



RIM FOB Singapore Oil Products Price Assessment Methodology

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Price Assessment Principle

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

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

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

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

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

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



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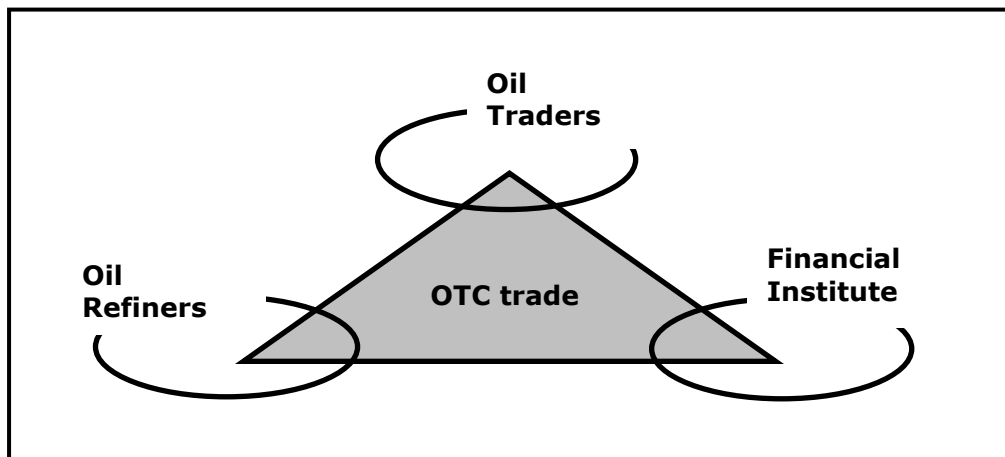
FOB Singapore

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SINGAPORE PRODUCTS PAPER SWAPS VALUES

RIM assesses values of Singapore products paper swaps once a day at 17:30 Tokyo time. All values are for available swaps contracts for periodical average settlements based on daily price quotations for physical cargo assessments by Platts, a price reporting service. All prices are assessed based on information collected in the course of market research by RIM reporters each business day.

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.

Assessment Window	RIM's assessment window for Singapore products paper swaps values closes at 17:30 Tokyo time.
Price Unit	Values for naphtha, jet/kerosene, gasoil, regrade are in \$/bbl on an FOB Singapore basis. Values for 180 and 380 HSFO are in \$/mt on an FOB Singapore basis.
Time Window	RIM assesses values of Singapore products paper swaps for three forward months. The front month reflects the same month as the first day of the RIM physical cargo price assessment window. Ex: the January swaps contract is no longer assessed when the front of the delivery window for physical cargoes becomes Feb 1.
Standard Size	Values of Singapore products paper swaps are for a contract for 50,000bbl, which RIM considers standard. Values for contracts for smaller or larger volumes are to be translated into estimated values that the contract could be worth if the contracts were for the standard volume.

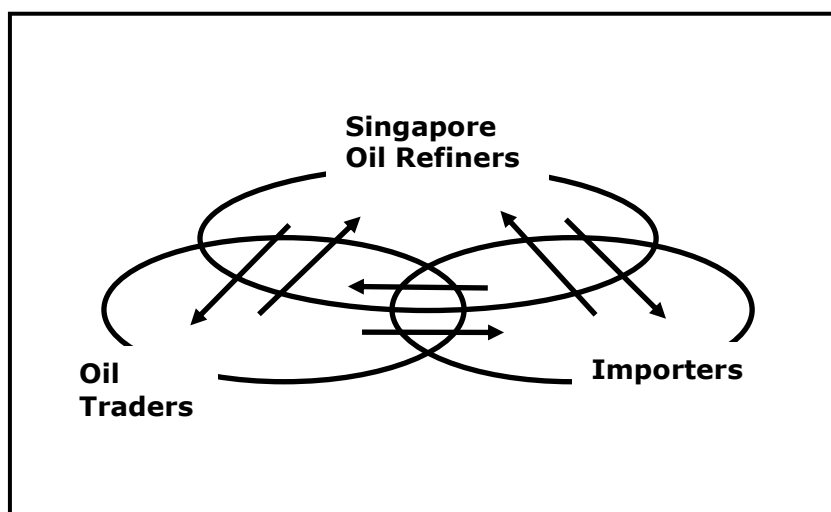
FOB SINGAPORE SPOT PRICES

RIM assesses FOB Singapore spot prices for physical cargoes of gasoline, naphtha, kerosene/A1 jet fuel, gasoil, 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 grade, 95 RON grade and 97 RON grade. The premiums are to periodical average of daily assessments for FOB Singapore spot naphtha prices by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula:

$$\text{Premium} + \text{Value of Singapore Paper Swaps} = \text{Fixed Value}$$

Assessment Window	RIM's assessment window for FOB Singapore spot gasoline prices closes at 17:30 Tokyo time.																																				
Price Unit	FOB Singapore spot gasoline prices are in \$/bbl.																																				
Time Window	FOB Singapore spot gasoline prices are for cargoes to be loaded during the period from 20 to 35 days ahead from the publication day. The premiums are to Singapore paper swaps for the front month in RIM Singapore paper swaps assessment.																																				
Standard Size	FOB Singapore spot gasoline prices are for an MR-size cargo, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were with the standard volumes.																																				
Loading Port	FOB Singapore spot gasoline prices are for cargoes to be loaded at major ports in Singapore.																																				
Quality Specifications	<p>FOB Singapore spot gasoline prices are for cargoes of which quality is equivalent to the following specifications.</p> <table border="1"> <tr> <td>Research Octane Number</td> <td colspan="2">92, 95, 97</td> </tr> <tr> <td>Lead Content</td> <td colspan="2">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>Copper Corrosion 3h at 50 degree C</td> <td colspan="2">Max 1</td> </tr> <tr> <td>Sulfur Content</td> <td colspan="2">Max 0.05%</td> </tr> <tr> <td>Existent Gum</td> <td colspan="2">Max 4mg/100ml</td> </tr> <tr> <td>Benzene Content</td> <td colspan="2">Max 5%</td> </tr> <tr> <td>MTBE Content</td> <td colspan="2">Max 10%</td> </tr> <tr> <td>Color</td> <td colspan="2">Undyed, orange</td> </tr> </table> <p>*Specifications for other properties are to meet specifications that are commonly required in international trading.</p>		Research Octane Number	92, 95, 97		Lead Content	Max 0.013gpb/l		Distillation Temperature;	10% evaporated	Max 74 degree C	50%	Max 127 degree C	90%	Max 190 degree C	Final Boiling Point	Max 225 degree C	Residue	Max 2.0%	Copper Corrosion 3h at 50 degree C	Max 1		Sulfur Content	Max 0.05%		Existent Gum	Max 4mg/100ml		Benzene Content	Max 5%		MTBE Content	Max 10%		Color	Undyed, orange	
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Benzene Content	Max 5%																																				
MTBE Content	Max 10%																																				
Color	Undyed, orange																																				



<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)–(*freight rates for the Singapore-Japan route)] / 9
 *The freight rates are for an MR tanker on the Singapore-Japan route.

The differential between the netback fixed prices from CFR Japan prices and the swap values are considered to be relevant premiums for the day of publication.

Assessment Window	RIM's assessment window for FOB Singapore spot naphtha prices closes at 17:30 Tokyo time.														
Price Unit	FOB Singapore spot naphtha prices are in \$/bbl.														
Time Window	FOB Singapore spot naphtha prices in the publications released during the period from the first day to the 15 th of a month are for cargoes to be loaded during the period from the 9 th to the 24 th of the next month from the current month. FOB Singapore spot naphtha prices in the publications released during the period from the 16 th to last day of a month are for cargoes to be loaded during the period from the 25 th of the next month to the 8 th of a month after the next from the current month.														
Standard Size	FOB Singapore spot naphtha prices are for MR-size cargoes, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were with the standard volumes.														
Delivery Port	FOB Singapore spot naphtha prices are for cargoes to be loaded at major ports in Singapore.														
Quality Specifications	<p>FOB Singapore spot naphtha prices are for cargoes of which quality is equivalent to "the open specifications".</p> <table border="1"> <tr> <td>Paraffin Content</td> <td>Min 65%</td> </tr> <tr> <td>Sulfur Content</td> <td>Max 650ppm</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> <p>Extract from the open specification *Specifications for other properties are to meet specifications that are commonly required in international trading.</p> <p>REFERENCE: Full-range naphtha</p> <table border="1"> <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>	Paraffin Content	Min 65%	Sulfur Content	Max 650ppm	Olefin Content	Max 1%	Specific Gravity at 60 degree F	0.65-0.74	Paraffin Content	78-82%	Olefin Content	Max 1%	Specific Gravity at 60 degree F	0.68-0.70
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Paraffin Content	78-82%														
Olefin Content	Max 1%														
Specific Gravity at 60 degree F	0.68-0.70														

