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OCCASION

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THIS CONTRACT is made this _____ (day, date and year) _____
_____ and entered into between (Legal Name of the
PURCHASER) _____
having its registered office at _____ (Place) _____
and hereinafter referred to as the 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
(Legal Name of the CONTRACTOR) _____
having its registered office at _____ (Place) _____
and hereinafter referred to as the 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 THE PURCHASER wishes to install at _____ (Plant Site) _____ facilities
for the production of _____ (one thousand) _____ metric tons of ammonia per day,
and _____ (one thousand seven hundred and twenty-five) _____ metric tons/day of
Urea.

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

AND WHEREAS THE CONTRACTOR is willing to undertake such work and services
as hereinafter set out in this Contract

AND WHEREAS THE PURCHASER AND CONTRACTOR have hereby agreed to enter into
this Contract

AND IN CONSIDERATION OF THE PREMISES AND MUTUAL COVENANTS HEREIN CONTAINED,
IT IS AGREED BY THE PARTIES HERETO AS FOLLOWS:

ARTICLE 1

DEFINITIONS

- 1.1 Unless the context otherwise requires the following expressions shall have the meanings assigned to them respectively in this article.
- 1.2 "The Contract" means this Contract entered into between the PURCHASER and the CONTRACTOR for the execution of the works howsoever made together with all of the documents to which reference has been made in the contract documents (including the Annexures and Specifications and the amendments properly made from time to time) by mutual agreement between the parties.
- 1.3 "The PURCHASER" means the party named as such in this Contract or its successors or permitted assigns.
- 1.4 "The CONTRACTOR" means the party named as such in this Contract, or its successors or permitted assigns.
- 1.5 "The Technical Advisor" means, subject to Annexure XXVII (Terms and Conditions of Expert Services), the person(s) or firm(s) appointed from time to time by the PURCHASER as his representative with the specified authority to review all work on the PURCHASER's behalf and give such instructions or grant such approvals as may be necessary for the purposes of this Contract.
- 1.6 "The Contract Price" means the total of the sums payable by the PURCHASER to the CONTRACTOR under Article 11 (Contract Price).
- 1.7 "The Work" or "The Works" means the whole of the works, material, plant, matters and things to be done, furnished, performed and/or used by the CONTRACTOR under this Contract and, but without restricting the generality of the foregoing, includes, according to the context, all or any one or more of the following viz.:

- 1.7.1 the provision and/or use by the CONTRACTOR of plant and/or material;
 - 1.7.2 all or any part or parts of the work required to be done by the CONTRACTOR under this Contract;
 - 1.7.3 every structure, installation and/or alteration to be erected, constructed or made by the CONTRACTOR pursuant to this Contract.
- 1.8 "The Plant" means the plant as defined in this Contract, the Annexures and in the Specifications, to be constructed at the Site, and in respect of which the CONTRACTOR's Services are provided.
- 1.9 "The CONTRACTOR Equipment" means any equipment, sheds, materials, tools, stores or things brought on the Site by or on behalf of the CONTRACTOR for the execution of the Contract, but not for permanent incorporation in the Plant.
- 1.10 "The CONTRACTOR's Services" means the services to be provided and the work to be done by the CONTRACTOR in the execution of the Works, as set out in the Contract.
- 1.11 "The Site" means the land within which the Plant is to be constructed as specified in Annexure I.
- 1.12 "The Specification" means the technical criteria, definitions and parameters governing all of the equipment, works and capacities of the Plant as set out in the contractual documentation (of which the specifications form a part), and as from time to time amended in accordance with the Contract.
- 1.13 "The Materials" means machinery, other items of equipment and other things needed or intended to form part of the Plant.
- 1.14 "Sub-Contractor" means any person to whom the preparation of any design, the supply of any Materials or the execution of any other part of the Works is sub-contracted, by the CONTRACTOR or the PURCHASER as the case may be.

- 1.15 "Holding Company" and "Subsidiary" have the meanings assigned to them by the Companies Act(s) in the applicable jurisdictions under governing laws.
- 1.16 "Act of Bankruptcy" has the meaning assigned to it by the Bankruptcy Act(s) in the applicable jurisdictions under governing laws.
- 1.17 "The Ammonia Process" shall mean the know-how, basic engineering and the Licence provided by (Name of Licensor) for the construction, operation and maintenance of the Ammonia Plant.
- 1.18 "Urea Process" shall mean the know-how, basic engineering and the Licence provided by (Name of Licensor) for the construction, operation and maintenance of the Urea Plant.
- 1.19 "Ammonia Plant" shall mean the ammonia plant as described in Annexure VIII.
- 1.20 "Urea Plant" shall mean the urea plant described in Annexure VIII.
- 1.21 "Utilities" and "Off-Sites" shall mean the facilities more particularly described in Annexure VIII.
- 1.22 "Battery Limits of the Plant" shall be used in reference to the Ammonia and Urea Plant(s) and shall mean all facilities embodied in such Plant(s) between the points at which influent streams to and effluent streams from these Plants as are connected to the Utilities.
- 1.23 "Equipment" shall mean all of the equipment, machinery, materials and first charge of chemicals and catalysts required to be incorporated permanently into the plant (with the exclusion of materials for civil works) in order for the plant to be built in accordance with the Contract.
- 1.24 "Critical Items" shall mean the equipment as listed in Annexure VIII.
- 1.25 "Mechanical Completion" shall mean the time when the physical construction of the Plant(s) has been completed, all mechanical tests as specified under Annexure XX have been satisfactorily completed (in accordance

with the detailed procedures as shall be agreed between the parties), and the Mechanical Completion Certificates of the Plants and all sections of the Off Sites and Utilities have been issued.

- 1.26 "Absolute Guarantees" shall mean the performance guarantees of Ammonia and Urea Plants relating to quantity, quality and capability of the Plant(s) in relation to the Products as set-forth in Article 19, and Annexure XVI.
- 1.27 "Penaltiable Guarantees" shall mean the performance guarantees of the Plants relating to consumption of raw materials and utilities as set forth in Article 19.
- 1.28 "Performance Guarantees" shall mean the Absolute Guarantees and the Penaltiable Guarantees.
- 1.29 "Products" shall mean the ammonia and the carbon dioxide produced in the Ammonia Plant and the urea produced in the Urea Plant, both of such quality as defined in Annexure I.
- 1.30 "Acceptance of the Complex" shall mean the time when the Certificates of Acceptance of both the Ammonia and Urea Plants have been issued by PURCHASER in accordance with Article 18.
- 1.31 "Start-up" shall mean the date by which the operations of commissioning shall have been completed and the Plant(s) start the production of specification grade Product(s).
- 1.32 "Approval" shall mean approval in writing. Decisions requiring approval shall also be deemed to encompass modifications or rejections, all of which shall be in writing.
- 1.33 "Technical Documentation" shall mean any technical documentation forming part of this Contract (including those to be supplied under this Contract) and in particular the technical documents described in Annexure XV.
- 1.34 All "tons" refer to metric tons.

ARTICLE 2

SCOPE OF THE CONTRACT
INCLUDING TIME SCHEDULE

- 2.1 The object of this Contract is to establish an integrated Plant to produce Ammonia and (prilled, uncoated) Urea, together with the utilities and off-sites required for the purpose.
- 2.2 The location of the plant shall be at (Name of Town) in (Country).
- 2.3 The capacity of the plant shall be (1000) tons per day of Ammonia, and (1725) tons per day of Urea, with a minimum stream factor of 330 days per calendar year.
- 2.4 The target date for different elements of the construction and completion of the plant are given in the bar chart attached to Annexure XV. It is, however, agreed that within 2 months after the Effective Date of the Contract (Article 13), the CONTRACTOR shall prepare a Critical Path Network, generally conforming to the Bar Chart attached, which shall be discussed between the PURCHASER and CONTRACTOR and shall be mutually approved, and which shall list all activities connected with the completion of the Project.
- 2.5 The Critical Path Network shall be computerised by the PURCHASER and at the first design meeting contemplated under Article 4, the methodology shall be laid down to obtain the necessary inputs required to maintain and modify the Critical Path Network on a monthly basis. Computerised print-outs indicating all activities and the float on a monthly basis shall be available to PURCHASER and CONTRACTOR.
- 2.6 The general basis of the overall time schedule is as follows:-

- 2.6.1 Complete load drawings of the Complex shall be made available by the (6th) month.
- 2.6.2 Civil Engineering of the Plant Buildings will start in the (10th) month.
- 2.6.3 FOB Delivery of equipment (with the exception of time critical items) shall commence no later than in the (14th) month and shall end (95% by value) no later than in the (24th) month.
- 2.6.4 Delivery FOB of time critical elements shall not exceed (26) months.
- 2.6.5 Erection of the Plant shall start no later than in the 18th month.
- 2.6.6 The plant shall be mechanically complete no later than in the 34th month, with a minimum float of 2 months (i.e. 32 months plus 2 months float).
- 2.6.7 The plant will be in commercial production no later than by the 36th month.

ARTICLE 3

SCOPE OF WORK

- 3.1 In pursuance of the objectives contained in Article 2, the scope of the work required for the establishment of the plant, may be described as follows: -
- 3.1.1 Establishment of the Design basis of the plant.
 - 3.1.2 Supply of know-how and basic engineering, including but not limited to: -
 - Process flow Diagrams.
 - Material and Energy balances.
 - Equipment data and specifications.
 - Piping and Instrument diagrams and specifications.
 - Plant layout.
 - Electric Distribution.
 - Effluent and Emission specifications.
 - Operation manuals.
 - 3.1.3 The detailed engineering for the plant.
 - 3.1.4 Establishment of the list of plant and equipment and identification of time critical and process critical items.
 - 3.1.5 Prequalifying vendors for the supply of plant and equipment.
 - 3.1.6 Procurement of all plant and equipment and materials for the Plant, and procurement of spare parts.
 - 3.1.7 Inspection of Plant and equipment during fabrication, on completion, and after packing, and providing certificates of inspection.
 - 3.1.8 Providing test certificates for plant and equipment wherever laid down under the laws of the country of fabrication and/or the laws of (PURCHASER'S country).

- 3.1.9 Packing of the plant in seaworthy/road-worthy packing, marking of the packages, transportation of the plant from fabricators' works to site, including loading and unloading at harbours, if any.
- 3.1.10 Arranging all necessary insurance coverages.
- 3.1.11 Purchasing and Acquiring the land for the plant.
- 3.1.12 Clearing, levelling and otherwise developing the land.
- 3.1.13 Testing the soil characteristics of the site, and in particular testing the points at which heavy loads are to be expected.
- 3.1.14 Construction of roads within battery limits.
- 3.1.15 (Optional) Construction of railway sidings within the battery limits, and connecting to the national rail network.
- 3.1.16 Arranging for all telephone and other similar facilities for communications from site to other places.
- 3.1.17 Construction of all Civil Engineering works within the plant battery limits including: -
 - (a) Design of the works,
 - (b) Construction of the works.
- 3.1.18 Construction of a housing colony for erection and start-up personnel.
- 3.1.19 Construction of a housing colony for permanent staff and workers for the operation of the plant.
- 3.1.20 Receipt and Inspection of equipment at site and making claims for insurance or for short supply, if required.
- 3.1.21 Storage of equipment at site prior to erection.
- 3.1.22 Providing all erection equipment, tools and tackle, and procuring all erection materials.
- 3.1.23 Erecting all plant and equipment.

- 3.1.24 Providing training for plant Engineers and plant operators.
 - 3.1.25 Testing all erected plant and equipment individually, by sections and as a complete plant, and carrying out all pre-commissioning procedures.
 - 3.1.26 Supplying feedstock, chemicals and all other material inputs, including outside purchased utilities, necessary for the start-up of the plant.
 - 3.1.27 Commissioning and start-up of the plant, until specification grade products are obtained.
 - 3.1.28 Operation of the Plant from start-up until completion of the guarantees for the plant.
 - 3.1.29 Conducting the Guarantee Tests.
 - 3.1.30 (Optional) Management Assistance for operation of the plant for 12 months after completion of guarantees.
- 3.2 The responsibilities (subject to the details given in Articles 4 and 5, and the procedures laid down in Article 6 and elsewhere in the Contract) for each of the functions described in the scope of work above shall be as follows: -
- 3.2.1 The PURCHASER undertakes to supply the design basis (Article 3.1.1) as contained in Appendices II and IV. The CONTRACTOR shall be obliged to review and check the design basis so specified, and shall expeditiously advise the PURCHASER of any discrepancies, errors or omissions that should be corrected, and of any necessary amendments to be made.
 - 3.2.2 Know-how and basic engineering (Article 3.1.2) shall be supplied or procured by the CONTRACTOR from the licensors, as per Article 4.
 - 3.2.3 The detailed engineering of the plant (Article 3.1.3) shall be undertaken by the CONTRACTOR.
 - 3.2.4 The CONTRACTOR and the PURCHASER will jointly pre-qualify vendors (Article 3.1.5) on the basis of conditions satisfactory to the PURCHASER.



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**PRELIMINARY DRAFT OF THE
UNIDO MODEL FORM OF COST REIMBURSABLE CONTRACT
FOR THE CONSTRUCTION OF A FERTILIZER PLANT**

by the UNIDO Secretariat

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- 3.2.5 The CONTRACTOR shall establish a complete list of equipment and materials to be procured under this Contract, and will identify time-critical and process-critical equipment. The special procedure for purchasing critical equipment shall be agreed to by the CONTRACTOR and the PURCHASER as shall be laid down elsewhere in the Contract.
- 3.2.6 The CONTRACTOR shall undertake, in association with PURCHASER all procurement (except where otherwise agreed) of plant and equipment, materials, spare parts etc. (Article 3.1.6) in accordance with the provisions of this Contract.
- 3.2.7 The CONTRACTOR shall inspect all equipment (Article 3.1.7) and arrange for all test certificates (Article 3.1.8) and shall arrange and supervise the carrying out by the Vendors of all packing and transportation F.O.B. to the point of despatch.
- 3.2.8 The PURCHASER shall be responsible for the transportation of equipment from the port of despatch F.O.B. to the receipt C+F entry port in the PURCHASER's country.
- 3.2.9 The limitations as to size and weight of packages are contained in the Annexures to this Agreement, and the CONTRACTOR shall design and procure the plant accordingly. Within the first 4 months of this Agreement, the PURCHASER and the CONTRACTOR shall review all transport of equipment from port of entry to site, in accordance with Article 6.
- 3.2.10 The PURCHASER shall be responsible for arranging insurance during transportation (Article 3.1.10), and the CONTRACTOR shall carry such insurance policies consistent with the CONTRACTOR's activities under the terms of the Contract.
- 3.2.11 The PURCHASER shall be responsible for all matters connected with obtaining and developing the land (Articles 3.1.11 and 3.1.12).

- 3.2.12 The PURCHASER shall be responsible for carrying out soil tests (Article 3.1.13). The CONTRACTOR shall however indicate the points at which heavy loads are to be expected, and shall also review all load tests.
- 3.2.13 The PURCHASER shall be responsible for the design and construction of all road, rail and other communication within the battery limits and offsite. (Articles 3.1.14, 3.1.15, and 3.1.16).
- 3.2.14 The PURCHASER shall be responsible for the design (Article 3.1.17 (a)) of all civil engineering works. The CONTRACTOR shall, however, supply the line drawings, machinery and piping lay-out, load data, and all other information necessary to undertake the design of the Civil Engineering.
- 3.2.15 The PURCHASER shall be responsible for the construction of all Civil Engineering works including the housing colonies (Articles 3.1.17 (b), 3.1.18, 3.1.19).
- 3.2.16 The CONTRACTOR shall depute a representative on site to inspect all equipment on receipt at site and to identify along with the PURCHASER's representatives, any shortages in receipt, and to help the PURCHASER in making claims for Insurance, or against Vendors for damages and/or for shortages. The site representative shall also advise the PURCHASER on storage at site (Articles 3.1.20 and 3.1.21).
- 3.2.17 The CONTRACTOR shall, within 4 months after Effective Date of the Contract provide a list of erection equipment and materials (Article 3.1.22) to the PURCHASER. The CONTRACTOR and the PURCHASER shall thereafter obtain the specified equipment as laid down in Article 6.
- 3.2.18 The Plant shall be erected (Article 3.1.23) by the PURCHASER or by such other party appointed by the PURCHASER, (provided that

such other party is not a competitor of the CONTRACTOR), under the supervision of the CONTRACTOR's personnel.

- 3.2.19 The CONTRACTOR shall provide training to the PURCHASER's personnel as specified in this Contract.
- 3.2.20 The PURCHASER's personnel at site shall carry out all testing (Article 3.1.25) and start-up and operation of the plant (Article 3.1.27 and 3.1.28) until the guarantee tests, under the direct SUPERVISION of the CONTRACTOR's representatives.
- 3.2.21 The PURCHASER shall provide all feedstocks, outside utilities, chemicals and other materials required for the plant (Article 3.1.26). The feedstocks shall be, as far as possible, in accordance with the specifications contained in this Contract or as otherwise agreed. The CONTRACTOR shall advise the PURCHASER of the requirements for the supply of outside utilities (power, water maximum quantity per hour etc.) within 9 months of the Effective Date of the Contract. The requirements for all chemicals, and other material necessities required for the start-up of the plant, and those regularly required thereafter, shall be intimated by the CONTRACTOR to the PURCHASER at least 9 months before Mechanical Completion of the Plant.
- 3.2.22 The CONTRACTOR shall demonstrate to the PURCHASER the carrying out of the performance of the guarantee tests in accordance with the provisions laid down in the Contract. This shall be considered an essential part of the services of the CONTRACTOR.
- 3.2.23 Should the PURCHASER so desire, the CONTRACTOR shall enter into a separate agreement with the PURCHASER to manage the plant, or to assist the PURCHASER to manage the plant, as the PURCHASER may desire, for a period of 12 months after completion of the guarantee tests.

3.3 In the event that any activity or work of the type necessary for the successful implementation of this Contract is not particularly mentioned in the scope of work above or in the specifications, drawings, or any of the Annexures of this Contract, but becomes necessary to ensure the successful operation of the plant according to the specifications laid down in the Contract and the intent thereof, such activity or work shall also become part of this Contract as if the same had been originally included in the Scope of Work. The PURCHASER and the CONTRACTOR shall mutually agree on the quantum of work to be undertaken by each party in such an eventuality.

ARTICLE 4

OBLIGATIONS OF THE CONTRACTOR

- 4.1 The obligations of the CONTRACTOR for specific items in the scope of the work are contained in Article 3 and are described in detail in Annexure VI or elsewhere (as applicable) in the Contract. The CONTRACTOR shall accept total responsibility for all such items of work. The CONTRACTOR shall also be responsible for all work which may reasonably be inferred as essential activities in the context of obligations falling within the scope of his work to be performed.
- 4.2 The CONTRACTOR shall, commencing within 7 days of the Effective Date of the Contract, proceed with utmost diligence and care in carrying out all of the services specified as his obligations in Article 3, and provide such documentation indicated in Annexure XV in order to meet the time schedule laid down in that Annexure and indicated in the bar chart attached to that Annexure. Both parties to the Contract recognise that time is the essence of the Contract.
- 4.3 The CONTRACTOR shall execute the work in accordance with good engineering practice to the reasonable satisfaction of the PURCHASER. Such execution of the work shall be subject to such variations that will be incorporated according to the procedures shown in Article 6 and/or Article 28.
- 4.4 While the basic design parameters laid down in Annexure IV have been approved by the PURCHASER, the CONTRACTOR acknowledges that he has satisfied himself as to the nature, location and propriety of the site for the Factory, the applicable laws, agreements and regulations, the general and local conditions (particularly those bearing upon transportation, disposal, handling and storage of materials, availability of labour, water, electrical power, roads and uncertainties

of weather or similar physical conditions at site) the conformation and conditions of the ground and the subsurface, the character of equipment and facilities needed preliminary to, and during the prosecution of the work, and all other matters which may in any manner affect the work or the cost thereof to the CONTRACTOR under this Contract. The CONTRACTOR acknowledges that he has reviewed all exploratory work done by or for the PURCHASER and information presented by the drawings and technical specifications and other pertinent documentation. Any failure of the CONTRACTOR to acquaint himself with all the available data and information will not relieve him of any responsibility for improper estimation or inaccurate costing in the fulfilment of the work. The PURCHASER assumes no responsibility for information and data furnished by him or for any understanding, opinions, or representations made or expressed by any of its officers or agents during or prior to the execution of this Contract except where:

(a) Such understanding or representation is expressed in this Contract;

and

(b) this Contract provides that the responsibility for a particular activity or activities is assumed by the PURCHASER.

4.5 The CONTRACTOR shall obtain the know-how for various processes from the Process Licensors as follows:-

Ammonia Plant - (name of Licensor(s))

Urea Plant - (name of Licensor(s))

(Specify any others e.g. water treatment).

AND shall design the plant in conformity with the basic engineering and design criteria of the Process Licensors. A copy of all know-how and basic engineering documents obtained from the above supplies shall be provided to the PURCHASER.

- 4.6 The CONTRACTOR shall perform the general basic and detailed engineering of the Plant and the process design, layout, equipment design, piping and instrument design, and all other design work in order that:-
- 4.6.1 The work shall constitute, when assembled, a technological entity, producing the final products of the quality and quantity in accordance with the criteria set out in this Contract, and complying with the economic and technical performance figures contained in this Contract.
- 4.6.2 The design work undertaken shall obligate the CONTRACTOR to place at the disposal of the PURCHASER all data and documentation required by the latter to carry out his obligations in accordance with Article 3, and Article 5, so that the Plant can meet the time schedule laid down in the Contract.
- 4.7 The CONTRACTOR shall carry out the Engineering of the Plant(s) in accordance with the Standards and Codes laid down in Article 43 and Annexure II. Where specialised design criteria are being used, the PURCHASER shall be advised of such specialised design codes. The CONTRACTOR shall also take into account all safety rules normal to the industry practice and any special provisions required in (PURCHASER's country).
- 4.8 Notwithstanding the use of the Codes and Standards indicated in Article 45, if the CONTRACTOR is aware of superior engineering codes or design methods, or where experience from previous contracts has proven improvements, the CONTRACTOR shall use such improved methods or codes in the design of the Plant and where required, shall make these appropriate data and design methods available to the PURCHASER.
- 4.9 The CONTRACTOR shall advise the PURCHASER during the prequalification of Vendors, and shall place at the disposal of the PURCHASER all data known to the CONTRACTOR in connection with the actual operation of the equipment of different Vendors.

- 4.10 The CONTRACTOR will procure all plant and equipment, material and spare parts on behalf of the PURCHASER in accordance with the Procurement provisions and procedures laid down in the Contract and in Annexure XXVI. Notwithstanding the fact that the ultimate purchase is to be made on the PURCHASER's account, the CONTRACTOR shall ensure that all procurement is accomplished so as to enable the plant to meet the objectives expressed in Article 2, and in accordance with the time schedule contained in Annexure XV, and the CONTRACTOR shall be responsible in any case for meeting the contractual guarantees contained in Article 19.
- 4.11 The CONTRACTOR shall provide an adequate number of supervisory personnel for the erection, mechanical testing, commissioning, startup and initial operation of the plant. The particulars relating to the number and duration of stay of such personnel is contained in Annexure XXVII; however, the adequacy of the requirements shall be reviewed by the CONTRACTOR and the PURCHASER within 4 months of the Effective Date of the Contract and, thereafter, periodically as may be required. The CONTRACTOR shall ensure that all Supervisory personnel are available at the site of work so as to meet the requirements of the time schedule contained in Article XV.
- 4.12 The CONTRACTOR shall supply all technical documentation required for the implementation of the Project (and in particular the Technical Documentation stated in Annexure XV) within the dates contained in Annexure XV and, in any event in sufficient time to meet the requirements of the time schedule contained in Annexure XV.
- 4.13 The CONTRACTOR shall undertake the initial Guarantee Tests of the plant within 45 days after the startup of the plant, but in any event not later than 3 months after mechanical completion of the plant,

provided that the PURCHASER has carried out his obligation to supply feedstock, outside utilities, chemicals and other agreed materials. The CONTRACTOR shall be allowed to extend this period and repeat guarantee tests in accordance with Article 19.10 of the Contract.

- 4.14 For a period of one year after the plant has been accepted, the CONTRACTOR shall be responsible to correct the plant free of any additional costs, in the eventuality that the plant is unable to give production at rated capacity on account of latent faults in design/equipment specification/process which were not apparent at the time of guarantee tests.
- 4.15 The CONTRACTOR shall ensure that the number and level of training (to be arranged by the CONTRACTOR within or outside the country of the PURCHASER) of the PURCHASER's personnel is adequate for the smooth operation and maintenance of the plant in peak condition.
- 4.16 Up to a period of five years following the startup of the plant, the CONTRACTOR shall on the PURCHASER's inquiry answer questions related to the operation of the plant. As promptly as possible after receipt of such enquiries, the CONTRACTOR will respond in as much detail as possible. It is hereby agreed that there shall be no limitations on the number of such queries advanced. Independently of the specific questions asked by the PURCHASER, the CONTRACTOR on request and approval by the PURCHASER and at the PURCHASER's cost shall send an advisor (on a once yearly basis) to visit the plant and review its operation and who shall recommend ways to improve the operation.
- 4.17 Throughout the performance of the work the CONTRACTOR shall ensure that it, its employees, agents and invitees and his sub-contractors, their employees, agents, invitees while upon the job site, comply with all applicable safety laws, rules and regulations. The responsibility for the safety of all persons employed by the CONTRACTOR and that of his sub-contractors on Owner's premises or any other person who enters

upon Owner's premises for reasons relating to this Contract, shall be the sole responsibility of the CONTRACTOR. The CONTRACTOR shall at all times maintain good order among his employees and shall not employ on the work any person unfit or anyone not skilled in the work assigned to him.

- 4.18 The CONTRACTOR shall provide the PURCHASER with office space, facilities and secretarial and typing services for the representatives of the PURCHASER assigned to the CONTRACTOR's offices.
- 4.19 The CONTRACTOR shall provide such assurances as the PURCHASER may reasonably require concerning the essential legal validity and enforceability of this Contract insofar as the CONTRACTOR is concerned, including (without limitation) evidence that the CONTRACTOR is a properly organized legal entity duly entitled to perform this Contract and that the CONTRACTOR has properly executed this Contract in accordance with all legal requirements of law, of governing charter and by-laws, and of its governing board of directors, as the case may be.

CONTENTS

	<u>Page</u>
Introduction	i - ii
 <u>PRELIMINARY DRAFT OF UNIDO MODEL FORM OF COST REIMBURSABLE CONTRACT FOR THE CONSTRUCTION OF A FERTILIZER PLANT</u>	
List of Articles of the Contract	1 - 2
List of Technical Annexures	3 - 4
Articles 1 - 46 of the Contract	5 - 120
Technical Annexures 1/	

1/ The Technical Annexures are reproduced in an addendum to this document
ID/WG.281/12/Add.1

ARTICLE 5

OBLIGATIONS OF THE PURCHASER

- 5.1 The obligations to be undertaken by the PURCHASER within the overall scope of work shall be as defined in Article 3. The PURCHASER shall carry out his obligations so as to enable the CONTRACTOR to meet the time schedule contained in Annexure XV.
- 5.2 The PURCHASER shall secure and make available to the CONTRACTOR within one month from the agreement on the lay-out and plot plan, the site for construction of the work free of all encumbrances, including the necessary rights-of-way. The owner shall also make available adequate space for storage depots at or near the site.
- 5.3 The PURCHASER shall obtain and make available to the CONTRACTOR all necessary permits/approvals and/or licences from local authorities and/or Government as may be necessary for the execution of the Contract inclusive of import licences, visas for CONTRACTOR's personnel, entry permits etc.
- 5.4 The PURCHASER shall give his approval to all drawings, purchase orders etc. as required under the provisions of Article 6 or as elsewhere specified in this Contract.
- 5.5 The PURCHASER shall provide free of charge all the raw materials, fuel, consumable items and make-up items necessary for the operation and maintenance of the plant, unless otherwise specifically mentioned in the specifications or elsewhere in this Contract as that to be supplied by the CONTRACTOR.
- 5.6 The PURCHASER shall provide free of charge, operation and maintenance personnel for the use of the CONTRACTOR throughout the period from the beginning of the mechanical test of equipment till the date of acceptance of the plant, in adequate numbers and of corresponding competence to the requirements of manning, which requirements are to be developed by the CONTRACTOR in the form of a Manpower and Qualification Chart and which is to be approved by the PURCHASER.

- 5.7 The PURCHASER shall provide the CONTRACTOR and his personnel deputised to site with such facilities as are detailed in Annexure XVII.
- 5.8 The PURCHASER shall be responsible for making all payments to the CONTRACTOR in accordance with the provisions of this Contract.
- 5.9 The PURCHASER shall be responsible for making all payments to Vendors of equipment, in accordance with the Procurement Purchase Orders issued to them in the name of the PURCHASER, and on the advice of the CONTRACTOR.
- 5.10 The PURCHASER will provide and maintain the Insurance policies which are his specific responsibility as defined in Article 26.
- 5.11 The PURCHASER will provide the CONTRACTOR with office space, secretarial facilities and typing services for the CONTRACTOR's personnel assigned to the PURCHASER's office or to site.

ARTICLE 6

CO-OPERATION AND CO-ORDINATION BETWEEN
CONTRACTOR AND PURCHASER

- 6.1 The Parties to this Contract hereby agree to undertake all reasonable co-operation to implement and execute the work as stipulated in the Contract. The parties through their designated representatives will meet periodically to take stock of the progress of work, costs that have been incurred and mutually agree upon 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 confirmation and necessary action.
- 6.2 The PURCHASER and the CONTRACTOR each shall appoint a 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 regarding the work and on any matters concerning delays, quality, completion, requirements of services/materials/utilities/personnel, payments, conduct, access to work/documents/Government clearances where required or other associated aspects including matters related to variations/suspension/termination/resumption etc., as empowered accordingly.
- 6.3 All notices, instructions and decisions on meetings shall be given in writing. Minutes of meetings between CONTRACTOR's and PURCHASER's representatives held at site, or in the offices of PURCHASER or CONTRACTOR shall after recording and confirmation have the same effect as notices in writing.
- 6.4 The CONTRACTOR shall submit drawings, equipment specifications, and other documents required for approval or distribution to the PURCHASER under this Contract. The PURCHASER shall return (if required) with appropriate approval or disapproval as the case may be (with reasons indicated if the requirements under the Contract are not technically or commercially met) within the period specified in Article 10, and if otherwise such document(s) shall be deemed to have been approved by the PURCHASER.

