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# MODEL CONTRACT

07052

KNOW-NOW AND ENGINEERING SERVICES  
FOR A  
FERTILIZER PLANT BASED ON  
FUEL OIL



JUNE, 1979

PREPARED FOR  
**UNIDO**  
BY  
**FERTILIZER (PLANNING & DEVELOPMENT) INDIA LTD.**  
SINDRI  
INDIA



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This contract is made this.....(1).....  
.....and entered into between.....  
.....(2).....  
having its registered office at.....(3).....  
and hereinafter referred to as PURCHASER, which expression shall  
unless repugnant to the context or contrary to the meaning thereof  
include its successors and permitted assigns of the one part, and  
.....(4).....  
having its registered office at.....(5).....and  
hereinafter referred to as CONTRACTOR, which expression shall,  
unless repugnant to the context or contrary to the meaning thereof,  
include its successors and permitted assigns of the other part,

**WITNESSETH**

WHEREAS PURCHASER wishes to install at.....(6).....  
facilities for the production of.....(7).....metric tonnes of  
ammonia per day, and

WHEREAS PURCHASER wishes to avail of CONTRACTOR's  
services in respect of preparation of basic design and engineering,  
procurement assistance, supervision services during preparation of  
detailed engineering and during erection and commissioning of the  
ammonia plant facilities as mentioned hereinafter, and

**\*Guide Notes:** Numbers in parentheses refer to corresponding guide notes, annexed separately. Guide notes provide the assumptions made for this 'Model Form' and the factors that are to be considered to tailor this 'draft' to suit to local conditions; the purchaser would have to incorporate modifications that would be convenient from his viewpoint taking into account local laws and regulations in his country.



WHEREAS CONTRACTOR is willing to undertake such services as hereinafter agreed to with the PURCHASER, and

WHEREAS PURCHASER shall appoint another company hereinafter referred to as ENGINEER to undertake detailed engineering, procurement, supervision of erection and commissioning under the overall control and supervision of CONTRACTOR.

In consideration of the premises and mutual covenants herein contained, it is hereby agreed by the parties hereto as follows:

#### ARTICLE I

#### DEFINITIONS

Wherever used in this contract, the following terms in capital letters shall have the following meanings:

- 1.1 CONTRACT shall mean this Agreement, all exhibits and subsequent amendments thereto. (8)
- 1.2 PLANT shall mean the Ammonia Plant to produce.....(7).... metric tonnes of ammonia per day based on fuel oil to be set up by PURCHASER at.....(6).....under the terms of the CONTRACT. PLANT shall include all apparatus, equipment, machinery, electricals, piping, measuring and controlling instruments and other materials required within the PLANT battery limits (as defined hereinafter) and shall consist mainly of the following sections:(9)
  - High pressure non-catalytic Partial Oxidation,
  - Sulphur removal and recovery,



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- Shift conversion,
- Carbon dioxide removal and recovery,
- Nitrogen wash,
- Air fractionation,
- Ammonia synthesis, recovery and storage,
- Refrigeration units (10),
- Yard piping,
- All units (11) supplying utilities such as cooling water, boiler feed water, steam, electricity, instrument air, including distribution and control etc., and
- Effluent disposal system.

1.3 **BATTERY LIMITS (12)** of the PLANT shall mean the area as demarcated by the dash and dot line in the plot plan as per drawing No. \_\_\_\_\_ and attached hereto as **EXHIBIT-1**.

1.4 **BASIC DESIGN** shall mean the process design and basic engineering of the PLANT to be performed and supplied by **CONTRACTOR** as mentioned in Clause 4.2 hereof.

1.5 **DETAILED ENGINEERING** shall mean the complete mechanical, civil, electrical and instrumentation engineering of the PLANT (based on the **BASIC DESIGN**) to be performed by **ENGINEER** under the supervision of **CONTRACTOR**.

1.6 **PROPRIETARY EQUIPMENT** shall mean the equipment referred to in clause 4.6 to be supplied FOB by **CONTRACTOR (13)**.





- 1.7 **EFFECTIVE DATE OF CONTRACT** shall mean the date on which the **CONTRACT** becomes effective pursuant to the provisions of Article 13 hereof.

**ARTICLE - 2**

**SCOPE OF CONTRACT**

- 2.1 The scope of the **CONTRACT** covers the technical assistance and services of **CONTRACTOR** for setting up of the **PLANT** by **PURCHASER**.
- 2.2 **CONTRACTOR** shall, for the consideration provided for under this **CONTRACT**, make arrangements for licensing of the process if so provided, prepare and supply **BASIC DESIGN**, supervise **DETAILED ENGINEERING** to be carried out by **ENGINEER** as representative of **PURCHASER**, procure and supply **PROPRIETARY EQUIPMENT**, render assistance services to **PURCHASER** for procurement, inspection testing and expediting of other equipment as agreed to with **PURCHASER**, render supervisory services for erection, start-up, trial runs and commissioning, demonstrate process guarantees of the **PLANT**, and render other project assistance services like management of construction, preparation of documentation for reporting and control and engineering information as requested to by **PURCHASER** and agreed to by **CONTROLLER**.



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2.3 **CONTRACTOR shall be responsible to the PURCHASER in accordance with the terms of the CONTRACT for the DETAILED ENGINEERING performed by ENGINEER.**

2.4 **CONTRACTOR shall render assistance and services in each field of activities of the PLANT as mentioned in ARTICLE-4, under obligations of CONTRACTOR, in such a manner that PURCHASER along with association of ENGINEER can successfully set up the PLANT.**

#### ARTICLE - 3

#### SCOPE OF WORK

3.1 **The Scope of Work, details of which are furnished in EXHIBIT-2, would comprise the activities involved in the setting up of the PLANT. The agencies responsible for accomplishment of the different responsibilities and obligations are clearly indicated under the Articles 4 and 5.**

#### ARTICLE - 4

#### OBLIGATIONS OF CONTRACTOR

**The obligations of CONTRACTOR in fulfilment of the CONTRACT for the design, engineering, technical assistance in procurement, inspection and expediting and for supervision of erection, installation and commissioning of the PLANT shall be as stated below:**



**4.1 Grant of License (14)**

From the **EFFECTIVE DATE OF CONTRACT**, the **CONTRACTOR** hereby grants to **PURCHASE**, a non-exclusive right and licence to use in the **PLANT** throughout its life whether patented or not, the process(es) and the process data and know-how relevant to the process(es) offered by **CONTRACTOR** (owned either by **CONTRACTOR** or its principal licensors) with respect to all sections of the **PLANT**. Such right and licence cover also the patents applicable to such process(es) owned either by **CONTRACTOR** or their principal licensors, on the **EFFECTIVE DATE OF CONTRACT**.

**4.2 Supply of BASIC DESIGN (15)**

**4.2.1** **CONTRACTOR** shall supply to **PURCHASER** the **BASIC DESIGN** on the design basis given in Exhibit-3 and as per the time schedule given in Exhibit-4. The **BASIC DESIGN** shall be sufficient to enable **PURCHASER/ENGINEER** to undertake **DETAILED ENGINEERING** and shall include but not limited to the following:

- (a) Process description.
- (b) Mass and energy balances.
- (c) Process flow diagrams indicating flow, pressure and temperature of different process and utility streams in the **PLANT**.
- (d) P&I flow Diagrams showing instrumentation.
- (e) Diagram of trips and interlocks.
- (f) Instrument specification including process data.



- (g) Critical piping layout and piping specifications.
- (h) Specification for machinery and equipment.
- (i) PLANT basic layout plan.
- (j) Diagrams of distribution system of different utilities, cooling agent etc. and condensate recovery.
- (k) Utility requirement list including emergency power for the PLANT.
- (l) Steam network diagrams incorporating the control system and condensate balance.
- (m) Effluent quantities and specifications.
- (n) All necessary data and specification on electric drives including interlocking schemes, suggested power distribution layout etc.
- (o) Instructions and manuals for operation and maintenance and laboratory analysis.

4.2.2 In the event that there is any equipment or work of the type provided for in this CONTRACT not specifically mentioned in the specifications or drawings or in any of the Exhibits of the CONTRACT, but which is necessary to ensure operability of the PLANT, CONTRACTOR shall perform such work also free of cost to PURCHASER as if the same had been originally included in such specifications or drawings.

4.2.3 CONTRACTOR shall allow PURCHASER's/ENGINEER's representatives/engineers (not exceeding.....at a time) to associate themselves with CONTRACTOR's engineers during the



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preparation of BASIC DESIGN. (15.4) CONTRACTOR shall provide office facilities to such PURCHASER's/ENGINEER's representatives in CONTRACTOR's office.

4.3 Supervision of DETAILED ENGINEERING (16)

4.3.1 CONTRACTOR shall supervise the DETAILED ENGINEERING to be undertaken by ENGINEER by deputing supervisory personnel. CONTRACTOR shall assume responsibility for the frequency and accuracy of the DETAILED ENGINEERING and also its timely completion.

4.3.2 CONTRACTOR shall, upon request by PURCHASER, check and advise on model of the PLANT prepared by PURCHASER by providing competent engineers. (16.2)

4.4 Technical Assistance in procurement (17)

4.4.1 CONTRACTOR shall provide to PURCHASER/ENGINEER technical assistance in procurement which shall include preparation of bid documents along with ENGINEER for the critical items of supplies as per list to be mutually agreed to, and bid analysis, evaluation and finalisation of recommendation of suppliers. These services will be rendered in CONTRACTOR's country at CONTRACTOR's offices. For all the other items except the said critical items, procurement action shall be taken in PURCHASER's country with the assistance of CONTRACTOR's personnel.

4.5 Inspection and Expediting (18)

CONTRACTOR shall assist PURCHASER, as and when



requested, in the inspection, testing and expediting of equipment as detailed under Article-18 of the CONTRACT.

**4.6        Supply of PROPRIETARY EQUIPMENT**

**4.6.1        CONTRACTOR shall supply FOB (Port of embarkation) the PROPRIETARY EQUIPMENT. These items are of a proprietary nature and cannot be procured in the usual way of tendering.**

**4.6.2        For the items included under PROPRIETARY EQUIPMENT, CONTRACTOR shall furnish to PURCHASER a list of recommended spare parts (including spare parts as may be required for commissioning of the PLANT) for normal operation of the PLANT for two years.**

**4.6.3        The other terms and conditions for supply of PROPRIETARY EQUIPMENT are detailed under Article-10 of the CONTRACT.**

**4.7        Transportation, Storage etc.**

**4.7.1        CONTRACTOR shall advise PURCHASER in arranging for the transportation of the PROPRIETARY EQUIPMENT in regard to ODCs (over dimensioned consignments) to enable PURCHASER to make arrangements for transport by sea/rail/road in advance. CONTRACTOR shall also advise PURCHASER when requested by PURCHASER, regarding packing, tagging, transporting, unloading and storage at PLANT site of all materials, equipment and spare parts.**

**4.8        Construction (19)**

**4.8.1        CONTRACTOR shall provide advice and assistance concerning the erection and installation of the PLANT including the selection of erection contractors, interpretation of drawings, planning and**



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sequence of erection, witnessing key activities and giving recommendation to PURCHASER. For this purpose, CONTRACTOR shall depute competent technical personnel as per the agreed schedule. PURCHASER and CONTRACTOR shall periodically discuss and review the schedule during the erection of the PLANT and mutually agree upon the changes, if necessary.

4.8.2 The terms and conditions for the deputation of expatriate personnel to work at site are set forth in Exhibit-5.

4.8.3 CONTRACTOR shall provide a list of construction tools and tackles required for erection of the PLANT to enable PURCHASER to arrange for the same in time.

4.8.4 CONTRACTOR will, in conjunction with PURCHASER/ENGINEER, prepare in his office an overall plan in network form, suitable for computer analysis on which all principal activities are identified in their correct relative sequence. From this, CONTRACTOR shall develop control curves against which actual performance will be analysed and trends established and the effects of changes in material deliveries and design and construction resources can be predicted and remedial action recommended.

4.9 Start-up and Commissioning:

CONTRACTOR shall depute a minimum of.....operating engineers to assist PURCHASER/ENGINEER in start-up, commissioning, and performance test run of the PLANT. PURCHASER reserves



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the right to seek increase in the number of such personnel at his cost.

**4.10**        Spares (20)

**4.10.1**        In rendering assistance in procurement; CONTRACTOR shall prepare and submit to PURCHASER proforma purchase orders for spare parts and ancillaries of the equipment required for commissioning and for normal operation of the PLANT for a period of two years. CONTRACTOR shall ensure that it becomes possible to place orders for purchase of spares with the main equipment. CONTRACTOR shall submit to PURCHASER a list of recommended spare parts (including spare parts as may be required during commissioning of the PLANT). The quotations for spares should accompany the quotations of the equipment, so that PURCHASER can place orders for such spare parts as are essential along with the equipment.

**4.11**        CONTRACTOR shall guarantee the performance of the PLANT as mentioned in Article-19.

**4.12**        Progress Reports:

Progress reports in a form as agreed to between PURCHASER and CONTRACTOR shall be submitted every month. These shall give in suitable detail, progress on every major item and aspect of work relating to the CONTRACT including manufacture of equipment by vendors and erection in the field.





4.13 Change in Design Condition:

The basic design conditions for the PLANT including without limitation, soil data, climatological data and other site conditions, as set forth in the proposal of the CONTRACTOR leading to this CONTRACT have been furnished by PURCHASER to CONTRACTOR or have been reviewed and approved by PURCHASER. If any further data or information of this nature is required by CONTRACTOR PURCHASER will furnish such data and information to CONTRACTOR at PURCHASER's cost. The design of the PLANT shall be based upon all the foregoing, and CONTRACTOR shall be entitled to rely upon the accuracy and completeness thereof in the performance of the work.

4.14 Soil Data:

CONTRACTOR will review with PURCHASER the scope and results of soil investigations and analysis made for the PLANT site. It shall be PURCHASER's responsibility to determine and approve the appropriate soil values; however, CONTRACTOR shall advise PURCHASER if in his opinion such scope and results are insufficient.

4.15 Office facilities at CONTRACTOR's Office (17.2)

CONTRACTOR shall provide office facilities and secretarial assistance upto..... of PURCHASER's/ENGINEER's personnel in CONTRACTOR's office during the preparation of BASIC DESIGN and also at the time of procurement of supplies from CONTRACTOR's office.



**4.16      Training:**

CONTRACTOR shall arrange for training of a limited number of PURCHASER's personnel in the operation and maintenance of PLANT at one or more similar plants using similar process technology. PURCHASER shall bear the cost of salaries, travel and living expenses and other related expenses of PURCHASER's personnel and the cost of training, if charged by plant owners.

**4.17      Any other obligation imposed upon CONTRACTOR by the terms of the CONTRACT.**

**ARTICLE - 5**

**OBLIGATIONS OF PURCHASER**

The obligations of PURCHASER in fulfillment of the CONTRACT are as stated below:

**5.1      PURCHASER shall furnish to CONTRACTOR all information concerning the conditions for BASIC DESIGN if CONTRACTOR has not received all of them prior to EFFECTIVE DATE OF CONTRACT. Such information shall be furnished as soon as practicable, but in any event not later than the requirements of CONTRACTOR's engineering schedule which is established jointly with the PURCHASER.**

**5.2      PURCHASER shall obtain import licences and government approvals required by the government of PURCHASER's country for which purpose all necessary information shall be furnished by CONTRACTOR.**



- 5.3 PURCHASER shall obtain the necessary licences which are excluded from the scope of CONTRACTOR and shall cause to pass any technical information of the process(es) (for which PURCHASER is required to obtain licence) to CONTRACTOR, as may be required to carry out the PROCESS DESIGN.
- 5.4 PURCHASER shall arrange to perform the DETAILED ENGINEERING by the ENGINEER. PURCHASER shall ensure deployment by ENGINEER of sufficient number of qualified engineers and other personnel for undertaking the DETAILED ENGINEERING. The number of such personnel shall be determined by mutual agreement between CONTRACTOR, PURCHASER and ENGINEER on the basis of normal manpower requirement of CONTRACTOR if he has to undertake DETAILED ENGINEERING in his country with necessary adjustment to suit conditions in PURCHASER's country and on the basis of time schedule requirements. (15.3)
- 5.5 PURCHASER shall, as soon as possible, appoint shipping agents for ocean transit of imported equipment and for clearance of imported consignments at the ports of disembarkation in the country of PURCHASER.
- 5.6 PURCHASER shall diligently seek any approvals of the different purchase orders/contracts from the appropriate government agencies and financial institutions.
- 5.7 Within.....days of EFFECTIVE DATE OF CONTRACT, PURCHASER and CONTRACTOR shall mutually agree upon the final



list of vendors as per procedures of Government and financial institutions. PURCHASER shall assist CONTRACTOR in the preparation of such list.

5.8 PURCHASER shall sign all purchase orders for the PLANT within . . . working days from the date of receipt by the PURCHASER after release by CONTRACTOR. PURCHASER shall make all payments for the purchase orders/contracts.

5.9 PURCHASER shall review and approve the list of spare parts recommended by CONTRACTOR.

5.10 PURCHASER shall undertake the cost of travel and living for its personnel assigned to CONTRACTOR's office in connection with the CONTRACT.

5.11 PURCHASER shall arrange for execution of civil works erection and installation of the PLANT. PURCHASER shall arrange for the testing, start-up and commissioning of the PLANT and provide all personnel, raw materials utilities and consumables required.

5.12 PURCHASER shall take out normal insurance covering transport, storage, erection, installation, start-up and commissioning of the PLANT, including PROPRIETARY EQUIPMENT. This insurance is to be obtained in such a form, which shall identify the CONTRACTOR and its personnel as coinsured company and persons excluding any right of recourse from insurance company. Any deductibles shall have to be borne by PURCHASER.