<Jet/Kerosene>

RIM assesses FOB Singapore spot kerosene and A1 jet fuel prices. The premiums are to periodical average of daily assessments for FOB Singapore spot A1 jet fuel prices by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula: Premium + Value of Singapore Paper Swaps = Fixed Value

Assessment Window	RIM's assessment window for FOB Singapore spot A1 Jet fuel/Kerosene prices closes at 17:30 Tokyo time.	
Price Unit	FOB Singapore spot kerosene prices are in \$/bbl.	
Time Window	FOB Singapore spot A1 jet fuel/kerosene prices are for cargoes to be loaded during the period from 20 to 35 days ahead from the publication day. The premiums are to Singapore paper swaps for the front month in RIM Singapore paper swaps assessment.	
Standard Size	FOB Singapore spot A1 jet fuel/kerosene prices are for MR-size cargoes, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were with the standard volumes.	
Delivery Port	FOB Singapore spot A1 jet fuel/kerosene prices are for cargoes to be loaded at major ports in Singapore.	
Quality Specifications	FOB Singapore spot A1 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 JFSCCL is issued by International Air Transport Association.	
	Distillation Temperature; Initial Boiling Point 10% Evaporated	Max 205 degree C
	Flash Point	Max 40 degree C
	Sulfur Content	Max 0.3%
	Smoke Point with naphthalene content of maximum 3.0%	Minimum 19
	Copper corrosion 2h at 100 degree C	Maximum 1.0
	Saybolt color	Minimum 18
	Extract from IATA's JFSCCL *Specifications for other properties are to meet specifications that are commonly required in international trading.	

<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 periodical average of daily assessments for FOB Singapore spot gasoil (0.05% sulfur) prices by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula:
 Premium + Value of Singapore Paper Swaps = Fixed Value

Assessment Window	RIM's assessment window for FOB Singapore spot gasoil prices closes at 17:30 Tokyo time.																													
Price Unit	FOB Singapore spot gasoil prices are in \$/bbl.																													
Time Window	FOB Singapore spot gasoil prices are for cargoes to be loaded during the period from 20 to 35 days ahead from the publication day. The premiums are to Singapore paper swaps for the front month in RIM Singapore paper swaps assessment.																													
Standard Size	FOB Singapore spot gasoil prices are for MR-size cargoes, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were with the standard volumes.																													
Delivery Port	FOB Singapore spot gasoil prices are for cargoes to be loaded at major ports in Singapore.																													
Quality Specifications	<p>FOB Singapore spot gasoil prices are for cargoes of which quality is equivalent to the following specifications.</p> <table border="1"> <tr> <td>Flash Point</td> <td colspan="2">Min 50 degree C</td> </tr> <tr> <td>Distillation Temperature; 90% evaporated</td> <td colspan="2">Max 360 degree C</td> </tr> <tr> <td>Pour Point</td> <td colspan="2">Max 5 degree C</td> </tr> <tr> <td>Cold Filter Plugging Point</td> <td colspan="2">Max -1 degree C</td> </tr> <tr> <td>Carbon Residue (10% btms)</td> <td colspan="2">Max 0.1%</td> </tr> <tr> <td>Cetane Index</td> <td colspan="2">Min 48</td> </tr> <tr> <td>Kinematic Viscosity at 40 degree C</td> <td colspan="2">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> <p>*Specifications for other properties are to meet specifications that are commonly required in international trading.</p>		Flash Point	Min 50 degree C		Distillation Temperature; 90% evaporated	Max 360 degree C		Pour Point	Max 5 degree C		Cold Filter Plugging Point	Max -1 degree C		Carbon Residue (10% btms)	Max 0.1%		Cetane Index	Min 48		Kinematic Viscosity at 40 degree C	Max 4.5 mm ² /sec		Sulfur Content	0.001%S	Max 0.001%	0.05%S	Max 0.05%	0.5%S	Max 0.5%
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Sulfur Content	0.001%S	Max 0.001%																												
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	0.5%S	Max 0.5%																												



<Fuel Oil>

RIM assesses FOB Singapore spot fuel oil prices for the following grades; 180cst HSFO (3.5% sulfur) and 380cst HSFO (3.5% sulfur). The premiums are to periodical average of daily assessments for FOB Singapore spot 180cst and 380cst HSFO (3.5% sulfur) prices by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula: Premium + Value of Singapore Paper Swaps = Fixed Value

Assessment Window	RIM's assessment window for FOB Singapore spot fuel oil prices closes at 17:30 Tokyo time.																					
Price Unit	FOB Singapore spot fuel oil prices are in \$/mt.																					
Time Window	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. The premiums are to Singapore paper swaps for the front month in RIM Singapore paper swaps assessment.																					
Standard Size	FOB Singapore spot fuel oil prices are for MR-size cargoes, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were with the standard volumes.																					
Delivery Port	FOB Singapore spot fuel oil prices are for cargoes to be loaded at major ports in Singapore.																					
Quality Specifications	<p>FOB Singapore spot fuel oil prices are for cargoes of which quality is equivalent to the following specifications.</p> <table border="1"> <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> <p>*Specifications for other properties are to meet specifications that are commonly required in international trading.</p>		Sulfur Content	HSFO	Max 3.5%	Flash Point	All Grades	Min 66 degree C	Pour Point	All Grades	Max 24 degree C	Carbon Residue	180cst	Max 16%	380cst	Max 18%	Water Content	All Grades	Max 0.5%	Ash Content	All Grades	Max 0.1%
Sulfur Content	HSFO	Max 3.5%																				
Flash Point	All Grades	Min 66 degree C																				
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	380cst	Max 18%																				
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Ash Content	All Grades	Max 0.1%																				



RIM FOB South Korea Oil Products Price Assessment Methodology

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Price Assessment Principle

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

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

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



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FOB SOUTH KOREA SPOT PRICES

RIM assesses FOB South Korea spot prices for MR-size cargoes and small-tanker cargoes (5,000-6,000mt). Grades that are assessed are as follows:

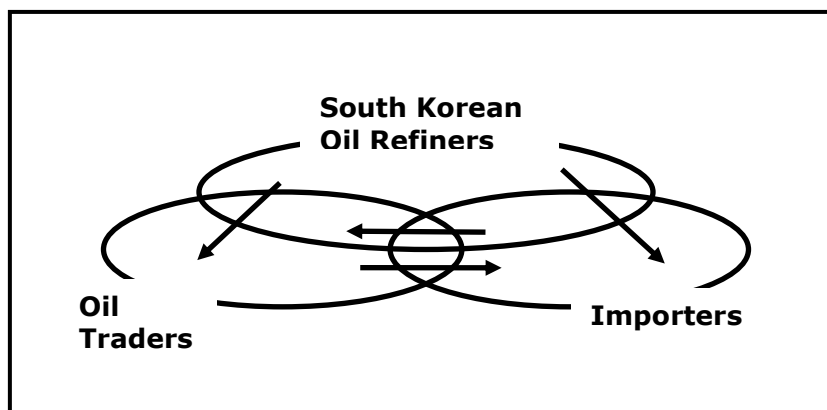
MR-size cargo	Small tanker cargo
92RON gasoline	91RON gasoline
Jet/Kerosene	Kerosene
Gasoil-0.001%S	Gasoil-0.001%S
Gasoil-0.05%S	A-fuel oil
Gasoil-0.2%S	LS A-fuel oil
Gasoil-0.5%S	LSFO-0.3%S
Fuel oil-3.5%S (380cst)	
LSFO-0.3%S	

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 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.

<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	A company of South Korea that produces and exports oil
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Refiner	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 periodical average of daily assessments for FOB Singapore spot 92RON gasoline prices by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula:
Premium + Value of Singapore 92RON Gasoline Prices = Fixed Value