- 6.5 Within 30 days from the Effective Date of the Contract a meeting shall be held in (Country) between the CONTRACTOR and the PURCHASER and, if necessary with the Technical Advisor present to discuss all matters of common interest, including but not restricted to the finalization of co-ordination procedure, the Procurement Protocol (the provision of which shall be such as to be acceptable to a financing agency if any), Vendors list, Design Criteria and Critical items. The matters related to the concept of location of each Plant, Off-sites and Utilities within the plant location and sites shall be finalised at such meeting.
- 6.6 The CONTRACTOR shall immediately thereafter prepare the necessary documents for placing orders for the critical items (time critical and process critical items) as identified in Annexure XII.
- 6.7 Immediately after the enquiries for Critical items are issued, the CONTRACTOR shall begin issuing the necessary enquiries for the pre-qualification of vendors for the remaining Equipment and Spare Parts, expeditiously and immediately following completion of the relevant engineering.
- 6.8 Within four (4) months from the Effective Date of the Contract, a meeting shall be held at the PURCHASER's Offices at (Town) between the CONTRACTOR and the PURCHASER to discuss process and design completed up to that time. The detailed in-plant layout, design sizes of the utility units, time schedule, project cost and production cost optimization, local procurements, training programme and other items of common interest shall also be discussed. The CONTRACTOR shall take into account in its design any changes suggested by the PURCHASER and/or the Technical Adviser, which are acceptable technically to the CONTRACTOR; and the CONTRACTOR shall advise the PURCHASER of any changes in the overall price, guarantees and/or project schedule, arising from such changes.

- 6.9 After the PURCHASER has given its approval, the CONTRACTOR shall prepare bid documents and follow the procedures in the issue of enquiries, bid evaluations, recommendation to the PURCHASER and preparation of purchase order documents as laid down by the Procurement Protocol. The Protocol shall provide that except as otherwise provided in the Contract or where exceptions are made by the PURCHASER, all Equipment and spare parts shall be purchased by the PURCHASER on the recommendation of the CONTRACTOR. Forms of purchase contracts shall be as approved by the PURCHASER on terms and conditions consistent with the Contract.
- 6.10 The PURCHASER shall post an engineer with suitable powers at the offices of the CONTRACTOR at (Town) who shall, together with the Technical Advisor, have the right to examine and approve bid specifications, examine bid comparisons, approve and place orders for Equipment and spare parts.
- 6.11 The CONTRACTOR shall open an office at site, for which an agreed amount of space shall be provided by the PURCHASER. This office shall be managed within the jurisdiction of the Construction Manager of the CONTRACTOR, who shall be responsible for all liaison with the PURCHASER and for the supervision of erection. This office shall be opened in good time for checking the progress of civil works and before any of the equipment arrives at Site. For the purpose of co-ordination, the CONTRACTOR's Construction Manager at Site shall liaise with the Senior Site Representative of the PURCHASER.
- 6.12 The CONTRACTOR's Construction Supervision personnel at Site shall also assist in checking the Equipment received, survey any damages incurred and assist the PURCHASER in submitting claims to the insurers.
- 6.13 Throughout the period of the Contract, the PURCHASER shall have the right to inspect the CONTRACTOR's work and the CONTRACTOR shall maintain a cost control report bearing on FOE cost equipment and spare parts to enable the PURCHASER or the Technical Advisor to check on the

payments effected, and to enable a monthly report to be issued on the progress of purchasing and other work, and the deviation if any from estimates.

ARTICLE 7

ASSIGNMENT OF CONTRACT

- 7.1 This Contract shall inure to the benefit of and be binding upon the parties hereto and their and each of their executors, administrators, curators, successors and assigns but (as regards assigns of the CONTRACTOR) insofar only as such assigns are duly consented to by the PURCHASER under this Contract.
- 7.2 This Contract may not be assigned without the written consent of the PURCHASER.
- 7.3 Neither the whole nor any part of the work may be sub-contracted by the CONTRACTOR without the written consent of the PURCHASER.
- 7.4 Every sub-contracting by the CONTRACTOR shall provide that the sub-contractor shall comply with all terms and conditions of this Contract, mutatis mutandis.

ARTICLE 8

SUPERVISION OF THE WORK

- 8.1 The CONTRACTOR shall provide all of the required services for the supervision of work at the plant site at (name of place and country).
- 8.2 The CONTRACTOR shall provide an adequate number of suitably qualified and experienced personnel to assist in site management and supervision of erection, pre-commissioning and start-up of the plant. The erection of the plant(s) shall be undertaken by the PURCHASER under the supervision and direction of the staff of the CONTRACTOR.
- 8.3 The CONTRACTOR shall supervise and direct the guarantee tests of the plant, and shall demonstrate that the plant fulfils the capabilities specified in this Contract.

ARTICLE 9

ACCESS TO WORK

- 9.1 The CONTRACTOR and the PURCHASER and any person(s) authorised by either of them shall at all times have access to the works, to all workshops and places where work is being undertaken or where materials, manufactured articles and machinery are being obtained for the works. The CONTRACTOR shall afford every facility for and assistance in or in obtaining the right for such access in connection with the execution of the work under this Contract.
- 9.2 The PURCHASER shall afford every facility and assistance in or in obtaining the right of access to such information, site, workshops or persons within its country as is required in connection with this Contract.
- 9.3 The CONTRACTOR and his authorized personnel shall have free access to the plant site, storage yards, fabrication shops, utilities and Laboratories, which are set up or intended for use for establishing the plants under the Contract. The PURCHASER shall provide necessary assistance in obtaining permission from its Government for visits/ stay and travel of CONTRACTOR or his authorised personnel.
- 9.4 The CONTRACTOR shall be entitled to visit the Plant(s) in operation to examine them as to operating results, to take measurements required for establishing exact operating data to demonstrate the Plant(s) to his potential customers. The CONTRACTOR shall give four (4) weeks notice to the PURCHASER for such visits, permission for which shall not unreasonably be withheld by the PURCHASER. However the PURCHASER may exclude the nationals of certain countries from visiting the Plant and/or Site.

- 9.5 (a) Where, in the opinion of the Technical Asvisor, it is necessary that third parties (whether additional contractors or otherwise) with or without material and plant, be sent on to the work and/or the site thereof the CONTRACTOR shall, to the satisfaction of the Technical Advisor, allow them access to the work and/or the site thereof and shall co-operate with them in the carrying out of their duties and obligations. The foregoing shall not prejudice the rights of the CONTRACTOR relative to the terms of Article 30.
- (b) If the sending on to the work and/or the site thereof of a third party under Subarticle (a) does not arise from any non-fulfilment of the CONTRACTOR's obligations and, in addition, could not have been reasonably foreseen or anticipated by the CONTRACTOR when entering into this Contract, and, if, in the opinion of the PURCHASER, the CONTRACTOR has incurred expense in complying with Subartiole (a) in respect of such third party, the PURCHASER (if the CONTRACTOR has given written notice of the CONTRACTOR's claim before the expiration of thirty days from the sending on to the work and/or site thereof of the third party or third parties involved) shall pay to the CONTRACTOR the cost of any services provided by the CONTRACTOR.

Introduction

1. At the First Consultation Meeting there was general agreement that the work done by UNIDO on model contracts would be of interest to many countries, particularly those in the early stages of development. The Meeting suggested that UNIDO should continue its investigations into alternative forms of contracts and should suggest guidelines for their use by developing countries. Different types of contracts should be considered.

2. UNIDO, with the assistance of experts and institutions acting as consultants to UNIDO^{1/} has prepared model forms of the following five types of contract:

- (a) Turn-key lump-sum contract that covers supply of process know-how, engineering services, procurement of machinery, equipment and materials, civil works and erection. The contractor alone is responsible for all work up to the final acceptance test; he accepts full responsibility for the plant's performance. The work is performed for a fixed total price.
- (b) Cost-reimbursable contract that covers most of the services included in the turn-key lump-sum contract. The contractor's responsibilities are more limited in some areas such as procurement. Know-how, engineering and procurement assistance are provided for a fixed fee; all other costs are charged on a reimbursable basis.
- (c) Semi-turn-key contract that covers supply of the same services as in the turn-key lump-sum contract above but excluding civil works and erection at site for which the purchaser is responsible. Most of the work is performed by the contractor for a fixed fee. The contractor accepts responsibility for the plant's performance but not for completion on time.
- (d) Supply of know-how and engineering services that covers supply of the process know-how, basic engineering, procurement assistance and assistance with supervision of the construction of a single plant. The contractor accepts responsibility for the plant's performance.
- (e) Supply of know-how and engineering services that covers the same services as (d) above but for a number of similar plants at the same or other locations.

^{1/} For further details, see "The Preparation by UNIDO of Model Forms of Contract for the Construction of a Fertilizer Plant and Guidelines for their Use", ID/WG.281/2.

ARTICLE 10

PROCUREMENT

- 10.1 It is understood and agreed that the timely supply of the equipment and spare parts is of the essence of the Contract and accordingly the CONTRACTOR shall make every attempt to meet the time schedules provided hereunder for procurement by the PURCHASER of the Equipment and Spare Parts.
- 10.2 The CONTRACTOR shall supply to the PURCHASER the following services in connection with the procurement of the Equipment and Spare Parts, in accordance with Annexure VIII and XXVI respectively.
- 10.2.1 The CONTRACTOR shall prepare the bid document on the basis of the technical specifications prepared by him and submit the same to the PURCHASER or his Technical Adviser deputised for this purpose, for relevant approval, and shall issue the same to the Vendors in the manner agreed to in the Procurement Protocol.
- 10.2.2 The CONTRACTOR shall send the bid documents on behalf of the PURCHASER to the respective Vendors listed in the Vendors list (which list shall be agreed upon between the parties within thirty (30) days from the Effective Date of the Contract for critical items, and at least one month prior to the issue of tenders for other items).
- 10.2.3 The CONTRACTOR shall use its best endeavours to obtain from the Vendors a minimum of three competitive (3) offers, except for the Critical Items as indicated in Annexures VIII and XII.
- 10.2.4 The offers received from the Vendors shall be evaluated by the CONTRACTOR who shall submit the bid evaluation with appropriate recommendations to the PURCHASER or his Technical

Adviser for the relevant final selection. The PURCHASER's final selection of the Vendor shall be communicated to the CONTRACTOR within twenty (20) days from the date of the CONTRACTOR's submission of the bid tabulation.

- 10.2.5 After the selection of the Vendor(s) by the PURCHASER, the CONTRACTOR shall prepare for the PURSHASER's signature the relevant purchase orders on the PURCHASER's letter-head, with proper terms and conditions in such purchase orders.
- 10.3 The CONTRACTOR shall prepare monthly forecasts of deliveries specifying details of proposed consignments, approximate tonnages, dimensions and other relevant information, and furnish the same to the PURCHASER and/or his shipping agent(s). The CONTRACTOR shall give the PURCHASER's shipping agent(s) six (6) weeks advance notice of the date when the Equipment and/or Spare Parts shall be ready for despatch from the respective Vendor's shops.
- 10.4 The CONTRACTOR shall be responsible for the preparation, adequacy and accuracy of the bid specifications to be issued to the Vendors, in connection with the design of the Plant and the fulfilment of guarantees as specified in Article 19, and other contractual requirements specified in this Contract.
- 10.5 All procurement data including bid specifications, bid tabulations and evaluations, issued by the CONTRACTOR under the Contract shall be the property of the PURCHASER.
- 10.6 Notwithstanding anything provided herein for the procurement of Equipment and Spare Parts, the CONTRACTOR shall complete the bid tabulations of Critical Items within four (4) months from the Effective Date.
- 10.7 The CONTRACTOR shall within twelve (12) months from the Effective Date of the Contract issue tenders, obtain quotations and make final bid tabulations with regard to the sources and supply of 95% (by value) of the equipment itemised with item numbers as required under Annexure VIII.

- 10.8 The CONTRACTOR shall make every endeavour to make final bid tabulations with regard to the sources and supply of 95% (by value) of the remaining Equipment within eighteen (18) months from the Effective Date of the Contract.
- 10.9 The CONTRACTOR shall cause the Vendors to provide the PURCHASER with sufficient copies of the invoices, packing lists and such other documents as may be required to have the Equipment and Spare Parts imported in (country), specifying in each case that the Equipment and spare parts are to form part of a complete fertilizer plant.
- 10.10 The CONTRACTOR shall use his best endeavours to obtain appropriate mechanical guarantees from the Vendors which shall remain valid for a minimum period of twelve (12) months after startup of the equipment or for a period not less than twenty-four (24) months from the date of shipment, whichever occurs first. Such guarantees shall be read together with and in conjunction with the provisions of Article 21. If any of the Vendor's supplies, equipment, machinery, spare parts or materials within the guaranteed period are found to be defective, the CONTRACTOR shall assist the PURCHASER to immediately undertake the necessary corrective measures to require the Vendor(s) to substitute (within the shortest possible time on air freight basis and/or at the Vendor's cost when possible) the defective equipment, machinery, spare parts or materials, with new replacement of the same.
- 10.11 The services to be provided by the CONTRACTOR under the provisions of Article 10 shall, in any event, complement the procedures of the (name of financing agency) and the CONTRACTOR shall fully satisfy himself that such procedures conform with the requirements before commencing procurement.

ARTICLE 11

PRICE AND TERMS OF PAYMENT

I. PRICE:

11.1 The PURCHASER will pay to the CONTRACTOR, as consideration for the execution of the work (and subject always to any qualification provided for elsewhere in this Contract):

11.1.1 Insofar as these Presents constitute a cost-reimbursible Contract (with certain prices fixed and firm) as follows: The sum of (_____) being equal to the total of the amounts expressed in Article 11.1 to 11.5 which last cited sum shall be conclusive as to the total amount payable being fixed and firm for the duration of the Contract. IT BEING EXPRESSLY AGREED that if, for purposes of more detailed price-citation, as indicated by Articles 11.2 to 11.8 hereunder, such prices shall operate only to such extent as not conflicting with the total sum payable under this Subarticle as cited herein.

11.1.2 Each and every price cited in or contemplated by this Contract includes and covers all patent royalties and all taxes, rates, charges and assessments of any kind whatsoever (whether Federal, Provincial or Municipal, and whether or not in the nature of excise taxes/duties, customs, tariffs, sales taxes, land taxes, licence fees or otherwise) pertinent to the material sold to the PURCHASER and/or to the performance of the work, as well as all transportation costs and charges and all other cos's and charges whatsoever relevant to such material and/or to such performance of the work, except where specifically payable by the PURCHASER under the provisions of the Contract.

- 11.2 For granting of the Licences for the Plants referred to in Article 29 of the Contract:
- For the Ammonia Process (Amount)
For the Urea Process (Amount)
- 11.3 For the supply of basic and detailed engineering referred to in Articles 3 and 4 of the Contract:
- (Amount)
- 11.4 For the supply of procurement, inspection and expediting services referred to in Articles 10 and 18 of the Contract:
- (Amount)
- 11.5 For providing training and training facilities referred to in Annexure XVIII of the Contract:
- (Amount)
- 11.6 (For providing expatriate personnel for assistance and supervision services referred to in Article 8 of the Contract, the CONTRACTOR shall be paid in accordance with Article 11.9 - 11.12 hereunder).
- 11.7 All the prices contained in Article 11.1 to 11.5 above are fixed and firm for the duration of the Contract, and any extension thereof, and shall not be escalated in any manner.
- 11.8 The prices given in the Article are payable on the dates due in the Contract in the currencies mentioned above. In the event that there is a delay in the CONTRACTOR performing his services and hence a delay in payment for his services, which results in an increase in the cost of the services to the PURCHASER in terms of the currency of the PURCHASER, the payment will be adjusted in such manner that the PURCHASER shall pay at the conversion rate prevailing on the date that the services were due.

II. REIMBURSEMENT FOR SERVICES OF PERSONNEL:

- 11.9 Insofar as these Presents constitute a cost-reimbursible Contract (with certain prices of a reimbursible nature) as follows: For provision of expatriate personnel for assistance and supervisory services in (country of site of Plant) for erection, the commissioning, and startup of Plant, and for conducting guarantee tests, the CONTRACTOR shall be paid in accordance with the procedure contained in this Article, and in Annexure XXVII.
- 11.10 For each calendar day of absence from the normal place of work in (supplier's country) of the specified expatriate personnel supplied by the CONTRACTOR, the PURCHASER will pay to the CONTRACTOR daily rates in accordance with the schedule of charges as contained in Annexure XXVII.
- 11.11 The daily rates contained in Annexure XXVII shall be related to a normal working week of 48 hours with, at least, one day included as a holiday. In the event of any overtime for expatriate staff (excluding Engineers, and any other staff who would not normally be paid overtime in their home country), or for work on weekly holidays or public holidays in (country of Plant site) the expatriate personnel shall be paid overtime charges at the rates contained in Annexure XXVII.
- 11.12 In addition to the payments contained in Articles 11.9 to 11.11 above, the CONTRACTOR's personnel will be provided travel facilities, and facilities at site in accordance with Annexure XXVII.

III. TERMS OF PAYMENTS:

- 11.13 The payments due to the CONTRACTOR under Article 11.2 above shall be payable as follows:-

- (a) 50% (Amount) as an advance payment
 - (b) 25% (Amount) on receipt by the CONTRACTOR of all of the documents contained under Article 11.19.1
 - (c) 25% (Amount) on completion of the guarantee tests of the Plant, and issuance of an acceptance certificate by the PURCHASER.
- 11.14 The payment due under Article 11.3 and 11.4 above shall be paid (subject to Article 11.15 below) as follows:
- (a) 15% as an advance payment.
 - (b) 15% on the 6th month after effective date.
 - (c) 10% on the 9th month after effective date.
 - (d) 10% on the 12th month after effective date.
 - (e) 10% on the 15th month after effective date.
 - (f) 10% on the 18th month after effective date.
 - (g) 5% on the 21st month after effective date.
 - (h) 5% on the 24th month after effective date.
 - (i) 5% on the 27th month after effective date.
 - (j) 5% on mechanical completion of the Plant.
 - (k) 10% on acceptance of the Plant.
- 11.15 All the payments due under Article 11.14(b) to 11.14(i) both inclusive above shall be payable only if the "penalizable" documents (so identified in Annexure XV) due on or before the date of payment have been supplied by the CONTRACTOR to the PURCHASER, and (where appropriate) the CONTRACTOR's expatriate supervisory staff are ready and available on site for erection and commissioning duties.
- 11.16 The payments due under Article 11.5 shall be payable on completion of the overseas training of the PURCHASER's personnel, in accordance with Annexure XVIII.

- 11.17 The advance payments contained in Articles 11.13(a) and 11.14(b) above shall be payable by direct remittance to (name of bank) and shall be payable only if a Bank Guarantee for an (amount equivalent to at least 15% of the total Contract Price) guaranteed by (name of bank) and confirmed in (name of the PURCHASER's country) has been given by the CONTRACTOR to the PURCHASER. The Bank Guarantee shall be in a form satisfactory to the PURCHASER.
- 11.18 For the purpose of making the remaining payments, under Articles 11.13 and 11.14, the PURCHASER shall establish in favour of the CONTRACTOR at a specified bank in (the CONTRACTOR's country or as agreed otherwise) irrevocable Letters of Credit providing for payments in accordance with the schedule laid down in Article 11.14 and where applicable the supply of documents listed in Articles 11.13 and 11.15.
- 11.19 The payments under the Letters of Credit referred to in Article 11.18 shall be made upon the fulfilment of the following:
- (i) For payments under Article 11.13(b) a Certificate from the PURCHASER stating that the documents under Article 4.5 above have been received shall be presented.
 - (ii) For payments under Article 11.16 a Certificate from the PURCHASER stating that the Overseas Training Programme (envisaged in Annexure XVIII) has been completed, shall be presented.
 - (iii) Payments under Article 11.14(a) to 11.14(i) both inclusive, shall be made when each of the following have occurred:-
 - (a) When the date for payment becomes due in the relevant case,
 - (b) When a certificate issued by the PURCHASER is presented stating that the "penaltable" documents due on or before the date of payment under Article 11.15 have been received by the PURCHASER.

(c) When a certificate issued by the PURCHASER is presented, stating that all expatriate personnel due for erection/startup before the date of payment, have arrived at site.

(iv) Payment under Article 11.14(j) shall be made on the issuance by the PURCHASER of a Certificate of Mechanical Completion of the Plant in accordance with Article 15.

(v) The final payments under Articles 11.13(c) and 11.14(k) less any deductions due under Article 39.4(b) shall be made upon presentation of the Certificate of Acceptance duly signed by the PURCHASER and the CONTRACTOR.

11.20 Upon the mechanical completion of the Plant(s), the CONTRACTOR shall have the option to draw upon the Letter of Credit opened in accordance with Article 11.18 above to the extent that the payment is due under Article 11.13(c), 11.14(k) amounting to (Amount). In such an eventuality the CONTRACTOR shall provide a Bank Guarantee of an equivalent amount in favour of the PURCHASER for fulfilment of his obligations to perform the Guarantee Tests in accordance with the Contract. The form of Bank Guarantee shall be in accordance with Annexure XXIII.

11.21 In the event that, for reasons not attributable to the CONTRACTOR, the Plant has not been erected or that the Plant has been erected, but not started up within the (24) months after the final shipment FOB of machinery for the Plant, or 60 months after the Effective Date of the Contract, whichever is later, the CONTRACTOR shall be entitled to the payments due under Articles 11.13(c), 11.14(j) and 11.14(k), within 30 days (but subject to the provisions of Article 11.22) after presenting:

(i) An invoice in triplicate signed by an Executive Officer of the CONTRACTOR

(ii) An affidavit executed by the CONTRACTOR stating that for reasons not attributable to the CONTRACTOR the mechanical completion of the Plant has not been accomplished, or the Plant has not been started up as the case may be.

- 11.22 Should the CONTRACTOR wish to invoke his rights for payment of the amount under Article 11.21 he shall promptly inform the PURCHASER by telegram, and by letter, of his claim. Should the PURCHASER dispute such claim, the CONTRACTOR shall nevertheless be entitled to draw upon the payments due under Article 11.21 against presentation of the documents stated therein together with a Bank Guarantee (for amount(s) equivalent to payments under the relevant Articles) in a form satisfactory to the PURCHASER. The Bank Guarantee shall be valid for 12 months, but if the PURCHASER or the CONTRACTOR should refer any dispute arising therefrom to Arbitration then, in such eventuality such Bank Guarantee shall remain valid until a period of 3 months after the Award of the Arbitrator.
- 11.23 The payments of the amounts due or reimbursable to the CONTRACTOR for services and/or expenses specified in Article 11.6 shall be effected as follows:-
- 11.23.1 The PURCHASER shall establish with the specified bank irrevocable Letters of Credit in favour of the CONTRACTOR for an amount to be mutually negotiated between the parties. This Letter of Credit shall be established one month before the commencement of services by the CONTRACTOR pursuant to Article 11.6 and provisions for payment shall be made in the manner detailed hereunder.
- 11.23.2 Payments for daily rates and/or overtime of the CONTRACTOR's expatriate personnel as provided in Article 11.6 and Annexure XXVII shall be effected out of the said relevant Letter of Credit upon presentation to the PURCHASER of:
- (i) Monthly invoice supported by time-logs of each of the CONTRACTOR's expatriate personnel working in (country) for the Plant(s), duly countersigned by the PURCHASER's Representative at site.

3. The Model Form of Cost Reimbursable Contract has been chosen as the most suitable for discussion at the Second Consultation Meeting.
4. This Model Form was prepared by the National Design and Industrial Services Corporation Limited of Lahore, Pakistan under the direction of Dr. Shah Nawaz, Chairman, and Dr. A. K. Qureshi, General Manager. UNIDO was also assisted by Mr. D. Subramaniam, Legal Consultant on International Technology Contracts, United States of America.
5. This Model Form provides a basis for drafting a Cost Reimbursable Contract. It is presented to the Consultation Meeting so that it may be discussed by the interested parties, namely potential purchasers and contractors. Facilities will be made available at the Second Consultation Meeting at Innsbruck, for a working group to be established to consider this Model Form of Contract. Following its consideration at Innsbruck, UNIDO intends to prepare a revised version of the Model Form of Contract with a view to eventual publication.
6. UNIDO is preparing a companion report entitled "Guidelines for the Use of UNIDO Model Forms of Contract". These Guidelines will contain advice on how to use the Model Forms of Contract. The reader of this document is advised to consult this document when using the Model Form of Contract.
7. The Model Form of Contract is being issued first in English. Arrangements have been made for translation in time to make copies available in French, Spanish and Russian at the Second Consultation Meeting.
8. Since this is a preliminary draft, UNIDO would appreciate written comments addressed to the Head, Negotiations Section, United Nations Industrial Development Organization, P. O. Box 707, A-1011 Vienna, Austria.

- 11.24 Payments for reimbursement of expenses arising out of variation, changes and additions to scope of work (Article 28) shall be effected upon presentation of:
- (i) Monthly invoice in triplicate certified by an Executive Officer of the CONTRACTOR that the expenses specified therein relate wholly to the Contract and countersigned by the PURCHASER's Representative authorised for this purpose in the CONTRACTOR's Offices or (if no representative is present) by the PURCHASER's other deputised officer.
- 11.25 The living allowances detailed in Annexure 4.2.3.4 shall be payable in local currency directly to the CONTRACTOR's expatriate personnel at Site and shall be made by the PURCHASER every fortnight in advance, if and when due.
- 11.26 The reimbursement in local currency to the CONTRACTOR's expatriate personnel for the justifiable expenses defined in the Contract and Annexure XXVII incurred within (Country) shall be made directly by the PURCHASER to the CONTRACTOR's expatriate personnel at Site within 30 days of the claim duly supported by the relevant receipts.
- 11.27 Any and all Bank Guarantees to be provided by the CONTRACTOR pursuant to the Contract shall be encashable by the PURCHASER in (currency e.g. U.S. Dollars). Such Guarantees shall be valid for the period required under the Contract and the CONTRACTOR shall take any and all actions including renewals at the appropriate times to keep the said guarantees current and valid for the said periods.
- 11.28 Should the CONTRACTOR so desire, the Letter of Credit to be established under Article 11.18 shall be confirmed by the PURCHASER at the bank specified by the CONTRACTOR. All charges in connection with such confirmation shall be borne by the CONTRACTOR.

ARTICLE 12

PERFORMANCE BOND AND BANK GUARANTEES

- 12.1 Upon the execution of the Contract, the CONTRACTOR shall provide to the PURCHASER, a Performance Bond guaranteed by an approved Bank and/or Bonding Institution in (PURCHASER's country) in the form given in Annexure XXII for an amount equal to (at least 15% or more of the total Contract) in favour of the PURCHASER callable without precondition at the option of the PURCHASER. The Performance Bond shall be valid for the period required under the Contract and the CONTRACTOR shall take any and all actions including renewals at the appropriate times to keep the said Bond current and valid for the said period.
- 12.2 The advance payments as provided for under Article 11.13 (a) and 11.14 (b) shall be made by the PURCHASER by direct remittance to (name of bank) and shall be receivable only if a Bank Guarantee is provided in an acceptable form by the CONTRACTOR to the PURCHASER in an amount (equal to at least 15% of the total Contract price as stated in Article 11.1) guaranteed by (name of bank) and confirmed in (name of PURCHASER's country).
- 12.3 Upon mechanical completion of the Plant, and provided the CONTRACTOR elects to exercise his option under Article 11.20, the CONTRACTOR shall deliver a Bank Guarantee for an amount equal to (Amount) at least equivalent to the amount of retention monies requested to be released by the PURCHASER under Article 11.20 from the (name of bank) and confirmed by a bank in (country of PURCHASER) in the form given in Annexure XXIII. This Bank Guarantee shall remain valid and in force up to the date of the final acceptance of the Plant, or any extensions thereof.

ARTICLE 13

EFFECTIVE DATE OF CONTRACT

- 13.1 The Contract shall become valid and effective immediately following the signing of the Contract by the duly authorised officers of the PURCHASER AND CONTRACTOR and on the date when the last of the following requirements has been fulfilled:
- 13.1.1 Approval of the Contract by the Government of (the Country) where the Plant is to be located, such approval to be obtained by the PURCHASER (if required by law or Decree).
 - 13.1.2 Approval of the Government of (the Country) where the CONTRACTOR conducts his principal business and where the Head Office of the CONTRACTOR's Office is located, such approval to be obtained by the CONTRACTOR.
 - 13.1.3 The receipt by the CONTRACTOR of the advance payment as provided under Article 20 secured by the receipt by the PURCHASER of the Bank Guarantee(s) under the terms of the Contract.
- 13.2 The Effective Date of the Contract shall be the date determined in Article 13.1, provided that the Letter of Credit for the balance of the payments as provided under Article 11.19 shall in fact be opened by the PURCHASER within the three (3) months from the date of the receipt of the advance payment by the CONTRACTOR.
- 13.3 If the PURCHASER does not open the Letter of Credit specified in Article 11.19 or does not make equivalent arrangements within six (6) months, the CONTRACTOR shall have the right to demand satisfaction to cover his bona fide commitments made in pursuance of his obligations under this Contract.

13.4 The expression "Effective Date" whenever used in this Contract or in the Annexures or in the Specifications (or in any other document deemed to form a part of this Contract) shall be interpreted to mean "Effective Date of Contract".

ARTICLE 14

TIME OF ESSENCE

- 14.1 The PURCHASE and CONTRACTOR agree that time is of the essence in this Contract. Both parties agree that every endeavour shall be made to meet the target dates set forth in the Contract (and as set out in Annexure XV).
- 14.2 It is agreed that the timely supply of the equipment and spare parts is of the essence of the Contract and accordingly the CONTRACTOR shall take all necessary steps to meet the time schedule provided in this Contract for procurement by the CONTRACTOR of the equipment and spare parts. The CONTRACTOR shall be obliged to take such necessary precautions that are reasonably necessary to ensure that the sources of supply are constant, and shall in anticipation of any shortfall in the supply of such equipment and spare parts (for whatever reason) undertake steps to resource from alternate sources without compromising the criteria as to quality and/or quantity expressed in this Contract.
- 14.3 In the event that the CONTRACTOR during the required shop inspection anticipates delays in delivery of any equipment, the CONTRACTOR shall be obligated to recommend remedial measures to overcome delays.

