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**UNIDO MODEL FORM
OF SEMI-TURNKEY CONTRACT
FOR THE
CONSTRUCTION OF A FERTILIZER PLANT
INCLUDING GUIDELINES
AND TECHNICAL ANNEXURES**

**Prepared by the
DEPARTMENT FOR INDUSTRIAL PROMOTION,
CONSULTATIONS AND TECHNOLOGY**

Abbreviations

C and F	cost and freight
CIF	cost, insurance, freight
DIN	Deutsche Industrie-Norm
FOB	free on board
FOR	free on rail
STP	standard temperature and pressure

PREFACE

The Lima Declaration and Plan of Action on Industrial Development and Co-operation adopted at the Second General Conference of the United Nations Industrial Development Organization (UNIDO), held in March 1975, called for an increase in the share of the developing countries to at least 25 per cent of total world industrial production by the year 2000, and recommended that UNIDO should establish a system of continuing consultations between developed and developing countries to help achieve this goal.* This recommendation was endorsed by the General Assembly at its seventh special session.** Following the General Assembly's decision, the System of Consultations was designed with the objective of developing a new dimension to international co-operation in the field of industry.

The System was launched by UNIDO in January 1977. The first consultation was on the fertilizer industry, a basic industry that provides an essential input for food production and agricultural development in general. The high cost and the low capacity utilization of new fertilizer plants built in developing countries in the past 10 years were identified as pressing problems deserving the full attention of the international community. After an initial review of these problems by the First Consultation Meeting on the Fertilizer Industry,*** UNIDO was requested to examine procedures for drawing up contracts with a view to designing the best conditions for ensuring the successful construction and operation of such fertilizer plants. The subject was given a high priority because of the large investments involved, the negative impact of delays in meeting the performance specifications of the plants supplied, and the low capacity at which such plants would operate.

The Second Consultation Meeting on the Fertilizer Industry was convened at Innsbruck, Austria, from 6 to 10 November 1978, and examined the progress made by UNIDO in preparing four types of model forms of contract along with general guidelines for their use. It was recommended that UNIDO should continue to work on preparing four types of model forms of contract, and present final drafts of the turnkey lump-sum and cost-reimbursable model forms of contract to the next Consultation meeting.****

The Third Consultation on the Fertilizer Industry was convened at São Paulo, Brazil, from 29 September to 2 October 1980, and examined the final drafts of the UNIDO model forms of turnkey lump-sum and cost-reimbursable contracts.

*Report of the Second General Conference of the United Nations Industrial Development Organization (ID/CONF.3/31), chap. IV, "Lima Declaration and Plan of Action on Industrial Development and Co-operation", para. 66.

**Official Records of the General Assembly, Seventh Special Session, Supplement No. 1, section IV, para. 3.

***See "Report of the First Consultation Meeting on the Fertilizer Industry, Vienna, 17-21 January 1977" (ID/WG.242/8/Rev.1), paras. 39 and 64.

****See Report of the Second Consultation Meeting on the Fertilizer Industry, Innsbruck, Austria, 6-10 November 1978 (ID/221), paras. 14-16 and 89-94.

Since the final drafts of both model forms of contract could not be approved at the Third Consultation, it was recommended that an international group of experts should be convened by UNIDO to complete the examination of both model forms of contract.*

The Expert Group Meeting on Model Forms of Contract for the Construction of a Fertilizer Plant was convened at Vienna from 23 February to 6 March 1981 to finalize, on behalf of the Third Consultation, the UNIDO model forms of (a) the turnkey lump-sum and (b) the cost-reimbursable contract for the construction of a fertilizer plant. It was recommended that a further expert group meeting should be held to complete discussions on a few pending articles. A Follow-up Meeting on Model Contracts for Fertilizer Plants, convened at Vienna from 4 to 6 May 1981, finally completed the text of both model forms of contract.

The international group of experts that finalized the UNIDO model forms of contract was composed of experienced contractors from developed countries and purchasers from developing countries. The model forms of contract now include a number of provisions based on the needs and the industrial reality of developing countries and also respect established commercial practice in the field.

In recognition of the growing sophistication of developing countries as purchasers of industrial plants and the shortcomings of many commercial contracts concluded in the past, emphasis has been placed in drafting the model forms of contract on (a) the timely completion of an integrated fertilizer plant guaranteed to be capable of sustaining a high operating efficiency and of producing specification-grade products; (b) the establishment of the total project cost instead of the contract price only; (c) payment terms linked to the fulfilment of the contractor's obligations instead of to agreed time periods; (d) the continuing validity of mechanical warranties; (e) the purchaser's involvement at all stages of procurement; and (f) the effective use of performance bonds to secure the contractor's performance.

The model forms of contract were the subject of thorough discussions at three consultation meetings and, as a result, they reflect a balancing of the interests of both purchaser and contractor under the conditions prevailing in developing countries. It is hoped that the model forms of contract in their final agreed form will contribute to better understanding and co-operation between developed and developing countries by helping to shorten the negotiating period for concluding satisfactory contracts between suppliers and buyers of fertilizer plants.

*See the Report of the Third Consultation on the Fertilizer Industry (ID/260), paras. 2 and 16-22.

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INTRODUCTION

An expert group meeting convened at Bangkok, Thailand, in July 1975, as part of the UNIDO/Economic and Social Commission for Asia and the Pacific (ESCAP) priority project on regional co-operation in the ESCAP region in chemical fertilizer production and distribution, recommended that general guidelines should be prepared for the formulation of contracts for fertilizer plants.

The First Consultation on the Fertilizer Industry, held in January 1977, agreed that the work done by UNIDO on model forms of contract would be of interest to many countries, particularly those in the early stages of development. The meeting recommended that UNIDO should continue its investigations into alternative forms of contract and suggest guidelines for their use by the developing countries.

Consequently, UNIDO convened a Technical Seminar on Contracting Methods and Insurance Schemes for Fertilizer and Chemical Process Industries at Lahore, Pakistan, from 25 to 29 November 1977. ^{1/} The Seminar considered pre-contracting and contracting methods, guarantees and penalties, arbitration, insurance and model forms of contract.

The participants of the Seminar stated that the type of contract used by a country for the construction of a fertilizer or chemical process plant depended on its experience and its needs in each particular situation. Furthermore, there was a need to ensure that contracts would be implemented in a spirit of co-operation between the purchaser and the contractor.

The participants found that the model forms of contract currently in existence were not entirely suitable to meet the requirements of developing countries for the construction of fertilizer and chemical processing plants, and that significant changes would have to be incorporated in those contracts before they could be adopted for common use. In order to protect the interests of both purchaser and contractor in entering into a contract, it was necessary that certain fundamental technical, legal and contractual safeguards be maintained for their mutual protection. The Seminar therefore proposed that UNIDO should develop model forms of contract.

An appraisal of contracts for fertilizer and chemical plants undertaken especially in developing countries during the past 10 years reveals fundamental weaknesses in contractual and legal terminology, which have worked to the detriment of both parties. In particular, inadequate use has been made of (a) legal securities available by way of bonds and other instruments which may be used to secure the contractor's performance, and (b) suitable technical guarantees and warranties of the plant and technology.

As a first step towards the development of model forms of contract, the participants identified several areas for particular coverage in the appropriate parts of each model form of contract and concluded that one of the following four types of contract would probably be used by a developing country: (a) turnkey lump-sum; (b) semi-turnkey; (c) cost-reimbursable; and (d) supply of know-how and engineering services.

In order to guide and assist users of the model forms of contract in applying them to contract negotiations, it was considered that UNIDO should

^{1/} For the report of the meeting, see ID/WG.259/26/Rev.2.

prepare guidelines that would cover pre-contracting practices, preparation of technical specifications and scope of work, and an explanatory commentary on the principal clauses of the model form of contract, together with a description of recommended additional arrangements, both within and outside the contract, to cover training of local personnel required by inexperienced plant operators.

To implement the recommendations, UNIDO requested the assistance of consultants experienced in the preparation and use of contracts to draft five different model forms of contract: (a) turnkey lump-sum; (b) semi-turnkey; (c) cost-reimbursable; (d) supply of know-how and engineering services; and (e) supply of know-how and engineering services for a number of similar plants.

The Working Group of Consultants met in April, June and August of 1978 to discuss the contents of the five model forms of contract and adopt a uniform approach to their preparation. The consultants recommended that one model form of contract, the cost-reimbursable contract, should be presented to the Second Consultation Meeting as the preliminary draft of that type of model contract. As background information, the Second Consultation should be presented with the four other model forms of contract, as submitted to UNIDO by the institution or person that had prepared them, as well as preliminary draft guidelines on the use of UNIDO model forms of contract for the construction of a fertilizer plant. The fertilizer plant in question is a specific ammonia/urea complex, which is the one most widely used in developing countries.

The five model forms of contract were drafted following a uniform list of 46 main articles and 29 technical annexures. The essential differences between these model forms of contract relate to (a) the scope of the contractor's work and responsibilities; (b) the method of payment; and (c) the type of site.

The Second Consultation Meeting on the Fertilizer Industry, held in November 1978, considered the five model forms of contract prepared by UNIDO. The participants agreed to examine only the preliminary draft of the UNIDO model form of cost-reimbursable contract (ID/WG.281/12 and Add.1) and set up a Working Group to discuss it. The participants recognized that the draft, as submitted, did not fully take into account the points of view of contractors, which, they considered, would be valuable in arriving at a final model form of contract that would be acceptable to both purchasers and contractors.

The Second Consultation Meeting recommended that UNIDO should continue to work on preparing four types of model forms of contract for the construction of a fertilizer plant and present final drafts of the model forms of cost-reimbursable contract and turnkey lump-sum contract to the Third Consultation on the Fertilizer Industry. Furthermore, the final drafts of the model forms of cost-reimbursable and turnkey lump-sum contract should be prepared as follows, UNIDO should: (a) invite comments on the first drafts of both contracts; (b) consolidate those comments and incorporate them as appropriate in the revised text of each model form of contract; (c) convene an expert group meeting of purchasers and contractors from developing and developed countries to consider and finalize the revised text of both contracts; and (d) circulate the final drafts to the Governments of member States and present the drafts to the Third Consultation.

UNIDO invited written comments on the model forms of turnkey lump-sum and cost-reimbursable contract, and revised drafts were then prepared, taking into account those comments and further informal discussions with some representatives of contractors.

An Expert Group Meeting on UNIDO Model Forms of Contract for Fertilizer Plants was convened at Vienna from 26 to 30 November 1979 to consider the revised texts and annexures of the second draft of the UNIDO model form of

cost-reimbursable contract and the first draft of the UNIDO model form of turnkey lump-sum contract. ^{2/} The participants agreed that, rather than discussing the contracts article by article, it would be appropriate to consider the main principles on which the contracts were based.

The Expert Group Meeting recognized that the model forms of contract and guidelines for their use being developed by UNIDO could meet a real need in developing countries by improving their skills in contract drafting and negotiation. Developing countries would thereby obtain greater contractual assurance that the fertilizer plants they purchased would be completed on time and would operate successfully at near rated capacity producing specification-grade products.

The participants recommended that UNIDO should prepare revised drafts of the turnkey lump-sum and cost-reimbursable model forms of contract, taking into account comments made at the meeting, and present them to the Third Consultation. Written comments should then be invited and submitted to the Consultation itself.

Revised drafts of both model forms of contract were prepared, taking into account the comments made at the Expert Group Meeting. As recommended, the order of the articles was changed to correspond to the plan for implementing the work and some articles were combined, thereby reducing their number to 40. Thereafter, UNIDO distributed to Governments the final drafts of both model forms of contract and the comments of an international group of contractors on them.

The Third Consultation on the Fertilizer Industry, held in October 1980, examined the revised drafts, namely the third draft of the UNIDO model form of cost-reimbursable contract (ID/WG.318/3 and Add.1) and the second draft of the UNIDO model form of turnkey lump-sum contract (ID/WG.318/1 and Add.1) including the comments on those drafts prepared by an international group of contractors (ID/WG.318/5 and ID/WG.318/4 respectively). Although it was recognized that the model forms of contract were realistic documents that should be commented upon article by article and approved, the short time available for discussion precluded a thorough examination of them at the Consultation. It was agreed to concentrate on the second draft of the turnkey lump-sum contract in a working group set up for that purpose.

The UNIDO secretariat explained that the model forms of contract were guidelines that clearly spelt out the obligations of the parties in a balanced way but, as such, they were not legally binding documents for the parties. It was recognized that a general contract form was no substitute for specific contracts, however the model forms of contract were useful documents for the developing countries, because of their comprehensiveness.

In considering the turnkey lump-sum contract in detail, agreement was reached on many points and much reconciliation accomplished between the viewpoints of purchaser and contractor. Consequently, a drafting committee was set up to redraft the main problem clauses of the model form of contract, taking into account the legitimate interests of both parties.

The Third Consultation recommended that, in finalizing the model forms of contract, UNIDO should adopt the following procedures:

(a) An international group of experts should be convened by UNIDO to complete the examination of the UNIDO model forms of turnkey lump-sum and

^{2/} For the report of the meeting, see ID/WG.306/4.

cost-reimbursable contract. The experts should be selected by UNIDO from developed and developing countries, with due regard to an equitable geographical distribution, and should include the members of the drafting committee of the working group on that subject convened at the Third Consultation;

(b) The group of experts should finalize the model forms of contract; in cases of disagreement on specific clauses, the various alternatives should be presented and given equal weight;

(c) When publishing the model forms of contract, UNIDO should acknowledge that they were finalized by an international group of experts.

An Expert Group Meeting on Model Forms of Contract for the Construction of a Fertilizer Plant was convened at Vienna from 23 February to 6 March 1981 to finalize, on behalf of the Third Consultation, the UNIDO model forms of turnkey lump-sum and cost-reimbursable contract for the construction of a fertilizer plant. Extensive and constructive discussions between participating purchasers and contractors facilitated the finalization of both the cost-reimbursable contract and the pending articles of the turnkey lump-sum contract not discussed at the Third Consultation, with fewer areas of genuine disagreement.

However, as some articles of the turnkey lump-sum contract discussed at the Third Consultation required further discussion, in the opinion of several participants, the experts agreed that an additional meeting should be held, with a smaller participation. Four participants, of whom two were purchasers and two contractors, were nominated by the experts to complete finally both model forms of contract on their behalf.

The Follow-up Meeting on Model Contracts for Fertilizer Plants was convened at Vienna from 4 to 6 May 1981 to finalize the model forms of contract, after discussing the few pending articles and checking the full texts of each model form of contract for conformity with the agreements reached between purchasers and contractors.

The UNIDO model forms of turnkey lump-sum and cost-reimbursable contract, as finalized by the international group of experts, rearrange the balance between obligations, liabilities and financial compensations of traditional contracts and tailor it to the special requirements and problems of most developing countries, in particular, the need for greater built-in safety and reliability in plants which warrant a commensurate liability and financial compensation. The areas of disagreement are presented as alternative articles, reflecting two schools of thought. The figures without brackets are indicative, whereas those in brackets are negotiable. The model forms of contract, as finalized, are considered to reflect a fair and realistic balance between the interests of both parties, and are expected to become practical and useful instruments to purchasers and contractors alike.

The annexures to each model form of contract were brought into line with the appropriate text, by UNIDO, taking into account also the needs of field personnel in charge of implementing the contract.

Work on the guidelines for the use of each model form of contract was carried out during 1981, the third drafts of which were circulated later in the year, for comments and suggestions, to the international group of experts that finalized the model forms of contract.

In addition to the comments received, the four participants who finalized the model forms of contract attended a small expert group meeting convened at Vienna from 17 to 19 February 1982 to discuss and finalize both sets of guidelines.

Part One

GUIDELINES FOR THE MODEL FORM OF
COST-REIMBURSABLE CONTRACT

I. GENERAL GUIDELINES FOR THE MODEL FORM OF COST-REIMBURSABLE CONTRACT

A cost-reimbursable contract is suitable for purchasers in countries that have some experience in the fertilizer and chemical industries and a certain degree of engineering and design capability but lack the skills and expertise to engineer and erect a complete plant without external assistance. Furthermore, some international financing agencies prefer a cost-reimbursable contract because it makes it possible to procure equipment on the basis of international competitive bidding and also provides for a better geographical distribution of the application for funds.

The extent of preparation and detailing of the plant design and specifications for contracting is much less in a cost-reimbursable contract than in a turnkey contract. Hence, minimum time is required for preparing the tender documents and issuing the bids. The bidding time required is also considerably shorter than the bidding time required in a turnkey contract for the contractor need not do any engineering or detailing or pricing of equipment or field-work for the purpose of bidding. However, since in a cost-reimbursable contract the scope of the project is not completely fixed at the time of contracting, and the requirements of the projects develop as the engineering work proceeds, there could be delays at later stages if care is not taken to adhere to the agreed procedures and time limits.

This type of contract also enables the purchaser to become fully involved in all activities connected with the implementation of the project, to review the provisions that are being made, and to suggest additions or modifications according to the conditions of infrastructure, the operating skills of personnel and the need to optimize costs. Hence, the purchaser increases his knowledge and experience of project implementation.

The cost-reimbursable contract places several crucial obligations on the purchaser for the effective implementation of the contract. In fact, the contractor's performance and adherence to the time schedule depends to a large extent on the timely discharge of the purchaser's obligations because the contractor cannot proceed with the implementation of the project unless the decisions and approvals required from the PURCHASER are accorded promptly. Therefore, the purchaser who opts for a cost-reimbursable contract should have a full appreciation of his role and responsibilities and the capability to manage the project and co-ordinate all the activities related to it.

Since the purchaser in a cost-reimbursable contract pays for the plant, equipment and materials, it becomes possible for him to choose the optimum design and specifications and also to procure the equipment from proven sources of his choice. However, the contractor may develop a tendency to over-design the plant and equipment, at extra cost to the project, in order to ensure that the performance guarantees are met comfortably. Therefore, the purchaser ought to have the necessary experience and expertise to determine that the plant is designed to achieve a high on-stream factor, but without unnecessary over-design at avoidable extra cost.

In a cost-reimbursable contract, unlike a turnkey contract, the purchaser has no assurance of the total project cost and therefore he has to exercise continuous control over expenditures. In the turnkey contract, the contractor accepts the responsibility for delivering the plant at an agreed contract price, thereby assuming the risk of any cost or time overruns, whereas in the cost-reimbursable contract, it is the purchaser who has to bear the risk of escalations in time and cost.

However, the cost-reimbursable contract offers the purchaser an opportunity to reduce delays, or advance time schedules by incurring additional expenditure, if necessary. For instance, the purchaser may choose to purchase equipment from a vendor whose delivery schedule is in accordance with the requirements of the project, even if the price is not the most competitive, or to accelerate the pace of activities by employing additional resources. It is therefore crucial for the purchaser, with the assistance of the contractor, to set up an efficient system to monitor and control the costs and schedule of the project.

Cost-reimbursable contracts follow various patterns, differing from one another on the elements of cost that are fixed or reimbursable and on the division of responsibilities between the purchaser and the contractor.

The UNIDO model form of cost-reimbursable contract envisages the supply of process licence and know-how, basic and detailed engineering and procurement, inspection and expediting services at a fixed fee. The provision of training and supervisory services for erection, commissioning and start-up of the plant, the supervisory services during the period between mechanical completion and provisional acceptance of the plant and the conducting of performance guarantee tests are to be paid on a reimbursable basis. The equipment and materials are to be purchased directly by the purchaser, on the advice of the contractor.

In a standard cost-reimbursable contract, as it is usually understood, the contractor is reimbursed for all costs, including corrective engineering costs arising from inevitable design and construction errors, provided he exercises normal professional skills, for there are no contingencies in the contract price to cover such costs. 3/

Although the UNIDO model form of cost-reimbursable contract accepts that the contractor should be covered for the costs incurred and paid a fee for the services rendered, it differs from standard contracts in regard to the contractor's responsibility for rectifications and/or modifications to the plant where such measures have become necessary due to the contractor's failure.

The UNIDO model form of cost-reimbursable contract requires the contractor to carry out the corrective engineering free of charge, and to defray the costs for any replacement or rectification of equipment that becomes necessary because of defective or incorrect engineering, including the associated costs of civil engineering, erection etc. This "make good" obligation is ascribed to the contractor because, if the plant is incapable of meeting the performance guarantees, the purchaser has to suffer a considerable loss in production and profitability, for the CONTRACTOR has been chosen and paid primarily for his skill and experience. Such a provision should ensure that, from the very beginning, the contractor is careful and diligent in the discharge of his duties.

3/ See, for example, Model Form of Conditions of Contract for Process Plants Suitable for Reimbursable Contracts in the United Kingdom (London, Institution of Chemical Engineers, 1976).

However, when the contractor exercises normal professional skills and care in designing and engineering the plant and equipment, it would not be reasonable to penalize him beyond his means for bona fide errors in design or engineering and therefore his liability would be limited to corrective engineering and procurement services.

In the event that the contractor had to assume an unlimited liability for replacing or modifying equipment, he would take this risk into account at the time of bidding and build a contingency amount into the contract price to cover his increased exposure, which would only add to the project cost. Some contractors may even refuse to enter into contracts that provide for such unlimited liability. Hence, a footnote has been added to text B of article 29.1 to highlight the practice in standard contracts.

However, the question arises as to whether, in a contract of this type, there should be a limitation on the contractor's liability for rectification or replacement of plant and equipment. There are two views on this subject. One view is that if the plant is incapable of meeting the absolute guarantees in respect of capacity and product quality because of a lapse or error on the part of the contractor, then the contractor should rectify the defect or inadequacy, and, where necessary, modify or replace the equipment at his cost, without any limitation of liability. When a purchaser makes a large capital investment out of his limited resources to set up a fertilizer factory, he expects the plant to produce products of the required quality at near capacity. In the past, a number of developing countries have suffered for not having included such provisions in their contracts.

The other view is that, in a cost-reimbursable contract, it would be unfair to require the contractor to assume an unlimited liability without any relation to his fees. While it would be justifiable to insist on the contractor forgoing part of his fee or profit, in order to rectify the plant and make it capable of meeting the absolute guarantees, it would be unreasonable to expect the contractor to defray the entire rectification, particularly when this cost could be even higher than his fees. Such a requirement would result in the contractor adding a substantial contingency amount to his fixed fee and/or in the plant being over-designed, which in turn would lead to higher investment costs for the purchaser.

Taking this divergence of views into account, the model form of contract presents alternative texts for article 30.5. Text A requires the contractor to rectify the plant, if necessary, to meet the absolute guarantees without any limitation in liability. Text B provides for a limitation to the contractor's liability even in respect of absolute guarantees.

The two approaches discussed above are fundamental to a proper understanding of the UNIDO model form of cost-reimbursable contract. It would be necessary for every user of this model form of contract to appreciate the implications of the two divergent views when negotiating an actual contract. It would also be advisable for the purchaser to indicate, even in the bid document, the approach he intended to adopt.

It should be noted that the figures and periods of time mentioned in the various articles of this model form of contract are entirely illustrative; they are based upon general experience. The figures and periods of time that go into an actual contract would have to be negotiated by the parties on a case-to-case basis.

