

(3)

DISTRIGAS CORPORATION

Docket No. 88-37-LNG

EXHIBIT E-III-B

RESTATED VERSION OF THE APRIL 13, 1976 AGREEMENT  
FOR THE SALE AND PURCHASE OF LIQUEFIED NATURAL GAS  
AS AMENDED BY AMENDMENT NO. 3 (MARKED TO SHOW  
CHANGES FROM THE ORIGINAL 1976 VERSION).

AGREEMENT FOR THE SALE AND PURCHASE OF  
LIQUEFIED NATURAL GAS

Between:

Société Nationale SONATRACH, with registered office in Algiers, 80 Avenue Ahmed Ghermoul, hereinafter referred to as the "Seller", represented by its Vice President in charge of the Marketing Department, Slimane Bouguerra, authorized to execute this Contract,

and

on the one hand

Distrigas Corporation, a corporation organized and existing under the laws of the State of Delaware, with its principal office in Boston, Massachusetts, 125 High Street, hereinafter referred to as the "Buyer", represented by its Vice President, John G.L. Cabot,

on the other hand,

WITNESSETH

WHEREAS, Alocean, Ltd., a Bermudian Corporation (ALOCEAN), and Buyer have concluded contracts for the sale and purchase of LNG dated December 3, 1969 and September 10, 1970 and an amendment to these contracts has been concluded between the two parties on October 4, 1975;

WHEREAS, Alocean and Buyer have concluded a contract for the sale and purchase of LNG dated October 4, 1975 relating to additional quantities to be delivered from July 1, 1976 to December 31, 1977;

WHEREAS, Seller and Buyer now deem it desirable, subject to Alocean's obligations under the above-mentioned contracts being assumed by Seller, that the latter sell LNG directly to Buyer rather than through Alocean; and

WHEREAS, Seller and Buyer have agreed in accordance with a protocol signed by them June 6, 1975, to increase, beginning January 1, 1978, the quantities of LNG provided in the above-mentioned contracts and to conclude between themselves a new contract which replaces the above-mentioned contracts, beginning January 1, 1978, setting forth the new terms under which all quantities of LNG sold by Seller to Buyer will be delivered, beginning on such date.

IT IS AGREED AS FOLLOWS:

ARTICLE 1

DEFINITIONS

For the purpose of this agreement, the words and terms contained in Appendix A attached hereto and which are an integral part of this agreement, will have the meanings defined in said appendix.

ARTICLE 2

[DELETED]

ARTICLE 3

SOURCE OF SUPPLY

The LNG sold by Seller and delivered to Buyer will come from natural gas wells located in Algeria.

Seller represents that the LNG which is to be sold under the provisions of this agreement will be produced by liquefaction units at Seller's liquefaction plants in Algeria.

ARTICLE 4

TANKERS; DELIVERY; PASSAGE OF TITLE

Section 4.1. Tankers. Buyer shall cause the LNG purchased and sold hereunder to be shipped from Algeria in LNG tankers having a Gross Cargo Capacity, as defined in the Transportation Agreement dated the date hereof between Seller as transporter and Buyer as shipper (the "Transportation Agreement"), of between 30,000 and 135,000 cubic meters, for carriage to and delivery at the Terminalling Facility. Such LNG tankers shall have specifications and characteristics compatible with the ports of loading and discharging. Seller shall furnish or cause to be furnished to Buyer, and Buyer shall accept, on and subject to the terms and conditions of the Transportation Agreement, at least one of such LNG tankers in use hereunder at any given time. If a second LNG tanker is, at any given time, required to lift LNG which is to be purchased and sold hereunder, Buyer shall, before entering into any arrangements with any third party for the provision of such additional LNG tanker, offer to Seller first refusal of the right to provide the same on terms and conditions not less favorable to Buyer than would be the

terms and conditions of such arrangements. Unless such offer is accepted by Seller and such acceptance communicated to Buyer within 48 hours of such offer being made it shall be deemed to have been rejected by Seller.

Section 4.2. Delivery Point, Passage of Title and Risk of Loss. The delivery point is the point at which the flange coupling of Seller's loading line joins the flange coupling of the LNG loading manifold on board any LNG Tanker at Arzew or other safe port in Algeria. Title and risk of loss shall pass to Buyer at the delivery point.

#### ARTICLE 5.

##### LIABILITY

While the LNG tanker is being berthed or leaving the berth, and as long as it is berthed at the loading port, each party will be responsible to the other party for any proven injuries or damage, excluding all indirect consequences, which may be caused to the other party by the fault or negligent act of the first party, its own employees, representatives, contractors or suppliers of services and in no case shall Buyer or its affiliates be deemed to be employees, representatives, contractors or suppliers of Seller, and vice versa.

Seller shall cause the LNG to be delivered and Buyer shall receive the LNG at the delivery point with due compliance with appropriate safety precautions.

#### ARTICLE 6

##### QUANTITIES AND DELIVERIES

Section 6.1. Annual Quantities. Subject to the provisions of this Article 6, from 15 September, 1988 Seller shall cause Sonatrading to sell to Buyer and Buyer shall purchase from Sonatrading F.o.b. Algerian port 51 million MMBtu of LNG, corresponding to 17 full cargoes each of approximately 125,000 cubic meters in each Contractual Year and pro rata for any part of a Contractual Year.

Section 6.2. Undertaking of Buyer and Affiliates. Throughout the term of this agreement, Buyer undertakes that it and any affiliate of Buyer selling LNG purchased by Buyer hereunder or regasified LNG derived therefrom shall diligently seek to obtain from their customers and potential customers commitments (capable of being satisfied by such LNG or

regasified LNG) on terms and conditions (including price) which in Buyer's reasonable commercial judgment are the most favorable available to Buyer and its affiliates in the prevailing market and under the prevailing circumstances, for the purchase by such customers and potential customers from Buyer or any such affiliate of Buyer of LNG for delivery in the U.S.A., or of Natural Gas derived from the regasification of LNG and emanating from or delivered at the Tailgate. If and to the extent that Buyer proposes to seek delivery of any quantities of LNG at the Terminalling Facility in excess of the quantities specified in Section 6.3(a) with a view to meeting any such commitments it will, subject to and on the terms hereof and up to the quantities specified in Section 6.1, offer to purchase those quantities of LNG from Sonatrading hereunder at the price computed in accordance with Article 9 hereof. Unless such offer is accepted by Seller and such acceptance communicated to Buyer within 240 hours of such offer being communicated it shall be deemed to have been rejected by Seller.

Section 6.3. Minimum Quantities; Make-up.

(a) Seller shall cause Sonatrading to sell and load hereunder, and Buyer shall buy from Sonatrading, as part of the quantities specified in Section 6.1, minimum quantities of LNG totalling in the aggregate approximately 27 million MMBtu (corresponding to nine full cargoes of an LNG tanker or LNG tankers each of a capacity of approximately 125,000 cubic meters) during each Contractual Year and pro rata for any part of a Contractual Year. Deliveries of such quantities hereunder shall be scheduled by agreement under Section 6.4 hereof. Buyer shall make payment to Sonatrading in respect of each cargo forming part of such quantities at the price computed in accordance with Article 9 hereof; provided that if the Reference Price on the tenth day preceding the date such cargo is scheduled for loading pursuant to Section 6.4 shall be below the prevailing Minimum Price Buyer shall not be obligated under this Section 6.3(a) to buy, and Seller shall not be obligated under this Section 6.3(a) to sell or load such cargo, but Buyer shall instead have the option (exercisable by notice delivered by telex or other prompt means not later than 10 days before such scheduled date) to purchase at the Minimum Price, and to call for delivery of, such cargo as scheduled. To the extent that the shipping schedule involves or would involve loading of any of the nine cargoes constituting minimum quantities after March 15 of such Contractual Year, the price for any cargoes so loaded after that date shall, at either party's request, be a price to be agreed between the parties. Accordingly,

Seller and Buyer will attempt in that event to agree to alternative pricing terms. If Seller and Buyer do not agree to pricing terms for any of such cargoes then both Seller and Buyer shall be excused from any obligation to sell and deliver or receive and pay for the same.

