



LPG Assessment Methodology

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Relevance of Rim Assessment Methodology

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

Chapter 1: General Procedures for Price Assessment

Article 1: Purpose of price assessment

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

Article 2: Conducting price assessment

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

Trades considered for price assessment

Assessment window

Priority in price assessment

Selection of players providing market information

Method of information gathering

System of review by supervisor

Reliability and adequacy of market information

Policy of maintaining consistency in price assessment

Trades not considered for price assessment

Process of regular reviews and amendments to Assessment Methodology

Changes/Amendments to price assessments

Quantity

Reasons for using specific units for quantity (barrel etc.)

Article 3: Transactions considered for price assessment

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

Article 4: Assessment window

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

Article 5: Priority in price assessment

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

Article 6: Selection of players providing market information

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

Article 7: Method of information gathering

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

Article 8: Role of Supervisor

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

Article 9: Selection of supervisor

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

Article 10: Maintaining quality of supervisor review

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

Article 11: Maintaining consistency in price assessment

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

Article 12: Reliability and adequacy of market information

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

For certain markets with low liquidity, market information for price assessment may be obtained from a single source. Even in such a situation, we follow processes detailed in our

Assessment Methodology to determine if such market information can be used for price assessment. We do not disregard the information in making price assessment merely because it is obtained from a single source.

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

Article 13: Making our Assessment Methodology available

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

Article 14: Regular review of Assessment Methodology

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

Article 15: Amendments to Assessment Methodology

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

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

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

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

Article 16: Amendments/Changes to price assessment

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

Chapter 2 Price Assessment Methodology for LPG Report

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. Priority is given in the following order: latest transactions, bids/offers, buying/selling interest.

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.

Rim understands metric ton (written as mt) is widely used as standard price unit in LPG industry. Nevertheless, gallon is also used as standard price unit in the US trades.

FOB Middle East SPOT LPG PRICES

Rim assesses FOB Middle East spot refrigerated LPG 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 Middle East LPG Market

Rim understands that the FOB Middle East LPG market is structured with three groups of business parties: Producers, Traders and Importers. Rim assesses FOB Middle East LPG prices at which a standard spot transaction could take place.

Rim defines a standard FOB Middle East LPG spot market transaction as follows:

Case 1	A producer sells an LPG cargo to a trader on a spot basis.
Case 2	A producer sells an LPG cargo to an importer on a spot basis.
Case 3	A trader sells an LPG cargo to another trader or an importer on a spot basis.
Case 4	An importer sells an LPG cargo to another importer or a trader on a spot basis.

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

Producer	A company that produces and exports LPG.
Trader	A company that buys and resells LPG cargoes in the international market.
Importer	A company that buys and sells LPG cargoes in the international market and also sells in the domestic market.

Assessment Window	Rim's assessment window for FOB Middle East spot LPG prices closes at 19:00 Tokyo time on the day of publication.
Price Unit	FOB Middle East spot LPG prices and premiums are in \$/mt. The premiums for cargoes to be loaded in the current month are to Saudi Aramco's monthly contract prices. The premiums for cargoes to be loaded in the next month are to the values Rim expects Saudi Aramco's monthly contract prices for the month to be at. The expected values are determined based on market research that Rim conducts each business day.
Time Window	FOB Middle East spot LPG prices in the publications released during the first half of a month are for cargoes to be loaded in the current month and the next month. In the publications released during the second half of a month, the prices are for the cargoes to be loaded in the next month and a month after the next.
Standard Size	FOB Middle East spot LPG prices are for 10,000 to 45,000mt lots, 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 Middle East spot LPG prices are for cargoes to be transacted on an FOB basis for loading at main export ports in Middle East countries, such as Saudi Arabia, Kuwait, Abu Dhabi, Qatar and Iran.

Quality Specifications	<p>FOB Middle East spot propane prices are for cargoes with propane of which quality is equivalent to SAMAREC A-140 specifications, issued by Saudi Aramco, containing minimum 95% propane and maximum 4% butane, with maximum 0.1% olefin content.</p> <p>FOB Middle East spot butane prices are for cargoes with butane of which quality is equivalent to SAMAREC A-160 specifications, issued by Saudi Aramco, containing maximum 2% propane, maximum 29% isobutane and minimum 68% normal butane, with maximum 0.1% olefin content.</p>
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Saudi CP Swaps

Rim assesses values of the Saudi LPG CP swaps for the forward months. The assessments are taken into account for Rim's expectations for Saudi Aramco's next month contract prices. All values are assessed based on information collected in the course of market research by Rim reporters each business day.