ARTICLE 15

COMPLETION OF WORK

- 15.1 Notwithstanding the time schedule contained as a guideline in this Contract and in Annexure XV, the CONTRACTOR shall complete all his contractual obligations under this Contract competently and in a timely fashion.
- 15.2 The different section or parts of the Plant shall be considered to have been mechanically completed when the provisions of Articles 15.4 to 15.8 have been met.
- 15.3 On mechanical completion of the Plant, each Plant or Plant section will be tested in accordance with Article 15.8 and Annexure XX, and will, as soon as possible thereafter be brought into operation.
- 15.4 As soon as the Plant, or any part thereof, is (in the opinion of the CONTRACTOR) substantially complete and ready for inspection the CONTRACTOR shall so notify the PURCHASER by means of a Construction Completion Report. This report shall contain particulars as to which parts of the Plant (proposed to be demonstrated by the CONTRACTOR) have been completed in accordance with the specifications, and which have passed such tests as may have been specified in the Contract or otherwise agreed. The CONTRACTOR shall propose a programme for such demonstration, concurrent with the issue of the Construction Completion Report.
- 15.5 Upon satisfactory completion of any such demonstration the CONTRACTOR and the PURCHASER shall sign the Construction Completion Report affirming that the CONTRACTOR has demonstrated that the Plant or part(s) thereof are substantially complete and in a condition such that the essential procedures required to be undertaken before the Plant is put into operation may safely be carried out. Such Construction Completion Report shall also include notes of any minor items (punch list items etc.) requiring completion before the start-up.

- 15.6 If the PURCHASER is not satisfied that the Plant or part(s) thereof referred to in Article 15.4 are substantially complete he may endorse the Construction Completion Report accordingly, and particularise as to the reasons why the Plant or part(s) thereof are not in accordance with the Contract. The CONTRACTOR shall then complete the Plant or part(s) thereof as necessary and shall repeat the procedure described in Article 15.4.
- 15.7 When all the items of equipment comprised in the Plants or any of the sections of the Off Sites and Utilities have been completely erected pursuant to this Contract, and installed and tested, the CONTRACTOR shall prepare a Mechanical Completion Report which shall be signed by the CONTRACTOR and submitted to the PURCHASER for approval.
- 15.8 The pre-commissioning of the Plants and each section of the Utilities and Off Sites shall consist of the carrying out of such operations and the making of such tests as are listed in Annexure XX to establish the correct mechanical functioning of the Plants. When all such operations and tests have been fully and satisfactorily completed and the Mechanical Completion of the Plant(s) have been achieved, the CONTRACTOR shall prepare a Ready for Commissioning Report which shall be signed by both parties following a joint examination of the Plants or those sections of Utilities and Off Sites concerned, and upon signature of such Report by both parties, the state of readiness for commissioning of the Plants or sections or Utilities and Off Sites concerned shall be deemed to be achieved.
- 15.9 The operations and tests referred to in 15.6 and 15.7 above shall be carried out by the PURCHASER's personnel and undertaken under the supervision of the CONTRACTOR's personnel.
- 15.10 If during the course of the tests mentioned above, any defect(s) or malfunction(s) are apparent in the Vendor's equipment, the CONTRACTOR shall immediately advise the PURCHASER as to such actions that should be taken immediately to facilitate the replacement of the defective equipment or defective parts by the Vendor(s)

in the shortest possible time, and the CONTRACTOR shall assist the PURCHASER in undertaking whatever action which may be necessary in the circumstances.

- 15.11 Thereafter the Plant shall be started up and when all sections of the Plants are in a satisfactory operating state, and specification grade Ammonia and Urea are being continuously produced, the Plant shall be deemed to be in Commercial Production.
- 15.12 The CONTRACTOR will thereafter demonstrate that the Plant is capable of achieving all the guarantee requirements in accordance with the provisions of Article 19.
- 15.13 Subject to the provisions of Articles 18 and 20, the Plant shall be deemed to have been accepted when the CONTRACTOR shall have satisfactorily completed the Guarantee Tests laid down in Article 19 and the PURCHASER has given a Provisional Acceptance Certificate thereof, or as otherwise laid down in the Contract.
- 15.14 Notwithstanding the taking over of the Plant by the PURCHASER, the CONTRACTOR shall assume the responsibility of starting up the Plant, and demonstrating that the Plant is capable of meeting the Guarantees specified in the Contract, together with his other obligations (such as mechanical guarantees, as stated in the Contract) and the CONTRACTOR hereby agrees to fulfil all such obligations under the Contract.
- 15.15 The PURCHASER shall issue a Final Acceptance Certificate to the CONTRACTOR when all the contractual requirements have been satisfied and fully complied with.

ARTICLE 16

EXTENSION OF TIME

16.1 If by reasons of any of the following factors which are de facto beyond the CONTRACTOR's or PURCHASER's control which delay or affect specific work to be undertaken pursuant to this Contract at the CONTRACTOR's Offices, Vendor's shop or plant site viz:

- (a) Vandalism or malicious damage;
- (b) Default on the part of the PURCHASER;
- (c) Failure on the part of other contractors (if any) of the PURCHASER affecting the work;
- (d) Extra work, improvements in design (agreed mutually);
and
- (e) Temporary suspension of work (in writing) under the instructions of the PURCHASER or his authorized representative whereby the work is unduly delayed;

The CONTRACTOR shall within (10) days of such occurrence specified above make written request to the PURCHASER for an extension of time for completion of work or any portion of it to the extent that the factors affecting delay prevailed in the circumstances. Should the PURCHASER consider such claim(s) valid, he shall grant such extension in time which shall reasonably compensate the loss of time of the CONTRACTOR. The CONTRACTOR's claims for such extension shall be made in writing. The granting of this extension shall be without prejudice and shall be free of liabilities on either party on account of any delay in the completion of specific activities affected by the above-mentioned factors. The CONTRACTOR shall also extend the period of validity of the Bank Guarantee(s) and Performance Bond commensurate with the period of extension granted by the PURCHASER.

- 16.2 Should the CONTRACTOR discover any discrepancy or mistake in his process, engineering, instructions, specifications, inspections or procurement, or errors or omissions as the case may be requiring rectification(s) to be undertaken to correct the defects (Article 27) the CONTRACTOR and the PURCHASER shall meet and agree to such extension in time to be allowed the CONTRACTOR for the rectification of defects and corrective engineering. The extension in time thus allowed to the CONTRACTOR shall in no way absolve him of the liabilities for the period of delay and/or the application of Articles 22, 23 and 25 as the case may be except as provided otherwise in this Contract.
- 16.3 The CONTRACTOR's obligation to rectify defects and to take corrective steps shall continue unabated even if the period of extension granted by 16.2 is exhausted, and the CONTRACTOR shall continue his endeavours at his own cost to rectify the defects and take corrective measures provided the PURCHASER agrees to allow such further extension(s) in time (in writing), as requested by the CONTRACTOR. The obligations of the CONTRACTOR herein shall not end until the Absolute Guarantees of the Plants are successfully demonstrated.
- 16.4 The CONTRACTOR's obligation to execute the rectifications pursuant to 16.2 shall be limited to ten (10) months from the date of start-up of the Plant(s), however the period during which the Plant(s) cannot be operated normally by the CONTRACTOR or the period spent in the replacement of equipment (if any such replacement is required under the Contract) shall not be counted in computing the said (10 months) period.
- 16.5 The PURCHASER may either
- (a) on its own initiative;
 - or
 - (b) on the application of the CONTRACTOR made before the day fixed for completion of the work or before any new date for completion fixed under this Subarticle

LIST OF ARTICLES OF THE CONTRACT

	<u>page</u>
LIST OF TECHNICAL ANNEXURES	3
PREAMBLE	5
<u>ARTICLES</u>	
1. Definitions	6
2. Scope of the Contract including Time Schedule	10
3. Scope of Work	12
4. Obligations of the CONTRACTOR	19
5. Obligations of the PURCHASER	25
6. Co-operation and Co-ordination between CONTRACTOR and PURCHASER	27
7. Assignment of Contract	31
8. Supervision of the Work	32
9. Acces to Work	33
10. Procurement	35
11. Prices and Terms of Payment	38
12. Performance Bonds and Bank Guarantees	46
13. Effective Date of Contract	47
14. Time of Essence	49
15. Completion of Work	50
16. Extension of Time	53
17. Materials and Workmanship	57
18. Inspection, Testing and Certification	59
19. Guarantees and Performance Guarantee Tests	61
20. Conditions of Acceptance	71
21. Warranties	74
22. Penalties	75
23. Liquidated Damages	78
24. Bonuses and Incentives	81
25. Liabilities	83

if, in the PURCHASER's opinion, it is in the public interest to extend the time for completion of the work by fixing a new day for completion of the work PROVIDED ALWAYS

- (c) that the PURCHASER shall be the sole judge as to what additional time, if any, may be allowed to the CONTRACTOR, and the PURCHASER's decision as to the sufficiency thereof shall be final and binding upon the CONTRACTOR;
- (d) 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 whatsoever under this Contract;
- (e) that where such extension is granted on the PURCHASER's initiative, no consent thereto on the part of the CONTRACTOR shall be necessary; and
- (f) that in any event no extension of time, whether on the PURCHASER's initiative or on the application of the CONTRACTOR, shall be deemed to have been granted unless the PURCHASER specifically so states by written notice to the CONTRACTOR.

16.6 Without restricting or affecting any other rights or remedies of the PURCHASER under this Contract: where the CONTRACTOR does not complete the work by the day fixed for completion of the work but does complete the work thereafter, the CONTRACTOR shall pay to the PURCHASER

- (a) an amount equal to all salaries, wages and travelling expenses paid by the PURCHASER to persons superintending the work during the period of delay;
- (b) an amount equal to the value to the PURCHASER of the use of the completed work for the period of delay; and
- (c) an amount equal to all other expenses and damages incurred or sustained by the PURCHASER as a result of the work not being completed during the period of delay;
- (d) the amount(s) by way of liquidated damages and penalties specified mutatis mutandis pursuant to Articles 22 and 23 above.

- 16.7 For the purposes of this Article "period of delay" means the period commencing on the day fixed for completion of the work and ending on the day immediately preceding the day on which the work is completed but excluding therefrom any day within a period of extension granted under Article 16.5 above, if on any such day, in the opinion of the PURCHASER, causes beyond the control of the CONTRACTOR delayed completion of the work.
- 16.8 The PURCHASER may, if in the PURCHASER's opinion, it is in the public interest, waive the right of the PURCHASER to the whole or any part of a payment payable pursuant to Article 16.6 above.

ARTICLE 17

MATERIALS AND WORKMANSHIP

- 17.1 The CONTRACTOR is fully responsible for satisfying himself that the materials used by the Vendors in the manufacture of equipment and machinery and other items completely conform to the specifications issued by the CONTRACTOR. The suppliers certificates for the materials shall satisfy the minimum requirements (physical and chemical) specified by the CONTRACTOR, and random testing of materials shall have been done by Vendor or his agents, under the supervision of, and to the satisfaction of, the CONTRACTOR.
- 17.2 The CONTRACTOR shall ensure during progressive inspection of equipment fabrication that the Vendor or his employees strictly follow fabrication instructions and codes specified by the CONTRACTOR, and the quality of workmanship of the persons engaged for the work shall be of acceptable levels to enable the production of equipment and other items in accordance with the qualitative and quantitative standards expressed in the Contract.
- 17.3 When the equipment, machinery or material is ready for final inspection the CONTRACTOR shall ensure that the Purchase Order(s) have been complied with correctly as specified.
- 17.4 The CONTRACTOR shall ensure that the detailed design and material specifications for civil works submitted by the PURCHASER for the CONTRACTOR's review and checking, are in accordance with the requirements supplied by the CONTRACTOR generally (and particularly for all load bearing structures and those exposed to corrosive agents/ environments).
- 17.5 The CONTRACTOR shall assume complete responsibility for any failure of the equipment, materials or machinery due to improper: engineering, basic design, procurement specifications or inspection; and the

the CONTRACTOR shall be liable to take the necessary corrective measures under Article 27 and shall be subject to the punitive terms of Article 23.

ARTICLE 18

INSPECTION, TESTING AND CERTIFICATION

- 18.1 The CONTRACTOR shall be responsible for the inspection of all equipment, spare parts and other items during manufacture and prior to despatch.
- 18.2 Following the issue of purchase order(s) the CONTRACTOR shall carry out (in accordance with his standard procedures) the inspection and testing, as per relevant codes given in the specifications at the shops of Vendors before despatching. The CONTRACTOR shall also require Vendors to provide the necessary test certificates and all other documents required by the Inspecting Authorities or as may be required by the PURCHASER in consideration of the regulation of the regulations in force in (country) and/or as provided for in the specification.
- 18.3 The CONTRACTOR will issue a Certificate of Inspection in respect of all items of Plant and Equipment, before despatch, and shall send copies of such Certificates to the PURCHASER, and Certificates of tests carried out in connection with issue of such Certificates of Inspection.
- 18.4 Wherever required by the PURCHASER, the CONTRACTOR shall associate the PURCHASER or his representatives with such inspection, and undertake the necessary co-ordination for joint inspections.
- 18.5 The CONTRACTOR shall expedite and control the delivery in accordance with efficient procedures in order that the Vendors maintain the delivery terms and conditions provided in the purchase orders.
- 18.6 The CONTRACTOR shall ensure that the Vendors arrange in a timely manner all proper export licences, if necessary, to export the equipment and spare parts to (country). The PURCHASER shall obtain the necessary import licences, permits and shall provide

for shipping arrangements for the equipment and spare parts of foreign origin. The PURCHASER or his shipping agent shall advise the CONTRACTOR or the Vendor(s) as the case may be of the name of the ship and the loading dates fourteen (14) days in advance to allow the Vendors to make the necessary arrangements for loading the consignment on the ship notified by the PURCHASER's shipping agent.

- 18.7 Should the PURCHASER so require, the CONTRACTOR shall recommend a shipping agent to the PURCHASER for despatch of the Plant and Equipment to (name of country).
- 18.8 In the event that the CONTRACTOR during shop inspection anticipates delays in delivery of any equipment, the CONTRACTOR shall promptly notify the PURCHASER and shall undertake measures to overcome delays. In the event that the delays appear inevitable, the CONTRACTOR shall anticipate the quantum of such delays, and inform the PURCHASER, so that the Critical Path Network may be modified accordingly, and the CONTRACTOR shall undertake such remedial steps as may be practical, in the circumstances, to alleviate the difficulties that would be caused by the delays.
- 18.9 The PURCHASER shall be responsible for the clearance of the equipment, spare parts and technical documentation at (name of port) and/or at other entry point(s) into (country) and for internal despatch to Site.

ARTICLE 19

GUARANTEES AND PERFORMANCE

GUARANTEE TESTS

- 19.1 This Article covers the Performance Guarantees of the Plant, and the obligations of the parties connected therewith.
- 19.2 The Plants shall be capable of meeting the requirement of normal operation, capacity, quality of products, consumption of raw materials and utilities, and efficiency of operations all of which are hereby guaranteed by the CONTRACTOR, and which shall be proven and demonstrated by test runs as laid down in this Article provided that the equipment has been purchased in accordance with the CONTRACTOR's recommendations, the Plant(s) have been erected and operated in accordance with the CONTRACTOR's supervision, technical directions and instructions, and that such test runs are conducted in accordance with the conditions set forth herein. For the purposes of the Guarantee Tests, the ammonia storage and the urea storage and bagging shall be excluded from the definition of the Plant.
- 19.2.1 The production capacity of ammonia and urea from the Plants shall be (1000) tons per day ammonia and (1725) tons per day urea, and capable of operating at a stream factor of 330 days per year.
- 19.2.2 The quality of the ammonia from the Ammonia Plant, and of the urea from the Urea Plant shall be in accordance with Annexure XVI.
- 19.2.3 The quality and quantity of carbon dioxide shall be adequate and suitable for the guaranteed capacity of the Urea Plant and quality of urea product.
- 19.2.4 The Plants shall be capable of sustained, steady and continuous operation.

- 19.2.5 The utilities and Off-sites shall be adequate for the sustained and continuous operation of the Plant.
- 19.2.6 The consumption of utilities and raw materials in each of the Ammonia and Urea Plants shall be in accordance with guarantees given below.
- 19.2.7 The effluents from the Plant shall be in accordance with Annexure XVII.
- 19.3 For the purposes of this Article 19, the guarantees outlined in Article 19.2 shall be divided into Absolute Guarantees and Penaltiiable Guarantees, as follows:-
- 19.3.1 Absolute Guarantees shall be deemed to cover:
- (a) The capacity of the Ammonia Plant.
 - (b) The capacity of the Urea Plant.
 - (c) The quality of ammonia and urea.
 - (d) The quality of effluents.
 - (e) The adequacy of the utilities and Off-Sites to meet the capacity of the Ammonia and Urea Plants when operating together.
- 19.3.2 The Penaltiiable Guarantees shall be deemed to be in respect of the consumption of raw materials and utilities for each of the Ammonia and Urea Plants.
- 19.3.3 The sustained steady operation of the Plant shall be demonstrated over a continuous period of, at least, 30 days as given in the test procedure below. Notwithstanding the completion of such tests, the CONTRACTOR warrants that the Plant(s) shall have been designed and procured for steady continuous operation at a stream factor of 330 days per year.

- 19.4 Absolute Guarantees shall be defined as those Guarantees which must be met to satisfy the criteria expressed more particularly in this Article and all of the contractual requirements (including penaltiabe guarantees).
- 19.5 Penaltiabe Guarantees shall be defined as those Guarantees which if not met may be compounded by the payment of penalties as given in subsequent articles, provided, however, that if the consumption of raw materials exceeds (3%) or that the overall guaranteed consumption cost (see Article 27.5.4) exceeds (5%), then the PURCHASER shall have the right to request the CONTRACTOR to modify the Plant in accordance with Article 25 and to demonstrate by such additional guarantee tests, that the consumption of raw materials and utilities are within the above limits.
- 19.6 Absolute Guarantees for individual Plants shall be as given hereunder.

19.6.1 Ammonia Plant

- 19.6.1.1 The Absolute Guarantees for the output of the Ammonia Plant shall be (1000) metric tons per stream day of specification grade ammonia (corrected for strength) representing 100% capacity of the Ammonia Plant, which shall produce 10,000 metric tons of specification grade ammonia in ten (10) consecutive days.
- 19.6.1.2 The quality of the ammonia as per Annexure XVI, analysed in accordance with accepted international methods.
- 19.6.1.3 The quality and quantity of carbon dioxide is adequate and suitable for the guaranteed capacity of the Urea Plant and for manufacture of the desired quality of urea product.

19.6.2 Urea Plant

19.6.2.1 The Absolute Guarantees for the output of the Urea Plant shall be 1725 metric tons per stream day of specification grade urea (corrected for strength) representing 100% capacity of the Urea Plant, which shall produce 17,250 metric tons of specification grade urea in ten (10) consecutive days.

19.6.2.2 The quality of the urea shall conform to the criteria expressed in Annexure XVI.

19.6.3 Notwithstanding the provisions of Articles 19.6.1.1 and 19.6.2.1 above, the Absolute Guarantees for the Ammonia and Urea Plants shall be deemed to have been met if such Plant(s) produce 95% of the capacity of ammonia and urea respectively, and provided the CONTRACTOR agrees to pay the penalties stated in Article 22. The Absolute Guarantees shall only be deemed to have been met if the CONTRACTOR has paid such penalties due under this Article (19.5) and as elsewhere provided in this Contract.

19.7 Penaltable Guarantees for individual Plants shall be as expressed below:

19.7.1 Ammonia Plant

19.7.1.1 The Penaltable Guarantees for the Ammonia Plant shall be as given below:

	Units	Units per metric ton of ammonia (indicative only)*
a) Consumptions		
- Natural Gas (1)	Millions of Kcal	(8.80)
- HP Steam	Metric tons	(1.00)
- Electric Power (2)	Kwh	(32)
- Cooling Water (32°C)	m ³	(275)
- Boiler Feed Water (110°C, 120 Kg/cm ²)	Metric tons	(4.75)

(* These figures are indicative only, and for one particular design.)

	<u>page</u>
26. Insurance	86
27. Rectification of Defects	88
28. Variations, Changes and Additions to Scope of Work	90
29. Right of Use of Proprietary Rights and Licences	92
30. Secrecy	93
31. Patents	95
32. Disclosures	97
33. Indemnification	98
34. Force Majeure	99
35. Suspension of the Work	101
36. Termination of the Contract	103
37. Cancellation of the Contract	104
38. General Provisions	107
39. Accounting and Inspection of Records	110
40. Determination of Reimbursable Costs	112
41. Language governing the Contract	113
42. Applicable Laws and Conformity with local Statutes	114
43. Standards and Codes	115
44. Notices	116
45. Settlement of Disputes	118
46. Arbitration	119

	Units	Units per metric ton of ammonia (indicative only)*
b) Output		
- MP Steam	Metric tons	(0.6)
- LP Steam	Metric tons	(0.1)
- Purge Gas	Millions of Kcal	(0.50)
- Boiler Feeding Water - Pre-heating	Millions of Kcal	(0.25)
- Condensates	Metric tons	(3.00)

*(These figures are indicative only, and for one particular design).

Notes: (1) - Natural gas consumptions refer to the consumption for process and fuel to primary reformer only.

(2) - Electric power consumptions refer to process consumptions only, excluded being the Plant(s) lighting, instrumentation, air conditioning etc.

19.7.1.2 It is understood that in the event there are changes in the individual figures set forth above, the Guarantees given in Article 19.7.1.1 shall be deemed to have been met if the total cost calculated as set forth in Article 23.2.4 is not exceeded.

19.7.2 Urea Plant

19.7.2.1 The Penaltiable Guarantees for the Urea Plant shall be as given below:

	Units	Units per metric ton of urea (indicative only)
a) Consumptions		
- Ammonia (as 100%)	Metric tons	(0.580)
- HP Steam	Metric tons	(1.20)
- Electric Power (1)	Kwh	(25)
- Cooling Water (32°C)	m ³	(100)
b) Productions		
- LP Steam	Metric tons	(0.10)
- Condensate	Metric tons	(0.60)

Note: (1) - Electric power consumptions refers to process consumptions only, excluded being the Plant(s) lighting, instrumentations, air conditioning, urea storage and bagging etc.

19.7.2.2 It is understood that in the event there are changes in the individual figures set forth above, the Guarantees given in Article 19.7.2.1 shall be deemed to have been met if the total cost calculated as set forth in Article 21.2.4 is not exceeded.

19.8 Performance Guarantee Test Procedures

19.8.1 Ammonia Plant

Performance Guarantees of the Ammonia Plant shall be proven by means of the following Performance Guarantee Tests:

19.8.1.1 A twenty (20) day sustained continuous test under normal operating conditions in order to demonstrate the capability for continuous steady operation and capacity at an average of 90% of capacity of the Ammonia Plant, together with the capability to produce specification grade ammonia and carbon dioxide, followed immediately by:-

19.8.1.2 A ten (10) day uninterrupted continuous test under normal operating conditions, in which the operation of the Ammonia Plant at 100% capacity, and the consumption of raw materials and utilities, will be demonstrated, while producing specification grade ammonia. The tests for capacity and quality shall be applicable for all ten (10) days of the test. 100% capacity of the Ammonia Plant shall be 10,000 metric tons of 99.8% product, and shall be corrected for any increase in strength. For consumption of the raw materials and utilities the test period will be seven (7) days.

19.8.2 Urea Plant

Performance Guarantees on the Urea Plant shall be proven by means of the following Performance Guarantee Tests:

19.8.2.1 A twenty (20) day sustained continuous test under normal operating conditions in order to demonstrate the capability for continuous steady operation and capacity at an average rate of 90% of the Urea Plant together with the capability to produce urea of specification grade, followed immediately by :-

19.8.2.2 A ten (10) day uninterrupted continuous test under normal operating conditions in which the operation of the Urea Plant at 100% capacity, and the consumption of raw materials and utilities will be demonstrated while producing specification grade urea. The tests for capacity and quality shall be applicable for all ten (10) days, and the task for consumption shall be for five (5) days within the ten (10) day test period. 100% capacity of Urea Plant shall be 17,250 metric tons of 46.3% N. product, and shall be corrected for any increase in strength.

19.8.3 The ten (10) day Guarantee Test(s) of the Plant(s) shall run immediately after the successful completion of the relevant twenty (20) days test(s).

19.8.4 Within the ten (10) days period specified above under Sub-articles 19.8.1 and 19.8.2, (unless as otherwise agreed) the Ammonia and Urea Plants will be run at capacity for three (3) days to demonstrate that all services are adequate for the operation of the Ammonia and Urea Plants, and utilities together.

- 19.9 The procedures to be followed for the execution of the Guarantee Tests stated in this Article shall be agreed upon between the parties three (3) months before the commencement of the above tests* Instrument tolerances shall be those warranted by the Vendors of the said instruments. The PURCHASER shall have the right to specify instruments with low margin of tolerance of measurement of the Plant capacity and consumptions.
- 19.10 The Performance Guarantee Tests of the Plants shall be run under the supervision of the CONTRACTOR's personnel but all measurements will be taken jointly by the PURCHASER and the CONTRACTOR.
- 19.10.1 The first twenty (20) day test of Ammonia and/or Urea Plant shall commence within forty-five (45) days from the startup of the Plant(s). This forty-five (45) day period shall be extended if the Plant(s) are unable to operate normally due to no fault of the CONTRACTOR. In the event of failure of this test the CONTRACTOR shall be permitted not more than three other tests to be run within the twelve (12) months immediately thereafter.
- 19.10.2 If, for reasons ascribable to mistake(s) and/or error(s) in processes and/or detailed engineering or other services provided or performed by the CONTRACTOR and/or mistake(s) and/or error(s) in the CONTRACTOR's specifications and instructions and the CONTRACTOR is not able to perform the test(s) within twelve (12) months, then the provisions of Articles 23 and 25 will apply.
- 19.10.3 The CONTRACTOR shall have the right to have the Plant(s) operated in accordance with his requirements during the period permitted for the CONTRACTOR to perform the test(s), and the PURCHASER's personnel shall work under the technical instructions of the CONTRACTOR. The PURCHASER shall have the right to operate the Plant(s) as and when such operations do not interfere with the CONTRACTOR's work.

* The procedures for such tests may be agreed between the parties prior to the Effective Date of Contract if necessary.

- 19.11 In the event of the CONTRACTOR not completing his Performance Tests of the Plant(s) within six (6) months after startup of the Plant(s), the PURCHASER shall have the right to stop all local payments to expatriate personnel, and, whenever required, the CONTRACTOR shall extend the validity of the relevant Bank Guarantee, provided that the period during which the Plant(s) cannot be operated normally by the CONTRACTOR or the period spent in the replacement of any equipment (if any such replacement is required under the Contract) shall not be counted in computing the said six month period.
- 19.12 If the ten (10) days capacity Performance Test(s) is interrupted due to reasons for which the CONTRACTOR is not responsible, the Plant(s) shall be started again as soon as possible and when the Plant(s) have reached normal operating conditions, the Test(s) shall continue immediately thereafter. The duration of the Test(s) shall be extended by the duration of such interruptions and the Test(s) shall then be deemed to have been performed continuously, provided however, that, the Plant has in fact been operated for a minimum of a five (5) day period continuously without interruption.
- 19.13 After completion of any Performance Test (which the CONTRACTOR believes to be a successful test) the CONTRACTOR shall prepare a Performance Test Report which should be signed by the CONTRACTOR and submitted to the PURCHASER for approval.
- 19.13.1 If in the PURCHASER's opinion, the said Report is found to be satisfactory, the PURCHASER shall issue within ten (10) days from receipt of the CONTRACTOR's Report an Acceptance Certificate or shall inform the CONTRACTOR's site representative within the same period the reasons for not-acceptance.
- 19.13.2 In the event of the PURCHASER failing to issue the Acceptance Certificate or to inform the CONTRACTOR as provided in Article 19.13.1, the Acceptance of the Plant for which the Performance Test was conducted shall be deemed to have taken place.

- 19.14 All obligations of the CONTRACTOR with respect to guarantees mentioned in this Contract shall be deemed to have been fulfilled and the Plants accepted if for reasons not attributable to the CONTRACTOR the first Guarantee Test cannot be carried out within twenty-four (24) months from the last shipment of machinery, or within sixty (60) months from the Effective Date of the Contract whichever comes later. In such event the Bank Guarantee shall expire automatically and the payment of the final instalment of the monies due shall be made to the CONTRACTOR as provided in Article 11.
- 19.15 The Acceptance of the Plants under Article 19.13 and 19.14 and the issue of Certificates thereof shall be considered to be provisional, until all of the obligations of the CONTRACTOR under this Contract shall have been met. The issue of these Provisional Acceptance Certificates shall, however, entitle the CONTRACTOR to receive all payments due on completion of Guarantees and Acceptance of the Plant, in accordance with Article 11.

ARTICLE 20

CONDITIONS FOR ACCEPTANCE

The provisions governing conditions for acceptance shall be as follows:

- 20.1 When the CONTRACTOR has provided to the PURCHASER all Certificates of Inspection and Certificates of Materials applying to each of the major equipment, and machinery.
- 20.2 When the CONTRACTOR has obtained the Mechanical Warranties and Performance Guarantees from the Vendors of equipment and machinery and provided the same to the PURCHASER.
- 20.3 When the CONTRACTOR has provided all documents listed in Annexure XV to the PURCHASER.
- 20.4 When the CONTRACTOR has completed the "Construction Completion Report" in respect of each equipment/section/Plant(s) included in the Contract, all of which in the CONTRACTOR's opinion are mechanically complete in accordance with the Contract, and have successfully passed such tests and demonstrated their capability as may have been specified in the Contract. (The "Construction Completion Report" shall state that the CONTRACTOR proposes to demonstrate tests on the equipment/section/Plant(s) within seven to fourteen (7 to 14) days of the date therefrom as agreed with the PURCHASER. The PURCHASER after having duly satisfying itself as to the adequacy and completeness of the tests demonstrated by the CONTRACTOR shall have signed the Report accordingly.)
 - 20.4.1 In the event that any of the test(s) results have been unsatisfactory in reference to any equipment/section/Plant(s), the PURCHASER shall endorse the same on the "Construction Completion Report". The CONTRACTOR after rectifying defects and undertaking such corrective measures as are necessary shall demonstrate such of the tests as required to prove the

performance of the equipment/section/Plant(s) in question to the satisfaction of the PURCHASER, and, thereafter shall obtain the PURCHASER's signatures approving the relevant "Construction Completion Report".

20.4.2 The Pre-commissioning Tests shall be demonstrated on the equipment after preparation of the "Construction Completion Report".

20.5 When all such tests have been satisfactorily completed, and the Mechanical Completion has been successfully proved to the satisfaction of the PURCHASER who has then approved the Mechanical Completion Report for the entire Works, the CONTRACTOR shall prepare the "Ready for Commissioning Report" for signatures by both parties to the Contract following joint examination of the Plant. The "Ready for Commissioning Report" shall signify the acceptance of the mechanical completion stage of the Works, and the readiness of the Plant for commissioning.