(b) Buyer's obligations in respect of all quantities in excess of the above minimum quantities shall be governed by Section 6.2 hereof. To the extent that the aggregate quantities of LNG purchased by Buyer for delivery in any one Contractual Year shall at the end of such Contractual Year be less than 51 million MMBtu, Buyer shall have the right in respect of the next succeeding Contractual Year(s) during this Agreement to increase the quantity of 51 million MMBtu in Section 6.1 hereof until the total of such increases shall equal the amount by which such quantities are less than 51 million MMBtu. If at the end of the term of this agreement specified in Article 14 any part of such difference shall still not have been shipped hereunder, Buyer shall have the right to extend such term for a period of five (5) years or until such difference shall have been delivered at the delivery point in full, whichever shall first occur, but Section 6.3(a) shall not apply during any such extended term, and in no event shall Seller be obligated to deliver more than 51 million MMBtu of LNG in any one Contractual Year during this Agreement as so extended or otherwise.

Section 6.4 Schedule of Loadings. Seller and Buyer agree that Buyer and Sonatrading shall consult together during a Contractual Year as may be reasonably required, and shall in particular meet each February and August to establish a schedule of projected loadings hereunder month by month for the six-month period commencing the following March 15th and September 15th, respectively.

The nine cargoes constituting minimum quantities pursuant to Section 6.3(a), shall be scheduled for loading, to the extent reasonably practicable, at approximately 20 day intervals beginning September 15.

Such schedule shall be updated from time to time to the extent reasonably practicable.

Ten (10) days prior to the beginning of each calendar month, Seller shall cause Sonatrading to confirm by telex to Buyer the schedule of deliveries for such month.

Seller shall ensure that Buyer shall be promptly notified by telex of any loading of LNG under this agreement

and of the departure of such cargo and the estimated time of arrival at the Terminalling Facility.

**Section 6.5. Plant Inspections and Overhauls.**

Seller and Buyer shall provide that annual inspections and overhauls of the plants and facilities necessary to carry out the operation contemplated by this agreement shall take place preferably during the summer, or at any such other suitable time of the year selected by mutual agreement as will not entail a decrease in the annual quantity of LNG the delivery of which is provided for by this agreement. Seller and Buyer shall notify each other of schedules of such annual inspections and overhauls ninety (90) days prior to their commencement.

**ARTICLE 7**

**QUALITY**

The LNG delivered by Seller to Buyer will have in the gaseous state:

- a PCS of between 9,640 Kcal/Nm<sup>3</sup> and 10,650 Kcal/Nm<sup>3</sup>
- constituent elements the percentage of which will vary within the following limits (in molecular percentage):

Nitrogen N <sub>2</sub>	between 0.2 and 1.4
Methane C <sub>1</sub>	between 85.65 and 96.6
Ethane C <sub>2</sub>	between 3.2 and 8.5
Propane C <sub>3</sub>	between 0.0 and 3.0
Isobutane iC <sub>4</sub>	between 0.0 and 0.52
Normal butane nC <sub>4</sub>	between 0.0 and 0.7
Pentane C <sub>5</sub> plus	between 0.0 and 0.23
- an amount of H<sub>2</sub>S not exceeding zero point five (0.5) part per million in volume
- an amount of mercaptan sulfur not exceeding 2.3 mg/Nm<sup>3</sup>
- an amount of total sulfur not exceeding 30 mg/Nm<sup>3</sup>.

The verification of the PCS and of the composition of the LNG in compliance with the above specifications shall be made in accordance with the provisions of article 8 below.

For the verification of the amounts of sulphur and  $H_2S$ , the procedures defined by the standards ASTM D 2385 and D<sup>2</sup>3031 shall be applied.

## ARTICLE 8

### MEASUREMENT AND TESTING

Section 8.1. Gauging. The quantities of LNG delivered under this agreement shall be measured in metric units by gauging of the liquid in the ship's tanks immediately prior to and after loading.

The gauging at the delivery point and the calculations relating thereto shall be made by Seller or its designated representative, with Buyer having the right to be present.

Each party shall send or cause to be sent to the other party a certified copy of the gauging standards for each tank of each LNG tanker being furnished by such party, in metric units approved by the Departments of Instruments and Measurements of Algiers - Paris or of the U.S. Bureau of Standards in Washington (D.C.), as well as correction charts (list, trim, tanks' contraction, etc.). Such standards and charts shall be used throughout the term of this agreement, except in the case of a physical change in the tanks, in which case new standards and charts shall be used. LNG level measuring devices shall be approved by both Seller and Buyer. Each tank shall be equipped with two level-measuring devices of different types.

Section 8.2. Determination of Density. The density of the LNG shall be determined by a calculation from the molecular composition determined in accordance with Section 8.4 hereof, for the average temperature defined in Section 8.3 hereof.

The method of calculation shall be the method known as the revised Klosek and McKinley Model, as set forth in NBS Technical Note 1030, published by the U.S. Department of Commerce in December 1980.

Section 8.3. Determination of the Temperature. The temperature of the cargo shall be the arithmetic average of the temperatures indicated by the temperature-registering devices immersed in the LNG in all of the tanks.



The temperature-registering devices, thermocouples or "resistance probes", shall be distributed over the entire height of the tanks and shall be accurate to 0.2°C, more or less, subject to the condition that the instruments are capable of being that accurate. These temperatures shall either be recorded in writing or printed.

Section 8.4. Sampling. One or several representative samples of the LNG shall be taken by Seller at a point located as close as possible to the loading flange of the LNG tanker. The sampling device shall permit the total vaporization of a definite quantity of LNG allowing the taking of representative gaseous samples.

The device shall be chosen by mutual agreement between Seller and Buyer. Samples shall be analyzed with the aid of a chromatograph approved by Buyer. The analysis or the average of these analyses shall determine the molecular composition of the LNG.

A calibration of the chromatograph used shall be made before each delivery, with the aid of a gaseous sample, in the presence of a representative of Buyer being present if it so wishes.

Section 8.5. Determination of the Gross Heating Value. The gross heating value (PCS) of the regasified LNG shall be calculated from its molecular composition determined in accordance with Section 8.4, from the molecular masses and from the PCS at 0°C at a pressure of 1.01325 BAR of each of the constituent elements.

The PCS shall be expressed in thermies/kg.

The PCS values of each of the constituent elements are indicated in the table attached hereto as Appendix B. They are deduced from the physical values given by the tables of API Research Project 44; they shall be corrected, without retroactive consequence, in the case of changes published later by the API.

