot gasoil prices are for MR-cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Loading Port</td><td>FOB Japan spot gasoil prices are for cargoes to be loaded at major ports in Japan.</td></tr>
<tr><td>Quality Specifications</td><td>FOB Japan spot gasoil prices are for cargoes of which quality is equivalent to the following specifications.
<table>
<tr><td colspan="2">Flash Point</td><td>Min 60 degree C</td></tr>
<tr><td colspan="2">Distillation Temperature; 90% evaporated</td><td>Max 360 degree C</td></tr>
<tr><td colspan="2">Pour Point</td><td>Max 5 degree C</td></tr>
<tr><td colspan="2">Cold Filter Plugging Point</td><td>Max –1 degree C</td></tr>
<tr><td colspan="2">Carbon Residue (10% btms)</td><td>Max 0.1%</td></tr>
<tr><td rowspan="2">Cetane Index</td><td>CARB DIESEL</td><td>Min 53</td></tr>
<tr><td>0.001%S</td><td>Min 48</td></tr>
<tr><td colspan="2">Kinematic Viscosity at 40 degree C</td><td>Max 4.5 mm2/sec</td></tr>
<tr><td rowspan="2">Sulfur Content</td><td>CARB DIESEL</td><td>Max 0.0008%</td></tr>
<tr><td>0.001%S</td><td>Max 0.001%</td></tr>
</table>
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Fuel Oil

Rim assesses FOB Japan spot fuel oil prices for MR-size cargoes of the 380cst with a sulfur content of 3.5%. The premiums are to the daily assessment for Singapore paper swaps values (380cst). Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for FOB Japan spot fuel oil prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB Japan spot fuel oil prices are $/mt and Yen/kl.</td></tr>
<tr><td>Time Window</td><td>FOB Japan spot fuel oil prices are for cargoes to be loaded during the period from 25 to 40 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB Japan spot fuel oil prices are for MR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Loading Port</td><td>FOB Japan spot fuel oil prices are for cargoes to be loaded at major ports in Japan.</td></tr>
<tr><td>Quality Specifications</td><td>FOB Japan spot fuel oil prices are for cargoes of which quality is equivalent to the following specifications.

<table><tr><td>Sulfur Content</td><td>Max 3.5%</td></tr><tr><td>Flash Point</td><td>Min 66 degree C</td></tr><tr><td>Pour Point</td><td>Max 24 degree C</td></tr><tr><td>Carbon Residue</td><td>Max 16%</td></tr><tr><td>Water Content</td><td>Max 0.5%</td></tr><tr><td>Ash Content</td><td>Max 0.1%</td></tr></table>
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Rim FOB Middle East Oil Products Price Assessment Methodology

FOB MIDDLE EAST SPOT PRICES

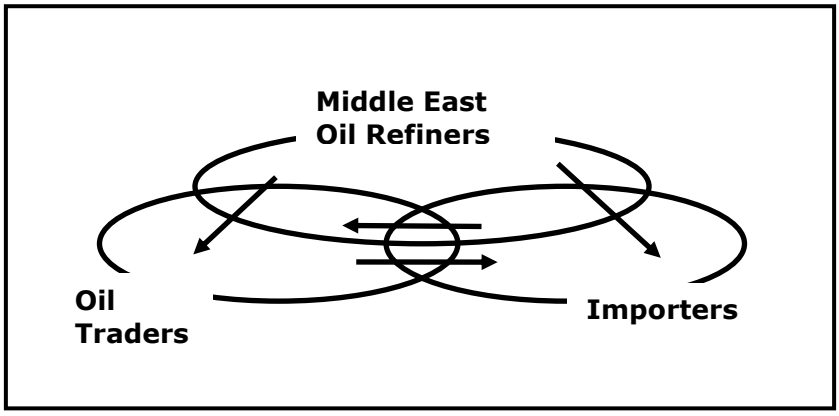
Rim assesses FOB Middle East spot prices for LR-size cargoes of naphtha, jet fuel/kerosene, gasoil, and fuel oil on a fixed price basis and a floating price basis.

In the absence of information of deals, bids and offers on a fixed price basis, the fixed price assessments indicate the price range in which a transaction on a floating price basis could be locked into with available derivative products, such as futures contracts and paper swaps values.

All prices are assessed based on information collected in the course of market research by Rim reporters each business day.

LR-size Cargo Price Assessment

STRUCTURE of the FOB MIDDLE EAST LR-size CARGO MARKET



Rim understands that the FOB Middle East LR-size cargo oil products market is structured with three groups of business parties: Middle East oil refiners, Oil traders and Importers. Rim assesses FOB Middle East LR-size cargo prices at which a standard spot transaction could take place.

Rim defines the three business parties in the FOB Middle East oil products market as follows:

Middle East Refiner	A company of Middle East that produces and exports oil products at/from its refining facilities in Japan.
Oil Trader	A company that buys and sells oil products in the international market.
Importer	A company that imports oil products and resell into domestic markets. Refiners of countries other than Japan are also considered to be importers.

Rim defines a standard FOB Middle East LR-size cargo spot market transaction as follows:

Case 1	A Middle East refiner sells an oil products cargo to a trader on a spot basis.
Case 2	A Middle East refiner sells an oil products cargo to an importer on a spot basis.
Case 3	A Middle East refiner sells an oil products cargo to another Middle East refiner on a spot basis.
Case 4	A trader sells an oil products cargo to a Middle East refiner on a spot basis.
Case 5	A trader sells an oil products cargo to an importer on a spot basis.
Case 6	A trader sells an oil products cargo to another trader on a spot basis.
Case 7	An importer sells an oil products cargo to a Middle East refiner on a spot basis.
Case 8	An importer sells an oil products cargo to a trader on a spot basis.
Case 9	An importer sells an oil products cargo to another importer on a spot basis.

