

# **LNG Assessment Methodology**

## **I . DES Japan Assessment Methodology**

### **(Scope of Price Assessment)**

The assessment of the DES Japan daily price is based on concluded deals and bids/offers in the Japan OTC Exchange (JOE) LNG market. The assessment of the DES Japan daily price may also refer to concluded deals and bids/offers in other markets such as the DES Northeast Asia market.

### **(Price Assessment Window)**

The window for assessment runs from 15:00 hours Tokyo time the previous trading day to 15:00 hours Tokyo time for the day the assessment is published.

### **(Price Assessment Methodology)**

1) For all trades that take place on JOE LNG during the assessment window, a weighted average is applied to assess the DES Japan daily price.

2) In the absence of actual trades, the DES Japan daily price is assessed based on the mean of the highest bid and the lowest offer placed in the JOE LNG market as of the closing time for that day. In the event the spread between the highest bid and the lowest offer is too far apart and the mean is found irrelevant, the mean will not be applied and the DES Japan daily price will be assessed within the highest bid and the lowest offer. In such case, the DES Japan daily price will refer to the last deal concluded the previous trading day in the JOE market as well as concluded price(s) and bids/offers in other markets such as the DES Northeast Asia.

3) In the event there are no actual trades concluded in the JOE LNG market and no bids and offers in the JOE LNG market during the assessment window, the DES Japan price of the previous trading day will be carried over. And in the event such a condition continues and is no longer deemed reliable, DES Japan will be referred to actual trades, bids and offers in other markets such as the DES Northeast.

4) In the event that the lowest offer falls below the highest bid during the price assessment window, the DES Japan daily price will be assessed based on these lowest and highest values if they are deemed reasonable after a close examination of the market conditions at that time.

5) In the event that bids higher than and/or offers lower than values of actual trades that took place in the JOE LNG market appear just prior to the close of the assessment window for that day, the assessment will be made based on those higher bids and lower offers as well as the actual trades, if those higher bids and higher offers are deemed reasonable following a close examination of market trends and market conditions.

6) Even in the event that a significant gap between concluded prices and bids/offers in the JOE LNG market and in the DES Northeast Asia market prevails, the DES Japan daily price will be assessed based on concluded deals and bids and offers in the JOE LNG market.

### **(Volume)**

One contract on the JOE LNG is applied to 250,000 million British thermal units (mmBtu), equivalent to about 4,800 metric tons (mt). In the event that RIM's DES North East Asia spot market is referred to in cases above, the maximum volume will be 3.12 million mmBtu or roughly 60,000mt, which can be loaded on standard-sized vessels with capacity around 140,000 cubic meters. In addition, RIM may also take into account relatively larger Q-Flex and Q-Max vessels for the DES Japan assessment.

### **(Delivery Period)**

The DES Japan delivery period is divided into twelve one-month periods. With regards to expiration of the front month contract, the contract can be traded until the 15th of the prior month. In the event the 15th falls on a weekend or holiday, the last day of the contract will be the previous business day. From the 16th of each month the front month contract moves two months forward, that is, into the month after next. In the event, the 16th falls on a weekend or holiday, the first day of the contract will be the next business day.

## **II Physical Cargo Assessment**

### **1. Assessment Window**

From 17 hours Tokyo time of the previous business day and to 17 hours Tokyo time of the designated assessment day.

### **2. Assessment Method**

RIM assesses market prices by taking deals reported and bids/offers indicated during the above time window and other factors such as supply/demand conditions with a priority on most recent deals and bids/offers.

### **3. Cargoes to be assessed**

RIM recognizes LNG with 9,000-12,000 kilo calorie per 10,000 cubic meters as standard.

## **4. Markets to be assessed**

### **A. Northeast Asia**

#### **a) Northeast Asia (DES)**

##### **(Type of trade form)**

Delivery Ex-Ship (DES)

##### **(Countries or areas)**

Japan, South Korea, Taiwan and China

##### **(Delivery period to be assessed)**

\*Three half-month periods: 30-45 days, 46-60 days, and 61-75 days ahead of the current business day.

##### **(Volume)**

RIM assesses the price of a cargo of around 60,000 metric tons onboard conventional 135,000-cubic meters LNG tankers. RIM also takes into account prices of cargoes loaded on relatively larger Q-Flex and Q-Max, and relatively smaller vessels.

##### **(RIM North Asia Index)**

RIM announces the "RIM North Asia Index", a monthly cumulative average price of the above \*three delivery periods on a daily basis. For instance, as of the 20<sup>th</sup> of the month, RIM announces the cumulative average of three delivery windows from the 1<sup>st</sup> to the 20<sup>th</sup>.

#### **b) RIM Northeast Asia Forward**

##### **(Type of trade form)**

Delivery Ex-Ship (DES)

##### **(Countries or areas)**

Japan, South Korea, Taiwan and China

##### **(Delivery period to be assessed)**

The RIM Northeast Asia Forward assessment is a daily assessment of prices three to nine months ahead of the current month. Monthly spreads are derived from forward curves of UK ICE Brent crude, NBP natural gas futures markets as well as supply and demand condition.

##### **(Volume)**

The same as above.

#### **d) RIM Northeast Asia Seasonal Index** \* As of September 2012

RIM estimates the average price for each season (Spring, Summer, Autumn, Winter) based on the Northeast Asia Forward assessments for six months. RIM announces the average assessment of the prices of cargoes delivered in each season.