Section 8.6. Determination of the Thermies of BTUs Delivered. The quantity of thermies loaded on the ship shall be computed from the following formula:

$$Q_{th} = V \times M \times PC$$

in which:

- $Q_{th}$  represents the quantity of thermies loaded
- $V$  represents the volume in cubic meters of LNG loaded in m3, determined in accordance with Section 8.1
- $M$  represents the density of LNG determined in accordance with Section 8.2, and expressed in kg/m3
- $PC$  represents the PCS determined in accordance with Section 8.5 and expressed in thermies/kg

The quantity of millions of BTUs (MMBTU) loaded shall be equal to

$$Q_{mmbtu} = \frac{Q_{th} \times 3,968.3}{1,000,000}$$

Section 8.7. Methods of Operation. The gauging equipment in the ship's tanks shall be provided, operated and maintained by the Buyer at its expense. The equipment and material utilized for the determination and tests of the quality and density of the product shall be provided, operated and maintained by Seller at its expense.

Any measurement and any calculation relating to the determination of the quality and density of the LNG shall be made by Seller in the presence of a representative of Buyer if Buyer so wishes.

The absence of one of the parties will affect neither the taking of the measurements nor the preparation of the calculations incumbent upon the other party.

At any time, one party shall have the right to inspect the measuring and testing equipment provided by the other party, after prior notice to the latter.

Calibration of an instrument shall be made by the party in charge of the operation of this instrument, the

other party having the right to be present at such operations.

However, all data relating to the tests, diagrams, calculations or any other similar information must be made available to the parties and kept for a period of at least three (3) years.

Section 8.8. Accuracy of Measurements. The accuracy of the equipment used may be verified on request of Seller or Buyer. Such verifications may only be made with both parties having the right to be present by methods recommended by the makers of the instruments or by any other method agreed upon by Buyer and Seller.

If, when verified, a measuring apparatus shows errors of less than one percent (1%) the previous reports on this equipment shall be considered correct regarding calculation of deliveries and the equipment shall be adjusted immediately as needed.

If, when verified, a measuring apparatus shows errors of more than one percent (1%), the previous reports on this equipment shall be recalculated to a zero deviation by comparison to calibration results for any definitely known or agreed period; but if the period in which this error occurred were not definitely known or agreed upon, this correction would be made for half of the deliveries since the date of the last calibration.

The equipment for measuring the level of the LNG and its mass, and the temperature in the ship's tanks, as well as the chromatographs for analysis of natural gas, shall be the most reliable and accurate instrument known at the time they are chosen.

The equipment shall be professionally installed. The parties shall make every effort to obtain from the service des Instruments et Mesures de Paris approval of measuring equipment and apparatus used.

Section 8.9. Disputes. Any dispute on the choice of the type and accuracy of the measurement apparatus, the result of a measurement, a sampling, an analysis, a calculation or method of calculation, shall be referred to the Ecole Polytechnique Fédérale de Zürich (Technische Hochschule, Zürich).

Any decision of this body shall be binding on Seller and Buyer. Expenses incurred relating to the services of this body shall be evenly divided between Seller and Buyer.

## ARTICLE 9

### PRICE

Section 9.1. F.o.b. Terms. For any month during which there shall be completed any loading of any LNG tanker hereunder the price F.o.b. Algerian port in U.S. Dollars per MMBtu of such LNG so loaded shall be the higher of the Reference Price (if any), the Minimum Price, and a price ("P") computed as follows:

(i) If SP for such month is less than \$5.00:

$$P = 0.6324 \times SP$$

(ii) If SP for such month is equal to or greater than \$5.00:

$$P = (0.6532 \times SP) - 0.0923$$

SP, for any month, shall be the amount obtained by ascertaining

(a) the total number of MMBtus of LNG or regasified LNG derived from LNG purchased hereunder and delivered to customers of Buyer or of any affiliate of Buyer during such month; and

(b) the total proceeds receivable by Buyer or any affiliate of Buyer from such deliveries less any sums paid by Buyer or such affiliate during such month to fiscal authorities in the United States in respect of any import duty, tax or other imposition not levied at the date of execution of Amendment No. 3 to this agreement but applicable to quantities of LNG imported under this agreement;

and by then dividing the aggregate of the amounts calculated under (b) above by the aggregate of the amounts calculated under (a) above. For any period less than a month, or for any month during which no vapor or liquid is delivered, SP shall be fixed by agreement of Buyer and Seller.

Buyer shall throughout this Agreement diligently seek to maximize the proceeds under (b) above by negotiating or causing to be negotiated with such customers terms and conditions (including price) which in Buyer's reasonable commercial judgment are the most favorable available to Buyer in the prevailing market and in the prevailing circumstances.

## ARTICLE 10

### TAXES AND DUTIES

All duties, taxes and imposts affecting the LNG cargo and collected by the Government of the United States of America shall be borne by Buyer without prejudice to Section 9.1 hereof.

All duties, taxes and imposts affecting the LNG cargo and collected by Algeria, and, where the LNG tanker is furnished under the Transportation Agreement, all duties, taxes and imposts affecting the LNG tanker shall be borne by Seller.

## ARTICLE 11

### PORT FACILITIES; LOADING

#### Section 11.1. Port and Loading Facilities.

(a) Port Facilities. Seller shall make available, or cause to be made available, safe port facilities for the loading of LNG purchased hereunder capable of receiving LNG tankers of the following maximum dimensions:

Overall Length.....	290.00 meters
Width.....	43.70 meters
Draft at full capacity...	11.30 meters

Port facilities shall be such as to permit all loading and maneuvers to be carried out in complete safety within a reasonable time.

(b) Berthing and Loading Facilities. Seller shall make available or cause to be made available to Buyer at the port of loading in Algeria berthing and loading facilities including:

(i) mooring equipment;

- (ii) lighting sufficient to permit docking maneuvers by day or by night in complete safety, to the extent permitted by the port authorities;
- (iii) pipelines to ensure normal stocking of the LNG tanker with bunker fuel;
- (iv) loading arms, pipes and other appropriate facilities permitting the loading of LNG at the average rate of ten thousand m<sup>3</sup>/hour;
- (v) a vapor return line from the LNG tanker to shore facilities having a diameter sufficient to maintain appropriate operating pressure in the tanks of the LNG tanker and in the storage reservoirs; and
- (vi) a liquid nitrogen loading facility compatible with the LNG tanker.

The facilities described in this Section 11.1(b) shall be provided, operated and maintained at no cost to Buyer.

Section 11.2. Safety. Loading of LNG shall be carried out in strict conformity with all applicable safety and other similar regulations.

Section 11.3. Conditions of Loading. Buyer shall give written notice to Seller of the estimated date and hour of arrival at the port of loading of any LNG tanker providing maritime transportation hereunder as well as of the estimated quantity of LNG which is to be loaded. Buyer shall send or cause to be sent to Seller the following written notices:

- (i) a first designation notice shall be given upon departure from last port of discharge or (if later) at least ninety-six (96) hours prior to the estimated time of arrival, and shall contain an estimated time of arrival;
- (ii) a second designation notice shall be given so as to arrive seventy-two (72) hours prior to the estimated time of arrival;
- (iii) a third designation notice shall be given so as to arrive twenty-four (24) hours prior to the estimated time of arrival; and

- (iv) At the time the LNG tanker arrives at the sea buoy or designated anchorage at the loading port, the Master shall give written notice of such arrival to Seller or its authorized representative at any time of the day or night.