Naphtha
FOB Middle East naphtha is assessed on a netback basis from CFR Japan. Premium/discount is determined by a variety of information such as transactions, bids/offers and buying/selling interest.

FOB Middle East spot naphtha prices =
(CFR Japan naphtha)–(*freight rates for the Middle East-Japan route)
*The freight rates are for an LR tanker on the Middle East-Japan route.

<table>
<tr><td>Assessment Window</td><td>Rim's assessment window for FOB Middle East spot naphtha prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB Middle East spot naphtha prices are $/mt.</td></tr>
<tr><td>Time Window</td><td>FOB Middle East spot naphtha prices in the publications released during H1 of a month are for cargoes to be loaded during the period from the 9th to the 24th of the next month. FOB Middle East spot naphtha prices in the publications released during H2 of a month are for cargoes to be loaded during the period from the 25th of the next month to the 8th of a month after the next.</td></tr>
<tr><td>Standard Size</td><td>FOB Middle East spot naphtha prices are for LR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Delivery Port</td><td>FOB Middle East spot naphtha prices are for cargoes to be loaded at major ports in Middle East.</td></tr>
<tr><td>Quality Specifications</td><td>FOB Middle East spot naphtha prices are for cargoes of which quality is equivalent to "the open specifications".

<table><tr><td>Paraffin Content</td><td>Min 65%</td></tr><tr><td>Sulfur Content</td><td>Max 0.065%</td></tr><tr><td>Olefin Content</td><td>Max 1%</td></tr><tr><td>Specific Gravity at 60 degree F</td><td>0.65-0.74</td></tr></table>Extract from the open specification
*Specifications for other properties are to meet specifications that are commonly required in international trading.

REFERENCE: Full-range naphtha<table><tr><td>Paraffin Content</td><td>78-82%</td></tr><tr><td>Olefin Content</td><td>Max 1%</td></tr><tr><td>Specific Gravity at 60 degree F</td><td>0.68-0.70</td></tr></table></td></tr>
</table>

Jet fuel/Kerosene
FOB Middle East jet fuel/kerosene is assessed on a netback basis from FOB Singapore assessment. Premium/discount is determined by a variety of information such as transactions, bids/offers and buying/selling interest.

FOB Middle East spot jet fuel/kerosene prices =
(FOB Singapore jet fuel/kerosene)–(*freight rates for the Middle East-Singapore)
*The freight rates are for an LR tanker on the Middle East-Singapore route.

<table>
<tr><td>Assessment Window</td><td>Rim's assessment window for FOB Middle East spot jet fuel/Kerosene prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB Middle East spot jet fuel/kerosene prices are $/bbl.</td></tr>
<tr><td>Time Window</td><td>FOB Middle East spot jet fuel/kerosene prices are for cargoes to be loaded during the period from 20 to 35 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB Middle East spot jet fuel/kerosene prices are for LR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Delivery Port</td><td>FOB Middle East spot jet fuel/kerosene prices are for cargoes to be loaded at major ports in Middle East.</td></tr>
<tr><td>Quality Specifications</td><td>FOB Middle East spot jet fuel/kerosene prices are for cargoes of which quality is equivalent to the Joint Fuel System Check List, also known as Jet A-1 Check List. The JFSCL is issued by International Air Transport Association.

<table>
<tr><td>Distillation Temperature;
Initial Boiling Point
10% Evaporated</td><td>Max 205 degree C</td></tr>
<tr><td>Flash Point</td><td>Min 37 degree C</td></tr>
<tr><td>Sulfur Content</td><td>Max 0.3%</td></tr>
<tr><td>Smoke Point with naphthalene content of maximum 3.0%</td><td>Minimum 19mm</td></tr>
<tr><td>Copper corrosion 2h at 100 degree C</td><td>Maximum 1.0</td></tr>
<tr><td>Saybolt color</td><td>Minimum 18</td></tr>
</table>
Extract from IATA's JFSCL
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Gasoil
FOB Middle East 0.05%S gasoil is assessed on a netback basis from FOB Singapore assessment. Premium/discount is determined by a variety of information such as transactions, bids/offers and buying/selling interest.

FOB Middle East spot gasoil prices =
(FOB Singapore gasoil)–(*freight rates for the Middle East-Singapore)
*The freight rates are for an LR tanker on the Middle East-Singapore route.

<table>
<tr><td>Assessment Window</td><td>Rim's assessment window for FOB Middle East spot gasoil prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB Middle East spot gasoil prices are $/bbl.</td></tr>
<tr><td>Time Window</td><td>FOB Middle East spot gasoil prices are for cargoes to be loaded during the period from 20 to 35 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB Middle East spot gasoil prices are for LR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Delivery Port</td><td>FOB Middle East spot gasoil prices are for cargoes to be loaded at major ports in Middle East.</td></tr>
<tr><td>Quality Specifications</td><td>FOB Middle East spot gasoil prices are for cargoes of which quality is equivalent to the following specifications.