Assessment Window	RIM's assessment window for FOB South Korea spot gasoline prices for MR-size cargoes closes at 17:30 Tokyo local time.																																				
Price Unit	FOB South Korea spot gasoline prices for MR-size cargoes are in \$/bbl.																																				
Time Window	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. The premiums are to Singapore 92RON gasoline prices in RIM Singapore physical cargoes assessment.																																				
Standard Size	FOB South Korea spot gasoline prices for MR-size cargoes are for cargoes with a 25,000-35,000mt lot, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were with the standard volumes.																																				
Loading Port	FOB South Korea spot gasoline prices for MR-size cargoes are for cargoes to be loaded at major ports in South Korea.																																				
Quality Specifications	<p>FOB South Korea spot gasoline prices for MR-size cargoes are for cargoes of which quality is equivalent to the following specifications.</p> <table border="1"> <tr> <td>Lead Content</td> <td colspan="2">Max 0.013gpb/l</td> </tr> <tr> <td>Density at 15 degree C</td> <td colspan="2">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% 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>Residue</td> <td>Max 2.0%</td> </tr> <tr> <td>Copper Corrosion 3h at 50 degree C</td> <td colspan="2">Max 1</td> </tr> <tr> <td>Sulfur Content</td> <td colspan="2">Max 0.005%</td> </tr> <tr> <td>Vapor Pressure at 37.8 degree C</td> <td colspan="2">0.45-0.80 Kg/cm2</td> </tr> <tr> <td>Existent Gum</td> <td colspan="2">Max 5mg/100ml</td> </tr> <tr> <td>Benzene Content</td> <td colspan="2">Max 1%</td> </tr> <tr> <td>Color</td> <td colspan="2">Yellow</td> </tr> </table> <p>*Specifications for other properties are to meet specifications that are commonly required in international trading.</p>		Lead Content	Max 0.013gpb/l		Density at 15 degree C	Min 0.783 mg/cm3		Distillation Temperature	10% evaporated	Max 70 degree C	50% evaporated	Max 125 degree C	90% evaporated	Max 175 degree C	Final Boiling Point	Max 225 degree C	Residue	Max 2.0%	Copper Corrosion 3h at 50 degree C	Max 1		Sulfur Content	Max 0.005%		Vapor Pressure at 37.8 degree C	0.45-0.80 Kg/cm2		Existent Gum	Max 5mg/100ml		Benzene Content	Max 1%		Color	Yellow	
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Vapor Pressure at 37.8 degree C	0.45-0.80 Kg/cm2																																				
Existent Gum	Max 5mg/100ml																																				
Benzene Content	Max 1%																																				
Color	Yellow																																				



<Jet/Kerosene>

RIM assesses FOB South Korea spot A1 jet fuel/kerosene prices for MR-size cargoes. The premiums are to periodical average of daily assessments for FOB Singapore spot A1 jet fuel prices by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula: Premium + Value of Singapore Paper Swaps = Fixed Value

Assessment Window	RIM's assessment window for FOB South Korea spot jet/kerosene prices for MR-size cargoes closes at 17:30 Tokyo local time.													
Price Unit	FOB South Korea spot jet/kerosene prices for MR-size cargoes are in \$/bbl.													
Time Window	FOB South Korea spot jet/kerosene prices for MR-size cargoes are for cargoes to be loaded during the period from 25 to 40 days ahead from the publication day. The premiums are to Singapore paper swaps for the front month in RIM Singapore paper swaps assessment.													
Standard Size	FOB South Korea spot jet/kerosene prices for MR-size cargoes are for cargoes with a 25,000-35,000mt lot, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were within the standard volumes.													
Delivery Port	FOB South Korea spot jet/kerosene prices for MR-size cargoes are for cargoes to be loaded at major ports in South Korea.													
Quality Specifications	<p>FOB South Korea spot jet/Kerosene prices for MR-size cargoes 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.</p> <table border="1"> <tr> <td>Distillation Temperature; Initial Boiling Point 10% Evaporated</td> <td>Max 205 degree C</td> </tr> <tr> <td>Flash Point</td> <td>Max 40 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 19</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> <p>Extract from IATA's JFSCL *Specifications for other properties are to meet specifications that are commonly required in international trading.</p>		Distillation Temperature; Initial Boiling Point 10% Evaporated	Max 205 degree C	Flash Point	Max 40 degree C	Sulfur Content	Max 0.3%	Smoke Point with naphthalene content of maximum 3.0%	Minimum 19	Copper corrosion 2h at 100 degree C	Maximum 1.0	Saybolt color	Minimum 18
Distillation Temperature; Initial Boiling Point 10% Evaporated	Max 205 degree C													
Flash Point	Max 40 degree C													
Sulfur Content	Max 0.3%													
Smoke Point with naphthalene content of maximum 3.0%	Minimum 19													
Copper corrosion 2h at 100 degree C	Maximum 1.0													
Saybolt color	Minimum 18													



<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%, 0.2% and 0.5%. The premiums are to periodical average of daily assessments for FOB Singapore spot (0.05% sulfur) prices by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula: Premium + Value of Singapore Paper Swaps = Fixed Value

Assessment Window	RIM's assessment window for FOB South Korea spot gasoil prices for MR-size cargoes closes at 17:30 Tokyo local time.																															
Price Unit	FOB South Korea spot gasoil prices for MR-size cargoes are in \$/bbl.																															
Time Window	FOB South Korea spot gasoil prices for MR-size cargoes are for cargoes to be loaded during the period from 25 to 40 days ahead from the publication day. The premiums are to Singapore paper swaps for the front month in RIM Singapore paper swaps assessment.																															
Standard Size	FOB South Korea spot gasoil prices for MR-size cargoes are for cargoes with a 25,000-35,000mt lot, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were within the standard volumes.																															
Loading Port	FOB South Korea spot gasoil prices for MR-size cargoes are for cargoes to be loaded at major ports in South Korea.																															
Quality Specifications	<p>FOB South Korea spot gasoil prices for MR-size cargoes are for cargoes of which quality is equivalent to the following specifications.</p> <table border="1"> <tr> <td>Flash Point</td> <td colspan="2">Min 50 degree C</td> </tr> <tr> <td>Distillation Temperature; 90% evaporated</td> <td colspan="2">Max 360 degree C</td> </tr> <tr> <td>Pour Point</td> <td colspan="2">Max 5 degree C</td> </tr> <tr> <td>Cold Filter Plugging Point</td> <td colspan="2">Max -1 degree C</td> </tr> <tr> <td>Carbon Residue (10% btms)</td> <td colspan="2">Max 0.1%</td> </tr> <tr> <td>Cetane Index</td> <td colspan="2">Min 48</td> </tr> <tr> <td>Kinematic Viscosity at 40 degree C</td> <td colspan="2">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>0.2%S</td> <td>Max 0.2%</td> </tr> <tr> <td>0.5%S</td> <td>Max 0.5%</td> </tr> </table> <p>*Specifications for other properties are to meet specifications that are commonly required in international trading.</p>		Flash Point	Min 50 degree C		Distillation Temperature; 90% evaporated	Max 360 degree C		Pour Point	Max 5 degree C		Cold Filter Plugging Point	Max -1 degree C		Carbon Residue (10% btms)	Max 0.1%		Cetane Index	Min 48		Kinematic Viscosity at 40 degree C	Max 4.5 mm ² /sec		Sulfur Content	0.001%S	Max 0.001%	0.05%S	Max 0.05%	0.2%S	Max 0.2%	0.5%S	Max 0.5%
Flash Point	Min 50 degree C																															
Distillation Temperature; 90% evaporated	Max 360 degree C																															
Pour Point	Max 5 degree C																															
Cold Filter Plugging Point	Max -1 degree C																															
Carbon Residue (10% btms)	Max 0.1%																															
Cetane Index	Min 48																															
Kinematic Viscosity at 40 degree C	Max 4.5 mm ² /sec																															
Sulfur Content	0.001%S	Max 0.001%																														
	0.05%S	Max 0.05%																														
	0.2%S	Max 0.2%																														
	0.5%S	Max 0.5%																														



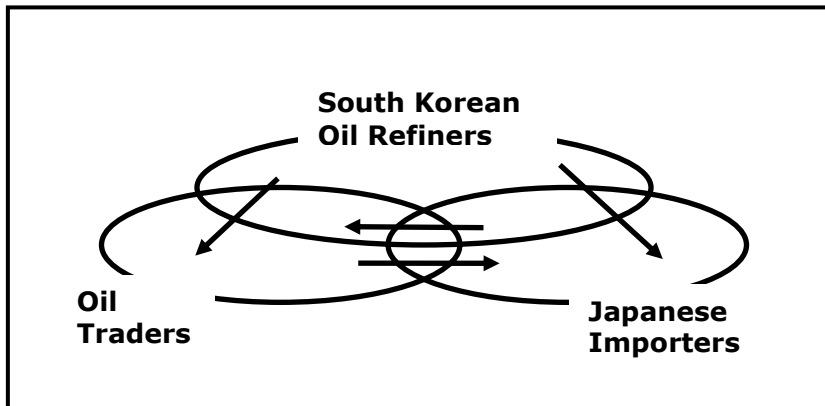
<Fuel Oil>

RIM assesses FOB South Korea spot fuel oil prices for MR-size cargoes of the two grades; 180cst HSFO with a sulfur content of less than 3.5%, and 180cst LSFO with a sulfur content of less than 0.3%. The premiums are to periodical average of daily assessments for FOB Singapore spot 180cst HSFO (3.5% sulfur) prices by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula: Premium + Value of Singapore Paper Swaps = Fixed Value