As soon as the LNG tanker is berthed alongside the pier and prepared to load its cargo, the Master of the LNG tanker shall give written notice of ready to receive to Seller or to its representative at any time of the day or night. Notwithstanding the foregoing, where the LNG tanker is furnished under the Transportation Agreement, all notices required to be given under this Section 11.3 shall be the responsibility of Seller. Provided that the bottom temperature of the tanks of the LNG tanker is not higher than minus one hundred and forty-five degrees centigrade, Seller shall then take all appropriate measures within its reasonable control to permit the loading of the LNG tanker as quickly as is safely possible.

Authorized laytime for loading any LNG tanker under this Agreement shall commence at the same time and shall run for the same period as authorized laytime at the loading port under the Transportation Agreement and demurrage shall be computed for the same period at the same rate and shall be payable in the same manner as demurrage at the loading port under the Transportation Agreement.

**Section 11.4. Cooldown; Heel and Gas Trials.**

(a) Seller shall make available or cause to be made available LNG for gas trials and cooldown for any LNG tanker transporting LNG purchased hereunder which has a bottom temperature in its tanks prior to loading higher than minus one hundred and forty-five degrees centigrade. Payment for the LNG so supplied shall be the responsibility of Buyer, except as provided below. Buyer shall pay to Sonatrading for the LNG so supplied (for which Buyer bears such payment responsibility) the price in U.S. Dollars per MMBtu provided in Article 9 hereof for LNG loaded during the month of such supply.

(b) Upon discharge of any LNG tanker transporting LNG in connection herewith, which is scheduled to load LNG at the loading port within thirty (30) days following completion of such discharge, Buyer shall retain or cause to be retained aboard that LNG tanker (if returning forthwith in ballast to the loading port to load further cargo hereunder) an amount of LNG sufficient to permit such tanker to maintain a temper-

ature no higher than minus one hundred and forty-five degrees centigrade at the bottom of the tanks for a period of at least twenty-four (24) consecutive hours after its arrival at the loading port or, in the case of an LNG tanker provided under Transportation Agreement, after the time (if earlier) when such arrival would have occurred had it proceeded to the loading port with due dispatch. The supply of LNG necessitated by a failure of Buyer so to cause sufficient LNG to be retained aboard shall be the responsibility of and shall be paid for by, Buyer but at the request of Buyer such LNG shall be supplied by Seller. The price to be paid by Buyer to Seller for LNG for which Buyer is obligated to pay Seller under this Section 11.4 shall be the price in U.S. Dollars per MMBtu provided in Article 9 hereof.

(c) If any LNG tanker aboard which LNG has been so retained does not load within such twenty-four (24)-hour period for any cause attributable solely to any matter within the reasonable control of Seller or the owner or operator of any LNG tanker furnishing services under the Transportation Agreement, the cost of additional LNG thereby rendered necessary and utilized for cooldown of such tanker shall be the responsibility of Seller.

(d) The quantities of LNG purchased pursuant to this Section 11.4 by Buyer shall not be included in the quantities covered by Article 6 of this agreement.

## ARTICLE 12

### INVOICING, PAYMENT AND ERRORS

#### Section 12.1. Invoicing and Payment.

(a) Seller's Documents; Payments on Account. Not less than 7 days in advance of each month in the course of which Buyer anticipates that there will be LNG deliveries hereunder, Buyer shall notify Sonatrading by telex of Buyer's best good faith estimate of the price P under Article 9 for that month. Promptly following the completion of each loading of LNG purchased hereunder Seller shall cause Sonatrading to send to Buyer in respect thereof a telex substantially in the form of Annex C hereto. Sonatrading shall at the same time cause to be dispatched to Buyer (a) the data and documents indicating the quantity in MMBtu's of LNG so loaded (including the measurements and calculations under Article 8 hereof); (b) where the LNG is loaded under the Transportation Agreement, a cargo receipt substantially in the form of Annex A to that Agreement in respect of such LNG; and (c) a



provisional invoice (which may be sent by telex or telecopier) for the amount calculated pursuant to the final paragraph of this Section 12.1(a). Buyer shall make to Sonatrading a payment on account for such LNG of that amount, by wire transfer to Sonatrading's account in a United States bank specified by Sonatrading, on or before the later of (i) the fifteenth day following the completion of each loading or (ii) the seventh day following the date of receipt by Buyer of the documents under (a), (b) and (c) above (the "Due Date"), provided that Buyer shall at all times have outstanding a standby, revolving, irrevocable commitment to Sonatrading of a first-class bank in the United States in form and substance reasonably satisfactory to Sonatrading to pay Sonatrading on the Due Date an amount of U.S. dollars equal to each such payment on account together with any interest accrued thereon against presentation of written advice by Sonatrading that there has been a failure by Buyer to pay the same when required by this agreement to such account by such Due Date. In the event that it shall become unduly onerous for Buyer to have such a bank commitment outstanding, Buyer may so inform Sonatrading by notice. In such event, Buyer shall not be obligated to have such a commitment outstanding in respect of any loadings occurring after the date on which such notice was given and shall make such payment on account for each loading by wire transfer to the aforementioned account not later than the seventh day following the date of receipt by Buyer of the documents under (a), (b) and (c) above.

The amount so payable on account shall be equal to:

- (i) the product of (a) the quantity of LNG in MMBtus loaded as specified in the aforementioned cargo receipt or (if not so specified) as determined in accordance with Article 8 hereunder; and (b) the price as estimated by Buyer and notified to Sonatrading in accordance with this Section 12.1(a) for the month in which such loading was completed, plus or minus
- (ii) any amount required to be added to or subtracted from the foregoing product under Section 12.1(c).

(b) Invoices. Within seven days following receipt of the monthly statement furnished by Buyer under Section 12.1(d), Sonatrading shall prepare and send to Buyer an invoice in U.S. Dollars for the aggregate quantity of LNG

purchased hereunder the loading of which was completed during the month covered by such monthly statement. The amount invoiced shall be equal to the product of (i) the price per MMBtu under Article 9 for such month as calculated in the monthly statement prepared under Section 12.1(d), and (ii) such aggregate quantity in MMBtus as determined pursuant to Section 12.1(a) for such month less the payments on account received by Sonatrading under Section 12.1(a) with respect to the shipments of LNG covered by such invoice. Any such invoice shall take into account any amount owed by either Sonatrading or Buyer under Section 11.

(c) Payment. In the event that the invoice sent by Sonatrading under Section 12.1(b) shows a net amount owed to Buyer, such amount shall be subtracted from the product referred to in Section 12.1(a)(i) in computing the amount or amounts payable by Buyer under Section 12.1(a) in respect of the shipment or shipments next following the date of receipt by Buyer of such invoice, in such a manner as to amortize as rapidly as possible the amount of such credit. In the event that the invoice shows a net amount owed to Sonatrading, all or any part of such amount remaining unpaid shall be added to the product referred to in Section 12.1(a)(i) in computing the amount payable by Buyer under Section 12.1(a) with respect to the shipment next following the date of receipt by Buyer of such invoice. If the amount shown in any invoice as a net amount owed to Buyer or to Sonatrading has not been paid in full as provided in this Section 12.1(c) within thirty (30) days following the date of receipt by Buyer of such invoice, then the party owing that net amount remaining unpaid shall forthwith pay the same by wire transfer to such account at a United States bank as the other party shall have specified by notice. If and for so long as Buyer shall be in default in respect of any obligation upon Buyer under this Article 12 to make payment for LNG, Sonatrading shall be under no obligation to make any further shipment(s) of LNG to Buyer hereunder. Upon the amount of any payment under this Article 12 which is in default the defaulting party shall pay interest at a rate which shall equal 1 percent per annum over LIBOR from the last date due until the date of payment.