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- 8.13 PURCHASER shall be responsible for overall coordination of all the works to be carried out by all parties including PURCHASER for the project. PURCHASER will coordinate the activities of CONTRACTOR, engineering contractor for urea plant, off-sites etc. to promote early completion and to avoid conflicts.**
- 8.14 PURCHASER shall provide facilities to CONTRACTOR's personnel deputed to ... (26)... in connection with the work as per terms and conditions of EXHIBIT-5.**
- 8.15 PURCHASER shall facilitate the entry into, residence in and exit from ... (26)... of CONTRACTOR's staff subject to prevailing laws and regulations and help expedite customs formalities regarding all documents, personal effects, etc. necessary for performance of work under the CONTRACT.**
- 8.16 Any other obligation imposed upon PURCHASER by the terms of the CONTRACT.**

#### **ARTICLE-6**

#### **COOPERATION AND COORDINATION BETWEEN CONTRACTOR AND PURCHASER:**

- 6.1 PURCHASER and CONTRACTOR shall cooperate with each other for smooth execution of work and shall work in harmony and cooperate with all others who may be performing services for PURCHASER in connection with work under this CONTRACT.**



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- 6.2 PURCHASER and CONTRACTOR shall meet periodically to take stock of the progress of work, costs incurred and suggest ways and means to improve the operations to expedite/ economise the work and resolve outstanding issues between the parties. Minutes of meetings shall be recorded and circulated for information and necessary action.
- 6.3 The PURCHASER and CONTRACTOR shall appoint their respective Project Manager to co-ordinate and monitor the work under this CONTRACT. The Project Managers shall have the authority under this CONTRACT to issue notices about work (in respect of delays, quality, completion, requirements of services/materials/utilities/personnel, payments, conduct, access to work/documents/Government clearances) and variations/suspension/termination/resumption.
- 6.4 Within 10 (ten) days from the EFFECTIVE DATE OF CONTRACT, CONTRACTOR and PURCHASER shall discuss and finalise a co-ordination procedure for the implementation of work.

#### ARTICLE -7

#### ASSIGNMENT OF CONTRACT

- 7.1 CONTRACTOR shall not assign or sublet the CONTRACT, or any part of it or any share or interest therein, without prior



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written consent of PURCHASER. This consent shall not be denied without justifiable reasons.

- 7.8 The CONTRACT shall enure to the benefit of and be binding upon the parties hereto and then each of their executors, administrators, curators, successors and assigns but (as regards assigns of the CONTRACTOR) in so far as such assigns are duly consented to by PURCHASER under the CONTRACT.

ARTICLE - 8

SUPERVISION OF WORK

(Not Applicable)

ARTICLE - 9

ACCESS TO WORK

(Not applicable)

ARTICLE - 10

PROCUREMENT

CONTRACTOR shall perform the following services in respect of the supply and delivery of the PROPRIETARY EQUIPMENT mentioned in Clause 4.6.

- 10.1 CONTRACTOR shall supply civil scope drawings and necessary information such as static and dynamic load data, vibration characteristics etc. in respect of PROPRIETARY EQUIPMENT.



- 10.2 **CONTRACTOR shall carry out inspection and testing of PROPRIETARY EQUIPMENT at the shops of vendors or manufacturers before despatch, and shall provide OWNER 6 (six) copies of such test certificates. In case of high pressure equipment and equipment requiring special techniques and special materials of construction, CONTRACTOR shall obtain and furnish 6 (six) copies of test certificates including radiographic tests for welds, impact test certificates for materials used for PROPRIETARY EQUIPMENT for low temperature services from independent international inspecting authority and testing laboratories like Lloyds/TUV etc.**
- 10.3 **CONTRACTOR shall also provide necessary test certificates, copies of drawings, radiographic examination reports and all other documents required by Boiler/Factory/Electrical/Explosive Department Inspecting Authorities as may be required by PURCHASER in terms of the regulation in force in (26).**
- 10.4 **CONTRACTOR shall supply suitably packed in weather-proof sea-worthy packing for transport under likely conditions and with suitable markings for identification. PROPRIETARY EQUIPMENT shall be protected by suitable coats of paints and all bright parts protected from rust by application of rust preventives as is necessary and/or customary. All fabricated and finished pipe ends and flanges shall be secured with wooden discs. All machined outer surfaces shall be suitably**





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protected. All packages shall be marked distinctly in.....  
as per the shipping instructions to be furnished by PURCHASER  
within one month from EFFECTIVE DATE OF CONTRACT.

10.5 If a package is received in sound condition and intact at the PLANT Site, but the quantity received falls short of the numbers indicated in the Packing Lists, on the joint verification of the representatives of PURCHASER and CONTRACTOR, to be conducted within 14 (fourteen) days of the date of arrival of package(s) at PLANT site, PURCHASER shall, within 7 days thereafter, send information to CONTRACTOR, in writing, with a supporting copy of such joint verification to make good the wrong supply and/or shortage free of cost to PURCHASER upto FOB point. Should, however, the representative of the CONTRACTOR be not expected, to be available for joint verification within one month after the arrival of such packages at the PLANT site, PURCHASER shall go ahead, open the packages within 14 days from the date of arrival of the packages at PLANT site in accordance with the unpacking instruction, if any given by CONTRACTOR. Should any wrong supply and/or shortage in quantity in spite of the sound and intact condition of the package be found, PURCHASER shall, within 7 days after the date of unpacking, give CONTRACTOR the reports thereon, which shall be binding on CONTRACTOR and CONTRACTOR



shall make good such wrong supply and/or shortage within reasonable time.

10.6 If required for transport reasons, some items of PROPRIETARY EQUIPMENT may be delivered in parts, CONTRACTOR shall in such cases supply free of charge all materials such as electordes etc. required for fabrication and assembly at the PLANT site and depute their technicians for supervision of fabrication and assembly. CONTRACTOR shall also supply free of cost to PURCHASER at FOB point any special tools and heat treatment device, if required, and these shall be returned to CONTRACTOR on completion of work.

10.7 Invoices, Packing Lists and Shipping Documents:

(Clause to be suitably drafted by PURCHASER to suit his individual requirements.)

ARTICLE - 11

PRICE AND TERMS OF PAYMENT

11.1 In consideration of the services and supplies by CONTRACTOR, PURCHASER shall pay to CONTRACTOR the following prices (21)

(a) Fee for grant of licence.

(b) Fee for preparation and supply of BASIC DESIGN.



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- (c) F.O.B. price of PROPRIETARY EQUIPMENT.
- (d) Fee for procurement assistance for critical items of supply (22).
- (e) Fee for supervising DETAILED ENGINEERING and procurement assistance for other items (23).
- (f) Fee for assistance in supervision of construction.
- (g) Fee for supervision of start-up and commissioning.
- (h) A per diem rate of . . . . . for each day of absence of the CONTRACTOR's personnel for inspection and expediting services.

11.2 Prices mentioned in Clauses 5.1 (a) (b) (c) and (d) are firm and not subject to escalation for any reason whatsoever. Prices mentioned in 5.1 (e) (f) and (g) are based on . . . . . and . . . . . man months.

The prices in 5.1 e, f, g and h are firm and not subject to escalation, if the total number of man-months are not exceeded beyond this provision and if these services do not extend beyond . . . . . (date) . . . . . In case of extensions beyond the agreed period or in total number for reasons attributable to CONTRACTOR, PURCHASER is not liable to pay the additional fees for such extended man-months.

11.3 Reimbursable Expenses:

11.3.1 If the stay of CONTRACTOR's personnel either for supervision of DETAILED ENGINEERING or for assistance in supervision of construction or for supervision of start-up and



commissioning exceeds the number of man-months and/or the period indicated above for reasons not attributable to CONTRACTOR, PURCHASER shall pay to CONTRACTOR for the additional services so utilised.

For such additional services of CONTRACTOR, PURCHASER shall pay to CONTRACTOR at the following rates (24).

- ..... for Project Manager
- ..... for Engineers/Chief Erectors
- ..... for Erectors/Technicians

**11.3.2** The above rates are payable for each person for each calendar day of absence of CONTRACTOR's personnel from his usual place of work in.....

The above daily rates are subject to the following escalation:

$$R = R_0 (0.25 + 0.75 \frac{T_1}{T_0}),$$

- Where R = Daily rate at the time of availing additional man-months
- R<sub>0</sub> = Daily rate in 11.3.1 above
- T<sub>0</sub> = Salary tariff of the particular class of personnel as on (25)
- T<sub>1</sub> = Salary tariff of the particular class of personnel at the time of deputing personnel.

**11.3.3** ~~Subsistence allowance~~

PURCHASER shall pay to the CONTRACTOR's personnel deputed to.....(26).....a subsistence allowance of.....per



calendar day. This payment shall commence from the date of arrival to and inclusive of the date of departure from...(26)...

PURCHASER and CONTRACTOR shall mutually agree to make reasonable adjustments in the subsistence allowance, as may be necessary due to increase in the cost of living in .....(26).....

**11.3.4 Travelling expenses**

PURCHASER shall reimburse to CONTRACTOR all travelling expenses of:

- i) CONTRACTOR's personnel deputed to.....as provided in the CONTRACT from his normal place of work in.....to.....end back.
- ii) CONTRACTOR's personnel for travels in connection with the expediting and inspection services.
- iii) Family members of CONTRACTOR's personnel, if such members are entitled to accompany CONTRACTOR's personnel in accordance with the provisions mentioned in Exhibit-5.

**11.4 TAXES**

**11.4.1** The prices, fees, remuneration and the rates and allowance quoted in this ARTICLE-11 include all taxes payable by CONTRACTOR outside ....(26)..... All taxes, customs duties, levies etc. payable in .....(26).....in connection with the performance of the CONTRACT are not included in the prices, fees, remuneration and rates and shall be borne by PURCHASER. PURCHASER shall hold CONTRACTOR indemnified and harmless



of any taxes, customs duties, levies which might be levied directly on CONTRACT in ....(26)..... in respect of performance of obligations under CONTRACT. It is further agreed that CONTRACTOR shall on receipt of any letter/notice/demand whatsoever for tax, customs duty, levy from any state authority in PURCHASER's country, immediately inform PURCHASER and shall file through PURCHASER replies/returns/appeals/revisions or take any other remedy at law within limitation period as may be advised by PURCHASER.

CONTRACTOR shall render all assistance that may be required by PURCHASER in dealing with tax matters.

11.4.2 In case taxes/duties are imposed by local tax authorities on personnel deputed to the country of PURCHASER, these taxes/duties shall be borne by CONTRACTOR or their sub-contractor's personnel so delegated. CONTRACTOR shall keep PURCHASER indemnified and harmless against any payment that may be required to be paid by PURCHASER due to their failure in the payments of income taxes levied/leviable on personnel deputed by CONTRACTOR. PURCHASER shall render procedural and administrative assistance in this respect if requested by CONTRACTOR. CONTRACTOR shall render all assistance that may be required by PURCHASER in dealing with tax matters. (27)



**11.5 Terms of Payment:**

**PURCHASER shall pay the prices referred to in 5.1 as**

**follows:**

**11.5.1 Fee for grant of licence as per 11.1(a):**

- i) 30 (thirty) percent 30 (thirty) days from EFFECTIVE DATE OF CONTRACT**
- ii) 30 (thirty) percent 6 (six) months from EFFECTIVE DATE OF CONTRACT**
- iii) 30 (thirty) percent 12 (twelve) months from EFFECTIVE DATE OF CONTRACT**
- iv) 10 (ten) percent upon fulfilment of performance guarantee referred to in Article 19 or payment of liquidated damages in accordance with clause 23.1 but not later than 48 (fortyeight) months from EFFECTIVE DATE OF CONTRACT.**

**11.5.3 Fee for supply of BASIC DESIGN as per Clause 11.1(a):**

- i) 5% (five, percent) within 30(thirty) days from EFFECTIVE DATE OF CONTRACT.**
- ii) 80% (eighty, percent) in four equal monthly instalments, the first instalment falling due on the 60th day from EFFECTIVE DATE OF CONTRACT. The fourth instalment will be payable only after all the BASIC DESIGN documents are supplied to OWNER.**
- iii) 15% (fifteen, percent) upon fulfilment of guarantee referred to in Clause 20.1 or on payment of liquidated damages as per clause 23.1 but not later than 48 months from EFFECTIVE DATE OF CONTRACT, provided CONTRACTOR was not responsible for delays in completion of Performance Test.**



**11.5.3 Price of PROPRIETARY SUPPLIES  
as per Clause 11.1(b) :**

- i) 10% (ten percent) within 30 days from the EFFECTIVE DATE OF CONTRACT against invoice submitted by CONTRACTOR.
- ii) 90% (ninety percent) on pro-rata basis against shipment of PROPRIETARY EQUIPMENT against submission by the CONTRACTOR of the following documents :
  - Two copies of the clean on-board Bills of lading made in favour of PURCHASER.
  - A certificate from the CONTRACTOR to the effect that one copy of the clean on-board bill of lading together with four copies of the invoices and one copy of the packing list has been airmailed to PURCHASER within 7 days of shipment under registered post;
  - Packing list in duplicate;
  - Original and 3 copies of the invoices duly signed including certificates of origin for each partial shipment of PROPRIETARY EQUIPMENT.

**11.5.4 Fee for procurement assistance  
for critical items as per 11.1(c) :**

- i) 50% (fifty percent) within 5 (five) months from EFFECTIVE DATE OF CONTRACT on issue of enquiries for all critical/long delivery items, the list for which is mutually agreed to.
- ii) 50% (fifty percent) within 9 (nine) months from EFFECTIVE DATE OF CONTRACT provided orders for all critical items of supplies are placed as agreed to between PURCHASER and CONTRACTOR.





**11.5.5** Fee for supervision of DETAILED ENGINEERING and assistance in supervision of erection and supervision of commissioning as per clauses 11.1 e, f and g:

These payments shall be made monthly on the basis of an invoice supported by a certificate signed by both PURCHASER's and CONTRACTOR's representatives indicating the man-months spent in supervision of DETAILED ENGINEERING, assistance in supervision of construction and supervision of commissioning of the PLANT as the case may be and a report on progress of work done during the period.

**11.5.6** Per diem rate for inspection and expediting services as per clause 11.1 (h):

The payments shall be made on the basis of monthly invoice to be submitted by CONTRACTOR supported by a certificate indicating the man-days/man-hours spent for inspection and expediting services and a progress report on the work done.

**11.6** PURCHASER shall open in favour of CONTRACTOR with ... (28) ... an irrevocable divisible and transferable letter of credit in respect of payments due under Clause 11.5 (1) through (6). Said letters of credit shall be valid for ....., ....., ....., ....., ..... and ..... months respectively.

**11.7** For getting advance payment referred to in 11.5.3 CONTRACTOR shall furnish a bank guarantee for an amount of ... (29) ... to PURCHASER within 15 (fifteen) days from the



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**EFFECTIVE DATE OF CONTRACT** which shall be released with the completion of shipping of **PROPRIETARY EQUIPMENT**, as per agreed delivery schedule.

**11.8** The **CONTRACTOR** shall furnish a performance bond for the faithful execution of the **CONTRACT** for an amount of ... (30) ... to **PURCHASER** within 15 (fifteen) days from **EFFECTIVE DATE OF CONTRACT**.

**11.9** The advance payment Bank guarantee and performance bond shall be given by **CONTRACTOR** within 15 (fifteen) days of **EFFECTIVE DATE OF CONTRACT** to enable payments by **PURCHASER** within 30 (thirty) days of **EFFECTIVE DATE OF CONTRACT**. In case of delays in receipt of bank guarantees and performance bond from **CONTRACTOR**, the due date for down payment may be correspondingly delayed.

**11.10** Fee for Grant of Licence :

The payment as per clause 11.5.1 for grant of licence shall be made on the due dates against invoice submitted by **CONTRACTOR** except the last payment of 10% which shall be released upon expiry of 48 months from **EFFECTIVE DATE OF CONTRACT** or earlier on fulfillment of performance guarantee as in clause 20.1 or upon payment of liquidated damages in accordance with clause 23.1 as may be certified by **PURCHASER**



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provided CONTRACTOR has fulfilled his obligations as per schedule and delay was not attributable to CONTRACTOR.

**11.11 Fee for supply of BASIC DESIGN :**

- i) The payment mentioned in Clause 11.5.2(i) shall be made on due date against invoice to be submitted by CONTRACTOR.
- ii) For payment under 11.5.2(ii), CONTRACTOR shall submit to PURCHASER an invoice certifying that all the BASIC DESIGN documents are supplied to PURCHASER.
- iii) The last payment due under 11.5.2(iii) shall be made at the expiry of 48 (fortyeight) months from EFFECTIVE DATE OF CONTRACT or earlier on fulfilment of performance guarantee as per clause 20.1, or upon payment of liquidated damages in accordance with clause 23.1 as may be certified by PURCHASER provided CONTRACTOR has fulfilled his obligations as per time schedule and CONTRACTOR was not responsible for delays, if any.

**11.12 Fee for procurement assistance :**

- i) The payment mentioned in Clause 11.5.4 (i) shall be made on due date against invoice supported by a certificate signed by PURCHASER that enquiries for all critical/long delivery items are issued.
- ii) The payment mentioned in Clause 11.5.4(ii) shall be made on due date against invoice supported by a certificate signed by PURCHASER that orders for all critical items of supplies are placed.

**11.13** All charges, stamp duties as well as bank commission and other charges levied by PURCHASER's bankers shall be borne by PURCHASER. Similar charges levied by CONTRACTOR's bankers



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in ~~(contractor's country)~~ shall be borne by CONTRACTOR.  
CONTRACTOR shall also bear charges for confirmation of letter  
of credit.

ARTICLE - 12

PERFORMANCE BOND AND BANK GUARANTEE

12.1 The Performance Bond and Bank Guarantee to be furnished  
by CONTRACTOR in fulfilment of its obligations under the  
CONTRACT to PURCHASER, shall conform to the form enclosed  
as EXHIBITS 6 and 7 respectively.