This model form of contract has been drawn up for an ammonia/urea plant with a capacity for the manufacture of 1,000 tonnes of ammonia per day and 1,725 tonnes of urea per day with natural gas as a feedstock. The contract can, however, be used to set up other kinds and sizes of fertilizer plants, with suitable modifications.

The technical annexures to the model form of contract detail all the technical parameters of the plant, the procedures to be followed for implementing the various provisions of the contract, the performance guarantees to be demonstrated by the contractor, and the procedure for proving them. As such, they represent a check-list and an example of its contents in establishing an ammonia/urea plant. The technical annexures to an actual contract should, therefore, be specific to the individual project.

II. GUIDELINES FOR SPECIFIC ARTICLES OF THE MODEL FORM OF COST-REIMBURSABLE CONTRACT

Article 1. Definitions

This Article contains the definitions of the terms used in the Contract. Whenever the terms defined are subsequently used in the Contract, the initial letter of each substantive word is capitalized, e.g. "effective date of the contract" becomes "Effective Date of the Contract" to indicate that the term has been defined in Article 1.

The parties to the Contract could add additional definitions, if considered necessary, or if substantial changes were made in the model form of Contract during negotiations.

Article 2. Object of the Contract and cost of the project

The objective of the Contract has to be clearly appreciated and understood by the parties and requires that it be presented in unambiguous terms as has been done in Article 2.1 of the model form of Contract.

Unlike the turnkey Contract, in the cost-reimbursable Contract, the completion time of the Plant is dependent both on the CONTRACTOR's adherence to the time schedule and on the PURCHASER discharging his obligations on time. The parties should, therefore, jointly determine a detailed time schedule covering every project activity, as shown in Article 2, and follow the provisions contained in Article 11.

- 2.4 This Article contains the time schedule for the Plant. The importance of the time schedule for any project, and particularly for one in the developing countries, cannot be over-emphasized. For instance, by the time all the Equipment has arrived at the Site, the PURCHASER will already have spent around \$US 250 million for a large Ammonia/Urea Plant and interest on this investment alone amounts to about \$US 68,000 per Day of delay. After the Mechanical Completion of the Plant, the PURCHASER's investment (at 1982 prices) would be around \$US 360 million and delays would cost about \$US 100,000 per Day in interest alone. In addition, the foreign exchange cost of imports (if fertilizer is in short supply in the country) or the value of exports (if the project is export-oriented) that would be lost would amount to about \$US 430,000 per Day of delay (at \$US 250 per tonne of urea). The strict adherence to the time schedule as far as possible is extremely important for the PURCHASER, and is equally important for the CONTRACTOR, whose profit margins usually depend upon the time taken by him to complete the Plant.
- 2.5 Unlike the turnkey Contract, in the cost-reimbursable Contract, it is and not possible to ensure that the Plant would be available at a determined price. What is feasible, is to get a firm price for contractual services such as the granting of licences and know-how; basic and detailed engineering; procurement, inspection and expediting services; the provision of training; and the supervision of erection, commissioning etc.

Article 2.5 requires that, in addition to the price provided for in the Contract, a reasonable assessment of the total cost of the Plant and Equipment should be jointly estimated.

Article 2.6 requires the CONTRACTOR to provide within 4 months from the Effective Date of the Contract a revised estimate of all Equipment and Materials costs, and hence, a reasonably firm estimate of the total project cost. It is expected that within this period the CONTRACTOR would have completed a substantial amount of engineering work, including the cost of Critical Items and other Equipment and Materials. The revised cost estimate at this stage is intended only to give a more realistic appreciation of the likely total project cost and serve as the basis for cost control.

In case the PURCHASER desires that the revised total cost of the Plant and Equipment be firmed up and the CONTRACTOR be bound by the firm cost, the PURCHASER could ask the CONTRACTOR at this stage to indicate a ceiling for the total project cost. The Contract would then become a cost-reimbursable Contract with a target price with penalties (or liquidated damages), if it is exceeded by a certain percentage. The UNIDO model form of cost-reimbursable Contract can then easily be modified by stating the target price in Article 2, and the penalties (or liquidated damages) and bonus in Article 20.

Article 3. Overall scope of work and division of responsibility

Article 3 covers the overall work required to build the Plant under two main headings. Article 3.1, which is common to all model forms of Contract except licensing agreements, enumerates the scope of the work to be done for establishing a Plant. Article 3.2 allocates obligations and responsibilities for the different items of work that are to be undertaken by the CONTRACTOR or by the PURCHASER.

It is very important for the parties to ensure that every project activity is clearly assigned to the CONTRACTOR or the PURCHASER or is shared by both.

3.2.7 This Article enables the PURCHASER to enter at his option into separate agreements with the CONTRACTOR to obtain the management assistance and technical advisory services that are specified under Articles 3.1.31, 3.1.32 and Article 17. The CONTRACTOR's obligations to provide these services, even though through separate agreements, should be laid down in the Contract to avoid the possibility that later on the CONTRACTOR may express his inability to accept this additional responsibility.

Articles 4 and 5. Obligations of the CONTRACTOR and of the PURCHASER

Articles 4 and 5 detail the obligations of the CONTRACTOR and the PURCHASER respectively. In those cases where there are corresponding obligations between the CONTRACTOR and the PURCHASER, they have been included in both Articles where necessary (e.g. Articles 4.8 and 5.16) to avoid difficulties of interpretation and understanding. Thus, Articles 4 and 5 should be read in conjunction with each other.

4.4 In these Articles the PURCHASER is required to provide the information and data necessary for the design basis of the Plant. The CONTRACTOR shall review the design basis and obtain any additional information required for carrying out his obligations. In case the review reveals inadequacies, the PURCHASER and the CONTRACTOR shall discuss changes in the Contract specifications and settle the design basis. Revision of the design basis might result in changes in the CONTRACTOR's obligations or Contract Price.

4.5 The licence and process know-how can either be obtained directly by the PURCHASER from the process licensor(s) or through the CONTRACTOR. Article 4.5 requires the CONTRACTOR to provide or obtain from particular process licensor(s) the know-how and basic engineering for the Plant.

Articles 4.5 and 7.2 obligate the CONTRACTOR to provide the PURCHASER with documentation on the latest know-how available to the licensor(s) at the signing of the Contract (or later, if mutually agreed), and the CONTRACTOR to make the detailed engineering according to the latest design standards known to him at the time of design.

Article 6. Co-operation and co-ordination between the CONTRACTOR and the PURCHASER

The cost-reimbursable Contract, which places obligations on both the PURCHASER and the CONTRACTOR, is a system that depends for its successful functioning upon both parties' adequate understanding of the interdependence of each other's contractual obligations. It is very important for the parties to define the various activities constituting the scope of the Contract and the division of responsibility (Article 3) and to identify in detail the obligations of the CONTRACTOR (Article 4) and those of the PURCHASER (Article 5).

Article 6 provides the procedures for co-operation and co-ordination between CONTRACTOR and PURCHASER, which is an essential requisite for the successful implementation of the Contract. It lays down the precise methodology for technical meetings at which the different matters shall be discussed and/or finalized.

The two most important meetings are: the first (or "kick-off") meeting within 30 Days of the Contract becoming effective (Article 6.5), which should finalize the co-ordination procedure, the procurement procedure and the overall implementation of the project; and the second meeting within (four) months of the Contract becoming effective (Article 6.8), to firm up the design.

Article 7. Proprietary rights and licences, secrecy and patents

The processes used in the production of ammonia and urea are owned and patented by the licensor who may be the CONTRACTOR himself or another agency. It should be recognized that the licensor has the right to protect his invention, which is his intellectual property. Through a contract, the licensor is providing a licence to the PURCHASER but only for the use of the process for the capacity specified in the Contract. The ownership continues to remain with the licensor. It is therefore necessary for the PURCHASER to accept an obligation to keep the information confidential and not to use it for non-contractual purposes.

In the UNIDO model forms of contract, the know-how is made available through the CONTRACTOR. However, experience has shown that there could be cases where the CONTRACTOR is unable or unwilling to continue to provide the know-how. The provisions of Article 7.2 enable the PURCHASER to obtain the necessary information directly from the original process licensor(s).

7.3 Improvements and developments in technologies are a continuous process and it is essential that adequate provision should be made in the

Contract for the exchange of information between the suppliers of the technology (the licensor and the CONTRACTOR) and the PURCHASER so that, wherever practicable, such improvements and developments can be adopted.

This Article requires the licensor(s) and the CONTRACTOR to make available to the PURCHASER for a certain period from the Effective Date of the Contract, all technical data and information relating to developments and improvements in operating and maintenance techniques and safety measures, free of charge, and, on payment, also proprietary information which could result in significant improvements in capacity, reliability or efficiency of the Plant.

Conversely, the PURCHASER should make available to the licensor(s) and the CONTRACTOR, free of charge, any improvements effected by him in operating or maintenance techniques during the same period.

The period during which a licensor would undertake to make the information available would depend largely on the licensor's policy. In cases where the PURCHASER is obtaining the process licence and know-how directly from the licensor, this period would have to be negotiated directly by the PURCHASER. In cases where the licence and know-how are made available by or through the CONTRACTOR (as in the UNIDO model forms of Contract), the PURCHASER should ensure that the CONTRACTOR obligates the licensor to undertake the transfer of information for an adequately long period. The period recommended is 8 to 10 years in text A, and is subject to negotiation under text B.

The PURCHASER is required to treat as confidential (Articles 7.7 and 7.9), for a certain period (Article 7.11), the proprietary know-how and other confidential information given to him by the licensor and/or the CONTRACTOR. It would be desirable if the period for which the licensor/ CONTRACTOR agrees to make the information available to the PURCHASER, and the period for which the PURCHASER is obliged to treat this information as confidential, are the same. Therefore, the periods of time to be stipulated in Articles 7.3 and 7.11 should be the same.

- 7.5 Experience has shown that there are instances where, because of deficiency or defects, the intended performance in terms of capacity or efficiency is not attained. The PURCHASER in such situations can approach the CONTRACTOR/licensor in the first instance to review and recommend corrective action. In cases where the CONTRACTOR is unable or unwilling to provide assistance to the PURCHASER for corrective action, the standard secrecy provision could prevent the PURCHASER from approaching other agencies for assistance. The standard articles also could prevent the PURCHASER from seeking assistance from other agencies for expanding or modernizing his Plant at a later date after the CONTRACTOR has expressed his inability or unwillingness to assist. This becomes an anomalous position. The model form of Contract recognizes such situations and in this Article details the conditions under which the PURCHASER can seek assistance from elsewhere without being held to have infringed the provisions of the secrecy clauses.

It is also possible that, after acquiring experience in the operation of the Plant, the PURCHASER may, on his own, de-bottleneck the Plant to increase production and/or improve efficiency. In such cases, the PURCHASER shall not be held to have infringed the provisions of Article 7.

- 7.11 The period of time to be mentioned in this Article (text A or text B) should be the same as in Article 7.3.
- 7.15 The model form of Contract envisages that the CONTRACTOR would provide or obtain for the PURCHASER the process licence and know-how. It is, therefore, appropriate that the CONTRACTOR should be solely responsible for indemnifying the PURCHASER for any claim or suit for patent infringement. In the event that any claim arises for patent infringement, the CONTRACTOR should have the option either to contest the suit or, alternatively, to make the necessary alterations in the Plant at his cost to eliminate the alleged infringement, provided such alterations do not affect the performance of the Plant. The question as to whether the CONTRACTOR's liability in regard to patent infringement should be restricted to a fixed amount, or the amount that would be available to the CONTRACTOR from the licensor as compensation, or whether it should be unlimited, is one to which there is no single answer.

In text A, the CONTRACTOR is required to be liable without limitation in connection with a third party's patents or know-how. In text B, the CONTRACTOR has a limited liability, which is stated in this text of the Article. Text A considers that only the CONTRACTOR or his licensor(s) can know whether he breaches a third party's patent or know-how, and since he is being paid for the licence, it is his duty to satisfy himself that there is no patent infringement. Hence, the PURCHASER should be held harmless. In text B, the CONTRACTOR limits his liability either to the amount paid to the licensor(s) or recovered from them, because in a separate licence agreement between PURCHASER and licensor such a limitation would apply.

It should be noted that if there is a patent infringement, the compensation asked for by third parties can be very heavy. It is suggested that in any event a patent search in the PURCHASER's country should be undertaken, particularly where relatively new processes are being considered.

Under the provisions of the International Convention for the Protection of Industrial Property (the Paris Convention), countries that are signatories to the Convention protect each other's patents. Thus, a patent filed in one member country is protected from the date of its filing, even though it is filed later in another member country. This gives patent holders protection against the mala fide filing of patents in other member countries. However, in cases where the PURCHASER's country is not a party to the Paris Convention, difficulties could arise from patent applications filed by other parties before they have been filed in the PURCHASER's country but after they have been filed or granted in the original country. In such cases, the need for a patent search is even more important.

Article 8. Effective Date of the Contract

The Effective Date of the Contract is a firm and fixed point of time and forms the basis of control of the time schedule throughout the implementation of the Contract and is the point at which any expenditures under the Contract should be authorized, as otherwise such expenditures could become infructuous if the Contract did not come into force. It is therefore necessary to define the Effective Date clearly as has been done in Article 8 and to ensure that all activities relating to time are linked with this specific Effective Date.

In most developing countries, Government approval of the Contract is necessary before the initial payments can be effected and the Contract becomes effective. The model form of Contract has recognized this position and has made Government approval for the Contract one of the pre-conditions for its effectiveness. As the approval of the Government could take time, in some cases between one and six months depending upon the procedures in force in each country, it would be necessary for the PURCHASER to ensure that the Contract Price remains firm during this period. The PURCHASER should also recognize that it would not be possible for the CONTRACTOR to keep the Contract Price firm indefinitely. Therefore, the PURCHASER and the CONTRACTOR should make a realistic estimate of the time required for Government approval and indicate that period in "Days" or in "months" in Article 8.2.

Instances are known of Government approval for Contracts in developing countries having been unduly delayed, resulting in variations in the Contract Price, which in turn again required Government approval. To obviate such a situation, the PURCHASER and the CONTRACTOR sometimes agree to a variation formula (escalation/de-escalation) linked with published price indexes in the CONTRACTOR's country. Once the Contract has been approved by the Government with the variation formula, any subsequent variation in the Contract Price on account of the delay in making the Contract effective would not again require approval.

If a Contract is negotiated on a price-variation basis, the price comparison by which a bidder is selected should not only be based upon the price tendered by him, but should also take into account the escalation anticipated in each bidder's country.

8.1.5 The normal procedure is for the Contract to become effective when, and apart from the down payment, some surety, such as a letter of credit or 8.2 an assurance from an international financing institution, is given for the balance of payments. In such cases, Article 8.1.5 will remain (and be amplified) and Article 8.2 can be altered.

However, in some countries the procedures for obtaining these sureties take time. Therefore, if acceptable to the CONTRACTOR (and this has been the case in some contracts in developing countries), the Contract becomes effective on the payment of the advance payment, subject to a letter of credit or guarantees from a financing institution being given within an agreed period of time. In such cases, Article 8.1.5 is not a condition for the Effective Date but the PURCHASER would have a definite obligation within a specified period to open the letter of credit or obtain the required guarantees of payment. The period (to be stated in Article 8.2) would depend on the PURCHASER's estimate of the time required to complete the formalities, but normally it is from three to six months. In any case, it should not be excessive or the price may have to be re-negotiated.

Article 9. Assignment of the Contract

In the implementation of a project it would often be necessary for the CONTRACTOR to engage other agencies or Subcontractors to fulfil some of the CONTRACTOR's obligations. However, as the PURCHASER has chosen the CONTRACTOR on the basis of his experience and reputation and is paying the CONTRACTOR a fee for his engineering services, it is necessary for the PURCHASER to approve the subcontracting of any of the CONTRACTOR's engineering activities. Article 9

provides for this case. It also ensures that, despite such subcontracting, the responsibility for performance and the accountability for the results remain with the CONTRACTOR.

Often, large and established engineering contractors have offices or subsidiaries with engineering facilities in various countries. In the event that the Contract has been awarded based on the engineering capabilities at one of the CONTRACTOR's offices or subsidiaries, the CONTRACTOR is required to obtain the PURCHASER's prior approval in case any part of the work is to be carried out at the CONTRACTOR's other offices or subsidiaries.

It has to be borne in mind, however, that financing institutions funding the project, particularly where supplier's credit is involved, may require a CONTRACTOR to assign the Contract to the institution. Should such a requirement be imposed, the parties could provide for assignment in the Contract to a specific financing institution. The model form of Contract gives the PURCHASER the right to assign his obligations to another agency, as in some countries the PURCHASER could be a State organization and, sometimes, the Government of the country might transfer the obligations of the PURCHASER to another organization. However, such a change of assignment should not in any way reduce the PURCHASER's responsibilities in terms of the Contract. Similarly, the financing institutions financing the project may not permit the PURCHASER to assign the Contract to another agency without the approval of the financing institution. These, therefore, are issues that have to be settled on a case-to-case basis where financing is involved.

Article 10. Procurement

This model form of cost-reimbursable Contract requires the PURCHASER to procure the Equipment and Materials directly from the Vendors at his cost. The PURCHASER has, therefore, the right to decide on the final choice of the Vendor, even if it is against the CONTRACTOR's recommendation. However, since the CONTRACTOR is required to demonstrate the Performance Guarantees of the Plant, in cases where the CONTRACTOR is overruled in the choice of a Vendor, he has the right to seek modifications in the Performance Guarantees suitably.

Activities relating to procurement are crucial to the success of the project. Plant performance depends on sound engineering and design specifications and on the choice of appropriate Equipment successfully proved in actual operations. A main advantage of a cost-reimbursable contract is that it permits the procurement of Equipment and Materials from proven sources of the PURCHASER's choice. This advantage is also recognized by some financing institutions, which insist upon this type of contract when financing a project.

Procedural requirements for procurement differ widely from one country to another and from one PURCHASER to the next, and they are also influenced by the conditions imposed by financing institutions. Therefore, it is necessary that at an early stage the procurement procedure for the project is clearly defined and understood by the parties, and that such understanding is put in writing to avoid future misinterpretations. The time schedule for giving approvals and clearances forms part of this procedural requirement for it affects the project schedule and, hence, it is to be strictly adhered to.

It is standard practice that the PURCHASER posts his representative(s) at the CONTRACTOR's office to scrutinize the CONTRACTOR's recommendations in regard to the procurement of Equipment and the accord of approvals. It is very important that the representative(s) should have adequate competence and authority to take prompt decisions concerning procurement. Experience in developing countries has shown that the PURCHASER's obligations in this area are often delayed, thus leading to problems and disputes.

The procurement of spare parts is another crucial area. Provision of spare parts is to be made under two considerations: (a) spare parts that are generally required for periodic replacement, and (b) spare parts/components that are generally not required for periodic replacement but are needed as insurance spares, for their failure could lead to serious difficulties in terms of Plant down-time and consequent production loss. Additionally, provision should be made for some stand-by equipment to take care of critical areas.

In making provision for insurance spares and stand-by equipment, it is necessary to consult with and rely on the judgement of experienced personnel, such as the Technical Adviser or consultant. Experience has shown that the procurement of spare parts is often relegated to a position of secondary importance, and both the CONTRACTOR and the PURCHASER have tended to give priority to placement of orders for the main Equipment in their anxiety to maintain the overall time schedule for the project. It should be appreciated that the drawing up of the list of spare parts and the placement of orders for them, particularly spares for Critical Items, should be carried out when ordering the main Equipment or soon thereafter, and are as important in terms of time and price as the procurement of the main Equipment itself. Article 10 therefore lays due emphasis on the procurement of spare parts along with the main Equipment.

Article 11. Time schedule

This Article lays down the procedure for monitoring the time schedule, which in the model form of Contract is based upon a computerized critical path network (CPN). The method of obtaining inputs on a monthly basis should be carefully worked out, otherwise the CPN could give false information. The CPN not only enables the PURCHASER to monitor the time schedule but also enables him to relate the physical progress with the flow of expenditure on a monthly basis to ascertain that costs are running on schedule.

Article 12. Delivery and execution of the work

The PURCHASER ought to ensure that the CONTRACTOR provides experienced and competent personnel for guidance and supervision of construction and erection activities. Often, experience has shown that competent personnel in these areas is not always available. Therefore, the PURCHASER should raise this issue with the CONTRACTOR at a sufficiently early stage, such as at the first co-ordination meeting (Article 6.5), and come to an agreement with the CONTRACTOR on the qualifications and experience of the personnel to be assigned to the project (Article 12.4).

Article 13. Supervision of work and access to work

According to Article 5, it is the PURCHASER's responsibility to construct the Civil Works, to erect the Plant, to carry out all mechanical testing and

Start-Up of the Plant. However, the PURCHASER's personnel or Subcontractors responsible for civil construction, mechanical erection, pre-commissioning and commissioning of the Plant are required to work under the supervision of the CONTRACTOR. The CONTRACTOR's responsibilities in this regard have been laid down in Articles 4.17 and 13.1.

13.5 These Articles give the CONTRACTOR the right of access to the Site, and storage yards, fabrication shops etc. Since the CONTRACTOR is

13.6 responsible for the successful commissioning of the Plant and the demonstration of the Performance Guarantee Tests, he should have full information on the activities of the PURCHASER's personnel and his Subcontractors relating to the execution of the project, and also have the right to inspect the work in progress.

13.8 This Article gives the PURCHASER the right to engage third parties, who are not direct competitors of the CONTRACTOR, to check the work carried out by the CONTRACTOR at his offices, for the PURCHASER may wish to engage an independent technical adviser to supervise the implementation of the project on his behalf. The PURCHASER should recognize that his technical adviser should neither disturb the CONTRACTOR's activity nor infringe the secrecy agreement entered into by the PURCHASER.

Article 14. Inspection, testing and certification

This Article deals with the inspection, testing and certification of all Equipment and Materials for the Plant. It is important to ensure due diligence in inspection and testing services and in the interpretation of test results. Identification of problems and consequential corrective action at the initial stages are more significant than permitting substandard equipment to be passed off for construction, in order to avoid delays in completing the Plant and facing the problems later on. It would be unwise to tighten expenditures on testing and inspection services and depend exclusively on Vendor's certificates. Furthermore, the PURCHASER should specify, with the assistance of his technical adviser, the tests that ought to be carried out in respect of Equipment and Materials without relying only on standard tests during inspections.

Although in a cost-reimbursable contract the PURCHASER signs, as owner, the purchase orders for the procurement of Equipment, the bid specifications for procurement are prepared by the CONTRACTOR. In most cases the bids are evaluated by the CONTRACTOR who may also prepare the purchase orders for the PURCHASER's signature. In addition, the CONTRACTOR is requested to inspect the quality of materials and workmanship of the Vendors at every stage of the manufacture of Equipment and Materials. Article 14.2.2 stresses the CONTRACTOR's responsibilities for adequate inspection and testing to see that the Plant, Equipment and Materials procured are strictly in accordance with design specifications and accepted standards and in the best interest of the project.

There could be cases where the CONTRACTOR supplies some of the Equipment. In such cases it is suggested that separate purchase orders should be issued to the CONTRACTOR acting as Vendor, and the terms and conditions of the order should be carefully scrutinized by the PURCHASER or his Technical Adviser. Inspection of such Equipment should also be undertaken by a third party. In such a case, some modifications may be required (on a country-to-country basis) in Article 31 (Taxes and levies).