Assessment Window	RIM's assessment window for FOB South Korea spot fuel oil prices for MR-size cargoes closes at 17:30 Tokyo local time.																								
Price Unit	FOB South Korea spot fuel oil prices for MR-size cargoes are in \$/mt.																								
Time Window	FOB South Korea spot fuel oil prices for MR-size cargoes are for cargoes to be loaded during the period from 25 to 40 days ahead from the publication day. The premiums are to Singapore paper swaps (180cst 3.5%S HSFO) for the front month in RIM Singapore paper swaps assessment.																								
Standard Size	FOB South Korea spot fuel oil prices for MR-size cargoes are for cargoes with a 25,000-35,000mt lot, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were within the standard volumes.																								
Loading Port	FOB South Korea spot fuel oil prices for MR-size cargoes are for cargoes to be loaded at major ports in South Korea.																								
Quality Specifications	<p>FOB South Korea spot fuel oil prices for MR-size cargoes are for cargoes of which quality is equivalent to the following specifications.</p> <table border="1"> <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> </table> <p>*Specifications for other properties are to meet specifications that are commonly required in international trading.</p>		Sulfur Content	HSFO	Max 3.5%	LSFO	Max 0.3%	Flash Point	All Grades	Min 66 degree C	Kinematic Viscosity at 50 degree C	All Grades	Max 380cst	Pour Point	All Grades	Max 24 degree C	Carbon Residue	All Grades	Max 16%	Water Content	All Grades	Max 0.5%	Ash Content	All Grades	Max 0.1%
Sulfur Content	HSFO	Max 3.5%																							
	LSFO	Max 0.3%																							
Flash Point	All Grades	Min 66 degree C																							
Kinematic Viscosity at 50 degree C	All Grades	Max 380cst																							
Pour Point	All Grades	Max 24 degree C																							
Carbon Residue	All Grades	Max 16%																							
Water Content	All Grades	Max 0.5%																							
Ash Content	All Grades	Max 0.1%																							

<Small-Tanker Cargo Price Assessment>

STRUCTURE of the FOB SOUTH KOREA Small-tanker CARGO MARKET



RIM understands that the FOB South Korea small-tanker 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 small-tanker 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 small-tanker 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.

<CFR Japan Equivalent Values>

RIM indicates CFR Japan equivalent values, based on the small tanker cargo prices and assessment of spot freight rates of a 5,000-6,000mt clean tanker for the South Korea-to-Nagoya route. RIM also makes assessment of spot freight rates for the following routes as reference.

RIM 5,000-6,000mt Clean Tanker Freight Assessment

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

The CFR Japan equivalent values are calculated into Yen/kl, based on the following formula.

Gasoline

CFR Japan Equivalent Value =
 [(FOB S Korea small-tanker prices) + (Freight)] x (Yen/\$) x 6.2898
 + (Petroleum tax of Yen 2,290/kl) + (Import duty of Yen 934/kl)

Kerosene

CFR Japan Equivalent Value =
 [(FOB S Korea small-tanker prices) + (Freight)] x (Yen/\$) x 6.2898
 + (Petroleum tax of Yen 2,290/kl) + (Import duty of Yen 346/kl)

Gasoil

CFR Japan Equivalent Value =
 [(FOB S Korea small-tanker prices) + (Freight)] x (Yen/\$) x 6.2898
 + (Petroleum tax of Yen 2,290/kl) + (Import duty of Yen 750/kl)

A-fuel oil

CFR Japan Equivalent Value =
 [(FOB S Korea small-tanker prices) + (Freight)] x (Yen/\$) x 6.2898

<Gasoline>

RIM assesses FOB South Korea spot gasoline prices for small-tanker cargoes of the 91 research octane number grade. The premiums are to periodical average of daily assessments for FOB Singapore spot 92RON gasoline prices by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula:
Premium + Value of Singapore 92RON Gasoline Prices = Fixed Value

Assessment Window	RIM's assessment window for FOB South Korea spot gasoline prices for small-tanker cargoes closes at 17:30 Tokyo local time.																											
Price Unit	FOB South Korea spot gasoline prices for small-tanker cargoes are in \$/bbl.																											
Time Window	FOB South Korea spot gasoline prices for small-tanker cargoes are for cargoes to be loaded during the period from 20 to 35 days ahead from the publication day. The premiums are to Singapore 92RON gasoline prices in RIM Singapore physical cargoes assessment.																											
Standard Size	FOB South Korea spot gasoline prices for small-tanker cargoes are for cargoes with a 5,000-6,000mt lot, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were with the standard volumes.																											
Loading Port	FOB South Korea spot gasoline prices for small-tanker cargoes are for cargoes to be loaded at major ports in South Korea.																											
Quality Specifications	<p>FOB South Korea spot gasoline prices for small-tanker cargoes 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.</p> <table border="1"> <tr> <td>Lead Content</td> <td>Max 0.013gpb/l</td> </tr> <tr> <td>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>Copper Corrosion 3h at 50 degree C</td> <td>Max 1</td> </tr> <tr> <td>Sulfur Content</td> <td>Max 0.001%</td> </tr> <tr> <td>Vapor Pressure at 37.8 degree C</td> <td>0.45-0.80 Kgf/cm2</td> </tr> <tr> <td>Existent Gum</td> <td>Max 5mg/100ml</td> </tr> <tr> <td>Benzene Content</td> <td>Max 1%</td> </tr> <tr> <td>Color</td> <td>Undyed, orange</td> </tr> </table> <p>Extract from JIS K-2202 *Specifications for other properties are to meet specifications that are commonly required in international trading.</p>	Lead Content	Max 0.013gpb/l	Density at 15 degree C	Min 0.783 mg/cm3	Distillation Temperature;	10% evaporated	Max 70 degree C	50%	75-110 degree C	90%	Max 180 degree C	Final Boiling Point	Max 220 degree C	Residue	Max 2.0%	Copper Corrosion 3h at 50 degree C	Max 1	Sulfur Content	Max 0.001%	Vapor Pressure at 37.8 degree C	0.45-0.80 Kgf/cm2	Existent Gum	Max 5mg/100ml	Benzene Content	Max 1%	Color	Undyed, orange
Lead Content	Max 0.013gpb/l																											
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	90%	Max 180 degree C																										
	Final Boiling Point	Max 220 degree C																										
	Residue	Max 2.0%																										
Copper Corrosion 3h at 50 degree C	Max 1																											
Sulfur Content	Max 0.001%																											
Vapor Pressure at 37.8 degree C	0.45-0.80 Kgf/cm2																											
Existent Gum	Max 5mg/100ml																											
Benzene Content	Max 1%																											
Color	Undyed, orange																											



<Kerosene>

RIM assesses FOB South Korea spot kerosene prices for small-tanker cargoes. The premiums are to periodical average of daily assessments for FOB Singapore spot A1 jet fuel prices by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula: Premium + Value of Singapore Paper Swaps = Fixed Value

Assessment Window	RIM's assessment window for FOB South Korea spot kerosene prices for small-tanker cargoes closes at 17:30 Tokyo local time.	
Price Unit	FOB South Korea spot kerosene prices for small-tanker cargoes are in \$/bbl.	
Time Window	FOB South Korea spot kerosene prices for small-tanker cargoes are for cargoes to be loaded during the period from 20 to 35 days ahead from the publication day. The premiums are to Singapore paper swaps (kerosene) for the front month in RIM Singapore paper swaps assessment.	
Standard Size	FOB South Korea spot kerosene prices for small-tanker cargoes are for cargoes with a 5,000-6,000mt lot, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were within the standard volumes.	
Loading Port	FOB South Korea spot kerosene prices are for cargoes to be loaded at major ports in South Korea.	
Quality Specifications	FOB South Korea spot kerosene prices for small-tanker cargoes 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.	
	Flash Point	Min 40 degree C
	Distillation Temperature; 95% evaporated	Max 270 degree C
	Sulfur Content	Max 0.005%
	Smoke Point	Min 23mm
	Copper Corrosion 3h at 50 degree C	Max 1
	Extract from JIS K-2203 *Specifications for other properties are to meet specifications that are commonly required in international trading.	

<Gasoil>

**RIM assesses FOB South Korea spot gasoil prices for small-tanker cargoes of the grade with a sulfur content of 0.001%. The premiums are to periodical average of daily assessments for FOB Singapore spot gasoil (0.05% sulfur) prices by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula:
Premium + Value of Singapore Paper Swaps = Fixed Value**

Assessment Window	RIM's assessment window for FOB South Korea spot gasoil prices for small-tanker cargoes closes at 17:30 Tokyo local time.	
Price Unit	FOB South Korea spot gasoil prices for small-tanker cargoes are in \$/bbl.	
Time Window	FOB South Korea spot gasoil prices for small-tanker cargoes are for cargoes to be loaded during the period from 20 to 35 days ahead from the publication day. The premiums are to Singapore paper swaps (0.5%S gasoil) for the front month in RIM Singapore paper swaps assessment.	
Standard Size	FOB South Korea spot gasoil prices for small-tanker cargoes are for cargoes with a 5,000-6,000mt lot, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were within the standard volumes.	
Loading Port	FOB South Korea spot gasoil prices are for cargoes to be loaded at major ports in South Korea.	
Quality Specifications	FOB South Korea spot gasoil prices for small-tanker cargoes are for cargoes of which quality is equivalent to the Japan Industrial Standard (JIS) K-2204 specification for No1 and No2 grades.	
	Flash Point	Min 50 degree C
	Distillation Temperature; 90% evaporated	Max 360 degree C
	Pour Point	Max 5 degree C
	Cold Filter Plugging Point	Max -1 degree C
	Carbon Residue (10% btms)	Max 0.1%
	Cetane Index	Min 48
	Kinematic Viscosity at 40 degree C	Max 4.5 mm ² /sec
	Sulfur Content	0.001%S Max 0.001%
	Extract from JIS K-2204 *Specifications for other properties are to meet specifications that are commonly required in international trading.	