ARTICLE - 13

EFFECTIVE DATE OF CONTRACT (32)

13.1 The CONTRACT shall become effective after signing by  
both the parties and after the following requirements have been  
fulfilled :

- (a) Approval of the Government of PURCHASER's  
country.
- (b) Approval of the Government of CONTRACTOR's  
country.
- (c) Approval of (financial institutions in case  
of credits).
- (d) Confirmation of the Letter of Credit stipulated  
in Clause 11.6.

13.2 The EFFECTIVE DATE OF CONTRACT shall be the latest  
date upon which any of the above mentioned requirements have



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been completed and shall be confirmed in writing by PURCHASER and CONTRACTOR.

- 13.3 If this CONTRACT does not become effective by....., then the prices quoted in ARTICLE-11 and other terms and conditions of the CONTRACT shall be subject to confirmation by CONTRACTOR.

#### ARTICLE - 14

##### TIME IS ESSENCE

- 14.1 CONTRACTOR and PURCHASER agree that time is the essence of this CONTRACT.

#### ARTICLE - 15

##### COMPLETION OF WORK

- 15.1 The CONTRACTOR shall provide the PURCHASER a milestone chart, delineating important events covering its obligations to the PURCHASER. The dates on which these events are completed to the satisfaction of the PURCHASER would be reckoned as the completion dates. The CONTRACTOR shall be deemed to have completed the work, when all its obligations under this CONTRACT, including but not limited to those specifically mentioned under ARTICLE-4 are performed and settled with PURCHASER.



ARTICLE 16

EXTENSION OF TIME

**16.1 The PURCHASER may either**

- (a) on its own initiative; or**
- (b) on the application of the CONTRACTOR made before the completion of any milestone activity for completion of work or before any new date for completion fixed under this clause,**

**extend the time for completion of the work by fixing a new day for completion of the work, if in the PURCHASER's opinion, it is in the public interest, provided always**

- i) that the PURCHASER be the sole judge as to what additional time may be allowed to the CONTRACTOR and the PURCHASER's decision as to the sufficiency thereof shall be final and binding upon the CONTRACTOR;**
- ii) that any extension of time granted as aforesaid to the CONTRACTOR shall be so granted and accepted without prejudice to any rights or remedies of the PURCHASER under this CONTRACT;**
- iii) that where such extension is granted on the PURCHASER's initiative, no consent thereto on the part of the CONTRACTOR shall be necessary; and**
- iv) that in any event, no extension of time, whether on the PURCHASER's initiative or on the application of CONTRACTOR, shall be deemed to have been granted unless the PURCHASER specifically so states by written notice to the CONTRACTOR.**



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ARTICLE - 17

MATERIALS AND WORKMANSHIP

**17.1** The PROPRIETARY EQUIPMENT shall be new, of first quality and manufactured in the most workmanlike manner and with materials of best quality.

ARTICLE - 18

INSPECTION, TESTING AND CERTIFICATION

**18.1** CONTRACTOR shall assist PURCHASER, as and when required in the inspection, testing and expediting of equipment with respect to

- (a) checking up for conformity with drawings and materials specifications, workmanship etc.;
- (b) checking up for adherence to specified process duties and performance guarantees;
- (c) arranging for official inspection wherever necessary, and
- (d) follow-up and clarifying all technical details.

**18.2** At all times, PURCHASER shall be entitled, at its cost, to inspect the equipment at the point of manufacture, irrespective of whether CONTRACTOR has been entrusted with such inspection and testing. PURCHASER shall, however, take care to see that there are no extra expenses or delays to CONTRACTOR due to participation of PURCHASER.



**10.3** PURCHASER shall communicate only with CONTRACTOR any questions in respect of such inspection. The purchase orders to be issued by PURCHASER pursuant to the CONTRACT shall provide for the rendering of inspection, expediting and other procurement services by CONTRACTOR. All test reports, results of radiography or core sample tests conducted by CONTRACTOR or vendors shall be made available to PURCHASER.

**10.4** PURCHASER and CONTRACTOR shall mutually agree, sufficiently in time regarding the categories/names of equipment, which CONTRACTOR would be required to inspect and which PURCHASER intends to inspect along with CONTRACTOR. CONTRACTOR shall notify PURCHASER in advance of the date of inspection of the equipment in order that PURCHASER also participate in such inspection and test. In the event that any inspection or test is not satisfactory, or that tests disclose defective materials or workmanship, CONTRACTOR shall cause corrective measures to be taken.

In the event that PURCHASER's representative, having received due notice, fails to attend any such inspection and test, the same shall proceed in his absence and PURCHASER shall accept CONTRACTOR's decision as to whether or not such test was satisfactory.





10.5 PURCHASER's failure to inspect any such materials or equipment or to object to defects at the time it is inspected shall not relieve CONTRACTOR of its responsibility and liability in accordance with the CONTRACT.

ARTICLE - 19

GUARANTEES AND PERFORMANCE GUARANTEE TESTS

10.1 CONTRACTOR shall guarantee the completion dates for the following important milestones in the critical path schedule:

- (a) Supply of BASIC DESIGN, excluding manuals.
- (b) Enquiry specifications for equipment and machines including cold boxes for air separation and nitrogen wash units, and other package units.
- (c) Final civil scope drawings.
- (d) Instrument specification.
- (e) Electrical equipment specifications.
- (f) Preliminary piping take off.
- (g) Final piping take off.

10.2 CONTRACTOR shall guarantee that the PROPRIETARY EQUIPMENT along with spares shall be supplied within..... months from EFFECTIVE DATE OF CONTRACT.

10.3 Provided that the raw material and utilities conform to the specifications as per the design basis given in Exhibit - 3 of the CONTRACT, the CONTRACTOR shall guarantee the



following in respect of the performance of the PLANT under normal operating conditions :

- (a) The PLANT shall produce not less than....tonnes of anhydrous liquid ammonia per day of 24 hours of the quality specified hereinbelow;
- (b) When operating the PLANT at guaranteed capacity or in case of shortfall in guaranteed capacity, at the maximum achievable capacity of not less than 95% of the guaranteed capacity, the product anhydrous ammonia shall have
  - i) a minimum ammonia content of 99.9%
  - ii) a maximum moisture content of 0.1% and
  - iii) a minimum pressure of liquid ammonia at BATTERY LIMITS OF THE PLANT of.....ata at a temperature not above .....°C.
- (c) The PLANT shall recover not less than....nm<sup>3</sup>/hr. of carbon dioxide of the quality mentioned below.
- (d) The by-product carbon dioxide shall contain on dry basis (i) more than 99% by volume of CO<sub>2</sub> (ii) a maximum sulphur content of 1 ppm and (iii) a maximum methanol content of.....ppm. Carbon dioxide shall be moisture free and its minimum pressure at the BATTERY LIMITS OF THE PLANT shall be....ata at a maximum temperature of.....°C.
- (e) While producing the anhydrous ammonia and carbon di-oxide at the guaranteed capacity and the quality mentioned in (a) to (d) above, the specific consumption of raw material and utilities per tonne of liquid ammonia produced shall be as follows:
  - i) Raw material (Fuel Oil) ..... kg
  - ii) Net boiler feed water after condensate return ..... kg
  - iii) Power ..... KWH



- iv) Cooling water (in circulation) ... m<sup>3</sup>
- v) Steam (import) from auxiliary boiler at boiler temperature and pressure kg at....ata and....°C
- vi) Steam (export) to Urea Plant kg at....ata and....°C

On the basis of the specific consumption figures given above, CONTRACTOR shall guarantee the total guaranteed consumption cost per one metric tonne of ammonia produced as follows:

(in currency units to be specified)

Item	Unit Price in	Consumption per tonne of Ammonia	Cost per one tonne of Ammonia in
Fuel Oil			
Steam			
Cooling Water			
DM Water after condensate return			
Power			

Total guaranteed consumption cost.....

The guaranteed consumption cost shall be adjusted by mutual agreement as necessary to reflect differences in the



consumption of feed and utilities assumed for estimating purposes from the consumption thereof indicated upon final design and equipment selection and also any changes in climatic conditions existing during a test run not in accordance with those used for the BASIC DESIGN. CONTRACTOR shall notify PURCHASER in writing of any such adjustment.

(f) The water condensate effluent from the PLANT shall be

Quantity.....m<sup>3</sup>/hr.

Ammonia content.....less than....ppm.

19.4 If there is a variance in the basic design condition as given in the design basis of the performance guarantees mentioned in 19.3 hereinabove, the performance guarantees shall be adjusted in accordance with the standard practice and shall be agreed upon and reduced in writing before starting the guarantee tests.

19.5 In the event that the fuel oil, utilities, catalysts, climatic conditions or any other conditions are not in accordance with those specified in the design basis and the changes are prejudicial to CONTRACTOR and substantial as may be demonstrated by CONTRACTOR, PURCHASER and CONTRACTOR shall mutually and, in good faith negotiate an adjustment to the performance Guarantees.



19.6 The ability of the PLANT to meet the performance guarantees set forth in 19.3 hereinsbove shall be determined by a performance test run of 240 continuous hours. In determining the ability of the PLANT to meet the consumption and product quality and capacities all charge rates, product rates and quality and utility consumption shall be averaged over a period which shall consists of a minimum continuous run of 168 hours.

If the test run of the PLANT is interrupted for short period, the PLANT shall be started again as soon as possible and when the PLANT has reached normal operating conditions, the test shall continue. The duration of the above mentioned interruptions shall be condoned and the test run shall be deemed to have been performed continuously provided the continuous run of at least 168 hours was enabled. In case of frequent interruptions, where a continuous run of 168 hours was not possible, a fresh test run shall be started.

If, in the second performance test, a continuous block of 168 hours is not achievable in the 10-day period, then two blocks of 96 hours minimum continuous duration, if achievable, shall be taken for calculating the PLANT performance. If such blocks of 96 hours are not achievable, then OWNER and CONTRACTOR shall mutually agree on action to be taken.

19.7 The quantity of fuel oil and utilities included within the guaranteed total cost of consumption of feed and utilities



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which are employed during the test run shall, for purposes of calculation of guaranteed performances, be determined by flow record measurements or on the volume in storage tanks, where possible. All gas volumes shall be corrected to 0°C and 760 mm Hg. All liquid volumes shall be corrected to 15.6°C. The analytical methods, instrument tolerances, equipment for sampling etc., to be used in determining the ability of the PLANT to meet the performance guarantee shall be determined by mutual agreement.

19.8 Periods during the test run at operating conditions other than those recommended or approved by CONTRACTOR or non-operation due to equipment failure, lack of sufficient feed and utilities, or any other causes beyond the control of CONTRACTOR, shall not be considered part of the test run nor shall they be considered to have interrupted test run period.

19.9 The Performance Test run referred to in 19.6 hereinabove shall be conducted only after it has been demonstrated that the PLANT is capable of running on a sustained load for a period of 90 days at an average production rate of not less than 85% of the daily rated capacity of ammonia, taking into consideration the normal shutdown interruptions due to unavoidable reasons such as power failure etc. as may be mutually agreed upon before the start of the sustained load run. PURCHASER shall



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have option to reduce the period of sustained load run of 90 days. On satisfactory completion of the sustained load run, the results achieved shall be tabulated and jointly signed by the CONTRACTOR and PURCHASER's representatives. Thereafter a certificate shall be issued by PURCHASER and performance test runs could be proved by CONTRACTOR. The CONTRACTOR shall, however, give a notice of not less than a fortnight which may be reduced by mutual agreement for starting the Performance Test run within which period PURCHASER shall ensure the availability of feedstocks etc. During the sustained load run and performance test run of the PLANT, no standby equipment shall be used in parallel.

19.10 The performance guarantees shall not be effective unless the PLANT is constructed in accordance with the drawings and specifications furnished by CONTRACTOR which shall be certified by the CONTRACTOR before start-up, unless the Performance Test is carried out within 60 months from the EFFECTIVE DATE OF THE CONTRACT, provided that if the Date of Mechanical completion is delayed for reasons attributable to CONTRACTOR or due to Force Majeure conditions (as defined in Article 34) the period of 60 months shall be extended by the period of such delay by CONTRACTOR or the period of Force Majeure as the case may be.



ARTICLE - 20

CONDITIONS OF ACCEPTANCE

20.1 Immediately after completion of the Performance test run mentioned in Clause 19.6, CONTRACTOR shall determine the results thereof and certify to PURCHASER when in CONTRACTOR's judgment the Performance Guarantees have been demonstrated. The Performance Guarantees shall be deemed to have been demonstrated if CONTRACTOR certifies that the test run was successful and submit his calculations in support thereof to PURCHASER and if PURCHASER agrees to the same in writing.

20.2 In case PURCHASER does not agree to the Performance Guarantee results, he shall indicate, in writing, to CONTRACTOR in what respect the Performance Guarantees have not been met.

ARTICLE - 21

WARRANTIES

21.1 If any item of PROPRIETARY EQUIPMENT supplied by CONTRACTOR is found defective within 12 months from completion of erection of PLANT or within 60 months from the EFFECTIVE DATE OF THE CONTRACT whichever is earlier, PURCHASER shall notify the same to CONTRACTOR in writing, within reasonable time. CONTRACTOR shall be liable to rectify the defect by repair or replacement within reasonable period of all parts





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that may fail or show defect due to faulty design, defective material or bad workmanship. All replacements of the defective parts as mentioned above shall be made free of cost FOB by CONTRACTOR and the return of defective parts to CONTRACTOR's works shall be the responsibility of CONTRACTOR and shall be made at CONTRACTOR's expense. If it becomes necessary for CONTRACTOR to repair or replace any defective items of EQUIPMENT, under this clause a fresh guarantee shall apply to the items so repaired or replacement so obtained until the expiry of a further 12 (twelve) months period from the date of such repair or replacement.

If any defect be not satisfactorily remedied within a reasonable time, after the defect has been brought to the notice of CONTRACTOR, PURCHASER may proceed to make good the defect at CONTRACTOR's risk and expense, but without prejudice to any other contractual right which PURCHASER may have against CONTRACTOR in respect of the performance guarantees of the PLANT mentioned in 19.3.

21.2 This warrantee does not, however, cover (i) normal wear and tear and (ii) defects arising from non-observance of CONTRACTOR's instructions for erection, operation and maintenance.



ARTICLE - 22

PENALTIES (35)

**22.1** If CONTRACTOR fails to supply the documents as per schedule given under clause 19.1 of the CONTRACT, CONTRACTOR shall pay to PURCHASER for every week's delay beyond the scheduled date an agreed penalty of . . . . ., subject to a maximum of . . . . .

**22.2** If CONTRACTOR fails to deliver any item of PROPRIETARY EQUIPMENT according to the guaranteed delivery schedule, CONTRACTOR shall pay to PURCHASER, for every week's delay of the undelivered items at the rate of 0.5% of the FOB value of the undelivered items subject to a maximum of 5% of the FOB value of PROPRIETARY EQUIPMENT.

ARTICLE - 23

LIQUIDATED DAMAGES (35)

**23.1** Subject to the other provisions of Article 19, in the event that the performance guarantees relating to the PLANT are not fulfilled for reasons attributable to CONTRACTOR under the CONTRACT, CONTRACTOR shall arrange for the modification of the PLANT, at its own cost, so as to achieve a satisfactory performance. However, in the event the deficiencies in the Performance Guarantees are within the ranges specified below, PURCHASER shall have the option of either accepting liquidated



damages at the rates mentioned below or requesting CONTRACTOR to effect modification in the PLANT.

(a) PLANT Capacity:

For each 0.5% (or part thereof) deficiency in capacity guarantee liquidated damages of.....shall be payable upto the maximum deficiency of 5%.

(b) Raw material and utility consumption cost:

For each 0.5% (or part thereof) increase over the guaranteed consumption cost of ammonia as set forth in Article 19.3 (e) liquidated damages..... shall be payable upto a maximum increase of 5%.

(c) Product Quality:

For each 0.05% (or part thereof) absolute deficiency in the ammonia content, liquidated damages..... shall be payable upto the level where Ammonia content is not less than 99.5%.

(d) Effluent Quantity:

For each 0.5 m<sup>3</sup>/hr. (or part thereof) increase in the effluent quantity, liquidated damages of..... shall be payable upto the maximum quantity of.....

(e) Effluent Quality:

For each 5 ppm increase in the actual ammonia content liquidated damages..... shall be payable upto a maximum ammonia content of.....

**23.2** In case PURCHASER decides that CONTRACTOR should make modifications in the PLANT, CONTRACTOR's liability shall be, in any case, limited to the amount related to the above relevant liquidated damages on the basis of the most favourable Performance Test run results.



**23.3** In the event that the PLANT Performance Guarantees are not within the limits specified in 23.1 above and/or the production of carbon dioxide has not reached...nm<sup>3</sup>/per stream day on a Performance Test run and if it is established that the reasons for failure to prove the Performance Guarantees are attributable to CONTRACTOR under the terms of the CONTRACT, CONTRACTOR shall within a reasonable period make or request in writing PURCHASER to make such modifications, alterations, or additions in the PLANT as are necessary to enable the PLANT to meet the Performance Guarantees. During the 180 days period provided for in Clause 27.1, PURCHASER shall allow CONTRACTOR such time as may be required to make such modifications, alterations and additions or cause the same to be made, and shall repeat the Performance Test run as often as CONTRACTOR may request. The cost of such modification, alteration and additions necessary to enable the PLANT to meet the Performance Guarantees shall be borne by CONTRACTOR.