In a cost-reimbursable contract the procurement is generally done on a FOB basis, and the shipping arrangements are made by the PURCHASER. It is therefore necessary for the PURCHASER to identify suitable shipping agents well in advance and arrange with the CONTRACTOR for proper co-ordination between the Vendors and the shipping agents. Often, the PURCHASER prefers to entrust the CONTRACTOR with the shipping arrangements as these are closely related to the CONTRACTOR's procurement services.

Article 15. Variations, changes and additions to the scope of the Contract

The process and basic design, detailed engineering and formulation of specifications for the Plant involve a large number of activities covering many different disciplines, and performed by a number of agencies or departments within one or more engineering organizations. It is therefore not always possible to foresee at the time of entering into the Contract all the requirements of the project and freeze its scope, particularly if all technical details are not fixed initially but are left to be decided during project implementation. Therefore, variations, changes and additions to the scope of the Contract may become continuously necessary or desirable in the course of implementation.

There are two main categories of modifications: (a) variations or changes required to correct omissions or errors in engineering in order to ensure that the objectives of the Contract are fully met, and (b) variations or modifications upon the PURCHASER's request in order to enhance the viability or flexibility of the Plant, or owing to changes in the statutory requirements or regulations in the PURCHASER's country made after the signing of the Contract.

Normally, modifications that are required to rectify earlier omissions or errors in engineering within the original scope of the Contract would be carried out by the CONTRACTOR at no extra cost to the PURCHASER even though additional engineering and/or re-engineering might be required. Where additional engineering and/or re-engineering has to be carried out by the CONTRACTOR in order to effect variations or changes sought by the PURCHASER or to comply with changes in statutes or regulations, the CONTRACTOR should be compensated for the additional work. Article 15 provides only for those modifications where the CONTRACTOR would be entitled to payment.

15.2 Payments for modifications under Article 15 are to be made outside the payments laid down in Article 20. Where there are foreign exchange regulations, it may be advisable to lay aside a sum of money (by appropriate modifications in Article 20) for this purpose.

15.4 It should be noted that the kind of changes/variations contemplated in to Article 15 could result in extra cost to the CONTRACTOR and/or in
15.6 additional time for engineering, and possibly in modifications to the Performance Guarantees. Hence, the CONTRACTOR should state at the outset the implications of every change or variation requested by the PURCHASER in terms of cost and time and, where relevant, their effect on the Performance Guarantees before obtaining the PURCHASER's approval to proceed with the change or variation.

The parties may not agree on the CONTRACTOR's estimate of the cost and/or time delay and/or modifications to the Performance Guarantees. Article 15.5.3 provides for such a contingency and requires the CONTRACTOR to proceed with the execution of the change/variation upon the PURCHASER's request, and pending the settlement of the dispute by

reference to an independent expert to be chosen by the PURCHASER and the CONTRACTOR. This independent expert should be an expert in the particular field to which the dispute pertains and need not necessarily be the Neutral Independent Person contemplated in Article 37.1.1.

- 15.7 Often, changes have been requested orally by the PURCHASER's Site representatives and there have been subsequent disputes about payments and the effect of such changes on the Contract. It is essential, therefore, that not only should the procedure laid down in this Article be followed, but all such changes are embodied in written change orders.

Article 16. Training

The appropriate training of the PURCHASER's personnel is one of the most important prerequisites for the proper operation of the Plant. Therefore, it is recommended that the PURCHASER make a very careful selection of people to be sent for training in the plant(s) selected under the Contract. When selecting people for this task, the PURCHASER should try to ensure that the trained staff are employed for the commissioning period as well as for the normal operation of the Plant.

The CONTRACTOR has an obligation to provide training, at a reasonable cost in plants that have been in operation for some years and that are reference plants in the CONTRACTOR's offer, to selected personnel of the PURCHASER. It may be desirable to arrange this training in plants built by the CONTRACTOR in other developing countries so that the trainees are fully exposed to the problems of operation and maintenance in developing countries.

As a reciprocal arrangement for training in other plants, the PURCHASER should consider the possibility of providing training in future to others at reasonable fees.

In Article 16.2, the CONTRACTOR not only has an obligation to train the PURCHASER's personnel abroad, but also to organize and supervise a training programme at the Site (annexure XVIII). For the latter purpose, training aids may be needed (e.g. a simulator) and these may form part of the supply list and be included in annexure VIII.

However, Article 16 does not provide for further training of the same staff in the case of possible inefficiency of the first trainees and/or unavailability of trained personnel at the time of Start-Up. In the event that, in spite of the original training programme, further training becomes necessary, the PURCHASER and the CONTRACTOR could agree upon the conditions thereof.

Article 17. Management and technical advisory services

Many developing countries often require continuing technical assistance to operate a plant successfully. The PURCHASER's operating and maintenance personnel frequently do not have the necessary experience to operate the Plant successfully despite the adequate training being given to such personnel. Furthermore, it is very important to establish correct systems and procedures for maintenance and operations at the outset. Hence, smooth operation is facilitated by providing for suitable management assistance.

The CONTRACTOR also has a commitment in ensuring the success of the Plant. A Plant that performs indifferently after the PURCHASER has taken it over from the CONTRACTOR is often not good for the CONTRACTOR's reputation.

17.1 This Article enables the PURCHASER, at his option, to request the CONTRACTOR at an appropriate stage and at extra cost to enter into a management assistance agreement for a period of 12 months after Provisional Acceptance of the Plant. Since the CONTRACTOR is contractually bound by his warranties and obligations to correct latent defects until the Final Acceptance of the Plant, which is 12 months after its Provisional Acceptance, it would also be advantageous for the CONTRACTOR to continue to manage the operations for the 12-month period between Provisional and Final Acceptance of the Plant.

Experience has shown that it is beneficial for a smooth operation of the Plant that the CONTRACTOR provides, at the PURCHASER's option, technical advisory services for a specified number of years under a separate agreement. Such an agreement would require the CONTRACTOR to make experienced personnel available to review the performance of the Plant periodically and offer recommendations for improvements, and to identify problems and suggest remedial measures.

17.4 Although the agreements envisaged in Article 17 are optional and the PURCHASER has a defined period in which to exercise his option, Article 17.4 ensures that the CONTRACTOR accepts this position in the Contract itself. Although both the management assistance and technical advisory service agreements stem from the Contract, they are wholly separate and distinct from the liabilities and responsibilities contained in the Contract and would have to be negotiated separately.

Article 18. Completion of Plant and conditions of Provisional and Final Acceptance

In every contract the stages of implementation should be clearly identified in order to adopt a procedure for certifying that each stage has been properly completed in accordance with the Contract. This is more important in a cost-reimbursable contract, for the PURCHASER is associated from the beginning with the implementation of the project, and has also certain well-defined obligations to discharge.

This Article deals with the certificates of work completion and acceptance of the Plant linked to the main stages of project implementation. The cost-reimbursable Contract calls for a Mechanical Completion Certificate at the end of erection and dry tests; a Provisional Acceptance Certificate on completion of the Performance Guarantee Tests, and a Final Acceptance Certificate issued 12 months after Provisional Acceptance, by which time the Equipment warranties and other obligations (including those for latent defects) are over.

In normal practice, Plants are fully accepted once the Performance Guarantee Test runs have been satisfactorily completed. Experience has shown that this arrangement is unsatisfactory and does not provide adequate time for latent design defects to show up. As latent defects usually appear in the first 12 months of operation, the Contract provides for continuance of the CONTRACTOR's contractual responsibility for design defects, until the stage of Final Acceptance, which is reached 12 months after Provisional Acceptance.

In a cost-reimbursable Contract, the actual testing and commissioning of the Plant, including the running of the Performance Guarantee Tests, are to be demonstrated by the CONTRACTOR with the assistance of the PURCHASER's personnel. To avoid the possibility of any disagreement between the parties, it would be necessary to lay down strict procedures in the protocol covering the Performance Guarantee Tests envisaged in Article 26.4 and annexure XXXI.

Article 19. Extension of time 4/

This Article defines the occurrences beyond control in which an extension of time to the Contract schedule is allowed. The PURCHASER should, in the circumstances envisaged, give a reasonable extension of time to the CONTRACTOR. However, since additional payments may be involved, this aspect should be carefully negotiated.

In Article 19.1 there are two views on whether force majeure conditions in the PURCHASER's country should be treated as a factor that would warrant an extension of time and the compensation of cost.

One view, which is reflected in text B, is that, in the event of delay due to force majeure in the PURCHASER's country, the CONTRACTOR should be granted not only a reasonable extension of time but also be compensated for the additional cost involved on account of the delay. This view stresses that it would be difficult for the CONTRACTOR to calculate and make allowances adequately in the Contract Price for force majeure events in the PURCHASER's country and that, if compensation for delay on this account was provided for in the Contract, it would be possible for the PURCHASER to get more competitive quotations from experienced engineering contractors. It would also avoid situations whereby an experienced and competent CONTRACTOR is excluded from consideration simply because he has provided for a higher allowance for force majeure and thereby quoted a higher Contract Price. In other words, the risk of force majeure in the PURCHASER's country should not be transferred to the CONTRACTOR.

The other view, which is expressed in text A, is that force majeure whether in the PURCHASER's country or in the CONTRACTOR's country is beyond the control of the parties and should be treated alike in both cases. In other words, where the PURCHASER is not compensated for increases in project cost, or loss of production due to delays arising from force majeure in the CONTRACTOR's country, it would not be correct or reasonable to provide for any compensation to the CONTRACTOR for delays arising out of force majeure in the PURCHASER's country.

It should be noted that it is not a normal practice in contracts to provide compensation for delays arising from force majeure. However, as many leading engineering contractors have suffered substantial losses in recent years, because of force majeure situations in developing countries, it is likely that pressures may develop to change the international practice in this regard. This is also one of the reasons for the two texts.

However, in a cost-reimbursable contract, compensation of costs due to force majeure is not so important as in a turnkey contract.

4/ Text A and text B have the heading "Extension of time" but only text B has the additional heading "and compensation of cost".

Article 20. Contract Price, terms of payment
bonuses and incentives

In cost-reimbursable contracts it is customary to relate payments to specific periods. However, it is felt that payments should not be related to time but to the completion of specific activities by the CONTRACTOR. The model forms of contract are based upon a cash contract and involve the principle of payments being tied to the accomplishment of specific work (performance milestones). The activity to which a particular payment should be related and the percentage of payment to be made at each stage would depend essentially on the scope of the CONTRACTOR's Services and the time span of the Contract.

The figures given in brackets in Article 20 are entirely indicative and in an actual contract would have to be settled on a case-to-case basis. Article 20 is laid down mainly as a model and check-list of the various activities to which payment could be related.

Articles covering Contract Price and terms of payment are specific to each project and may need substantial modifications, particularly when a project is financed by loans, for lending agencies often have their own rules on payment conditions. Likewise, if export credit financing is involved, further changes would have to be made to this Article.

Article 20.1 requires that the price be firm for licensing, engineering, procurement, inspection and expediting services, and be reimbursable for training and supervision of erection and commissioning of the Plant; i.e. per diem costs for expatriate personnel (in some cases this is estimated and a ceiling is provided in the Contract). However, the Equipment is procured by the PURCHASER on the advice and with the assistance of the CONTRACTOR, and payments are made directly by the PURCHASER.

Article 21. Performance bonds and bank guarantees

This Article requires the CONTRACTOR to provide not only a bank guarantee to secure the advance payment but also a performance bond to guarantee the full and faithful discharge of all his obligations in terms of the Contract. The performance bond is necessary to ensure that the PURCHASER's interests are fully protected and that the CONTRACTOR does not repudiate any of his responsibilities during the course of the implementation of the project.

A performance bond or performance guarantee is generally issued by a commercial bank in the CONTRACTOR's country, but it can also be obtained from a bonding company. In the United States of America, it is customary for a bonding company to issue a performance bond.

In a performance guarantee issued by a commercial bank, provision may be made to enable the PURCHASER to invoke the guarantee, should the CONTRACTOR default on his obligations, without having to obtain the CONTRACTOR's concurrence or an arbitration decree or an order from a court of competent jurisdiction. However, in a performance bond issued by a bonding company it would normally not be possible for the PURCHASER to draw upon the bond unless the default was accepted by the CONTRACTOR or was established to the satisfaction of the bonding company.

In a performance guarantee, the coverage is generally between 10 to 15 per cent of the Contract Price. In the case of performance bonds, the value could be and should be substantially higher.

In the case of a performance guarantee issued by a bank, the PURCHASER should ensure that it fully allows him to draw upon the guarantee if there is a default on the part of the CONTRACTOR, without the CONTRACTOR having to concede the default or to establish the default to the satisfaction of a court or the bank itself. A draft of such a bank guarantee is given in annexure XXII, A.

Some financing institutions insist on a bank guarantee and require that in the case of default by the CONTRACTOR, the guarantee should be drawn upon and the funds placed at the disposal of the financing institution which, in turn, would make the required funds available to the PURCHASER for rectifying the default. In such cases, the amount covered by the guarantee is only available to the PURCHASER through the financing institution.

In a performance bond from a bonding company, it is possible to obtain a bond whereby the bonding company is obligated to finish the Contract by appointing a new CONTRACTOR if the first one does not perform or abandons the work. This bond is not very effective in a cost-reimbursable contract but could be of value in a turnkey contract, although it could give rise to some problems which need to be considered on a case-to-case basis. A draft of such a bond is given in annexure XXII, B.

Article 21 should be read in conjunction with the wording suggested in annexures XXII and XXIII, for the wording of bank guarantees is of major importance.

- 21.2 Regarding the bank guarantee to cover advance payments, it is standard practice to make a provision in the guarantee according to which its value is automatically reduced to the extent of the value of the CONTRACTOR's Services as and when they are carried out.

Article 22. Indemnification

- 22.1 In this Article, the CONTRACTOR assumes complete responsibility for all costs, claims, suits or legal actions brought or prosecuted by anyone in connection with the activities of the CONTRACTOR, pursuant to this Contract. The PURCHASER is protected from liability for actions of the CONTRACTOR that may be the subject of lawsuits, claims or damages. This protection is required because the PURCHASER may not be aware of occurrences such as breaches by the CONTRACTOR of licensing arrangements with third parties.
- 22.2 Conversely, the PURCHASER is obliged to indemnify or protect the CONTRACTOR from claims, damages, losses, personal injuries, death etc. to the PURCHASER's employees or third parties (but not to the CONTRACTOR's Site personnel), and to property damage outside Battery Limits caused by the PURCHASER's negligence. In actual practice, the PURCHASER's erection and Start-Up insurances should cover such contingencies to some extent.

Article 23. Project accounting and audit

Project accounting is an important activity especially in a cost-reimbursable contract, for the PURCHASER should be aware of cost overruns at every stage of project implementation.

Experience has shown that PURCHASERS sometimes underestimate the total cost impact of their requests for changes, variations and additions. In some cases, there has also been a tendency to provide more expatriates than were necessary, or for a longer period, at extra cost to the PURCHASER. An efficient project accounting and monitoring system, with strict arrangements for logging expatriate man-hours, is therefore necessary.

Article 24. Insurance

In developing countries the contracting parties do not always take full advantage of the insurance coverage that is currently available. This Article lists the various policies available and specifies the responsibilities of the CONTRACTOR and the PURCHASER for taking them out. It also requests the CONTRACTOR to maintain corporate insurance coverage including, where applicable, a professional indemnity insurance to cover mistakes in design etc.

It should be noted that the professional indemnity insurance, if any, obtained by the CONTRACTOR would cover his total corporate activities and not only his performance under the Contract. The professional indemnity insurance policy is by nature a confidential document and the CONTRACTOR is not obliged to disclose its contents to the PURCHASER. Professional indemnity insurance cover also has a limited application.

Policies to cover consequential loss of production arising out of a Plant breakdown, due to normal causes such as equipment failures, power interruptions etc. (Article 24.5.2), are normally available when the Plant has been in satisfactory operation (usually at least six months after Provisional Acceptance). The PURCHASER should take full advantage of this cover.

Insurance cover for consequential loss arising out of design or engineering faults is not currently available. UNIDO is attempting to evolve an arrangement to provide this cover, hence the reason for Article 24.6.

In a cost-reimbursable contract the PURCHASER is responsible for taking out most of the insurance covers, and he should therefore take care to ascertain that all the necessary policies are taken out in good time and for adequate values (Article 24.7).

It is suggested that before finalizing Article 24, the availability and extent of different types of insurance cover and the possibility of combining insurance policies should be carefully reviewed by the PURCHASER.

Article 25. Control of workmanship and materials

In a cost-reimbursable contract, the Equipment is procured by the PURCHASER, therefore the mechanical warranties covering the Plant and Equipment are extended by the Vendors to the PURCHASER.

The CONTRACTOR has the responsibility to see that the purchase orders issued to the Vendors contain adequate instructions and specifications in order that the quality of the materials and workmanship that go into the manufacture of the Plant and Equipment are the best, and the Equipment is new and capable of performing the tasks for which it is intended. The CONTRACTOR is also responsible for ensuring adequate inspection. These responsibilities of the CONTRACTOR have been laid down in this Article.

Article 26. Guarantees and Performance Guarantee Tests

This Article, dealing with the Performance Guarantees of the Plant and the procedures for running the Performance Guarantee Tests, is one of the most important Articles in the Contract. It should be carefully co-ordinated with annexures XXX and XXXI.

Guarantees

The UNIDO model forms of contract call for two types of guarantees: Absolute Guarantees and Penaltiable Guarantees, which are defined in Article 26.2.

Absolute Guarantees are defined as those guarantees that the CONTRACTOR shall establish and demonstrate without any limitation of liability as to his obligation to rectify the Plant to meet those guarantees, and which cannot be satisfied by the payment of liquidated damages. The CONTRACTOR is thus obliged to "make good" the Plant to make it capable of achieving the guarantees. The interpretation of Absolute Guarantees in a cost-reimbursable Contract would be different in cases where text B of Article 30.5 is adopted for the reasons explained in the guidelines for Article 30.

Penaltiable Guarantees are those guarantees that can be satisfied by the CONTRACTOR on the payment of liquidated damages. If the CONTRACTOR is unable to meet those guarantees, he can either rectify the Plant to make it capable of meeting those Penaltiable Guarantees or, at his option, pay liquidated damages and thereby free himself of any further obligations in regard to the fulfilment of the Penaltiable Guarantees.

While the model forms of contract are firm on the need for Absolute Guarantees on the capacity of the Plant(s) and the quality of the Products, they allow for negotiations on other guarantees, which can be either Absolute or Penaltiable.

Absolute Guarantees. These are in all cases:

(a) The capacity of the Ammonia and Urea Plants up to 95 per cent of their capacity. The Absolute Guarantees were defined at 95 per cent rather than 100 per cent of capacity because if there is a small difference in the capacity of a major piece of Equipment, it may be better to accept an adequate penalty rather than insist on the deficiency being corrected or the Equipment being replaced in cases that entail a disproportionately long period of time or loss of production during replacement. Furthermore, fertilizer plants are capital-intensive and, therefore, cannot be viable unless they operate at or near rated capacity;

(b) The quality of the ammonia and the urea Products; for the quality specifications detailed in annexure XVI of the Contract must conform to market requirements, otherwise the Products may be unsaleable or only saleable at a discount.

Penaltiable Guarantees. These are in all cases:

(a) The capacity of the Plants if below 100 per cent, but above 95 per cent of their capacity;

(b) The quality and quantity of carbon dioxide that is adequate and suitable to produce 100 per cent of the guaranteed capacity of urea. Since

the production of 95 per cent of the capacity of urea is an Absolute Guarantee, which cannot be met without producing 95 per cent of the requirement of carbon dioxide for the Urea Plant, it indirectly becomes an Absolute Guarantee at 95 per cent;

(c) The adequacy of utilities and Off-Sites to sustain the continuous production of ammonia and urea at 100 per cent of capacity. Since the obligation exists to produce at least 95 per cent of the capacities of the Ammonia and Urea Plants as Absolute Guarantees, to this extent the utilities and Off-Sites have to be absolutely sufficient. Hence, Article 26.4.4 requires the Ammonia and Urea Plants to be run simultaneously for 7 Days.

(a) The capacity of the steam and power plant. Since the plant is often dimensioned to be larger than required, there is a separate guarantee for it but this guarantee is penaltiable because the necessity to produce power for 95 per cent of overall capacity is covered by the Absolute Guarantees for the production of ammonia and urea.

Negotiable guarantees. The guarantees mentioned in Article 26.3.3 are negotiable and after deciding during negotiations whether they become Absolute or Penaltiable, they should be transferred accordingly as new headings to Article 26.3.1 (Absolute Guarantees) or Article 26.3.2 (Penaltiable Guarantees). Thereafter, Article 26.3.3 would become redundant and disappear in the final Contract.

These negotiable guarantees include the following:

(a) The quality of effluents or emissions from the Plant. Whether these are Absolute or Penaltiable depends upon the location of the Site and statutory legal enactments. If there are legal requirements covering gaseous emissions at the Site, then these would have to be Absolute Guarantees, otherwise the Plant could be shut down. However, if the Site is in a remote location near the sea, the emissions and effluents can be penaltiable;

(b) The consumption of raw materials and utilities. The model forms of contract use the concept of a guaranteed overall cost figure for raw materials and utilities, which is calculated according to the method given in Article 27.2.4. Thus, excess consumption of one item can be made up by a lower consumption of other items, so long as the overall cost of manufacture is maintained. Whether these guarantees would be Absolute or Penaltiable would depend on individual cases. For instance:

- (i) If the cost of feedstock, fuel and water is low and these are easily available, then the guarantees for consumption of feedstock and utilities can be Penaltiable. However, if the cost is high, then an Absolute Guarantee could be considered, say, not over 105 per cent of the daily guaranteed cost of raw materials and utilities; between 100 per cent and 105 per cent of the guarantees, the cost of utilities could be Penaltiable;
- (ii) The consumption of raw materials (ammonia) for the Urea Plant could be Penaltiable if there was surplus saleable ammonia in the Ammonia Plant capacity. However, if the Ammonia Plant capacity is just equivalent to the requirements of the Urea Plant, there should be a limit on the excess consumption of ammonia beyond which there should be an Absolute Guarantee.

To facilitate negotiations on these guarantees, they have been drawn up in the form contained in Article 26.3.3.

Performance Guarantee Tests

There have been cases in developing countries where Guarantees were successfully demonstrated in limited test periods of 72 hours, but the Plants did not operate continuously thereafter. The model form of Contract therefore calls for the continuous operation of the Plant at near rated capacity (say, 90 per cent) during 20 Days, followed immediately by a guarantee test run of 10 Days at 100 per cent of capacity. The test for consumption of raw materials and utilities shall be run during any consecutive 7-Day period within the 10-Day test period.

Recently, some developing countries have secured extended periods of continuous operation (up to about 90 Days at an average 85 per cent of capacity) before the guarantee test run is demonstrated for a period of about 10 to 14 Days. The extended continuous test run stipulated in the Contract is also necessary to demonstrate the Plant's ability to operate consistently at or near rated capacity.