<table><tr><td>Flash Point</td><td>Min 60 degree C</td></tr><tr><td>Distillation Temperature;
90% evaporated</td><td>Max 360 degree C</td></tr><tr><td>Pour Point</td><td>Max 5 degree C</td></tr><tr><td>Cold Filter Plugging Point</td><td>Max –1 degree C</td></tr><tr><td>Carbon Residue (10% btms)</td><td>Max 0.1%</td></tr><tr><td>Cetane Index</td><td>Min 48</td></tr><tr><td>Kinematic Viscosity at 40 degree C</td><td>Max 4.5 mm2/sec</td></tr><tr><td>Sulfur Content</td><td>Max 0.05%</td></tr></table>
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Fuel Oil
FOB Middle East 180cst 3.5%S fuel oil is assessed on a netback basis from FOB Singapore assessment. Premium/discount is determined by a variety of information such as transactions, bids/offers and buying/selling interest.

FOB Middle East spot fuel oill prices =
(FOB Singapore fuel oil)–(*freight rates for the Middle East-Singapore)
*The freight rates are for an LR tanker on the Middle East-Singapore route.

<table>
<tr><td>Assessment Window</td><td>Rim's assessment window for FOB Middle East spot fuel oil prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB Middle East spot fuel oil prices are in $/mt.</td></tr>
<tr><td>Time Window</td><td>FOB Middle East spot fuel oil prices are for cargoes to be loaded during the period from 20 to 35 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB Middle East spot fuel oil prices are for LR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may be considered.</td></tr>
<tr><td>Delivery Port</td><td>FOB Middle East spot fuel oil prices are for cargoes to be loaded at major ports in Middle East.</td></tr>
<tr><td>Quality Specifications</td><td>FOB Middle East spot fuel oil prices are for cargoes of which quality is equivalent to the following specifications.

<table><tr><td>Sulfur Content</td><td>Max 3.5%</td></tr><tr><td>Flash Point</td><td>Min 66 degree C</td></tr><tr><td>Pour Point</td><td>Max 24 degree C</td></tr><tr><td>Carbon Residue</td><td>Max 16%</td></tr><tr><td>Water Content</td><td>Max 0.5%</td></tr><tr><td>Ash Content</td><td>Max 0.1%</td></tr></table>
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Rim FOB Indonesia LSWR Price Assessment Methodology

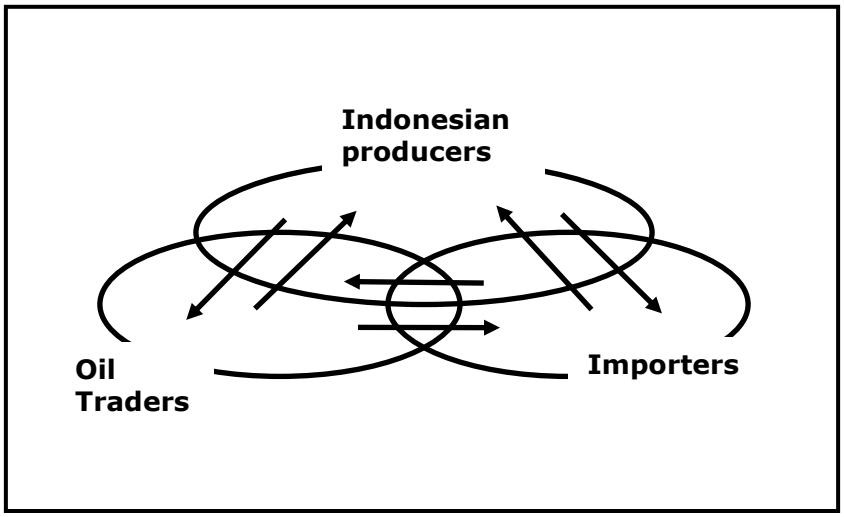
FOB INDONESIA SPOT LSWR PRICES

Rim assesses FOB Indonesia spot Mixed/Cracked low-sulfur waxy residue prices on a fixed price basis and a floating price basis.

In the absence of information of deals, bids and offers on a fixed price basis, the fixed price assessments indicate the price range in which a transaction on a floating price basis could be locked into with available derivative products, such as futures contracts and paper swaps values.

All prices are assessed based on information collected in the course of market research by Rim reporters each business day.

STRUCTURE of the FOB INDONESIA SPOT LSWR MARKET



Rim understands that the FOB Indonesia spot LSWR Market is structured with three groups of business parties: Indonesian producers, oil traders, importers. Rim assesses physical LSWR prices at which a standard spot transaction could take place.

Rim defines the three business parties in the FOB Indonesia Mixed/Cracked LSWR market as follows:

Indonesian Producer	A company that produces and sells Mixed/Cracked LSWR at its refining facilities in Indonesia. Indonesia's state-owned Pertamina is considered to be the dominant producer of Cracked LSWR. Equity holders that receive mixed/cracked LSWR through concession rights are also considered to be Indonesian producers.
Oil Trader	A company that buys and sells oil products in the international market.
Importer	A company outside of Indonesia that imports Mixed/Cracked LSWR on an FOB Indonesia basis for its own use or resale into other parties in the domestic market. Refiners that buy Mixed/Cracked LSWR as feedstock for its refining facilities are also considered to be an importer.