**23.4** In the event the Performance Guarantees of the PLANT are not met within thirty days from the beginning of the first Performance Test run, PURCHASER may require CONTRACTOR to give to PURCHASER within 30 (thirty) days of notice to do so, a full and detailed statement, in writing containing the detailed description and corrective measures which CONTRACTOR agrees to take and the time within which the same are to be completed



and further Performance Test run be made. PURCHASER may submit his comments to CONTRACTOR in writing regarding such corrective measures and such comments shall be carefully considered by CONTRACTOR. Before undertaking such corrective measures, it would be beneficial for CONTRACTOR to discuss with PURCHASER any differences of opinion that may be reflected in PURCHASER's comments to CONTRACTOR's statement. Also, it may be advantageous for certain work to be performed by PURCHASER on instructions of CONTRACTOR on a back-charge basis consistent with the allocation of costs provided in 23.3. All such arrangements shall be by mutual agreement to the extent they are at variance with other provisions of the CONTRACT. Nothing herein shall deprive PURCHASER of its rights to terminate the work in accordance with the provisions of Article 36 in the event of CONTRACTOR's default as provided therein.

**23.5** If the Performance Guarantees are not met within a period of 180 days from the start of the First Performance test run (excluding time lost for delays due to Force Majeure or not within the control of CONTRACTOR) and OWNER has not opted to claim the liquidated damages under Article 23.1, either party may request that an adjustment in the price be made, and if an adjustment in the price is made by mutual agreement, in writing, CONTRACTOR's liability under Article 20 in respect of Process Performance guarantees shall terminate. In case there is no



agreement regarding adjustment of the price, PURCHASER shall be free to seek such remedies as may be available under the CONTRACT for non-fulfilment of performance guarantees.

23.6 If the Performance Guarantees are not met due to reasons which are not attributable to CONTRACTOR, CONTRACTOR shall still be under obligation to investigate the reasons and suggest modifications in the PLANT as required to enable the PLANT to meet the Performance Guarantees. PURCHASER shall at his own cost effect the modification suggested by CONTRACTOR. CONTRACTOR and PURCHASER shall agree upon the date of the Fresh Performance Test run after the modifications are effected in the PLANT. The provision of clauses 23.1 through 23.5 shall apply to this Performance Test run.

ARTICLE - 24

BONUSES AND INCENTIVES (36)

(Not applicable)

ARTICLE - 25

LIABILITY

25.1 The cumulative liability of the CONTRACTOR on all counts under this CONTRACT except those mentioned in Article 21 shall not exceed in any event.....

25.2 The above limit of CONTRACTOR's liability shall not be applicable to the cost of re-doing the design and engineering work



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for suggesting necessary corrections and modifications to the PLANT in case the production capacity, product quality and consumption of raw materials and utilities do not meet the minimum guarantees mentioned in Article - 19.

ARTICLE - 26

INSURANCE

26.1 CONTRACTOR shall obtain and maintain workmen's compensation insurance and other insurances covering all persons to be employed by it or work under the CONTRACT against injury or death during the course of their employment under the CONTRACT as also against third party risks of the personnel deputed by CONTRACTOR to PURCHASER's country.

26.2 Insurance Cover for Consequential Losses:

In addition to the standard insurance policies required under other articles in CONTRACT, the PURCHASER and CONTRACTOR shall, to the extent possible, by mutual arrangement obtain an insurance cover in the name of the PURCHASER for consequential loss caused by defective design, material or workmanship and defective construction or erection within the control of the CONTRACTOR or his sub-contractors, suppliers or manufacturers. No liability shall, however, attach to the PURCHASER or the CONTRACTOR purely by reason of payment for such policy.



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**ARTICLE - 27**

**RECTIFICATION OF DEFECTS**

**27.1** If the Performance Guarantees are not met within a period of 180 days from the first Performance Test run (excluding time lost for delays due to force majeure or not within control of CONTRACTOR) and if the capacity of PLANT is less than 95 percent of the guaranteed capacity and/or if the raw material and utilities consumption cost of Ammonia is more than 105% of the guaranteed cost set forth in Article 19.3(e), CONTRACTOR shall make or cause to be made such modifications, alterations or additions to the PLANT as required to enable it to produce ammonia at 95 percent or more of the guaranteed capacity and at a raw material and utility consumption cost of 105 percent or less of the aforesaid cost. The cost for such modifications, alterations or additions including design, engineering charges, supervision charges, cost of equipment etc. shall be borne by CONTRACTOR subject to the ceiling specified under Clause 25.1. All other costs required for such modifications, alterations or additions shall be to PURCHASER's account.

**ARTICLE - 28**

**VARIATIONS, CHANGES AND ADDITIONS  
TO SCOPE OF WORK**

**28.1** PURCHASER shall have the right to request in writing, variations, changes and additions in the design, drawings, etc. and other services within the general scope of the CONTRACT.





- 28.2** CONTRACTOR shall comply with such requests by PURCHASER if such variations, changes and additions would not jeopardise fulfilment of any of CONTRACTOR's guarantees pursuant to the CONTRACT. If in CONTRACTOR's judgment, fulfilment of any of the guarantees would be jeopardised, then CONTRACTOR shall explain his reasons to the PURCHASER for not making these variations, changes and additions.
- 28.3** In case the variations, changes and additions suggested by PURCHASER are the basic changes not envisaged in the CONTRACT and involve substantial additional expenditure on the part of CONTRACTOR, CONTRACTOR shall promptly submit in writing to PURCHASER, the estimates of the amount by which the price under Article-11 shall be adjusted together with details of estimates for the changes and particulars of any variations required to be made to any of the CONTRACTOR's obligations.
- 28.4** It is understood that variations, changes and additions shall be put into effect and work shall be immediately performed under any such variations, changes and additions if so desired by PURCHASER. The cost of the variations, change(s) and additions shall be mutually agreed upon taking into account the expenditure saving, if any, that may arise to the CONTRACTOR. The method of payment shall also be thereafter mutually agreed upon.



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ARTICLE - 29

RIGHT FOR USE OF PROPRIETARY RIGHTS  
AND LICENCES

29.1 By virtue of the CONTRACT and so long as PURCHASER shall not be in default under the terms of the CONTRACT, CONTRACTOR hereby grants to PURCHASER non-exclusive right to use in the PLANT all processes, and know-how and technical information incorporated in the PLANT.

ARTICLE - 30

SECRECY

30.1 PURCHASER agrees to hold in confidence all technical information supplied to it by CONTRACTOR in connection with the PLANT insofar as it is of a confidential nature, provided however, that PURCHASER's obligation to keep in confidence shall not apply to:

- (a) Technical Information which at the time of disclosure is in the public domain;
- (b) Technical Information which after disclosure becomes part of the public domain, by publication or otherwise other than by PURCHASER;
- (c) Technical Information which OWNER can show was in its possession at the time of the disclosure and was not acquired directly or indirectly from CONTRACTOR;
- (d) Technical Information which may be furnished or known to PURCHASER by third parties as a matter of right and which is held by PURCHASER without restriction on such disclosure.



**PURCHASER shall use his best efforts to restrain its employees from making disclosures of such information to others. It is understood that this provision in the CONTRACT shall not be interpreted to prevent such reasonable inspection of operation of the PLANT or use of Technical Information by persons engaged in the sale or repair of EQUIPMENT as are customarily considered necessary in connection with the repair, modification, debottlenecking and maintenance of the PLANT, or to prevent inspection of the PLANT or technical documentation by any Government or Local Authority or Agency thereof. It is understood that the provisions of this clause shall not apply if PURCHASER decides to engage another person/firm to rectify the defects in PLANT as per provision of clause 27.1.**

**30.2 The provisions of clause 30.1 shall be valid for a period of..... years from the EFFECTIVE DATE OF CONTRACT.**

**ARTICLE - 31**

**PATENTS**

**31.1 CONTRACTOR shall at all times indemnify and keep indemnified PURCHASER against all claims or suits, and against all costs of such claims or suits, which may be made against PURCHASER in respect of any infringement of any rights protected by patent, registration of design or trade mark. In the event of any suit or claim on PURCHASER, PURCHASER shall pass on all claims**



made against it to CONTRACTOR for settlement. CONTRACTOR agrees to keep PURCHASER indemnified and harmless against such claims and costs thereof and pay the licence fee and damages and other claims, if any, for continuing the operations of the PLANT.

31.2 PURCHASER shall give CONTRACTOR prompt notice, in writing, of any claim or suit. CONTRACTOR shall have sole charge and direction of the defence and disposal of such suit and PURCHASER shall render all reasonable assistance. PURCHASER shall have the right to be represented by counsellor of its own choice at its own expense.

31.3 CONTRACTOR shall have the right to acquire immunity from suit and to make or cause to be made alterations at its cost to the PLANT to eliminate the alleged infringement provided such alteration does not prevent the PLANT from meeting its performance Guarantees mentioned in Clause 19.3.

31.4 Neither CONTRACTOR nor PURCHASER shall settle or compromise any suit or action without the written consent of the other if settlement or compromise obliges the other to make any payment or part with any property, to assume any obligation or grant any licences or other rights, or to be subjected to any injunction by reason of such settlement or compromise.



ARTICLE - 32

DISCLOSURE TO THIRD PARTY

32.1       **The terms and conditions of the CONTRACT shall not be disclosed by either party to any third party without written consent of the other party, provided however, such restriction shall not be applicable for obtaining clearance from Government agencies etc.**

ARTICLE - 33

INDEMNIFICATION

33.1       **(a) Subject to Clause 33, CONTRACTOR shall indemnify and save harmless the PURCHASER from and against all claims, demands, losses, costs, damages, actions, suits or proceedings by whomsoever made, brought or prosecuted in any manner based upon, arising out of, related to, occasioned by or attributable to the activities of CONTRACTOR under or in connection with the CONTRACT or to an infringement or alleged infringement by CONTRACTOR of a patent of invention;**

**(b) For the purpose of sub-clause (a) above, activities include an act improperly carried out, an omission to carry out an act and a delay in carrying out an act.**

33.2       **PURCHASER shall indemnify and save harmless CONTRACTOR from and against all claims, demands, losses, costs, damage, actions, suits or proceedings arising out of the CONTRACTOR's activities under the CONTRACT which are directly attributable to an infringement or an alleged infringement of any patent of**



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invention in executing anything for the purpose of the CONTRACT, the model, plan or design of which was supplied by PURCHASER to the CONTRACTOR.

33.3 CONTRACTOR and OWNEK agree that each will assume full risk of damage or injury to its own properties, representatives and employees caused by any act or omission to act, including negligence of the employees or representatives of the other party during the performance of CONTRACT. Each party hereby releases the other from any and all liability for loss or damage so caused to its own properties and each party agrees to indemnify and hold harmless the other against all liability so caused on account of personal injury to its respective representatives and employees.

#### ARTICLE - 34

#### FORCE MAJEURE

34.1 In the CONTRACT, Force Majeure shall be deemed to be any cause beyond the reasonable control of CONTRACTOR or PURCHASER as the case may be which prevents or impedes the due performance of the CONTRACT and which, by due diligence, the affected party is unable to avoid or overcome through its individual concerted effort.

Force Majeure shall include, but shall not be limited to



**the following:**

- any war or hostilities;
- any riot or civil commotion;
- any earthquake, flood, tempest, lightning or other natural physical disaster, impossibility of use of any railway, port, airport, shipping service or other means of transport;
- any accident, fire or explosion;
- any strike, lock-out, concerted acts of workmen or other industrial disturbance affecting the performance of the contractual obligations;
- any act of any Government.

**34.2** If either party is prevented or delayed in the performance of any of its obligations under the CONTRACT by Force Majeure, and if the affected party given written notice thereof to the other party within the shortest possible time, specifying the matter constituting Force Majeure with necessary evidence that a contractual obligation is thereby prevented or delayed, and the further period for which it is estimated that such prevention or delay will continue, then the affected party shall be excused the performance or punctual performance as the case may be of such obligation as from the date of such notice for so long as may be justified.

**34.3** PURCHASER or CONTRACTOR as the case may be shall be diligent in attempting to prevent or remove the cause of Force



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**Majeure. The parties upon receipt of Notice of Force Majeure shall confer promptly with each other and agree upon a course of action to remove or alleviate such causes.**

**34.4 If by virtue of clause 34.2, either of the parties is excused from the performance or punctual performance of any obligation for a continuous period of 6 (six) months then the parties shall consult together with a view to agreeing what action should in the circumstances be taken and what amendments to the terms of the CONTRACT ought to be made.**

**34.5 If by virtue of clause 34.2 either of the parties is excused from the performance or punctual performance of any obligation for a continuous period of 9 (nine) months for one or more causes and if the consultations referred to in the preceding clause 34.4 have not resulted in agreement or have not taken place because the parties have been unable to communicate with one another, then subject to the provisions of Article 36, the parties shall thereupon be finally released from further performance of all obligations of the CONTRACT (other than those contained in Article 30 and 31) and subject as aforesaid the CONTRACT shall automatically be terminated.**

#### ARTICLE - 35

#### SUSPENSION OF WORK

**35.1 PURCHASER may order CONTRACTOR to suspend all or any part of the work for such period as may be determined by him to**





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be necessary or desirable for the convenience of PURCHASER. If such suspension delays the progress of the work to such an extent as to cause additional expense or loss to CONTRACTOR, the increased costs due to such suspension shall be to PURCHASER's account. PURCHASER shall advise CONTRACTOR of the period such suspension is likely to cover and the adjustments, if any, in the price shall be mutually agreed upon.

#### ARTICLE - 36

#### TERMINATION OF CONTRACT

**36.1** PURCHASER may by written notice, terminate the CONTRACT whenever PURCHASER deems such termination to be in its best interests. Upon such termination, the provisions of Clause 36.4 shall be applicable, subject to Clause 36.8.

**36.2** If CONTRACTOR or PURCHASER shall commence to be wound up (not being members voluntarily winding up for the purpose of amalgamation or reconstruction) or carry on its business under a Receiver for the benefit of his creditors or any of them, then the other party hereto shall have liberty:

- (a) To terminate the CONTRACT forthwith by notice in writing to the other party hereto or to the Receiver or Liquidator or to any person in whom the CONTRACT may become vested, or
- (b) To give such Receiver, Liquidator or other person, the option of carrying out the CONTRACT subject to his providing a guarantee for the due and faithful performance of the CONTRACT upto an amount to be agreed.



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**36.3** If CONTRACTOR shall neglect to execute the CONTRACT with due diligence or expedition, or shall refuse or neglect to comply with any reasonable order given to him, in writing, by PURCHASER in connection with the work, or shall contravene the provision of the CONTRACT, PURCHASER may give notice in writing to CONTRACTOR calling upon him to make good the failure, neglect or contravention complained of, within such time as may be deemed reasonable, and in default of compliance with the said notice, PURCHASER without prejudice to his rights may rescind or terminate the CONTRACT holding CONTRACTOR liable for the damages that PURCHASER may sustain in this behalf.

**36.4** Upon such termination by PURCHASER pursuant to clause 36.2 and 36.3 above, CONTRACTOR shall:

- (a) terminate all work;
- (b) release no further orders;
- (c) as directed by PURCHASER deliver to PURCHASER subject to Article 30 hereof, plans, drawings and specification produced, prepared, or acquired for the work.

**36.5** On such termination by PURCHASER under Clause 36.2 and 36.3 PURCHASER may carry on the work necessary to complete the work either by himself or through his agents or may recontract with any other person or persons to execute the same.

**36.6** On such termination by PURCHASER under clause 36.2 and 36.3 PURCHASER shall be entitled to retain and apply any



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balance of a sum which may otherwise be then due on the CONTRACT by him to CONTRACTOR or such part thereof as may be necessary to the payment of the cost of execution of such work as aforesaid.

**36.7** If PURCHASER shall contravene the provision of the CONTRACT or suspend the work for a period or periods aggregating more than 60 days in any 365 days period, CONTRACTOR may give notice in writing to PURCHASER calling upon him to make good the contravention complained of or terminate such suspension and resume the work within such time as may be deemed reasonable and in default of compliance, of any such notice, the CONTRACTOR may, without prejudice to his right, terminate the CONTRACT holding PURCHASER liable for damage that CONTRACTOR may sustain on his behalf.

**36.8** On termination by CONTRACTOR under Clause 36.2 and 36.7 or termination by PURCHASER under Clause 36.1, PURCHASER shall thereupon become immediately liable to pay CONTRACTOR such proportion of the price as the work actually done by CONTRACTOR bears to the total amount of work for which the price was fixed together with any reasonable costs necessarily incurred by CONTRACTOR in connection with the termination of the CONTRACT which have not previously been taken into account and any other charges or expenses incurred by CONTRACTOR in connection with the CONTRACT which would



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not have been incurred had the CONTRACT gone to successful completion.

36.9 In the event of termination by either party under Article 34, the provisions of clause 36.8 shall be applicable except that in the event the termination is attributable to the inability of the CONTRACTOR to continue performance of the work and such inability persists, then PURCHASER shall have the right to continue and complete the work upon payment to CONTRACTOR of such amount as shall be fair and equitable under the circumstances.

36.10 No Termination of the CONTRACT for any reason shall diminish or terminate the provisions of Article 30 of the CONTRACT.

#### ARTICLE - 37

#### CANCELLATION OF CONTRACT

(Covered under Article 36)

#### ARTICLE - 38

#### GENERAL PROVISIONS

38.1 Consequential losses :

CONTRACTOR shall not be liable for any indirect or consequential loss or loss of profit suffered by PURCHASER in connection with or arising out of the CONTRACT. Similarly, PURCHASER shall not be liable for any indirect or consequential losses or



loss of profit suffered by CONTRACTOR in connection with or arising out of the CONTRACT.

**38.2**      Misconduct of CONTRACTOR's Personnel:

PURCHASER shall have the right to object to any of the CONTRACTOR's personnel stationed at PLANT site in connection with the CONTRACT who are undesirable from the point of view of misconduct, breach of laws and regulations and intentional negligence in duty. Upon receipt of written notice from PURCHASER to remove such personnel, CONTRACTOR shall take immediate steps to replace such persons.

**38.3**      Individual Liabilities:

PURCHASER shall, in no way, be responsible for any liabilities arising out of CONTRACTOR's contractual obligations with CONTRACTOR's sub-contractors, licensors, collaborators, vendors or subsidiaries and similarly CONTRACTOR shall, in no way, be responsible for any liabilities arising out of PURCHASER's contractual obligations with PURCHASER's sub-contractors, licensors, collaborators, vendors or subsidiaries.