The model form of Contract suggests that the guarantee test runs should be taken within 90 Days of commissioning so that defects are promptly identified, for there is urgency to attain production stabilization at or near rated capacity as early as possible to enable the Plant to start earning revenue. It also provides for situations where the CONTRACTOR, either on account of faults attributable to him or faults attributable to the PURCHASER, is unable to perform the guarantee test runs in the time prescribed (see also annexure XXXI).

In Article 26.7, under text A, a time limit is placed on the CONTRACTOR's obligations to run Performance Guarantee Tests if, within (30) months from the last shipment of Equipment or (60) months from the Effective Date of the Contract extended by an agreed period owing to force majeure, the Plant cannot be Started-Up for reasons not attributable to the CONTRACTOR. In text B, the brackets are left blank for the periods are negotiable. It is normal to provide for a "cut-off" point in such contracts for the period selected would depend upon Site conditions. If the Plant has its own feedstock source, power station and water supply, there would be little outside infrastructure that could delay the Start-Up. Conversely, if the Plant is dependent upon public utilities for the supply of feedstock, electricity and water, the delays outside the PURCHASER's control could be substantial and, hence, a longer period would be required before the CONTRACTOR is relieved of his obligations to run Performance Guarantee Tests. However, it should be stressed that to provide for an unduly long period would be onerous to the CONTRACTOR.

In case the Plant cannot be Started-Up within the period stipulated above, Article 26.8 has been added to allow the Plant to be Started-Up and tested with the CONTRACTOR's help but at additional cost, even if the Plant has passed the period stated in Article 26.7 without operation. It should be emphasized that if a Plant stays idle for a substantial time after Mechanical Completion, its subsequent performance will depend upon the maintenance of the Plant during the intervening period.

Article 27. Liquidated damages

Liquidated damages may be described as "lump-sum payments" by way of settlement for the breach of certain obligations under the Contract. Their objective is to give an incentive to the CONTRACTOR for the strict fulfilment of specific contractual duties. However, the payment of liquidated damages by

the CONTRACTOR does not relieve him of his other responsibilities under the Contract (Article 27.6).

The PURCHASER should appreciate that if he were to contribute partially or fully to the CONTRACTOR's failure to discharge his obligations, the CONTRACTOR would be relieved of part or the whole of the liability for payment of liquidated damages.

- 27.1 This Article provides liquidated damages for delay in the delivery of technical documents, and in the timely completion of bid tabulations for Critical Items of Equipment. Regarding the latter, text B of Article 27.1.2 disclaims the application of liquidated damages for delays caused by the PURCHASER or Vendors.
- 27.2 This Article provides liquidated damages for the non-fulfilment of the Penaltiible Guarantees (provided the Absolute Guarantees have been met) as required under the terms of the Contract. The failure by the CONTRACTOR to fulfil these specific obligations would result in the assessment and payment of liquidated damages in accordance with Articles 27.2.1 to 27.2.12.

Concerning liquidated damages for Plant(s) capacity (Articles 27.2.6 and 27.2.7), text A calls for payments of 5 per cent of the fixed Contract Price for each 1 per cent deficiency in capacity, text B calls for payments of 1 per cent.

Text A considers that while 1 per cent of the Contract Price may be adequate as liquidated damages in a turnkey contract, in a cost-reimbursable contract, where the Contract Price is itself low, 1 per cent of the Contract Price would be of little significance to the CONTRACTOR while a decrease in capacity of 1 per cent could result in a continuing production loss to the PURCHASER and thereby become a significant loss in profitability.

Text B stresses that liquidated damages of 5 per cent of the Contract Price for every 1 per cent decrease in capacity would impose an undue strain on the CONTRACTOR whose fee, particularly in a cost-reimbursable contract, is limited. Furthermore, in the event that liquidated damages are placed at 5 per cent, the CONTRACTOR would tend to build a provision into the Contract Price to cover this liability, which would result in a higher cost to the PURCHASER.

The level of liquidated damages should therefore be negotiated by the parties, keeping in view the above considerations.

- 27.3 In text A, a time limit of 9 months after Initial Operation is set for the CONTRACTOR completing the Performance Guarantee Tests, subject to agreed extension(s) for making repairs, after which liquidated damages are payable for delays. Any significant delay in stabilizing the Plant and in performing the guarantee test runs could affect production and the PURCHASER's profits and should, therefore, be subject to penalty. The penalty suggested is 5 per cent for each month of delay up to a maximum of (50) per cent of the Contract Price. By proposing the removal of this Article in text B, neither a time limit is set nor are liquidated damages payable.
- 27.4 This Article lays down that if after 18 months after Initial Operation, the Absolute Guarantees have not been met, subject to agreed extensions,

the PURCHASER has the right to obtain the help of a third party to modify the Plant to enable it to meet its Absolute Guarantees, and all costs of the modifications required are to be borne by the CONTRACTOR. The determination of costs should be made by mutual agreement or through arbitration.

If the CONTRACTOR, through his own fault, is unable to demonstrate that the Plant can operate successfully within the period stipulated above, he is unlikely to make it do so. Hence, the PURCHASER should have the right to bring in a third party.

- 27.5 In cases where the PURCHASER has satisfactorily fulfilled his obligation under the Contract but the CONTRACTOR has failed to perform the activities/obligations enumerated in Articles 27.1 and 27.2 in the required period, text A of Article 27.5 requires that the CONTRACTOR, in addition to the payment of liquidated damages, should also be made liable for fundamental breach of Contract.

Text B expresses the view that fundamental breach of Contract is too drastic a punishment for delays in fulfilling the CONTRACTOR's obligations and should, therefore, not be provided for in this Article.

Article 28. Warranties

Although mechanical warranties are extended by the Vendors to the PURCHASER, this Article requests the CONTRACTOR to assist the PURCHASER in obtaining and enforcing the warranties where necessary. Consequently, in a cost-reimbursable contract, unlike a turnkey contract, warranties get restricted to a period of 18 to 24 months from the date of shipment or 12 months from the date of commissioning of each item of Equipment, and not from the date of shipping the last item of Equipment or the commissioning of the Plant.

In many cases it happens that warranties for individual items of Equipment, including Critical Items expire even before the Plant is commissioned. The model form of Contract therefore recommends that warranties should be obtained for a period of not less than 30 months from the date of shipment and, as far as possible, shipment should be scheduled so as to ensure that warranties relating to Critical Items do not expire until 48 months after the Effective Date of the Contract. This provision considers that as latent defects take time to manifest themselves, the PURCHASER should have the benefit of mechanical warranties for a period of at least 12 months from the commissioning of the Plant.

Even then, it should be recognized that in many cases the Vendor's warranties could run out before the 12-month period is over. Therefore, in a cost-reimbursable contract the PURCHASER would be well advised to provide for additional contingencies to cover machinery failures which may not remain covered by warranties.

Article 29. Rectification of defects and modifications to the Plant

- 29.1 In the event that the Plant is unable to meet the Absolute Guarantees owing to defects or errors of the CONTRACTOR, he should ask the PURCHASER to make the necessary modifications/changes to remove the defects. The question that arises for consideration is what should be the extent of the CONTRACTOR's liability. There are two views on the subject which are reflected in the Contract.

Text A requires that in the event that an item of Equipment fails to perform satisfactorily owing to a lapse of the CONTRACTOR in engineering or ordering of the Equipment and which results in non-fulfilment of the Absolute Guarantees, the CONTRACTOR should redo his Services and replace the Equipment, if needed, at his cost. It considers that the CONTRACTOR's liability "to make good" the Plant should include the provision of engineering and procurement services and the cost of replacement Equipment including the associated costs of civil engineering, erection etc.

Text B stresses that as is customary in a standard cost-reimbursable contract, the CONTRACTOR's liability in this Contract would be limited to the redoing of his Services; the cost of the Equipment, if any, required by way of replacement is to be borne by the PURCHASER. It considers that in a cost-reimbursable contract the CONTRACTOR is being paid primarily for his engineering services, while the Equipment in any case has to be procured by the PURCHASER. Furthermore, if the CONTRACTOR's liability for rectifying a defect is not limited to an amount bearing a relationship to his fee, the CONTRACTOR would have to assess the risk involved and provide for it in his fee. Alternatively, the CONTRACTOR may overdesign the Plant and Equipment to avoid any risk of inadequacy or failure, which would result in considerable additional expenditure for the PURCHASER.

- 29.4 To avoid inconsistency in the Contract, this Article has two texts. Text A is in accordance with Article 29.1, text B is in accordance with Article 29.1 and text B of Article 30.5.

In reconciling the two viewpoints, a distinction might be made between what can be termed as "first cost" and the expenditure required to overcome Plant performance difficulties. While the PURCHASER may bear the actual "first cost", i.e. the cost that would have resulted from a correct design in the first instance, the additional cost owing to rectifications of the CONTRACTOR's design, even if part of it should relate to hardware, might be borne by the CONTRACTOR.

Article 30. Liabilities, set-off and waiver

This Article provides the basis of the liability to which the CONTRACTOR is subject and sets out the consequences in the event of failures, defaults or omissions under this Contract.

Article 30.4 requires the CONTRACTOR to use the proceeds of the insurance cover either to make such changes or modifications as are necessary to fulfil his obligations in regard to Plant performance, or to make the proceeds available to the PURCHASER.

- 30.5 There are two views on whether there should be a limitation on the total and liability of the CONTRACTOR.
30.7

Text A of Article 30.5 stresses that while the CONTRACTOR's total liability could be limited to an expressed percentage of the total Contract Price, his liability for meeting the Absolute Guarantees must be unlimited as defined in Article 26.2.1. Complementing this view, text A of Article 30.7 states that, if the CONTRACTOR does not discharge his obligations and meet the Absolute Guarantees at his cost, the PURCHASER may proceed to modify the Plant to overcome the deficiencies at the cost of the CONTRACTOR.

Text B of Article 30.5 indicates that, since the CONTRACTOR gets a fixed fee to provide mainly engineering, procurement and supervisory services, he cannot be expected to take on an unlimited liability for meeting the Absolute Guarantees. Such a requirement would make it difficult for the PURCHASER to obtain the services of competent engineering Contractors at reasonable prices. The words "notwithstanding anything to the contrary" in text B favour a restriction on the total liability of the CONTRACTOR. This view is complemented by text B of Article 30.7 where the CONTRACTOR's total liability is limited to the extent of his liability under Article 29.1.

An understanding of the two views above is critical to an appreciation of this Contract and the extent to which it differs from a standard type of cost-reimbursable contract.

30.9 This Article covers the right of set-off in favour of the PURCHASER. Text A gives this right to the PURCHASER provided that he has a legitimate claim against the CONTRACTOR that has not been satisfied under the Contract. However, the PURCHASER is obliged to inform the CONTRACTOR who has the right, within a specified period, to go to a court of competent jurisdiction before the right of set-off may be invoked.

Text B does not permit any set-off by the PURCHASER on the contention that payments are made on a work-progress basis and the CONTRACTOR is required to submit performance bonds. It should be noted that there can be cases where the right of automatic set-off is not permitted either by law or by the terms of the financing arrangements.

Article 31. Taxes and levies

This Article deals with taxes and levies and particularly income or corporate taxes. Some contracts provide for all taxes (including income tax on the CONTRACTOR's work) being paid by the PURCHASER. This arrangement may become complicated under certain conditions or, in some cases, may be unlawful. In such cases, taxes must be included in the CONTRACTOR's price. Nevertheless, it is suggested that both parties obtain the services of a competent tax expert to advise them.

31.1 This Article lays down that the CONTRACTOR is fully responsible for all taxes outside the PURCHASER's country including licence fees, royalties and the CONTRACTOR's Services abroad. The responsibility for taxes on Equipment and Materials is borne by the PURCHASER since he procures them directly from the Vendors.

31.2 The CONTRACTOR's liability for taxes in the PURCHASER's country should be drawn up on a case-to-case basis taking into account the provisions and requirements of tax laws, the existence of an agreement, if any, between the country of the PURCHASER and the country of the CONTRACTOR for the avoidance of double taxation etc.

It would be reasonable to assure the CONTRACTOR a fee for his Services, net of taxes, which does not vary with changes in the tax situation. In such cases, it would be appropriate for the fee to be indicated in the Contract as being net of taxes and for the PURCHASER to take on the tax liability. However, in some countries, the tax laws require every recipient of income to be liable for the payment of taxes. In such cases, it is customary for the parties to gross up the payment due to

the CONTRACTOR after providing for the prevailing rate of taxation. However, problems could arise in cases when the rate of taxation is altered to the disadvantage of the CONTRACTOR.

Therefore care should be taken to ensure that the CONTRACTOR is insulated from changes in tax laws; otherwise he is likely to build into the Contract Price a contingency amount to cover the risk of tax variations. Efforts should also be made by the parties to minimize the tax burden, and care should be taken to ensure that whenever the PURCHASER has taken on the tax liability, the CONTRACTOR reimburses the PURCHASER with any tax saving that he may have in his country.

Since tax provisions vary significantly from country to country, this Article has to be drawn up by the parties concerned and, hence, it has been left blank in the model form of Contract although self-explanatory footnotes have been added.

Article 32. Suspension of work

This Article governs those situations where for some reason all or part of the work under the Contract is required to be suspended. Article 32 provides that, in the event that a suspension period is unspecified, the PURCHASER shall specify it in writing within 45 Days from the first Day of suspension. During this period the CONTRACTOR is not allowed to remove from the Site any Materials or part(s) of the plant without the permission of the PURCHASER.

32.4 These Articles cover the payments due in the event that the suspension to period does not exceed 90 Days (Article 32.4), is in excess of 90 Days 32.6 (Article 32.5) or, in text A exceeds 365 Days, and in text B exceeds 180 Days (Article 32.6). In the event of suspension(s), the PURCHASER is required to grant commensurate extension(s) of time to compensate the CONTRACTOR for losses of time affecting the Contract schedule. Furthermore, payments and/or reimbursements should be defrayed by the PURCHASER in the event that the CONTRACTOR reasonably justifies his additional costs suffered as a result of the suspension. In any event, the right to go to arbitration is preserved to settle disputes arising from these circumstances.

32.7 The validity of the Contract would not be affected in circumstances of suspension for the parties are required under this Article to make endeavours to resume work as soon as possible.

Article 33. Termination or cancellation of the Contract

This Article specifies the conditions upon which termination of the Contract may occur, and draws a distinction between the situations in which termination can take place and those in which cancellation of the Contract may be made.

It should be stressed that the circumstances that may result in the termination of the Contract under Article 33 do not include any of the occurrences that are covered by force majeure situations as defined in Article 34, except under Article 34.5 where termination can be contemplated. The PURCHASER should realize that the right to terminate ought not to be abused

and only conditions of severe magnitude might merit consideration of termination. In a financed Contract, the termination of the Contract would be governed by the conditions attached to the financing arrangements.

33.3 It is important to acknowledge the rights of the parties in a situation and where termination notice has been given. Article 33.3 covers the basis
33.5 for legitimate payments due to the CONTRACTOR and which shall be discharged. Article 33.5 establishes the right of the PURCHASER to receive certain documents which are necessary for completing the Contract using the technology acquired.

Articles 33.5.1 and 33.5.2 enumerate the documentation to be received by the PURCHASER in the event of termination. In Article 33.5.1, under text A, the PURCHASER has the right to receive the process licensor's documentation to the extent that he has made payments pursuant to Articles 20.2 and 20.10. In text B, this is to be mutually agreed on a case-to-case basis, based upon whether the PURCHASER is entitled to the licence or not and taking into account the stage at which the Contract is terminated.

In Article 33.5.2.2, under text A, the PURCHASER is entitled to receive all the engineering calculations (print-outs) made by the CONTRACTOR up to the date of termination. In text B, this Article is removed because the CONTRACTOR is not in a position to give all his detailed engineering calculations, except those available at the Site.

The PURCHASER's right to cancel the Contract stems from situations where the CONTRACTOR has gravely defaulted or delayed execution of the work, or has been involved in circumstances resulting in insolvency, bankruptcy, or has abandoned the work.

In Article 33.7.5, text A gives the PURCHASER the right to cancel the Contract if proper disclosures, according to Article 40, are not made by the CONTRACTOR. In text B, this Article is removed.

Article 34. Force majeure

The concept of force majeure as expressed in this model form of Contract is defined in Article 34.1. The party invoking force majeure is obliged to take all reasonable steps to overcome the circumstances of force majeure to the degree possible in order to facilitate the execution of the Contract.

However, if force majeure circumstances prevent or continue to delay the performance of obligations, the party affected is obliged to give appropriate notice specifying the conditions constituting force majeure. In some instances, proof may be required by the other party that conditions of force majeure do in fact exist.

34.1 Since the definition of force majeure could differ in different jurisdictions, certain causes of force majeure that could be encountered are enumerated in Article 34.1. These include strikes or lock-outs, except where it is within the power of the party invoking the force majeure to prevent them.

34.5 This Article covers the options that the parties have in the event that force majeure continues uninterrupted for a period of 9 months. Text A requires the parties, in cases where force majeure extends beyond 9 months,

to seek arbitration if they are unable to amend the terms of the Contract to cover prevailing force majeure circumstances or to reach an agreement to terminate the Contract. When the implementation of the Contract has been affected by force majeure, and not for any other reason within the control of either party, the parties should not have the unilateral right to terminate the Contract and even the decision to terminate the Contract should be by mutual agreement.

Text B, however, gives the parties the right to terminate the Contract in the event that force majeure has continued for a period beyond 9 months and the parties are unable to come to an agreement to amend the terms of the Contract because of the prevailing force majeure situation.

- 34.6 This Article acknowledges that the PURCHASER's inability to make payments under the Contract shall not be claimed to be or considered to be a legitimate force majeure within the scope of this Contract. In cases of unusual circumstances the right to arbitration is preserved.

Article 35. Language governing the Contract

This Article governs the language to be used in the Contract. It has been the practice to write contracts in an internationally recognized language employing terms and expressions commonly used and understood among the contracting parties.

In cases where the Contract is written in two versions using different languages, the official version should be specified in this Article.

Article 36. Applicable laws and conformity with local statutes

- 36.1 This Article deals with the laws that shall be applicable to the Contract. Normally the laws would be those of a neutral country but in some countries, particularly where public sector projects are concerned, only the laws of the PURCHASER's country may be permitted. Hence, this Article should be considered on a case-to-case basis.
- 36.2 This Article covers the consequences of any laws enacted in the PURCHASER's country after the Effective Date of the Contract and lays down a procedure for modifications, if required.

Article 37. Settlement of disputes and arbitration

This Article deals with the settlement of disputes, which has been particularly detailed in the model form of Contract so that Article 37 can, to the extent possible, stand on its own merits and permit (through an annexure to be formulated later) an ad hoc arbitration that may be quicker and cheaper than existing methods. Alternatively, Article 37 provides for the use of the procedures of an agreed arbitration court such as the International Chamber of Commerce. In this case, the applicable rules of procedure should be specified in a new annexure.

In all cases, the model form of Contract calls for an attempt at reconciliation before formal arbitration. In the first instance, the parties are required to nominate a Neutral Independent Person to reconcile any dispute. In case the parties cannot agree to a Neutral Person, or the differences cannot be reconciled within 6 months, the parties shall proceed to arbitration.

- 37.6 It is agreed that during arbitration proceedings both parties shall carry on their obligations under the Contract and continue the work on the disputed portion provided that, if the CONTRACTOR claims additional costs, the PURCHASER shall give him a bank guarantee (Article 37.6.1) covering such costs but payable only at, and to the extent of, the arbitration award in favour of the CONTRACTOR.
- 37.8 It is suggested that the venue of arbitration should be in a neutral country.

Article 38. General provisions

This Article consists of provisions of a general nature common to contracts of this type.

- 38.7 This Article gives the PURCHASER the right to sell the Products in any market without restrictions being imposed by the CONTRACTOR. However, in some cases, licensors, particularly when they are producers themselves, may impose marketing restrictions on products manufactured under their licence. This situation should be discussed and clarified at the tender stage.

Article 39. Notices and approvals

This is a standard Article dealing with the addresses to which notices are to be sent. It also indicates (Article 39.3) that all approvals required under the Contract shall be in writing.

Article 40. Disclosures

- 40.1 This Article lays down that no commissions should be received by the CONTRACTOR from any Vendor from whom procurement is being made on behalf of the PURCHASER, and if any are received, they should be refunded to the PURCHASER.
- 40.2 Text A of this Article prescribes that no commission should be paid to third parties, except the bona fide agents of the CONTRACTOR in the PURCHASER's country, in relation to the award of the Contract. Even when payments are made to agents in the PURCHASER's country, the CONTRACTOR is required to disclose details of such payments to the PURCHASER, for there have been instances in developing countries of agents using a part of their commission to influence the award of contracts to particular parties.

Text B stresses that in order to protect the CONTRACTOR's commercial interests and activities, the CONTRACTOR should not be required to disclose his financial arrangements with his bona fide agents. However, the need is recognized to prevent the CONTRACTOR from paying a fee or commission to any employee of the PURCHASER in relation to the award of the Contract.

Part Two

TEXT OF THE MODEL FORM OF COST-REIMBURSABLE CONTRACT

III. TEXT OF THE MODEL FORM OF COST-REIMBURSABLE CONTRACT

ARTICLE 1

Definitions

Unless the context otherwise requires, the following expressions shall have the following meanings assigned to them in this Article.

- 1.1 "PURCHASER" shall mean the party named as such in this Contract or his successors or permitted assigns.
- 1.2 "CONTRACTOR" shall mean the party named as such in this Contract or his successors or permitted assigns.
- 1.3 "Contract" shall mean this Contract (together with the annexures) entered into between the PURCHASER and the CONTRACTOR for the execution of the work howsoever made, together with all of the documents to which reference has been made in the Contract documents, including such amendments and/or changes (properly made from time to time by mutual agreement between the parties) to the documents constituting this Contract.
- 1.4 "Absolute Guarantees" shall mean the Performance Guarantees of the Ammonia Plant and the Urea Plant as set forth in Articles 26.2.1, 26.3.1 and annexures XVI and XXXI.
- 1.5 "Act of Bankruptcy" has the meaning assigned to it by the Bankruptcy Acts in the applicable jurisdictions under governing laws.
- 1.6 "Approval" shall have the meaning ascribed to it in Article 39.3.
- 1.7 "Battery Limits" shall be defined to mean the overall limits which include the facilities embodying the Plant as detailed in annexure III.
 - 1.7.1 The Battery Limits of each individual Plant shall include all the facilities existent between the points at which raw materials and influent streams enter the Plant and the points at which finished materials and effluent streams leave the Plant and shall be deemed to include, except where otherwise provided, the storage for the Products.
- 1.8 "Civil Works" shall mean all the buildings, roads, foundations and any other work requiring civil engineering.
- 1.9 "Commercial Production" shall mean the continuous production of specification-grade ammonia and urea at the rate and for the period specified in Article 18.7.
- 1.10 "Confidential Information" shall mean the confidential information defined as such in Article 7.
- 1.11 "CONTRACTOR's Equipment" shall mean any equipment, sheds, materials, tools, stores or things brought on to the Site by or on behalf of the CONTRACTOR for the execution of the Contract, but not for permanent incorporation in the Plant.