Rim defines a standard FOB Indonesia Mixed/Cracked LSWR market transaction as follows:

Case 1	An Indonesian producer sells a Mixed/Cracked LSWR cargo to a trader on a spot basis.
Case 2	An Indonesian producer sells a Mixed/Cracked LSWR cargo to an importer on a spot basis.
Case 3	An Indonesian producer sells a Mixed/Cracked LSWR cargo to another Indonesian producer on a spot basis.
Case 4	A trader sells a Mixed/Cracked LSWR cargo to an Indonesian producer on a spot basis.
Case 5	A trader sells a Mixed/Cracked LSWR cargo to an importer on a spot basis.
Case 6	A trader sells a Mixed/Cracked LSWR cargo to another trader on a spot basis.
Case 7	An importer sells a Mixed/Cracked LSWR cargo to an Indonesian producer on a spot basis.
Case 8	An importer sells a Mixed/Cracked LSWR cargo to a trader on a spot basis.
Case 9	An importer sells a Cracked LSWR cargo to another importer on a spot basis.

LSWR

Rim assesses FOB Indonesia spot LSWR prices for MR-size cargoes. The premiums are to the daily assessment for Singapore paper swaps values (180cst 3.5%S) prices. Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim's assessment window for FOB Indonesia spot Mixed/Cracked LSWR prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB Indonesia spot Mixed/Cracked LSWR prices are $/mt and $/bbl.</td></tr>
<tr><td>Time Window</td><td>FOB Indonesia spot Mixed/Cracked LSWR prices are for cargoes to be loaded during the period from 30 to 40 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB Indonesia spot Mixed/Cracked LSWR spot prices are for an MR-size cargo, which Rim considers standard. Values for contracts for smaller or larger volumes may also be considered.</td></tr>
<tr><td>Loading Port</td><td>FOB Indonesia spot Mixed/Cracked LSWR prices are for cargoes to be loaded at major ports in Indonesia.</td></tr>
<tr><td>Quality Specifications</td><td>FOB Indonesia spot Mixed/Cracked LSWR prices are for cargoes of which quality is equivalent to the following specifications.

<table><tr><td>Specific Gravity at 60 degree F</td><td>0.8789-0.9309</td></tr><tr><td>API Gravity at 60 degree F</td><td>20.5-29.5</td></tr><tr><td>Viscosity at 140 degree F</td><td>100-350</td></tr><tr><td>Pour Point</td><td>Max 120 degree F</td></tr><tr><td>Sulfur Content</td><td>Max 0.35%</td></tr><tr><td>Carbon Residue</td><td>Max 8.0%</td></tr><tr><td>Water Content</td><td>Max 0.5%</td></tr><tr><td>Ash Content</td><td>Max 0.1%</td></tr><tr><td>Flash Point</td><td>Min 166 degree F</td></tr></table>*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Rim FOB Taiwan Oil Products Price Assessment Methodology

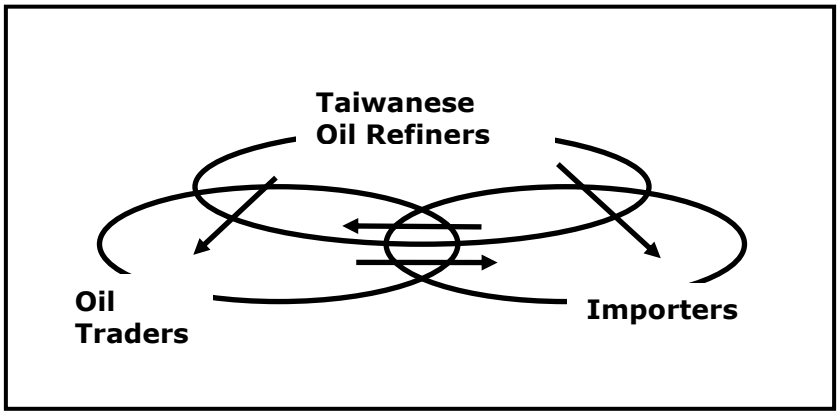
FOB TAIWAN SPOT PRICES

Rim assesses FOB Taiwan spot prices for MR-size cargoes of gasoline, jet fuel/kerosene and gasoil on a fixed price basis and a floating price basis.

In the absence of information of deals, bids and offers on a fixed price basis, the fixed price assessments indicate the price range in which a transaction on a floating price basis could be locked into with available derivative products, such as futures contracts and paper swaps values.

All prices are assessed based on information collected in the course of market research by Rim reporters each business day.

STRUCTURE of the FOB TAIWAN MR-size CARGO MARKET



Rim understands that the FOB Taiwan MR-size cargo oil products market is structured with three groups of business parties: Taiwanese oil refiners, Oil traders and Importers. Rim assesses FOB Taiwan MR-size cargo prices at which a standard spot transaction could take place.

Rim defines the three business parties in the FOB Taiwan oil products market as follows:

Taiwanese Refiner	A company of Taiwan that produces and exports oil products at/from its refining facilities in Taiwan.
Oil Trader	A company that buys and sells oil products in the international market.
Importer	A company that imports oil products and resell into domestic markets. Refiners of countries other than Taiwan are also considered to be importers.

Rim defines a standard FOB Taiwan MR-size cargo spot market transaction as follows:

Case 1	A Taiwanese refiner sells an oil products cargo to a trader on a spot basis.
Case 2	A Taiwanese refiner sells an oil products cargo to an importer on a spot basis.
Case 3	A Taiwanese refiner sells an oil products cargo to another Taiwanese refiner on a spot basis.
Case 4	A trader sells an oil products cargo to a Taiwanese refiner on a spot basis.
Case 5	A trader sells an oil products cargo to an importer on a spot basis.
Case 6	A trader sells an oil products cargo to another trader on a spot basis.
Case 7	An importer sells an oil products cargo to a Taiwanese refiner on a spot basis.
Case 8	An importer sells an oil products cargo to a trader on a spot basis.
Case 9	An importer sells an oil products cargo to another importer on a spot basis.