ARTICLE - 39

ACCOUNTING AND INSPECTION OF RECORDS

**39.1**      CONTRACTOR shall maintain suitable accounting records and upon acceptance of the PLANT by PURCHASER, provide PURCHASER with a distribution of total costs of work pursuant



to this CONTRACT according to a classification of accounts to be furnished by PURCHASER.

39.2 CONTRACTOR shall keep full and accurate records of payments or charges under reimbursible services and shall preserve such records for two (2) years after the completion of performance guarantees or termination of CONTRACT.

39.3 PURCHASER shall have the right, to be exercised at his discretion, at all reasonable times during regular business hours, to inspect the records in onnection with payments or charges under reimbursible services insofar as may be necessary to verify such payments or charges.

ARTICLE - 40

DETERMINATION OF REIMBURSIBLE COSTS

(Not applicable)

ARTICLE - 41

LANGUAGE COVERING THE CONTRACT

41.1 The language to be used for any purpose under the CONTRACT shall be.....

ARTICLE - 42

APPLICABLE LAWS AND CONFORMITY WITH LOCAL STATUTES

42.1 The CONTRACT shall be governed by.....laws.



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42.2 CONTRACTOR shall abide by all laws, codes and regulations from time to time in force in the country of PURCHASER and in the region where the PLANT is located. In the event that any code, law or regulation application to the PLANT shall alter the scope of CONTRACTOR, obligation under the CONTRACT, CONTRACTOR shall agree with PURCHASER to the change in the scope.

ARTICLE - 43

STANDARDS AND CODES

43.1 Metric system shall be followed in regard to measurement of length, weight volume, quantities etc.

ARTICLE - 44

NOTICES

44.1 Any notice required under the CONTRACT shall be in writing and shall be given either personally or by post, telegram, radiogram or cable or telex (in case of telegram, radiograms, cable or telex the messages should be confirmed by letters) and shall be deemed sufficiently given, as and when received by the party to be notified at its address set forth herein, or if and when mailed by registered post (postage pre-paid) addressed to such party to the address given below. Either party may, by notice to the other, change its address for receiving such notices:



**PURCHASER**

Mail Address

Cable Address

Telex

**CONTRACTOR**

Mail Address

Cable Address

Telex

**ARTICLE - 45**

**SETTLEMENT OF DISPUTES**

45.1        CONTRACTOR and PURCHASER agree to settle amicably and in a spirit of friendly cooperation by mutual negotiations, all disputes arising out of or concerning the CONTRACT. Pending resolution of any such claim or dispute, under consideration of CONTRACTOR and PURCHASER, for a mutual settlement, CONTRACTOR shall continue Work under the CONTRACT, unless the matter is such that the Work cannot possibly be continued





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until a settlement is reached and save as those which are otherwise specifically provided in the CONTRACT.

ARTICLE - 46

ARBITRATION

- 46.1 If the parties hereto are unable to settle the matter amicably by mutual agreement as provided under Clause 45.1 hereinabove then the dispute or difference shall be finally settled by arbitration in conformity with the Rules of Conciliation and Arbitration of the International Chamber of Commerce, Paris, by one or more arbitrators in accordance with such rules for the time being in force. The venue of Arbitration shall be....(31)....
- 46.2 The work under the CONTRACT shall be continued by the CONTRACTOR during arbitration proceedings unless otherwise directed, in writing, by PURCHASER or unless the matter is such that the work cannot possibly be continued until the decision of the Arbitrators or of the umpire is obtained and save as those which are otherwise expressly provided in the CONTRACT. No payment due or payable by PURCHASER shall be withheld on account of such arbitration proceedings unless it is the subject matter or one of the subject matters.



IN WITNESS WHEREOF, the parties hereto have hereunto signed this CONTRACT the date first written.

Executed for and on behalf of CONTRACTOR

Executed for and on behalf of PURCHASER

Signature.....

Signature.....

Title.....

Title.....

Date.....

Date.....

Signed at.....in presence of the witnesses who have signed below :

1. ....

1. ....

2. ....

2. ....



**LIST OF EXHIBITS**

1. PLOT PLAN
2. SCOPE OF WORK
3. DESIGN BASIS AND CRITERIA
4. TIME SCHEDULE
5. TERMS AND CONDITIONS FOR DEPUTATION OF PERSONNEL
6. FORM OF PERFORMANCE BOND
7. FORM OF BANK GUARANTEES



EXHIBIT-1

PLOT PLAN SHOWING BATTERY LIMITS OF PLANT

INCLUDED UNDER

SCOPE OF

CONTRACTOR

FOR

SUPPLY OF BASIC DESIGN



## **EXHIBIT - 1**

### **Scope of Work (Responsibility of Purchasers and Contractors)**

- 1. Design basis (based on atmospheric conditions, soil conditions, raw materials specifications and quantities, final product specifications and quantities, specifications for utilities, effluent and emission standards, limitation of weight and transportation of equipment)**
- 2. Basic engineering :**
  - a) Layout**
  - b) Process flow sheet**
  - c) Materials and heat balances**
  - d) Instrumentation**
  - e) Electric distribution**
  - f) Environmental aspects**
- 3. Detailed engineering :**
- 4. Equipment list and specifications :**
- 5. Inspection and test certificates of equipment and materials :**
- 6. Procurement of equipment and materials :**
- 7. Packing, markings, freight transportation, insurance, loading, unloading, delivery to site :**
- 8. Storage of equipment and materials :**
- 9. Soil investigation and site preparation :**
- 10. Construction of civil engineering works :**
- 11. Erection of equipment and machinery :**
- 12. Test certificates :**
  - (a) Testing of individually erected equipment;**
  - (b) Testing of the whole erected plant, section by section and as a whole.**



**13. Commissioning :**

- (a) Procedure and criteria for measurement of qualities and quantities of raw materials, utilities and products;**
- (b) Supervision during the guarantee period;**
- (c) Start up and guarantee test runs;**
- (d) Performance test certificates;**
- (e) Report on the history of construction and erection and test runs.**

**14. Spare parts for two years normal operations, consumables, spare catalysts, chemicals and other materials :**

**15. Training :**

**16. Provision of drawings, specifications and manuals and test certificates of equipment in fabrication shops and tests of materials for construction for critical items :**



**EXHIBIT - 3**

**BASIS OF DESIGN FOR PROJECTS**

**(Provided by CONTRACTOR & PURCHASER)**

**1.0 Products**

**1.1 Product definition**

All the products like anhydrous ammonia, carbon-dioxide gas, sulphur and urea covered under the scope of supply of the contractor shall be mentioned.

**1.2 Production rate**

Capacity of finished products shall be indicated by Purchaser.

**1.3 Product analysis showing maximum and minimum values**

Analysis of final and intermediate products shall be agreed upon. A typical analysis guidelines of products for ammonia and urea project based on fuel oil is shown below :

**i) Ammonia**

NH<sub>3</sub> - 99.9% by wt (Min)  
H<sub>2</sub>O - 0.1% by wt (Max)  
Oil - 10 ppm by wt (Max)  
State - Liquid

**ii) Carbon dioxide for Urea production**

CO<sub>2</sub> - 98% by Volume (Min)  
Total sulphur - 1 ppm  
Methanol - 3 ppm  
Humidity - Gas available would be dry  
State - Gas



iii) Urea

Total nitrogen (on dry basis)	: 46% (Min)
Moisture	: 0.5% (Max)
Biuret	: 0.6% (Max)

1.4 Outlet pressure and temperature at the Battery Limit

The pressure and temperature at the outlet of the Battery Limit for Ammonia and Carbon dioxide shall be indicated by Purchaser.

2.0 Feedstocks/fuel specifications

2.1 Liquid feedstock

Purchaser shall obtain most reliable analysis of Fuel Oil/Heavy Oil from their supplier and such analysis should not be based on multiple feedstocks with extremely wide range. Any major variation in the analysis of feedstock then one adopted for design of Ammonia Plant would be a major bottleneck in the smooth and safe operation of the Plant. Purchaser shall decide in consultation with controlling government agency and supplier whether feedstock to be supplied for Ammonia Plant shall be low sulphur heavy stock or high sulphur heavy stock. The sulphur content of the feedstock should not change appreciably than one adopted for the design of the Ammonia Plant, as this would adversely affect the working of sulphur recovery plant. A typical analysis for high sulphur feedstock is given below, which shall be used as guidelines while preparing the analysis of feedstock:





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Specific gravity at 15°C/4°C Kg/ltr. - 0.35 to 0.98  
Viscosity at 50°C - 90 to 480 Centistokes  
Viscosity at 100°C - 20 to 45 Centistokes  
Sediments and water - 1% by volume

**Analysis/including moisture**

Carbon : 83.18% by weight  
Oxygen : 1.28% by weight  
Sulphur : 4.5% by weight  
Minimum : 1.5%  
Maximum : 4.5%  
Normal : 4%  
Nitrogen : 0.39% by weight  
Ash : 0.05% by weight

**Other constituents**

e.g. metals - ppm by wt (max)

Sodium	: 80
Calcium	: 40
Vanadium	: 160
Magnesium	: 2
Silicon	: 10
Nickel	: 50

Gross Calorific value 9500 to 10,700 kcals/kg.

**3.0 Utilities**

**3.1 Fuels for steam generation**

Purchaser shall indicate the type of fuel to be used for Steam Generation e.g. coal, furnace oil etc. The analysis of fuel shall also be confirmed by Purchaser.

**3.2 Electric Power**

3.2.1 The voltage utilisation for driving motors of different loads and



voltage available for lighting and emergency power supply shall be indicated by Purchaser. The frequency of power failure in the area and fluctuations in voltage and frequency shall also be confirmed by Purchaser.

**3.3 Steam**

The availability and utilisation of high, medium and low pressure steam shall be confirmed by Contractor, based on steam network finalised for the project.

**3.4 Cooling Water**

**3.4.1 Type of cooling water**

The cooling water available e.g. river, sea or ground water closed cycle etc.

**3.4.2 Cooling Water Quality and Analysis**

If the cooling water treatment falls within the scope of engineering of Contractor this would be specified by Contractor, otherwise Purchaser would furnish the necessary information.

**3.4.3 Cooling Water inlet and outlet temperature**

The temperature of the inlet cooling water and rise in temperature permitted shall be specified by Purchaser.

**3.5 Make-up water**

The make-up water quality, temperature and pressure available at the Battery Limit shall be specified by Purchaser.

**3.6 Boiler Feed Water**

Purchaser shall indicate the standard which shall be followed



by Contractor while designing the BFW system. The system designed shall be flexible enough to accommodate commercially available standard resins. The quality of Boiler Feed Water available after treatment shall be specified by Contractor.

**3.7 Instrument Air**

The dew point of the available Instrument air shall be specified by Purchaser.

**4.0 Climatic and Local Conditions**

The following points regarding climatic and local conditions shall be specified by Purchaser:

- i) Height above mean sea level
- ii) Relative air humidity, dry and wet bulb temperature and barometric pressure;
- iii) Air pollution already present in the area;
- iv) Prevailing wind direction;
- v) Wind velocities and loads;
- vi) Annual rainfall;
- vii) Soil condition and type of subsoil;
- viii) Ground water table;
- ix) Permissible soil pressure and seismic factor.

**5.0 Effluent and Emission Standards**

**5.1 Waste gases**

The maximum permissible impurities in waste gases to meet the local statutory requirements shall be specified by



Purchaser. If there is no local standards, Purchaser can specify to Contractor to follow emission as permitted by existing standards in developed countries.

**5.2 Waste water**

The maximum permissible impurities in waste water to satisfy the local statutory requirements shall be specified by Purchaser. A typical maximum impurities permitted in India is given below for reference:

NH <sub>3</sub>	:	100 kg/day;	Oil	:	25 kg/day
HcN	:	1 kg/day;	Carbon	:	250 kg/day
Chromium (Hexavalent) 2.5 kg/day;					
Methanol : 25 kg/day					

**6.0 Limitation on transportation of equipment**

Purchaser shall specify the maximum height, width and length of equipment which can be transported over local Railways. Contractor would take into consideration these limitations during design stage of big size equipment.

**7.0 Definition of Battery Limits**

The Battery Limits of Plant meaning the limits of scope of work by Contractor shall preferably be marked on Plants layout drawing.

**8.0 Design Criteria**

**8.1 System of weights and measures**

The system of weight and measures, i.e. Metric or U.S. System shall be specified.



**8.2 Design codes**

**8.2.1 Vessels, Columns etc.**

International Standards like ASME, ISO, BS or Suppliers Standards shall be specified.

**8.2.2 Heat Exchangers**

As above, including TEMA - 'B'

**8.2.3 Materials**

The materials shall be specified as per ASTM and DIN or equivalent.

**8.3 Maximum permissible height**

Purchaser shall specify any statutory restriction for the maximum permissible height of chimney and towers.

**8.4 Other regulations**

**8.4.1 Pressure**

Design pressure shall be normally 10 per cent higher than the operating pressure. For high pressure i.e. above 100 atm, design pressure shall be 1.05 times the operating pressure.

**8.4.2 Sizing of Centrifugal Compressors and Prime Movers**

Purchaser shall specify the Standards to be followed for sizing of the Centrifugal Compressors and Prime movers.



## **EXHIBIT-4**

### **DOCUMENT AND DRAWING SCHEDULE**

**PURCHASER and CONTRACTOR shall co-operate to complete the following documents and drawings according to the split of work within the described period hereunder:**

- | <b>1. Basic Information</b>   |  | <b>(in months from EFFECTIVE DATE OF CONTRACT)</b> |
|---|--|--|
| <b>A. Project execution</b>   |  |  |
| 1) Co-ordination procedure  |  | 1.0  |
| 2) List of equipment for the Ammonia Plant  |  | 3.0 to 5.0   |
| 3) Time Schedule for detail engineering (Network)   |  | 2.0  |
| <b>B. Process</b>   |  |  |
| 1) Description of the processing scheme and the characters of the process   |  | 5.0  |
| 2) Process Flow Diagrams showing all process equipment and composition of streams with the indication of the main control system, operating pressure, operating temperature, material and heat balance showing quality, composition of all stream at normal operating conditions. |  |  |
| 3) Estimated utility balance diagram.   |  |  |
| 4) Catalyst specifications and quantities including handling procedures.  |  |  |
| 5) Estimated chemical requirements with specifications.   |  |  |
| 6) Equipment list.  |  |  |
| 7) Requirements for process plant laboratory inside process control room  |  | 8.0  |



4 - 2

- |  |     |
|--|-----|
| 8) Quality and quantity of all effluents including gaseous, together with recommended treatment system | 5.0 |
| 9) Turn-down requirements for critical equipment   | 5.0 |

**C. Design Engineering**

- |   |     |     |
|---|-----|-----|
| 1) Preliminary plot plan except the indication decided by the Vendor's design, indicating as follows: | 3.5 | 5.5 |
|---|-----|-----|

- Equipment layout in plan and elevation
- Dimensions and location of the air separation and N<sub>2</sub> washing apparatus
- Dimensions and location of the compressor room
- Dimensions and location of the main structure
- Dimensions and location of the pipe rack
- Dimensions and location of Control and Switch Room

**2) Fired Heater and other Apparatus**

- |  |     |
|--|-----|
| 1) Basic data for the fired heater indicating as follows | 4.5 |
|--|-----|

- No. required
- Type
- Total duty per heater
- Process design condition
- Combustion design condition
- Fuel characteristics
- Plot plan limitation



4 - 3

- Mechanical design condition
- Coil design condition
- Tube design condition
- Other pertinent conditions
- Heater rating results
- Preliminary B/M of imported equipment

ii) Basic data for the air separation and N<sub>2</sub> washing apparatus indicating as follows:

0.8

- specification of Feed gas for N<sub>2</sub> washing apparatus
- Specification of product gas for the N<sub>2</sub> washing apparatus
- Specification of product gas for the Air Separation apparatus such as Oxygen and Nitrogen
- Design condition such as climatic condition and utility condition
- Other pertinent conditions

iii) Basic data for the Auxiliary Boiler indicating as follows:

0.8

- Operating conditions
- Design condition
- Other performance requirements
- Material of construction
- Other pertinent conditions





- iv) **Basic data for the Refrigeration Unit for the Rectisol Process indicating as follows:** 4.0
  - Operating condition
  - Design condition
  - Other pertinent conditions
  
- 3) **Flare Stack**
  - i) **Basic data for the Flare Stack indicating as follows:** 5.5
    - Process design condition
    - Mechanical design condition
    - Preliminary B/M for imported parts
    - Mechanical design condition
    - Other pertinent conditions
  
  - 4) **Tower and Reactor except the Proprietary Equipment**
    - i) **Process sketch drawing indicating as follows:** 2.5, 4.0
      - Operating condition
      - Design condition
      - Major dimensions
      - Internal information for the tray and packing
      - Material specification of the major part
      - Corrosion allowance
      - Nozzle size rating



4 - 5

**5) Heat Exchanger except the Proprietary Equipment**

3.0 - 4.0

i) Data sheet and/or process sketch drawing for the Shell and Tube type Heat Exchanger including the ratings based on TEMA indicating as follows:

- Operating condition
- Design condition
- Heat duty
- Fouling factor
- Tube length
- Number of tubes
- Complete thermal design
- Allowable pressure drop
- Material specification of the major part
- Corrosion allowance
- Preliminary B/IV of imported parts

ii) Data sheet for the special type Heat Exchanger indicating as follows:

3.0 - 5.0

- Process data
- Heat Duty
- Operating condition
- Design condition
- Allowable pressure drop
- Other pertinent conditions

**6) Tank, Separator and Filter**

i) Data sheet and/or process sketch



4 - 6

**drawing except the Vendor's type equipment indicating as follows:**

**3.0 - 5.0**

- Design condition
- Operating condition
- Material specification of the main part
- Major dimensions
- Corrosion allowance

**ii) Data sheet for the Vendor's type equipment indicating as follows:**

**3.0 5.0**

- Process data
- Capacity
- Other pertinent conditions

**7) Rotating machine**

**i) Data sheet for each pump and Blower indicating as follows:**

**3.0 - 4.5**

- Operating condition
- Design condition
- Coupling type
- Type of seal
- Type of power transmission
- Other pertinent conditions

**ii) Data sheet for the compressor and its driver, indicating as follows:**

**1.5 - 4.0**

- Operating condition
- Design condition
- Type of driver
- Other pertinent conditions



4 - 7

iii) Data sheet for the Pelletiser, the mixing through and the homogeniser indicating as follows:

5.0

- Design condition
- Operating condition
- Material of construction
- Other pertinent conditions
- Process sketch drawing, if necessary

8) Piping

4.0 - 6.0

i) Preliminary process piping and Instrument Diagrams for the process systems except the indication decided by the Vendor's design indicating as follows:

- All process equipment
- Control loops for the instrumentation with tag number
- Line size and line number
- Line schedule
- Material specification of the main line
- Utility connection
- Valve including the safety valve and the control valve except the drain valve for the pump and the compressor
- Vent and drain
- Sample point

ii) Preliminary piping material classification based on the preliminary process piping and Instrument diagram

3.0 - 5.0

iii) Preliminary B.M.