Structure of the CP Swaps Market

Rim understands that the Saudi CP swaps market is structured with four groups of business parties: Financial Institutes, LPG Traders, LPG Importers and LPG producers. Rim assesses values of Saudi CP swaps at which a standard transaction could take place through "over-the-counter" method of trade.

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

LPG Importer	A company that imports LPG and resells into the domestic wholesale market and trades Saudi CP swaps to hedge risks associated with physical purchases of LPG.
LPG Trader	A company that trades LPG cargoes in the international market as its main trading item and trades Saudi CP swaps to hedge risks associated with physical purchases of LPG.
Financial Institute	A company that trades derivative products based on LPG values as one of its trading items.
LPG Producer	A company that produces and exports LPG.

Assessment Window	Rim's assessment window for values of Saudi CP swaps closes at 19:00 Tokyo time on the day of publication.
Price Unit	Values of Saudi CP swaps are in \$/mt on an FOB Middle East basis.
Time Window	Rim assesses values of Saudi CP swaps for three forward months.
Standard Size	Values of Saudi CP swaps are for a contract for 1,000-5,000mt, 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 within the standard volume.

CFR Japan Spot LPG Prices

Rim assesses CFR Japan spot refrigerated LPG 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.

Rim indicates the yen figure of CFR Japan spot LPG prices based on the following formula:

Refrigerated cargo price in yen/mt =
 (\$/mt price) x (yen/\$)+ (Add Tax yen 1,600)

Structure of the CFR Japan LPG Market

Rim understands that the CFR Japan market is structured with four groups of business parties: Producers, Traders, Asian Importers and Japanese importers.

Rim defines a standard CFR Japan LPG spot market transaction as follows:

Case 1	A producer sells an LPG cargo to a Japanese LPG importer on a spot basis.
Case 2	A producer sells an LPG cargo to a trader on a spot basis.
Case 3	A trader sells an LPG cargo to a Japanese LPG importer on a spot basis.
Case 4	An Asian LPG importer sells an LPG cargo to a Japanese LPG importer on a spot basis.
Case 5	A trader or an Asian LPG importer sells an LPG cargo to another trader

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

Producer	A company that produces and exports LPG.
Trader	A company that buys and sells LPG cargoes in the international market.
Asian Importer	A company of Japan, South Korea, China or Taiwan that buys and sells LPG cargoes in the international market and also sells in the domestic market.
Japanese Importer	A company of Japan that buys and sells LPG cargoes in the international market and sells in the domestic market.

Assessment Window	Rim's assessment window for CFR Japan spot LPG prices closes at 19:00 Tokyo time on the day of publication.
Price Unit	CFR Japan spot LPG prices and premiums are in \$/mt. The premiums for cargoes to be delivered are to Rim's forecast of Saudi Aramco's CP in the month immediately after the latest CP. Rim's CP forecast is determined based on market research that Rim conducts each business day. The premiums are for cargoes to be delivered in the half-month indicated in the first line of the assessment.
Time Window	CFR Japan spot LPG prices are for cargoes to be delivered to Japan in three half-months. The first line refers to prices for the half-month which is one month ahead of the current half-month. The second line refers to prices for the half-month which is a month and a half ahead of the current half-month. The third line refers to prices for the half-month which is two months ahead of the current half-month.

	*CFR Japan Naphtha prices are for the open-spec naphtha contracts for delivery to Japan in the half-month which is a month and a half ahead from the current half-month.
Standard Size	CFR Japan spot LPG prices are for 20,000 to 44,000mt lots, 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	CFR Japan spot LPG prices are for cargoes to be transacted on a CFR basis for delivery to primary import terminals in Japan.
Quality Specifications	CFR Japan spot propane prices are for cargoes with propane of which quality is equivalent to SAMAREC A-140 specifications, issued by Saudi Aramco, containing minimum 95% propane and maximum 4% butane, with maximum 0.1% olefin content. CFR Japan spot butane prices are for cargoes with butane of which quality is equivalent to SAMAREC A-160 specifications, issued by Saudi Aramco, containing maximum 2% propane, maximum 29% isobutane and minimum 68% normal butane, with maximum 0.1% olefin content.