93RON gasoline

Rim assesses FOB Taiwan spot 93RON gasoline prices for MR-size cargoes. The premiums are to the daily assessment for FOB Singapore 92RON gasoline prices. Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore fixed price = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for FOB Taiwan spot 93RON gasoline prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB Taiwan spot 93RON gasoline prices are $/bbl.</td></tr>
<tr><td>Time Window</td><td>FOB Taiwan spot 93RON gasoline prices are for cargoes to be loaded during the period from 25 to 40 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB Taiwan 93RON gasoline prices are for MR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may also be considered.</td></tr>
<tr><td>Delivery Port</td><td>FOB Taiwan spot 93RON gasoline prices are for cargoes to be loaded at major ports in Taiwan.</td></tr>
<tr><td>Quality Specifications</td><td>FOB Taiwan spot 93RON gasoline prices are for cargoes of which quality is equivalent to the following specifications.
<table>
<tr><td>Lead Content</td><td></td><td>Max 0.010gpb/l</td></tr>
<tr><td>Density at 15 degree C</td><td></td><td>Min 0.720 mg/cm3</td></tr>
<tr><td rowspan="4">Distillation Temperature</td><td>10% evaporated</td><td>Max 70 degree C</td></tr>
<tr><td>50% evaporated</td><td>Max 115 degree C</td></tr>
<tr><td>90% evaporated</td><td>Max 185 degree C</td></tr>
<tr><td>Final Boiling Point</td><td>Max 210 degree C</td></tr>
<tr><td>Sulfur Content</td><td></td><td>Max 0.025%</td></tr>
<tr><td>Existent Gum</td><td></td><td>Max 4mg/100ml</td></tr>
<tr><td>Benzene Content</td><td></td><td>Max 1.5%</td></tr>
<tr><td>Color</td><td></td><td>Yellow</td></tr>
</table>
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Jet fuel/Kerosene

Rim assesses FOB Taiwan spot jet fuel/kerosene prices for MR-size cargoes. The premiums are to the daily assessment for Singapore paper swaps values. Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for FOB Taiwan spot jet fuel/kerosene prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB Taiwan spot jet fuel/kerosene prices are $/bbl.</td></tr>
<tr><td>Time Window</td><td>FOB Taiwan spot jet fuel/kerosene prices are for cargoes to be loaded during the period from 25 to 40 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB Taiwan spot jet fuel/kerosene prices are for MR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may also be considered.</td></tr>
<tr><td>Delivery Port</td><td>FOB Taiwan spot jet fuel/kerosene prices are for cargoes to be loaded at major ports in Taiwan.</td></tr>
<tr><td>Quality Specifications</td><td>FOB Taiwan spot jet fuel/kerosene prices are for cargoes of which quality is equivalent to the Joint Fuel System Check List, also known as Jet A-1 Check List. The JFSCL is issued by International Air Transport Association.

<table><tr><td>Distillation Temperature;
Initial Boiling Point
10% Evaporated</td><td>Max 205 degree C</td></tr><tr><td>Flash Point</td><td>Min 37 degree C</td></tr><tr><td>Sulfur Content</td><td>Max 0.3%</td></tr><tr><td>Smoke Point with naphthalene content of maximum 3.0%</td><td>Minimum 19mm</td></tr><tr><td>Copper corrosion 2h at 100 degree C</td><td>Maximum 1.0</td></tr><tr><td>Saybolt color</td><td>Minimum 18</td></tr></table>Extract from IATA’s JFSCL
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Gasoil

Rim assesses FOB Taiwan spot gasoil prices for MR-size cargoes of the grades with a sulfur content of 0.001%, 0.05%, 0.25% and 0.5%. The premiums are to the daily assessment for Singapore paper swaps (0.05%S gasoil). Rim considers that the fixed value is calculated on the following formula:

Premium + Value of Singapore Paper Swaps = Fixed Value

<table>
<tr><td>Assessment Window</td><td>Rim’s assessment window for FOB Taiwan spot gasoil prices closes at 18:30 Tokyo time.</td></tr>
<tr><td>Price Unit</td><td>FOB Taiwan spot gasoil prices are $/bbl.</td></tr>
<tr><td>Time Window</td><td>FOB Taiwan spot gasoil prices are for cargoes to be loaded during the period from 25 to 40 days ahead from the publication day.</td></tr>
<tr><td>Standard Size</td><td>FOB Taiwan spot gasoil prices are for MR-size cargoes, which Rim considers standard. Values for contracts for smaller or larger volumes may also be considered.</td></tr>
<tr><td>Loading Port</td><td>FOB Taiwan spot gasoil prices are for cargoes to be loaded at major ports in Taiwan.</td></tr>
<tr><td>Quality Specifications</td><td>FOB Taiwan spot gasoil prices are for cargoes of which quality is equivalent to the following specifications.
<table>
<tr><td colspan="2">Flash Point</td><td>Min 60 degree C</td></tr>
<tr><td colspan="2">Distillation Temperature;
90% evaporated</td><td>Max 360 degree C</td></tr>
<tr><td colspan="2">Pour Point</td><td>Max 5 degree C</td></tr>
<tr><td colspan="2">Cold Filter Plugging Point</td><td>Max –1 degree C</td></tr>
<tr><td colspan="2">Carbon Residue (10% btms)</td><td>Max 0.1%</td></tr>
<tr><td colspan="2">Cetane Index</td><td>Min 48</td></tr>
<tr><td colspan="2">Kinematic Viscosity at 40 degree C</td><td>Max 4.5 mm2/sec</td></tr>
<tr><td rowspan="4">Sulfur Content</td><td>0.001%S</td><td>Max 0.001%</td></tr>
<tr><td>0.05%S</td><td>Max 0.05%</td></tr>
<tr><td>0.25%S</td><td>Max 0.25%</td></tr>
<tr><td>0.5%S</td><td>Max 0.5%</td></tr>
</table>
*Specifications for other properties are to meet specifications that are commonly required in international trading.</td></tr>
</table>