0 - 7.0



4 - 8

**9) Transportation equipment**

**i) Data sheet for the Crane and the Carbon Pellet Conveyor indicating as follows:**

**6.0**

- Operating condition
- Design condition
- Other pertinent conditions
- Material of construction

**10) Instrumentation**

**i) Instrument process data except the indication decided by the Vendor's design indicating as follows:**

**6.0 - 8.0**

- Process data necessary for the design of the Instrument such as fluid, operating pressure and temperature and flow rate
- Type of Instrument
- Material specification
- Location
- Valve action
- Allowable pressure drop for the control valve
- Set pressure and back pressure for the safety valve

**ii) Basic schematic of the process interlock including the automatic trip and alarm required for the process**

**7.0 - 9.0**

**iii) Indicative Instrument Panel layout**

**7.0 - 9.0**

**ii) Electrical**

**i) Electrical single line diagram except the indication decided by the Vendor's design indicating as follows:**

**5.0 - 7.0**



- **Electrical Network**
  - **Connection to each electrical equipment**
  - **Protection and Metering System**
  - ii) **Basic Schematics of the electrical interlock block diagrams required for the process** 6.0 - 8.0
  - iii) **Area classification** 3.0
- 12. Detail Engineering**
- i) **Plot Plan, showing:** 10.0
    - **Layout of all process equipment including the auxiliary equipment of the compressor and turbines, the air separation and N<sub>2</sub> washing apparatus and the auxiliary boiler**
    - **Location of the pipe rack and the main structure**
    - **Column number of the pipe rack, the structure and the building**
    - **Location of the building**
    - **Centre distance for the equipment**
    - **Floor plan for each elevation for the structure**
    - **Road and pavement**
  - 2) **Fired Heater and other apparatus**
    - i) **Data sheet for the fired heater indicating the technical requirement for bid inquiry and purchasing** 6.0
    - ii) **Data sheet for the Air Separation and N<sub>2</sub> Washing Apparatus indicating the technical requirement for bid inquiry** 0.5
    - iii) **Data sheet for the auxiliary boiler indicating the technical requirement for bid inquiry** 0.5



iv)	The Refrigeration Unit for the Rectisol Process indicating the technical requirement for bid inquiry	5.0	
3)	Flare stack		
i)	Data sheet for the flare stack indicating the technical requirement for bid inquiry	6.5	
4)	Tower and Reactor		
i)	Technical specification of the tower and the reactor including the engineering drawing and the technical requirement for bid inquiry showing:	3.5	6.5
-	Dimensions including inside diameter, height, tray spacing, skirt height etc.		
-	Reference thickness for the equipment except the high pressure vessel of above 200 Kg/Cm <sup>2</sup> g.		
-	Design data including corrosion allowance, insulation thickness, conditions for stress relief and X-ray		
-	Design data for the tray		
-	Material of construction		
ii)	Nozzle orientation and elevation platform clips etc.	8.0	10.0
iii)	Data sheet for the polisher indicating the technical requirement for bid inquiry	2.5	
5)	Heat Exchanger		
i)	Technical specification including the engineering drawing and the technical requirement for the shell and tube type heat exchanger for bid inquiry	4.5	6.5
ii)	Data sheet for the special type Heat Exchanger indicating the technical requirement for bid inquiry	3.5	5.5



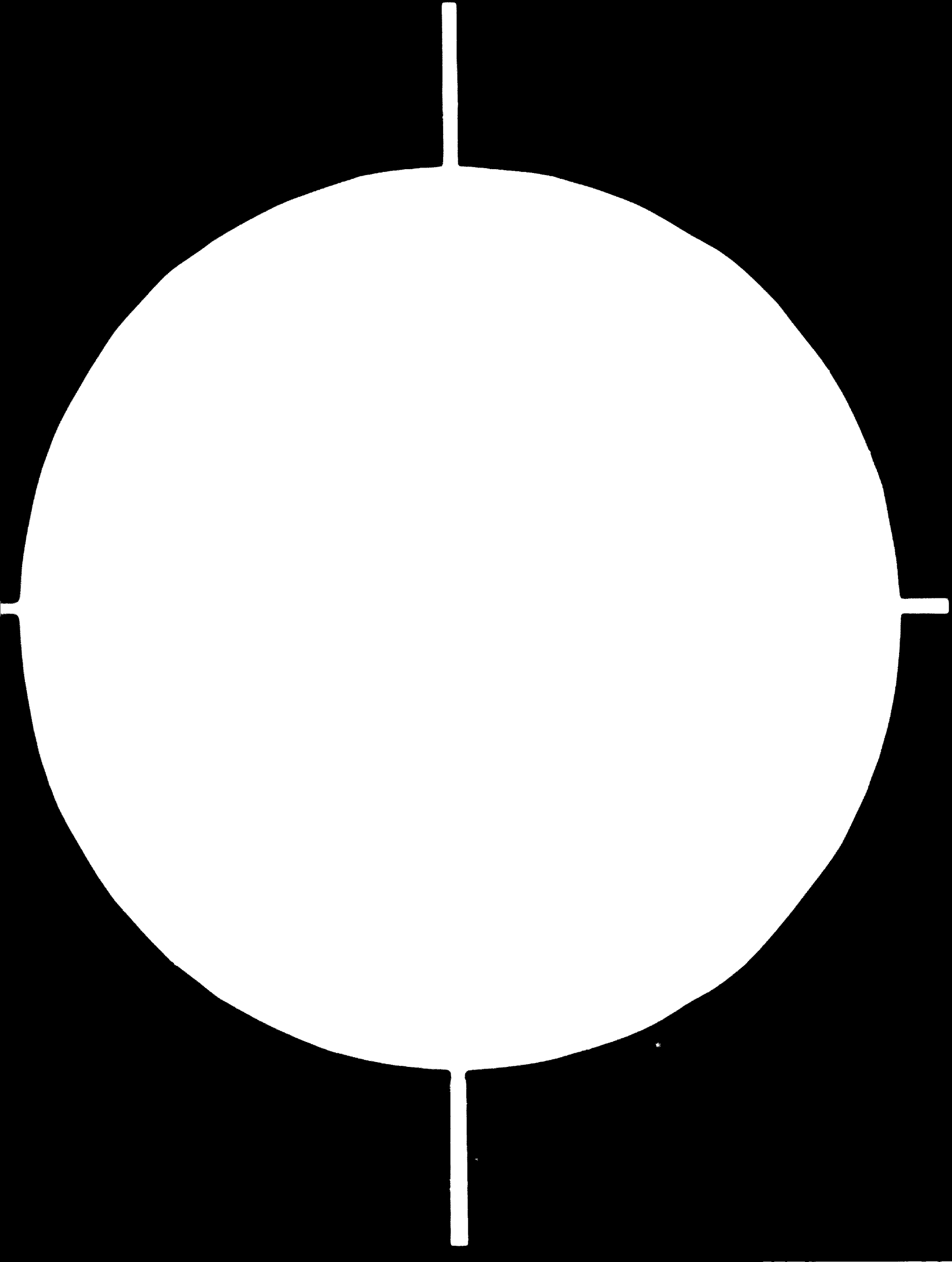
iii)	Engineering drawing for the Shell and Tube type heat exchanger showing:	4.5	6.5
-	Dimensions including inside diameter, tube length, baffle space, tube arrangement etc.		
-	Reference thickness of the shell except the high pressure heat exchanger operated above 200 kg/cm <sup>2</sup> g		
-	Design data including corrosion allowance, insulation thickness, stress relief and X-ray		
-	Nozzle size and rating		
-	Material of construction		
iv)	Nozzle orientation	8.0	10.0
6)	Tank, Separator and Filter		
i)	Technical specification including engineering drawing and technical requirement for the tank, the separator and the filter for bid inquiry showing:	4.0	6.0
-	Dimensions including inside diameter, height etc.		
-	Design data including corrosion allowance, insulation thickness and condition of X-ray		
-	Material of construction		
ia)	Nozzle orientation and elevation	8.0	10.0
ii)	Data sheet for the Vendor's type equipment indicating the technical requirement for bid inquiry	4.0	6.0
7)	Rotating Machine		
i)	Data sheet for the compressor and its driver indicating the technical requirement for bid inquiry	2.0	4.5



**C-662**

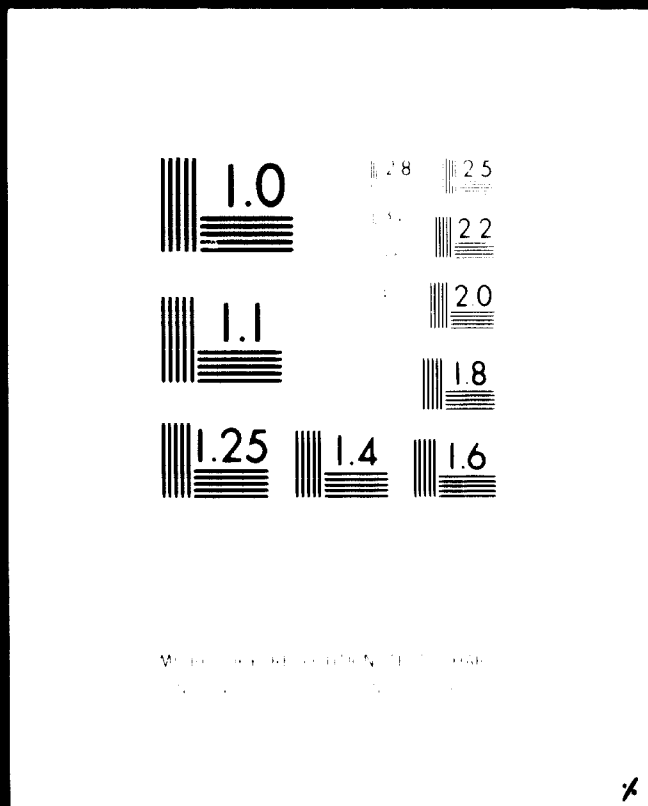


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- ii) Data sheet for the rotating machine except the compressor and its driver indicating the technical requirement for bid inquiry 3.0 - 5.5
- iii) Data sheet for the pelletizer, mixing through and the homogeniser indicating the technical requirement for bid inquiry 6.0
- 8) Piping
  - i) Process piping and instrument diagrams except the indication decided by the Vendor's design showing: 5.0 - 8.0
    - Size and material of pipe and the valve
    - Designation of the piping material classification
    - Line number
    - Control loop for instrumentation except the indication decided by the Vendor's design such as for the air compressor and N<sub>2</sub> washing apparatus and the refrigeration unit for the rectisol process
    - Instrument tag number
    - Vent and drain
    - Utility connection
    - Sample point
  - ii) Utility flow diagrams for the boiler feed water system, the steam and condensate distribution system, the cooling water system, the fuel oil system, the instrument air system and the vent and drain system, except the indication decided by the vendor's design, indicating as follows: 6.0 - 9.0
    - Size and material of the pipe and valve
    - Line number



4 - 13

- Control loop for instrumentation except the indication decided by the Vendor's design
- Instrument tag number
- Vent and drain
- iii) Piping drawing for the process and utility piping except the indication decided by the Vendor's design showing: 11.0 18.0
  - Pipe line with the indication of size, elevation, line number and designation of the piping material classification
  - Valve with the indication of type and direction of handle
  - Flange, fittings and miscellaneous parts such as steam trap, reducer, sample point
  - Instrumentation installed on the pipe line
  - Nozzle elevation and orientation of the equipment and machinery
  - Location of the support
- iv) Underground piping study drawing for the process and utility piping showing: 7.0 10.0
  - Pipe line with the indication of size, elevation, line number and designation of the piping material classification
  - Valve with the indication of type and direction of the handle
  - Flange and fittings
  - Location of the support



- v) **Piping isometric drawing to enable prefabrication of the pipe line from 2-1/2" of nominal size showing:** 11.0 17.0
- Pipe line with the indication of size, line number and designation of the piping material classification
  - Valve, flange, fittings and miscellaneous parts installed on the pipe line
- vi) **Piping support drawings** 13.0 18.0
- vii) **Line schedule showing:** 8.0
- Nominal size and designation of the piping material classification
  - Operating and design pressures
  - Operating and design temperatures
  - Test pressure and test medium
  - Whether insulation is required or not
  - Specific gravity of liquid operation
- viii) **Bill of Material for piping**
- ix) **Requisition for the piping material indicating the technical requirement for bid inquiry (95% of material)** 9.0 15.0
- 9) **Transportation equipment**
- i) **Data sheet for the crane and the conveyor indicating the technical requirement for bid inquiry** 8.0
- 10) **Instrumentation**
- i) **Instrument schedule for the equipment the safety valve and control valve except the indication decided by the vendor's design showing:** 8.0 11.0



- Process data necessary for the design of instrument
  - Type of instrument
  - Size
  - Range
  - Location
  - Material of construction
  - Set pressure (for the safety valve)
  - Discharge area (for the safety valve)
  - Rating
- 
- ii) Requisition for the Instrument equipment including the control valve and the safety valve indicating the technical requirement for bid inquiry 8.0 11.0
  - iii) Instrument interlock sequence diagram showing the emergency tripping system 10.0
  - iv) Requisition for the instrument interlock equipment indicating the technical requirement for bid inquiry 10.5
  - v) Instrument panel layout drawing showing the layout of the instrument on the panel board and the operating desk in the control room 9.0 12.0
  - vi) Requisition for the control panel indicating the technical requirement for bid inquiry 10.0 12.0
  - vii) Instrument process piping hook up drawing except the indication decided by the Vendor's design which is the Schematic drawing of the process piping for the instrument with the material indication and grouped into the same impulse piping pattern of the instrument 12.0 14.0



viii)	Instrument loop hook up drawing except the indication decided by the Vendor's design which is the schematic drawing of the pneumatic and electrical signal or power supply	12.0	14.0
ix)	Instrument wiring layout drawing except the indication decided by the Vendor's design showing the layout of the required local instrument wiring and of the junction box and the route of the wiring for the instrument outside the control room	12.0	18.0
x)	Instrument tubing layout drawing except the indication decided by the Vendor's design showing the layout of the required local instrument tubing and of the junction box and the route of the tubing for the instrument outside the control room	12.0	18.0
xi)	Instrument main cable duct drawing showing the route of cable duct from outside of the control room	11.0	14.0
xii)	Instrument cable schedule except the indication decided by the vendor's design	12.0	18.0
xiii)	Instrument process piping layout drawing except the indication decided by the vendor's design	12.0	18.0
xiv)	Bill of material for the Instrument material such as cable, wire and piping	13.5	17.0
xv)	Requisition for the instrument material indicating the technical requirement for bid inquiry		
1)	Electrical		
1)	Electrical single line diagram showing the composition of electric power, network, connection to each electrical equipment, main rating of the electrical equipment and the protection and the metering system for the Plant	6.5	8.5





ii)	Electrical equipment data sheet indicating the technical requirement for bid inquiry	7.0	12.0
iii)	Power layout drawing showing all power wirings among the electrical equipment installed in the Plant	7.0	20.0
	Installation route of cable indicating installation method, specification and size of cable of protecting conduit tube for cable and capacity of the equipment		
iv)	Motor schedule showing number required, type, output, number of poles, rated voltage, frequency and insulation class for each motor		
v)	Earthing layout drawing showing the route of earthing wires, size of wires and location of earthing electrodes	11.0	20.0
vi)	Lighting layout drawing showing the route of lighting wires, size of wires and location of distribution panels for lighting and lighting fixtures	12.0	20.0
vii)	Electrical interlock diagram showing the interlock system among the electrical equipment installed in the Plant	7.0	10.0
viii)	Connection diagram showing schematically connections of power circuit and control circuit between electrical equipment	14.0	20.0
ix)	Requisition for the electrical material such as cable, wire and lighting equipment, indicating the technical requirement for bid inquiry	13.0	15.0



x) **Operating and Maintenance Instructions including start-up and shut-down procedures, trouble shooting, safety measures and precautions** 16.0

xi) **Sampling and analytical procedures**

**3. Civil Drawings**

1) **For tower, reactor, vessel, tank, heat exchanger, fired heater and flare stack showing:** 8.0 10.0

- **Plan drawing of foundation indicating the location of the anchor bolt**
- **Elevation of foundation from the ground level**
- **Loading data indicating the equipment dimensions, wind and earthquake load empty weight, operating weight and weight at full of water and thermal load**

2) **For Compressors, showing:** 10.0 12.0

- **Plan drawing of foundation indicating the location of the anchor bolt**
- **Elevation of foundation from the ground level**
- **Loading data indicating the load distribution at dynamic load and static load**