20.6 When the Performance Guarantee Tests laid down in Article 19 in accordance with criteria laid down in Articles 19.3 to 19.7 inclusive, the methodology laid down in Article 19.8 and procedures laid down in Articles 19.9, 19.10, 19.11 to 19.13 shall have been successfully demonstrated and proved to the satisfaction of the PURCHASER, and the CONTRACTOR has prepared Performance Test Certificate(s) and submitted the same for signatures and acceptance by the PURCHASER:

20.6.1 The approval of the "Performance Test Certificate(s)" by the PURCHASER (if without reservations) shall be considered as signifying the acceptance of the Plant(s)/Works, and the completion of the obligations of the CONTRACTOR with respect to the Guarantee Tests stated in Article 19 shall be deemed to have been fulfilled.

20.6.2 If for any reason the Guarantee Test performance is not accepted by the PURCHASER, or is accepted subject to certain conditions for rectification of defects and the

CONTRACTOR has then rectified the defects (Article 20.7) and demonstrated Performance Guarantee Tests to the satisfaction of the PURCHASER, the Plant shall be deemed to have been accepted. During the period when the defective sections of the Plant(s) are being rectified, if certain sections of the completed Plant/Works can be operated to give commercial production, then the same may be taken over by the PURCHASER provided that this is done without interfering with the efforts of the CONTRACTOR for the rectification of defects or in the performance of his obligations under the Contract.

- 20.7 All obligations of the CONTRACTOR with respect to Guarantee Tests under Article 19 shall be deemed to have been fulfilled and the Plant shall be accepted if for reasons not attributable to the CONTRACTOR, the first Guarantee Tests cannot be carried out within twenty-four (24) months from the last shipment of equipment or machinery, or within sixty (60) months from the Effective Date whichever is the later.
- 20.8 Acceptance of the Plant or of any specified section by the PURCHASER shall not affect the obligations of the CONTRACTOR under the Contract and shall not be construed as evidence that the work, material or any part thereof is complete.

ARTICLE 21

WARRANTIES

- 21.1 The CONTRACTOR shall assume responsibility for the quality, duration and effect of the warranties provided for those portions of the equipment, spare parts and other items being fabricated pursuant to the obligations of the CONTRACTOR.
- 21.2 In inviting bids for the equipment, machinery and materials the CONTRACTOR shall ensure that adequate warranties for mechanical soundness and guarantees for performance are given by the successful bidder. The CONTRACTOR shall assist the PURCHASER in obtaining warranties and guarantees to ensure satisfactory performance of the equipment or machinery supplied from Vendors, while issuing the Purchase Order(s), and furthermore at the time of taking delivery of the equipment or machinery.
- 21.3 The CONTRACTOR shall make his best endeavours to obtain mechanical guarantees and warranties from Vendors. These guarantees shall be valid for a minimum period of twelve (12) months after startup of the equipment or for a period not less than twenty-four (24) months from the date of shipment whichever is earlier. Such guarantees shall in no event absolve the CONTRACTOR from his overall responsibilities for the continuous and steady operation of the Plant(s) as provided under Article 19, and shall not in any way prejudice the exercise by the PURCHASER of his rights and remedies under the Contract.

LIST OF TECHNICAL ANNEXURES*

- I. Brief description of the plant
- II. Basis of design
 - (i) Raw material specifications
 - (ii) Meteorological data
 - (iii) Soil conditions
 - (iv) Codes and standards
 - (v) Statutory regulations (boiler etc.)
 - (vi) Limitation on transportation of equipment
 - (vii) Definition of battery limits
 - (viii) Characteristics of utilities and services and limits of supply
 - (ix) Effluent standards; emission standards
- III. Definition of the battery limits (a drawing)
- IV. Design criteria as agreed
- V. Document requiring approval of the PURCHASER
- VI. Detailed description of services to be performed by the CONTRACTOR
- VII. Detailed description of services to be performed by the PURCHASER
- VIII. Scope of delivery, including list of equipment and equipment specifications
- IX. List of catalysts
- X. List of spare parts
- XI. List of chemicals
- XII. List of prequalified vendors of critical equipment items
- XIII. Exclusions from the scope of delivery
- XIV. Scope of delivery of the PURCHASER
- XV. Time schedule of implementing each stage of the Contract

* The Technical Annexures (I to XXVIII) are reproduced in an Addendum to this Contract.

ARTICLE 22

PENALTIES

- 22.1 No bond or undertaking given or supplied by the CONTRACTOR to the PURCHASER (whether required by the terms of this Contract or by any other agreement between the parties hereto) shall in any way or to any degree affect, alter or limit the liability of the CONTRACTOR under this Contract and the acceptance by the PURCHASER of any such bond or other undertaking shall neither be interpreted or construed as effecting or implying any waiver by the PURCHASER of any PURCHASER-rights or remedies nor as the acceptance of coverage or protection in lieu of any PURCHASER-rights or remedies under this Contract.
- 22.2 The PURCHASER shall have the rights of set-off as follows:
- 22.2.1 In the event that the PURCHASER considers that it possesses a claim against the CONTRACTOR under, arising out of, or in any way connected with this Contract, the PURCHASER may at any time (whether before or after the completion of the work under this Contract and whether such completion is effected by the CONTRACTOR, the PURCHASER or another person) calculate the amount of the damage or loss upon which such claim is based and (without restricting any right of set-off or counter-claim given or implied by law) may set-off against any amount then or to be subsequently payable to the CONTRACTOR under this Contract, any sum deemed by the PURCHASER to be payable to the PURCHASER by the CONTRACTOR pursuant to any such above-mentioned claim, and, without restricting the generality of the foregoing, the PURCHASER may deduct from any sum otherwise then or to be subsequently payable or repayable to the CONTRACTOR under any provision of this Contract (including provisions pertaining to the Performance

Bond or Bank Guarantee) any sum so deemed payable or retainable to or by the PURCHASER either by virtue of other provisions of this Contract or by virtue of the right off set-off or counter-claim, whether as conferred by this Article or otherwise.

22.2.2 Should the PURCHASER exercise any such right of set-off as envisaged by Article 22.2.1 above, the PURCHASER shall specifically notify the CONTRACTOR in writing that the said right is being exercised IT BEING EXPRESSLY AGREED that no letter or other communication from the PURCHASER shall constitute such notification to the CONTRACTOR unless the said letter or other communication so stipulates.

22.2.3 At any time up to thirty (30) days after the receipt of the notification contemplated by Subarticle 22.2.2 above, the CONTRACTOR may institute proceedings in a Court of competent jurisdiction to establish that the damage or loss as calculated by the PURCHASER did not in whole or in part constitute a valid legal claim against the CONTRACTOR but after the expiry of the said thirty (30) days the CONTRACTOR shall be deemed to have acknowledged the validity, both as regards quantum and otherwise, of the aforesaid claim of the PURCHASER.

22.2.4 Should the amount of the above-mentioned claim of the PURCHASER exceed the amount or value of the set-off contemplated by Subarticle 22.2.1 above, nothing herein shall be construed as a bar to the right of the PURCHASER to adopt any other legal measures available against the CONTRACTOR for the amount of such excess.

22.3 The rights of the PURCHASER pursuant to Article 23 shall be in addition to, and shall not be prejudiced by, such further rights provided by this Article 22, or by any other provision of this Contract.

22.4 Except for the damages, penalties and other obligations stipulated in the Contract, the CONTRACTOR shall not be liable, in any event, whether under the Contract or for loss of anticipated profits, or any consequential loss or damage arising from any cause, except to the extent of repaying to the PURCHASER, or directing that payment be made to the PURCHASER any amounts receivable under Article 26, and/or pursuant to other insurance policies and coverages held by the CONTRACTOR.

ARTICLE 23

LIQUIDATED DAMAGES

23.1 The CONTRACTOR shall be liable to the payment of Liquidated Damages for default of the several responsibilities under provisions of Articles 10 and 19, and as detailed elsewhere in the Contract, as follows:

23.1.1 For the delay in the delivery of the technical documents stipulated in Annexure SV the agreed Penalties shall be as follows: -

For each week in delay in the submission of a required document an amount of (amount) subject to an overall maximum liability of (amount) under this Article.

23.1.2 For delay in the submission of bid tabulation as per Article 10 the agreed liquidated damages shall be (amount) per week of delay in the submission of the required documents to a maximum of (amount) under this Article.

23.1.3 For non-fulfilment of Absolute Guarantees at 100% capacity but subject to fulfilment of Absolute Guarantees at 95% of capacity, a penalty of 1% of the total price of the Contract (give amount) (as stated in Article 11.1) for each 1% of lower production than of the 100% capacity of urea.

23.2 In the event that the Absolute Guarantees have been successfully demonstrated and proved but the Penaltiable Guarantees are not met, the CONTRACTOR shall have the option of either requesting the PURCHASER to execute modifications, additions and deletions in the Plant(s), in which case the provisions of Article 25 shall be applied, or, to pay by way of agreed liquidated damages, in consideration of any and all claims in connection with the non-fulfilment of the guaranteed consumption cost, (but subject to the provisions of Article 19.5), the following:

- 23.2.1 For the Ammonia Plant: for each full 0.5% (zero point five percent) exceeding the guaranteed consumption cost as given in Article 23.4.4 below an amount of _____ up to a maximum of _____.
- 23.2.2 For the Urea Plant: for each full 0.5% (zero point five percent) exceeding the guaranteed consumption cost as given in Article 23.4.4 below an amount of _____ up to a maximum of _____.
- 23.2.3 By virtue of the above payments being made the obligations of the CONTRACTOR in connection with the performance of such guarantees shall be considered as fulfilled and the Plant(s) as accepted, subject however to the provisions of Article 19.5.
- 23.2.4 The daily guaranteed cost of manufacture shall be computed by calculating the guaranteed daily cost of inputs of raw material and utilities minus the guaranteed output of utilities, according to the costs given below for each item, and multiplying by the guaranteed daily capacity of each Plant, to obtain the daily guaranteed net cost of raw materials and utilities.

Natural Gas	(Value) per million Kcal.
HP Steam	(Value) per ton
MP Steam	(Value) per ton
LP Steam	(Value) per ton
Cooling Water	(Value) per m ³
Boiler Feed Water	(Value) per m ³
Purge Gas of Ammonia Plant	(Value) per million Kcal.
Condensate	(Value) per ton
Ammonia	(Value) per metric ton

- 23.3 In the event of non-fulfilment of Absolute Guarantees, within nine (9) months of startup, the CONTRACTOR shall have the right to repair or replace equipment to fulfil the Absolute Guarantees within a further

period of nine (9) months. If the CONTRACTOR is unable to fulfil Guarantees within this period, the PURCHASER shall have the right to recover the full costs necessary to correct the Plant to ensure that the Absolute Guarantees are met. The amount of such costs shall be assessed by an international competent authority solely appointed by the PURCHASER. The assessment made shall be final and binding upon the CONTRACTOR.

- 23.4 If the CONTRACTOR should fail to complete the works or part thereof within the limits of time guaranteed in the Contract (Annexure XV) or within the extension(s) of time (Article 17), the CONTRACTOR shall pay to the PURCHASER the amounts stated in this Article 23 as liquidated damages for such default and failure. The PURCHASER without prejudice to any other method of recovery may deduct the amount of such liquidated damage payments from any payments due or which may become due to the CONTRACTOR. The payment of or deduction of such liquidated damages shall not relieve the CONTRACTOR from his total obligations to complete the works or from any other of his obligations and liabilities under the Contract.

ARTICLE 24

BONUSES AND INCENTIVES

24.1 The CONTRACTOR hereby agrees to perform the work in a well-planned and expeditious manner so that the completion of the work at various stages and that of the whole Works is achieved according to the time schedule given in Article 2 and detailed in Annexure XV of this Contract. In the event that the CONTRACTOR fully accomplishes the work under Article 3 and demonstrates the Guarantees given in Article 19 during a period of less than thirty-eight (38) months after the Effective Date of the Contract, the CONTRACTOR shall be entitled to receive Bonus as hereunder specified for each complete week of saved time in terms of the completion of the works:

- (a) (1)% of fixed fees under Article 11.3, 11.4;
- (b) (1)% of reimbursable fees under Article 18.6 actually paid during the agreement.

Payments under this Article shall be made within seven (7) months of acceptance of the Plant provided no latent or basic defects appear in the Plant and/or equipment during this period affecting its capacity or performance.

24.2 The CONTRACTOR hereby agrees that the performance of the Plant shall be demonstrated pursuant to the criteria under Article 19 of this Contract. However, should improvements in the performance of the Plant in respect of capacity (Article 19.6) and consumptions (Article 19.3.2) be achieved and proved, which improvements are certified by the PURCHASER, the CONTRACTOR shall be entitled to the following Bonus:

- (a) (1)% of fixed fees under Article 11.3 and 11.4 for each 5% improvement in the capacity of the plant while producing specification grade ammonia and urea (taken as a whole) over that guaranteed in Article 19.2.1 during ten (10) days guarantee tests (Articles 19.8.1.2 and 19.8.2.2) but subject to the ability of the utilities to operate at this capacity (Article 19.8.4).

- (b) (1)% of overall savings in consumptions given under Article 19.7, clearly demonstrated during the ten (10) day Guarantee Tests (Articles 19.8.1.2 and 19.8.2.2), and computed on the basis of a period of 330 days.

The provisions of this Article shall be applicable only when subject to the successful achievement of the minimum of the guarantees provided for:

- (a) twenty (20) days test under Articles 19.8.1.1 and 19.8.2.1
- (b) ten (10) days test under Articles 19.8.1.2 and 19.8.2.2.

The payments under this Article shall be made within seven (7) months of the acceptance of the Plant provided that the Plant has maintained the improved capacity and consumptions demonstrated by the CONTRACTOR for an average of five (5) months during this period.

ARTICLE 25

LIABILITIES

25.1 In the event that, due to mistakes, negligence, or errors in the processes and/or in the detailed engineering performed by the CONTRACTOR and/or in the CONTRACTOR's procurement or specifications, instructions and inspections, or for whatsoever reason falling within the CONTRACTOR's obligations, the CONTRACTOR is unable to demonstrate the Absolute Guarantees under Article 19, due to a defective condition, the CONTRACTOR shall request the PURCHASER to perform modifications, additions and/or deletions which in the CONTRACTOR's professional judgement are necessary to achieve the guarantees. The CONTRACTOR shall provide free of charge to the PURCHASER all the engineering, drawings, procurement, as well as supervision services and assume all costs connected with the above work, and the PURCHASER shall perform such modifications, additions and/or deletions at his own expense within a period of time to be mutually agreed. The CONTRACTOR shall reimburse the PURCHASER the ex-Plant Site cost of equipment and all associated costs, should a substitution or replacement of equipment be necessary.

25.1.1 The CONTRACTOR shall be allowed to conduct (as many further) Guarantee Tests as it may require within a period of twelve (12) months from the date of startup; if the request for the modifications, additions and deletions should have occurred, the period during which the Plant(s) cannot be operated normally by the CONTRACTOR or the period spent in the replacement of equipment (if any such replacement is required under the Contract) shall not be counted in computing the said twelve (12) months period.

25.1.2 If the period stated in Article 25.1.1 is exceeded and if within this period the Absolute Guarantees of the Plants have not been successfully demonstrated, the CONTRACTOR shall nevertheless

continue in his endeavours at his own cost (provided the PURCHASER agrees so in writing) for a specified period.

- 25.2 In the event that the CONTRACTOR does not comply with Article 25.1 or the PURCHASER does not agree to extend the period stipulated in Article 25.1.2, the PURCHASER shall have the right to terminate the Contract and shall have the right to have recourse to all legal and equitable remedies, including the option to proceed to Arbitration and/or for the assessment of compensatory payments to the PURCHASER in consideration of the circumstances. The unlimited liability of the CONTRACTOR to meet the Absolute Guarantees shall remain notwithstanding and shall not be qualified, limited or restricted by any other provisions of the Contract, excluding consequential loss liability. The PURCHASER and the CONTRACTOR agree that, if necessary, in the event of arbitration, the Arbitrator(s) shall have access to the Plants, notwithstanding anything contained in Article 30 in order to assess damages for the CONTRACTOR's failure to meet his guarantee obligations.
- 25.3 The duration of the CONTRACTOR's option to request the PURCHASER for execution of the modifications, additions and/or deletions referred to in Article 23.2 shall be limited to ten (10) months from the date of startup of the Plant(s), provided that the period during which the Plant(s) cannot be operated normally by the CONTRACTOR or the period spent in the replacement of equipment (if any such replacement is required under the Contract) shall not be counted in computing the said ten (10) months period.
- 25.4 The total liability of the CONTRACTOR under the Contract shall not exceed _____% of the total Contract price or U.S.\$ _____, whichever is the greater, with the exception of the CONTRACTOR's unlimited liability for the fulfilment of Absolute Guarantees, as well as the reimbursement to the PURCHASER of any amount(s) received by the CONTRACTOR under any Insurance Policies held by the CONTRACTOR as well as through those other coverages specifically taken out for the purposes of this Contract.

- XVI. Quality of products
- XVII. Quality and quantity of effluent;
Effluent standards; emission standards
- XVIII. Technical training of the PURCHASER's personnel
- XIX. Procedures for changes in scope of work
- XX. Pre-operating procedures and procedures for
guarantee tests
- XXI. Manuals
 - (a) for operation, maintenance and safety;
 - (b) for monitoring environmental aspects;
 - (c) for chemical analytical methods;
 - (d) for lubrication;
 - (e) for instrumentation;
 - (f) vendor's pamphlets, operational and
maintenance manuals and drawings
- XXII. Form of performance bonds
- XXIII. Form of bank guarantees
- XXIV. Packing, shipping and marking instructions
- XXV. Storage at site, general and marking instructions
- XXVI. Procurement procedures (where appropriate)
- XXVII. Schedule of rates and charges and terms of conditions
of expert services
- XXVIII. Insurance Policies

25.5 The CONTRACTOR shall not be liable for any payment in case any property or equipment of the PURCHASER shall be damaged or lost during transportation, erection, startup and during guarantee tests except where such loss or damage has occurred due to the negligence, errors, omissions or instructions given by the CONTRACTOR's personnel.

ARTICLE 26

INSURANCE

- 26.1 Without restricting in any manner the generality of any other provision of the Contract, and in particular any such provision as pertaining to the liability or responsibility of the CONTRACTOR, it is expressly agreed that throughout the period commencing from the date of commencement of work or Effective Date of the Contract, whichever is earlier, and continuing until Final Acceptance of the work(s) (and/or for such extended periods that the PURCHASER and CONTRACTOR may agree upon):
- 26.1.1 The CONTRACTOR and/or the PURCHASER, as the case may be, shall take out and keep in force the Insurance Policies enumerated in Annexure XXVIII for such period(s) of time as may be necessary under the Contract.
- 26.1.2 To the extent specified in Annexure XXVIII the Contractor shall, at the Contractor's expense, maintain additional insurance policies in a form and with a company or companies approved by the PURCHASER, such policies to be of the respective natures, in the amounts, against the risks, and for the periods required by the Contract, or implied therein.
- 26.1.3* To the extent that such a policy is obtainable, the PURCHASER and the CONTRACTOR shall by mutual agreement obtain a special insurance policy (where the PURCHASER shall be deemed to be the beneficiary) providing coverage for consequential loss caused by defective design, material or workmanship including defective construction or erection within the control of the CONTRACTOR or his sub-contractors, suppliers or manufacturers. It is expressly agreed however

* This Subarticle uses the wording drafted by the First Working Group on Contracts and Insurance, (Vienna, 14-17 February 1978) in its Report paragraph 50.

that no liability shall attach to the PURCHASER or the CONTRACTOR purely by reason of payment of the premium for such a policy.

Each of the policies envisaged by subparagraphs 26.1.1, 26.1.2 and 26.1.3 above is to contain such specific terms and conditions, if any, as stipulated or contemplated in Annexure XXVIII.

- 26.2 Within thirty (30) days after obtainment of each of such policies, as contemplated by 26.1 above, the CONTRACTOR shall deposit originals of each of such policies with the PURCHASER PROVIDED HOWEVER that acceptance by the PURCHASER of any such original shall for no purpose be construed as an acknowledgement by the PURCHASER that the insurance is adequate in nature, amount and/or scope.
- 26.3 The CONTRACTOR shall, whenever required from time to time by the PURCHASER, submit to the PURCHASER adequate proof that the insurance(s) contemplated by 26.1 above being his responsibility, as the case may be, remain in force.
- 26.4 Should the CONTRACTOR fail to take out and/or keep in force the insurances contemplated by 26.1 within the scope of his responsibility, then the PURCHASER may at the PURCHASER's option either:
- (a) take out insurance considered appropriate and necessary in the circumstances, in which event any premiums paid or payable by the PURCHASER shall immediately constitute a debt due from the CONTRACTOR to the PURCHASER, the amount of which debt, without restricting or superseding any other rights or remedies of the PURCHASER under this Contract or otherwise may be retained as the PURCHASER's monies out of any amount(s) otherwise payable by the PURCHASER to the CONTRACTOR;
 - (b) hold the CONTRACTOR liable in the same manner and degree as if the CONTRACTOR were the insurance underwriter of the policies such as those contemplated by 26.1 above.

ARTICLE 27

RECTIFICATION OF DEFECTS

- 27.1 In the event that due to mistakes, negligence or errors in the processes and/or in the detailed engineering performed by the CONTRACTOR and/or in the CONTRACTOR's procurement, or specifications, instructions and inspections, or for whatever reason falling within the CONTRACTOR's obligations, the CONTRACTOR is unable to demonstrate the Absolute Guarantees under Article 19, due to a defective condition, the CONTRACTOR shall request the PURCHASER to perform rectifications, modifications, additions and/or deletions which in the CONTRACTOR's professional judgement are necessary to rectify the defects and thereby to achieve the guarantees. The CONTRACTOR shall provide free of charge to the PURCHASER all the engineering, drawings procurement and other services as well as supervision services connected with the above work and the PURCHASER shall perform the rectifications and other work referred to above at his own expense (in accordance with the CONTRACTOR's advice and as agreed) within a period of time to be mutually satisfactory. The CONTRACTOR shall reimburse the PURCHASER the ex-Plant Site cost of equipment should a substitution or replacement of equipment be necessary.
- 27.2 Where in pursuance of this Article the CONTRACTOR removes any defective equipment and replaces it with new equipment, then the defects liability period shall begin to run anew in relation to such replaced equipment in like manner had it been taken over on the date when it would have passed the appropriate take-over test, or, where no such test would have been required to have been carried out, on the date when it is actually first put into satisfactory use.
- 27.3 If the CONTRACTOR shall neglect or refuse to make good within a reasonable time any defect(s) for which it is responsible under this Contract, then the PURCHASER may take such remedial steps

to rectify the defects and correct all associated problems and the cost of such remedial steps shall be borne by the CONTRACTOR, and/or may be recovered in any manner at the discretion of the PURCHASER.

- 27.4 The CONTRACTOR or the PURCHASER, as the case may be, shall in every case keep such contemporary and accurate records of the costs of making good any defect(s) in pursuance of this Contract and as may be reasonably required and, each party shall be entitled to receive copies of relevant documents.
- 27.5 If any defect is found during inspection (before despatch) of equipment, machinery or materials of Vendor, or during erection or pre-commissioning tests at the site of the Plant, the CONTRACTOR shall immediately advise the PURCHASER as to what action should be taken to have the Vendors replace defective equipment, defective parts, or inadequate material in the shortest possible time. The CONTRACTOR shall assist the PURCHASER in facilitating any action which may be necessary in such circumstances.
- 27.6 If any defect is found in the Vendor's equipment, machinery, spare parts or materials within the period when the guarantee is valid, the CONTRACTOR shall assist the PURCHASER in immediately undertaking the necessary measures to have the Vendor(s) replace the defective equipment, material, machinery or spare parts within the shortest possible time, including the air freighting of the equipment or parts etc. at Vendor's cost.

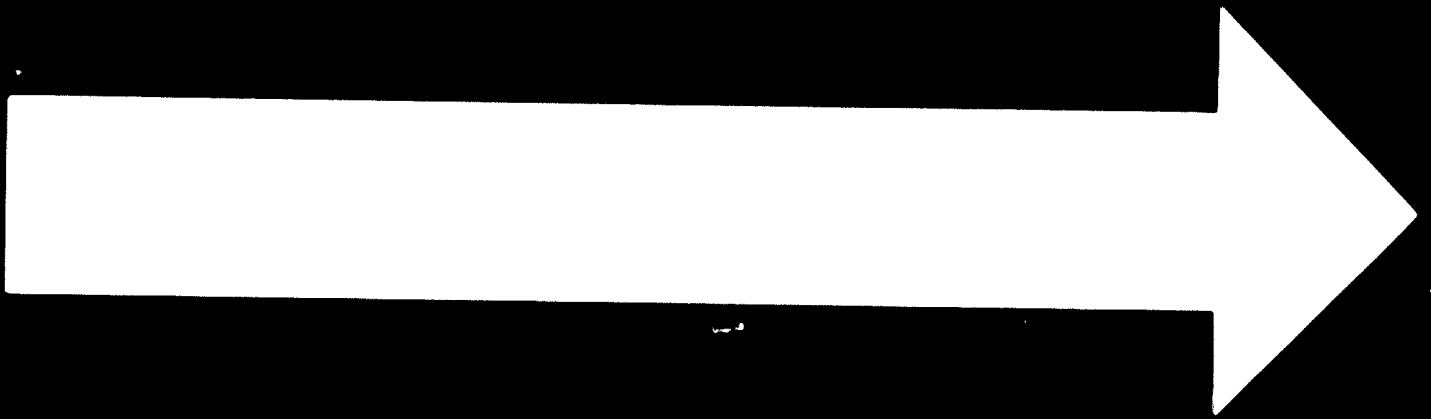
ARTICLE 28

VARIATIONS, CHANGES AND ADDITIONS TO SCOPE OF WORK

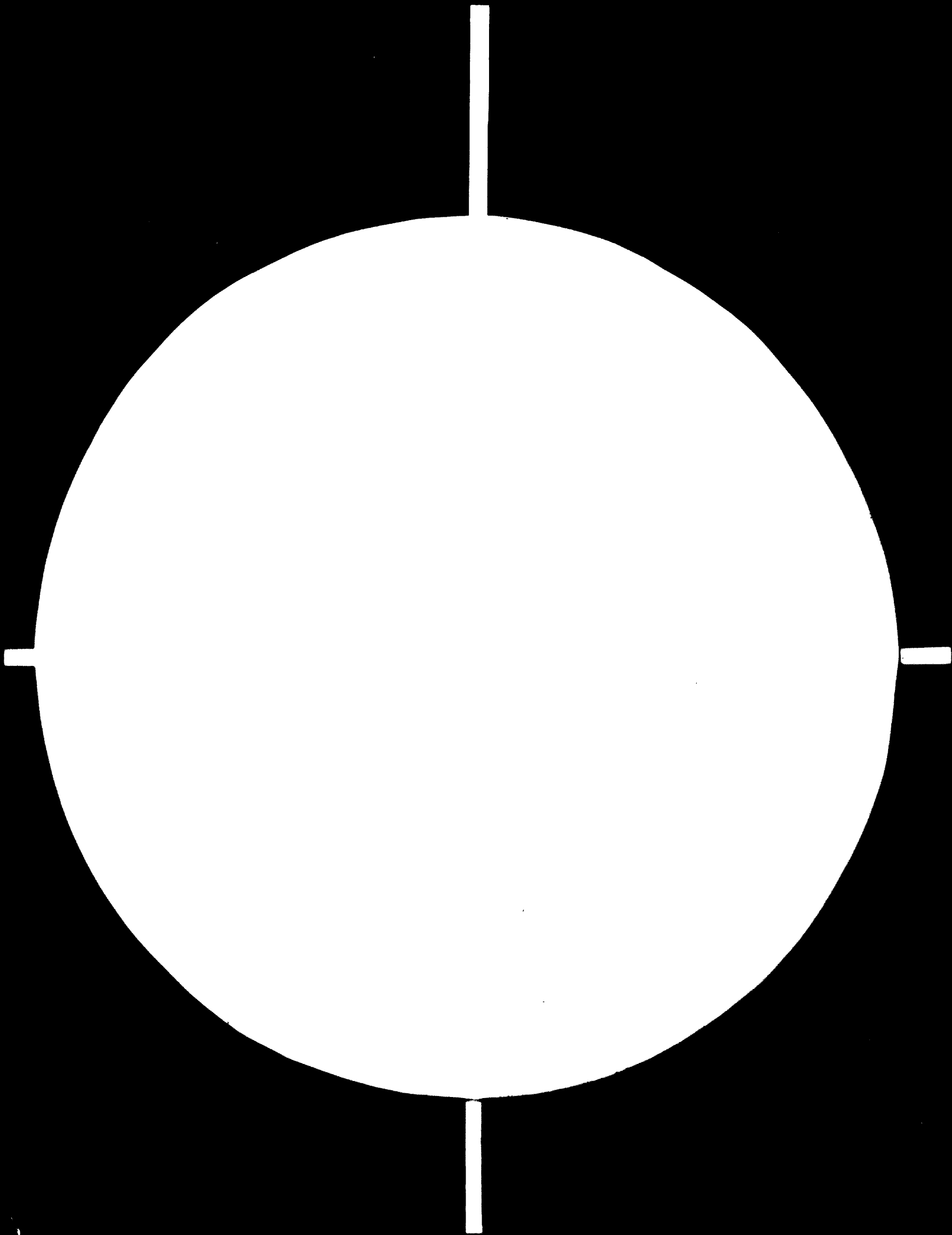
- 28.1 Whenever the PURCHASER shall make a request to the CONTRACTOR for change in design, or where services are required to be performed by the CONTRACTOR which in the opinion of the CONTRACTOR are in addition to the services which the CONTRACTOR is obligated to perform under this Contract, or which in the CONTRACTOR's opinion require additional payment by the PURCHASER, the CONTRACTOR shall promptly advise the PURCHASER, of the cost of such further services.
- 28.2 If the PURCHASER agrees that the services required of the CONTRACTOR are in addition to the CONTRACTOR's obligation under this Contract, the PURCHASER shall, (subject to negotiations as to the cost and extent of such services) agree to pay for such services in accordance with payment terms to be mutually agreed.
- 28.3 In the event that the PURCHASER and the CONTRACTOR are unable to agree on whether such required services are within the contractual obligations of the CONTRACTOR, or if the PURCHASER considers that the payment demanded for such required services by the CONTRACTOR is exorbitant, the Technical Advisor shall have the right to decide on the quantum of payment, if any, which may be payable by the PURCHASER to the CONTRACTOR. In such an eventuality the CONTRACTOR shall proceed without delay to carry out the design changes, and/or provide the services which are the subject of the dispute, pending the decision of the Technical Advisor.
- 28.4 All additional payments for the required services due from the PURCHASER to the CONTRACTOR under the provisions of this Article shall be embodied in a Change Order, which shall be signed by the PURCHASER and the CONTRACTOR (or their authorised representatives), and such Change Order(s) shall be deemed to form part of the Contract and subject to all of the terms and conditions therein, unless otherwise excepted.