Japan Index

This is calculated based on the average of the first two lines of Rim's CFR Japan prices.

CFR China Spot Prices

Rim assesses CFR China spot LPG prices for refrigerated cargoes. Prices for refrigerated cargoes are 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.

Rim indicates the Yuan figure of CFR China spot LPG prices based on the following formula:

Refrigerated cargo price in Yuan/mt =
 $[(\$/\text{mt price}) + (\text{Import tax } 1\%) + (\text{Value Add Tax } 13\%)] \times (\text{Yuan}/\$)$

<Refrigerated Cargoes>

Structure of the CFR China Refrigerated LPG Market

Rim understands that the CFR China refrigerated LPG market is structured with four groups of business parties: Producers, Traders, Asian Importers and Chinese importers.

Rim defines a standard CFR China refrigerated LPG spot market transaction as follows:

Case 1	A producer sells an LPG cargo to a Chinese LPG importer on a spot basis.
Case 2	A producer sells an LPG cargo to a trader on a spot basis.
Case 3	A trader sells an LPG cargo to a Chinese LPG importer on a spot basis.
Case 4	An Asian LPG importer sells an LPG cargo to a Chinese LPG importer on a spot basis.
Case 5	A trader or an Asian LPG importer sells an LPG cargo to another trader

Rim defines the four business parties in the CFR China refrigerated LPG market as follows:

Producer	A company that produces and exports LPG.
Trader	A company that buys and sells LPG cargoes in the international market.
Asian Importer	A company of Japan, South Korea, China or Taiwan that buys and sells LPG cargoes in the international market and also sells in the domestic market.
Chinese Importer	A company of China that buys and sells LPG cargoes in the international market and also sells in the domestic market.

Assessment Window	Rim's assessment window for CFR China spot refrigerated LPG cargo prices closes at 19:00 Tokyo time on the day of publication.
Price Unit	CFR China spot refrigerated LPG cargo prices and premiums are in \$/mt. The premiums for cargoes to be delivered are to Rim's forecast of Saudi Aramco's CP in the month immediate after the latest CP. Rim's CP forecast is determined based on market research that Rim conducts each business day. The premiums are for cargoes to be delivered in the half-month indicated in the first line of the assessment.
Time Window	CFR China spot refrigerated LPG cargo prices are for cargoes

	to be delivered to South and/or East China in two half-months. The first line refers to prices for the half-month which is one month ahead of the current half-month. The second line refers to prices for the half-month which is a month and a half ahead of the current half-month.
Standard Size	CFR China spot refrigerated LPG cargo prices are for 20,000 to 44,000mt lots, 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	CFR China spot refrigerated LPG cargo prices are for cargoes to be transacted on a CFR basis for delivery to primary import terminals in China.
Quality Specifications	CFR China spot refrigerated propane prices are for cargoes with propane of which quality is equivalent to SAMAREC A-140 specifications, issued by Saudi Aramco, containing minimum 95% propane and maximum 4% butane, with maximum 0.1% olefin content. CFR China spot refrigerated butane prices are for cargoes with butane of which quality is equivalent to SAMAREC A-160 specifications, issued by Saudi Aramco, containing maximum 2% propane, maximum 29% isobutane and minimum 68% normal butane, with maximum 0.1% olefin content.

China Index

This is calculated based on the average of the two lines of Rim's CFR China prices.

Rim Asia Index (For Refrigerated Cargoes)

The Rim Asia Index is calculated by taking the average of 4 quotations: the first two lines of Rim's CFR Japan prices and the two lines of CFR China prices for refrigerated cargoes.

The first line of CFR Japan and CFR China quotations are the prices for the half-month which is one month ahead of the current half-month.

The second line of CFR Japan and CFR China quotations are the prices for the half-month which is a month and a half ahead of the current half-month.

Example:

In first-half of January:

Taking the average of 4 quotations; CFR Japan for and CFR China quotations are the prices for first-half February and second-half February.