- 1.12 "Contract Price" shall mean the total amount referred to in Article 20.1 subject, however, to any valid adjustments made through the application of the relevant contractual provisions provided.
- 1.13 "CONTRACTOR's Services" shall mean the services to be provided and the work to be done by the CONTRACTOR in the execution of the Plant, as set out in the Contract.
- 1.14 "Critical Items" shall mean all the Equipment specifically designated as such in annexure VIII.
- 1.15 "Day(s)" shall mean calendar day(s).
- 1.16 "Effective Date of the Contract" shall mean the date that the Contract comes into force in accordance with Article 8.
- 1.17 "Technical Adviser" shall mean 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 and/or grant such approvals as may be necessary for the purposes of this Contract.
- 1.18 "Equipment" shall mean all the equipment, machinery, instruments, commissioning equipment and spares, and all other items required for incorporation in the Plant, or required to operate the Plant in order for the Plant to be built and operated in accordance with the Contract, and in respect of which the CONTRACTOR has provided procurement services.
- 1.18.1 "Materials" shall mean the chemicals, catalysts and other consumable materials in respect of which the CONTRACTOR has provided procurement services.
- 1.19 "Final Acceptance" shall mean the acceptance by the PURCHASER of the Plant in accordance with Article 18 and specifically Article 18.12 and the issue of a Final Acceptance Certificate.
- 1.20 "FOB", "FOR" and "CIF" shall have the meanings assigned to them in Incoterms 1953, published by the International Chamber of Commerce, as revised up to the signing of the Contract.
- 1.21 "Initial Operation" shall mean providing the first input of the feedstock to the Plant concerned.
- 1.22 "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 each of the Plants and inclusive of facilities within the Plants, and all sections of the Off-Sites within Battery Limits have been issued.
- 1.23 "Neutral Independent Person" or "Independent Consultant" shall mean a third party selected by the CONTRACTOR and the PURCHASER by mutual agreement to carry out functions in accordance with the Contract and, in particular, Article 37.
- 1.24 "Penaltable Guarantees" shall mean the Performance Guarantees of the Plant as set forth in Articles 26.2.2 and 26.3.2.

- 1.25 "Performance Guarantees" shall mean the Absolute Guarantees and the Penaltiable Guarantees.
- 1.26 "Performance Guarantee Tests" shall mean the test operation of each individual Plant and the Plant as a whole to be undertaken for the purpose of demonstrating the Performance Guarantees, as specified in Article 26.
- 1.27 "Plant" shall mean the Ammonia Plant, the Urea Plant and the Off-Sites, as defined in this sub-Article and in the annexures, to be constructed at the Site, and in respect of which the CONTRACTOR's Services are provided.
- 1.27.1 "Ammonia Plant" shall mean the facilities for the production of ammonia, as described in annexure VIII.
- 1.27.2 "Urea Plant" shall mean the facilities for the production of urea as described in annexure VIII.
- 1.27.3 "Off-Sites" shall mean the facilites demarcated and indicated in the annexures and the plot plan attached to annexure III.
- 1.28 "Products" shall mean the ammonia and the carbon dioxide produced in the Ammonia Plant and the urea produced in the Urea Plant, of such quality as specified in annexure XVI.
- 1.29 "Provisional Acceptance" shall mean the Provisional Acceptance of the Plant by the PURCHASER and the issue of a Certificate of Provisional Acceptance in accordance with Article 18 after meeting the Performance Guarantees specified in Article 26 and the annexures.
- 1.30 "Ready for Operation" shall mean that the Plant(s) concerned have completed the Mechanical Completion Tests and are ready for Initial Operation.
- 1.31 "Site" shall mean the land upon which the Plant(s) are to be constructed as specified in annexure I.
- 1.32 "Subcontractor" shall mean any person or firm to whom any part of the CONTRACTOR's Services or the execution of any part of the Contract is subcontracted by the CONTRACTOR.
- 1.33 "Start-Up" shall refer to the date by which the operations of precommissioning and commissioning shall have been completed and the Plant(s) commences (commence) the production of Product(s).
- 1.34 "Technical Documentation" shall mean the technical documents described in annexure XV to be supplied by the CONTRACTOR under the Contract and shall include all other technical documentation required to be supplied by the CONTRACTOR.
- 1.35 "Tonne(s)" refers (refer) to metric tonne(s).
- 1.36 "Vendor" shall mean the person or persons from whom the supply of any part of the Plant, Equipment and Materials is obtained by the PURCHASER in accordance with Article 10.

ARTICLE 2

Object of the Contract and cost of the project

- 2.1 The object of the Contract is to establish a modern, reliable, efficient and integrated Plant, suitable to the location, for the production of ammonia and (prilled/uncoated) urea, together with the Off-Sites required for the purposes of the Contract. The scope of the Contract covers a cost-reimbursable type of Contract, which includes the grant of licence and know-how, the provision of basic and detailed engineering, the procurement of all the Equipment and Materials and the supply of supervisory services for the erection, commissioning and Start-Up of the Plant and the demonstration of the ability of the Plant to produce Products continuously at a capacity of (1,000) Tonnes per Day of ammonia and (1,725) Tonnes per Day of urea with a stream factor of 330 Days per calendar year.
- 2.2 The location of the Plant shall be at (name of town) in (country).
- 2.3 The Contract includes the provision of both on-Site and off-Site training services and facilities for the PURCHASER's personnel for the purpose of enabling it to operate and manage the Plant at optimum capacity and efficiency.
- 2.4 The time schedule(s) required to be maintained to complete the Plant on time shall be estimated as follows and the CONTRACTOR and the PURCHASER shall take all the necessary steps to adhere to it (them). The periods referred to herein in respect of the time schedule(s) shall commence from the Effective Date of the Contract in each case.
- 2.4.1 Know-how, basic engineering and the documents of detailed engineering related thereto shall be made available to the PURCHASER from (2 to 8) months.
- 2.4.2 Complete load drawings of the Plant and specifications for Civil Works shall be made available by the (6th) month.
- 2.4.3 Construction of Equipment foundations and Plant buildings shall start in the (10th) month.
- 2.4.4 FOB delivery of Equipment (with the exception of the Critical Items) shall commence no later than in the (14th) month and shall end (95 per cent by value) no later than in the (24th) month.
- 2.4.5 Delivery FOB of Critical Items shall not exceed (26) months.
- 2.4.6 Erection of the Plant shall start no later than in the (15th) month.
- 2.4.7 The Plant shall be mechanically complete in the (32nd) month, with a float of (2) months (i.e. thirty-two months plus two months' float), and shall be Started-Up thereafter.
- 2.4.8 Training of the PURCHASER's personnel outside the Plant shall be completed by the (_____) month.
- 2.4.9 The Plant shall be in Commercial Production by the (36th) month.

2.5 The CONTRACTOR and PURCHASER estimate that the Battery Limits costs of the project as of the date of the Contract are:

Know-how and basic engineering
Total engineering
Procurement, inspection and expediting
Training
Site supervision
Materials and Equipment, FOB/FOR
Freight, insurance, clearance, transport to Site
Civil Works (including foundations)
Erection (including erection equipment)
Start-Up and commissioning

Project cost _____
Spare parts _____
Total cost _____

2.5.1 The parties acknowledge that this estimate shall not constitute a guarantee of project cost.

2.6 It is acknowledged that the estimate of the cost of all Equipment and Materials, FOB/FOR as stated in Article 2.5, is an estimated amount of (amount). The CONTRACTOR shall submit to the PURCHASER within 4 months of the Effective Date of the Contract a revised estimate of the FOB/FOR cost of all Equipment and Materials to be procured under this Contract. The estimates shall be broken up by Plants and by sections thereof, to the extent practicable.

ARTICLE 3

Overall scope of work and division of responsibility

- 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
 - Utility requirements and distribution including the steam system network
 - Plant layout
 - Electric distribution
 - Effluent and emission specifications
 - Operation manuals
 - Maintenance manuals
 - 3.1.3 The detailed engineering for the Plant.
 - 3.1.4 Establishment of the list of Equipment and Materials and identification of time- and process-Critical Items.
 - 3.1.5 Pre-qualification of Vendors for the supply of Equipment and Materials.
 - 3.1.6 Procurement of all Equipment and Materials for the Plant.
 - 3.1.7 Inspection of Equipment and Materials during fabrication, on completion, and after packing, and providing certificates of inspection.
 - 3.1.8 Provision of test certificates for Equipment and Materials wherever laid down under the laws of the country of fabrication and/or the laws of (PURCHASER's country).
 - 3.1.9 Packing and transportation consisting of:
 - 3.1.9.1 Packing of the Equipment and Materials in seaworthy/ roadworthy packing, marking of the packages, and transport of the Equipment and Materials from the shops to the point of dispatch FOB (or FOR) as the case may be.
 - 3.1.9.2 Transport of the Equipment and Materials from the point of dispatch FOB (or FOR) as the case may be to the Site, including loading and unloading at harbours and customs clearance and other formalities, if any.
 - 3.1.10 Arranging all necessary insurance coverage.

- 3.1.11 Purchasing and acquiring the Site for the Plant.
- 3.1.12 Clearing, levelling and otherwise developing the Site.
- 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 them to the national rail network.
- 3.1.16 Arranging for all telephone and other similar facilities for communications within the Site and from the Site to other places.
- 3.1.17 Design and construction of all Civil Works within the Battery Limits consisting of:
 - 3.1.17.1 Civil engineering.
 - 3.1.17.2 Construction of the Civil Works.
- 3.1.18 Construction of housing for erection and Start-Up personnel.
- 3.1.19 Construction of a township for permanent staff and workers for the operation of the Plant.
- 3.1.20 Receipt and inspection of Equipment and Materials at the Site and making claims for insurance or for short supply, if required.
- 3.1.21 Storage of Equipment and Materials at the Site prior to erection.
- 3.1.22 Providing all erection equipment, tools and tackle, and procuring all erection materials.
- 3.1.23 Erecting all Equipment.
- 3.1.24 Providing training for plant engineers and plant operators.
- 3.1.25 Testing all erected Equipment and Materials individually, by sections and as a complete Plant, and carrying out all pre-commissioning procedures.
- 3.1.26 Supplying feedstock materials and all other inputs, including outside-purchased utilities, necessary for the Start-Up of the Plant.
- 3.1.27 Commissioning and Start-Up of the Plant until Products are obtained.
- 3.1.28 Operation of the Plant from Start-Up until completion of the Performance Guarantee Tests for the Plant.
- 3.1.29 Demonstrating the Performance Guarantee Tests.

- 3.1.30 (Optional.) Providing management of the construction and erection of the Plant until Mechanical Completion, in accordance with the provisions of Article 13.2, and management of the operation of the Plant from Mechanical Completion to Provisional Acceptance.
 - 3.1.31 (Optional.) Providing management assistance following Provisional Acceptance of the Plant until Final Acceptance as specified in Article 17.
 - 3.1.32 (Optional.) Providing technical advisory services in accordance with terms and conditions to cover those services referred to in Article 17.
- 3.2 For each of the functions described in the scope of work above and in the context of the obligations of the CONTRACTOR and the PURCHASER (as expressed in Articles 4 and 5 and elsewhere in the Contract) the division of responsibilities shall be as follows:
- 3.2.1 The PURCHASER shall be responsible for the work to be undertaken under Articles 3.1.11 to 3.1.16, 3.1.17.2, 3.1.18 and 3.1.19. Unless otherwise agreed between the CONTRACTOR and the PURCHASER, the PURCHASER shall also be responsible for the work under Article 3.1.17.1.
 - 3.2.2 The PURCHASER shall also be responsible for the work to be undertaken under Articles 3.1.1, 3.1.9.2, 3.1.20, 3.1.21, 3.1.22 and 3.1.26, however, with the assistance of and/or verification by the CONTRACTOR whenever required as provided for particularly under Articles 4, 5 and 6, or elsewhere in the Contract.
 - 3.2.3 The PURCHASER's personnel and/or parties appointed by the PURCHASER working under the supervision and direction of the CONTRACTOR shall undertake the work under Articles 3.1.23, 3.1.25, 3.1.27 and 3.1.28.
 - 3.2.4 The CONTRACTOR shall be responsible for the work to be undertaken under Articles 3.1.2 to 3.1.4, 3.1.6, 3.1.7 and 3.1.24. The CONTRACTOR shall be responsible for the supervision of the erection, testing, commissioning and operation of the Plant until completion of the Performance Guarantee Tests, as stated in Articles 3.1.23, 3.1.25, 3.1.27 and 3.1.28 and for demonstrating the Performance Guarantee Tests pursuant to Article 3.1.29 (utilizing the personnel of the PURCHASER).
 - 3.2.5 The PURCHASER and the CONTRACTOR shall be jointly responsible for the functions under Article 3.1.5, and for taking out the insurance contemplated in Article 3.1.10 in accordance with the obligations stated in Article 24.
 - 3.2.6 The functions under Articles 3.1.8 and 3.1.9.1 shall be the responsibility of the Vendors, but under the supervision of the CONTRACTOR as to the sufficiency and proper discharge of such responsibilities by the Vendors.
 - 3.2.7 (Optional.) The management assistance and technical services contemplated under Articles 3.1.30, 3.1.31 and 3.1.32 shall be embodied in separate agreements to be entered into by the

PURCHASER and the CONTRACTOR. The CONTRACTOR shall execute such an agreement at the option of the PURCHASER on terms to be mutually established before the completion of the Performance 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 to 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. Payments due, if any, shall be governed by the provisions of Article 15.
- 3.4 The PURCHASER and the CONTRACTOR may by mutual agreement amend or change the conditions governing the responsibility or work to be undertaken. All amendments and/or changes to be incorporated in the terms of the Contract shall be made in writing by duly constituted and authorized representatives of the parties hereto, and the Contract together with such amendments and changes shall be deemed to have full force and effect.

ARTICLE 4

Obligations of the CONTRACTOR

- 4.1 The overall obligations of the CONTRACTOR pursuant to this Contract, and for specifications in the scope of the work and division of responsibilities (contained in Article 3) are described more particularly in this Article and in annexure VI, as well as in other relevant parts of this Contract. The CONTRACTOR shall be responsible for all such obligations.
- 4.2 The CONTRACTOR shall, commencing within (7) Days of the Effective Date of the Contract, proceed with the utmost diligence and care in carrying out all of the Services specified as being his obligation in Articles 3, 4 and 6 and elsewhere in the Contract and provide such documentation as is indicated in annexure XV.
- 4.3 The CONTRACTOR shall execute the work in accordance with good engineering practice and the specifications and basic design as stipulated in the Contract. The execution of the work shall be subject to such variations, changes and additions that may be required to be incorporated in accordance with the provisions of Article 15.
- 4.4 The PURCHASER shall provide the CONTRACTOR with information pertaining to the suitability of the Site, the applicable laws, rules and regulations, or import restrictions in (PURCHASER's country) that is available to the PURCHASER. The CONTRACTOR shall review all such information, and obtain such other information as he may consider necessary to carry out his work under the Contract, particularly that bearing on transportation, disposal, handling and storage of Equipment and Materials, availability of water and power for construction purposes, approach roads, physical condition of the Site, uncertainty of weather and ground conditions. It shall be the responsibility of the CONTRACTOR in any event to obtain all the information required for him to carry out his obligations under the Contract.
- 4.4.1 The design basis for the Plant is contained in annexures II and IV. However, this shall be reviewed by the CONTRACTOR. If the review by the CONTRACTOR shows differences in the design basis, the PURCHASER and the CONTRACTOR shall meet to discuss changes in the Contract specifications and the resultant changes in the CONTRACTOR's obligations or price, if any. These changes shall be embodied in a change order pursuant to Article 15.
- 4.5 The CONTRACTOR shall provide or obtain as the case may be the know-how and basic engineering for various processes from the process licensor(s) as follows:

Ammonia Plant	(name of licensor(s))
Urea Plant	(name of licensor(s))
(Others as specified, e.g. water treatment)	

and shall design the Plant in conformity with the basic engineering and design criteria of the process licensor(s). Documentation relative to all know-how and basic engineering obtained from the Licensor(s) shall be provided to the PURCHASER by the CONTRACTOR. The CONTRACTOR also hereby agrees that the documents referred to in this Article 4.5 shall cover and be based upon the latest commercially proven know-how

available to the process licensor(s) (such documentation to cover the know-how at the time of the signing of the Contract, or, if mutually agreed to, at a later date) and that the detailed engineering shall be undertaken by the CONTRACTOR according to the latest design standards available and/or known to the CONTRACTOR at the time of design.

- 4.6 The CONTRACTOR shall undertake the detailed engineering of the Plant and shall perform the basic and detailed engineering of the Plant in order that:
- 4.6.1 The Plant shall constitute, when assembled, a technological entity, capable of producing the Products of the quality and quantity in accordance with the criteria and Performance Guarantees set out in this Contract and in compliance with the 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 PURCHASER to carry out his obligations in accordance with Articles 3 and 5.
- 4.7 The CONTRACTOR shall carry out the engineering of the Plant(s) in accordance with the standards and codes laid down in annexure II including mandatory national standards. Where specialized design criteria are being used, the PURCHASER shall be advised of such specialized design codes. Notwithstanding the use of the codes and standards indicated in annexure II, if the CONTRACTOR is aware up to the date of signing the Contract of superior engineering codes or design methods, or where experience from previous contracts has resulted in proven improvements, the CONTRACTOR shall use such improved methods or codes in the design of the Plant and, where required, shall make the appropriate data and design methods available to the PURCHASER. The CONTRACTOR shall also take into account all safety rules/regulations normal to industrial practice, and safety regulations prescribed in (PURCHASER'S country), as stated in annexure II.
- 4.8 Prior to the expiry of (6) months following the Effective Date of the Contract, the CONTRACTOR shall confirm to the PURCHASER the requirements for the supply of outside utilities (such as power, water, maximum hourly quantities etc.). The requirements for all chemicals and other essential materials required for the Initial Operation of the Plant (and the period thereafter), shall be made known by the CONTRACTOR to the PURCHASER within the period of at least (12) months prior to the Mechanical Completion of the Plant.
- 4.9 The CONTRACTOR shall establish a complete list of Equipment and Materials to be procured under this Contract, and shall identify Critical Items. The special procedure for purchasing Critical Items and spare parts shall be agreed to by the CONTRACTOR and the PURCHASER as specified in the Contract, and procurement shall be expeditiously undertaken by the CONTRACTOR and the PURCHASER to meet the time schedule laid down in Article 2.
- 4.10 The CONTRACTOR and the PURCHASER shall jointly pre-qualify Vendors in accordance with Article 10 and annexure XXVI.
- 4.11 The CONTRACTOR shall advise and assist the PURCHASER during the pre-qualification of Vendors, and shall give to the PURCHASER appropriate

data and information known to the CONTRACTOR on the ability of the Vendors to meet specifications, and their reliability during actual operation of the Equipment of different Vendors. If the CONTRACTOR has sound reasons for the exclusion of certain Vendors, he may so recommend to the PURCHASER in accordance with Article 10.2.1.

- 4.12 The CONTRACTOR shall procure all Equipment and Materials 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 purchase is ultimately to be made on the PURCHASER's account, the CONTRACTOR shall be obligated to ensure that all procurement is accomplished so as to enable the Plant to meet the objectives expressed in Article 2, subject to the PURCHASER carrying out his obligations. The CONTRACTOR shall also assist the PURCHASER in obtaining remedial action from Vendors (where such is necessary) and the CONTRACTOR's Services for any required procurement and/or inspection shall be discharged free of additional costs to the PURCHASER. However, this Article shall not be construed as imposing a liability on the CONTRACTOR for non-fulfilment of the obligations of Vendors, except where such non-fulfilment is due to incorrect or inappropriate instructions issued by the CONTRACTOR, or to a defect in the purchase orders issued to Vendors by the CONTRACTOR, or issued with his approval.
- 4.13 The limitations as to the size and weight of packages are contained in the annexures to this Contract, and the CONTRACTOR shall design and procure the Plant accordingly. Within the first 4 months of this Contract, the PURCHASER and the CONTRACTOR shall review all transport of Equipment and Materials from the port of entry to the Site, in accordance with Article 6.
- 4.14 The CONTRACTOR shall undertake the inspection of all Equipment and Materials and arrange for the issue of all test certificates, and shall be obligated to require the proper carrying out by the Vendors of all packaging and the expediting of necessary transportation FOB to the point of dispatch.
- 4.15 The CONTRACTOR shall depute a representative on the Site to inspect all Equipment and Materials on receipt at the Site and to identify, along with the PURCHASER's representatives, any shortages and breakages 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 the Site.
- 4.16 The CONTRACTOR shall, within (4) months after the Effective Date of the Contract, provide a list of heavy erection equipment and within (8) months a list of all other erection equipment and materials to the PURCHASER.
- 4.17 The CONTRACTOR shall provide an adequate number of supervisory personnel for the erection, mechanical testing, commissioning, Start-Up and Initial Operation of the Plant. The CONTRACTOR shall also undertake supervisory responsibilities of the PURCHASER's personnel and direct the testing, Start-Up and demonstration of Performance Guarantee Tests in accordance with the requirements of the Contract. The particulars relating to the number and duration of stay of such personnel are contained in annexure XXVII; however, the adequacy of the requirements shall be reviewed by the CONTRACTOR and the PURCHASER within 8 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 in such a manner that the progress of work at the Site is carried out expeditiously and, as far as possible, in accordance with the time schedule contained in annexure XV and the PURCHASER shall provide all work permits, if they are required, in good time. The CONTRACTOR shall send particulars of such personnel to the PURCHASER at least (4) months before such personnel are required at the Site.

- 4.18 The CONTRACTOR shall supply all Technical Documentation within the time period(s) laid down in annexure XV and Article 12. In particular, the CONTRACTOR shall be required to supply all necessary data in good time to enable the PURCHASER to undertake his responsibility for civil engineering and erection in accordance with Articles 5.12 and 5.13.
- 4.19 The CONTRACTOR shall provide training to the PURCHASER's personnel in accordance with Article 16 and annexure XVIII. The CONTRACTOR shall ensure that the amount and level of training (to be arranged and supervised by the CONTRACTOR within and/or outside the country of the PURCHASER) of the PURCHASER's personnel are adequate for the smooth operation and maintenance of the Plant in peak condition. The PURCHASER shall ensure that the personnel sent for training meet the educational standards laid down in annexure XVIII.
- 4.20 The CONTRACTOR shall satisfactorily demonstrate to the PURCHASER the carrying out of the Performance Guarantee Tests in accordance with the provisions laid down in the Contract.
- 4.21 The CONTRACTOR shall commence the Performance Guarantee Tests of the Ammonia Plant and of the Urea Plant within (90) Days after the Start-Up of the respective Plant, but in any event not later than 6 months after Mechanical Completion of the respective Plant, provided that the PURCHASER has carried out his obligation to supply feedstock, outside utilities, chemicals and other agreed materials and has provided the agreed number of operating and maintenance staff, as well as an agreed complement of spare parts. The CONTRACTOR shall be allowed to extend this period and repeat the Performance Guarantee Tests in accordance with Article 26 and annexure XXXI.
- 4.21.1 The extension of time granted to the CONTRACTOR shall be governed by the provisions of Article 29.
- 4.22 In the event that the Plant is not capable of continued production at the rated capacity in a period of 12 months following Provisional Acceptance, owing to latent or patent design defects or inadequacies attributable to the CONTRACTOR, then the CONTRACTOR shall be responsible for rectifying the defects in accordance with Article 29, including the replacement of Equipment.
- 4.23 The CONTRACTOR shall check the detailed design and material specifications for Civil Works, submitted by the PURCHASER for the CONTRACTOR's review, for compliance with the specifications and drawings supplied by the CONTRACTOR (inclusive of all pipe areas and supports and those exposed to corrosive agents/environments).
- 4.24 Throughout the performance of the work the CONTRACTOR shall ensure that he, his employees, agents and invitees and his Subcontractors, their employees, agents and invitees while upon the Site, comply with all

applicable laws, rules and regulations. The CONTRACTOR shall at all times maintain good order among his employees and shall not employ on the Site any person unfit, undesirable, or anyone not skilled in the work assigned to him.