<A-Fuel Oil>

RIM assesses FOB South Korea spot A-fuel oil prices for small-tanker cargoes of the two grades categorized by sulfur content: AFO (with a sulfur content less than 1.0%) and Low-sulfur AFO (with a sulfur content less than 0.1%). The premiums are to periodical average of daily assessments for FOB Singapore spot gasoil (0.05% sulfur) prices by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula: Premium + Value of Singapore Paper Swaps = Fixed Value

Assessment Window	RIM's assessment window for FOB South Korea spot A-fuel oil prices for small-tanker cargoes closes at 17:30 Tokyo local time.	
Price Unit	FOB South Korea spot A-fuel oil prices for small-tanker cargoes are in \$/bbl.	
Time Window	FOB South Korea spot A-fuel oil prices for small-tanker cargoes are for cargoes to be loaded during the period from 20 to 35 days ahead from the publication day. The premiums are to Singapore paper swaps (0.5%S gasoil) for the front month in RIM Singapore paper swaps assessment.	
Standard Size	FOB South Korea spot A-fuel oil prices for small-tanker cargoes are for cargoes with a 5,000-6,000mt lot, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were within the standard volumes.	
Loading Port	FOB South Korea spot A-fuel oil prices are for cargoes to be loaded at major ports in South Korea.	
Quality Specifications	FOB South Korea spot A-fuel oil prices for small-tanker cargoes 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.	
	Flash Point	Min 60 degree C
	Kinematic Viscosity at 50 degree C	Max 20cst
	Pour Point	Max 5 degree C
	Carbon Residue	Max 4%
	Water Content	Max 0.3%
	Ash Content	Max 0.05%
Extract from JIS K-2204 Category 1 *Specifications for other properties are to meet specifications that are commonly required in international trading.		

<Fuel Oil>

RIM assesses FOB South Korea spot fuel oil prices for small-tanker cargoes of 180cst LSFO with a sulfur content of less than 0.3%. The premiums are to periodical average of daily assessments for FOB Singapore spot 180cst HSFO (3.5% sulfur) prices by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula: Premium + Value of Singapore Paper Swaps = Fixed Value

Assessment Window	RIM's assessment window for FOB South Korea spot fuel oil prices for small-tanker cargoes closes at 17:30 Tokyo local time.	
Price Unit	FOB South Korea spot fuel oil prices for small-tanker cargoes are in \$/mt.	
Time Window	FOB South Korea spot fuel oil prices for small-tanker cargoes are for cargoes to be loaded during the period from 20 to 35 days ahead from the publication day. The premiums are to Singapore paper swaps (180cst 3.5%S HSFO) for the front month in RIM Singapore paper swaps assessment.	
Standard Size	FOB South Korea spot fuel oil prices for small-tanker cargoes are for cargoes with a 5,000-6,000mt lot, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were within the standard volumes.	
Loading Port	FOB South Korea spot fuel oil prices for small-tanker cargoes are for cargoes to be loaded at major ports in South Korea.	
Quality Specifications	FOB South Korea spot fuel oil prices for small-tanker cargoes 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%.	
	Flash Point	Min 66 degree C
	Kinematic Viscosity at 50 degree C	Max 180cst
	Pour Point	Max 24 degree C
	Carbon Residue	Max 16%
	Water Content	Max 0.5%
	Ash Content	Max 0.1%
	*Specifications for other properties are to meet specifications that are commonly required in international trading.	



RIM CFR China Oil Products Price Assessment Methodology

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Price Assessment Principle

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

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

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

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

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

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



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CFR China

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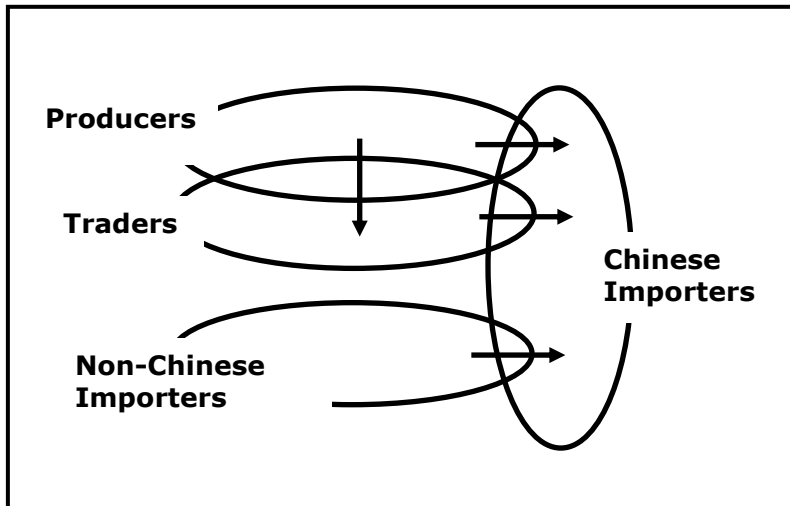
CFR CHINA SPOT PRICES

RIM assesses CFR China spot prices for physical cargoes of 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 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>

RIM assesses CFR China spot gasoline prices for the 93 research octane number grade. The premiums are to periodical average of daily assessments for FOB Singapore spot prices of 92RON gasoline by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula:

$$\text{Premium} + \text{Value of Singapore 92RON gasoline prices} = \text{Fixed Value}$$

Assessment Window	RIM's assessment window for CFR China spot gasoline prices closes at 17:30 Tokyo time.		
Price Unit	CFR China spot gasoline prices are in \$/bbl.		
Time Window	CFR China spot gasoline prices are for cargoes to be delivered during the period from 25 to 40 days ahead from the publication day. The premiums are to FOB Singapore spot prices of 92RON gasoline in RIM Singapore physical cargoes assessment.		
Standard Size	CFR China spot gasoline prices are for MR-size cargoes, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were the standard volumes.		
Delivery Port	CFR China spot gasoline prices are for cargoes to be delivered into main ports in east and south China.		
Quality Specifications	CFR China spot gasoline prices are for cargoes of which quality is equivalent to the following specifications.		
	Research Octane Number	93	
	Lead Content	Max 0.005gpb/l	
	Distillation Temperature;	10% evaporated	Max 70 degree C
		50%	Max 120 degree C
		90%	Max 190 degree C
		Final Boiling Point	Max 205 degree C
		Residue	Max 2.0%
	Copper Corrosion 3h at 50 degree C	Max 1	
	Sulfur Content	Max 0.015%	
	Vapor Pressure at 37.8 degree C	0.75-0.90 Kg/cm ²	
	Existent Gum	Max 5mg/100ml	
	Olefin Content	Max 35.0%	
	Aromatics Content	Max 40.0%	
	Oxygen Content	Max 2.7%	
	Benzene Content	Max 2.0%	
	*Specifications for other properties are to meet specifications that are commonly required in international trading.		



<Gasoil>

RIM assesses CFR China spot gasoil prices for gasoil with a sulfur content of 0.05%, supplied mainly from South Korea. The premiums are to the periodical average of daily assessments for FOB Singapore spot gasoil (0.05% sulfur) prices by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula:

$$\text{Premium} + \text{Value of Singapore Paper Swaps} = \text{Fixed Value}$$

Assessment Window	RIM's assessment window for CFR China spot gasoil prices closes at 18:30 Tokyo time.	
Price Unit	CFR China spot gasoil prices are in \$/bbl.	
Time Window	CFR China spot gasoil prices are for cargoes to be delivered during the period from 25 to 40 days ahead from the publication day. The premiums are to Singapore paper swaps for the front month in RIM Singapore paper swaps assessment.	
Standard Size	CFR China spot gasoil prices are for MR-size cargoes, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were the standard volumes.	
Delivery Port	CFR China spot gasoil prices are for cargoes to be delivered into main ports in east and south China.	
Quality Specifications	CFR China spot gasoil prices are for cargoes of which quality is equivalent to the following specifications.	
	Flash Point	Min 55 degree C
	Distillation Temperature; 90% evaporated	Max 355 degree C
	Pour Point	Max 0 degree C
	Cold Filter Plugging Point	Max 4 degree C
	Carbon Residue (10% btms)	Max 0.3%
	Cetane Index	Min 45
	Acidity	Max 7mgKOH/100ml
	Kinematic Viscosity at 20 degree C	Min 3.0, Max 8.0 mm ² /sec
	Sulfur Content	Max 0.05%
	*Specifications for other properties are to meet specifications that are commonly required in international trading.	