In second-half of January:

Taking the average of 4 quotations; CFR Japan for and CFR China quotations are the prices for and second-half February and first-half March.

CFR Far East Propane Swaps

Rim assesses values of CFR FAR EAST PROPANE swaps for the forward months. All values are assessed based on information collected in the course of market research by Rim reporters each business day.

Structure of CFR Far East Propane Swaps Market

Rim understands that the CP swaps market is structured with groups of business parties: financial institutes, traders, importers and producers. Rim assesses values of CFR Far East Propane swaps at which a standard transaction could take place through “over-the-counter” method of trade.

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

LPG Importer	A company that imports LPG and resells into the domestic wholesale market and trades CFR Far East Propane swaps to hedge risks associated with physical purchases of LPG.
LPG Trader	A company that trades LPG cargoes in the international market as its main trading item and trades CFR Far East Propane swaps to hedge risks associated with physical purchases of LPG.
Financial Institute	A company that trades derivative products based on LPG values as one of its trading items.
LPG Producer	A company that produces and exports LPG.

Assessment Window	Rim’s assessment window for values of CFR Far East Propane swaps closes at 19:00 Tokyo time on the day of publication.
Price Unit	Values of CFR Far East Propane swaps are in \$/mt on a CFR Far East basis.
Time Window	Rim assesses values of CFR Far East Propane swaps for two forward months. In first-half of month, the prices are current month and one month ahead of the current half-month. In second-half of month, the prices are one month ahead and two months ahead of the current half-month.
Standard Size	Values of CFR Far East Propane swaps are for a contract for 1,000-5,000mt, 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 within the standard volume.

FOB US Gulf Coast (USGC) Spot Prices

Rim assesses FOB USGC spot refrigerated LPG 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 USGC LPG Market

Rim understands that the FOB USGC LPG market is structured with three groups of business parties: Suppliers, Traders and Importers. Rim assesses FOB USGC LPG prices at which a standard spot transaction could take place.

Rim defines a standard FOB USGC LPG spot market transaction as follows:

Case 1	A supplier sells an LPG cargo to a trader on a spot basis.
Case 2	A supplier sells an LPG cargo to an importer on a spot basis.
Case 3	A trader sells an LPG cargo to another trader or an importer on a spot basis.
Case 4	An importer sells an LPG cargo to another importer or a trader on a spot basis.

Rim defines the three business parties in the FOB USGC market as follows:

Supplier	A company that supplies and exports LPG.
Trader	A company that buys and sells LPG cargoes in the international market.
Importer	A company that buys and sells LPG cargoes in the international market and also sells in the domestic market.

Assessment Window	Rim's assessment window for FOB USGC spot LPG prices closes at 19:00 Tokyo time on the day of publication.
Price Unit	FOB USGC spot LPG prices and premiums are in \$/mt and cts/gal. Rim understands that cts/gal is widely used as standard price unit in LPG industry in the United States. The premiums for cargoes to be loaded in the current month are to Mont Belvieu quotations of the current month. The premiums for cargoes to be loaded in the next month are to Mont Belvieu quotations of the next month.
Time Window	FOB USGC spot LPG prices in the publications released during the first half of a month are for cargoes to be loaded in the current month and the next month. In the publications released during the second half of a month, the prices are for the cargoes to be loaded in the next month and a month after the next.
Standard Size	FOB USGC spot LPG prices are for 10,000 to 45,000mt lots, 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 USGC spot LPG prices are for cargoes to be transacted on an FOB basis for loading at main export ports in the US Gulf Coast such as Houston.
Quality Specifications	FOB USGC spot prices are for cargoes of which quality is

	equivalent to Enterprise or Targa specifications.
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Mont Belvieu Swaps

Rim assesses values of Mont Belvieu swaps for the forward months. All values are assessed based on information collected in the course of market research by Rim reporters each business day.

Structure of Mont Belvieu Swap Market

Rim understands that the CP swaps market is structured with groups of business parties: financial institutes, traders, importers and suppliers. Rim assesses values of Mont Belvieu swaps at which a standard transaction could take place through “over-the-counter” method of trade.