(d) Monthly Statements. No later than the eighteenth day following the end of each month, Buyer shall prepare and deliver to Sonatrading a statement showing the price under Article 9 for such month and including in reasonable detail the basis for the calculation thereof. Such statement shall include in particular the aggregate quantities of deliveries of LNG or regasified LNG derived from LNG purchased hereunder effected in such month, the customers con-

cerned, and the total proceeds receivable from such deliveries to customers.

(e) Access to Books and Records. Sonatrading and its representatives shall be entitled from time to time at their expense to inspect Buyer's books and records upon reasonable notice during normal working hours for the purpose of verifying sales and deliveries to customers and computing the amounts payable under this agreement.

Section 12.2. Errors. In the event of any error being found in the amount shown on any invoice issued pursuant to Section 12.1, such error shall be corrected within one (1) month after it has been found, provided notice thereof shall have been given within three (3) months from the date when the invoice was issued.

## ARTICLE 13

### FORCE MAJEURE, ETC.

Section 13.1. Definition. "Force Majeure" means any event or condition, whether affecting Buyer, Seller or any other person, which has prevented or delayed or may reasonably be expected to prevent or delay any party hereto from performing hereunder in whole or in part (including but not limited to performing transportation to, storage at and redelivery from the Terminalling Facility), if such event or condition is beyond the reasonable or prudent control, forecasting or planning, and not the result of willful or negligent action or a lack of reasonable diligence, of whichever party hereto is relying thereon (the "Non-Performing Party") as justification for such nonperformance. The foregoing provisions shall not be construed to require that the Non-Performing Party observe a higher standard of conduct than that required by the usual and customary standards of the industry, as a condition to claiming the existence of Force Majeure. Such events or conditions shall include but shall not be limited to circumstances of the following kind:

- (a) (i) an act of God or government, epidemic, landslide, lightning, earthquake, fire, explosion, accident, storm, flood or similar occurrence, an act of the public enemy, war, blockade, insurrection, riot, civil disturbance or similar occurrence, or (ii) a strike, lockout, or similar industrial or labor action;

- (b) the failure to obtain, or suspension, termination, adverse modification, interruption or failure of renewal of any permit, license, consent, authorization or approval, including any approval contemplated by Article 18 hereof; and
- (c) circumstances preventing Seller, Sonatrading, Buyer or any affiliate of Buyer from supplying LNG or regasified LNG, as the case may be, including serious accidental damage to operations or equipment affecting the Natural Gas production facilities in the field, transportation, treatment, liquefaction, storage, and loading operations in Algeria; transportation by LNG tankers; and unloading, storage, regasification and transportation in the United States.

Section 13.2. Excuse of Performance. Each party hereto shall be excused for its failure or delay in performance hereunder to the extent that such failure or delay is caused by Force Majeure. Notwithstanding the foregoing, Buyer shall in any event make payment in accordance with the terms hereof for all LNG delivered hereunder as to which the risk has passed to Buyer.

Section 13.3. Notice. As soon as practicable following the occurrence of Force Majeure the party affected thereby shall give notice to the other party by the most rapid means available, describing such Force Majeure and stating such party's best estimate of the duration thereof and the effect thereof on the performance of this agreement and shall keep such other party reasonably advised as to the status of such Force Majeure and the progress of such party's efforts to overcome the same.

Section 13.4. Resumption of Performance. In the event performance hereunder shall be prevented or delayed in whole or in part by Force Majeure, the parties shall take all reasonable and appropriate measures to bring about conditions permitting the resumption of the normal performance of this agreement as soon as possible. In the event that performance hereunder shall be substantially prevented by Force Majeure for more than 24 consecutive months either party may, without prejudice to all other rights arising out of such circumstances, terminate this agreement by 30 days' written notice to the other.

**Section 13.5. Reduction or Cessation of Deliveries.** If in respect of any transaction between Buyer or any affiliate of Buyer, and any customer, for the sale and purchase of regasified LNG, or of LNG, in relation to which Seller is obligated to sell LNG to Buyer hereunder, there shall arise:

- (a) a failure or refusal of such customer to take delivery of or to make payment in full for any such regasified LNG or any such LNG;
- (b) a bankruptcy or insolvency of any such customer; or
- (c) a reasonable likelihood, in Buyer's good faith judgment, that the occurrence of one of the foregoing events is imminent;

Buyer or any such affiliate of Buyer may by reason thereof reduce or stop deliveries to such customer of regasified LNG, or of LNG, and if in consequence, so long as such deliveries shall not be made, Buyer fails to accept or lift all or any of such quantities of LNG hereunder as would have been required to effect such deliveries, Buyer shall have no liability whatsoever to Seller or Sonatrading in respect of such failure exceeding 60% of the amount by which the value of all monies or other consideration recovered from such customer by way of damages or otherwise in respect of any of the matters set forth under (a), (b), or (c) above exceeds the costs (including, without limitation, legal fees and expenses) disbursed by Buyer in effecting such recovery.

#### ARTICLE 14

##### EFFECTIVE DATE AND TERM OF THE AGREEMENT

This agreement shall enter into effect on the date of its execution subject to the condition mentioned in Section 18.1 and shall become operative from January 1, 1978.

Subject to Section 6.4(b), this agreement shall remain in effect for 15 years from 1 October, 1988.

The first regular delivery of LNG is defined as being the first of at least 13 deliveries of complete cargoes made over a period of 12 months totaling at least 1,400,000 cubic meters.

## ARTICLE 15

### NOTICES

Each notice, request, demand or other communication hereunder shall be in writing and shall be deemed to have been duly given when delivered by hand to an authorised employee or a duly appointed representative of the addressee party; or when received by such party after being sent by mail; or one day after it has been sent to such party by telex or telecopier (with receipt confirmed), provided a copy is also sent by mail addressed as follows (or to such other address as a party may designate by notice to the other):

(a) If to Distrigas:

Distrigas Corporation,  
2 Oliver Street,  
Boston, Massachusetts,  
U.S.A.  
Telecopier: (617) 439-6690  
Telex: 671-6307

(b) If to SONATRACH:

Sonatrach,  
46, Boulevard Mohamed V,  
Algiers,  
ALGERIA.  
Telex: 67123  
67124  
67125

(c) If to Sonatrading:

Sonatrading Amsterdam B.V.  
Kantoorgebouw "Sloterstyn" No. 5C  
Sloterkade 133  
1058 HM Amsterdam West,  
The Netherlands  
Telex: 1074B SKADE (temporary number)

## ARTICLE 16

### GOVERNING LAW

This agreement shall be construed in accordance with the laws of England.

## ARTICLE 17

### ARBITRATION

Any dispute between the parties hereto relating to the construction or the performance of the terms of this agreement shall be settled by arbitration in Geneva, Switzerland, by arbitration under the rules of conciliation and arbitration of the International Chamber of Commerce by one or more arbitrators appointed in accordance with such rules. The arbitration award shall be final and without any appeal being open.