<Fuel Oil>

RIM assesses CFR China spot fuel oil prices for the 380cst HSFO (3.5% sulfur) grade, supplied mainly from Singapore. The premiums are to the periodical average of daily assessments for FOB Singapore spot 380cst HSFO (3.5% sulfur) prices by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula:



Premium + Value of Singapore Paper Swaps = Fixed Value

Assessment Window	RIM's assessment window for CFR China spot fuel oil prices closes at 17:30 Tokyo time.												
Price Unit	CFR China spot fuel oil prices are in \$/mt.												
Time Window	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. The premiums are to Singapore paper swaps for the front month in RIM Singapore paper swaps assessment.												
Standard Size	CFR China spot fuel oil prices are for LR-size cargoes, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were with the standard volumes.												
Delivery Port	CFR China spot fuel oil prices are for cargoes to be delivered into main ports in South China.												
Quality Specifications	<p>CFR China spot fuel oil prices are for cargoes of which quality is equivalent to the following specifications.</p> <table border="1"> <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> <p>*Specifications for other properties are to meet specifications that are commonly required in international trading.</p>	Sulfur Content	Max 3.5%	Flash Point	Min 66 degree C	Pour Point	Max 24 degree C	Carbon Residue	Max 16%	Water Content	Max 0.5%	Ash Content	Max 0.1%
Sulfur Content	Max 3.5%												
Flash Point	Min 66 degree C												
Pour Point	Max 24 degree C												
Carbon Residue	Max 16%												
Water Content	Max 0.5%												
Ash Content	Max 0.1%												



RIM assesses CFR China spot fuel oil prices for the M100 HSFO (1.5% sulfur) grade, supplied mainly from Russia. The premiums are to the periodical average of daily assessments for FOB Singapore spot 180cst HSFO (3.5% sulfur) prices by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula:

$$\text{Premium} + \text{Value of Singapore Paper Swaps} = \text{Fixed Value}$$

Assessment Window	RIM's assessment window for CFR China spot fuel oil prices closes at 17:30 Tokyo time.												
Price Unit	CFR China spot fuel oil prices are in \$/mt.												
Time Window	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. The premiums are to Singapore paper swaps for the front month in RIM Singapore paper swaps assessment.												
Standard Size	CFR China spot fuel oil prices are for MR-size cargoes, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were with the standard volumes.												
Delivery Port	CFR China spot fuel oil prices are for cargoes to be delivered into main ports in North China.												
Quality Specifications	<p>CFR China spot fuel oil prices are for cargoes of which quality is equivalent to the following specifications.</p> <table border="1"> <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> <p>*Specifications for other properties are to meet specifications that are commonly required in international trading.</p>	Sulfur Content	Max 1.5%	Flash Point	Min 60 degree C	Pour Point	Max 24 degree C	Carbon Residue	Max 10%	Water Content	Max 2.0%	Ash Content	Max 0.14%
Sulfur Content	Max 1.5%												
Flash Point	Min 60 degree C												
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Water Content	Max 2.0%												
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RIM FOB Japan Oil Products Price Assessment Methodology

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Price Assessment Principle

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

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

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

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

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

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



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FOB JAPAN SPOT PRICES

RIM assesses FOB Japan spot prices for MR-size cargoes. Grades that are assessed are as follows:

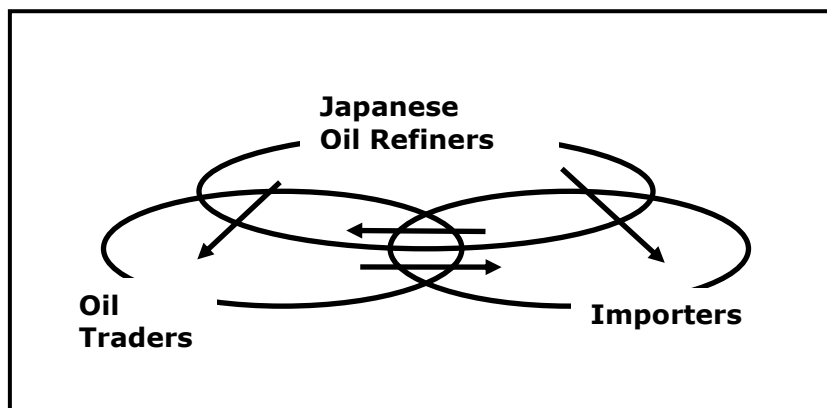
MR-size cargo	
Jet/Kerosene Gasoil CARB DIESEL Gasoil-0.001%S HSFO 380cst 3.5%S	

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 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.

<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/Kerosene>

RIM assesses FOB Japan spot A1 jet fuel/kerosene prices for MR-size cargoes. The premiums are to periodical average of daily assessments for FOB Singapore spot A1 jet fuel prices by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula: Premium + Value of Singapore Paper Swaps = Fixed Value

Assessment Window	RIM's assessment window for FOB Japan spot jet/kerosene prices for MR-size cargoes closes at 17:30 Tokyo local time.	
Price Unit	FOB Japan spot jet/kerosene prices for MR-size cargoes are in \$/bbl.	
Time Window	FOB Japan spot jet/kerosene prices for MR-size cargoes are for cargoes to be loaded during the period from 25 to 40 days ahead from the publication day. The premiums are to Singapore paper swaps for the front month in RIM Singapore paper swaps assessment.	
Standard Size	FOB Japan spot jet/kerosene prices for MR-size cargoes are for cargoes with a 25,000-35,000mt lot, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were within the standard volumes.	
Delivery Port	FOB Japan spot jet/kerosene prices for MR-size cargoes are for cargoes to be loaded at major ports in Japan.	
Quality Specifications	FOB Japan spot jet/kerosene prices for MR-size cargoes are for cargoes of which quality is equivalent to the Joint Fuel System Check List, also known as Jet A-1 Check List. The JFSCCL is issued by International Air Transport Association.	
	Distillation Temperature; Initial Boiling Point 10% Evaporated	Max 205 degree C
	Flash Point	Max 40 degree C
	Sulfur Content	Max 0.3%
	Smoke Point with naphthalene content of maximum 3.0%	Minimum 19
	Copper corrosion 2h at 100 degree C	Maximum 1.0
	Saybolt color	Minimum 18
	Extract from IATA's JFSCCL	
	*Specifications for other properties are to meet specifications that are commonly required in international trading.	

<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 periodical average of daily assessments for FOB Singapore spot (0.05% sulfur) prices by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula: Premium + Value of Singapore Paper Swaps = Fixed Value

Assessment Window	RIM's assessment window for FOB Japan spot gasoil prices for MR-size cargoes closes at 17:30 Tokyo local time.																													
Price Unit	FOB Japan spot gasoil prices for MR-size cargoes are in \$/bbl.																													
Time Window	FOB Japan spot gasoil prices for MR-size cargoes are for cargoes to be loaded during the period from 25 to 40 days ahead from the publication day. The premiums are to Singapore paper swaps for the front month in RIM Singapore paper swaps assessment.																													
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Loading Port	FOB Japan spot gasoil prices for MR-size cargoes are for cargoes to be loaded at major ports in Japan.																													
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<Fuel Oil>

RIM assesses FOB Japan spot fuel oil prices for MR-size cargoes of the 380cst HSFO with a sulfur content of less than 3.5%. The premiums are to periodical average of daily assessments for FOB Singapore spot 380cst HSFO (3.5% sulfur) prices by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula: Premium + Value of Singapore Paper Swaps = Fixed Value

Assessment Window	RIM's assessment window for FOB Japan spot fuel oil prices for MR-size cargoes closes at 17:30 Tokyo local time.												
Price Unit	FOB Japan spot fuel oil prices for MR-size cargoes are in \$/mt.												
Time Window	FOB Japan spot fuel oil prices for MR-size cargoes are for cargoes to be loaded during the period from 25 to 40 days ahead from the publication day. The premiums are to Singapore paper swaps (380cst 3.5%S HSFO) for the front month in RIM Singapore paper swaps assessment.												
Standard Size	FOB Japan spot fuel oil prices for MR-size cargoes are for cargoes with a 25,000-35,000mt lot, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were within the standard volumes.												
Loading Port	FOB Japan spot fuel oil prices for MR-size cargoes are for cargoes to be loaded at major ports in Japan.												
Quality Specifications	<p>FOB Japan spot fuel oil prices for MR-size cargoes are for cargoes of which quality is equivalent to the following specifications.</p> <table border="1"> <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> <p>*Specifications for other properties are to meet specifications that are commonly required in international trading.</p>	Sulfur Content	Max 3.5%	Flash Point	Min 66 degree C	Pour Point	Max 24 degree C	Carbon Residue	Max 16%	Water Content	Max 0.5%	Ash Content	Max 0.1%
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Water Content	Max 0.5%												
Ash Content	Max 0.1%												