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

LPG Importer	A company that imports LPG and resells into the domestic wholesale market and trades Mont Belvieu swaps to hedge risks associated with physical purchases of LPG.
LPG Trader	A company that trades LPG cargoes in the international market as its main trading item and trades Mont Belvieu swaps to hedge risks associated with physical purchases of LPG.
Financial Institute	A company that trades derivative products based on LPG values as one of its trading items.
LPG supplier	A company that supplies LPG.

Assessment Window	Rim’s assessment window for values of Mont Belvieu swaps closes at 19:00 Tokyo time on the day of publication.
Price Unit	Values of Mont Belvieu swaps are in cts/gal on a FOB US Gulf Coast basis. Rim understands that cts/gal is widely used as standard price unit in LPG industry in the United States.
Time Window	Rim assesses values of Mont Belvieu swaps for two forward months. In first-half of month, the prices are current month and one month ahead of the current half-month. In second-half of month, the prices are one month ahead and two months ahead of the current half-month.
Standard Size	Values of Mont Belvieu swaps are for a contract for 1,000-5,000mt, 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 within the standard volume.

FOB South China, Southeast Asia/CFR Vietnam

A. Pressurized cargoes FOB South China

Assessment Window	Closes at 19:00 Tokyo time on the day of publication
Price Assessment	FOB China cargoes are assessed on a fixed price basis.
Price Unit	Prices are in \$/mt
Time Window	Prices published are for cargoes to be loaded from South China during the 1st and 2nd half-month ahead of the current half-month.
Standard Size	Standard cargo size used in the assessment is 1,000-2,500mt Propane/butane ratio to be considered is 50:50
Loading Port	FOB South China prices are based on loading from ports in South China
Quality Specification	As per Saudi's standard specification for propane and butane

B. Pressurized cargoes FOB Southeast Asia

Assessment Window	Closes at 19:00 Tokyo time on the day of publication
Price Assessment	FOB Southeast Asia cargoes are assessed on a fixed price basis and as a premium/discount to the CP.
Price Unit	Prices and premiums/discounts are in \$/mt
Time Window	Prices published are for cargoes to be loaded from Southeast Asia during the 1st and 2nd half-month ahead of the current half-month.
Standard Size	Standard cargo size used in the assessment is 1,000-2,500mt Propane/butane ratio to be considered is 30:70
Loading Port	FOB Southeast Asia prices are based on loading from ports in Southeast Asia, including Singapore, Malaysia and Thailand
Quality Specification	As per Saudi's standard specification for propane and butane

C. Pressurized cargoes CFR Vietnam

Assessment Window	Closes at 19:00 Tokyo time on the day of publication
Price Assessment	CFR Vietnam prices are assessed on a fixed price basis and as a premium/discount to the CP.
Price Unit	Prices and premiums/discounts are in \$/mt
Time Window	Prices published are for cargoes to be delivered to Vietnam during the 1st and 2nd half-month ahead of the current half-month.
Standard Size	Standard cargo size used in the assessment is 1,000-2,500mt Propane/butane ratio to be considered is 30:70
Delivery Port	CFR Vietnam prices are based on delivery to ports in North and South Vietnam, with Haiphong and Ho Chi Minh City as the main port of discharge.
Quality Specification	As per Saudi's standard specification for propane and butane

LPG Freight Rates

VLGC Freight (Refrigerated)

Rim assesses VLGC freight rates for refrigerated cargoes for the following routes, based on one-port loading and one-port discharge:

- a. Ras Tanura-Far East
- b. Algeria-Far East
- c. Northwest Europe-Far East
- d. Yanbu-Mediterranean
- e. Algeria-Northwest Europe
- f. Algeria-US Gulf Coast
- g. US Gulf Coast-Far East
- h. US Gulf Coast-Northwest Europe

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

Assessment Window	Closes at 19:00 Tokyo time on the day of publication
Price Assessment	VLGC Freight prices are assessed on a fixed price basis.
Price Unit	Prices are in \$/mt
Standard Size	Standard vessel size used in the assessment is 44,000mt.

2. Term/Spot Combined Freight for Middle East -Japan

This assessment for a standard VLGC vessel for the Middle East -Japan route, based on one-port loading and one-port discharge. It takes into account both (1) time-chartered vessels including the companies' own ships, and (2) spot vessels in an appropriate weightage. The number of voyage days for (1) includes voyage days from Ras Tanura to Japan, loading/discharge time, time for taking bunkers and sea margin. Bunker and port costs are also considered for (1).