3) **For pumps, showing:** 10.0 12.0

- **Plan drawing of foundation indicating the location of the anchor bolt**
- **Elevation of foundation from the ground level**
- **Loading data at static load**



- 4) For air separation and N<sub>2</sub> washing apparatus showing: 11.0
- Plan drawing of foundation indicating the location of the anchor bolt
  - Elevation of foundation from the ground level
  - Loading data indicating the empty weight, operating weight and weight at a static load
- 5) For auxiliary Boiler showing: 10.0
- Plan drawing of foundation indicating the location of the anchor bolt
  - Elevation of foundation from the ground level
  - Loading data indicating wind and earthquake load, empty weight, operating weight and weight at full of water and thermal load
- 6) For cooling tower and refrigeration apparatus 11.0
- Plan drawing of foundation indicating the location of anchor bolt
  - Elevation of foundation from pond level
  - Loading data indicating the empty weight, operating weight and weight at static load
- 7) For pipe rack showing: 9.0 - 12.0
- Plan drawing of each elevation indicating the location and size of the column and the beam
  - Elevation of the beam



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- Typical sectional plan drawing
- Loading data of piping indicating operating weight, wind and earthquake load, dynamic and thermal load, if necessary
- Location of the anchor bolt
- 8) For structure except the local structure showing: 9.0 12.00
  - Plan drawing of each floor indicating the location of the anchor bolt and the column
  - Elevation of each floor from the ground level
  - Typical side view drawing
  - Loading data of each equipment indicating wind and earthquake load, empty weight, operating weight and weight at full of water
  - Loading on each floor for maintenance, if necessary
- 9) For building showing:
  - Plan drawing of each floor indicating the location of the anchor bolt and the column
  - Typical side view drawing
  - Elevation of each floor from the ground level
  - Typical sectional drawing
  - Loading data of each equipment indicating wind and earthquake load and load distribution at dynamic and static load
  - Loading on each floor for maintenance, if necessary



4 - 21

<b>1) Compressor house</b>	
<b>Sketch</b>	<b>6.5 - 8.5</b>
<b>Details</b>	<b>10 - 12</b>
<b>11) Switch and control room</b>	
<b>Sketch</b>	<b>8 - 10</b>
<b>Details</b>	<b>12 - 14</b>
<b>10) For sewerage and pit:</b>	<b>9 - 11.0</b>
<b>The route of the sewerage and the     pit shall be shown on the plot land</b>	
<b>11) For road and pavement</b>	<b>9.0 - 11.0</b>
<b>- Planning drawing of the road and     the pavement</b>	



EXHIBIT - 5

FACILITIES GIVEN TO CONTRACTOR'S PERSONNEL  
DEPUTED TO (26)

1. **PURCHASER shall provide the following facilities to CONTRACTOR's personnel deputed to ... (26)...**
2. **Return air ticket, Economy Class from an International Airport in Bidder's country to an airport in ... (26) ... For family wife, and not more than 3 children of each of the personnel whose stay in ... (26) ... is for 12 months or over, PURCHASER shall pay for return air tickets.**
3. **30 Kgs. Extra Air Luggage Allowance for the first entry and final departure.**
4. **Transport in ... (26) ... by plane or first class air conditioned coach (A.C.C.) or taxi for personnel and their families from the place of landing in ... (26) ... to the place of work.**
5. **Transport in ... (26) ... by first class A.C.C. or taxi, for the personnel travelling on PURCHASER's official work.**
6. **Expenses at actuals for the above journeys for embarkation tax, portorage, meals and hotel accommodation.**
7. **To and fro transport between residential accommodation and place of work at PLANT site or place of work in ... (26) ...**
8. **PURCHASER shall provide free residential accommodation (including water and electricity) to the extent available. Furniture, furnishing, crockery, air conditioner and refrigerator will be to the account of the CONTRACTOR.**



9. **PURCHASER shall pay for suitable accommodation in 4-star hotel for personnel travelling on official work in ... (26)...**
10. **Suitable furnished office accommodation with air conditioner. The personnel may avail free of charge PURCHASER's secretarial and communication facilities (telex/telephone).**
11. **Transportation by air of any document(s) needed by the personnel to perform the work in ... (26) ... will be to the account of the CONTRACTOR.**
12. **PURCHASER shall provide medical aid free to personnel to the extent available in PURCHASER's medical centres and/or their nominated medical centres in ... (26)...**
13. **Holidays, Vacation leave**
  - 13.1 **The CONTRACTOR's personnel shall be entitled to a paid vacation of 1 (one) month for each year of presence in ... (26) ... For periods of stay less than one year, a pro-rata vacation period shall be computed.**
  - 13.2 **In the case of those personnel, whose period of stay in ... (26) ... is likely to exceed 12 months, being required to proceed on vacation due to compelling reasons of their own or due to requirement of work, they can do so after obtaining PURCHASER's approval in each case. In such cases, the payment of the daily rate in foreign currency for the vacation leave will be made only after the concerned personnel complete a total of 12 (twelve) months stay in ... (26) ...**



- 13.3 In case where the personnel are required to stay in ... (26) ... for more than 12 (twelve) months at a stretch due to exigency of work, the personnel shall avail of their vacation leave only at the end of the period, when they can be conveniently spared. This is, however, subject to their not being required to stay beyond 14 (fourteen) months.
- 13.4 If the personnel who have brought their families to ... (26) ... wish to take them abroad during vacation leave, they may do so but the round trip air fare for the return of their families for a second time to ... (26) ... shall be paid by the PURCHASER only if the duration of stay in ... (26) ... of the personnel after the vacation leave is more than six months.





EXHIBIT - 6

PROFORMA FOR PERFORMANCE  
BOND

This Bond No. .... made this day of ..... between .....  
Bank, a Company incorporated and having its registered office  
at.....(hereinafter called BANK, which expression shall, unless  
repugnant to the context or contrary to the meaning thereof, include  
its successors and assigns) of the one part, and the (Owner Company  
.....), a Company incorporated under Companies Act and  
having its registered office (at.....) (hereinafter called  
PURCHASER which expression shall unless repugnant to the context  
or contrary to the meaning thereof include its successors and assigns)  
of the other part, whereas in pursuance of the Contract dated.....  
(hereinafter called CONTRACT) entered into between PURCHASER and  
....., a company incorporated in ..... (hereinafter called  
CONTRACTOR) for BASIC DESIGN, supervision of DETAILED ENGINEERING,  
supply of PROPRIETARY SUPPLIES, other procurement assistance, super-  
vision of erection, start-up and commissioning of Ammonia Plant as  
envisaged in the CONTRACT for\*.....only. CONTRACTOR  
agrees to furnish the Performance Bond as hereinafter contained towards  
fulfilment of all his obligations under the CONTRACT.

NOW THIS DEED WITNESSETH as follows:

1. In pursuance of the CONTRACT, the BANK hereby guarantee, as  
a direct responsibility to PURCHASER payment of the amount mentioned  
in Para-2 hereunder in accordance with Para-2 hereunder:

-----  
\*Currency and amount to be specified



2. The BANK further declares that the BANK is holding the amount of(.....only) at PURCHASER's disposal and hereby promises and shall be bound to PURCHASER, forthwith at PURCHASER's mere notice, stating that the CONTRACTOR has failed to fulfil his obligations under the CONTRACT for reasons for which CONTRACTOR is liable and without any objections and enquiry whatsoever regarding the grounds for non-fulfilment of obligations and without asking for any reasons as to whether the amount is lawfully asked for by PURCHASER or not, the entire amount or the portion thereof, as mentioned by PURCHASER in the notice. In any case, however, the BANK's responsibility under this Performance Deed is limited to(.....).

3. This Performance Bond comes into force from the Effective Date of the CONTRACT and shall be valid initially for a period of.....months from the Effective Date of the CONTRACT to be extended in case CONTRACTOR fails to fulfil his obligations under the CONTRACT for such periods as may be mutually agreed upon but not more than 6 (six) months at a time. The guarantee shall expire after fulfilment of the Performance, Guarantees in terms of the CONTRACT, as would be jointly certified by the PURCHASER and the CONTRACTOR.

4. In the event of force-majeure, or in the event of recourse to arbitration according to the CONTRACT, the validity of this



6 - 3

Performance Bond shall be extended, for a period to be mutually agreed upon, till the cause of force-majeure is over or settlement has been made through arbitration, but not more than 6 (six) months at a time.

5. This Performance Bond shall be in addition to and shall not affect or be affected by any other security now or hereafter held by PURCHASER on account of money hereby intended to secure and PURCHASER would, at its discretion, and without any further consent from the BANK and its rights against the BANK, may compound with, give time or other indulgence to, or make any other arrangement with the CONTRACTOR and nothing done or omitted to be done by PURCHASER in pursuance of any authority or permission contained in this guarantee shall affect or discharge the liability of the BANK.

6. This Performance Bond is to be returned to the BANK after its expiry unless extended beyond the period stipulated in the Performance Bond for reasons covered in paragraphs-3 and/or 4 hereinabove.



**EXHIBIT-7**

**FORM OF BANK GUARANTEE FOR ADVANCE  
PAYMENT**

This Guarantee No. .... made this day..... between  
( ) a Company incorporated and having its Registered Office  
at.....(hereinafter called 'BANK' which expression shall  
unless repugnant to the context or contrary to the meaning thereof  
include its successors and assigns) of the one part, and.....  
.....(hereinafter called PURCHASER which expression  
shall unless repugnant to the context or contrary to the meaning thereof,  
include its successors and assigns) of the other part.

1. WHEREAS in Article ..... of the Contract dated..... (herein-  
after called CONTRACT, between PURCHASER and.....a Company  
incorporated in.....(hereinafter called CONTRACTOR which expres-  
sion shall unless repugnant to the context or contrary to the meaning  
thereof include its successors and assigns) for supply of.....for  
the PLANT, as envisaged in the CONTRACT it is stipulated that the  
sum of ..... will be paid by..... as advance payment within.....  
days from the EFFECTIVE DATE against the Bank Guarantee of equal  
amount to be issued by the BANK.

2. WHEREAS in fulfilment of the said CONTRACT and against the  
receipt of said advance by.....has.....agreed to furnish a  
Bank Guarantee as hereinafter contained.

3. In consideration of the above, the BANK hereby guarantees as a  
direct responsibility, to pay to PURCHASER any amount upto a total  
sum of.....



4. The BANK shall effect payment under this letter of guarantee immediately upon PURCHASER's written request stating that CONTRACTOR did not fulfil his Contractual obligations without being entitled to enquire whether this payment is lawfully asked for or not.

5. In any case, however, the BANK's responsibility under this letter of guarantee is limited to the above mentioned total sum of..... This letter of guarantee comes into force as soon as and as far as the advance payment of.....has been received by the BANK in favour of CONTRACTOR.

6. This letter of guarantee shall be initially valid for a period of.....months from the EFFECTIVE date and shall be extended by suitable periods in case of delay in delivery of documents as per Clause..... This guarantee shall be returned to the BANK after its expiry unless extended beyond this period for any reason whatsoever.

7. In the event of force majeure or in event of recourse to arbitration according to the CONTRACT, the validity of the present guarantee shall be extended for a period to be mutually agreed upon.

8. This guarantee shall be in addition to and shall not affect or be affected by any other security now or hereafter held by PURCHASER, and PURCHASER at his discretion, and without any further consent from the BANK and PURCHASER's right against the BANK may, compound with or give time or other indulgence to or make any other arrangement with CONTRACTOR and nothing done or omitted to be done by PURCHASER in pursuance of any authority contained in this guarantee shall affect or discharge the liability of the BANK.



APPENDIX - I

**GUIDE NOTES FOR THE PREPARATION OF  
THE DIFFERENT CLAUSES AND SPECIAL  
CONDITIONS OF CONTRACT**

...

The Model Contract has been framed for the supply of know-how and engineering services from the Contractor to the Purchaser, so that the Purchaser could get the detailed engineering done by a local engineering firm of Purchaser's choice.

The Model Contract also envisages supply of proprietary equipment. The arrangement provided herein envisages that Contractor would be responsible for the quality and schedule of detailed engineering jobs to be done by the local engineering firm.

The responsibility for erection and civil works is left to Purchaser with assistance to be provided by Contractor's expatriate personnel.

The actual agreement to be entered into between Purchaser and Contractor would depend on the final scope and responsibilities agreed to between the two parties for the specific project in view.

The guide-notes give the different possible alternatives that may be considered to suit the actual conditions.

Guide-notes are referred under corresponding number under the main body of the agreement, under the relevant clauses.



Guide Notes :

1. Date on which contract is signed
2. Name of Purchaser
3. Address of Purchaser
4. Name of Contractor
5. Address of Contractor
6. Factory Site
7. Capacity of Ammonia Plant, in tonnes per day of ammonia
8. All understandings, agreements etc. prior to this

contract should be clearly put down in writing in the main body of contract or in separate enclosures to the contract, to be designated as Exhibits I, II, III etc. It would not be proper to refer to an understanding/agreement prior to this contract unless the same is incorporated into this contract as a separate exhibit or annexure.

9. The battery limits may be defined on the basis of the process chosen for ammonia production from fuel oil. The two popular partial oxidation processes are Shell and Texaco.

10. Refrigeration Units may be provided as mechanical refrigeration units or absorption refrigeration units. The economical selection of the type of refrigeration unit would depend on cooling water temperature and availability and the amount and level of waste heat available from the process.

It would be worthwhile to carry out a preliminary exercise on the basis of available data and select the type of refrigeration unit before finalisation of contract.



11. PLANT in this case has included all the off-sites like water treatment facilities, cooling towers, utilities, effluent treatment etc. In case the design of utilities and off-sites is excluded from the ammonia engineering contractor and included under scope of urea engineering contractor or a separate contractor, these may be excluded from ammonia contract.

12. The battery limits would be marked preferably in a plot plan so as to include all the sections covered under contractor's scope for design. For the overall plant, the battery limits would include all fluid lines terminating at 1 metre beyond the rectangle area for the PLANT. In specific cases, some pipe lines interconnecting two plants or sections may come under contractor's scope. In such cases, the whole line may be included under the scope of contractor. The boundary for Battery Limit would then cover this line also, by extension of the rectangle suitably.

13. PROPRIETARY EQUIPMENT :

13.1 Some agreements may provide for supply of equipment in addition to supply of engineering and services. These equipment may be of a proprietary nature, in which event, they have to be procured only from a specified source and that too by the contractor and the contractor would be entitled to a fixed price to be finalised before this contract.

In the case of equipment other than of proprietary nature, it is possible to include these on a fixed price basis, or on a reimbursable basis.





13.2 The different clauses relating to Proprietary Equipment would be relevant only when the contractor has indicated in his proposal and it has been subsequently agreed to by purchaser, that a few items of equipment/machinery are considered proprietary on the condition that the process guarantees are enabled only with the use of such equipment and supply of such equipment directly by contractor are insisted upon.

In some cases, contractor may like that some items of equipment may be procured only from those vendors who are approved by contractor. The list of approved vendors should contain at least two vendors. Procurement from such approved vendors, not less than 2 (two) in number does not get classified as Proprietary equipment.

13.3 The list of items to be included under Proprietary equipment should be furnished by the contractor.

13.4 The spares would be required mainly for rotating equipment. In the case of static equipment, spare bolts, gaskets etc. would alone be required. If catalyst is to be included under Proprietary Equipment initial supply would contain an extra quantity to make up losses during transport and to provide for sieving and rejecting undersize at the time of loading. This quantity does not exceed 20% normally. For the replacement of catalyst before the expiry of normal operating life due to poor performance of catalyst, or mal operation of purchaser, the purchaser should keep an extra charge of catalyst of the same specification as the original supply and procure from the same sub-supplier of contractor independently.



13.5 This contract assumes that supply of proprietary equipment involves marine transit and tropical conditions during despatch and transport, and multiple handlings at the port of despatch and disembarkation, in addition to surface transport in the country of origin and in the country of purchaser.

In case purchaser or his engineer has made available a ready set of standards for "packing of equipment during transport and storage" such set of standards may be sent to contractor. Alternatively, the standards of contractor, if available, may be discussed and agreed to with necessary revisions to suit purchaser's requirements.

13.6 Any specific instructions to be followed by the purchaser in accordance with the regulations of the Government of the country of purchaser may be indicated, along with regular shipping instructions, giving in detail the number of copies to be sent, addresses to which documents are to be despatched, etc.

13.7 In some countries, the clearance of Over Dimensioned Consignments (ODCs) over the local railways involves a lot of procedures to be complied with and the actual dimension of equipment as loaded on to the rail wagons should not vary from the indicated figures even by a few centimeters. In case of any deviations, the entire procedure has to be repeated right from the beginning. It has to be impressed upon the contractor that the indicated dimensions prior to despatch do not differ from the actuals at the time of despatch.



13.8 In some countries, there may be a paucity of special rail wagons and such wagons cannot be arranged at short notice. It would be necessary to arrange for these wagons much in advance so that the few available wagons could be effectively utilised and are made available in time when needed.

13.9 The contract has considered under contractor's obligations, the responsibility for supply of proprietary equipment at F.O.B. point. In case the contract provides for supplies on C&F/ CIF basis, the contractor shall have to bear the freight charges, which would be included in his contract price.

#### 14. GRANT OF LICENCE :

In some cases, the purchaser has licensing arrangements with the principal licensors directly, and the responsibility for obtaining process data and know-how then rests with the purchaser. The plant consists of many sections, and it is likely that the contractor is not responsible for the process data and know-how for all the sections, in which event contractor would be excluded from grant of licence for such of those process(es) where relevant licensing arrangements are included under obligations of purchaser.

#### 15. SUPPLY OF PROCESS DESIGN :

##### 15.1 On-stream efficiency

The on-stream efficiency as required by the purchaser may be indicated at the bid stage. Countries which depend on foreign manufactures for supply of machinery and spares would lose more time



for replacements than those with facilities for local manufacture of these machinery. Countries in their initial stage of development may aim at a lower on-stream efficiency while more developed countries could stipulate and achieve 330 days. Countries which have developed manufacturing facilities and expertise in operation and maintenance could aim and achieve 345 days.