Asia Bunker Fuel Price Assessments

Rim Assesses bunker fuel oil prices for cargoes to be traded in Japan, South Korea, Russian Far East, Taiwan (Kaohsiung), China (Dalian, Shanghai, and Qing dao), Hong Kong, Singapore, Bangkok (Thailand) and Colombo.

The delivery basis and grades for prices assessed are as follows:

Port	Basis	Grade		
Japan, Tokyo Bay	Delivered	180cst	380cst	MDO
Japan, West Japan	Delivered	180cst	380cst	MDO
Japan, Ise Bay	Delivered	180cst	380cst	MDO
South Korea (Southern ports)	Delivered	180cst	380cst	MGO
Russian Far East (Nakhodka, Vostochny, Vladivostok)	Delivered	180cst	380cst	MGO
Taiwan (Kaohsiung)	Delivered	180cst	380cst	MGO
China, Dalian	Delivered	180cst		MGO
China, Shanghai	Delivered	180cst	380cst	MGO
China, Qingdao	Delivered	180cst	380cst	MGO
Hong Kong	Delivered	180cst	380cst	MGO
Singapore	Delivered	180cst	380cst	MGO
Bangkok, Thailand	Delivered	180cst	380cst	MGO
Colombo	Delivered	180cst	380cst	MGO

*****Assessments for LS380cst were abolished in January 2015 due to a change in ECA sulfur regulation.

Assessment Window	Rim's assessment window for Asia bunker fuel oil prices closes at 18:30 Tokyo.
Price Unit	All Rim Asia bunker fuel oil prices are $/mt
Time Window	All Rim Asia bunker fuel oil prices are for lots to be delivered to ships during the period from 3 to 7 days ahead of the day the report is published. *Assessment for bunker fuel oil delivery shifts to the following month during the last five days of the current month.
Standard Size	All Rim Asia bunker fuel oil prices are for volumes in the range of 300-2,000mt lots, that Rim considers standard. Values for contracts for smaller or larger volumes may also be considered.

Quality Specifications	All Rim Asia bunker fuel prices are for cargoes of which quality is equivalent to the ISO standard for each grade (See “Quality Specifications” at the bottom).

Rim quotes posting prices of CPC in Kaohsiung, Keelung, Taichung, and Others in Taiwan. Both Contract prices and Spot prices are published.

Port	Basis	Grade		
Kaohsiung	Delivered	180cst	380cst	MGO
Keelung	Delivered	180cst	380cst	MGO
Taichung	Delivered	180cst	380cst	MGO
Others	Delivered	180cst	380cst	MGO

Quality Specifications
All bunker fuel prices in Rim Bunker Reports are for cargoes of which quality is equivalent to the following ISO standard.

380cst : RMG380

Density at 15 degree Celsius	Maximum 991.0kg/m2
Kinematic Viscosity	Maximum 380
Flash Point	Minimum 60 degree Celsius
Upper Pour Point	Maximum 30 to the twenty first power degree Celsius
Carbon Residue Content	Maximum 18%
Ash Content	Maximum 0.15%
Water Content	Maximum 0.5%
Sulfur Content	Maximum 3.5%
Vanadium Content	Maximum 300mg/kg
Aluminum plus Silicon Content	Maximum 80mg/kg
Total Sediment Content	Maximum 0.1%

180cst : RME180

Density at 15 degree Celsius	Maximum 991.0kg/m2
Kinematic Viscosity	Maximum 180
Flash Point	Minimum 60 degree Celsius
Upper Pour Point	Maximum 30 to the twenty first power degree Celsius
Carbon Residue Content	Maximum 15%
Ash Content	Maximum 0.10%
Water Content	Maximum 0.5%
Sulfur Content	Maximum 3.5%
Vanadium Content	Maximum 200mg/kg
Aluminum plus Silicon Content	Maximum 80mg/kg
Total Sediment Content	Maximum 0.1%

MDO: ISO specification

Kinematic Viscosity at 100 degree Celsius	Maximum 10.0mm2/s
Flash Point	Minimum 60 degree Celsius
Upper Pour Point	Maximum 24 to the thirty first power degree Celsius
Carbon Residue Content	Maximum 10%
Ash Content	Maximum 0.01%
Water Content	Maximum 0.3%
Sulfur Content	Maximum 2.0%

MGO: ISO specification

Kinematic Viscosity at 100 degree Celsius	Maximum 10.0mm2/s
Flash Point	Minimum 60 degree Celsius
Upper Pour Point	For the Winter spec, Maximum 0 degree Celsius For the Summer spec, Maximum 6 to the thirty first power degree Celsius
Carbon Residue Content	Maximum 10%
Ash Content	Maximum 0.01%
Water Content	Maximum 0.3%
Sulfur Content	Maximum 1.5%

Japan Domestic Products Waterborne Market Assessment Methodology

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.