3. Pressurized Freight

a. South China-Haiphong

Pressurized freight assessment for this route is based on a standard vessel size of 1,000-2,500mt for loading at one port in South China and discharging at one port in Haiphong considered as the main port of discharge.

Assessment Window	Closes at 19:00 Tokyo time on the day of publication
Price Assessment	Prices are assessed on a fixed price basis.
Price Unit	Prices are in \$/mt

b. Singapore-Ho Chi Minh

Pressurized freight assessment is based on a standard vessel size of 1,000-2,500mt for loading at one port in Singapore and discharging at one port in South Vietnam, with Ho Chi Minh City considered as the main port of discharge.

Assessment Window	Closes at 19:00 Tokyo time on the day of publication
Price Assessment	Prices are assessed on a fixed price basis.
Price Unit	Prices are in \$/mt

China Domestic Wholesale Prices

Rim assesses wholesale spot LPG prices for imported and refined material in seven markets in South China, four markets in East China, three markets in North China and three markets in Northeast China. All assessments are based on information collected in the course of market research conducted by Rim reporters each business day. For reference, Rim indicates refineries' posted prices for their refined LPG cargoes along with the price assessment for imported material.

Assessment Area for China Domestic Wholesale Prices

Each four Area are composed by the markets as follows.

South China: East Guangdong, Shenzhen, Guangzhou, Zhuhai, Western Guangdong, Guangxi, and Hainan

East China: Jiangsu, Shanghai, Zhejiang and Fujian

North China: Northeast China, Southeast China and Shandong

Northeast China (different from Northeast China in North China market): Dalian, West Liaoning and Heilongjiang

Structure of the China Domestic Wholesale LPG Market

Rim understands that the China domestic wholesale LPG markets are structured with three groups of business parties: Importers, Traders, and Endusers. Rim assesses China domestic wholesale LPG prices at which a standard spot transaction could take place.

Rim defines a standard China domestic wholesale LPG spot market transaction as follows:

Case 1	An importer sells an LPG cargo to a trader who is buying on behalf of an enduser/retailer on a spot basis.
Case 2	An importer sells an LPG cargo directly to an enduser/retailer on a spot basis.
Case 3	A trader sells an LPG cargo on behalf of an importer to an enduser/retailer on a spot basis.

Rim defines the three business parties in the China domestic wholesale LPG market as follows:

Importer	A company that imports LPG and resells into the domestic wholesale market.
Trader	A company that sells LPG on behalf of an importer and buys LPG on behalf of an enduser/retailer.
Enduser	A company that buys a large lot of LPG to consume in its business operation. Consumers in the household sector are not included in Rim's definition of an enduser.
Retailer	A company that buys a large lot of LPG and resells to consumers in the household and other sectors.

Assessment Window	Rim's assessment window for China Domestic Wholesale LPG Prices closes at 19:00 Tokyo time on the day of publication.
Price Unit	China Domestic Wholesale LPG prices are in Yuan/mt on an ex-terminal basis. Rim understands that Yuan/mt is widely used as standard price unit in LPG industry in China.
Time Window	China Domestic Wholesale LPG prices are for cargoes to be loaded within one week from the day of publication.

Standard Size	China Domestic Wholesale LPG prices are for transactions for more than 50mt, 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 volume.
Loading Port	China Domestic Wholesale LPG prices in South China are for cargoes to be transacted on an ex-terminal basis for loading at import terminals and secondary terminals in the East Guangdong, Shenzhen, Guangzhou, Zhuhai, Western Guangdong, Guangxi, and Hainan markets. China Domestic Wholesale LPG prices in East China are for cargoes to be transacted on an ex-terminal basis for loading at import terminals and secondary terminals in the Jiangsu, Shanghai, Zhejiang, and Fujian markets. China Domestic Wholesale LPG prices in North China are for cargoes to be transacted on an ex-terminal basis for loading at refineries in the Northeast China, Southeast China and Shandong markets. China Domestic Wholesale LPG prices in Northeast China are for cargoes to be transacted on an ex-terminal basis for loading at refineries in the Dalian, West Liaoning and Heilongjiang markets.
Quality Specifications	China Domestic Wholesale LPG prices are for cargoes with propane of which quality is equivalent to the SAMAREC A-140 specifications and butane of which quality is equivalent to the SAMAREC A-160 specifications. The SAMAREC specifications are issued by Saudi Aramco.