RIM FOB Indonesia LSWR Price Assessment Methodology

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Price Assessment Principle

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

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

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FOB Indonesia LSWR

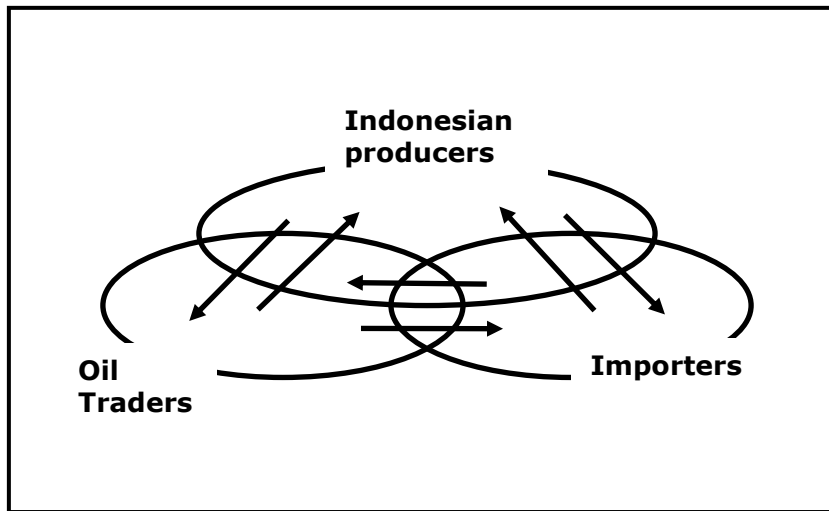
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●FOB Indonesia LSWR Market	3
●Understanding of PPF	5
●Expected PPF of the Window	6

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.

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

UNDERSTANDING of PERTAMINA PRICE FORMULA

Spot transactions for FOB Indonesia LSWR are typically settled on a floating basis using the Pertamina Price Formula (PPF). In a transaction between parties other than Pertamina, the PPF refers to a formulated price by the parties similar to the method used by Pertamina:

$$\text{PPF} = (\text{Average of daily assessments by price reporting services}) + 65\text{cts/bbl}$$

Mixed/cracked LSWR cargoes ex-Indonesia are typically priced at a premium of \$1.00/bbl to the PPF. In most cases, PPF in the floating prices are the averaged value of daily price assessments published over a five-day period; two days before the loading day, the loading day, and two days after the loading day (two-one-two).

RIM's Assessment Window

Publication Day	Loading Period of cargoes to be assessed
Jan 1	Jan 31 – Feb 10
//	//
Feb 1	Mar 3 – Mar 13
Feb 2	Mar 4 – Mar 14
Feb 3	Mar 5 – Mar 15
Feb 4	Mar 6 – Mar 16
Feb 5	Mar 7 – Mar 17

RIM understands the PPF in the deal price is calculated based on the average of daily price assessments published during the period from Feb 1 through Feb 5. This case could be interpreted that the buyer and seller on Jan 1 agreed that the value of an LSWR cargo loaded on Feb 3 was \$1.00/bbl higher than values of a cargo to be loaded in early-to-mid March.



Expected PPF for the Window

For fixed values from indicated premiums, RIM assesses the expected PPF for the delivery window. The expected values are determined based on market research that RIM conducts each business day. Prices for Indonesian crude oil are also factored into the expected value of PPF for the delivery window since price trends for the two products are closely related.

RIM considers that a floating price based on PPF is equivalent to the fixed value derived from the following formula:

$$\text{Premium to PPF} + \text{expected PPF for the window} = \text{Fixed Value}$$

Assessment Window	RIM's assessment window for FOB Indonesia spot LSWR prices closes at 6:30 PM Tokyo time.																			
Price Unit	FOB Indonesia spot LSWR prices are in \$/bbl.																			
Time Window	FOB Indonesia spot LSWR prices are for cargoes to be loaded during the period from 30 to 40 days ahead from the publication day. The premiums are to expected PPF for the window.																			
Standard Size	FOB Indonesia spot LSWR spot prices are for an MR-size cargo, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were with the standard volumes.																			
Loading Port	FOB Indonesia spot LSWR prices are for cargoes to be loaded at major ports in Indonesia.																			
Quality Specifications	<p>FOB Indonesia spot LSWR prices are for cargoes of which quality is equivalent to the following specifications.</p> <table border="1"> <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 0.2%</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> <p>*Specifications for other properties are to meet specifications that are commonly required in international trading.</p>		Specific Gravity at 60 degree F	0.8789-0.9309	API Gravity at 60 degree F	20.5-29.5	Viscosity at 140 degree F	100-350	Pour Point	Max 120 degree F	Sulfur Content	Max 0.2%	Carbon Residue	Max 8.0%	Water Content	Max 0.5%	Ash Content	Max 0.1%	Flash Point	Min 166 degree F
Specific Gravity at 60 degree F	0.8789-0.9309																			
API Gravity at 60 degree F	20.5-29.5																			
Viscosity at 140 degree F	100-350																			
Pour Point	Max 120 degree F																			
Sulfur Content	Max 0.2%																			
Carbon Residue	Max 8.0%																			
Water Content	Max 0.5%																			
Ash Content	Max 0.1%																			
Flash Point	Min 166 degree F																			



RIM FOB Taiwan Oil Products Price Assessment Methodology

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●Small-Tanker Cargo	7
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FOB TAIWAN SPOT PRICES

RIM assesses FOB Taiwan spot prices for MR-size cargoes. Grades that are assessed are as follows:

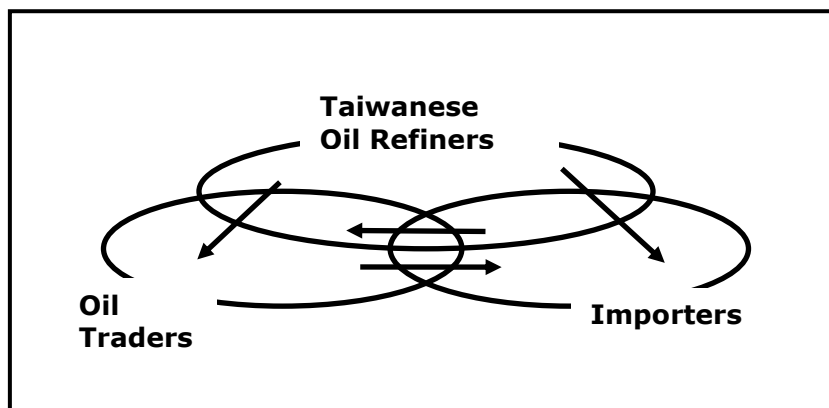
MR-size cargo	
Jet/Kerosene Gasoil-0.001%S Gasoil-0.05%S Gasoil-0.2%S Gasoil-0.5%S	

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 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.

<MR-size Cargo Price Assessment>

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.



<Jet/Kerosene>

RIM assesses FOB Taiwan spot A1 jet fuel/kerosene prices for MR-size cargoes. The premiums are to periodical average of daily assessments for FOB Singapore spot A1 jet fuel prices by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula: Premium + Value of Singapore Paper Swaps = Fixed Value

Assessment Window	RIM's assessment window for FOB Taiwan spot jet/kerosene prices for MR-size cargoes closes at 18:30 Tokyo local time.	
Price Unit	FOB Taiwan spot jet/kerosene prices for MR-size cargoes are in \$/bbl.	
Time Window	FOB Taiwan spot jet/kerosene prices for MR-size cargoes are for cargoes to be loaded during the period from 25 to 40 days ahead from the publication day. The premiums are to Singapore paper swaps for the front month in RIM Singapore paper swaps assessment.	
Standard Size	FOB Taiwan spot jet/kerosene prices for MR-size cargoes are for cargoes with a 25,000-35,000mt lot, which RIM considers standard. Prices for smaller or larger cargoes are to be translated into estimated values that the prices could be if the cargoes were within the standard volumes.	
Delivery Port	FOB Taiwan spot jet/kerosene prices for MR-size cargoes are for cargoes to be loaded at major ports in Taiwan.	
Quality Specifications	FOB Taiwan spot jet/kerosene prices for MR-size cargoes 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.	
	Distillation Temperature; Initial Boiling Point 10% Evaporated	Max 205 degree C
	Flash Point	Max 40 degree C
	Sulfur Content	Max 0.3%
	Smoke Point with naphthalene content of maximum 3.0%	Minimum 19
	Copper corrosion 2h at 100 degree C	Maximum 1.0
	Saybolt color	Minimum 18
	Extract from IATA's JFSCL	
	*Specifications for other properties are to meet specifications that are commonly required in international trading.	