- 4.25 The CONTRACTOR shall be responsible for taking out and keeping in force the various insurance policies which are his responsibility under Article 24.
- 4.26 The CONTRACTOR shall provide the PURCHASER with sufficient office space and facilities, secretarial and typing services and reasonable telephone and telex facilities for the representatives of the PURCHASER assigned to the CONTRACTOR's home offices at (country).
- 4.27 Within (6) months of the Provisional Acceptance of the Plant, the CONTRACTOR shall prepare a set of "as-built" drawings or their equivalent for the Plant, under his supervision. The PURCHASER shall provide the necessary drafting office facilities and personnel.
- 4.28 (Optional.) The CONTRACTOR shall agree to grant an option to the PURCHASER for the execution of a separate agreement providing for technical advisory services to be provided by the CONTRACTOR to the PURCHASER upon mutually acceptable terms. Such an agreement shall become effective immediately following Provisional Acceptance of the Plant and shall have a duration of not less than () years. For the purposes of this Contract, the rights and obligations envisaged in such an agreement for technical advisory services shall be considered to be wholly separate and distinct from the liabilities and the responsibilities contained in this Contract. The terms of such agreement shall include (but shall not be restricted to) any one and/or other of the following matters:
 - 4.28.1 Provision of senior advisory personnel to conduct a half-yearly review of the Plant and the efficiency of its operation.
 - 4.28.2 Recommendations as to improvement of Plant operations.
 - 4.28.3 Provision of answers to technical queries related to Plant operations.
- 4.29 At the option of the PURCHASER, the CONTRACTOR shall enter into a separate agreement with the PURCHASER (as provided in Article 3.2.7) to manage the Plant, or to assist the PURCHASER to manage the Plant, as the PURCHASER may desire, for a period of () months after completion of the Performance Guarantee Tests, on terms to be mutually agreed when the option is exercised.

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 more particularly defined herein and as elsewhere expressed in the Contract. 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 undertakes to supply the information and data required as a basis for the design contained in annexures II and IV. The CONTRACTOR shall be obliged to examine the information and data for the design basis so specified, and shall expeditiously advise the PURCHASER on the adequacy and relevance of the information and data provided.
- 5.3 The PURCHASER and the CONTRACTOR shall jointly pre-qualify Vendors in accordance with Article 10 and annexure XXVI, and the PURCHASER shall comply with the procurement provisions contained in Article 10.
- 5.4 The PURCHASER shall be responsible for making all payments to Vendors, in accordance with the purchase orders issued to them in the name of the PURCHASER, and on the advice of the CONTRACTOR.
- 5.5 Whenever any approval(s) is (are) required from the PURCHASER under the provisions of this Contract, such approvals or reasons for withholding such approvals shall be conveyed to the CONTRACTOR within (___) Days of receipt, unless otherwise provided in this Contract. If no reply is received from the PURCHASER within the period specified, such items submitted for approval shall be deemed to be approved. The PURCHASER acknowledges that delays in approvals of purchase orders or in payments to Vendors (when due) could be detrimental to the time schedules contained in annexure XV.
- 5.6 The PURCHASER shall be responsible (unless otherwise agreed) for the transportation of Equipment and Materials from the port of dispatch (FOB) to the port of entry (CIF/FOR) in the PURCHASER's country, for clearance at the port of entry and for transportation of the Equipment and Materials to the Site.
- 5.7 The PURCHASER shall be responsible for all matters connected with obtaining and developing the Site.
- 5.8 The PURCHASER shall acquire and make available for development, within 3 months from the agreement on the layout and plot plan, the Site for construction of the work free of all encumbrances, including the necessary rights-of-way. The PURCHASER shall arrange for storage of Equipment and Materials.
- 5.9 The PURCHASER shall be responsible for carrying out soil tests. The CONTRACTOR shall, however, indicate the points at which heavy loads are to be expected, and shall also supervise such work relating to load tests, evaluate the results and shall convey his consent as to the adequacy of the load-bearing and soil tests. However, in the event of the CONTRACTOR's disagreement with the results of such tests, then, the PURCHASER and the CONTRACTOR shall determine the future course of action. The PURCHASER shall give at least (45) Days notice to the CONTRACTOR of the date on which such tests are to be commenced.

- 5.10 The PURCHASER shall be responsible for the timely design and construction of all road, rail and other means of communication within the Site.
- 5.11 Except where otherwise agreed between PURCHASER and CONTRACTOR, the PURCHASER shall be responsible for the design of all Civil Works. For this purpose, the CONTRACTOR shall ensure the timely supply of Technical Documentation relating to the design of the Civil Works in accordance with annexure XV.
- 5.12 The PURCHASER shall be responsible for the construction of all Civil Works.
- 5.13 The Plant shall be erected by the PURCHASER or by such other party/parties appointed by the PURCHASER (from a list of pre-qualified parties mutually agreed between the CONTRACTOR and the PURCHASER), under the supervision of the CONTRACTOR's personnel.
- 5.14 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 timely execution of the Contract inclusive of import licences, visas for CONTRACTOR's personnel, entry permits, work permits etc.
- 5.15 The PURCHASER's personnel at the Site shall carry out all testing and Start-Up and operation of the Plant until the completion of the Performance Guarantee Tests, under the supervision of the CONTRACTOR.
- 5.16 The PURCHASER shall provide feedstocks, outside utilities, chemicals and other materials required for the Start-Up, operation and maintenance of the Plant, unless otherwise specifically stated to be the responsibility of the CONTRACTOR in the Contract. The CONTRACTOR shall be obligated to advise the PURCHASER of the requirements for the supply of outside utilities, chemicals and other materials in accordance with the requirements of Article 4.8.
- 5.16.1 The feedstocks shall be in accordance with the specifications contained in this Contract or with such deviations as have been specified in this Contract. In the event of broader deviations, the parties hereto shall determine the technical changes required, if any, and this may constitute the basis for a change order under Article 15.
- 5.17 The PURCHASER shall provide operations and maintenance personnel for the Start-Up and operation of the Plant under the supervision of the CONTRACTOR throughout the period from the beginning of the mechanical testing of Equipment till the date of Provisional Acceptance of the Plant, in adequate numbers and competence commensurate with the requirements of manning, which requirements are to be developed by the CONTRACTOR in the form of a manpower and qualification chart which is to be agreed by the PURCHASER.
- 5.18 The PURCHASER shall provide the CONTRACTOR and his personnel deputed to the Site with such facilities as are detailed in annexure XXVII.
- 5.19 The PURCHASER shall make all payments to the CONTRACTOR in accordance with the provisions of this Contract.
- 5.20 The PURCHASER shall take out and maintain the insurance policies which are his specific responsibility as defined in Article 24.

5.21 The PURCHASER shall provide the CONTRACTOR with: office space, secretarial facilities and typing services for the CONTRACTOR's personnel assigned to the PURCHASER's office or to the Site.

ARTICLE 6

Co-operation and co-ordination between
the CONTRACTOR and the PURCHASER

- 6.1 The parties to this Contract hereby agree to co-operate, implement and execute the work as stipulated in the Contract. The parties through their designated representatives shall meet periodically according to a predetermined schedule and when necessary to examine the progress of work, costs that have been incurred and mutually agree to expedite/ economize the work and resolve outstanding issues.
- 6.2 The PURCHASER and the CONTRACTOR shall each appoint a project manager who shall co-ordinate and monitor the work under this Contract on behalf of the PURCHASER and the CONTRACTOR respectively, within the scope of the authority entrusted to each of them.
- 6.3 All notices, instructions and decisions on meetings shall be given in writing. Minutes of meetings shall be recorded and circulated for confirmation and necessary action. Minutes of meetings between the CONTRACTOR's and the PURCHASER's representatives held at the Site, or in the offices of the PURCHASER or the 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 within the time limits specified in annexure XV. The PURCHASER shall return such drawings, specifications and documents within the period specified in Articles 5.5 and 10.
- 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 Adviser present to discuss all matters of common interest, including but not restricted to the finalization of the co-ordination procedure, the procurement procedure, the list of Vendors, design criteria and Critical Items. The matters related to the concept of location of the Plant and Off-Sites within the Site shall be finalized at such meeting.
- 6.6 The CONTRACTOR shall immediately thereafter call for bids and prepare the necessary documents for placing orders for the Critical Items as identified in annexure XII.
- 6.7 Immediately after the inquiries for Critical Items are issued, the CONTRACTOR shall begin issuing the necessary inquiries to the pre-qualified Vendors for the remaining Equipment, expeditiously and in any event immediately following completion of the relevant engineering.
- 6.8 Within 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 Off-Sites, time schedule, project cost and production cost optimization, local procurement, training programme and other items of common interest shall also be discussed. The CONTRACTOR shall take into account in his 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 Contract Price, Performance Guarantees and/or time schedule arising from such changes.

- 6.9 The design services to be undertaken by the CONTRACTOR shall be undertaken entirely from his offices at (agreed places) and the prior approval of the PURCHASER shall be required to carry out any part of the work at other offices.
- 6.10 The PURCHASER shall post an engineer with suitable powers at the offices of the CONTRACTOR at (town) who shall have the right to examine and approve bid specifications, examine bid comparisons, approve and place orders for Equipment. The PURCHASER and the CONTRACTOR shall agree at the meeting contemplated in Article 6.8 the quantum of services and office personnel to be provided by the CONTRACTOR to the PURCHASER's engineers appointed to the CONTRACTOR's offices under this Article and Article 6.13.
- 6.11 The CONTRACTOR shall open an office at the 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 and Materials arrive at the Site. For the purpose of co-ordination, the CONTRACTOR's construction manager at the Site shall liaise with the senior site representative of the PURCHASER. The PURCHASER and the CONTRACTOR shall agree at the time of the meeting contemplated under Article 6.8, the quantum of services and office personnel which shall be provided by the PURCHASER at his cost, for the office of the CONTRACTOR at the Site.
- 6.12 The PURCHASER shall have the right to review completed work of the CONTRACTOR in the CONTRACTOR's offices so as to monitor the progress and status of the work. Such review will be reasonable both in scope and time so as not to interfere unduly with the CONTRACTOR's work.
- 6.13 The PURCHASER, if he so desires, shall have the right to assign up to a maximum of 4 engineers to the design offices of the CONTRACTOR at (town) to be present during the detailed design of the Plant, and the procurement of the Equipment and Materials. The CONTRACTOR shall make available to the engineers of the PURCHASER Technical Documentation, as defined in annexure XV, on the detailed design of the Plant and the procurement of the Equipment and Materials. All costs in connection with the travel and stay of his engineers shall be borne by the PURCHASER.

ARTICLE 7

Proprietary rights and licences, secrecy and patents

- 7.1 The CONTRACTOR hereby affirms that he has or has obtained the unqualified right(s) to grant, and hereby does grant to the PURCHASER irrevocable, non-exclusive, non-transferable, fully paid-up licence(s) for use in the operation of all the processes during the lifetime of the Plant.
- 7.2 The CONTRACTOR shall ensure (through specific arrangements, with proof provided to the PURCHASER) that the process licensor(s) shall make available to the PURCHASER through the CONTRACTOR all basic process data (received by the CONTRACTOR from the process licensor(s)) 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 together with copies of all documents mentioned in Article 3. The CONTRACTOR also hereby undertakes to make available to the PURCHASER the latest commercially proven know-how and techniques available to the process licensor(s) at the time of signing the Contract and to the CONTRACTOR at the time of design.
- 7.2.1 In circumstances where the CONTRACTOR is unable or unwilling to make available to the PURCHASER the necessary process know-how and related information, the PURCHASER shall be free to approach the process licensor(s) directly after giving notice in writing to the CONTRACTOR.
- 7.2.2 The PURCHASER shall also have the right to establish direct contractual arrangements with the said process licensor(s) in the event that the circumstances envisaged in Article 33 apply.

Text A

Text B

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| 7.3 The CONTRACTOR shall ensure that the process licensor(s) and the CONTRACTOR shall make available to the PURCHASER for a period of (8 to 10) years from the Effective Date of the Contract: | 7.3 The CONTRACTOR shall ensure that the process licensor(s) and the CONTRACTOR shall make available to the PURCHASER for a period of (<u> </u>) <u>5</u> / years from the Effective Date of the Contract: |
| 7.3.1 Free of charge: developments and improvements in operating techniques, preventive maintenance and safety measures applicable to the Plant, and other relevant technical data and information which are made available free of cost by the process licensors to other licensees within the same period. The PURCHASER shall also make available to the process licensor(s) and the CONTRACTOR, free of charge, any improvements in operating techniques which the PURCHASER shall have made in the same period. | |

5/ This figure is almost completely dependent on the licensing policy of the process licensor(s) (for text B only).

7.3.2 On payment: at a reasonable cost, and on agreed terms, including extension of secrecy agreements, rights to use proprietary processes developed or acquired by the CONTRACTOR including patented processes which could result in significant improvements in the capacity, reliability and efficiency of the Plant, and quality of the Products.

7.3.3 The CONTRACTOR shall be required to undertake of his own accord the obligations set forth in Article 7.3.1 and Article 7.3.2 for the period specified in Article 7.3.

7.4 The CONTRACTOR shall undertake to enter into specific arrangements with the process licensor(s) to ensure the continued availability to the PURCHASER of Confidential Information pursuant to Article 7.3.

7.5 Following the Final Acceptance of the Plant, if the PURCHASER determines that modifications are required to be made to parts of the Plant which are covered by licences under this Article (which in his opinion would result in improved or better Plant operation) or the PURCHASER requires an expansion or modernization of the Plant with incorporation of the latest developments of the licensed technology, then the PURCHASER shall first request in writing the CONTRACTOR to assist in accomplishing the necessary work. If the CONTRACTOR indicates in writing that he is unable or unwilling (for whatever reason) to undertake the same, then the PURCHASER shall have the right to employ or retain any other person, firm or agency, which is not a direct competitor of the CONTRACTOR (contractors holding the same licence shall not be considered as direct competitors), to undertake and complete such work referred to above and the PURCHASER shall not be held to be in breach of the secrecy provisions of this Article, provided, however, that the PURCHASER's new contractor agrees to the same secrecy provisions that the PURCHASER initially signed covering the technology of the CONTRACTOR and his licensor(s), with the secrecy termination date extended from the effective date of the new contract.

7.6 For the purposes of this Article, the grant to the PURCHASER of the right to use the processes referred to in Article 7.1 shall not be interpreted to mean a passing on to the PURCHASER of proprietary rights and title to the processes.

7.7 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 the CONTRACTOR or otherwise) in accordance with this Contract, all of which is hereinafter referred to as "Confidential Information". 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 advise the CONTRACTOR and provided further that the PURCHASER shall obligate the third party to treat such information as confidential whenever the third party is not already obligated by law to do so.

7.8 This Article shall not apply to such Confidential Information:

7.8.1 Which is or becomes a part of the public domain, through no fault of the PURCHASER.

7.8.2 Which is already known to the PURCHASER prior to disclosure by the CONTRACTOR and was not received directly or indirectly from the CONTRACTOR and/or the process licensor(s) and was obtained without any breach of confidentiality by other parties.

7.9 The PURCHASER shall not utilize the Confidential Information for any purpose other than for completing, operating, repairing, maintaining or de-bottlenecking the Plant(s). Similarly the CONTRACTOR shall not use or divulge any technical data or Confidential Information and drawings or technical documents given by the PURCHASER or his representatives, to the CONTRACTOR except for the purposes strictly connected with the Contract.

7.10 The PURCHASER and the CONTRACTOR hereby agree that the obligations contained in this Article subject to Article 7.11 below, shall not be affected by a termination and/or cancellation of this Contract under Article 33 herein.

Text A

Text B

7.11 Except when otherwise agreed, the PURCHASER's obligations pursuant to the provisions of sub-Articles 7.5, 7.7 and 7.9 shall be valid for a period of (8 to 10) years from the Effective Date of the Contract.

7.11 Except when otherwise agreed, the PURCHASER's obligations pursuant to the provisions of sub-Articles 7.5, 7.7 and 7.9 shall be valid for a period of (__) 5/ years from the Effective Date of the Contract.

7.12 The PURCHASER shall give the CONTRACTOR prompt notice, in writing, of any claim or suit for patent infringement (referred to in Article 22.1) of which he 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 his own choice at his own expense.

7.13 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 the Performance Guarantees mentioned in Article 26.

7.14 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.

Text A

Text B

7.15 The CONTRACTOR shall indemnify and hold harmless the PURCHASER in connection with any liability

7.15 The CONTRACTOR shall indemnify and hold harmless the PURCHASER in connection with any

arising out of patent infringement or use of proprietary information referred to in Article 7.7 in accordance with the requirements of Article 22.1.

liability arising out of patent infringement or use of proprietary information referred to in Article 7.7. In any event, the CONTRACTOR's total aggregate limit of liability under this Article 7 shall in no event exceed the following:

1. (amount) for any process for which he is the licensor and
2. the amounts recovered from third-party licensors for other processes.

Such limit of liability shall include all costs of defence both legal and engineering.

ARTICLE 8

Effective Date of the Contract

- 8.1 The Contract shall become valid upon the formal execution (signing) by the duly authorized officers of the PURCHASER and the CONTRACTOR properly witnessed and sealed and in accordance with the applicable law. The Effective Date of the Contract shall be the date upon which the last of the following requirements has been fulfilled:
- 8.1.1 Approval of the Contract by the Government of (country) where the Plant is to be located, such approval to be obtained by the PURCHASER, if required.
 - 8.1.2 Approval of the Government of (country) where the CONTRACTOR resides and has his principal place of business, such approval to be obtained by the CONTRACTOR, if required.
 - 8.1.3 The provision by the CONTRACTOR of the performance bond as provided under Article 21.1, to be effected simultaneously with the receipt of the advance payment by the CONTRACTOR, referred to in Article 21.2 and Article 8.1.4.
 - 8.1.4 The remittance of the advance payment by the PURCHASER as provided under Articles 20.10.1 and 20.11.1, secured by the bank guarantee as provided by the CONTRACTOR in accordance with Article 21.2.
 - 8.1.5 The PURCHASER has provided security for the remainder of the Contract payments on terms acceptable to the CONTRACTOR. 6/
- 8.2 In case the conditions of Article 8.1 are not fulfilled within () Days following the date of signature of the Contract, the Contract execution time and the Contract Price shall be reconsidered and modified by mutual agreement to take into account variations of economic conditions in the CONTRACTOR's and the PURCHASER's countries during the delayed period. 6/

6/ Article 8.1.5 and Article 8.2 can be used in specific cases.

ARTICLE 9

Assignment of the Contract

- 9.1 This Contract shall inure to the benefit of and be binding upon the parties hereto and each of their executors, administrators, curators, successors and assigns, however subject to the provisions of Article 9.2.
- 9.2 This Contract may not be assigned by the Contractor without the written consent of the PURCHASER.
- 9.3 The PURCHASER shall have the right to assign the Contract provided that such assignment does not increase the CONTRACTOR's liabilities over what they would have been if such assignment or transfer had not been made, and provided that the obligations of the PURCHASER are binding upon the assignee, as specified in Article 9.2, with assured guarantees for payment(s) under the Contract.
- 9.4 Neither the whole nor any part of the CONTRACTOR's Services may be subcontracted by the CONTRACTOR without the written consent of the PURCHASER.
- 9.5 The CONTRACTOR shall ensure that every subcontracting by the CONTRACTOR shall comply with all terms and conditions of this Contract.

ARTICLE 10

Procurement

- 10.1 It is understood and agreed that the timely procurement of the Equipment and Materials is essential to the implementation of the Contract and accordingly the CONTRACTOR shall make every attempt to meet the time schedules provided hereunder for providing procurement assistance to the PURCHASER for acquisition of the Equipment and Materials.
- 10.2 The CONTRACTOR shall supply to the PURCHASER the following services in connection with the procurement of the Equipment and Materials, in accordance with annexures VIII and XXVI.
- 10.2.1 The PURCHASER and the CONTRACTOR shall pre-qualify Vendors in accordance with the procedure laid down in annexure XXVI. A minimum of (3) and a maximum of (8) Vendors shall be pre-qualified, unless otherwise agreed between the PURCHASER and the CONTRACTOR. Vendors may be recommended for exclusion from pre-qualification by the CONTRACTOR for good and sufficient reasons.
- 10.2.2 The CONTRACTOR shall prepare the bid documents on the basis of the technical specifications prepared by him and submit the same to the PURCHASER, or his engineer deputed for this purpose in accordance with Article 6.10, for relevant approval, and shall send a copy to the Technical Adviser, if appointed, and shall issue the same to the Vendors in the manner agreed to in the procurement protocol. All goods to be supplied by Vendors under this Contract shall be "brand-new" and in accordance with Article 14. The bid documents shall specify that the Equipment to be purchased is "brand-new".
- 10.2.3 The CONTRACTOR shall send the bid documents on behalf of the PURCHASER to the respective Vendors listed in the list of Vendors (which list shall be agreed upon between the parties within (30) Days from the Effective Date of the Contract for Critical Items, and at least 1 month prior to the issue of tenders for other items).
- 10.2.4 The CONTRACTOR shall use his best endeavours to obtain from the Vendors a minimum of (3) competitive offers, except for the Critical Items as indicated in annexures VIII and XII.
- 10.2.5 The offers received from the Vendors shall be evaluated by the CONTRACTOR who shall submit the bid evaluation with appropriate recommendations to the PURCHASER for the relevant final selection. The PURCHASER's final selection of the Vendor shall be communicated to the CONTRACTOR within (20) Days from the date of receipt of the CONTRACTOR's submission of the bid tabulation. The PURCHASER shall endeavour to preclude the selection of Vendors who are unacceptable to the CONTRACTOR. The CONTRACTOR shall, however, substantiate the reasons for such unacceptability (if any) so as to enable the PURCHASER to re-evaluate the choice of such Vendor(s). The CONTRACTOR agrees and acknowledges that guarantee provisions and other criteria established by this Contract shall not be prejudiced

as a result of any difference arising between the PURCHASER and the CONTRACTOR as regards the final selection of the Vendor(s), provided, however, that the CONTRACTOR has the right to request for modifications to the Performance Guarantee requirements of the Contract reasonably commensurate with the circumstances.