China Domestic Wholesale Market: South China Index & East China Index

The purpose of the South China Index and East China index is to provide a clear indication of price movements in the South China and East China domestic wholesale markets, respectively.

South China Index

The South China Index is determined using a weighted average of Rim's assessment of the following regions based on consumption volume by household end-users: East Guangdong, Shenzhen, Guangzhou, Zhuhai, Western Guangdong, Guangxi, Hainan.

East China Index

The East China Index is determined using a weighted average of Rim's assessment of the following regions based on consumption volume by household end-users: Jiangsu, Shanghai, Zhejiang, Fujian.

Calorific Values

Rim indicates the calorific LPG equivalent values of Arabian Light crude based (AL)* on the following formula.

To compare AL and propane : $AL\ price \times 47.39 / 5.78$

To compare AL and butane : $AL\ price \times 46.74 / 5.78$

Coefficient of converting calorific value of AL to propane: 47.39

Coefficient of converting calorific value of AL to butane: 46.74

Coefficient of converting AL unit (barrel) to LPG (mt): 5.78

Rim also indicates comparison of the calorific LPG equivalent values of Arabian Light crude and the current FOB Middle East spot LPG prices** in percent figures.

*Assessed with posts of premium/discount of crude condensate by Saudi Aramco based on Dubai/Oman.

**The middle price in the FOB Middle East market which Rim assesses each business day. Prices are for cargoes loaded in the current month during current first-half month or in the next month of the current month during current second-half month.

Rim Assessment Standard for Spot LPG Barge Prices

Loading Point and Assessed Areas

All Rim Japan barge domestic LPG market prices are evaluated on the cargoes to be traded on an ex-pipe basis (the same as ex-refinery, ex-tank storage). Prices in deals, bids and offers on a delivered basis are to be translated into estimated values that the prices could be if the deals, bids and offers were on an ex-pipe basis. Loading points in Rim's definitions are the Keihin and Western Japan markets. In Rim's commentary, the area along the Tokyo Bay is called Keihin and also includes Chiba. The Kashima terminal is not located in the Keihin market. However, prices for cargoes to be loaded at the Kashima terminal are customarily regarded equivalent to those to be loaded in the Keihin even though Kashima is not loaded in the Keihin in actuality. Meanwhile, the Western Japan includes Chukyo, Hanshin, Setouchi, and northern Kyushu.

Standard Size

Japan domestic spot barge LPG prices are for cargoes larger than 500 mt, which Rim considers standard. Prices for smaller cargoes with 200-500 mt are to be translated into estimated values that the prices could be if the cargoes were the standard volume.

Price Unit

Japan domestic spot barge LPG prices are in yen/mt on an ex-terminal basis. Rim understands that Yen/mt is widely used as standard price unit in LPG industry in Japan

Time Window

Japan domestic spot barge LPG prices in the publications released during the period from the first day to the fifth business day from the last day of the month are for cargoes to be loaded in the current month. In the publication released during the period from the fourth business day from the last day of the month to the last day of a month, the prices are for the cargoes to be loaded in the next month.

Assessment Window

Rim's assessment window for Japan domestic barge LPG prices, bids and offers, open at 10:00 and close at 19:00 Tokyo time.

Priority

The Rim price assessment is based on (a) transacted prices (b) firm bids and offers (c) buying and selling indication. (b) and (c) carry weight in order to investigate the validity of (a). In particular, (b) is qualified at par to (a) once quoted with volumes, delivery timing, and loading terminal. Rim is unlikely to take into account prices far below or above those at where standard transactions could take place.

Prices of transactions for assessment are divided into three groups, which are (a) prices confirmed by both buyers and sellers (b) prices confirmed by either side of parties (c) prices informed by multiple reliable third parties. It goes without saying that (a) is the most reliable, but (b) is also occasionally a case under certain circumstances. In the course of price assessment, (a) is taken into account the most. (a) is referred to the Rim's assessment. (c) is not taken into account. Prices of transactions if Rim found false are not taken into account even if transactions were confirmed by both counter-parties.