The parties shall perform the arbitration award without any exception or reservation. Such award may be invoked before any court of competent jurisdiction and application may be made to such court to confirm such arbitration award by authorizing its enforcement.

## ARTICLE 18

### APPROVAL OF GOVERNMENTAL AUTHORITIES

Section 18.1. Governmental Authorizations. This agreement is subject to the respective authorizations of the governmental authorities of the parties concerned.

Section 18.2. What Seller and Buyer Shall Make Every Effort to Obtain.

Seller shall do all in its power to obtain within the shortest possible period of time all approvals and authorizations which may be required by the administrative authorities of Algeria, or by any other authority, deemed necessary by Seller, to allow Seller to begin and to continue deliveries of LNG to Buyer under the terms of this agreement, and to provide Buyer with certified true copies of such governmental approvals and authorizations attaching certified true copies of the rules, regulations and restrictions imposed by each of these administrative authorities concerning such authorizations.

Buyer shall do all in its power to obtain within the shortest possible period of time all approvals and authorizations required by the administrative authorities of the United States of America, or deemed necessary by Buyer, to allow it to begin and to continue to receive the LNG under the terms of this agreement and to provide Seller with certified true copies of such governmental approvals and

authorizations attaching certified true copies of the rules, regulations and restrictions imposed by each of the administrative authorities, if any, concerning such approvals and authorizations. Buyer shall also do all in its power to obtain from the administrative authorities of the United States of America any other approval or authorization which may be required from time to time during the term of this agreement.

Seller's and Buyer's obligations hereunder shall be subject to obtaining and maintaining all approvals of authorities required for performance, including any such approvals required to enable Buyer or an affiliate of Buyer to purchase, import, sell or resell LNG the subject of this Agreement or regasified LNG derived therefrom. Seller shall do all in its power to maintain all such approvals of Algerian authorities, and Buyer shall do all in its power to maintain all such approvals of United States authorities. Each party shall notify the other party when it has received any such approval. Each party shall, if requested by the other, help the other party by doing all in its power to obtain and maintain such governmental approvals as may be required from time to time for performance.

#### ARTICLE 19

##### CONTENTS OF THE AGREEMENT

This agreement contains the entire contract and agreement entered into between the parties and supersedes all prior agreements between them with respect thereto. No oral promise or representation may affect it. It may be amended only in writing and by mutual agreement.

The provisions concerning measurement procedures and methods of analysis may be amended or supplemented by memoranda written, under mutual agreement, by the employees of Buyer and Seller.

#### ARTICLE 20

##### REVISION OF REFERENCE PRICE FORMULA AND OF THE MINIMUM PRICE

The parties may meet to revise the formula contained in the definition of the Reference Price in Appendix A hereto every three (3) years and/or to revise the Minimum Price every five (5) years, during the term of this agreement or any extension thereof.



Any such revision of the Reference Price Formula or of the Minimum Price shall be effected by adaptation of the said formula or of the said Minimum Price in a reasonable and fair manner (having regard, inter alia, to the terms of Article 9), to the economic circumstances then prevailing in the natural gas markets for the East Coast of the United States of America.

Among the factors to be considered in determining the appropriateness of any adaptation shall be Buyer's success in obtaining commitments from time to time during the term of this Agreement (capable of being satisfied by LNG purchased by Buyer hereunder or by regasified LNG derived from LNG purchased by Buyer hereunder), on terms and conditions (including price and date of contract and nature of purchase commitment) which in Buyer's reasonable commercial judgment are the most favorable to Buyer's and Seller's LNG trade in the then prevailing markets and under the then prevailing circumstances.

The request for such a meeting shall be in writing, and shall be delivered 180 days in advance, and shall set forth the agenda for such meeting.

If the parties, in either case, cannot reach an agreement within 90 days from the date of their first meeting to this effect, either party shall be entitled to have recourse to arbitration as provided in Article 17 above.

No amendment agreed to by the parties or resulting from an arbitration award shall become effective before it is approved by the authorities having jurisdiction in the countries of the parties. As long as such authorization is not obtained, the provisions of Article 9 then applicable shall remain unchanged.

## ARTICLE 21

### ASSIGNMENT

Seller or Buyer may assign all or a part of the rights which it holds under this agreement to any person who, by accepting this assignment, shall become a party to this agreement, but no assignment shall ever release or relieve Seller or Buyer of any of its obligations or commitments agreed to under this agreement.

The party assigning its rights shall, before proceeding to the assignment, obtain the prior authorization of

the other party, which shall not unreasonably refuse it, and shall deliver to it copies of the instrument establishing the assignment after having proceeded to it.

Any assignment shall contain a provision to the effect that the assignee agrees that all the clauses and conditions of this agreement will be binding upon and inure to the benefit of the parties, their successors and assigns, and shall include the express commitment of the assigning party, that is, to remain guarantor towards the other party for the due performance of the contractual obligations of its assignee.

## ARTICLE 22

### COUNTERPARTS

This agreement may be executed in any number of counterparts and each of such counterparts shall be deemed an original. All such counterparts shall together constitute a single instrument. The French and English versions of this agreement shall be equally authoritative.

Made in Boston, on April 13, 1976.

DISTRIGAS CORPORATION

SONATRACH

By John G.L. Cabot  
Vice President

By Slimane Bouguerra  
Vice President-  
Marketing

## APPENDIX A

### DEFINITIONS

For the purpose of this agreement, to which this Appendix A is attached, the words and terms hereafter shall have the following meanings unless their use in the context obviously implies a different meaning:

1. Natural Gas (NG)

Any hydrocarbon or mixture of hydrocarbons consisting mainly of methane, in the gaseous state, and which is extracted from underground in the natural state, separately or in association with liquid hydrocarbons.

2. Liquefied Natural Gas (LNG)

Natural gas at its bubbling point or below and at or about the atmospheric pressure.

3. Normal Cubic Meter (Nm<sup>3</sup>)

Quantity of natural gas necessary to fill one (1) cubic meter of space at a temperature of 0°C and at a pressure of 1.01325 Bar.

4. Gross Heating Value (PCS)

Amount of heat generated by burning one cubic meter of water-free gas in the air, at a constant pressure, the air being at the same temperature and at the same pressure as the gas, after cooling the products of the combustion to the initial temperature of the gas and air, and after condensation of the water produced by the combustion.

The initial conditions of the air and gas will be equal to 0°C and 1.01325 Bar.

5. Thermie (th)

One calory (cal) being the amount of heat necessary to raise by 1°C the temperature of one (1) gram of an element the heat pertaining to the mass of which is equal to that of water at 15°C at normal atmospheric pressure (1.01325 Bar), one thermie is equal to one thousand kilocalories (Kcal), one kilocalory (Kcal) being itself equal to one thousand (1,000) calories; 252 thermies being equal to one (1) million BTU (MMBTU).

All references to BTUs, calories, kilocalories, thermies shall be considered as references to BTUs, calories, kilocalories, thermies of gross heating value, at constant pressure.

6. BTU

BTU means one (1) British Thermal Unit (BTU) and is defined as the amount of heat required to raise the temperature of one pound (avoirdupois) of water from fifty-nine (59) to sixty (60) degrees Fahrenheit at the absolute constant pressure of fourteen and six hundred and ninety six thousandths (14.696) pounds per square inch.