- 28.5 If the changes requested by the PURCHASER are due solely to defects, omissions or errors in the design which could alter considerably the amount of work already within the obligations of the CONTRACTOR or his Sub-contractor(s), the PURCHASER shall not be liable to pay any additional costs. The CONTRACTOR acknowledges that there shall be no entitlement for any claims for any increases in the amount of work undertaken or to be undertaken for rectification of design errors due to a lack of diligence on the part of the CONTRACTOR in the verification of the basic information made available to him and for lack of accuracy in the checking procedures of the CONTRACTOR.
- 28.6 If in the opinion of the CONTRACTOR if any of the changes requested to be made by the PURCHASER are likely to jeopardize the fulfilment of any of the CONTRACTOR's guarantees pursuant to this Contract, then the CONTRACTOR shall detail his reasons to the PURCHASER for not undertaking such of these changes.

B - 89

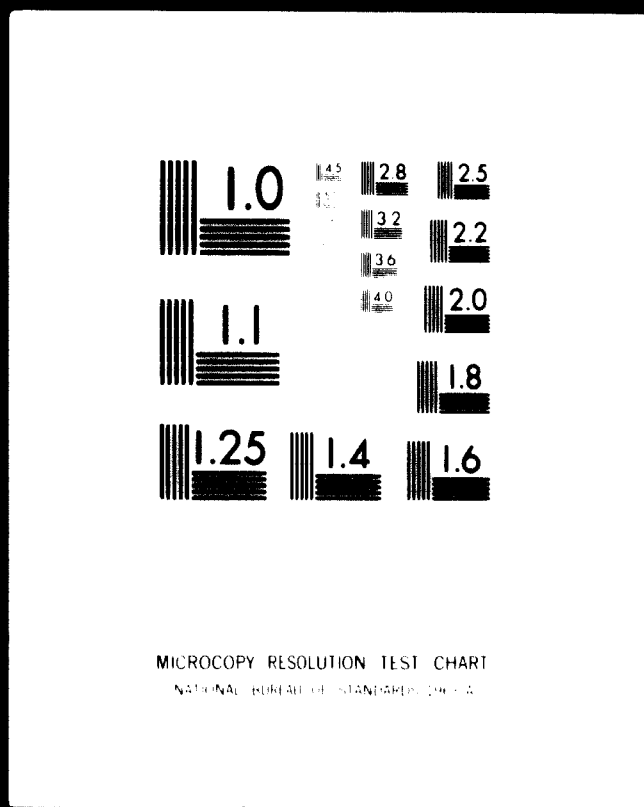


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ARTICLE 29

RIGHT FOR USE OF PROPRIETARY RIGHTS
AND LICENCES

- 29.1 The CONTRACTOR hereby affirms that it has obtained the unqualified right(s) to grant, and hereby does grant to the PURCHASER irrevocable, non-exclusive, non-transferable licences for use in the operation of all the processes in the Plant, and in particular, the Ammonia Process and the Urea Process.
- 29.2 The CONTRACTOR shall ensure (through specific arrangements, with proof provided to the PURCHASER) that the Process Licensors shall make available to the PURCHASER all basic process data received by the CONTRACTOR from Process Licensors relating to the Contract, and that all basic process documentation and all drawings prepared by the CONTRACTOR shall also be made available to the PURCHASER. The CONTRACTOR also hereby undertakes to make available to the PURCHASER the latest know-how and techniques available to the Process Licensors and to the CONTRACTOR at the time of design.
- 29.3 The CONTRACTOR shall ensure that the Process Licensors and/or the CONTRACTOR shall make available free of cost to the PURCHASER for a period of ten (10) years from the Effective Date of the Contract, any technological or research developments in operating techniques, preventive maintenance and safety measures applicable to the Plants constructed pursuant to this Contract, and other relevant data and information that come within the knowledge of the CONTRACTOR within the same period.

ARTICLE 30

SECRECY

- 30.1 The PURCHASER agrees that he shall treat as confidential all process and technical information, proprietary know-how, patented processes, documents, data and drawings supplied by the CONTRACTOR (whether owned by him or otherwise) in accordance with this Contract, all of which is hereinafter referred to as "confidential information". The CONTRACTOR shall, (after obtaining a declaration of acceptance to the provisions of this Article from the PURCHASER, his accredited representative or Technical Advisor) be free to make the confidential information available to the PURCHASER. The PURCHASER shall not without the prior approval of the CONTRACTOR divulge such confidential information available to a third party, other than when required by law, and provided that when so required by law the PURCHASER shall duly advise the CONTRACTOR.
- 30.2 This Article shall not apply to such confidential information:
- 30.2.1 Which is or becomes a part of the public domain.
- 30.2.2 Which is already known to the PURCHASER, his representatives or Technical Advisor before the obtaining of declaration required of them under Article 30.1.
- 30.3 The PURCHASER shall not utilise the confidential information for any purpose other than for completing, operating, using, repairing, maintaining or modifying the Plant(s). Similarly, the CONTRACTOR will not use or divulge any technical data or confidential drawings or technical documents given by the PURCHASER, his representative or Technical Advisor, to the CONTRACTOR except for the purposes strictly connected with the Contract.
- 30.4 The PURCHASER and CONTRACTOR hereby agree that the aforementioned obligations of this Article subject to Article 30.5 below, shall not be affected by a termination of this Contract under Article 36 herein.

- 30.5 The provisions of Subarticles 30.1, 30.2, 30.3 and 30.4 shall be valid for a period of ten (10) years from the Effective Date of the Contract.
- 30.6 The CONTRACTOR shall provide firm guarantees to the PURCHASER relative to the continued use of know-how and patented processes, and associated proprietary knowledge, also referred to as "confidential information" in Article 30.1, over an agreed period of time without prejudice to any matters occurring which might inhibit the continued use of the acquired know-how and processes.
- 30.7 The PURCHASER shall not be deemed to have infringed the conditions stipulated in this Article, where following the final acceptance of the Plant(s) (but within the period specified in Article 30.5) the PURCHASER determines that modifications of the Plant(s) are required to be made (which in his opinion would result in improved or better Plant operation) or where the PURCHASER requires an expansion or modernization of the Plant(s) with incorporation of contemporary technology, and, in consideration of the foregoing the PURCHASER has requested the CONTRACTOR to assist in accomplishing the necessary work, and the CONTRACTOR is unable or unwilling (for whatsoever reason) to undertake same, then the PURCHASER shall have the right to employ or retain any other person, firm or agency to undertake and complete such work above referred to, and in such an eventuality, the PURCHASER shall not be held to be in breach of the secrecy provisions of this Article.

ARTICLE 31

PATENTS

- 31.1 The CONTRACTOR shall indemnify and hold harmless the PURCHASER and anyone directly or indirectly employed by it from and against all claims, damages, losses, and expenses (including legal fees) arising out of any infringement of such patent rights or know-how referred to as "confidential information" in Articles 30.1 and 30.6 during and after completion of the work, and shall defend all such claims (filed by whomsoever) in connection with any alleged infringement of such rights. The foregoing notwithstanding, the CONTRACTOR shall continue his performance of the work utilising substantial non-infringing equipment and methods, where possible, and in any event the PURCHASER shall be entitled to negotiate a reduction in the cost of the Contract when it is certain that the PURCHASER will not have the right to continued usage of the "confidential information" as originally envisaged.
- 31.2 The PURCHASER shall give the CONTRACTOR prompt notice, in writing, of any claim or suit of which it has knowledge. The CONTRACTOR shall have sole charge and direction of the defence and disposal of such suit or action and the PURCHASER shall render all reasonable assistance but shall not be obligated to sustain any expenses. The PURCHASER shall have the right to be represented by legal counsel experienced in technology contracts of its own choice at its own expense.
- 31.3 The CONTRACTOR shall have the right to acquire immunity from suit and to make or cause to be made alterations at his own cost to the Plant to eliminate the alleged infringement provided such alteration does not prevent the Plant from meeting its Performance Guarantees mentioned in Article 19, subject however to any negotiation for cost reduction in the Contract referred to in Article 31.1 above.

31.4 Neither the CONTRACTOR nor the PURCHASER shall settle or compromise any suit or action without the written consent of the other if such settlement or compromise would oblige 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

DISCLOSURES

- 32.1 The PURCHASER shall not disclose any "confidential information" (obtained from the CONTRACTOR) to a third party without the approval of the CONTRACTOR other than where required by law when the PURCHASER shall inform the CONTRACTOR (Article 30.1).
- 32.2 Obligation under Article 32.1 shall be valid for a period of ten (10) years subject to Article 30.2.
- 32.3 The CONTRACTOR shall not solicit, request or tolerate any commission, fee, discount or other payments from any Vendor. Should the CONTRACTOR receive any such payment (whether directly or indirectly) the CONTRACTOR shall forthwith disclose and reimburse the same without any deduction whatsoever to the PURCHASER.
- 32.4 The CONTRACTOR shall not pay any agents' fees, discount or other commissions to any third party in relation to the award of this Contract to the CONTRACTOR. If any agents' fees are payable to agents in (PURCHASER's country) by virtue of agency agreement(s) made at least twelve (12) months before the award of this Contract then the PURCHASER shall (before the award of this Contract) disclose to the client the name of the agent and quantum of fees that were paid.
- 32.5 Any failure on the part of the CONTRACTOR to disclose the payment(s) of agency fees, discounts or other commissions (whether such payments are referred to by such nomenclature or not), shall entitle the PURCHASER to cancel the Contract without prejudice to any other rights or remedies available under this Contract.

ARTICLE 33

INDEMNIFICATION

33.1 Subject only to Article 33.2 below, the 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 the CONTRACTOR under or in connection with this Contract or to an infringement or alleged infringement by the CONTRACTOR of patent(s) of invention;

33.1.1 For the purposes of Subarticle 33.1 above, "activities" includes an act improperly carried out, an omission to carry out an act and a delay in carrying out an act.

33.2 The PURCHASER shall indemnify and save harmless the CONTRACTOR from and against all claims, demands, losses, costs, damages, actions, suits or proceedings arising out of the CONTRACTOR's activities under this Contract which are directly attributable to:

33.2.1 A lack of, or a defect in title, or an alleged lack of, or a defect in title, to the Site of the Work.

33.2.2 The functions of the PURCHASER under or in connection with this Contract.

ARTICLE 34

FORCE MAJEURE

34.1 In this Contract, Force Majeure shall be deemed to be any cause beyond the reasonable control of the CONTRACTOR or the PURCHASER (as the case may be) which prevents, impedes or delays the due performance of the Contract by the obligated party and which, by due diligence, the affected party is unable to control, despite the making of all reasonable efforts to overcome the delay, impediment or cause.

Force Majeure may include, but shall not be limited to the following:

- any war or hostilities;
- any riot or civil commotion;
- any earthquake, flood, tempest, lightning, unusual weather, or other natural physical disaster, impossibility in the use of any railway, port, airport, shipping-service or other means of transportation (occurring concurrently and to be proven to the satisfaction of the PURCHASER).
- any accident, fire or explosion;
- any strike, lock-out, concerted acts of workmen or other industrial disturbance;
- shortages or unavailability of materials if beyond the CONTRACTOR's control (to be proven to the satisfaction of the PURCHASER);
- any act of any Government adversely affecting performance of contractual obligations.

34.2 If either party is prevented or delayed in the performance of any of its obligations under this Contract by circumstances of Force Majeure, and if the affected or obligated party has given written notice thereof

to the other party within ten (10) days of the happening of such event, specifying the details constituting Force Majeure, with necessary evidence that a contractual obligation is thereby prevented or delayed, and that the anticipated period (estimated) during which such prevention, interruption or delay may continue, then the affected or obligated party shall be excused from 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 The PURCHASER or the CONTRACTOR (as the case may be) shall be diligent in endeavouring to prevent or remove the cause of Force Majeure. The parties upon receipt of Notice of Force Majeure under Article 34.2 shall confer promptly with each other and agree upon a course of action to remove or alleviate such cause(s), or shall seek alternative methods of achieving the performance objectives under the Contract.
- 34.4 If by virtue of Article 34.2, either of the parties is excused from the performance or punctual performance of any obligation for a continuous period of six (6) months than the parties shall consult together to seek agreement as to the required action that should be taken in the circumstances and as to the necessary amendments that should be made to the terms of the Contract.
- 34.5 If by virtue of Article 34.2, either of the parties is excused from the performance or punctual performance of any obligation for a continuous period of (___) months for one or more causes and if the consultations referred to in the preceding Subarticle 34.4 have not resulted in mutual 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 under the Contract (other than those contained in Articles 30, 31 and 32).
- 34.6 Nothing herein shall in any manner affect the validity of the Contract. Both the PURCHASER and the CONTRACTOR shall be prompt and diligent to remove all causes of interruption or delay in the work, insofar as each is liable to do so.

ARTICLE 35

SUSPENSION OF WORK

- 35.1 The PURCHASER may, when in the PURCHASER'S opinion it is deemed necessary, require the CONTRACTOR to suspend execution of the work either for a specified or unspecified period by communicating notice to that effect to the CONTRACTOR.
- 35.2 The CONTRACTOR, upon receiving notice of the PURCHASER'S requirement pursuant to Subarticle 35.1 above, shall suspend all operations except those which, in the PURCHASER'S AND CONTRACTOR'S opinion, are necessary for the care or preservation of the Works.
- 35.3 During the period of suspension, the CONTRACTOR shall not remove from the Site any material, any part of the Works, or any Plant without the consent of the PURCHASER.
- 35.4 If the period of suspension is thirty (30) days or less, the CONTRACTOR, upon the expiration of the period of suspension, shall resume the execution of the Contract and the CONTRACTOR is entitled to be paid the cost, calculated in accordance with Articles 11 and 40 hereunder, for any material, work and/or Plant necessarily unduly affected in complying with the suspension.
- 35.5 If the period of suspension is more than thirty (30) days and if, upon the expiration of the period of suspension, the PURCHASER and the CONTRACTOR agree that the fulfilment of the Contract be accomplished by the CONTRACTOR, the CONTRACTOR shall resume operations and fulfil the Contract in accordance with the terms and conditions of this Contract, subject to any amendments that are required by virtue of the suspension of work under Article 35.1.
- 35.6 If upon the expiration of a period of suspension of more than thirty (30) days the PURCHASER and the CONTRACTOR are unable to reach agreement on the fulfilment of the Contract by the CONTRACTOR, or the parties are

unable to agree upon the terms and conditions under which the CONTRACTOR will fulfil the Contract, the notice of suspension shall be deemed to be a notice of termination pursuant to Article 36 hereunder.

ARTICLE 36

TERMINATION OF CONTRACT

- 36.1 The PURCHASER may at any time by giving notice in writing to that effect terminate this Contract.
- 36.2 The CONTRACTOR will upon receipt of a notice pursuant to Article 36.1 above cease all operations forthwith.
- 36.3 If the Contract is terminated pursuant to Article 36.1, the PURCHASER will pay to the CONTRACTOR an amount equal to the lesser of
- 36.1.1 the cost as agreed upon by the CONTRACTOR and the PURCHASER for the Works supplied or done by the CONTRACTOR as at the date of termination less all amounts already paid to the CONTRACTOR by the PURCHASER, and less all amounts which the CONTRACTOR is liable to pay to the PURCHASER, and
- 36.1.2 the amount calculated in accordance with the Terms of Payment which would have been payable to the CONTRACTOR had such CONTRACTOR fulfilled the Contract.
- 36.4 In the event that the CONTRACTOR and the PURCHASER are unable to agree upon the amount of payments then the parties shall resort to Arbitration as provided for in Article 46.

ARTICLE 37

CANCELLATION OF THE CONTRACT

- 37.1 In any of the following cases, namely,
- 37.1.1 where the CONTRACTOR has made default or delayed in commencing or in diligently executing the work or any portion thereof to the satisfaction of the PURCHASER, and the PURCHASER has given notice thereof to the satisfaction of the PURCHASER, and the PURCHASER has given notice thereof to the CONTRACTOR and has by such notice required the CONTRACTOR to put an end to such default or delay, and such default or delay continues for ____ days after such notice was given;
 - 37.1.2 where the CONTRACTOR has made default in the completion of the Works, or any portion thereof, within the time limited for such completion by the CONTRACTOR;
 - 37.1.3 where the CONTRACTOR has become insolvent;
 - 37.1.4 where the CONTRACTOR has committed an act of bankruptcy;
 - 37.1.5 where the CONTRACTOR has abandoned the work;
 - 37.1.6 where the CONTRACTOR has entered into a sub-contract or made an assignment of this Contract without the required consent; or
 - 37.1.7 where the CONTRACTOR has otherwise failed to observe or perform any of the provisions of this Contract (including, without restricting the generality of the foregoing, failure to deliver to the PURCHASER all or any portion of the Works;
 - 37.1.8 where the CONTRACTOR has failed to make proper disclosures as referred to in Article 32;

the PURCHASER may, without any other authorisation, take all or any part of the Contract and/or of the Works out of the CONTRACTOR's hands and may employ such means as the PURCHASER sees fit to complete this Contract and/or the Works.

37.2 Where this Contract, the Works, or any portion or portions thereof has or have been taken out of the CONTRACTOR's hands under Subarticle 37.1, the CONTRACTOR shall not, except as provided in Subarticle 37.3 hereunder, be entitled to any further payment including payments then due and payable but not paid and the obligation of the PURCHASER to make payments as provided for in the Terms of Payment shall be at an end and the CONTRACTOR shall be liable to and upon demand therefore pay to the PURCHASER an amount equal to all loss and damage suffered by the PURCHASER by reason of the non-fulfilment of this Contract and/or of the Works by the CONTRACTOR.

37.3 Where this Contract, the Works, or any portion or portions thereof has or have been taken out of the CONTRACTOR's hands under Article 37.1 and is subsequently completed by the PURCHASER, the PURCHASER shall determine the amount, if any, of retention monies and progress claims of the CONTRACTOR unpaid at the time of taking the work out of the CONTRACTOR's hands that, in the PURCHASER's opinion, are not required by the PURCHASER for the purposes of the Contract and the PURCHASER shall, if of the opinion that no financial prejudice to the PURCHASER will result, authorise payment of that amount to the CONTRACTOR.

37.4 The taking of this Contract, of the Works, or of any portion thereof, out of the CONTRACTOR's hands pursuant to this Article does not operate so as to relieve or discharge the CONTRACTOR from any obligation under this Contract or imposed upon the CONTRACTOR by law except the obligation to complete physically the execution of such portion of the Contract and/or the Works as so taken out of the CONTRACTOR's hands.

- 37.5 If this Contract, the Works, or any part thereof is taken out of the CONTRACTOR's hands pursuant to this Article, all material, plant and interest of the CONTRACTOR in all real property, licences, power and privileges acquired, used or provided by the CONTRACTOR for purposes of this Contract shall be the property of the PURCHASER without compensation to the CONTRACTOR and in particular, but without affecting any liability or obligation of the CONTRACTOR and/or any PURCHASER right imposed, conferred, or contemplated by any other provision of this Contract, the PURCHASER may, at his option, sell or otherwise dispose of, at forced sale prices, or at public auction or at private sale or otherwise, the whole or any portion of such material, and/or plant at such price or prices as it may see fit and retain the proceeds of any such sale or disposition as well as all other amounts then or thereafter due by the PURCHASER to the CONTRACTOR, all in satisfaction or partial satisfaction (as the case may be) of any loss or damage which the PURCHASER has sustained or may sustain by reason aforesaid.
- 37.6 Subject to Article 37.5 above, if the PURCHASER considers that any PURCHASER property-interest possessed by virtue of Article 37.5 above, is no longer required for the purposes of the Contract, and that it is not in the interests of the PURCHASER to retain such property-interest then, upon written notice to such effect from the PURCHASER to the CONTRACTOR, such property-interest shall become the property of the CONTRACTOR.

ARTICLE 38

GENERAL PROVISIONS

38.1 No Implied Obligations

No implied obligation of any kind by or on behalf of the PURCHASER shall arise from anything in this Contract, and the express covenants and agreements herein contained and made by the PURCHASER are and shall be the only covenants and agreements upon which any rights against the PURCHASER are to be founded; and, without limiting the generality of the foregoing, this Contract supersedes all communications, negotiations and agreements, either written or oral, relating to the work and made prior to the date of this Contract.

38.2 Waiver or Estoppel

Notwithstanding anything contained elsewhere in this Contract no waiver or estoppel (if any) arising against a right or remedy of the PURCHASER on any occasion shall be deemed operative against such right or remedy if the relevant factual circumstances continue in existence beyond the date upon which such waiver or estoppel first arose or if there occur, subsequent to the said date, factual circumstances (whether or not similar to those first mentioned above) upon or against which the PURCHASER right or remedy would normally be invocable.

38.3 Provisions for Execution of the Work

The CONTRACTOR will provide everything necessary for the execution of the work except things in respect of which this Contract expressly provides otherwise and except the site of the work if the work when completed is to remain permanently affixed thereon.

38.4 Protection of Work and Documents

38.4.1 The CONTRACTOR will guard or otherwise protect the work and shall protect the Contract, Plans and Specifications, information, material, plant and real property provided by the PURCHASER to the CONTRACTOR against loss or damage from any cause, and without limiting the generality of the foregoing, from espionage and sabotage and will not disclose, issue, or use the foregoing except as may be essential for the fulfilment of this Contract without the written consent of the PURCHASER;

38.4.2 If any document or information given or disclosed to the CONTRACTOR is given a security rating the CONTRACTOR will take all measures directed by the PURCHASER to ensure the maintenance of the security rating;

38.4.3 The CONTRACTOR will provide facilities for and will assist any person authorized by the PURCHASER to inspect or to take security measures in respect of the work;

38.4.4 The PURCHASER may direct the CONTRACTOR to do such things and to construct such works as the PURCHASER considers reasonable and necessary in order to ensure compliance with or to remedy a breach of this Article.

38.5 Precautions Against Damages, Infringements, Fire, etc. and Safety Measures

38.5.1 The CONTRACTOR shall at the CONTRACTOR's own expense do whatever is necessary to ensure that

- (a) no person, property, right, easement, or privilege is injured, damaged or infringed by reason of the CONTRACTOR's activities under this Contract;
- (b) pedestrian and other traffic on any public or private road or waterway is not unduly impeded, interrupted or endangered by the execution or existence of the work, material and/or Plant;

- (c) fire hazards are eliminated and in the case of a fire in or about the Works, that it is promptly extinguished;
- (d) the health of all persons employed in connection with this Contract is not endangered;
- (e) adequate medical supervision of all persons employed in connection with this Contract is maintained;
- (f) adequate sanitation measures in respect of the work are taken; and
- (g) all stakes, buoys and marks placed on or about the Works by or under the authority of the PURCHASER are protected and are not removed, defaced or altered.

38.5.2 The PURCHASER may direct the CONTRACTOR to do such things and to construct such Works as the PURCHASER considers reasonable and necessary to ensure compliance with or to remedy a breach of Subarticle 38.5.1.

38.5.3 The CONTRACTOR will at his own expense comply with a direction of the PURCHASER made pursuant to Subarticle 38.5.2 above.

38.6 Proprietary Licence Privileges and Secrecy Agreements

The CONTRACTOR shall be obliged to provide guarantees to the PURCHASER relative to the continued use of proprietary know-how and (patented) processes, etc., over a mutually agreed period of time without prejudice to any matter occurring which might inhibit the continued use of the acquired know-how and processes.

38.7 Sales Territory

The PURCHASER shall have the right to sell the products and intermediates in the international market without any restriction imposed by the CONTRACTOR.

ARTICLE 39

ACCOUNTING AND INSPECTION OF RECORDS

- 39.1 The PURCHASER shall at all times have access to the relevant records of the CONTRACTOR maintained in relation to the purchases made by the CONTRACTOR or with regard to orders placed by the CONTRACTOR on behalf of the PURCHASER.
- 39.2 (a) The CONTRACTOR hereby estimates the FOB cost of equipment to be (amount). The CONTRACTOR shall submit to the PURCHASER within four (4) months of the Effective Date of this Contract, a revised estimate of the FOB cost of all plant and equipment to be procured under this Contract. The estimates shall be broken up by Plants and by sections thereof, to the extent possible.
- (b) The CONTRACTOR's revised estimate under Article 39.4 shall be accurate to within 10%, calculated at the prices prevailing at the date of the Contract. Should the final FOB price exceed this amount, the CONTRACTOR shall pay to the PURCHASER a penalty of (amount) which shall be deducted from the CONTRACTOR's final payment under Article 11.3 (c) and 11.2 (k).
- 39.3 The CONTRACTOR shall submit to the PURCHASER bi-monthly statements of procurement undertaken under this Contract, along with the cumulative total to date, and the total estimated procurement price, for each Plant and each section thereof. Such statements shall reach the PURCHASER not later than fifteen (15) days after the last date of procurement in each case.
- 39.4 The CONTRACTOR shall promptly advise the PURCHASER of any variations which he may foresee in the estimates made by him under Article 39.2 above, and shall discuss the reasons for all such variations which the PURCHASER in (PURCHASER's country) should the PURCHASER so desire.

- 39.5 The PURCHASER shall have the right to audit all time-logs of the CONTRACTOR, if any prices under the provisions of Article 11 are based on time-charges.
- 39.6 The PURCHASER or any Auditors nominated by the PURCHASER, or its Government, shall have the right to audit all payments made on behalf of the PURCHASER by the CONTRACTOR under the Contract, and to audit all or any Purchase Orders issued in connection with this Contract, or to receive any other financial data and information in regard to the transactions between the PURCHASER and the CONTRACTOR and with Vendors, pursuant to this Contract.

ARTICLE 40

DETERMINATION OF REIMBURSABLE COSTS

- 40.1 This sub-article envisages the obligations of the CONTRACTOR in Article 4. The CONTRACTOR acknowledges that Subarticles 4.2.1.3, 4.2.2, 4.2.3.3, 4.2.3.4, 4.2.3.6 and 4.2.3.7 of the Contract obligate the CONTRACTOR in the provision of assistance for procurement of personnel, inspection and expediting, erection, pre-commissioning, startup, guarantee tests, arrangements of training for the PURCHASER's personnel, and additional work (if any) due to variations under Article 28.
- 40.2 Payments for services rendered under 40.1 are to be reimbursed in the manner detailed in Article 11, Subarticles 11.4, 11.5, 11.6, 11.9, 11.10, 11.11, 11.12, 11.16 and annexures referred to therein, subject to Subarticles 11.19 (ii), 11.19 (iii) (c), 11.23 and Annexure XVII, 11.24 and Articles 28, 11.25 and Annexure XXVII and 11.26.
- 40.3 The CONTRACTOR and his representatives/employees shall be reimbursed the costs, expenses, allowances, fees, travel and transport, medical and other claims vide relevant Subarticles of Article 11 and Annexure XXVII on the presentation of invoices, certificates, receipts, logs showing additional/overtime work at home offices and Site.
- 40.4 Payments due upon Suspension of Work (Article 35) in the relevant case shall be determined on a 'quantum meruit' basis, or on a mutually agreed basis between the PURCHASER and CONTRACTOR.

ARTICLE 41

LANGUAGES GOVERNING THE CONTRACT

- 41.1 The governing language of the Contract shall be _____,
and the definitions in such language shall be final in the use and
interpretation of the terms of the Contract.
- 41.2 All correspondence, information, literature, data, manuals, etc.
required under the Contract shall be in the _____
language.
- 41.3 All expatriates sent by the CONTRACTOR to the Site, and all personnel
sent by the PURCHASER for training shall be conversant in the
_____ language.

ARTICLE 42

APPLICABLE LAWS AND CONFORMITY WITH
LOCAL STATUTES

- 42.1 The laws applicable to the Contract shall be the laws of the land where the Plant Site is located or as otherwise agreed between the parties in conformity with laws of the country where the Plant is located.
- 42.2 The CONTRACTOR, his staff, and representatives shall observe all codes, laws and regulations in force in the country of the PURCHASER and in the region where the Plant is located. In the event that any code law or regulations are enacted after the Effective Date of the Contract, which adversely affect the CONTRACTOR's obligations under this Contract, the PURCHASER shall either
- (a) obtain appropriate exemption(s) from the relevant authorities on the CONTRACTOR's behalf, or
 - (b) negotiate with the CONTRACTOR for appropriate change(s) in the scope of the work to be performed under the Contract, together with such changes in price as are proper.

ARTICLE 43

STANDARDS AND CODES

- 43.1 The standards and codes used for the Plant, except where mandatory local standards are available, shall be internationally recognised codes and standards, wherever available. A list of international standards for Ammonia and Urea Plants is indicated in Annexure II. These or equivalent national standards will be permitted in designing the Plant(s), and for issue of Tender Specifications to Vendors.
- 43.2 Wherever relevant international standards are not available, or where special known standards of the CONTRACTOR or Vendor have been used for Ammonia and/or Urea Plants, these may be used, provided that these are at least equivalent or better than international standards, where the latter are available.
- 43.3 Mandatory national standards to which equipment must be designed or procured are indicated in Annexure II.

ARTICLE 44

NOTICES

44.1 Any notice to be given to or served upon either party under this Contract shall be deemed to have been properly served in the following circumstances:

44.1.1 (a) Any notice to be given to the CONTRACTOR is to be conveyed by registered air mail post, or left at the address stated below, followed thereafter by the transmission of the same notice by cable or telex with a copy to be delivered to the CONTRACTOR's office at (town).

(CONTRACTOR's address, cable address and telex number)

(b) In the case of a notice to be served on the PURCHASER it is to be sent by registered air mail post to or left at the address stated below, followed thereafter by the transmission of the same notice by cable or telex.

(PURCHASER's address, cable address and telex number)

(c) In the case of a notice or information to be sent to the Technical Advisor by the CONTRACTOR, or to be sent by the Technical Advisor to the CONTRACTOR, such notice shall be delivered to the respective Site offices at (town).

44.1.2 When any such notice is sent by registered mail post it shall be deemed to have been duly served following the expiration of seven (7) days following the date of posting and in proving such service it shall be sufficient to show that the letter containing the notice was properly addressed and conveyed to the postal authorities for transmission as a registered air mail letter.

44.2 Either party may, by notice to the other party in writing, change its postal address, cable address or telex address for receiving and/or forwarding such notices.

ARTICLE 45

SETTLEMENT OF DISPUTE

45.1 In the event of any dispute, difference or contention in the interpretation or meaning of any of the Articles to this Contract or reasonable inference therefrom, both parties shall promptly make endeavour to resolve the dispute or differences by mutual discussions and agreement. Should the dispute or differences continue to remain unresolved, both parties may nominate a neutral person to negotiate and reconcile the dispute or differences to resolve thereby the matter of contention between the parties arising out of the Contract.