<u>Season time frame.</u>	<u>Appearance in report</u>
Spring (April - June)	September 16- March 15
Summer (July - September)	December 16- June 15
Autumn (October – December)	March 16- September 15
Winter (January – March)	June 16- December 15

## **B. Others**

### **a) Middle East (FOB)**

#### **(Type of trade form)**

Free on Board (FOB)

#### **(Countries or areas)**

Abu Dhabi, Qatar, Oman, and Yemen (other countries in the Middle East are also considered).

#### **(Loading period to be assessed)**

Three half-month periods: 30-45 days, 46-60 days, and 61-75 days ahead of the current business day.

#### **(Volume)**

RIM assesses the price of a cargo of around 60,000 metric tons onboard conventional 135,000-cubic meters LNG tankers. RIM also takes into account prices of cargoes loaded on relatively larger Q-Flex and Q-Max, and relatively smaller vessels.

### **b) Middle East (DES)**

**\*Started on Jan 5, 2012.**

#### **(Type of trade form)**

Delivery Ex-Ship (DES)

#### **(Countries or areas)**

Kuwait and Dubai (other countries in the Middle East are also considered).

#### **(Delivery period to be assessed)**

Three half-month periods: 30-45 days, 46-60 days, and 61-75 days ahead of the current business day.

#### **(Volume)**

RIM assesses the price of a cargo of around 60,000 metric tons onboard conventional 135,000-cubic meters LNG tankers. RIM also takes into account prices of cargoes loaded on relatively larger Q-Flex and Q-Max, and relatively smaller vessels.

### **c) India (DES)**

**\*Started on Jan 5, 2012.**

#### **(Cargoes to be assessed)**

Prices are based on values of cargoes to be discharged in India for the designated delivery period.

**(Type of trade form)**

Delivery Ex-Ship (DES)

**(Countries or areas)**

India.

**(Delivery period to be assessed)**

The same as DES Middle East.

**(Volume)**

The same as DES Middle East.

**d) DES Europe (DES)**

\* “delivery period” changed on May 16, 2012

\* changed from FOB Atlantic Basin to DES Europe (June 16, 2011)

**(Type of trade form)**

Delivery Ex-Ship (DES)

**(Countries or areas)**

Britain, France, Belgium, Spain and Portugal (other countries in Europe are also considered).

**(Fixed and Market-linked price assessment)**

RIM assesses DES Europe prices based on fixed price discussions as well as the premium/discount levels to the British National Balancing Point (NBP) futures. RIM assesses the fixed price by adjusting a premium or discount from the previous business day's NBP.

**(Delivery period and volume)**

Three half-month periods: 15-30 days, 31-45 days, and 46-60 days ahead of the current business day.

**(Volume)**

The same as DES Middle East.

**e) Atlantic (FOB):**

\*Started November 2013

**(Type of trade form)**

Free on Board (FOB)

**(Countries or areas)**

Trinidad & Tobago, Nigeria, Norway and other European areas. Peru on the west coast of South America and Algeria along the North African coast of the Mediterranean Sea are also considered.

**(Delivery period and volume)**

Three half-month periods: 15-30 days, 31-45 days, and 46-60 days ahead of the current business day.

**(Volume)**

The same as DES Middle East.

#### **f) South America (DES)**

**\*Started in November 2013**

##### **(Type of trade form)**

Delivery Ex-Ship (DES)

##### **(Countries or areas)**

Brazil, Argentina and Chile. Mexico's east and west coasts and the Dominican Republic are also considered (freight rates for Mexico and Dominican cargoes are taken into consideration).

##### **(Volume)**

The same as DES Middle East.

### **III. Freight Market**

#### **(Price Assessment Window)**

The window for assessment runs from 17:00 hours Tokyo time the previous trading day to 17:00 hours Tokyo time for the day the assessment is published.

#### **(Type of trade form)**

Spot rates for each route per mmBtu and daily rates. The assessment includes fuel cost and boil off cost.

#### **(Route)**

Middle East-Northeast Asia, Atlantic-Northeast Asia, and Middle East-Europe routes.

**\* Added from November 2011**

#### **(Type of tankers)**

Conventional LNG tankers; carrying capacity of 135,000 to 150,000-cubic meters.

LNG tankers with cost-efficient engines; carrying capacity of 160,000 to 170,000-cubic meters.

RIM also considers freight rates of Q-Flex, Q-Max, and relatively smaller vessels.

#### **(Condition of assessment)**

RIM assesses spot charter rates based on the following conditions:

- Number of days in a voyage and area for voyage
- Market for one voyage from loading point to discharging point.
- Number of days per voyage as follows:
  - (a) 30 days for a Middle East-Northeast Asia route
  - (b) 54 days for an Atlantic-Northeast Asia route
  - (c) 22 days for a Middle East-Europe route
- RIM sets the loading as well as discharge ports as follows:
  - (a) Middle East = Abu Dhabi, Qatar, Oman, and Yemen

- (b) Northeast Asia = Japan, South Korea, Taiwan, and China
- (c) Europe = Britain, France, Spain, Belgium, and Portugal
- (d) Atlantic = Trinidad and Tobago, Nigeria, and Equatorial Guinea
- Factors included in freight assessment
  - (a) spot chartering rate
  - (b) fuel cost
  - (c) boil off
  - (d) port charge at the loading and discharge ports
  - (e) for a Middle East-Europe route, RIM includes a Suez Canal charge

#### **(Bunker market for fuel of tankers)**

The assessment of 380cst fuel oil at Tokyo Bay, Singapore and Rotterdam from the previous business day is shown on the report.

#### **IV. Others**

##### **JCC Price (Japan Crude Cocktail Price)**

##### **(Forecast of JCC)**

--- RIM forecasts the JCC price using Dubai crude as a base. The import prices of other crudes are calculated based on the difference between Dubai crude. RIM decides freight, insurance cost and the month of loading.