Standard Transaction for Rim Assessment

Spot transactions confirmed by either ends are taken into account. Term contract transactions are not taken into account. Package transactions, location and time swap transactions, barter transactions are referred to as an indicator.

As stated at the beginning, prices in deals, bids and offers on a delivered basis are to be

translated into estimated values that the prices could be if the deals, bids and offers were on an ex-pipe basis. Sales transactions directly to end-users are occasionally completed out of the range in which a standard spot transaction could take place. Therefore, prices for the above transactions are referred to as an indicator.

Prices for cargoes to be loaded at refineries are not fully taken into account due to the limited liquidity of spot transactions, but referred to as an indicator to show condition of supply and demand.

Quality:

Rim's assessment is for imported and ex-refinery liquefied petroleum gas both meeting the quality guideline set by the Japan LPG Association.

Rim Assessment Standard for Spot LPG Lorry Prices

In the course of creating price assessments, it is essential to discover the current price range in which a standard spot transaction could take place on the day of publication. In other words, transactions at prices far above or below the range in which a standard spot transaction could take are not taken into account even if transacted in actuality. The Rim price assessment is based on (a) transacted prices (b) firm bids and offers (c) buying and selling indication. (b) and (c) carry weight in order to investigate the validity of (a). In particular, (b) is qualified at par to (a) once quoted with volumes, delivery timing, and loading terminal. Rim is unlikely to take into account prices far below or above those at where standard transactions could take place.

Prices of transactions for assessment are divided into three groups, which are (a) prices confirmed by both buyers and sellers (b) prices confirmed by either side of parties (c) prices informed by multiple reliable third parties. It goes without saying that (a) is the most reliable, but (b) is also occasionally a case under certain circumstances. In the course of price assessment, (a) is taken into account the most. (b) is referred to the Rim's assessment. (c) is not taken into account. Prices of transactions if Rim found false are not taken into account even if transactions were confirmed by both counter-parties.

Loading Point

All Rim Japan lorry domestic LPG market prices are for cargoes to be traded on an ex-pipe basis, or ex-refinery or ex-primary storages. Prices in deals, bids and offers on a delivered basis are to be translated into estimated values that the prices could be if the deals, bids and offers were on an ex-pipe basis. Loading points in Rim's definitions are Chiba and Kawasaki for Keihin and Osaka Sakai for Hanshin. Kashima prices may be used as a reference for Keihin while Chukyo, Setouchi, northern Kyushu may be used as a reference for Hanshin.

Standard Size

Japan domestic spot lorry LPG prices are for cargoes larger than 100 mt, which Rim considers standard. Prices for smaller cargoes with 50-100 mt are to be translated into estimated values that the prices could be if the cargoes were the standard volume.

Price Unit

Japan domestic spot barge LPG prices are in Yen/mt on an ex-terminal basis. Rim understands that Yen/mt is widely used as standard price unit in LPG industry in Japan

Time Window

Japan domestic spot lorry LPG prices in the publications released during the period from the first day to the fifth business day from the last day of the month are for cargoes to be loaded in the current month. In the publication released during the period from the fourth business day from the last day of the month to the last day of a month, the prices are for the cargoes to be loaded in the next month.

Assessment Window

Rim's assessment window for Japan domestic lorry LPG prices, bids and offers, open at 10:00 and close 19:00 Tokyo time.

Standard Transaction for Rim Assessment

Spot transactions on an ex-pipe, or ex-refinery or ex-primary storages, confirmed by either

ends are taken into account. Prices in deals, bids and offers on a delivered basis are to be translated into estimated values that the prices could be if the deals, bids and offers were on an ex-pipe basis. Term contract transactions are not taken into account. Sales transactions directly to end-users are occasionally completed out of the range in which a standard spot transaction could take place. Therefore, prices for the above transactions are referred to as an indicator. Prices completed through tenders issued by government institutions are referred to as an indicator.

Package transactions, location and time swap transactions, barter transactions are referred to as an indicator.

Quality:

Rim's assessment is for imported and ex-refinery liquefied petroleum gas both meeting the quality guideline set by the Japan LPG Association.