Pending resolution of any such claim or dispute, the CONTRACTOR will perform in accordance with the PURCHASER's instructions without prejudice to any claim by the CONTRACTOR for additional compensation and/or time to complete the work if such instructions require him to perform above and beyond the requirements of the Contract and not merely in accordance with the reasonable meaning and intent thereof.

In case the efforts of the neutral person nominated by the two parties fail to resolve the differences, both parties to the Contract shall proceed to Arbitration under Article 46 of this Contract.

ARTICLE 46

ARBITRATION

- 46.1 (a) Either the PURCHASER or the CONTRACTOR may demand arbitration with respect to any such claim, dispute or other matter that has been referred to the PURCHASER. However, no demand for arbitration of any such claim, dispute or other matter shall be made until the earlier of (1) the date on which the PURCHASER has rendered its decision, or (b) the tenth day after the CONTRACTOR has presented its evidence to the PURCHASER if it has not rendered its written decision before that date. No demand for arbitration shall be made later than ten days after the date on which the PURCHASER has rendered his written decision in respect of the claim, dispute or other matter as to which arbitration is sought; and the failure to demand arbitration within said ten-day periods shall result in the PURCHASER's decision being final and binding upon the CONTRACTOR.
- (b) All claims, disputes and other matters in question arising out of, or relating to, this Contract or the breach thereof which cannot be resolved by the parties except for claims which have been waived by the making or acceptance of final payment as provided by Article 11 above, shall be decided by arbitration in accordance with the terms contained in Annexure __ attached hereto. This agreement so to arbitrate shall be specifically enforceable under the prevailing arbitration law. The award rendered by the arbitrator shall be final, and judgements may be entered upon it in any court having jurisdiction thereof.

- (c) Notice of the demand for arbitration shall be filed in writing with the other party to the Contract in accordance with the conditions contained in the Annexure referred to in Article 46.1 (b) above. The demand for arbitration shall be made within the period specified in Articles 45 and 46 (where applicable), and in all other cases, within the time (as specified in Annexure __) after the claim, dispute or other matter in question has arisen, and in no event shall the demand for arbitration be made after institution of legal or equitable proceedings based on such claim, dispute or other matter in question if it would be barred by the applicable statute of limitations;
- (d) The CONTRACTOR will carry on the work and maintain the progress schedule during any arbitration proceedings, unless otherwise agreed by the PURCHASER in writing.



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TECHNICAL ANNEXURES FOR PRELIMINARY DRAFT OF THE
UNIDO MODEL FORM OF COST REIMBURSABLE CONTRACT
FOR THE CONSTRUCTION OF A FERTILIZER PLANT*

Prepared by the UNIDO Secretariat

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INTRODUCTION

1. This document is an addendum to the Preliminary Draft of the UNIDO Model Form of Cost Reimbursable Contract for the Construction of a Fertilizer Plant. The addendum contains the Technical Annexures which form part of the contract.
2. These Technical Annexures are an illustrative example. They have been prepared for an ammonia/urea complex, comprising an ammonia plant with a capacity of 1,000 tons a day and a urea plant with a capacity of 1,720 tons per day.
3. The Technical Annexures for the UNIDO Model Form of Cost Reimbursable Contract have been prepared with a view to their use in many countries. UNIDO has therefore had to be less specific than is perhaps desirable on some aspects. A list of critical items of equipment is identified in Annexure XII but names of experienced suppliers of this equipment have not been given; a list is available from UNIDO on request.
4. Regarding standards and codes, each country will make its own choice; the standards and codes listed in Annexure II are given by way of example. UNIDO recognizes that the international harmonization of standards and codes is a topic that needs to be discussed further; a suggestion to this effect has been made to the Consultation Meeting.
5. This addendum belongs to the UNIDO Model Form of Cost Reimbursable Contract. The comments that were invited in the introduction to that document apply to both the contract itself and the Technical Annexures.

CONTENTS

<u>Annexures</u>	<u>Page</u>
I. BRIEF DESCRIPTION OF THE PLANT	4
II. BASIS OF DESIGN	5
1. Raw Material Specifications	5
2. Meteorological Data	6
3. Soil Conditions	6
4. Codes and Standards	7
5. Statutory Regulations	8
6. Limitation on transportation of equipment	8
7. Definition of battery limits	8
8. Characteristics of utilities and services and limits of supply	9
9. Effluent standards	10
III. DEFINITION OF THE BATTERY LIMITS (a drawing)	11
IV. DESIGN CRITERIA AGREED	12
V. DOCUMENTS REQUIRING APPROVAL OF THE PURCHASER	16
VI. DETAILED DESCRIPTION OF SERVICES TO BE PERFORMED BY CONTRACTOR	18
VII. DETAILED DESCRIPTION OF SERVICES TO BE PERFORMED BY PURCHASER	24
VIII. SCOPE OF DELIVERY, INCLUDING LIST OF EQUIPMENT AND EQUIPMENT SPECIFICATIONS	26
IX. CATALYSTS	30
X. LIST OF SPARE PARTS	31
XI. LIST OF CHEMICALS	32

CONTENTS (cont'd)

<u>Annexures</u>	<u>Page</u>
XII. LIST OF PREQUALIFIED VENDORS FOR CRITICAL EQUIPMENT . . .	33
XIII. EXCLUSIONS FROM THE SCOPE OF DELIVERY	35
XIV. SCOPE OF DELIVERY OF THE PURCHASER	37
XV. TIME SCHEDULE OF IMPLEMENTING EACH STAGE OF THE CONTRACT	38
XVI. QUALITY OF PRODUCTS	47
XVII. QUALITY AND QUANTITY OF EFFLUENTS; EFFLUENTS AND EMISSION STANDARDS	48
XVIII. TECHNICAL TRAINING OF PURCHASER'S PERSONNEL	49
XIX. PROCEDURES FOR CHANGES IN SCOPE OF WORK	50
XX. OPERATING PROCEDURES AND PROCEDURES FOR GUARANTEE TESTS	51
XXI. MANUALS	53
(a) Operating	53
(b) Maintenance	53
(c) Safety Procedures	53
(d) Analytical Procedures	53
(e) Monitoring Environmental Aspects	53
(f) Instrumentation Maintenance	53
(g) Special instructions for maintenance and calibra- tion of in-line analysers	53
XXII. FORM OF PERFORMANCE BONDS	54
XXIII. FORM OF BANK GUARANTEES	55
XXIV. PACKING, SHIPPING AND MARKING INSTRUCTIONS	56
XXV. STORAGE AT SITE, GENERAL AND MARKING INSTRUCTIONS . . .	57
XXVI. PROCUREMENT PROCEDURES	59
XXVII. SCHEDULE OF RATES AND CHARGES	61
XXVIII. INSURANCE POLICIES	67

ANNEXURE I

BRIEF DESCRIPTION OF THE PLANT

The object of this Contract is to establish an Ammonia Plant with a daily capacity of (1000) tons per day along with a Urea Plant with a capacity of (1725) tons per day, to be located at _____ (town) _____ in _____ (country) _____ .

The plant will use natural gas from (source) as raw material, and will be designed to the process technology of (licensor) for the Ammonia Plant, and of (licensor) for the Urea Plant.

The basic steps in the manufacture of the ammonia shall start from the specified natural gas as feed and shall consist of natural gas compression, hydrotreating and desulphurization, primary and secondary steam reforming, waste heat recovery to generate steam, high and low temperature shift conversion, CO₂ removal and recovery, methanation of carbon oxides, compression of synthesis gas using a turbine driven centrifugal compressor and ammonia synthesis.

The basic steps in the manufacture of urea are as follows:

(Provide also a brief description of other essential units envisaged by the Contract).

The facilities to be provided will include the generation of power and steam, for which an optimum balance between electric and steam drives will be made by CONTRACTOR, and the Plant will use a closed cooling water circuit, with cooling towers and make-up water from (source).

The effluents from the plant will be disposed off to (disposal point) and effluent treatment facilities will be provided to make the effluents fit for such disposal.

The plant site is located at a distance of _____ Kilometres from the nearest large habitation and plant discharges to the air will be controlled accordingly.

Note: The description of the processes and block diagrams and/or preliminary P and I flow-sheets may be taken from the tender documentation or should comply with those agreed upon at the offer stage of the pre-contract discussions.

ANNEXURE II

BASIS OF DESIGN

1. Raw Material Specifications

The raw material (natural gas) specifications should contain data on:

- (i) Source
- (ii) Pressure at battery limits of Plant Site.^{1/}
- (iii) Analysis of the gas, including, to the extent possible, the following:

Methane,	% by volume
Ethane,	%
Propane,	%
Butane,	%) If available in quantity the
Pentane,	%) % in i-form and n-form should
Hexane,	%) be given
Nitrogen	%
Carbon Dioxide	%
Inerts	%
Oxygen	%
Water Content	%
Total Sulphur	ppm v/v
Sulphur as H ₂ S	ppm v/v
Sulphur as Organics	ppm v/v (including CoS)
Lower Calori- fic value	Kcals/Nm ³ .

Note: If data on Organic Sulphur, as ppm CoS, Mercaptans, Thiophenes etc. is available, this should be indicated.

^{1/} Upper and lower limits of pressure should be indicated as this may have a bearing on the standard design pressure of equipment at the plant inlet point.

2. Meteorological Data

(a) Available Average Data

The available meteorological data for site (or the nearest station to site) should contain the following information for each month of the year.

- (i) Daily average maximum temperature, °C.
- (ii) Daily average minimum temperature, °C.
- (iii) Monthly rainfall, mm.
- (iv) Dry and wet bulb (°C), preferably both for morning (indicate time) and afternoon.
- (v) Prevailing wind direction, (if available, a complete thumb-card indicating the yearly average occurrences of winds in the prevailing directions).

(b) Extremes recorded

This should contain data on the extremes recorded for:

- (i) Maximum temperature, °C.
- (ii) Minimum temperature, °C (indicate whether pipes freeze).
- (iii) Maximum rainfall recorded in 24 hours.
- (iv) Maximum recorded wind velocity. (Indicate occurrence of typhoons etc. or make reference to relevant standards concerning wind load design data at various levels up to the levels of the highest structure to be designed).

3. Soil Conditions

Soil conditions should include:

- (a) The type of soil.
- (b) The sub-soil water level at site (indicate whether water is sweet, saline or sea water).
- (c) The design bearing load capacity. In case the soil bearing capacity differs considerably in various places of the plot, a plot plan indicating drilling points and findings should be attached.

4. Codes and Standards^{1/}

Standards applicable to the Ammonia and Urea Plants and off-sites are as follows. (Indicate as appropriate including national codes and standards if existing):

Reinforced and prestressed structures for storage of liquids	BS CP 2007
Steel structures	BS 449
Steel chimneys	BS 4076
Steam boilers, superheaters and coils	ASME boiler and pressure code sect. I
Convection coils	ASME
Tubular exchangers	ASME code, section VIII, div. I and II TEMA standards (class R)
Surface condensors etc.	American Heat Exchanger Institute
Pressure vessels (including condensor shells)	ASME code, section VIII, div. I and II
Refrigerated tanks	API Std.620 (with appendices)
Atmospheric storage tanks	API Std.650
Piping systems	ANSI B 31.3 ANSI B 16.5 ASME and API codes
Pressure relieving system	API RP-520
Electrical code of practice	BS- CP321, 326, 1003 (for tropical usage) with class E insulation
Electrical systems and electrical equipment	National codes
Instruments	ISA standards. (These depend on supplier practices and types of instruments). Applicable standards should be agreed upon between CONTRACTOR and PURCHASER
Hazard area classification	API - American Petroleum Institute. Safety codes

^{1/} The agreed upon British and American Standards are given as examples. Other standards such as German DIN, Japanese JIS etc. should be specified accordingly if required or envisaged as alternates.

5. Statutory Regulations

The Statutory Regulations relating to Codes or other Standards or Factory Acts applicable in the PURCHASER's country should be specified herein. This particularly refers to Boiler Codes and acceptance procedures applicable for endorsement of foreign standards prior to manufacture of the equipment. If necessary translations of local standards and regulations should be prepared and annotated to point out differences and permissible exceptions for imported equipment.

6. Limitation on transportation of equipment

The data supplied here should include:

- (a) Maximum lift available at Port. (If ship's derricks can be used this should be stated).
- (b) Maximum dimensions and weights which can be carried by road from port to site.
- (c) Maximum dimensions and weights which can be carried by rail from port to site.

If possible drawings of waggon profiles, and section profiles of the smallest tunnel/bridge above rail etc. should be given.

7. Definition of battery limits

The battery limits of the area of plant design should be clearly stated and indicated on the preliminary plot plan with approximate data on elevation of the connecting point above and underground. An example is given below:

- Inputs - Natural gas shall be supplied by the Gas Distribution Company, at a single point on the boundary of the plant (unit inlet or battery limit).
- Water shall be pumped to the plant site and will be available (provide separate data on cooling water and/or well water etc. as make-up water and utility water) at a single point in the plant. A plant storage at ground level of _____ m³ will be provided, and water will flow to this storage. All treatment and pumping facilities for the water are part of the design. Steam and power requirements will be generated in the plant. External steam and power supplies will be connected to the respective points as indicated on the plot plan (separately for different parameters).

- Standby and construction electric power will (or will not) be available. (Give details if available. Otherwise indicate type of emergency power source desired. This can also be used for construction).
- All chemicals, catalysts will be supplied at storage/warehouses at ground level. (Indicate location at the construction site or within the plot).

Outputs - Power. Additional power to the extent of _____ KW will be generated for use by the PURCHASER (Housing Colony, Tubewell etc.).

- Surplus steam and condensate (specify parameters and quantities) will be piped to point _____ indicated on the plot plan.
- Facilities will be designed for filling liquid ammonia cylinders/ammonia tank wagons at a maximum rate of _____ tons per 8 hours.
- Urea will be packed in (50 kgm net weight) bags. The bags will be give details.
- Transport of urea will be:

_____ % by road in _____ ton trucks

_____ % by rail in _____ ton wagons

Rail truck locations will be indicated by the CONTRACTOR but will be finalized after discussion with the PURCHASER and the National Rail Authorities.

- Effluents will be disposed off to _____ .

Within the above battery limits, the entire plants, including the utilities and off-sites contained in Annexure VIII shall be designed by the CONTRACTOR. It is generally understood that if not specifically mentioned the connecting points of inlet and outlet pipes will be one meter outside the battery limit or 250 mm above ground/floor level, flanged or unflanged with the cut-off valves included in the scope of delivery or design.

8. Characteristics of utilities and services and limits of supply

8.1 Electric power:

- (a) All purchased standby electric power shall have the following characteristics.
(Indicate voltage, phases, cycles, 3 or 4-wire system)

- (b) All generated power shall have the following characteristics: (This should be discussed by the PURCHASER and the CONTRACTOR and should conform to national standards as far as possible).
- (c) Power supplied outside the battery limits shall have the following characteristics:
(Voltage, phases, cycles, 3 or 4-wire system).

8.2 Water

(Specify separately for water from different sources as river, sea, well, pre-treated water, recycled steam condensate etc.).

- (a) The source of water shall be (source)
- (b) The water has the analysis given below:

Normal Variations

Total hardness, ppm CaCO_3
P. Value, ppm CaCO_3
M Value, ppm CaCO_3
Calcium ppm CaCO_3
Magnesia ppm MgCO_3
Sodium ppm Na
Iron, ppm Fe
Chloride, ppm Cl
Sulphate, ppm SO_4
Silica (dissolved), ppm SiO_2
Total dissolved solids, ppm
Total suspended solids, ppm
pH
Conductivity micro-mhos/cm

- (c) If there are large variations these should be explained.

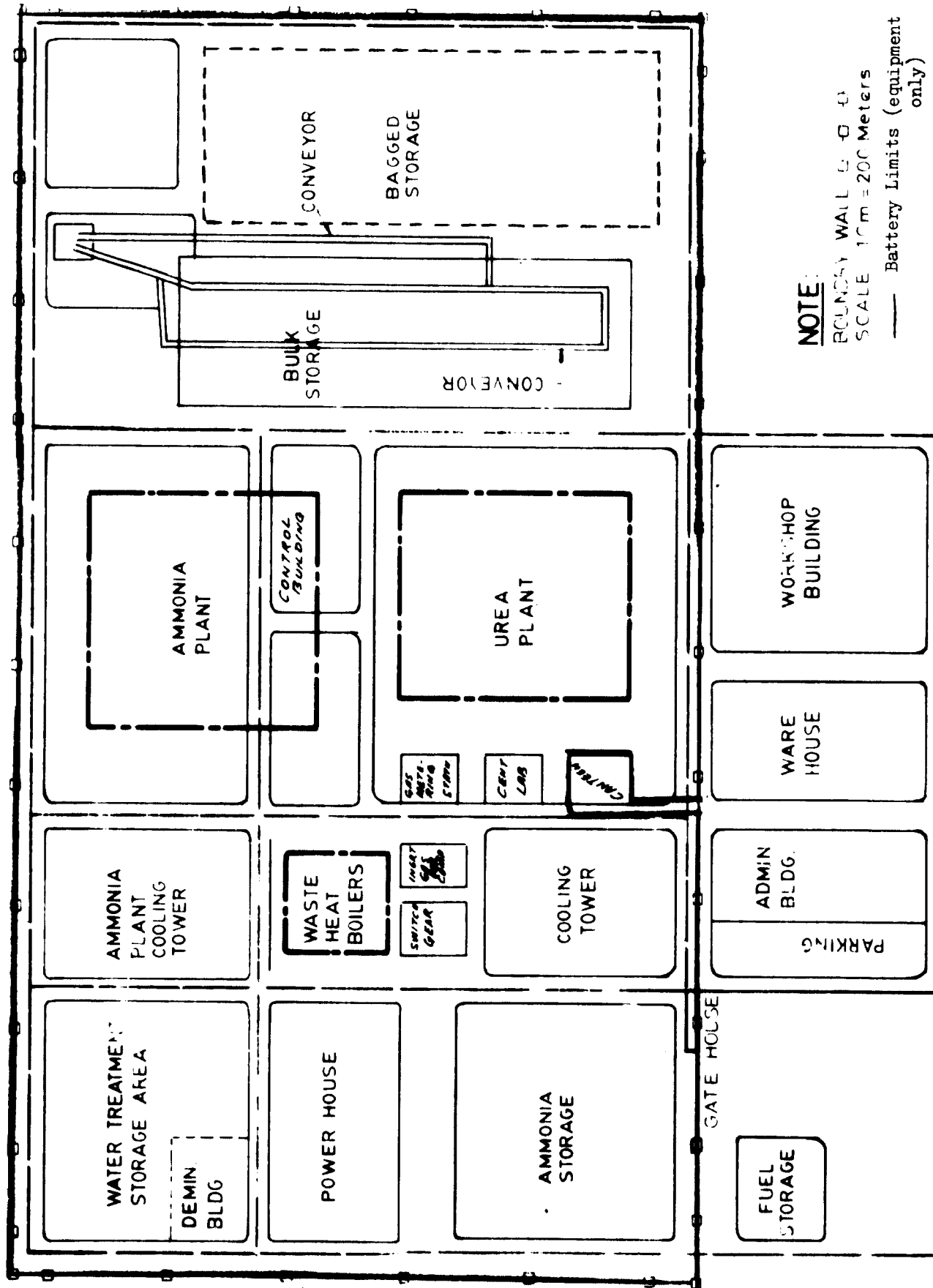
9. Effluent standards

(Local effluent standards, if any should be stated an indication should be made whether off-site biological waste water treatment is envisaged).

BATTERY LIMITS (AMMONIA/UREA PLANT)

ANNEXURE III

RAILWAY SIDING



NOTE:

BOUNDARY WALL \square \square \square
 SCALE 1 cm = 200 Meters
 — Battery Limits (equipment only)

MAIN ROAD

GATE HOUSE

ANNEXURE IV

DESIGN CRITERIA AGREED

(a) Meteorological:

(i) The plant and equipment, particularly the 100% capacity of the Air Compressor and the Prilling Tower will be designed for a maximum ambient in temperature of _____ °C. (Suggested equivalent to extreme recorded).

(ii) The plant and equipment, particularly piping shall be designed for a minimum temperature of _____ °C. Water piping (shall/shall not) be designed for freezing conditions. (Suggest temperature in minimum recorded).

(iii) Design will be for a maximum rainfall of _____ mm in 24 hours. (If flash storms of a few hours are possible, this should be indicated).

(iv) The cooling towers shall be designed for an extreme wet bulb of _____ °C, and dry bulb of _____ °C, and will be designed to give cooling water of (32°C). (This is the suggested maximum for tropical countries. It can rise to 34°C in such areas as Bangladesh).

(v) The Barometric pressure, when corrected to sea level can reach a minimum of (975) millibars. (It can be lower for some areas). This must be corrected for the height above sea level of the site which is _____ metres.

(vi) Design wind velocity shall be _____ K.p.h. (or indicate local standards if applicable and specified for different levels).

(b) Seismic Factor

The Seismic factor at site, for design can be taken as _____. For purposes of structural design, seismic conditions and maximum wind velocity shall not be considered as occurring simultaneously.

(c) Natural gas:

(i) The plant shall be designed for natural gas conditions as given in Annexure II, with the following extreme design analysis:

(Give extreme ranges for each component of natural gas).

(ii) The sulphur guard will be for _____ ppm sulphur. For design purposes the ratio of non-reactive to reactive sulphur shall be _____% to _____%.

(iii) The design intake pressure of gas shall be _____ Kgm/cm² at the battery limits of the entire project. (Refer to maximum pressure or standard design pressure for piping and valves).

(iv) Design temperature of natural gas at the battery limits shall vary between _____ °C and _____ °C.

(d) Water:

(i) The analysis of make-up water used for design shall be the extreme conditions contained in Annexure II.

(ii) Make-up water shall not exceed _____% of the circulating water. (For desert conditions 5-7%).

(iii) Where sea water is used for cooling, the sea water condition at site shall be carefully examined by the CONTRACTOR to guard against fouling or corrosion. Sea water design intake temperature shall be (maximum recorded) and the outlet temperature of sea water from the plant shall not exceed _____ °C. (For use of certain alloys, should not exceed 38 °C).

(iv) The cooling water circuit shall be designed for a maximum ΔT of _____ °C. (Suggested max. 10 °C in tropics).

(v) The analysis of the demineralized water produced in the plant, in particular the silica content, shall be suitable for use in (105) Kgm/cm² steam boilers and in the ammonia plant circuit.

(vi) No parts of the cooling water circuit (pipes, valves and instrumentation) shall contain copper and copper alloys.

(e) Soil conditions

Design load bearing capacity shall be as in Annexure II.

(f) Electrical generation

(i) The project will be self-sufficient for electrical power. Power exported from the battery limits will be _____ Kw.

Emergency power supply (is/is not) to be provided:

(ii) Line voltages and characteristics shall be as follows:

High tension : V 3 phase, 3 wire 50 or 60 Hz A.C.

3 - phase : V 3 phase, (3 or 4) wire, 50 or 60 Hz A.C.

1 - phase : V 1 phase, (3 or 4) wire, 50 or 60 Hz A.C.

(iii) Voltages for electrical motors shall be H.T. voltage for motors of 200 Kw or more, and L.T. 3 phase voltage for smaller motors.

(iv) Instrument voltages shall be: (details).

(g) Instruments air

The project will be self-sufficient in instrument air supply under the following conditions:

- Outlet pressure conditions from instrument air unit. - 7 kg/cm²g
- Quality - dew point below minus (20°C for tropical countries otherwise minus 40°C)
- Free of dust and oil.

(h) Inert gas

Inert gas for the complex shall be produced by the combustion of natural gas at the following conditions:

- Pressure 6 kg/cm²g minimum
- Temperature Ambient
- Quality Suitable for plant purging and catalyst reduction.

(Alternatively: specify pure nitrogen if available from existing external sources, air separation plant etc.).

(i) Steam

Three steam systems shall be provided in the complex. These are:

	<u>Pressure</u> <u>Kg/cm² g</u>	<u>Temperature</u> <u>C</u>
High pressure steam (HP)	(105)	(500)
Medium pressure steam (HP) (ranges in one system)	(37/25)	(370/225)
Low pressure steam (LP) (ranges in one system)	(4.5/2.5)	(155/138)

A steam condensate recycling system for non-contaminated steam shall be envisaged.

Surplus or contaminated condensate should be

- Cooled locally to the temperature of _____ °C and discarded into the _____ water system.
(sewerage, cooling)

- Flushed and piped to _____ (indicate place of utilization of waste heat or purification or hot process water tank etc.).

(j) Primary reformer furnace

The design of the reformer furnace shall be based on (a single row arrangement of reformer tubes or as otherwise agreed, please specify).

(k) Other design criteria

(1) All dimensions and weights and measures including instrumentation will be indicated in the (metric) system. The dimensions of piping and parts of the heat exchangers may be indicated in English system. (Indicate applicable standard).

(2) Copper and copper bearing alloys shall not be used in the complex except for electrical system other than the grounding system and where otherwise agreed.

(3) The synthesis gas compressor system shall operate at a pressure of _____ Kg/cm² at the intake of the synthesis gas loop. (Indicate standard design pressure which is higher).

(4) Design criteria for concrete and steel structures (anticorrosion protection, prilling tower, storage, flooring etc.) are as follows:

(1) Effluent disposals and emission standards

See Annexure XVII.

ANNEXURE V

DOCUMENTS REQUIRING APPROVAL
OF THE PURCHASER

1. Technical documents for the following:
 - 1.1 Process:
 - (a) Process flow sheets (plants and utilities)
 - (b) P and I diagrams " "
 - 1.2 Equipment and machines:
 - (a) Specifications for all equipment and machinery
 - (b) List of recommended vendors of critical equipment
 - (c) List of recommended spare parts
 - 1.3 Piping:
 - (a) General layout of the complex
 - (b) Plot plan for the plants
 - (c) Terminal point drawings for interconnection of pipes going in and coming out of the complex.
 - 1.4 Instrumentation:
 - (a) General description of the process with regard to the instrumentation
 - (b) General description of the control system and proposed types of instrumentation
 - (c) Description of the alarm and interlocking system
 - (d) Specifications of control panels and control desks.
 - 1.5 Electrical:
 - (a) Electrical power balance and motor list
 - (b) Single line electrical diagram
 - 1.6 Civil engineering:
 - (a) General plot plan
 - (b) Foundation layout with locations and above ground dimensions.
 - (c) Layout for underground installations. Plans showing trenches for pipes and cables, sewerage, disposal.

- (d) Preliminary profile drawings of the buildings with location of equipment and details of loads including anticipated loads and stresses from heavy piping supports.
- (e) Drawings showing areas where anticorrosion protection of structures and floors is necessary. Suggested maintenance access areas and apertures.

2. Purchase documents:

(a) All purchase orders above a certain value (say \$200,000) together with comparative statement of bids by vendors and recommendations of the contractor.

(b) All purchase orders below a certain value (say \$200,000) together with comparative statement of vendor's bids where:

- (i) Order is not placed on the lowest bidder together with reasons for doing so
- (ii) Less than three bids could only be obtained.

3. Any technical documentation which specifies basic design data for detailed engineering to be carried out by the Purchaser.

ANNEXURE VI

DETAILED DESCRIPTION OF SERVICES TO BE
PERFORMED BY CONTRACTOR

These shall include:

1. Licences and know-how

1.1 Procurement of the licences and basic engineering for the plants from:

1.1.1 (Process licensor) for the manufacture of (1,000) metric tons per stream day of specification grade ammonia.

1.1.2 (Process licensor) for the manufacture of 1,725 metric tons per stream day of urea.

1.1.3 (Process licensor) for (specify other units).

2. Planning (preliminary)

2.1 Procedures

2.1.1 Description of the procedures for the design of the plants as given in Article E. Outline of the philosophy and procedure for the design of the utilities and off-sites.

2.1.2 Suggestions relating to construction and commissioning procedures of the plants.

2.2 Provision of process block flow diagrams and preliminary P and I diagrams of the process plants.

2.3 Preparation of a preliminary time schedule and critical path network for the engineering, procurement and deliveries, construction and commissioning of the entire plant.

2.4 At an appropriate date, presentation of preliminary schedules showing the over-all cost and cash disbursements for the FOB purchase of equipment and spare parts and the time when these disbursements are anticipated.

2.5 Provision of a general complex layout.

2.6 Assistance in planning studies made by the Purchaser.

2.7 Provision of a preliminary one-line electrical diagram.

- 2.8 Presentation of finalized design data.
 - 2.9 Preparation of general specifications and recommendations for equipment, tools and materials for erection.
 - 2.10 Preparation of block flow diagrams for utilities.
 - 2.11 Preparation of a preliminary organization structure for the complex including manpower requirements.
 - 2.12 Preparation of a plan for technical training.
 - 2.13 Preparation of a list of reliable foreign suppliers of equipment, for determining the final list of possible vendors, some of which are subject to acceptance or exclusion by the PURCHASER as per Annexure V item (b).
3. Designing
- 3.1 The detailed engineering of the complex to the extent necessary to purchase the equipment and to perform the erection of the complex.

For the following units, to be purchased as package units, the CONTRACTOR shall supply duty and general specifications complete with all data necessary to procure these units from suitable vendors; (provide the complete list as appropriate) e.g.
 - Raw water treatment
 - Demineralized water plant
 - Urea handling
 - Urea bagging station
 - Auxiliary boilers
 - Turbo-generators
 - Inert gas generator
 - etc.
 - 3.2 Provision of the load and line layout data required to perform the civil, structural and architectural design for the complex, including data on trenches for piping and cables.

- 3.3 Approval of the structural, civil and architectural engineering of the complex, which will be done locally, in order to check the compliance of the same with the basic dimensions provided by the CONTRACTOR.
- 3.4 Provide all necessary documentation in accordance with Annexure XV.
4. Procurement of equipment and spare parts
- 4.1 All services in the procurement of equipment and spare parts shall be performed according to Article 10 of the Contract.
- 4.2 Identification of suitable equipment (in association with the PURCHASER) which can be fabricated in the PURCHASER's country within the time schedule as per Annexure XV. The CONTRACTOR shall prepare bid specifications on the same basis as for purchase outside (Country).
- Where additional engineering details and drawings are required to obtain bids from the PURCHASER's country, these shall be arranged by the PURCHASER or the CONTRACTOR (as appropriate).
- 4.3 Preparation of bid specifications for approval by and for the signature of the PURCHASER and issue the same to the selected Vendors.
- 4.4 Evaluation of tenders and making purchase recommendations to the PURCHASER.
- 4.5 Preparation of purchase orders and other relevant documents for the purchase of the equipment and spare parts for signature by the PURCHASER and issue the same to the selected Vendor.
- 4.6 Preparation of a schedule of equipment and spare parts deliveries, and conducting regular follow-up with Vendors to meet this schedule.