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. Actual market is defined as price levels at which, based on the principle of competition, many players can buy or sell, that is, price levels at which most deals can be concluded.

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.

Priority for assessment is basically in the following three categories:
(1) Deal done prices
(2) Firm bids and offers
(3) Buying/selling indications
While we examine the appropriateness of (1), we also place emphasis on (2) and (3). In particular, for (2), priority is enhanced and may be treated in the same way as (1) if the quantity, lifting period and place of lifting are clearly stated.

Explanation of (1) and (2)
(1) To reflect more reflect more realistically actual market conditions, deals done at levels far from the bid-offer range of most market participants will not be considered in RIM’s assessment.

Information on deals done is classified into 3 types:

① Confirmation obtained from both the buyer and the seller

② Confirmation obtained from only the buyer or the seller but not both

③ Information from several reliable third-party sources

In terms of reliability, ① is the most ideal although, owing to various constraints, many cases fall into ②. In principle, RIM’s price assessment is based on ① with ② also

being considered. However, ③ is not taken into account. Further, even when information is obtained directly from the buyer or seller, this will not be considered if found to be untrue.

To reflect the different quantities traded in Rim's assessment, 50% is based on cumulative average and of the remaining 50%, priority is given to the number of trades with the average price taken based on the number of trades.

Rim Japan Domestic Waterborne Price = (Cumulative Average + Price Average)/2

(2) In the spot market, prices of commodities are determined by competition among sellers and buyers. Price assessment takes into account lower offers instead of higher offers and higher bids instead of lower bids.

Changes in supply/demand, and other markets such as crude and overseas products markets, and currency exchange rates are deemed in principle to be reflected in deal prices and bids/offers. When price information is scarce, movements in these other markets may be used as a reference in price assessment.

Price assessment range is, in principle, between Yen 200 and Yen 1,000. Where only offers exist and no bids are posted in response, the price assessment range may be widened to a maximum of Yen 1,000. The same applies to instances where only bids exist.

Unit Price:
In line with industry practice, unit prices are in Yen per kiloliter (kl).

Quality:
Basically, price assessment applies to imported cargoes or domestically produced cargoes meeting Japan Industrial Standards (JIS) and generally accepted by the oil industry in Japan. For gasoil, low-sulfur C (LSC) fuel oil and high-sulfur C (HSC) fuel oil, however, the following considerations are taken.

Gasoil: As No.1 and No.2 gasoil as specified in JIS are regarded as being generally available in the market, price assessment is based on No.1 and No.2 gasoil. No.3 and special No.3 gasoil used in cold areas during the winter season are not reflected in price assessment per se. Basically, cargoes that are tax-exempted are used for price assessment while cargoes that are taxed are not considered.

LSC fuel oil: Price assessment is basically for 0.2-0.4% sulfur. Further, only HPP products are used and LPP products are not considered.

HSC fuel oil: Price assessment is basically for 2.5-3.0% sulfur.

Products to which price assessment applies:
7 products: Regular gasoline, kerosene, gasoil, A fuel oil, low-sulfur A (LSA) fuel oil, low-sulfur C (LSC) fuel oil, high-sulfur C (HSC) fuel oil.

Assessment Window:
Price assessment for the current day is for deals done and bids/offers from 10am to 3pm Tokyo time in the OTC (over the counter) market. However, considering high volatility in the futures and paper swap markets, greater attention is given to trades and bids and offers between 2pm and 3pm Tokyo time, or close to this time. Further, Rim has to be informed of these trades and bids/offers by 5pm Tokyo time. Trades and bids/offers reported after that will not be considered for price assessment.

Assessment Period:
Up till the 25th of the current month, trades for lifting in the current month are considered. From the 26th of the current month, price assessment shifts to trades for lifting in the following month. If the 25th is a holiday, then the previous day will be the last day for trades lifting in the current month to be considered.

Quantity:
The assessment quantity is 200 kiloliters and above per lot for gasoline, kerosene, gasoil, A fuel oil and LSA fuel oil. For LSC fuel oil, the standard quantity is 1,000 kiloliters and above per lot. For HSC fuel oil, the standard quantity is 100 kiloliters and above per lot. Volumes that are different from the standard quantity may also be considered.

Market Structure, Lifting/Delivery Points, and Areas of Assessment:
Rim assesses wholesale prices on an ex-terminal basis for cargoes from refineries and secondary terminals. For secondary terminals, a clear indication of the loading terminal is desirable. However, prices on a delivered basis may be taken as a reference. In such a case, the actual freight will be used to calculate the ex-terminal price.

RIM assesses two main areas: Tokyo Bay and Western Japan (including Hanshin and areas in the Osaka Bay area such as Wakayama, and Oita which is located west of Setouchi).

Regarding price differences between different areas, while supply/demand pertaining to each particular area is taken into account, caution is adopted so that prices do not vary significantly from actual market conditions. To reflect more realistically actual market situations, actual freight is considered. Because of this, even if traded prices and bids/offers are unchanged, price assessment can move up or down due to differences between areas.

Trades Considered in Assessment:
Outright spot trades with confirmation obtained from the buyer and seller will be taken into account. Traded prices and bids/offers are obtained by Rim reporters in the course of information gathering. Further, traded prices and bids/offers on (1) the Rim Trading Board and online physical trades such as in (2) JOX (J-Oil Exchange) are also considered for price assessment.

When making assessment on fixed prices, paper swap prices are also used as a reference. In addition, prices in physical forward trades and futures prices for oil products in the Tokyo Commodity Exchange are used as a reference.