<Gasoil>

RIM assesses FOB Taiwan spot gasoil prices for MR-size cargoes of the grades with a sulfur content of 0.001%, 0.05%, 0.2% and 0.5%. The premiums are to periodical average of daily assessments for FOB Singapore spot (0.05% sulfur) prices by reporting services. RIM considers that a floating price based on the periodical average equals the fixed value based on the following formula: Premium + Value of Singapore Paper Swaps = Fixed Value

Assessment Window	RIM's assessment window for FOB Taiwan spot gasoil prices for MR-size cargoes closes at 5:30 PM Tokyo local time.																								
Price Unit	FOB Taiwan spot gasoil prices for MR-size cargoes are in \$/bbl.																								
Time Window	FOB Taiwan spot gasoil prices for MR-size cargoes are for cargoes to be loaded during the period from 25 to 40 days ahead from the publication day. The premiums are to Singapore paper swaps for the front month in RIM Singapore paper swaps assessment.																								
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	<table border="1"> <tr> <td>Flash Point</td> <td>Min 50 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 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>0.2%S</td> <td>Max 0.2%</td> </tr> <tr> <td>0.5%S</td> <td>Max 0.5%</td> </tr> </table>		Flash Point	Min 50 degree C	Distillation Temperature; 90% evaporated	Max 360 degree C	Pour Point	Max 5 degree C	Cold Filter Plugging Point	Max -1 degree C	Carbon Residue (10% btms)	Max 0.1%	Cetane Index	Min 48	Kinematic Viscosity at 40 degree C	Max 4.5 mm ² /sec	Sulfur Content	0.001%S	Max 0.001%	0.05%S	Max 0.05%	0.2%S	Max 0.2%	0.5%S	Max 0.5%
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*Specifications for other properties are to meet specifications that are commonly required in international trading.																									



RIM Japan Domestic Waterborne Market Price Assessment Methodology

(Updated Mar 26, 2012)

Structure of the Japan Domestic Waterborne Market and Areas of Assessment

RIM assesses wholesale prices on an ex-terminal basis for cargoes from refineries, primary and secondary terminals. 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). In the Tokyo Bay area, Chiba is usually included in Keihin and in RIM's commentaries, Tokyo Bay is also referred to as Keihin. While Kashima is strictly speaking not considered part of Tokyo Bay or Keihin, prices in Kashima are usually treated in a similar way as those in Tokyo Bay or Keihin, and RIM regards trades from Kashima to be similar to those from Tokyo Bay and Keihin.

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

Quantity

The assessment quantity is basically 200 kiloliters and above per lot for Gasoline, Middle Distillates, High-sulfur C Fuel Oil. For Low-sulfur C Fuel Oil, the standard quantity is 1,000 kiloliters and above per lot although lots between 500 to 1,000 kiloliters may also be considered.

In assessing the market, prices deemed too high or too low from actual market levels where the majority of trades are done or where the majority of bids/offers are will be removed. 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 of such trades taken.

Price Unit

Japan domestic waterborne prices are in yen/kiloliter on an ex-terminal basis. RIM's price assessment excludes the tax of yen 53,800/kiloliter for gasoline and yen 32,100/kiloliter for gasoil.

Lifting 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, RIM's assessment shifts to trades for lifting in the following month.

Assessment Window

Price assessment for the current day is for deals done and bids/offers from 10am to 5pm Tokyo time. However, considering high volatility in the futures and paper swap markets, greater attention is given to trades and bids and offers between 3pm and 4pm Tokyo time.

Priority in Assessment

In principle, assessment is prioritized as follows:

1. Deal done prices



2. Firm bids/offers
3. Buying/selling indications

However, while considering the appropriateness of (1), attention is also given to (2) and (3). In particular, for (2), priority is enhanced if the quantity, lifting period and place of lifting are clearly stated. To 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.

Supply/demand, price movements in crude and products markets overseas, changes in exchange rates are basically reflected in traded prices and bids/offers. In fixed price assessments, trades in the paper swap market are one of the main factors considered. Trades in the physical forward market are also taken into consideration. In addition, trades in the futures market, which are gaining greater influence on the physical market, are also taken as a reference.

The basic principle of assessment is to reflect actual market conditions, that is, obtaining price levels where most market participants can buy or sell their cargoes. Extremely high or extremely low prices that deviate from such actual market conditions, even if traded in reality, may not be taken into consideration.

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 accuracy, (1) is the most ideal although, owing to various restrictions, 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. Even when information is obtained directly from the buyer or seller, this will not be considered if found to be untrue.

Trades Considered in Assessment

Outright spot trades with confirmation obtained from the buyer and seller will be taken into account. Term deals are not considered.

Package deals, grade swaps, location swaps and time swaps may be used as a reference but the assessment will not be solely reflecting these deals.

As mentioned earlier, for trades on a delivered basis, the actual freight will be used to calculate the ex-terminal price. 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 to determine market trends, RIM's assessment will not be based entirely on them.

Assessment Principles for Market-linked Floating Prices

Concerning trades and bids/offers based on floating prices linked to monthly average prices (i.e. RIM-linked trades), if factors such as supply/demand and cost are unchanged, movements in the premium or discount will be reflected in the fixed price.

Although the premium and discount in floating-price trades is regarded to be reflecting the strength or weakness of the current market, it may be affected by three other 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. Monthly average prices, the basis for the "RIM price", for the 5 products: gasoline, kerosene, gasoil A fuel oil and low-sulfur A fuel oil, 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 March 2012, the March paper swap prices on each day from February 27 to March 9 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. For March 12 to 23, the monthly average is obtain as follows: First, average prices from the 1st to the 23rd (assuming prices from the previous day till the 23rd remain the same) are used; Next, for the 26th till the end of the month, paper swap prices 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.

However, for low-sulfur C fuel oil and high-sulfur C 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.

As mentioned in the section on "Priority in Assessment", paper swap prices will be one of the components reflected. Apart from this, physical forward prices will be considered in RIM's price assessment. In addition, futures prices, which are having a major impact on the physical market, are also used as a reference.

Quality

Basically, RIM's price assessment applies to imported cargoes or domestically produced cargoes meeting Japan Industrial Standards (JIS) and generally accepted by the oil industry in Japan. Various considerations for different products are given below.

Gasoline: Research octane number (RON): 90 and above. Even though JIS and standards according to the quality assurance law specify 89 and above, the RON of cargoes available in the market is in reality 90 and above, which has become the industry standard. MTBE content: zero. Although JIS and the quality assurance law specify 7% and below, actual cargoes available have zero MTBE. Therefore, the RON and MTBE content of cargoes that RIM considers in its assessment meet industry standards.

Kerosene: Regarding color (Saybolt color), JIS and the quality assurance law specify +25 and above. However, +30 and above has become the actual industry standard. Therefore, RIM's assessment is based on color of +30 and above.

Gasoil: No.1 and No.2 gasoil as specified in JIS are regarded as being generally available in the market, RIM's 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 RIM's assessment as they are traded at a premium to No.1 and No.2 gasoil in view of quality differences. Basically, cargoes that are tax-exempted are used for price assessment while cargoes that are taxed are not considered.

A fuel oil: In Western Japan such as Mizushima, the so-called "White A" is traded at a premium to the normal A fuel oil due to quality differences. RIM's assessment does not reflect the premium per se. However, as changes in premium levels play a role in reflecting the supply/demand situation, this may be used as a reference in RIM's assessment.

Low-sulfur C fuel oil: RIM's assessment is basically for 0.3% sulfur although 0.2% and 0.4% are also considered. Only HPP products are used and LPP products are not considered. Tender prices to end-users, as indication of price movements, are used as a reference.



High-sulfur C fuel oil: RIM's assessment is basically for 3.0% sulfur but in reality, lower sulfur content of up to 2.5% is also considered. Small lots of less than 200 kiloliters are not reflected in the assessment although as an indication of supply/demand movements, the premium is used as a reference. Tender prices to end-users are treated in the same way as for low-sulfur C fuel oil.

Assessment principles for bids/offers on RIM Trading Board

Bids/Offers used in price assessment

Bids/Offers shown on RIM Trading Board from 3pm to 4pm Tokyo time are considered in RIM's assessment. Bids/Offers and traded prices on RIM Trading Board are obtained by phone, email, instant messaging services such as Yahoo messenger, as well as by surveys conducted by RIM. In principle, priority in price assessment is given to bids/offers on JOX (J-Oil Exchange).

Assessment principles for physical forward trades on JOX

Period

RIM's assessment considers prices for the nearest week on JOX's screen. Trades switch to lifting in the following month from the 26th of each month.

Assessment Window (from 3pm to 3.30pm)

RIM's assessment reflects deals done on the screen up till 3.30pm based on firm bids/offers shown on the screen up till 3pm. Deals done or bids/offers indicated outside the 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 Japan domestic products paper swap

Products

7 products are considered: gasoline, kerosene, gasoil, A fuel oil, low-sulfur A fuel oil, low-sulfur C fuel oil, high-sulfur C fuel oil.

Period

Assessment is for the 3 months up to 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 March 2012, assessment for the front month March contract starts from February 13 and finishes on March 9. From March 12, the front month shifts to the April contract.

Factors

In principle, the assessment window is from 3pm to 4pm Tokyo time. During this period, deals done and bids/offers in the paper swap market including RIM Trading Board and JOX are considered in RIM's assessment.