- 4.7 Inspection and expediting services relating to equipment procurement, in co-operation with inspectors of the PURCHASER (as required by him).
- 4.8 Checking of compliance of the pro forma invoice and packing lists etc. with the purchase order and certifying the invoice for payment (by PURCHASER or CONTRACTOR as appropriate).
- 4.9 Reporting at regular intervals to the PURCHASER on expenditures made on purchases of equipment and spare parts.
- 4.10 The CONTRACTOR shall make recommendations for the services of a shipping agent if so desired by the PURCHASER.

5. Planning

- 5.1 Preparation of a detailed complex implementation schedule and critical path network.
- 5.2 Preparation of a list of drawings to be sent to the site.
- 5.3 Assistance in planning for battery limit connections of the complex to be made by the PURCHASER.
- 5.4 Assistance in identification of the erection requirements.
- 5.5 Submission of progress reports to the PURCHASER and making recommendations on steps to be taken to expedite erection, pre-commissioning and start-up.
- 5.6 Identification of requirements and recommendations regarding over-land transport facilities for the transportation of equipment to site.
- 5.7 Organization of overseas training of the PURCHASER's personnel as provided in Annexure XVIII.
- 5.8 Provision of all required documentation relating to construction, planning of erection, precommissioning and start-up.

6. Erection, precommissioning, start-up and operation

The CONTRACTOR shall undertake the following during the period of physical execution of the project:

- 6.1 Perform the over-all supervision of construction and erection, and project management in accordance with Article 4.
- 6.2 Supervise in detail the installation of the equipment and field fabrication, including insulation of vessels and piping.
- 6.3 Recommend a final organization structure for the complex including manpower requirements, operators and technical personnel.
- 6.4 Obtain, compile and draw up operating manuals including analytical procedures and maintenance instructions, as per Annexure XXI.
- 6.5 Recommend inventory requirements for chemicals, catalysts and supplies and assist in preparation of spare parts list and inventories.
- 6.6 Establish precommissioning and start-up programmes.
- 6.7 Supervise the commissioning of machinery in collaboration with Vendors.
- 6.8 Supervise pressure testing (acceptance) of boilers and pressure vessels falling under the jurisdiction of local technical inspection and supervisory authorities.
- 6.9 Supervise the precommissioning and start-up of the utilities and plants.
- 6.10 After discussions with the PURCHASER draw up the procedure for the performance of guarantee tests.
- 6.11 Perform guarantee tests according to the Contract.
- 6.12 Provide all the necessary documentation.

7. Project time and cost control and reporting

7.1 Set up effective procedures for controlling and regularly reporting to the PURCHASER the over-all progress of the project in terms of time and costs throughout all phases of the Contract.

ANNEXURE VII

DETAILED DESCRIPTION OF SERVICES TO BE
PERFORMED BY PURCHASER

1. The PURCHASER shall provide facilities to the personnel of the CONTRACTOR visiting/deputed for work at the plant site as detailed in Annexure XXVII.
2. The PURCHASER shall provide an adequate number of suitably qualified technical/non technical personnel and unskilled workers at the plant site as mutually agreed between PURCHASER and CONTRACTOR for:
 - (a) Clearance, forwarding, loading and unloading of imported equipment and materials.
 - (b) Proper storage, marking, record and issue of equipment and materials at plant site.
 - (c) Shop fabrication, mechanical and electrical operations required for on site jobs for equipment/plant assembly, movement and erection.
 - (d) Laying and maintenance of electrical network for site preparation and the complex.
 - (e) Laying of piping and instrument lines, including insulation of piping and vessels.
 - (f) Testing for mechanical completion, precommissioning, commissioning, guarantee tests, operation and maintenance of the plant and utilities.
3. The PURCHASER shall provide adequate capacity number, and quantity (agreed between PURCHASER and CONTRACTOR) of workshop machines, tools, materials, erection equipment, and utilities according to the specification and schedule agreed between the PURCHASER and CONTRACTOR.
4. The PURCHASER shall obtain the necessary area of land for the plant and other services at the proposed site and undertake
 - (a) site development
 - (b) build internal roads and rails and linking to the national network
 - (c) build tubewells and water mains to storage tanks or connecting points
 - (d) industrial and stormwater drains.

5. The PURCHASER shall arrange detailed design of all civil works for the plant, utilities and off-sites based on the load data, material specifications, plot plan, plant layout and building profiles supplied by the CONTRACTOR. Design of all load bearing structures including piping supports in trenches will be submitted to the CONTRACTOR for his approval before execution of the civil works.
6. The PURCHASER shall undertake procurement, inspection and testing (according to CONTRACTOR's specifications) of all equipment, machinery and materials for the plant and utilities which is to be procured locally.
7. The PURCHASER shall arrange import of such equipment and materials (as agreed between PURCHASER and CONTRACTOR) as needed for the setting up of the plant.
8. The PURCHASER shall provide all feed stocks, chemicals, catalysts, lubricants and utilities of quality specified in the Contract.
9. The PURCHASER shall arrange insurance of plant, machinery, works and personnel (of CONTRACTOR and PURCHASER) during construction, erection, commissioning, guarantee tests until the plant is accepted by the PURCHASER.
10. All such other services which are reasonably needed to accomplish the project and have been mutually agreed between CONTRACTOR and PURCHASER.

ANNEXURE VIII

SCOPE OF DELIVERY, INCLUDING LIST OF EQUIPMENT
AND EQUIPMENT SPECIFICATIONS

1. The Annexure should state "The list of equipment given below is not exhaustive. The equipment to be engineered or supplied will include all equipment within the battery limits of design required to produce ammonia and urea, and to meet the guarantees contained in the Contract."
2. Complete flow sheets, and P + I diagrams should be attached. (For lump-sum contract, also plant layout, machinery layout, etc. as per Annexure VI item 2.2, 2.5 and 3.1).
3. Each piece of equipment must be specified under each of the headings given below, and should contain the following data.

<u>Equipment</u>	<u>Number on flow sheet</u>	<u>Size, approx. weight and technical data</u>	<u>Material of construction</u>
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- 3.1 The plant sections suggested are:
(The following list may be expanded as appropriate).

3.1.1 Ammonia plant

- (a) Desulphurization, reforming and conversion
- (b) Carbon dioxide removal and methanation
- (c) Compressors and drivers
- (d) Ammonia synthesis
- (e) Purge gas absorption
- (f) Ammonia storage

Note: Equipment within the sections may be categorized as for the urea plant using equivalent code numbers.

3.1.2 Urea plant

- (a) Reactors
- (b) Towers and vessels
- (c) Heat exchangers
- (d) Separators

- (e) Tanks
- (f) Ejectors
- (g) Compressors
- (h) Turbines
- (i) Pumps
- (j) Miscellaneous equipment

3.1.3 Product handling, bagging and storage

- (a) Urea handling equipment to storage
- (b) Urea storage (suggested capacity 60,000 tons)
- (c) Urea reclaiming equipment with a capacity of 160 metric tons per hour
- (d) Screening and dedusting for the reclaimed urea from the storage
- (e) Bagging station provided with a suitable number of bagging lines for a total bagging capacity of 160 metric tons per hour of urea

Each line will be completed with the hopper weighing machine, bagging machine, stitching machines or bag sealing or valve bag filling machines and conveyor system for bulk and bagged urea

- (f) Road and rail cars loading system for bags shipment, to be dispatched as follows:

_____ % by road

_____ % by rail

Bags shall be with open mouth (valve) and for (50 kg) net contents.

The actual list of the equipment shall be determined during the layout and engineering design.

4. Utilities

- 4.1 The services that shall be provided in the plant complex are:
(Supplement as appropriate).

- 4.1.1 Cooling water system
- 4.1.2 Raw water treatment
- 4.1.3 Demineralized water system
- 4.1.4 Fire-fighting and fire alarm system
- 4.1.5 Plant and instrument air system

- 4.1.6 Natural gas distribution system
- 4.1.7 Inert gas system
- 4.1.8 Effluents collection and disposal system
- 4.1.9 Steam generation, distribution and condensate recovery system
- 4.1.10 Interconnection (piping) system within the complex
- 4.1.11 Electric power generation and distribution system, lighting system, earthing system, emergency power generation and distribution system.

The actual list of itemized equipment shall be determined during the layout and engineering design.

5. Off-sites

5.1 The off-sites facilities that shall be provided in the complex are:

- 5.1.1 Workshops for mechanical, electrical and instrumentation, maintenance and motor garage
- 5.1.2 Control laboratory
- 5.1.3 Warehouses for spare parts, stores, chemicals and lubricants
- 5.1.4 Administration and community buildings
- 5.1.5 Telephone and plant intercommunication system
- 5.1.6 Erection equipment
- 5.1.7 Fire-fighting equipment and health security appliances.

6. Lists of equipment given for the plants represent only the itemized equipment and machinery, it being understood that bulk materials such as piping, electricals, instrumentation, insulation and painting necessary for the complex are included in the scope of the equipment.

7. Critical items

7.1 (These need to be discussed at the time of the Contract because technologically and time critical items tend to change owing to process and market developments).

7.2 (Critical items for one contract have been:)

7.2.1 Ammonia

- (i) Primary reforming furnace
- *(ii) Waste heat boiler

- (iii) Ammonia synthesis convertor
- *(iv) Ammonia chillers
- *(v) Air compressor with turbine
- *(vi) Refrigerating ammonia compressor with turbine

7.2.2 Urea

- (i) Synthesis reactor
- (ii) Urea stripper
- (iii) 1st carbamate condensor
- (iv) 2nd carbamate condensor
- *(v) Carbon dioxide compressor with turbine

7.2.3 Utilities

- *(i) Turbo-generators

Note: (a) Items marked * were time critical at that time.
(b) At that time the desired equipment for the designed synthesis loop pressure could only be obtained in time from one supplier of synthesis gas compressor.

ANNEXURE IX

CATALYSTS

The following catalysts are proposed for the Ammonia Plant
(as an example):

Duties	Particle size (mm)	Bulk Density (Kg/1)	Expected life (year)
<u>Desulphurisation</u>			
1. Hydrogenation of Natural Gas	2 - 5	0.85	4
2. H ₂ S absorption	4 x 6	1.38	1/2/5
3. Activated Carbon			
<u>Reforming</u>			
4. Primary Reforming	16/6 5/16	1.66	3
5. Secondary "	19/9/19	1.0	5
<u>Conversion</u>			
6. H.T. Shift	6 x 6	1.06	3
7. L.T. Shift	4½ x 4½	1.06	2
<u>CO_x Removal</u>			
8. Methanation	5 - 10	0.90	5
<u>Synthesis</u>			
9. NH ₃ Synthesis	3 - 6	2.12	5
	1½ - 3	2.7	5

ANNEXURE X

LIST OF SPARE PARTS

1. Within 6 months of the effective date of the Contract, the CONTRACTOR shall submit to the PURCHASER a list of spare parts required for 2 years operation of the Plant, along with an estimate of costs.
2. This list will include spare parts of a proprietary nature which will be purchased from vendors, along with the main equipment.
3. For the spare parts of critical items, orders will be placed along with the order for critical items, and such spares need not be included in the list under item 1 above.
4. Following the supply of lists for spares, CONTRACTOR and PURCHASER (and his Technical Advisor) will scrutinise such lists, and will decide on the spare parts to be purchased, and will consider revised costs. (Note: recommended overall spare part purchase is 8% of the C and F cost of equipment for 2 years operation).
5. The spare parts will thereafter be purchased in accordance with the Contract, and Annexure XXVI.

ANNEXURE XI

LIST OF CHEMICALS

1. In addition to the catalyst contained in Annexure IX, the following additional chemicals will be required to start-up the plant.

(List of chemicals particularly overall charges of chemicals for the Carbon Dioxide removal system, water treatment, Anticorrosion, Antiscaling).

2. The annual requirements of the above chemicals are estimated as follows:

(Annual requirements and quantities to be kept on stock for replacement in emergency cases be stated for each item).

3. At the projected meeting in the 4th month after effective date, the PURCHASER will advise the CONTRACTOR which chemicals can be procured in PURCHASER's country, and which must be imported.

4. CONTRACTOR shall thereafter arrange to procure those in accordance with the Contract and Annexure XXVI, in particular the initial requirement of chemicals, along with one year's requirement of such chemicals.

ANNEXURE XII

LIST OF PREQUALIFIED VENDORS FOR
CRITICAL EQUIPMENT

This equipment includes such dependable manufacturers of equipment, who had sufficient experience and provided heavy/long delivery/special/high duty equipment to the design of an engineering company in the shortest time. The specific equipment may vary from case to case. Some salient critical equipment and their manufacturers are:

(i) Compressors and Pumps

Name of Company	Country
-----------------	---------

(ii) Power Plants (Boiler House/Turbines/Transformer/Switchgear).

Name of Company	Country
-----------------	---------

(iii) Reactors

Name of Company	Country
-----------------	---------

(iv) Primary Reformer/Structure (For)

Name of Company	Country
-----------------	---------

(v) Pressure Columns and Vessels

Name of Company	Country
-----------------	---------

(vi) Manufacturers of special grade stainless steel

Company	Country	Type of steel Manufacturer's code	for equipment item no.
---------	---------	--------------------------------------	---------------------------

The above list of Equipment and Manufacturers is only indicative and may be supplemented in the course of engineering.

ANNEXURE XIII

EXCLUSIONS FROM THE SCOPE OF DELIVERY

1. The following services will be excluded from the scope of design, procurement and erection supervisory services of the CONTRACTOR.
 - (a) Land Procurement and levelling.
 - (b) Civil Engineering Design and Construction.
 - (c) Design and Construction of all Communications (road, rail, telephone).
 - (d) Design of gas pipeline or water intake beyond the battery limits of the Plant.
 - (e) Procurement of Erection Equipment. However, the CONTRACTOR will advise the PURCHASER on hiring of Erection Equipment, if desired by the PURCHASER.

(Note: If Erection Equipment is to be purchased, this may be eliminated).
 - (f) (If procurement of any equipment is to be undertaken by the PURCHASER or a third party in the PURCHASER's country, the Procurement and Inspection of such equipment may be listed in exclusions).
 - (g) The clearance of the Plant and Equipment at (Port) despatch to site, and storage at site.
 - (h) Supply of all erection materials, erection staff and erection labour, for the erection of the plant.
 - (i) The procurement of all start-up chemicals, but excluding the first and a spare charge of catalysts which will be procured by the CONTRACTOR. The CONTRACTOR will give a list of such Chemicals.
 - (j) The recruitment of all personnel for start-up and operation of the plant (other than the CONTRACTOR's expatriate personnel). The CONTRACTOR will advise the PURCHASER on qualification of such personnel, and will test them if required.

(k) The supply of all operational Chemicals, raw materials or other materials required for steady operation of the Plant.

(l) Management of the Project, other than the CONTRACTOR's site management personnel and control of costs and time schedules by the CONTRACTOR, as provided in the Contract.

ANNEXURE XIV

SCOPE OF DELIVERY OF THE PURCHASER

The scope of delivery by the PURCHASER are the items shown as
"EXCLUSIONS FROM THE SCOPE OF DELIVERY" Annexure XIII.

ANNEXURE XV

TIME SCHEDULE OF IMPLEMENTING EACH STAGE OF THE CONTRACT

1. TIME SCHEDULE

1. General basis of the over-all time schedule:

The time schedule for the completion of the complex has been shown in the bar-chart attached hereafter as part of this Annexure and is based on the following considerations:

1.1 - All dates referred to hereafter start from the effective date.

1.2 - Delivery FOB of the equipment (with the exclusion of critical items) shall start from the 14th month and end (95% of the value) by the 29th month.

1.3 - Delivery FOB of critical items shall end by 26th month.

1.4 - The average estimated duration of transport from ex-work deliveries to site is approximately two months.

1.5 - Civil work construction beginning in the 10th month.

1.6 - The duration of erection has been estimated on the basis that it will be performed by an experienced erection company.

1.7 - The last dates of deliveries as shown in the attached time-schedule are not the dates when shipment will be made. It is understood that there shall be shipments prior to that date, as and when the equipment is ready.

2. TECHNICAL DOCUMENTATION

2.1 The technical documentation described in this Annexure shall be supplied by the CONTRACTOR to the PURCHASER and shall include all the documents necessary to buy the equipment and spare parts, to carry out detailed engineering by the PURCHASER, and to perform the erection of the complex. The technical

documentation shall be in English and shall include but not be limited to the following items, which shall be supplied not later than the time indicated against each item (the indicated times are in months and referred to the final issue of the documents as starting from the effective date).

<u>2.1.1 Process Documentation</u>	<u>Delivery within</u> <u>(months)</u>
(a)* Process flow sheets	
- for the plants	5
- for the utilities	8
(b)* P & I diagrams	
- for the plants	12
- for the utilities	15
(c) Material and heat balances for the plants and utilities	9
(d) Description of the process and information on the products	6
(e) List and process data sheets for all equipment and machines	9
(f) Specification of raw materials, utilities and chemicals	6
(g) Consumption of raw materials and utilities and chemicals	9
(h) Peak and average requirements of utilities for use in engineering of utilities	6(p)
(i) Properties of effluents (gaseous, liquid and solid)	6(p)
(j) Details concerning quantities, frequency of discharge, temperatures etc. of effluents and waste materials	9
(k) Operating personnel required and their duties	12

2.1.2 Equipment and machines documentation

- | | |
|--|----|
| (a)* Specifications for all equipment and machinery | 12 |
| (b) Manufacturers catalogues | 24 |
| (c) Manufacturer's drawings for all equipment and machinery | 24 |
| (d) Requirements for installation and start-up for all equipment and machinery including specifications for insulation | 24 |
| (e) Assembly drawings for equipment which requires assembling at site | 15 |
| (f)* List of recommended spare parts | 15 |
| (g) Manufacturer's certificates and documents concerning workshop testing, pressure testing and acceptance by authorized inspection or official inspection authorities in the manufacturers' countries | |
| (h) Lubrication schedules and summary list of types and grades of lubricants as recommended by equipment manufacturers | |

2.1.3 Piping documentation

- | | |
|---|------|
| (a) Pipe line list and specifications including insulation requirements | 9 |
| (b)* General layout of the complex | 6 |
| (c)* Plants plot plans | 9 |
| (d)* Terminal point drawings for the interconnection of pipes, going in and coming out of the complex | 6(p) |
| (e) Isometric drawings for 2" pipes and larger | 16 |
| (f) Piping erection drawings | 16 |

(g) Model of the process plants and utilities (with the exclusion of urea storage and bagging)	18
(h) Stress analysis	12
(i) Piping take-off list	
- 1st (50% of piping material)	9
- 2nd (85% of piping material)	12
- 3rd (100% of piping material)	18
(j) Specification of supports	18
(k) Specification of insulation	

2.1.4 Instrumentation documentation

(a)* General description of the process with regard to instrumentation	8
(b)* General description of the control system and proposed types of instrumentation	
(c) Detailed description of the alarm and inter-locking system	18
(d) Description of the control room	18
(e) Description of the special provisions for instrumentation in hazardous areas	15
(f) Requirements for installation and start-up of the various types of instruments	24
(g)* Specifications of control panels and control desks	18
(h) List of instruments	8
(i) Data sheets for all instruments	15
(j) Orifice plate specification and typical calculation	18
(k) Control valve specifications and typical calculation	18

(l) Cable list	18
(m) Instrument air tubing list	18
(n) List of abbreviations and symbols used	8
(o) Manufacturers pamphlets	24
(p) Operation and maintenance instructions	24
(q) List of settings of switches and relays for operation of alarms and interlocks	24
(r) List of codes and standards used	8(p)

2.1.5 Electrical documentation

(a)* Electrical power balance and motors list	6
(b) Electrical diagrams	
*- one line diagram	6
- general and detailed diagrams	12
(c) Electrical layouts and cable routing	18
(d) Electrical equipment specifications and list	15
(e) Electrical erection drawings	18
(f) Installation, operation and maintenance instructions	24

2.1.6 Civil Engineering

The CONTRACTOR shall supply to the PURCHASER the basic data and drawing necessary for the PURCHASER to perform the detailed civil works engineering. This documentation shall include:

(a)* General plot plan	4(p)
(b)* Foundations layout with foundation location and above ground dimensions	6(p)
(c)* Layout for underground installations, Plans showing trenches, pipes and cables, sewerage disposal etc.	6(p)

- (d)* Preliminary profile drawings of the buildings with location of equipment and details of loads including anticipated loads and stresses from heavy piping supports 6(p)
- (e)* Additional information on profile and loading drawings not affecting the overall civil engineering programme (slopes, wet areas, anticorrosion protection of structures and floors, maintenance access areas and apertures) 9
- (f) Details of lightening protection required for the plant 10
- (g) Recommendations on air-conditioning and ventilation

2.1.7 General documentation

- (a) Estimates of FOB cost of all plant and equipment, with details by plants and sections 4(p)
- (b) Operating manuals including detailed instructions for the start-up, shut-down, operation at reduced capacity and for action in the plants in the event of break-down in the supply of the raw materials and utilities. Emergency instructions 24(p)
- (c) Recommendations for the protection of the plants and personnel against industrial hazards based on safety regulations of the country of origin of equipment 24
- (d) Instructions for the maintenance of the complex with drawings 24
- (e) Recommendations for the personnel number and qualifications, necessary to properly operate and maintain the complex (in addition to point 2.1.1.k) 24

- (f) Final recommendations for quality, quantity, frequency and points of lubrication preferably on internationally available and acceptable products. This will cover initial and current requirements (in addition to point 2.1.2.h) 24
- (g) Recommended list and general specifications of:
 - 1. Maintenance workshop equipment 9
 - 2. Laboratory equipment 9
 - 3. Mobile fire fighting and safety equipment 9
 - 4. Warehouse materials handling equipment
 - 5. Erection equipment 4(p)

2.1.8 Procurement documentation

- (a) Critical items 4(p)
- (b)* List of recommended Vendors of critical equipments 4(p)
- (c) Itemised equipment and machinery (95% by value) other than critical items 12(p)
- (d) Remaining equipment (95% by value) 18

2.2 Delivery procedure of documentation

The procedure for the delivery of the documentation supplied by the CONTRACTOR shall be as follows:

- 2.2.1 The documentation shall be delivered to the PURCHASER's representative in the CONTRACTOR's offices or despatched to the PURCHASER by air-way bill on a freight pre-paid basis and the PURCHASER shall acknowledge each despatch immediately after receiving it. The date of delivery shall be taken to be the date of delivery to the PURCHASER's representative or the date of the air-way bill as the case may be.

2.2.2 The documentation shall be supplied in six (6) copies and a reproducible copy (with the exclusion of the catalogues, pamphlets and manuals supplied by the Vendors).

2.3 The items of technical documentation marked (p) are the documents liable to penalty as mentioned in Article 11 and 25 of the Contract.

2.4 The items of technical documentation marked with an asterisk (*) are those for which the approval of the PURCHASER is required as mentioned in Article 3 and 10 of the Contract.

Note: A separate time schedule may be worked out for delivery of documentation, showing separately for each item of the above scope

- CONTRACTOR's documentation
- PURCHASER's documentation
- Approval by the PURCHASER as per Annexure V.

AMMONIA/UREA COMPLEX OVERALL EXPECTED TIME SCHEDULE		106
DESCRIPTION	MONTH	
1. ENGINEERING		
11 PROCESS ENG		
12 DETAILED ENG		
13 CIVIL ENG		
14 PIPING ENG		
15 ELECTRICAL & INSTRUM ENG		
16 EQUIPMENT & MACHINERY		
2. PROCUREMENT & SHIPPING		
21 VESSEL COLUMNS TANKS		
22 HEAT EXCH & HEATERS		
23 MACHINERY		
24 PIPING MATERIAL		
25 ELECTRICAL MATERIAL		
26 INSTRUM MATERIAL		
27 STEEL STRUCTURE		
3. CONSTRUCTION		
31 CIVIL WORKS		
32 STEEL STRUCTURES		
33 PIPING INCLUDING FABRICATION		
34 MECHANICAL ERECTION		
35 ELECTRICAL ERECTION		
36 INSTRUMENTATION ERECTION		
37 INSULATION & PAINTING		
4. CRITICAL EQUIPMENT		
41 ENGINEERING		
42 PROCUREMENT SHIPPING		
43 ERECTION		
5. PRE-COMMISSIONING/START-UP		
51 TESTS		
52 START-UP		
		DELIVERY TO SITE

MECHANICAL COMPLETION
COMMERCIAL OPERATION

ANNEXURE XVI

QUALITY OF PRODUCTS
(typical example)

1. AMMONIA

NH ₃ Contents	99.8% by wt. minimum (G)
Water and Inerts	0.2% by wt. maximum (G)
Oil	5 ppm maximum (G)
Pressure at the battery limits of Ammonia Plant	(20 Kg/cm ² g)

2. CO₂ GAS ON DUTY BASIS

CO ₂ Contents	98.5% by Vol. minimum (G)
Inerts, including water vapour	1.5% by Vol. maximum
Pressure at the battery limits of Ammonia Plant	(0.05% Kg/cm ² g)

3. UREA

Type	Prilled (coated/uncoated)
Nitrogen	46.3% by wt. minimum (G)
Biuret	0.9% by wt. maximum (G)
Moisture	0.3% by wt. maximum (G)
Size	90% between 1 mm and 2.4 mm
Temperature	Not exceeding 65°C at the bottom of prilling tower

The characteristics marked with (G) are those for which the performance guarantees for quality of products are referred to.

ANNEXURE XVII

QUALITY AND QUANTITY OF EFFLUENTS
EFFLUENTS AND EMISSION STANDARDS

The quantity of effluents from the Complex shall not exceed the following under normal operating conditions:

(1) From Ammonia Plant (Benfield Section)

- Flow rate	3.3 t/hr
- Quality	Waste water saturated with CO ₂ at 42°C with - approx. 50 ppm K ₂ CO ₃ - traces of DEA

(2) From Urea Plant

- Flow rate	39 t/hr condensate at 55°C containing approx. 200 ppm NH ₃ and 400 ppm Urea
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Note: In some cases in compliance with local standards the process condensate may require further treatment within the Battery Limits Plant so that under (2) the effluent from the waste water desorber unit should be specified.

(3) Cooling Tower System

(a) Losses (evaporation)	400 m ³ /h
(b) Blow down and mist loss	230 m ³ /h
(c) Ammonia and urea content	___ ppm NH ₃ ___ ppm Urea

The effluents shall be delivered at agreed designated points in the Plant Battery Limits.

ANNEXURE XVIII

TECHNICAL TRAINING OF PURCHASER'S PERSONNEL

1. The CONTRACTOR will provide technical training for the PURCHASER's personnel in accordance with Article 3 and 4.2.3.7 of the Contract for the following personnel and for the time stated against each personnel.

<u>Designation</u>	<u>Number</u>	<u>Time</u>	<u>Training Units</u>
(a) Chief Production Manager	1	7 months	Ammonia Plant Urea Plant Overall Management
(b) Chief Mech. Engineer	1	6 months	Ammonia Plant and Urea Plant Maintenance facilities Instruments
(c) Production Engineers	4	6 months	Ammonia Plant
		1 month	Urea Plant
	4	6 months	Urea Plant
		1 month	Ammonia Plant
(d) Electrical Engineer	(1)*	3 months	Power Station
(e) Instruments Engineers	2	6 months	Instruments. Course Plant Instrument Maintenance
(f) Maintenance Engineers	2	3 months	Maintenance of Plants Workshop
(g) Chemists	2	3 months	Laboratory and Field Analysis
(h) Chief Chemist	1	3 months	Laboratory and field Analysis. Research

2. In addition the CONTRACTOR will assist the PURCHASER in setting up a training school at site to train plant engineers and operators in operation of the plants, and field staff in maintenance of the plants.

* / May be increased to 4 if required.

ANNEXURE XIX

PROCEDURES FOR CHANGES IN SCOPE OF WORK

(This has already been discussed under Article 28, VARIATIONS, CHANGES AND ADDITIONS TO SCOPE OF WORK).

In specific cases where modifications of details of the process documentations are expected owing to new developments underway at the time of signing the contract, ANNEXURE XIX is intended to specify particular procedures.

ANNEXURE XX

OPERATING PROCEDURES AND PROCEDURES FOR
GUARANTEE TESTS

1. Mechanical Completion Operations:

These operations include the following:

- 1.1 Conduct the hydrostatic, pneumatic, and other field tests of operating equipment embodied in the plants which are set forth in the specifications.
- 1.2 Prepare all sections of the Plants and Utilities to meet safety requirements.
- 1.3 Align pumps and drivers.
- 1.4 Install packings in pumps and compressors.
- 1.5 Install packings and lubricants in valves and cocks.

2. Pre-commissioning Operations:

These operations include the following:

- 2.1 Fill lubricating and seal oil in the Equipment where required.
- 2.2 Check motor rotation and turbine speed, including overspeed trips.
- 2.3 Furnish and install startup suction strainers in pumps, blowers and compressors.
- 2.4 Circulate lubricating and seal oil in blowers and compressors to assure correct operations.
- 2.5 Dry out and cure linings in primary waste heat boiler, secondary reformer, transfer line auxiliary boilers of the Utilities etc., dry out primary reformer heaters and other such refractories.
- 2.6 Clean all lines of loose materials by flushing or blowing and do any other special cleaning or preparation of individual lines as may be called for in the specifications or drawings, including cleaning of the H.P. steam system, demineralized water lines and CO₂ removal system. Boil out auxiliary boilers and waste heat boilers.

- 2.7 Pull all blinds except those installed for operation.
- 2.8 Install orifice plates after lines are hydrostatically tested and flushed.
- 2.9 Check correct action of instruments as far as possible.
- 2.10 Connect thermocouples, check connexions and check-out circuits.
- 2.11 Remove all loose material from vessels and load all internals and packing materials. Vessels to be closed up except vessels containing catalysts.
- 2.12 Load all catalysts and close up the reactors.
- 2.13 Fill electrical equipment with oil as required.
- 2.14 Check electrical installation to check operability.
- 2.15 Conduct preliminary tightness tests and purge the unit.
- 2.16 Conduct pre-operation pressure testing and acceptance tests as required by local technical inspection authorities and issue relevant documents.
- 2.17 Conduct a simulated operation of sections of the plant using air, water and steam where possible. Circulate water through the piping system where possible. Operate all pumps which can be run on cold or hot water for an adequate time period following special instructions worked out for this purpose.

3. Guarantee Tests

- 3.1 Procedure for these shall follow the procedures laid down in Articles 19 of the Contract.