7. Standard Cubic Foot (SCF)

One standard cubic foot (SCF) is the quantity of natural gas filling one (1) cubic foot of space at a temperature of sixty (60) degrees Fahrenheit and at the absolute pressure of fourteen and six hundred and ninety-six thousandths (14.696) pounds per square inch.

8. Bar

One bar is equal to one hundred thousand (100,000) Pascal; one Pascal is the pressure exercised by a force of one (1) Newton per square meter; one (1) Newton is the force which, applied to a mass of one (1) kilogram, transmits to it an acceleration of one (1) meter per second/per second ( $1 \text{ m/sec}^2$ ).

9. Contractual Annual Quantity

The contractual annual quantity means the quantity of LNG which Buyer is under an obligation to buy and to receive and which Seller is under an obligation to deliver to Buyer each contractual year.

10. Pound

A pound is the weight unit defined by the avoirdupois system.

11. LNG Tanker

LNG tanker means a ship in which LNG purchased and sold is transported.

12. Barrel

Barrel means forty-two (42) United States gallons (five cubic feet six thousand one hundred and forty six ten thousandths) (5.6146 cft).

13. Day

The period of time of 24 consecutive hours beginning at 8:00 a.m. GMT of every calendar day and ending at 8:00 a.m. GMT of the following calendar day.

14. Month

The period of time beginning at 8:00 GMT the first day of a calendar month and ending at the same hour of the first day of the following calendar month.

15. Contractual Year

The period of time beginning September 15 and ending the following September 14.

16. LIBOR

The average rate of interest per annum (rounded up to the nearest one sixteenth of one per cent) offered from time to time by prime banks in the London interbank market for three-month eurodollar deposits in amounts of \$1,000,000, as certified by Citibank N.A. (London).

17. Minimum Price

The minimum price of LNG shall be the price per MMBtu FOB Algerian port set out below for the periods indicated:

	<u>U.S.\$</u>
September 15, 1988 - September 14, 1989	1.475
September 15, 1989 - September 14, 1990	1.560
September 15, 1990 - September 14, 1991	1.645
September 15, 1991 - thereafter	1.730

## 18. Reference Price

The Reference Price for any month during the period beginning on each 15th September during the term of this agreement and ending one year later or when the loading thereafter of nine cargoes comprising minimum quantities pursuant to section 6.3(a) shall have been effected, whichever shall be earlier, shall result from the application of the following formula on the first day of such month:

Reference Price = (i) If RP for such month is less than \$5.00:

$$\text{Reference Price} = .6324 \times \text{RP}$$

(ii) If RP for such month is equal to or greater than \$5.00:

$$\text{Reference Price} = (.6532 \times \text{RP}) - .0923$$

$$\text{RP} = 2.16 \times \text{PK} + 0.15 \times \text{WS} + 0.40 \times \text{B} + 0.15 \times \text{CD}$$

where:

PK = the price in U.S. dollars of one gallon of No. 2 distillate oil measured by adding 75% of the arithmetic average of the high and low prices of "No. 2 Oil, Max 0.2% Sulfur, Contract Barges, NY Harbor" for the preceding month, as published by Platt's Oilgram, to 25% of the arithmetic average of the high and low prices of "No. 2 Oil, Spot Cargoes, NY Harbor", for the preceding month, as published by Platt's Oilgram.

WS = the arithmetic average of the commodity charge for gas in U.S. dollars per Dth to be delivered to Massachusetts utilities under the highest three rate schedules chosen from Algonquin W-1, Conteal F-2, National Fuel F-3 and Boundary, as reported in the gas cost adjustment filings made by the four gas distribution companies whose projected purchases are the largest at the Massachusetts Department of Public Utilities for the heating season (November through April), and as subsequently adjusted (where relevant) by filings made by the interstate pipeline suppliers at

the Federal Energy Regulatory Commission ("FERC") for the subject heating season.

B = the price in U.S. dollars of No. 6 fuel oil, 0.3% sulfur grade measured on a Btu basis, by dividing by 6.38 the total of 70% of the arithmetic average of the average prices of "No. 6 Fuel Oil, Max 0.3% Sulfur, Estimated Contract Cargo Prices" and 30% of the arithmetic average of the average prices of "No. 6 Fuel Oil, Max 0.3% Sulfur, Estimated Spot Cargo Prices" as published by Platt's Oilgram for the preceding month; less the arithmetic average cost of transportation per MMBtu as disclosed in filed tariffs or contracts provided to Seller from time to time which would be transported from the tailgate of the Terminalling Facility to such customer or customers in the Northeastern United States as are capable of substituting natural gas produced from vaporised LNG for No. 6 fuel oil, 0.3% sulfur grade.

CD = the higher of the Tennessee Gas Pipeline Rate CD-6 or Algonquin Gas Pipeline Rate F-1 as reported in the gas cost adjustment filings made by the four gas distribution companies whose projected purchases are the largest at the Massachusetts Department of Public Utilities for the period November through April, and as subsequently adjusted (where relevant) by filings made by Algonquin and Tennessee at FERC for the subject period.

Promptly following the end of such period, there shall be calculated (1) the arithmetic average of the respective Reference Prices for each month of such period during which a cargo shall have been loaded and (2) the weighted average of the respective prices P for each such month. If the arithmetic average Reference Price so calculated shall differ from the weighted average price P so calculated, the aggregate price receivable by Sonatrading for cargoes shipped during such period shall be recalculated by repricing all such cargoes at the higher of such two average prices. Should the aggregate price which shall have been paid to Sonatrading in respect of such cargoes prior to such recalculation be less than the aggregate price so recalculated, the difference shall forthwith be paid by Buyer to Sonatrading. Should the aggregate price which shall have been paid to

Sonatrading in respect of such cargoes prior to such recalculation be more than the aggregate price so recalculated, the difference shall forthwith be paid by Sonatrading to Buyer.

19. Tailgate

The tailgate of the Terminalling Facility.

20. Terminalling Facility

The Everett Marine Terminal located at Everett, Massachusetts.

21. Transportation Agreement

The Transportation Agreement, dated as of the date hereof between Buyer and Seller, as amended from time to time.



# APPENDIX B

## CHARACTERISTICS OF THE COMPONENTS OF NATURAL GAS

AT NORMAL CONDITIONS 0°C/1.01325 BAR

	Molecular Mass kg:kmol	Molar Volume m <sup>3</sup> :kmol	Molar GHV kcal/kgmol	Density kg/m <sup>3</sup>	GHV kcal/m <sup>3</sup> (real gas)	critical temperature °K	critical absolute atmospheric pressure
Methane CH <sub>4</sub>	16.04	22.38	213.280	0.7167	9,530	190.7	45.00
Ethane C <sub>2</sub> H <sub>6</sub>	30.07	22.17	373.786	1.3563	16,860	305.4	48.20
Propane C <sub>3</sub> H <sub>8</sub>	44.09	21.84	531.804	2.0188	24,350	370.0	42.01
iso-Butane iC <sub>4</sub> H <sub>10</sub>	58.12	21.78	687.594	2.6685	31,570	408.1	36.00
n-Butane nC <sub>4</sub> H <sub>10</sub>	58.12	21.50	689.290	2.7033	32,060	425.2	37.47
iso-Pentane iC <sub>5</sub> H <sub>12</sub>	72.15	21.03	844.354	3.4308	40,150	461.0	32.90
n-Pentane nC <sub>5</sub> H <sub>12</sub>	72.15	20.86	846.916	3.4588	40,600	469.8	33.31
Hexane nC <sub>6</sub> H <sub>14</sub>	86.20	20.30	1,004.850	4.2463	49,500	507.9	29.92
Nitrogen N <sub>2</sub>	28.02	22.40	-	1.2509	-	126.4	33.53

C. Wilhelm  
mzy RJP

## APPENDIX C

### Buyer's Facilities

This description will be applicable starting January 1, 1978.