### 15.2 Quality of feedstock

Countries may be required to import feedstocks, if the countries do not have facilities within the country for processing of crude. In those cases, it may not be possible to stick to one source of import throughout the entire operating life of the project. Change in source of crude would lead to change in composition of refinery products like fuel oil. Among the various constituents, the sulphur content and the ash content (vanadium and sodium salts) have to be taken care of at the design stage itself. A higher sulphur content than that considered for design will lead to inadequate provision in the sulphur removal section. A higher sulphur content leads also to higher oxygen consumption. A too low sulphur content in comparison to design composition will lead to under utilization of sulphur recovery section with the ultimate possibility of rendering the sulphur recovery section infructuous, in addition to the problem of disposal of sulphur bearing off gases from sulphur removal section. A higher ash content, especially vanadium, would lead to erosion of gasifier refractory. The quality of ash is also important in addition to quantity.



**15.3 Provision for expansion and additional facilities**

In case the purchaser desires to have provisions for expansion, or any additional facilities for argon production, for bottling of industrial gases like oxygen, nitrogen, argon etc., or for sale of ammonia in cylinders, contractor should be asked to consider these factors at the design stage itself with respect to layout, inter-connections, equipment capacity, utilities provisions etc., so that the downtime required to implement these schemes at the time of necessity is minimum, and no extensive modifications/constructions are required in the original set of plants later.

**15.4 Participation in process design**

Where the purchaser or the local Government is desirous of developing the process know-how locally, it would be desirable to associate a few of his engineers or those of the engineering firm (Engineer) with the contractor's engineers. Prior agreement with the contractor must be had to enable such participation. It is desirable to mention this provision in the bid documents for selection of contractor so that the fees quoted by contractor takes into account this factor.

**16.0 DETAILED ENGINEERING**

**16.1 Extent of local engineering**

The capability of the local engineering contractor must be considered thoroughly before attempting detailed engineering completely by the local engineering contractor. It would be advisable



to be cautious in the indigenisation of this attempt. The detailed engineering for some of the critical equipment may be left to contractor in the initial stages. The local engineering firm could cover these items for later projects after gaining experience.

#### 16.2 Extent of detailing

It would also be advisable to have an agreement between contractor and the local engineering contractor to decide on the extent to which detailing of the engineering is to be carried out in purchaser's country, even for items for which detailed engineering has been agreed to be carried out by the local engineering contractor. For instance, in the case of major compressors, some firms are willing to procure the entire system of compressor, turbine, condenser, oil lubrication system, inter-coolers etc. as a comprehensive package unit, while some others prefer to procure compressors and turbines only from machine vendors and the intercoolers and separators from fabricated equipment vendors after detailed engineering in contractor's offices.

Further, in case procurement is restricted within purchaser's country due to Government regulations, and the technological/industrial capability of purchaser's country is in the initial stages, the purchaser/engineer might be required to supply more detailed drawings for fabricated equipment. In the case of international shopping, such detailed drawings are not required.



### 16.3 Division of work for detailed engineering

If the Government of the purchaser or purchaser insists on carrying out certain activities locally, contractor and purchaser shall agree to such division of work and purchaser shall be required to assume responsibility of the work carried out by the local engineering firm. Alternatively, the contractor may be required to choose the local engineering contractor as a sub-contractor, in which event purchaser may require contractor to assume direct responsibility for the entire job, regardless of the fact whether it is carried out by contractor or local engineering contractor. In that event contractor and local engineering contractor should enter into an agreement delineating mutual responsibilities and liabilities.

### 16.4 Plant model

If necessary, contractor may be required to prepare the model on behalf of purchaser. If purchaser is not experienced in preparing models, this may be made clear in the beginning itself so that contractor can provide for sufficient remuneration in his price.

## 17.0 PROCUREMENT

### 17.1 Procurement procedures

In some cases, purchaser is required to adhere to procurement guidelines of agencies who have granted credit for the setting up of the project. In other cases also, especially for projects in public sector, the country of the purchaser may have their own procurement procedures, which have to be complied with by contractor. Strict



Import regulations are also prevalent in many countries and imports may not be allowed for items indigenously available even though they cannot match imported goods in terms of cost and delivery. Contractor should be made familiar with all the procedures relevant to the project. Purchaser should furnish contractor with all the relevant particulars.

#### 17.2 Extent of procurement assistance

The extent to which services of the contractor are to be utilized in this regard would depend on the technical competence and the experience of the purchaser and his local engineering contractor (Engineer) in such procurement. For countries venturing on their maiden projects, this assistance from contractor would be tantamount to carrying out the entire job of procurement by contractor leaving the formality of the signature alone to the purchaser. For countries with a greater experience, this assistance may not be required to that extent and also not for the entire range of equipment. The assistance may be confined to those items which are long delivery items and critical from the process point of view, and the list for which can be finalized initially with the contractor. For countries with well established facilities for procurement, inspection and expediting in their own country, this assistance may be limited to only for procurement of imported items from abroad. The contractor may not be required to extend any facilities other than office facilities like Telex, Telephones, furniture and secretarial assistance.





Where purchaser has a limited experience, and the procurement assistance is likely to be of a large magnitude, it would be desirable to agree for a lumpsum to cover all services under this head. Where contractor is required to provide technical assistance for a limited number of items and where purchaser's participation and contribution is going to be substantial, it would be better to have these services availed from the contractor on man-hour basis at agreed man-hour rates. Contractor shall also advise purchaser, in case purchaser's experience is limited, with respect to the furnishing of services of vendor's specialists for the installation and commissioning of machinery.

### 17.3 Manpower requirement

The number of engineers to be deputed to contractor's offices by the purchaser at the procurement stage would be mutually agreed to between contractor and purchaser. At the procurement stage, a team of 6 to 8 people, consisting of representatives of purchaser/engineer to represent the disciplines of Project Management, procurement, finance and the relevant technical disciplines may be considered. In case, procurement of mechanical electrical and instrument items overlaps, the team strength may be suitably amplified.

## 18.0 INSPECTION AND EXPEDITING

### 18.1 Extent of assistance

As in the case of procurement, the extent of assistance contractor would be required to offer would again depend on the competence and the organizational setup of purchaser and the engineer.



Even in cases where the local engineering contractor would probably be able to carry out expediting, inspection and testing of local items manufactured in purchaser's country, use of contractor for expediting, inspection and testing for imported items may be necessary if insisted upon by contractor. For some of the fabricated items, the inspection and testing may be entrusted to agencies like Lloyds, TUV etc., in which event contractor's role would be confined to mainly rotating equipment for inspection and testing and expediting for all items of import. The contractor may like to associate himself with critical items manufactured in the purchaser's country for inspection and testing especially when he has to be responsible for satisfactory performance of the plant. In cases where contractor would be required to perform these functions for all imported and indigenous equipment, or for all imported equipment, the responsibility may be entrusted to contractor for a fixed lumpsum fee. When the contractor's services are solicited for a shorter list of mutually agreed items, imported or local, the services may be covered on a reimbursable basis at agreed man-hour/man-day rates and other terms and conditions to cover travel board and lodging expenses.

#### 18.2 Correspondence with supplier

Purchaser should communicate only with contractor on any questions in respect of such inspection. All test reports, results of radiography or core sample tests conducted by contractor or vendors shall be made available to purchaser.



**19.0 CONSTRUCTION**

**19.1 Construction supervision**

The present model form of contract has considered that purchaser would only avail of assistance from the contractor in supervision of civil works and erection, on the basis that civil works and erection are to be carried out by the purchaser with the help of the Engineer who would supervise construction by reputed construction contractors selected as per approved guidelines.

For plant owners with limited experience in the construction of plants, it would be worthwhile to entrust the entire responsibility of construction management to the contractor. In the event contractor is to be held responsible for quality of construction jobs and time schedule, contractor would expect the right to choose sub-contractors for execution of civil works and erection, without leaving it to be decided exclusively by purchaser.

**19.2 Remuneration for supervisory services**

Even where only assistance is sought, it is better to provide a fixed sum to cover a mutually agreed number of personnel for the anticipated duration of stay in the country of purchaser, based on the computed time schedule of the project.

In case there is delay in implementation, or when additional personnel of contractor are required to provide assistance, the contract may provide for suitable adjustments upwards based on already agreed per diem rates.



## 20.0 SPARES

It is advisable to finalise the entire spares requirement for all running machinery along with the original purchase orders. It is quite often seen that some suppliers take advantage of late ordering of spares, by quoting a low price for the item as such in the first phase and exorbitant prices for the spares to be ordered later. An attempt should, therefore, be made to standardise the spares for different types of machinery, so that at least bulk of these spares requirements are met. It would also be necessary to include insurance spares (as spare rotors for centrifugal compressors and turbines, spare coils for waste Heat Boilers etc.) at the bid stage itself, so that the bids are evaluated on the total cost including spares, provided on a common basis.

## 21.0 RIGHT FOR REPETITIVE USE

Where purchaser is desirous of setting up more plants of same capacity and same feedstocks, the rights to repetitive use of documentation may be suitably incorporated in the contract as follows:

"On payment of the price indicated in 5.1, Purchaser shall have the perpetual right to use, in the subsequent plants either of the same or different capacities at a fee to be mutually agreed to, at the time of this contract, depending on the capacity of the plant and on a sliding scale basis, purchaser shall have the option to approach the contractor for such assistance that may be required in the setting up of the future plants on the basis of reimbursable cost to be agreed upon."



## **22.0 FEE FOR PROCUREMENT ASSISTANCE**

The contract assumes a fixed fee for procurement assistance. In case the list for which contractor's assistance is sought is small, and it also becomes difficult to estimate the number of items to be procured with assistance from contractor, it would be logical to avail of procurement assistance on a reimbursable basis based on per diem rates and the number of personnel utilised.

## **23.0 FEE FOR SUPERVISION OF DETAILED ENGINEERING**

In case the detailed engineering work has to be carried out by local engineering contractor as per conditions of the contract, the fee for supervision of detailed engineering in the offices of local engineering contractor, may also be provided as a lumpsum for an estimated period of.....man-months with necessary provision for adjustment upwards and downwards based on actual utilisation.

## **24.0 PER DIEM RATES**

The expatriate personnel to be deputed to contractor's country may be divided into broad categories for purposes of remuneration based on man-months utilized. It is better to confine to fewer categories to avoid unnecessary and cumbersome calculations, if such services are utilised.

25.0 The basic rates to be included in the contract are based on wage tariff for the particular category as on a date, to be mutually agreed to between contractor and purchaser. When the services are



utilised at a date beyond this base date, the daily rates are calculated on the basis of wage tariff prevailing in the country of personnel at the time of his deputation to purchaser's country.

26.0 Name of purchaser's country.

27.0 Tax liability of expatriate personnel

In some countries, the reimbursement of tax liability to contractor's personnel by purchaser is construed as additional income for the contractor's personnel, to the effect that an additional tax liability arises. From the above consideration, it would be preferable, if the income tax liability of personnel deputed is taken over by the contractor subject, however, to the condition that the prices quoted by contractor, based on Income Tax laws applicable on the date of contract are allowed to be revised in the event of changes in taxation structure.

If contractor does not agree to tax liability under his scope, purchaser is bound to take over the liability. It would then be desirable to get a split-up of the per-diem charges payable to contractor's personnel, to indicate

- (a) basic rates,
- (b) overheads,
- (c) profits, and
- (d) escalation provision, if any

since taxes are to be borne only on profits.

28.0 Name of bank to be specified by contractor.



**29.0 Amount equivalent to down payment towards Proprietary Equipment.**

**30.0 The amount to be covered by Performance Bond may be provided at 15% of the value of payments towards 11.1(c) through (e). Of this, 5% of the total estimated value of 11.1(c) through (e) would be released on completion of Proprietary equipment, 5% on completion of Performance Test and the balance 5% on completion of Workmanship Guarantee for Proprietary Equipment as per Clause 21.1.**

**31.0 The venue of Arbitration can be fixed as a city convenient to the Purchaser in the Purchaser's country or a suitable city in a neutral country, if the contractor does not agree to Purchaser's country as the venue.**

**32.0 The effective date of contract would have to be defined taking into specific requirements of Purchaser and contractor and other agencies as the Governments of the respective countries, financial institutions, as may be required. The clause then may be suitably modified to take care of specific requirements.**

**33.0 The contract shall be covered by the laws of purchaser's country.**

**34.0 Facilities for contractor's personnel at plant site are considered as part of contractor's liability in this contract. These shall be imported into purchaser's country contractor subject to rules and regulations of import of these items in purchaser's country. Alternatively, purchaser can cover all these facilities at his expense,**



in which event subsistence allowance at plants site shall be suitably reduced.

35. The terms liquidated damages and penalties are used in different contexts and have different implication as per laws of certain countries whereas they are used as synonymous words as per laws applicable in other countries. For example as per English law, penalty can be imposed without any relevance to the actual damage that is likely to be suffered by the purchaser and the sum of penalty can even exceed the consideration to the party committing breach of contract. On the other hand if an amount is stipulated as liquidated damages, it is necessary to establish that that much of loss is to be incurred by the purchaser. As per Indian laws both terms are same and there is no intention to penalise the contractor. At the most he has to compensate upto the full extent of damage to be suffered by the purchaser.

It is, therefore, imperative to draft the two clauses depending upon the laws governing the contract.

36.0 This is more appropriate for turnkey contract. Contractor's ability for completion guarantee is only in respect of supply of design documentation, proprietary equipment and fulfilling performance guarantees. If the documentation/proprietary equipment is delivered ahead of the schedule, still purchasers may not be benefitted because these are not very significant in guiding the overall project schedule. As regards overall schedule contractor will not have any control.



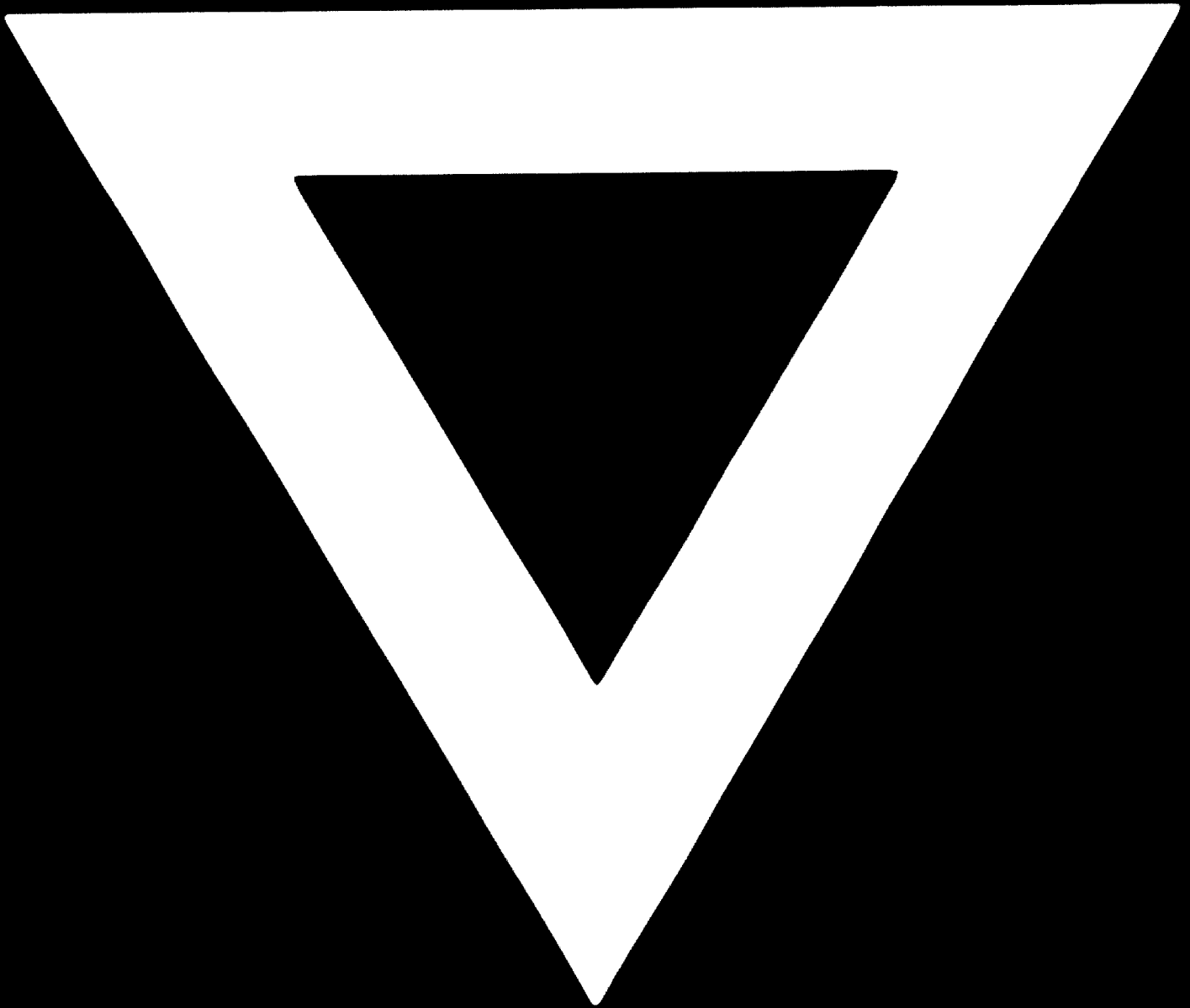


The bonuses/incentives cannot also be stipulated for improvement in the performance of the plant over the guaranteed levels, as there would be a tendency on the part of CONTRACTOR to provide luxurious design and cushion everywhere.



We regret that some of the pages in the microfiche copy of this report may not be up to the proper legibility standards, even though the best possible copy was used for preparing the master fiche

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