ANNEXURE XXI

MANUALS

1. As part of his Contract Services, the CONTRACTOR shall provide to the PURCHASER 6 copies each of the following Manuals:
 - (a) Operating Manual, with complete details of the operation at capacity under all conditions of the Ammonia and Urea Plants to produce specification grade products.
 - (b) Maintenance Manual, for the maintenance of all major Plant and Equipment, particularly all Pumps, Turbines, Compressors, Workshop Machines, Electrical Motors, Generators, etc. This will be in addition to Vendor's Maintenance Sheet and will include instructions on lubrication.
 - (c) Manual of Safety Procedures, for all Safety and Emergency measures for operation of the Plant.
 - (d) Manual of Analytical procedures for all routine, emergency and monitoring tests required for the operation of the plant, monitoring the effluents and emissions and checking the quality of raw materials and finished products.
 - (e) Manual for Monitoring Environmental Aspects.
 - (f) Manual for Instrumentation Maintenance.
 - (g) Special instructions for maintenance and calibration of in-line analysers.
2. All the above manuals shall be in the (_____) language.
3. In addition the CONTRACTOR will provide the PURCHASER in original, all pamphlets, installation, operation and maintenance instructions etc., received from Vendors and where required shall identify the equipment to which such instructions refer.

ANNEXURE XXII

FORM OF PERFORMANCE BONDS

Examples to be taken from the Guidelines and other relevant papers prepared by UNIDO.

ANNEXURE XXIII

FORM OF BANK GUARANTEES

At the request of (Name and Address of CONTRACTOR) (hereinafter called CONTRACTOR), we hereby open our irrevocable guarantee No. _____ for an amount of maximum (Amount)

In consideration of CONTRACTOR having entered into a Contract dated _____ (hereinafter called "Contract") with _____

_____ (name and address of PURCHASER), (hereinafter called PURCHASER) for the grant of licences and technical know-how and for the supply of engineering, procurement, supervision and training services for the Ammonia and Urea and Auxiliary Plants to be built by PURCHASER we (Bank) do hereby agree and undertake to pay forthwith to PURCHASER in repatriable (U.A.) currency on demand by PURCHASER and without prior recourse to CONTRACTOR such sum or sums not exceeding (Amount) as may be demanded by PURCHASER stating that CONTRACTOR has failed to fulfil its obligations relevant to performance guarantees under the Contract for reasons for which CONTRACTOR is liable under the Contract.

It is understood and agreed that any demand made hereunder by PURCHASER shall be conclusive evidence of CONTRACTOR's failure to comply with its obligations relevant to performance guarantees under the Contract for reasons for which CONTRACTOR is liable under the Contract.

The amount being guaranteed hereunder shall be applied towards the payment by CONTRACTOR of damages under and in accordance with the Contract.

This bank guarantee shall come into force immediately and shall remain valid for a period of _____ months such period to be extended for additional six (6) months periods, in accordance with the Contract, up to the date of acceptance by PURCHASER of the Plants as per the Contract and we _____ (Bank) shall at all times prior to such acceptance be bound on the demand of PURCHASER to forthwith pay PURCHASER the amount guaranteed hereof.

_____ (Bank)

ANNEXURE XXIV

PACKING, SHIPPING AND MARKING INSTRUCTIONS

1. The CONTRACTOR shall ensure that in procurement and in inspection, all items of equipment are delivered in proper sea-worthy packing, and where special protection is required, shall so specify in the procurement specifications, and will inspect the items accordingly.
2. Where FOB procurement is involved, the CONTRACTOR shall ensure that clean bills of lading are obtained for all deliveries. Where space limitations will only permit deck cargo, CONTRACTOR shall specify the special protective measures required to protect equipment during sea transport.
3. Where air or land shipment is involved CONTRACTOR shall give appropriate packing instructions in the tender specification.
4. In the event that due to late deliveries or procurement, shipment has to be made by air instead of by sea, CONTRACTOR will advise PURCHASER on packing and give appropriate instructions to the Vendors.
5. During Inspection the CONTRACTOR shall ensure that:
 - (a) A packing list is enclosed with all closed packages.
 - (b) Signs are placed in _____ and _____ languages indicating top and bottom, and where essential, points for locking crane lifts.
 - (c) The packages are marked as given below:
(alternately as agreed between PURCHASER and CONTRACTOR).
(marking instructions)
 - (d) Certificates of origin, where required, are available.
6. The number of invoices, the methods of despatch of original invoices, etc., will be in accordance with Annexure XXVI.

ANNEXURE XXV

STORAGE AT SITE, GENERAL AND MARKING INSTRUCTIONS

The CONTRACTOR shall review when the procurement has been planned to further streamline these instructions also supplying numbers allotted to equipment and parts and strategy for storage erection, and marking.

1. The area for the storage of equipment should be:

- (i) At a distance from fuel oil storages
- (ii) Near the points of erection, also near rail siding
- (iii) Higher in level by about () inches above the rest of the site or raised by earth filling
- (iv) Properly consolidated and paved with (bricks) suitable for heavy trucks and mobile cranes and sloping towards arterial drains
- (v) Provided with arterial drains joining with common drains at either end
- (vi) Adequate to store all equipment (area approx _____), machinery and materials except large towers, reactors and boilers
- (vii) Well connected by internal roads to different points where equipment is to be installed
- (viii) Cordoned with boundary wall/barbed wire
- (ix) Properly lighted.

2. Storage instructions:

- (i) Equipment packages are stored in _____ bags so that a package is reached from one side by lifting device (crane, trolleys, fork lifters etc.) and provide free access on two other sides, free access at all places for fire fighting purpose
- (ii) Packages are placed on bricks allowing free flow of water or approach of lifting tackle underneath
- (iii) Packages are stored in rows depending on the erection plan which the CONTRACTOR shall provide later

- (iv) All heavy/large packages should preferably be stored in outer front bags
- (v) All very large/heavy equipment (viz. boilers/reactors etc.) should be properly unloaded and stored as close to the place of their erection as possible
- (vi) A package should be stored, so that all marking instructions on it are on front side and also upright
- (vii) Lighter packages should not be stored under heavy packages/loads
- (viii) Packages containing instruments, control valves, smaller packages should be stored in proper stores, air-conditioned where necessary
- (ix) Packages liable to be affected by rain/dust should be covered with tarpaulins.

3. Marking instructions

- (i) The packages should carry markings:
 - (a) on top and three sides, and arrow indicating top of equipment
 - (b) name of the PURCHASER and country
 - (c) package number (same as equipment number given by the CONTRACTOR, part number and number of pieces. The markings should be in indelible ink/paint and easily readable).
- (ii) Fragile packings should be clearly so marked
- (iii) Packages for the same plant should have one common number followed by equipment number (in series).

ANNEXURE XXVI

PROCUREMENT PROCEDURES

1. Procurement procedures have been outlined in Article 10 of the Contract, and will be followed. In addition the mode of procurement is given in this Annexure.
2. The CONTRACTOR will issue pre-qualifying notices for all groups of equipment inviting potential vendors for prequalification. All documents required for this purpose shall be mentioned in this notice. The PURCHASER and the CONTRACTOR will agree on the newspapers in which such notices are to appear in the first design meeting after effective date.
3. The CONTRACTOR will give to the PURCHASER a list of companies pre-qualified by him for purchase of different types of equipment, indicating reasons for rejection of any vendor. The PURCHASER shall have the right to add or subtract from such list of prequalified vendors. All cost of the CONTRACTOR satisfying himself on the competence of any bidders will be borne by the CONTRACTOR.
4. The PURCHASER and the CONTRACTOR shall agree on the general format of the purchase orders to be issued for procurement at the meeting proposed for the 4th month after effective date.
5. The CONTRACTOR shall thereafter issue tender specifications for each item of equipment, modifying or extending the general format as the need may arise. Where the PURCHASER's representatives are available at the CONTRACTOR's offices, the PURCHASER's representatives will approve such specifications.
6. The CONTRACTOR shall receive bids in two parts - technical specifications and prices, and will open the price tenders in accordance with the procedure laid down between the PURCHASER and the CONTRACTOR (and the name of the financing agency). Any clarification requested from bidders shall be undertaken in writing or in the presence of the site representatives of the PURCHASER. Where site representatives of the PURCHASER are not present, complete minutes of such meetings will be sent to the PURCHASER.

7. The CONTRACTOR shall prepare bid tabulations in ample detail to enable the PURCHASER to select the final bidder, and will make recommendations to the PURCHASER on the selection of the vendor. Should this vendor not be the lowest bidder, full details will be supplied on reasons for rejection of such vendors. The actual selection of bidder shall be in accordance with Article 10 of the Contract.

8. The CONTRACTOR will prepare the final purchase orders, fully safeguarding the PURCHASER's interest, for signature of the PURCHASER or his representative at site.

9. The PURCHASER shall thereafter open letters of credit, or in the case of reimbursable procedures such as the World Bank or others, provide appropriate payment guarantees acceptable to the vendor, within the time limits agreed in the purchase order.

10. The CONTRACTOR shall ensure that all orders are placed for delivery dates in accordance with the time schedule laid down in Annexure XV, and in an orderly manner for erection at site. The PURCHASER shall ensure payment in accordance with the purchase orders.

11. For purchase of critical items of equipment quotations shall be obtained promptly after the effective date by the CONTRACTOR and purchase shall be in accordance with a separate protocol between the PURCHASER and the CONTRACTOR. Separate protocols between the PURCHASER and the CONTRACTOR may also be made for specialised proprietary equipment, but in all cases where procedures of the financing agency are required these shall be followed.

12. For purchases made under loans from (name of financing agency) the CONTRACTOR undertakes to follow the procedures of this financing agency, without extra charge to the CONTRACTOR.

ANNEXURE XXVII

SCHEDULE OF RATES AND CHARGES

1. Home Office charges

The Home Office charges of the CONTRACTOR for work undertaken in accordance with the Article 28 on a cost-plus basis, or for other work on this basis, as agreed between the PURCHASER and the CONTRACTOR shall be computed as follows:

1.1 Direct cost of personnel

<u>Designation</u>	<u>Direct costs per hour</u>
x x x	x x x
x x x	x x x

1.2 The direct personnel costs shall be multiplied by the hours worked by each category of staff to arrive at the over-all direct costs. The CONTRACTOR will prepare time logs specifying the name of the person undertaking the work, the dates and hours worked, and where the PURCHASER's site representatives are present these will be approved by them on a weekly basis.

1.3 To the direct personnel costs shall be added _____ to cover the CONTRACTOR's overheads and profits.

1.4 To the above charges shall be added direct expenses e.g. travel etc. at actuals to arrive at the total amount payable by the PURCHASER for such work.

2. CONTRACTOR's expatriate personnel

1. (a) The charges for the CONTRACTOR's expatriate personnel in foreign exchange for deputation to (PURCHASER's country), for each day of absence from Home Office shall be as follows:

Rates per day

Construction Manager
Start-up Manager
Specialist Engineers
Erection Specialists
Assistant for erection and
start-up
(other may be specified)

(b) (It is recommended that this should not have an escalation clause. However in some cases this may be required. This escalation in such cases should be based on an index specified in this clause, which index should be an officially published index of the CONTRACTOR's Government agencies).

2. In addition the CONTRACTOR's expatriate personnel shall be entitled to tourist class air travel tickets for themselves (and family, where permitted according to Article 4.2.3.4).

3. Overtime charges

3.1 Overtime charges in accordance with Article 11.11 of the contract shall be paid as follows:

Up to 54 hours/week	(100%) of normal rates
above 54 hours/week	(130%) of normal rates
for weekly and public holidays	(130%) of normal rates

3.2 No additional payments will be made in local currency.

4. List of personnel to be deputed by the CONTRACTOR

4.1 The CONTRACTOR shall provide the following expatriate personnel to site for the period noted against each person/category of persons.

<u>Category</u>	<u>Expected number</u>	<u>Total expected man-months</u>
x x x	x x x	x x x
x x x	x x x	x x x

(The requirements shall depend upon availability of personnel in a given country).

4.2 The period of stay mentioned above is only indicative and the CONTRACTOR shall agree to extend the stay of such personnel if required by the PURCHASER, or to provide additional personnel in the categories required above, if desired by the PURCHASER.

4.3 The above personnel shall be in addition to Vendor's specialists. The CONTRACTOR estimates the following Vendors specialists will be required:-

<u>Category</u>	<u>Number</u>	<u>Experted man-month</u>
x x x	x x x	x x x

Payments to Vendor's specialists shall be negotiated between the PURCHASER and the CONTRACTOR and the Vendor separately at the time of placing orders with the Vendor.

5. Terms and conditions of personnel services

- 5.1 The CONTRACTOR shall provide such qualified and competent expatriate personnel as are necessary for the proper and final implementation of the Contract. Such expatriate personnel should be fit for working in a (tropical) climate.
- 5.2 Within five (5) months from the Effective Date, the parties shall further agree upon the details about the expected initial number of each category of the CONTRACTOR's personnel and duration of their stay at site. This will be subject to clause 1.2 above.
- 5.3 Before any of the CONTRACTOR's personnel is sent to site, the PURCHASER shall be informed of his bio-data and the PURCHASER shall have the right to satisfy himself of the competence of such a person. Any person so rejected shall be substituted promptly by the CONTRACTOR. This right shall, however, not apply to start-up personnel.
- 5.4 If any of the CONTRACTOR's personnel is guilty of misconduct, the PURCHASER shall have the right, after giving reasons thereof to the CONTRACTOR in writing, to send him back to his home office country, and ask for and obtain an adequate replacement at the CONTRACTOR's expense.

5.5 In consideration of the services to be rendered by the CONTRACTOR personnel under the Contract, the PURCHASER shall provide, in addition to what is specified under Annexure XXVII, the following allowances, services and facilities to the CONTRACTOR's personnel engaged in work under the Contract at site.

5.5.1 Local Allowance

The PURCHASER shall pay to each of the expatriate personnel engaged in the work a living allowance at the rate of (amount in local currency) for each calendar day of presence to site.

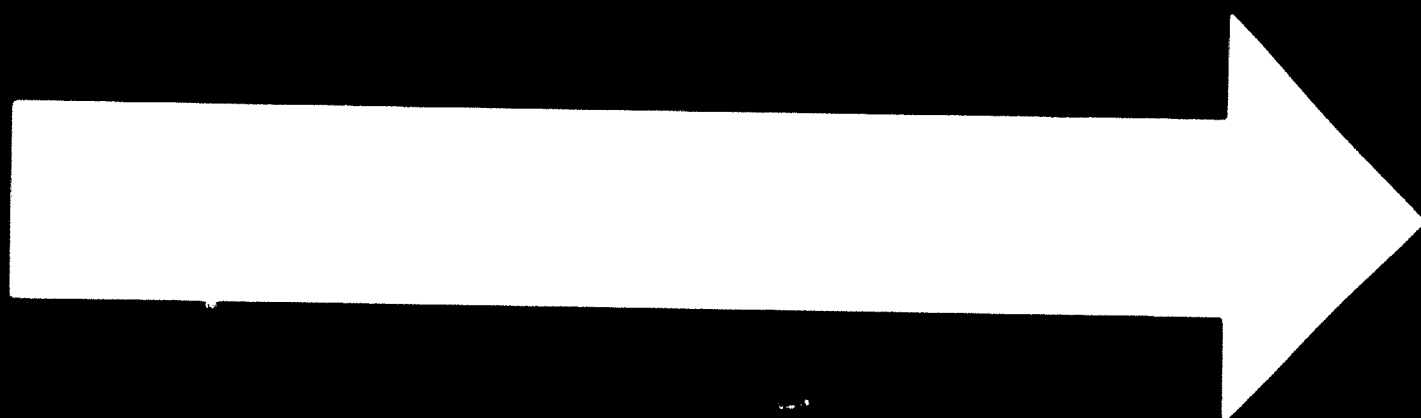
5.5.2 Travelling

5.5.2.1 Tourist class return air fare for each assignment for each expatriate from the expatriate home office to site by (air carrier) or an IATA carrier at the discretion of the PURCHASER. When an expatriate has completed 18 months at site he shall be entitled to a tourist class return air fare to the country of his home office. Tourist class return air fares will be provided for families of expatriate whose assignments are anticipated to be for periods in excess of 12 months. Air fare will extend to cover the family defined as the wife and all accompanying unmarried children under the age of 18 years, up to a maximum of four children of the said expatriate.

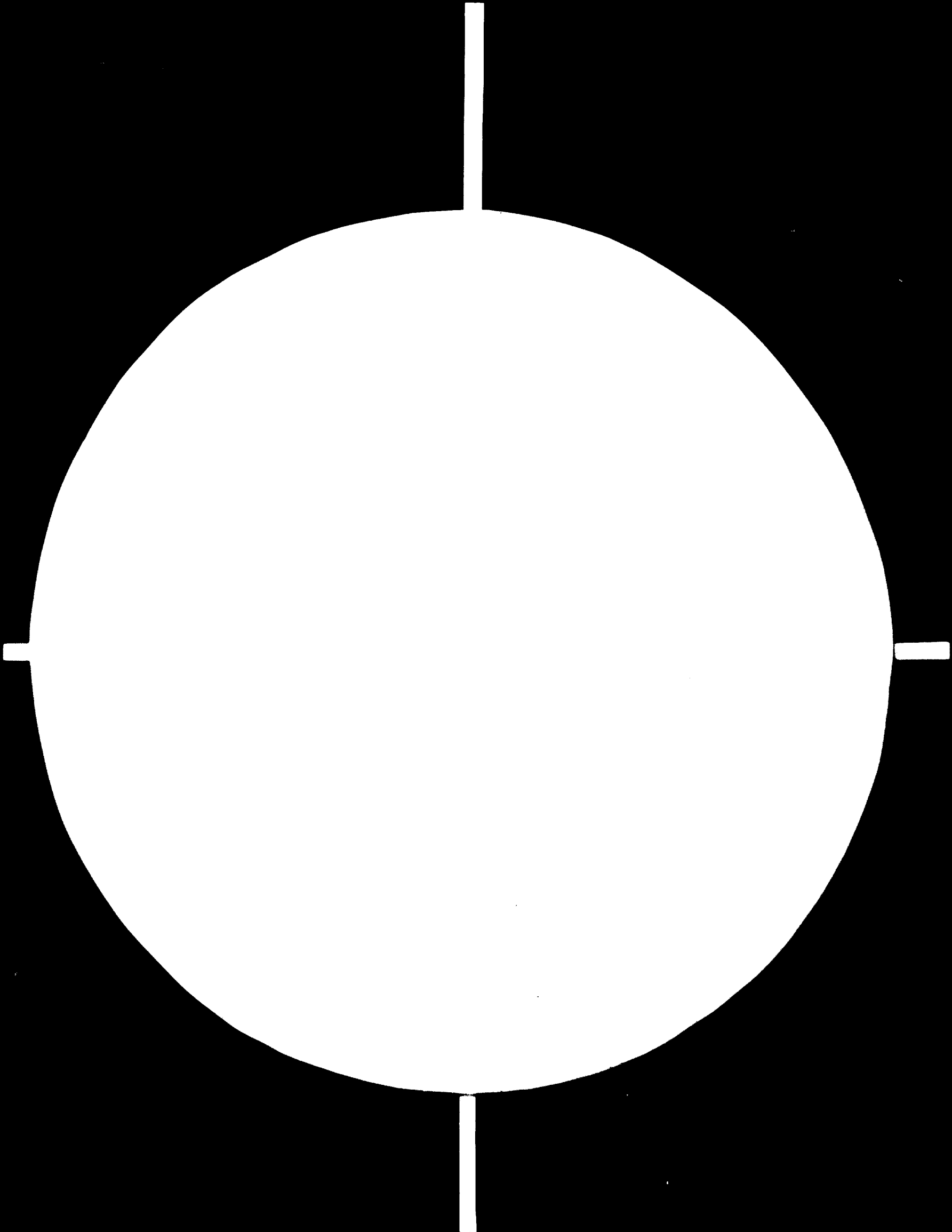
5.5.2.2 At the beginning and end of assignments, the CONTRACTOR's expatriate personnel and his wife shall be entitled to Kg. 30 baggage allowance in addition to those provided free with the cost of air tickets.

- 5.5.2.3 Transport within (PURCHASER's country) by plane (economy class) or rail (air conditioned class) on the rail route for the expatriate personnel and their families on their arrival in and departure and for expatriate personnel travelling on official work.
- 5.5.3 The PURCHASER shall also provide free of cost to the CONTRACTOR's expatriate personnel the following:
- 5.5.3.1 Furnished residential accommodation, adequate for a single or married expatriate as the case may be, as well as water, electricity and gas for domestic use.
- 5.5.3.2 Furnished office accommodation, as well as secretarial assistance and facilities for official communications including telephone and telex services.
- 5.5.3.4 Medical assistance to the personnel and their facilities to the extent available at the PURCHASER's own or nominated medical centre(s).
- 5.5.4 Holidays, vacation leaves
- 5.5.4.1 For every completed month of his stay in (PURCHASER's country) the CONTRACTOR's expatriate shall be entitled to a paid holiday of one day.
- 5.5.4.2 In the case of a CONTRACTOR's expatriate whose period of stay at site is likely to exceed 18 months and desires to proceed on vacation leave before the completion of his 18 months stay for any compelling reason of his own, he can do so subject to this facility being availed of only in special cases and after obtaining the PURCHASER's approval in each case. In such cases, the payment to the CONTRACTOR

G - 82

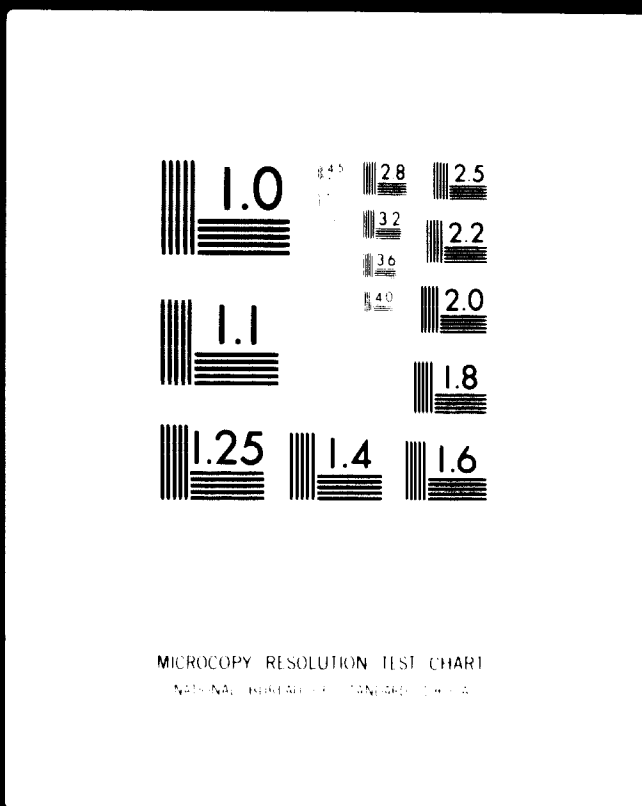


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of the daily rate in foreign currency for the vacation leave will be made only subsequently after the concerned expatriate completes a total of 18 months stay at site.

- 5.5.4.3 In cases where an expatriate is required to stay at site for more than 18 months continuously due to exigency of work, the expatriate shall avail of his vacation leave only at the end of the period when he can be conveniently spared. This is, however, subject to his not being required to stay beyond (24) months continuously in which case at his opinion, he can avail of the vacation leave.
- 5.5.4.4 The expatriate after availing his vacation outside as referred to in paragraphs 5.5.4.2 and 5.5.4.3 above shall be provided with a return air ticket (economy class) for himself.
- 5.5.4.5 If an expatriate personnel who has brought his family to (country) and wishes to take them out of (country) during his vacation leave, he may do so but the return air ticket for his family for the second travel shall be paid by the CONTRACTOR.

5.6 Training

- 5.6.1 The PURCHASER will undertake the costs of travel and living expenses of personnel to be trained. The cost of training will be borne by the CONTRACTOR.
- 5.6.2 The CONTRACTOR shall provide all the necessary literature/information and a training manual in the _____ language for use of the PURCHASER's personnel.

ANNEXURE XXVIII

INSURANCE POLICIES

I. INSURANCE POLICIES ^{1/}

The PURCHASER and CONTRACTOR agree that the following insurance policies should be taken out:

1. "Construction All Risks" (C.A.R.) or "Erection All Risks" (E.A.R.) policy. This is to insure the project under construction, including all plant, equipment and materials incidental thereto, while at the site from the start of work until final acceptance by the PURCHASER.

This insurance would normally be in the name of the PURCHASER and CONTRACTOR.

2. "Machinery Breakdown Policy to cover the breakdown of machinery while under construction or during trial operation of the plant, including boilers, pressure vessels, turbines etc., and explosion risks incidental thereto.
3. Endorsement to the above policies, particularly to the E.A.R. policy, for "faults in design", covering the replacement and repair of machinery damaged due to faults in design, faulty workmanship and faulty material, up to the guarantee tests.
4. "Loss of Advanced Profits Insurance" (sometimes called "Machinery Consequential Loss ((Interruption)) Insurance") which covers consequential loss to the Purchaser, after start-up, due to faults in erection or mechanical or electrical breakdown.
5. "Professional Indemnity Insurance" which covers the errors and omissions, negligence, failure in performance, mistakes in design, etc., of the engineering companies.
6. "Marine Insurance" or "Cargo Insurance Policies" covering the transit of goods ex-works from the fabricator's workshops to the site of the plant. This may or may not include War Risks insurance, as agreed by the PURCHASER and the CONTRACTOR.

^{1/} The PURCHASER and CONTRACTOR will choose which of these 10 policies to take out.

7. Bodily Injury and Personal Liability Insurance, excluding that to third parties.
8. Specific insurances or endorsements for such items as elevator and hoist liability, shoring, blasting, excavating etc.
9. Coverage of Insurance Liabilities on the use of Automobiles, Trucks, Aircraft, Launches, Tugs, Barges, etc.
10. Insurance of liability for payments under Workmen Compensation Acts, as required under appropriate legislation.

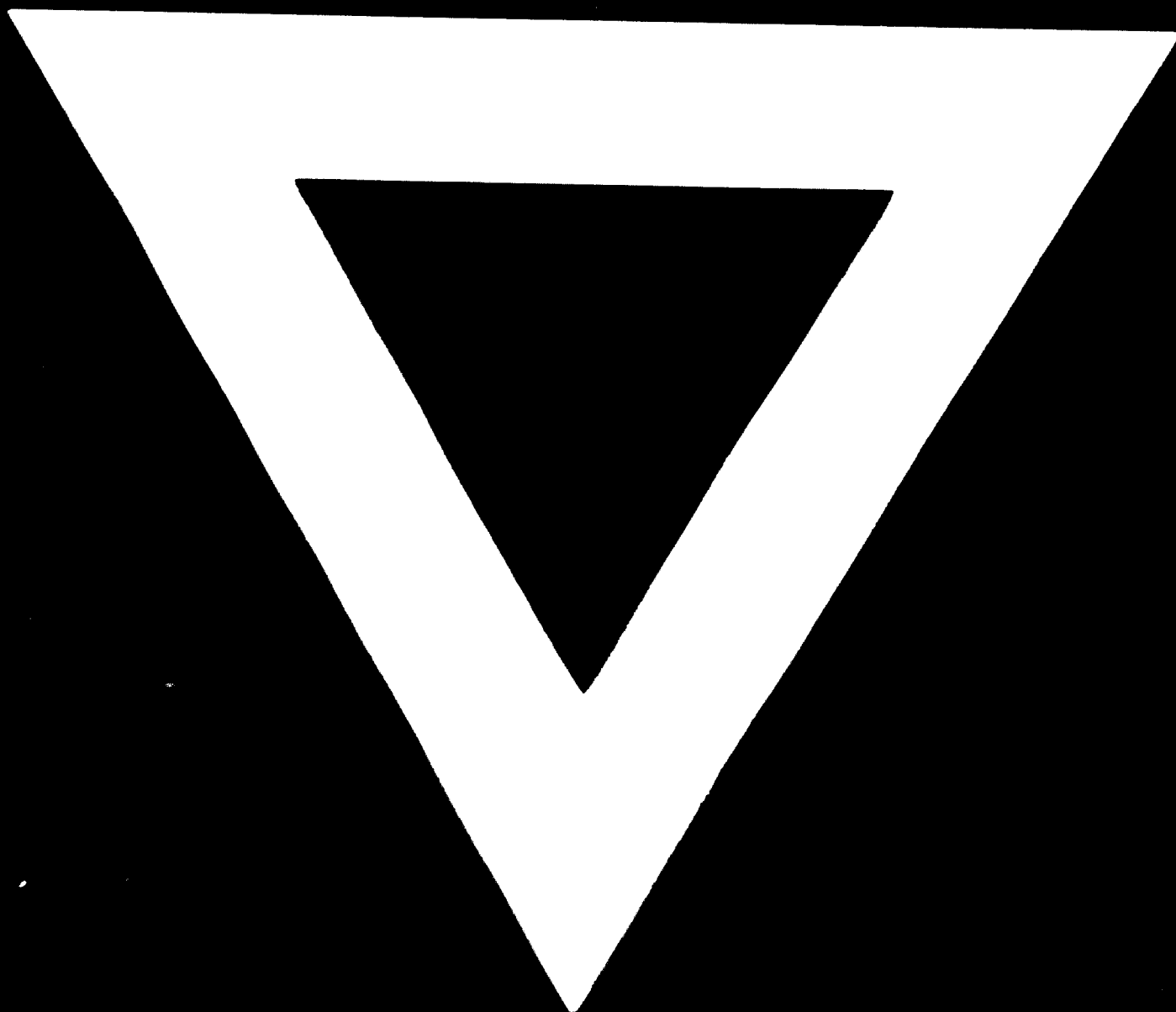
II. RESPONSIBILITY FOR COVER

1. In this Cost-Reimbursable Contract, the CONTRACTOR shall be responsible for the taking out of the following policies:
 - (a) Professional Indemnity Insurance (Item 1.5 above)
 - (b) Bodily Injury and Personal Liability Insurance (Item 1.7 above) only for his CONTRACTOR's personnel at site.
 - (c) Insurance for CONTRACTOR's transport (e.g. Automobiles) of which CONTRACTOR is the owner.
2. All other insurances will be taken out by PURCHASER.

III. GENERAL PROVISIONS

1. All policies taken out by the CONTRACTOR shall be jointly in the name of the CONTRACTOR and the PURCHASER.
2. In particular cases e.g. when there is a Faulty Design endorsement to the E.A.R. policy, insurance companies may insist on the policy being taken out jointly in the name of the CONTRACTOR and PURCHASER.
3. In all other cases, all policies shall be in the name of the PURCHASER.

G - 82



80.02.04