Term deals are not considered. Package deals, location swaps and time swaps, barter trades may be used as a reference but the assessment will not be solely reflecting these deals.

For deals done directly to end-users, prices often deviate significantly from actual market levels for various reasons. Consequently, while these prices may be used as a reference, Rim's assessment will not be based entirely on them.

Explanation of (1) and (2)
(1) Rim Trading Board
Traded prices and bids/offers shown on RIM Trading Board from 10am to 3pm Tokyo time are considered in price assessment. However, greater attention is given to traded prices and bids/offers between 2pm and 3pm Tokyo time, or close to this time. Bids/offers and traded prices on Rim Trading Board are obtained by phone, email, Yahoo messenger and other communication services, as well as by surveys conducted by Rim reporters.

(2) Physical trades on JOX
Rim's assessment considers prices for prompt delivery on JOX's screen. Trades switch to

lifting in the following month from the 26th of each month.

Assessment Window
Rim's assessment reflects deals done on the screen up till 2.30pm based on firm bids/offers shown on the screen from 2pm onwards. Deals done or bids/offers indicated outside this assessment window are, in principle, not reflected in Rim's assessment. Even if a deal is done within the assessment window, it will not be considered if the price deviates too drastically from the bid-offer range or if confirmation is not obtained. If no deals are done, bids/offers will be used as a reference in Rim's assessment.

Assessment Principles for Market-linked Floating Prices:
Trades on market-linked floating prices could be based on Rim monthly average waterborne prices, Rim monthly average truck prices and futures prices without limitations. Concerning trades and bids/offers based on these floating prices, if factors such as supply/demand and cost are unchanged, movements in the premium or discount will be reflected in the fixed price.

The premium and discount in floating-price trades is regarded to be reflecting the strength or weakness of the current market and includes the following three factors:
1. Quality differences
2. Area differences
3. Commission

Concerning (1) and (2), assessment will be made separately from the bullish and bearish factors in the general market.

The methods of obtaining Rim monthly average waterborne prices and Rim monthly average truck prices are given below.

<u>Rim monthly average waterborne prices</u>
Monthly average prices for 3 products: gasoline, kerosene and gasoil are obtained as follows:

1. From the 26th of the previous month (the starting day of assessment for cargoes to be lifted in the current month) to the 10th of the current month, paper swap prices for the relevant month obtained by Rim's survey on each day will be used. For example, for lifting in November 2015, the November paper swap prices (mid-point value) on each day from October 26 to November 10 will be taken as the monthly average. For deals done at "+200yen/kiloliter", 200yen will be added to the paper swap price on that day to obtain the fixed price.

2. From the 11th to the 25th of the month, the monthly average is obtain as follows: First, average prices from the 1st to the 25th (assuming prices from the previous day till the 25th remain the same) are used; Next, for the 26th till the end of the month, paper swap prices (mid-point value) for the following month obtained by Rim's survey will be used; the average of these two sets of prices forms the basis for the monthly average during this period.

3. For market-linked trades for A fuel oil and LSA fuel oil: Trades are considered from the 2nd to the 25th of the month of delivery. From the 26th, when the month of delivery is shifted, to the first of the month of delivery, market-linked trades will not be converted to fixed prices. For trades from the 2nd to the 25th of the month of delivery, an estimated average will be calculated (assuming that prices of the previous day until the 25th are

unchanged) and this will be considered the monthly average (base price).

4. For LSC fuel oil and HSC fuel oil, prices in the previous day's report are assumed to be the same till the end of the month and an estimated average is calculated based on this, which is considered the monthly average.

Rim monthly average truck prices
From the 2nd business day of the month to the 25th of the month (the previous business day is applied if the 25th is a holiday), average truck prices (assuming prices from the previous day till the 25th of the month are unchanged) will be used. On the first business day of the month, prices on the last business of the previous month (for delivery in the next month) will be used. From the 26th to the end of the month, as the delivery month for waterborne and truck markets is different, trades linked to Rim truck prices will not be considered for price assessment. Among the Rim truck prices used, the four Rim prices refer to prices from refineries in Chiba, Kawasaki, Chukyo and Hanshin.

Assessment principles for Japan domestic products paper swap:
Products
7 products are considered: gasoline, kerosene, gasoil, A fuel oil, LSA fuel oil, LSC fuel oil, HSC fuel oil. LSC fuel oil and HSC fuel oil are based on "barge spot price assessments" and have the same values as "barge spot prices". The assessment price range is, in principle, between Yen 200 and Yen 1,000.

Assessment Window and Market Structure
Assessment is based on traded prices and bids/offers in the OTC market during 2pm to 3pm Tokyo time on the day of the assessment obtained through surveys by Rim reporters. Traded prices and firm bids/offers on the Rim Trading Board and in paper markets including JOX and JOE are also considered.

Period
Assessment is for the first 3 months forward. Assessment for the front month of the 3 months will end on the 10th of the lifting month for the physical cargoes (brought forward in the case of holidays). From the 11th, assessment will shift to cargoes lifting in the following month. For example, for June 2014, assessment for the front month July contract starts from June 11 and finishes on July 10. From July 11, the front month shifts to the August contract.

Quantity
200 kiloliters and above per lot for gasoline, kerosene, gasoil, A fuel oil and LSA fuel oil, 1,000 kiloliters and above per lot for LSC fuel oil and 100 kiloliters and above per lot for HSC fuel oil. Volumes different from the standard quantity may also be used as a reference.

Area of Assessment
Refineries in Japan