- 10.2.6 In case the PURCHASER intends to select a Vendor who is not acceptable to the CONTRACTOR, the CONTRACTOR shall indicate the specific changes in his guarantee or other obligations, if any, which would result from such selection. The PURCHASER shall thereafter still have the choice of purchasing the Equipment from the selected Vendor subject to the reservations of, and modifications of the obligations of the CONTRACTOR.
- 10.2.7 After the selection of the Vendor(s) by the PURCHASER, the CONTRACTOR shall prepare for the PURCHASER's signature the relevant purchase orders on the PURCHASER's letterhead with proper terms and conditions in such purchase orders. These purchase orders shall be signed by the PURCHASER within () Days following their transmission by the CONTRACTOR. Any delay in the PURCHASER's approval and/or signature pursuant to Articles 10.2.5 and 10.2.7 shall automatically entitle the CONTRACTOR to the consequential extension of time pursuant to Article 19 hereinafter.
- 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) with (6) weeks' advance notice of the date when the Equipment and/or Materials shall be ready for dispatch from the shop of the respective Vendor.
- 10.4 The CONTRACTOR shall be responsible for the preparation, adequacy and accuracy of the bid specifications and purchase orders to be issued to the Vendors, in connection with the Equipment and Materials to be procured, the design of the Plant and the fulfilment of Performance Guarantees as 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 The CONTRACTOR shall complete the bid tabulations of Critical Items within (4) months from the Effective Date of the Contract.
- 10.7 The CONTRACTOR shall within (12) months from the Effective Date of the Contract issue tenders, obtain quotations and make final bid tabulations with regard to the supply of (95) per cent (by value) of the Equipment itemized with item numbers as required under annexure VIII.
- 10.7.1 In case there is no response to the bids or the response is not adequate, the CONTRACTOR and the PURCHASER shall by mutual agreement alter the periods provided for in Articles 10.6 and 10.7.
- 10.8 The CONTRACTOR shall make every endeavour to make final bid tabulations with regard to the supply of the remaining Equipment and Materials within (14) 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 Materials imported in (country), specifying in each case that the Equipment and Materials are to form part of a complete fertilizer Plant.
- 10.10 The CONTRACTOR shall use his best endeavours to obtain appropriate mechanical warranties from the Vendors in accordance with Article 28.
- 10.11 In the event that any Equipment has to be replaced, repaired or any additional Equipment is to be ordered, as required by the provisions of Article 29, the CONTRACTOR shall render, without additional cost to the PURCHASER, services relating to the procurement of all such Equipment in accordance with the procedure laid down in this Article 10 (or as otherwise agreed with the PURCHASER) or, if the Equipment is to be repaired, shall make suitable recommendations to the PURCHASER for repairs to the Equipment, and if services for such repairs are required from third parties, shall draw up specifications for such services by way of purchase orders to be issued by the PURCHASER. The costs for such repairs, replacement or additions to the Equipment shall be paid in accordance with Articles 15 and 29, and the CONTRACTOR shall be responsible for all rectifications, in accordance with Article 29.

ARTICLE 11

Time schedule

- 11.1 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 agreed that within (2) months after the Effective Date of the Contract the CONTRACTOR shall prepare a critical path network, generally conforming to the bar chart attached, which shall be discussed between the PURCHASER and the CONTRACTOR and shall be mutually approved, and which shall list significant activities connected with the completion of the Plant.
- 11.2 The critical path network shall be computerized by the CONTRACTOR and at the first design meeting contemplated under Article 6.5, the methodology shall be laid down to obtain the necessary inputs to maintain the print-out and deviations on a monthly basis. The critical path network itself shall be changed and modified as soon as slippage exceeds (10) per cent. Computerized print-outs indicating all activities and the float on a monthly basis shall be made available to the PURCHASER by the CONTRACTOR.

ARTICLE 12

Delivery and execution of the work

12.1 Delivery of documents

12.1.1 The CONTRACTOR shall ensure delivery to the PURCHASER of copies of all the know-how, basic engineering and licensing documents received by him from the process licensors, within 30 Days of receipt of such documents pursuant to the requirements of Article 4.5. The CONTRACTOR shall, in any case, ensure that all basic know-how documents required by him for carrying out his engineering functions, shall be available to him within the (4th) month of the Effective Date of the Contract, and that copies of the same are sent to the PURCHASER by the (5th) month after the Effective Date of the Contract.

12.1.2 The CONTRACTOR shall provide to the PURCHASER all the documents designated as "Technical Documentation" in annexure XV on the dates specified. The provisions of Article 27.1 shall apply in the event of late delivery of "penalizable documents" detailed in annexure XV.

12.1.3 The CONTRACTOR shall supply to the PURCHASER the complete manuals for the operation and maintenance of the Plant, as specified in further detail in annexure XXI. All manuals shall be supplied to the PURCHASER at least (6) months before Mechanical Completion of the Plant, and the operating manual, the maintenance manual and the laboratory manual shall be supplied (1 year) before Mechanical Completion in order to train the necessary operating and maintenance personnel at the Site.

12.2 Procurement services

12.2.1 The CONTRACTOR shall draw up and issue all the procurement bid specifications to the Vendors, for all process Equipment (excluding electricals, pipings, valves and instrumentation) by the (__) month and in any event not later than the (__) month after the Effective Date of the Contract.

12.2.2 Subject to the PURCHASER giving approvals in time, the CONTRACTOR shall issue purchase orders for all process Equipment (excluding electricals, piping, valves and instruments) by the (__) month, and at least 95 per cent by value of the Equipment in any event not later than the (__) month after the Effective Date of the Contract, and for all Critical Items by the (6th) month after the Effective Date of the Contract.

12.3 Training services

12.3.1 The CONTRACTOR shall draw up a programme for on-Site training of the PURCHASER's personnel in accordance with Article 16 and submit it to the PURCHASER by the (__) month after the Effective Date of the Contract for discussions and approval by the PURCHASER.

12.3.2 The CONTRACTOR and PURCHASER shall commence on-Site training by the (___) month from the Effective Date of the Contract.

12.3.3 The CONTRACTOR shall commence the training overseas of the PURCHASER's personnel as laid down in Article 16 and annexure XVIII on the (___) month after the Effective Date of the Contract, and shall complete the training by the (___) month.

12.4 Deputation of personnel

12.4.1 The CONTRACTOR shall make available to the PURCHASER the supervisory personnel to be deputed to the Site in accordance with annexure XXVII, clause 4.1 (or as may be otherwise agreed under clause 5.2 of that annexure) and shall thereafter depute personnel to the Site to conform with the requirements of annexure XXVII, within (30) Days of the PURCHASER requesting the deputation of any particular person to the Site.

12.4.2 The CONTRACTOR and the PURCHASER acknowledge that the number and category of personnel to be deputed to the Site referred to in annexure XXVII is tentative. Whenever additional personnel is required at the Site, the CONTRACTOR shall depute such additional personnel, when requested by the PURCHASER.

12.5 Inspection reports

12.5.1 The CONTRACTOR shall promptly make available to the PURCHASER copies of all inspection reports prepared by him, during manufacture by Vendors and/or on completion of any subcontract by Vendor(s). Where such reports are in a language other than the (_____) language, the CONTRACTOR shall supply a translation in the (_____) language.

12.5.2 The CONTRACTOR's personnel at the Site shall undertake such additional inspection as may be required to ensure that the Equipment and Materials have not been damaged during transport to the Site, and shall assist the PURCHASER in making insurance claims.

12.6 Start-Up, commissioning and testing

12.6.1 Before Start-Up, the CONTRACTOR and PURCHASER shall undertake all the necessary tests for the completion of the Plant as laid down in Article 18.

12.6.2 All supervisory, Start-Up and commissioning personnel of the CONTRACTOR shall be dispatched to the Site, at least (8) weeks before Start-Up, in accordance with annexure XXVII.

12.6.3 The CONTRACTOR shall provide all the necessary supervisory staff required to demonstrate the Performance Guarantees, in accordance with Article 26.

ARTICLE 13

Supervision of work and access to work

- 13.1 The services to be provided by the CONTRACTOR to the PURCHASER for the supervision of work at the Site or otherwise, are contained in the relevant provisions of the Contract.
- 13.2 In addition, should the PURCHASER so desire, he shall have the option of calling upon the CONTRACTOR to manage the construction, erection and commissioning operations at the Site, on behalf of the PURCHASER. However, this shall be the subject of a separate assistance agreement for project management during construction, to be entered into between the PURCHASER and the CONTRACTOR on terms and conditions to be mutually agreed and incorporated in that agreement.
- 13.3 The CONTRACTOR shall provide an adequate number of suitably qualified and experienced personnel for supervision of load tests (in accordance with Article 5.9), erection pre-commissioning and Start-Up of the Plant in accordance with the requirements of the Contract.
- 13.4 The CONTRACTOR and the PURCHASER and any person(s) authorized by either of them shall at all reasonable times have access to the Plant.
- 13.4.1 The CONTRACTOR shall use his best endeavours to obtain the right from Vendors for such access for the PURCHASER or his authorized representatives in connection with the execution of work.
- 13.5 The PURCHASER shall afford every facility and assistance for obtaining the right of access to such information, Site workshops or persons within his country as is required in connection with this Contract.
- 13.6 The CONTRACTOR and his authorized personnel shall have free access to the Site, storage yards, fabrication shops, facilities for the supply of utilities and laboratories, which are set up or intended for use for establishing the Plant. The PURCHASER shall provide the necessary assistance in obtaining permission from his Government in accordance with Article 5.14.
- 13.7 The CONTRACTOR shall be entitled to visit the Plant(s) in operation for a period of (__) years from the date of Provisional Acceptance of the Plant to examine them as to operating results, to make the measurements required for establishing exact operating data to demonstrate the Plant(s) to his potential customers. The CONTRACTOR shall give 4 weeks' notice to the PURCHASER for such visits, permission for which shall not be unreasonably withheld by the PURCHASER.
- 13.8 Where, in the opinion of the PURCHASER, it is necessary that technical consultants, provided that such technical consultants are not direct competitors of the CONTRACTOR, be sent to check the work of the CONTRACTOR, the CONTRACTOR shall allow them access to any place where work is being performed 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 7, and the technical consultants shall not disrupt the activities or obligations of the CONTRACTOR.

13.8.1 If the sending of such a technical consultant under Article 13.8 above involves delays and/or entails expenses incurred by the CONTRACTOR, the PURCHASER shall pay to the CONTRACTOR these expenses and the contractual time schedule shall be adjusted accordingly.

ARTICLE 14

Inspection, testing and certification

- 14.1 The CONTRACTOR shall be responsible for the inspection, testing and certification of all Equipment and Materials during manufacture and prior to dispatch.
- 14.2 The CONTRACTOR shall inspect or cause to be inspected the Equipment and Materials and obtain certification at all stages of work by the Vendors, and on completion of the orders.
- 14.2.1 Following the issue of purchase order(s), the CONTRACTOR shall carry out (in accordance with standard procedures) or cause to be carried out the inspection and testing, as per relevant codes given in the specifications at the shops of the Vendors during manufacture and before dispatch.
- 14.2.2 During progressive inspection of Equipment fabrication the CONTRACTOR shall take appropriate measures in order that the Vendors or their employees strictly follow fabrication instructions and codes specified by the CONTRACTOR, and that the quality of workmanship meets acceptable levels to enable the production of Equipment in accordance with the qualitative and quantitative standards expressed in the Contract.
- 14.2.3 The CONTRACTOR shall also require Vendors to provide the necessary test certificates and all other documents required by the inspecting authorities in the country of manufacture or as may be required by the PURCHASER in consideration of the regulations in force in (country) and/or as provided for in the Contract.
- 14.3 The CONTRACTOR shall issue or cause to be issued certificates of inspection for all the Equipment and Materials.
- 14.3.1 When the Equipment and Materials are ready for final inspection, the CONTRACTOR shall take appropriate measures in order that the purchase order(s) have been complied with correctly as specified.
- 14.3.2 The CONTRACTOR shall issue or cause to be issued a certificate of inspection in respect of each item of the Plant, Equipment and Materials before dispatch, and shall send copies of such certificates to the PURCHASER, and certificates of tests carried out in connection with the issue of such certificates of inspection.
- 14.4 Wherever required by the PURCHASER, the CONTRACTOR shall associate the PURCHASER or his representatives with such inspection, and arrange for joint inspection.
- 14.5 The CONTRACTOR shall expedite, co-ordinate and monitor the delivery of all Equipment and Materials efficiently in order that the Vendors maintain the delivery terms, conditions, and procedures contained in the purchase orders.
- 14.6 The CONTRACTOR shall take appropriate measures in order that the Vendors arrange in a timely manner all proper export licences, if necessary, to export the Equipment and Materials to (country).

- 14.7 The PURCHASER shall obtain the necessary import licences, permits and shall provide for shipping arrangements for the Equipment and Materials 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 (14) Days in advance to allow the Vendor(s) to make the necessary arrangements for loading the consignment on the ship.
- 14.8 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 suggest measures to overcome the 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.
- 14.9 The PURCHASER shall be responsible for the clearance of the Equipment, Materials and Technical Documentation at (name of port) and/or at other entry point(s) into (country) and for internal dispatch to the Site.

ARTICLE 15

Variations, changes and additions to the scope of the Contract

- 15.1 Whenever the PURCHASER shall make a request to the CONTRACTOR for a 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.
- 15.2 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 and effect on the time schedule, if any) agree to pay for such services in accordance with payment terms and time schedules to be mutually agreed.
- 15.3 The CONTRACTOR shall be entitled to claim for additional costs and/or time delays when a modification, change or variation occurs in the event of any one of the following:
 - 15.3.1 Any modification required by the PURCHASER which is an addition to the scope of the work as per Article 3 and obligations of the CONTRACTOR as per Article 4.
 - 15.3.2 Any additional engineering/re-engineering required for compliance with applicable laws and in conformity with local statutes consequent on changes in such laws or statutes enacted after the signing of the Contract.
 - 15.3.3 Any additional engineering/re-engineering required for compliance with local statutes consequent on changes in environmental protection standards, as for example, introduction of more stringent standards relating to air pollution and/or effluent characteristics that have been guaranteed by the CONTRACTOR and agreed to by the PURCHASER, at the time of the signing of the Contract.
 - 15.3.4 Any additional engineering/re-engineering required relating to incorporation of improvements in know-how or technologies that have become known after the signing of the Contract.
 - 15.3.5 Any additional engineering/re-engineering required consequent on the PURCHASER altering the specifications of the raw materials and/or changing the characteristics of the utilities and/or altering the basis of the meteorological data which had earlier been agreed as the basis of design between the PURCHASER and the CONTRACTOR.
- 15.4 In all cases envisaged in Article 15.3 and its sub-Articles, the CONTRACTOR shall furnish a breakdown in sufficient detail to permit an analysis of all material, labour, equipment, subcontracts and shall estimate project schedule overruns and specify design changes and shall further include all work involved in the variation and/or modification, whether such work is to be deleted, added or changed. The CONTRACTOR and the PURCHASER shall thereafter meet and discuss the implications of such variations.

- 15.5 Whenever the provisions of Article 15.3 are applicable, the CONTRACTOR shall prepare and submit to the PURCHASER a detailed cost and/or execution time estimate of the modifications to the CONTRACTOR's Services.
- 15.5.1 The PURCHASER shall within (___) Days agree or disagree on the adjustments proposed by the CONTRACTOR.
- 15.5.2 If the PURCHASER agrees on the: (a) cost, (b) execution time and (c) modified Performance Guarantees, if any, proposed by the CONTRACTOR, the cost shall be either added to or subtracted from the Contract Price as the case may be; and the Contract execution time shall be altered and the Performance Guarantees modified accordingly, wherever necessary.
- 15.5.3 If the CONTRACTOR and the PURCHASER do not agree either on the cost adjustments and/or time delays, and/or modifications of Performance Guarantees, the PURCHASER shall have the right to request the CONTRACTOR to proceed to execute the work pending settlement of the dispute in the manner prescribed in the Article below.
- 15.6 The PURCHASER and the CONTRACTOR shall mutually agree to nominate an independent consultant and refer the dispute to the independent consultant for a decision on the disputed points.
- 15.6.1 In the event that there is no agreement as to the choice of the independent consultant, the parties shall mutually agree to refer the matter to (7/) for the appointment of such independent consultant.
- 15.6.2 The decision of the independent consultant shall be without prejudice to the rights of either party to submit the dispute to arbitration in accordance with Article 37; however, and in such event, the PURCHASER shall make an "on account" payment to the CONTRACTOR of the sum in accordance with the decision of the independent consultant but without prejudice to the rights of either party for further adjustments of the amounts so paid consequent on the award rendered by the arbitrator.
- 15.7 Changes/variatioins as per the provisions in the Article on the CONTRACTOR's Services covered by this Article, and any modifications to the Contract Price and technical specifications contained in the Contract and/or time schedule shall be incorporated in a written change order which shall be signed and issued by the PURCHASER.

7/ To be determined from case to case by prior negotiations at the time of the signing of the Contract.

15.7.1 Upon receiving a change order from the PURCHASER either in accordance with Articles 15.2 or 15.3 and if in the opinion of the CONTRACTOR such variations are likely to prevent or prejudice the CONTRACTOR from fulfilling any of his obligations under the Contract, he shall notify the PURCHASER thereto in writing and the PURCHASER shall decide forthwith whether or not the same shall be carried out. If the PURCHASER reconfirms in writing his intention to carry out the variations, then the said obligations of the CONTRACTOR shall be modified to such an extent as may be justified.

15.8 Except as specifically provided for in this Article, any change to the CONTRACTOR's Services and/or to the work shall be governed by all the other provisions of the Contract.

ARTICLE 16

Training

- 16.1 The PURCHASER and the CONTRACTOR agree that the adequate training of the PURCHASER's personnel is a necessary condition for the fulfilment of the objectives of the Contract.
- 16.2 The CONTRACTOR shall provide training for the PURCHASER's personnel both at the Site and at other plants, in accordance with the requirements of annexure XVIII and Article 4.
- 16.3 Training facilities to be provided by the CONTRACTOR shall be as detailed in annexure XVIII.
- 16.4 The PURCHASER and the CONTRACTOR shall agree at the first co-ordination meeting contemplated under Article 6.8 the time, place and details to be established for the training of the PURCHASER's personnel and final details for training shall be forwarded to the PURCHASER within (__) months following the Effective Date of the Contract. The CONTRACTOR shall competently train the PURCHASER's personnel for the purposes and on the basis referred to herein for the periods contemplated in annexure XVIII at a plant or plants, using the processes of the process licensors identified in Article 4.5 who have commenced production in the 5 years immediately preceding the Effective Date of the Contract. The training of the PURCHASER's personnel should be of a standard that is adequate for operating and maintaining the Plant.
- 16.5 The PURCHASER shall undertake to supply personnel for training with qualifications and experience recommended by the CONTRACTOR, and agreed to by the PURCHASER.
- 16.6 Travel and living expenses for the PURCHASER's personnel shall be borne by the PURCHASER.

ARTICLE 17

Management and technical advisory services 8/

- 17.1 At the option of the PURCHASER, the CONTRACTOR shall enter into a separate management assistance 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 Provisional Acceptance of the Plant, to provide management assistance as below:
- (a) To ensure maintenance of production levels at optimum capacity, and with maximum efficiency;
 - (b) To assure maintenance of the Plant and Equipment to enable operations to be kept at design levels of production, and efficiency ratios;
 - (c) To provide in-Plant training for the PURCHASER's personnel;
 - (d) To provide expertise and assistance to set up systems and procedures for operation, maintenance, safety standards etc.
- 17.1.1 The PURCHASER and CONTRACTOR shall agree, within 30 Days of Commercial Production of both the Ammonia and Urea Plants, on the number and type of personnel to be supplied by the CONTRACTOR for management assistance during this period of (12) months, and the quantum of fees and mode of payment to be made to the CONTRACTOR and his staff at the Site.
- 17.2 If at the expiry of the period of (12) months contemplated under Article 17.1 above the PURCHASER wishes to retain an agreed number of the management personnel already at the Site for a further period not exceeding (__) months, the CONTRACTOR shall make such personnel available to the PURCHASER on terms and conditions to be mutually agreed.
- 17.3 Following Final Acceptance of the Plant, 9/ the CONTRACTOR shall agree to grant an option to the PURCHASER for the execution of a separate agreement for the provision of technical advisory services to be provided by the CONTRACTOR to the PURCHASER upon mutually agreed terms to cover those services mentioned below. Such an agreement shall become effective immediately following Final Acceptance of the Plant and shall have a duration of (__) years. The PURCHASER may exercise the said option (at his sole discretion) no later than the expiry of 1 month before Final Acceptance.
- 17.3.1 The terms of such agreement shall include (but shall not be restricted to) any one or other of the following matters:
- 17.3.1.1 Provision of senior advisory personnel to conduct a half-yearly review of the Plant and the efficiency of its operations.

8/ This Article is optional.

9/ If the option in Article 17.1 is not exercised, the PURCHASER might exercise the option provided in Article 17.3, after Provisional Acceptance.

17.3.1.2 Recommendations as to the improvement of the operations and maintenance of the Plant.

17.3.1.3 Provision of answers to technical queries related to operations of the Plant.

17.4 The rights and obligations envisaged in such an agreement for technical advisory services as per Article 17.3, or a management assistance agreement as per Article 17.1, or assistance as per Article 17.2, shall be wholly separate and distinct from the liabilities and the responsibilities contained in this Contract.

17.5 The CONTRACTOR's staff required to accomplish management assistance services in accordance with Article 17.2 above shall consist of:

_____ 10/

10/ To be discussed on a case-by-case basis. It is suggested that normal requirements might be: one production engineer, one maintenance engineer (mechanical), one maintenance engineer (instrumentation).

ARTICLE 18

Completion of Plant and conditions of Provisional and Final Acceptance

- 18.1 As soon as any Plant or any part thereof is substantially complete, it shall be inspected by the PURCHASER and the CONTRACTOR before any tests are carried out.
- 18.2 When all the items of Equipment in the Plant or part thereof or any of the sections of the Off-Sites are ready and have been completed pursuant to this Contract (viz. erected, installed and initially tested), the CONTRACTOR and the PURCHASER shall review the procedures for the pre-agreed tests for the demonstration of the Mechanical Completion of the Plant to be undertaken in accordance with annexure XX and the detailed procedures therewith.
- 18.3 The pre-commissioning of the Plant or part thereof and of each section of the Off-Sites and the carrying out of the Mechanical Completion tests shall consist of the carrying out of such operations and the making of such tests as are detailed in annexure XX to establish the correct mechanical functioning of the Plants. When all such operations and tests have been fully and satisfactorily completed individually and/or together on the Ammonia Plant, the Urea Plant, the power plant and all sections of the Off-Sites, and the Mechanical Completion of the Plant has been achieved, the CONTRACTOR and the PURCHASER shall thereupon prepare a Mechanical Completion Certificate which shall be signed by both parties following a joint examination of the Plant(s) and Off-Sites.
- 18.4 The operations and tests referred to in Articles 18.2 and 18.3 above shall be carried out by the PURCHASER's personnel under the direction and supervision of the CONTRACTOR's personnel.
- 18.5 If any defects are found during the tests mentioned above in Article 18.3, these shall be promptly rectified by the PURCHASER's personnel under the direction of the CONTRACTOR's supervisory personnel, and the mechanical tests necessary shall then be repeated.
- 18.6 Upon Mechanical Completion of the Plant or any part thereof, it shall be prepared for and brought into Initial Operation.
- 18.7 When all sections of the Plant are in a satisfactory operating state, and specification-grade ammonia and urea are in continuous and un-interrupted production for (__) Days at (__) per cent capacity in accordance with the terms of the Contract, the Plant shall be deemed to be in Commercial Production.
- 18.8 The CONTRACTOR shall thereafter demonstrate that the Plant is capable of achieving all the Performance Guarantees and requirements specified in Article 26 and in annexures XXX and XXXI.
- 18.9 The Plant shall be deemed to have been Provisionally Accepted when the CONTRACTOR shall have satisfactorily demonstrated that the Plant is capable of meeting its Performance Guarantees as specified in Article 26 and annexures XXX and XXXI and the PURCHASER has given a Provisional Acceptance Certificate.