#### 1. Mooring Facilities

(a) Depth. The berth is dredged to maintain a depth of at least 36.4 feet (11.1 m) at mean low tide.

(b) Dolphins. The attached Figure C-1 shows the location and load capacity of breasting and mooring dolphins.

(c) Platforms. Two platforms alongside are suitable to receive an accommodation ladder. These are shown in Figure C-1.

(d) Length. The extent of the berth in the easterly direction is the property line, which is 470 ft. (143 m) from the central (vapor) unloading arm. The extent of the berth in the westerly direction is approximately 1,000 ft. (305 m).

#### 2. Unloading Facilities

The unloading equipment consists of five marine unloading arms, four for liquid and one for vapor. Each connection is a 12-inch ASA 150-RF flat-faced flange. The plan and elevation of the arms are shown in Figure C-2.

The four liquid arms connect to a 24-inch unloading line that leads to two storage tanks, with nominal capacities of 59,000 m<sup>3</sup> and 95,000 m<sup>3</sup>.

The vapor arm is connected to a 12-inch vapor return line leading from the tanks. The line is equipped to return sufficient vapor to maintain the ship's connecting flange at 1,080 millibar absolute pressure.

#### 3. Auxiliary Facilities

On the loading arm platform (elevation 53 ft. 9 in. in Figure C-2) is a connection for loading liquid nitrogen and a bonding cable for electrical grounding.

An "international flange" connection for supplying supplementary firewater is located on the dock approximately 40 m east of the cargo manifold. A fresh water connection is

located near the gate at the dock roadway at the head of the pier. The locations of the water connections are shown on Figure C-1.

#### 4. Communication

The focal point for communication between the ship and Buyer's facilities shall be the ship's cargo control room. Buyer shall station a representative in the control room who is duly authorized and fully competent to relay all requests, replies and statements between the ship's cargo officer and Buyer's Supervisor-in-Charge. To facilitate efficient communication, Buyer shall provide its representative with at least two independent means of communication with shore.

## APPENDIX D

### Specification of LNG Ship

Presented below are the specifications to which any LNG Tanker must conform in order to comply with Section 4.4. In the absence of Buyer's prior approval, any delay in unloading caused by lack of conformance to these specifications will be construed under Section 11.3(b) as being due to "inability of the LNG Tanker's facilities to discharge cargo within the time allowed."

1. The maximum cargo capacity shall not exceed 125,000 m<sup>3</sup> by more than three percent.

2. The ship shall be capable of discharging from the port side, as required by the U.S. Coast Guard.

3. The dimensions of the ship shall be compatible with Buyer's facilities as described in Appendix C. Specifically, the forwardmost projection of the bow shall not exceed the berth limit given in Section 1(d) of Appendix C.

4. The ship shall be equipped with a safe and convenient accommodation ladder (stairway type) mounted to provide access from one of the dock platforms described in Section 1(c) of Appendix C.

5. The ship's port side cargo manifold shall consist of two or four liquid connections and no more than two vapor connections. Upon arrival at the berth, the connections provided shall be 12-inch ASA 150-RF, flat-faced flanges; the flanges will be in a clean, unblinded condition ready to be connected to the marine arms. The forward to aft arrangement of the flanges shall be one of the following (L-liquid; V-vapor):

(a) L, L, V, V, L, L

(b) L, L, V, L, L

For arrangements (a) or (b), the separation distance between the centers of the outermost two liquid flanges shall be no less than 10.3 m (33.8 ft.) and no greater than 15.2 m (49.9 ft.).

The flange faces shall reside in a common plane which is perpendicular to the water surface and parallel to the ship's longitudinal axis. The flange centers

shall reside in a line which is parallel to the water surface. In a transverse section of the ship through the manifold area, the above line is represented by a point; this point shall be located within the reach envelope shown in Figure D-1 under all conditions of draft. In addition, no railing platform, or other part of the ship's structure, shall occupy any volume of space through which the arms must pass to reach the flanges.

6. In addition to its full pumping capability, the ship shall be able to discharge LNG in two smaller ranges of flowrate.

(a) 30 to 50 m<sup>3</sup>/H (for cooldown of the loading arms).

(b) 170 to 230 m<sup>3</sup>/H (for cooldown of the unloading line to the tanks).

7. The ship shall provide efficient means to drain and purge the loading arms and manifold piping. For this purpose, dry gaseous nitrogen shall be made available and connected at the time that pumping is finished. This nitrogen shall be available at a nominal rate of 100 Kg/H at a gauge pressure of 3 Bar.

8. The ship shall have means for independent control of its cargo tank pressures at all times. Specifically, with the exception of an emergency, the ship shall have no need to send vapor ashore during any portion of its visit.

9. The focal point for communication between the ship and Buyer's facilities shall be the ship's cargo control room. From the start of unloading until the completion of all drain and purge operations, the ship shall station an officer who speaks in English to be continuously present in the control room. This officer shall be fully competent and duly authorized to conduct all phases of the unloading operation; he shall not leave the control room for any purpose whatsoever unless relieved by an officer who is equivalent in authority, competence and fluency in English. For the purposes of this requirement, the start of unloading is the completion of connecting the arms or the completion of gauging the cargo tanks, whichever occurs later; any delay after this point caused by absence of the aforementioned

officer from the cargo control room shall not count as authorized laytime.

ANNEX C  
Form of  
Loading Report Telex

\_\_\_\_ Corporation,  
\_\_\_\_,  
\_\_\_\_\_

Telex No:  
Answerback:  
Attention: Chief Executive Officer

1. Cargo Number: \_\_\_\_\_

2. LNG Cargo Composition

<u>Component</u>	<u>Mole Percent</u>
Methane (C1)	____ . ____
Ethane (C2)	____ . ____
Propane (C3)	____ . ____
Iso-Butane (IC 4)	____ . ____
N-Butane (NC4)	____ . ____
Iso-Pentane (IC5)	____ . ____
N-Pentane (NC5)	____ . ____
Hexanes Plus (C6+)	____ . ____
Nitrogen (N2)	____ . ____
Total	____ . ____

3. Average Cargo Temperature: \_\_\_\_\_ C°

4. Calculated Density (Klosek & McKinley): \_\_\_\_\_ kg/m<sup>3</sup>

5. Real Gross Heating Value: \_\_\_\_\_ KCAL/nM<sup>3</sup>

6. Cooldown Volumes: \_\_\_\_\_ m<sup>3</sup>  
Cooldown Volumes: \_\_\_\_\_ MMBTU

7. Volume on Board at Initial Gauging: \_\_\_\_\_ m<sup>3</sup>

8. Volume on Board at Final Gauging \_\_\_\_\_ m<sup>3</sup>

9. Quantities Loaded: \_\_\_\_\_ m<sup>3</sup>  
Quantities Loaded: \_\_\_\_\_ MMBTU

Sonatrading Amsterdam B.V.

By \_\_\_\_\_

*C. H. H. H.*  
*my* *RJP*