- 18.10 The issue of the Provisional Acceptance Certificate shall be made when all of the following have been satisfactorily discharged:
- 18.10.1 When the CONTRACTOR has provided to the PURCHASER all certificates of inspection and/or certificates of Materials applying to each of the major items of Equipment and Materials.
 - 18.10.2 When the CONTRACTOR has provided all the documents listed in annexure XV to the PURCHASER.
 - 18.10.3 When the Performance Guarantee Tests have been successfully completed in accordance with the Contract or, where applicable, the liquidated damages have been paid and the CONTRACTOR has prepared Performance Test Certificate(s) and these have been signed signifying acceptance by the PURCHASER.
- 18.11 The CONTRACTOR shall be responsible for providing the necessary engineering and supervision and, where required under the Contract, replacing incorrectly engineered or incorrectly specified Equipment to prove the Performance Guarantees provided it is due to the fault of the CONTRACTOR. The Performance Guarantee Tests and/or any other tests required cannot be commenced or completed if the Plant(s) and/or parts thereof and/or processes are found to be inadequate or insufficient or any work under the Contract is incomplete, insufficient or inadequate.
- 18.11.1 Any and all modification(s) required to be undertaken under the terms of the Contract shall be governed by the provisions of Article 29, and such modification work shall be accomplished in a diligent and bona fide manner to the reasonable satisfaction of the PURCHASER. The conditions governing extension(s) of time required to complete such work and the terms of such extension(s) shall be determined in accordance with the provisions of Article 19, subject, however, to the provisions of Article 29.
 - 18.11.2 The modification(s) undertaken shall not be deemed to be complete until all the contractual stipulations governing such work and services are satisfied, and the cause(s) giving rise to the necessity for such modification(s) are eliminated. The CONTRACTOR shall not require the PURCHASER to provide a formal waiver of rights and/or remedies prior to agreeing upon modification work required pursuant to the relevant provisions of the Contract.
- 18.12 The PURCHASER shall issue a Final Acceptance Certificate when all conditions specified in this Article have been fulfilled and the CONTRACTOR has completed his work in accordance with the provisions of this Contract. Subject to the completion of any and all work more particularly referred to in this Article and Article 29 and as elsewhere required under the terms of the Contract, the PURCHASER shall issue the Final Acceptance Certificate within 12 months after Provisional Acceptance, unless during the intervening period referred to in Article 4.22 the Plant has shown defects requiring modifications in accordance with Article 29. In such case the PURCHASER shall issue a Final Acceptance Certificate when all the defects have been removed.
- 18.13 In the event that the PURCHASER, at his sole discretion, considers that, at the end of 12 months after Provisional Acceptance, only minor defects remain to be corrected, he may release payments due to the CONTRACTOR after deducting his estimates of the cost of removing such defects.

ARTICLE 19

Text A
Extension of time

19.1 If by reason of the happening of any one and/or other of the following occurrences which are beyond the CONTRACTOR's or the PURCHASER's control, namely:

19.1.1 Vandalism;

19.1.2 Failure on the part of the Vendor or other subcontractor of the PURCHASER affecting the contractual time schedule;

19.1.3 Work arising out of the application of Article 15 for which a time extension has been granted;

19.1.4 Temporary suspension of work pursuant to Article 32;

as well as non-fulfilment by the PURCHASER of his obligations in a timely fashion (but not including any of the occurrences or events covered by Articles 18, 29 or 34) which affect or delay specific work required to be undertaken pursuant to this Contract, the CONTRACTOR shall within (10) Days of such occurrence specified above, make written request to the PURCHASER for a reasonable extension of time for completion of the work or any portion of it to the extent that the factors affecting delay prevailed in the circumstances. The PURCHASER shall grant such extension in time which shall reasonably make up for the

Text B
Extension of time and compensation of cost

19.1 If by reason of the happening of any one and/or other of the following occurrences which are beyond the CONTRACTOR's control, namely:

19.1.1 Vandalism, malicious damage;

19.1.2 Non-fulfilment by the PURCHASER of his obligation in a timely fashion;

19.1.3 Temporary suspension of work pursuant to Article 32;

19.1.4 Force majeure occurrence pursuant to Article 34 which affects the work in the PURCHASER's country;

which damage or delay the work required to be undertaken pursuant to this Contract, the CONTRACTOR shall, as soon as the effect of such occurrence is known to the CONTRACTOR, make written request to the PURCHASER for a reasonable extension of time for completion of the work or any portion of it and reasonable compensation of cost additionally required because of such occurrence. The PURCHASER shall grant such extension in time and compensation of cost which shall reasonably make up for the delay(s) and damage suffered by the CONTRACTOR. In case of disagreement in time and amount, the matter shall be settled in a similar manner as stated in

delay(s) suffered by the CONTRACTOR. The CONTRACTOR shall be responsible for the completion of all of the work and activities affected by the above-mentioned delay(s) or occurrences. The CONTRACTOR shall be free of liabilities on account of the said occurrences referred to in this Article 19.1 in connection with his contractual activities affected by the delays caused. The CONTRACTOR shall extend the period of validity of the bank guarantee(s) and performance bond(s) commensurate with the period of extension granted by the PURCHASER, and the PURCHASER shall be obliged to bear the cost of such extension of guarantee(s) and bond(s) provided that the circumstances envisaged in Articles 19.1.2, 19.1.3 and 19.1.4 prevailed or that the PURCHASER did not fulfil his obligations. Such costs arising in the circumstances specified in Articles 19.1.1, 19.1.2 and 19.1.4 and those arising out of the non-fulfilment of the PURCHASER's obligations in a timely fashion, shall be to the account of the party at fault, or as may be covered by appropriate insurances taken out.

Article 15.6. The CONTRACTOR shall be responsible for the completion of all of the work and activities affected by the above-mentioned delay(s) or occurrences. The CONTRACTOR shall be free of liabilities on account of the said occurrences referred to in this Article 19.1 in connection with his contractual activities affected by the delays caused.

- 19.2 Payments and/or entitlement to any costs pursuant to this Article, or pursuant to the provisions of Article 32 or Article 34.6 shall be established on a quantum meruit basis, provided, however, that in the circumstances envisaged by Article 32 the suspension of work was not made necessary due to default by the CONTRACTOR, and provided that the CONTRACTOR has otherwise adhered to the terms of the Contract.
- 19.3 In the event of the occurrences referred to in Article 19.1 or Articles 32.4 and 32.5, the conditions of any extension granted shall (if applicable) be included as an amendment to the existing documents governing the activities or work affected or delayed by the occurrences referred to above, as provided by the terms of Article 3.4.
- 19.4 For the purpose of Article 19.1 only, "delay(s)" shall be construed to refer to any Day or period being utilized legitimately for completion of the work under the Contract, if on any such Day or period the causes referred to in Article 19.1 above as being beyond the control of the CONTRACTOR delayed completion of the work.

ARTICLE 20

Contract Price, terms of payment, bonuses and incentives

20.1 The PURCHASER shall pay to the CONTRACTOR in full consideration for the performance of the Contract the amounts mentioned in this Article. The overall price for the Contract is divided into:

A firm price, being the sum of

(amount) (currency)

for the items detailed in Article 20.2 to 20.5.

A reimbursable price estimated at

(amount) (currency)

for the items detailed in Articles 20.7 to 20.9.

20.1.1 The firm price shall not be subject to escalation and shall be varied only in accordance with the specific provisions of the Contract.

20.1.2 The price mentioned in Article 20.1 above is divided into the categorized amounts stated in each of Articles 20.2 to 20.5 below and Articles 20.7 to 20.9 respectively to facilitate the identification of payments required to be made when due at progressive stages.

20.2 For the granting of the licences and know-how for the Plants referred to in Article 4.5 and Article 7 of the Contract:

For the Ammonia Plant (amount) (currency)

For the Urea Plant (amount) (currency)

For Utilities (amount) (currency)

20.3 For the supply of basic and detailed engineering referred to in Articles 3 and 4 of the Contract:

(amount) (currency)

20.4 For the supply of procurement, inspection and expediting services referred to in Articles 10 and 14 of the Contract:

(amount) (currency) 11/

20.5 For the provision of training and training facilities referred to in Article 16 and annexure XVIII of the Contract:

(amount) (currency)

11/ The price for services relating to procurement, inspection and expediting could be partly in the form of a firm price and partly in the form of a reimbursable price.

- 20.6 The CONTRACTOR shall be paid in accordance with Articles 20.7 to 20.9 below and annexure XXVII, for the cost incurred for the provision of expatriate personnel for management assistance and supervisory services in (PURCHASER's country) for erection, commissioning and Start-Up of the Plant, for supervisory services at the Site during the period between Mechanical Completion and Provisional Acceptance, and for conducting Performance Guarantee Tests.
- 20.7 The PURCHASER shall pay to the CONTRACTOR daily rates in accordance with the schedule of charges as contained in annexure XXVII, for each Day of absence from the (respective) normal place of work in (country) of the specified expatriate personnel supplied by the CONTRACTOR.
- 20.8 The daily rates contained in annexure XXVII shall be related to a normal working week of (48) hours, with, at least, 1 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 (PURCHASER's country) the expatriate personnel shall be paid overtime charges at the rates contained in annexure XXVII.
- 20.9 The total estimated cost of the CONTRACTOR's Services contained in Articles 20.6 to 20.8 and annexure XXVII is (amount) in foreign exchange and (amount) in local currency. In addition to the payments due under Articles 20.7 and 20.8 above, the CONTRACTOR's personnel shall be provided with travel facilities, and facilities at the Site in accordance with annexure XXVII.
- 20.10 The payments due to the CONTRACTOR under Article 20.2 above shall be made in accordance with the following:
- 20.10.1 (25 per cent) as an advance payment.
 - 20.10.2 (50 per cent) on receipt by the PURCHASER of all the documents contained under Article 3.1.2, excluding operation and maintenance manuals.
 - 20.10.3 (25 per cent) on completion of the Performance Guarantee Tests of the Plant, and issuance of a Provisional Acceptance Certificate by the PURCHASER.
- 20.11 The payments due under Article 20.3 and Article 20.4 above shall be paid as follows:
- 20.11.1 (15 per cent) as an advance payment.
 - 20.11.2 (10 per cent) upon the completion of the meetings required under Article 6.5 and Article 6.8, and upon the issue of purchase orders for all Critical Items.
 - 20.11.3 (15 per cent) on the issue of bid specifications for all process Equipment (excluding electricals, piping, valves and instrumentation), as required by Article 12.2.1.
 - 20.11.4 (10 per cent) on the issue of purchase orders for all process Equipment, in accordance with Article 12.2.2.

- 20.11.5 (10 per cent) on the issue of purchase orders for 95 per cent (by value) of the Equipment, in accordance with Article 12.2.2.
 - 20.11.6 (5 per cent) on the issue of inspection certificates for 50 per cent (by value) of the Equipment.
 - 20.11.7 (5 per cent) on the shipment FOB of 50 per cent (by value) of the Equipment.
 - 20.11.8 (5 per cent) on the issue of inspection certificates for 95 per cent (by value) of the Equipment.
 - 20.11.9 (5 per cent) on the shipment FOB of 95 per cent (by value) of the Equipment.
 - 20.11.10 (7 per cent) on the Mechanical Completion of the Plant.
 - 20.11.11 (10 per cent) on the issue of the Provisional Acceptance Certificate of the Plant.
 - 20.11.12 (3 per cent) on Final Acceptance of the Plant.
- 20.12 All the payments due onwards in time pursuant to Articles 20.11.2 to 20.11.9 above shall be payable only if the "penaltable" documents (so identified in annexure XV) due on or before the last date of payment (in each case) have been supplied by the CONTRACTOR to the PURCHASER, and (where appropriate) the CONTRACTOR's expatriate supervisory staff is ready and available on the Site for erection and commissioning duties.
- 20.13 The amount(s) due under Article 20.5 shall be payable as follows:
- 20.13.1 (15 per cent) upon agreement of the programme of training.
 - 20.13.2 (60 per cent) pro rata during training as specified in annexure XVIII.
 - 20.13.3 (25 per cent) on completion of the overseas training of the PURCHASER's personnel, in accordance with Article 16 and annexure XVIII.
- 20.14 The advance payments due from the PURCHASER to the CONTRACTOR pursuant to Articles 20.10.1 and 20.11.1 shall be made by direct remittance by the PURCHASER to a bank designated by the CONTRACTOR upon the satisfactory fulfilment by the CONTRACTOR of his obligations as stated in the provisions of Articles 21.1 and 21.2.
- 20.15 For the purpose of making the other payments, under Articles 20.10 and 20.11, the PURCHASER shall establish in favour of the CONTRACTOR at a specified bank in (the CONTRACTOR's country or as agreed otherwise) irrevocable divisible letters of credit providing for payments in accordance with the schedule laid down in Articles 20.10 and 20.11 in conjunction with the certificates presented in accordance with Article 20.16.

- 20.16 The payments under the letters of credit referred to in Article 20.15 shall be made only upon the fulfilment of the following:
- 20.16.1 For payments under Article 20.10.2, a certificate from the PURCHASER shall be presented stating that the documents under that Article above have been received.
 - 20.16.2 For payments under Article 20.13.1, a certificate from the PURCHASER shall be presented stating that the overseas training programme (envisaged in annexure XVIII) has been agreed upon.
 - 20.16.3 For payments under Article 20.13.2, certificates from the PURCHASER shall be presented stating that the percentage of the training programme for which pro rata payment is claimed has been completed.
 - 20.16.4 For payments under Article 20.13.3, a certificate from the PURCHASER shall be presented stating that the training programme has been completed.
 - 20.16.5 Payments under Articles 20.11.2 to 20.11.9 shall be made when each of the following has occurred, as also those specified in Article 20.12:
 - 20.16.5.1 A certificate from the CONTRACTOR is countersigned by the PURCHASER stating that the relevant work has been completed.
 - 20.16.5.2 A certificate issued by the PURCHASER is presented stating that the "penaltable" documents due on or before the date of payment have been received by the PURCHASER.
 - 20.16.5.3 A certificate issued by the PURCHASER is presented, stating that expatriate personnel due for erection/Initial Operation before the date of payment, has arrived at the Site.
 - 20.16.6 Payment under Article 20.11.10 shall be made on the issuance by the PURCHASER of a certificate of Mechanical Completion of the Plant in accordance with Article 18.
 - 20.16.7 The payments under Articles 20.10.3 and 20.11.11 as reduced by such deductions (if any) due under Article 27 shall be made upon presentation of the certificate of Provisional Acceptance duly signed by the PURCHASER.
 - 20.16.8 The payment under Article 20.11.12 shall be made on the presentation of the certificate of Final Acceptance by the PURCHASER but subject to any deductions due to the PURCHASER for rectification in accordance with Article 29.
 - 20.16.9 The certificates referred to in this Article 20.16, respectively, shall not be unreasonably withheld by the PURCHASER.
 - 20.16.10 In the event of any dispute as to the eligibility of payments, the PURCHASER shall pay the uncontested part of the payment, but without prejudice to his rights of recovery.

- 20.17 Upon Mechanical Completion of the Plant, the CONTRACTOR shall have the option to draw upon the letters of credit opened in accordance with Article 20.15 above to the extent that the payment is due under Article 20.10.3 and Articles 20.11.11 and 20.11.12 amounting to (amount). In such an eventuality the CONTRACTOR shall provide a bank guarantee in accordance with Article 21.3.
- 20.18 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 (30) months after the final shipment FOB of Equipment, or (60) months after the Effective Date of the Contract, whichever is earlier, the CONTRACTOR shall be entitled to the payments due under Article 20.11.10 (in like manner as if the Plant had been Mechanically Completed), and Articles 20.10.3, 20.11.11 and 20.11.12 and within 60 Days (but subject to the provisions of Article 20.19) after presenting:
- 20.18.1 An invoice in triplicate signed by the CONTRACTOR.
- 20.18.2 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 Initially Operated as the case may be.
- 20.18.3 Proof as to the issue of a bank guarantee in the form specified in annexure XXIII for the proper amount (as specified in Article 20.19 below).
- 20.18.4 Proof that he has advised the PURCHASER of his claim in accordance with Article 20.19 below.
- 20.19 Should the CONTRACTOR wish to invoke his rights for payment of the amounts under Article 20.18, 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 20.18 against presentation of the documents stated in Articles 20.18.1, 20.18.2 and 20.18.4 together with a bank guarantee (for amount(s) equivalent to payments under the relevant Articles) in the form given in annexure XXIII. 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 continue to remain valid until a period of at least 3 months after the award of the arbitration.
- 20.20 The payments of the amounts due or reimbursable to the CONTRACTOR for services and/or expenses specified in Articles 20.6 to 20.9 shall be effected as follows:
- 20.20.1 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 hereto. These letters of credit shall be established 1 month before the commencement of services by the CONTRACTOR pursuant to Article 4.17 and provision for payment shall be made in the manner detailed hereunder.

20.20.2 Payments for daily rates and/or overtime of the CONTRACTOR's expatriate personnel as provided in Articles 20.7 and 20.8 and annexure XXVII shall be effected out of the said relevant letter of credit upon presentation to the PURCHASER of:

20.20.2.1 Monthly invoices supported by time-logs of each of the CONTRACTOR's expatriate personnel working in (country) for the Plant, duly countersigned by the PURCHASER's representative at the Site. The PURCHASER shall promptly sign the time-logs after verification.

20.21 Payments for reimbursement of expenses due to work undertaken pursuant to the terms of Article 15 shall be effected upon presentation of the authorized change order together with the PURCHASER's certification that payment under the said change order is due, accompanied with invoices certified by the CONTRACTOR that the expenses specified therein relate to such work undertaken pursuant to the terms of Article 15.

20.22 The living allowances detailed in annexure XXVII, clause 5, shall be payable in local currency directly to the CONTRACTOR's expatriate personnel at the Site and shall be paid by the PURCHASER every fortnight in advance, if and when due.

20.23 The payment 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 the Site within (30) Days of the claim duly supported by the relevant receipts.

20.24 Any and all bank guarantees to be provided by the CONTRACTOR pursuant to the Contract shall be encashable by the PURCHASER in (currency). 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.

20.25 Should the CONTRACTOR so desire, the letters of credit to be established under Article 20.15 shall be confirmed by the bank specified by the CONTRACTOR. ^{12/} All charges in connection with such confirmation shall be borne by the CONTRACTOR.

20.26 In the event that the CONTRACTOR demonstrates the Performance Guarantees given in Article 26 during a period of less than (36) months after the Effective Date of the Contract, the CONTRACTOR shall be entitled to receive a bonus as hereunder specified for each complete week of saved time:

20.26.1 (1 per cent) of the fixed fees under Article 20.3 and Article 20.4.

^{12/} The question whether the confirmation charges should be borne by the CONTRACTOR or the PURCHASER should be negotiated on a case-by-case basis.

20.26.2 (1 per cent) of the fees under Article 20.7 actually paid during the duration of the Contract.

Payments under this Article 20.26 shall be made within 12 months of Provisional Acceptance of the Plant provided no defects which are not remedied appear in the Plant and/or Equipment during this period affecting its capacity, performance and/or operation.

ARTICLE 21

Performance bonds and bank guarantees

- 21.1 Upon the execution of the Contract, the CONTRACTOR shall provide to the PURCHASER a performance bond guaranteed by a first-class bank in the form given in annexure XXII, A, and/or an approved bonding institution in the form given in annexure XXII, B, for the amount of (amount) in favour of the PURCHASER. The performance bond shall be valid for the period required under the Contract and such extensions thereof, and the CONTRACTOR shall take any and all actions including renewals at the appropriate time to keep the said bond current and valid for the said period. Fifty per cent of this performance bond shall be released upon Mechanical Completion of the Plant, and the balance on Provisional Acceptance of the Plant.
- 21.2 In consideration of the advance payment remitted by the PURCHASER (as provided for herein), the CONTRACTOR shall provide a bank guarantee from a first-class bank in the form given in annexure XXIII for an amount equivalent to the sum total of the advance payment required to be made by the PURCHASER pursuant to Articles 20.11 and 20.12. The amount of the bank guarantee or advance payment bond shall be progressively reduced in accordance with the payment schedule until Mechanical Completion of the Plant.
- 21.3 Upon Provisional Acceptance of the Plant, and provided the CONTRACTOR elects to exercise his option under Article 20.17, the CONTRACTOR shall deliver a bank guarantee from a first-class bank in the form given in annexure XXIII for an amount equal to (amount) but at least equivalent to the amount of the final payments to be released by the PURCHASER under Article 20.17 from the (name of bank) and confirmed by a bank in (country of the 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 extension(s) thereof.

ARTICLE 22

Indemnification

- 22.1 The CONTRACTOR shall indemnify and hold harmless the PURCHASER and anyone employed by him from and against all claims, demands, losses, costs, damages, actions, suits, expenses (including legal fees) or proceedings by whomsoever made for personal injuries, death or third-party property damage, brought or prosecuted in any manner based upon, arising out of, related to, or occasioned by the negligent act or omission of the CONTRACTOR or his Subcontractors and their employees in connection with this Contract.
- 22.2 The PURCHASER shall indemnify and hold harmless the CONTRACTOR, his employees and agents from and against all claims, demands, losses, costs, damages, actions, suits or proceedings arising out of the CONTRACTOR's activities under this Contract for personal injuries, death (other than of CONTRACTOR's personnel) and property damage (other than to the Plant) arising out of the PURCHASER's and his subcontractors' and their employees' negligence.

ARTICLE 23

Project accounting and audit

- 23.1 The CONTRACTOR shall keep adequate books of accounts and time-logs in accordance with the form and procedure required by the PURCHASER with regard to charges incurred and purchases made/payments effected on behalf of the PURCHASER up to a period of 2 years following Final Acceptance of the Plant, if:
- 23.1.1 Any price or part of a price under the provisions of Article 20 is based on time charges.
- 23.1.2 Provision has been made in the Contract for the CONTRACTOR to make purchases/effect payments up to a prescribed value on behalf of the PURCHASER.
- 23.2 The CONTRACTOR shall submit to the PURCHASER bimonthly 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 within (15) Days after the requisition involving the procurement formality has been completed in each case.
- 23.3 The CONTRACTOR shall on a monthly basis review and promptly advise the PURCHASER of any variations which he may foresee in the estimates made by him under Article 2.5, and shall discuss the reasons for all such variations with the PURCHASER in (PURCHASER's country) should the PURCHASER so desire.
- 23.4 The PURCHASER shall have the right to have access to and audit all time-logs and books of accounts of the CONTRACTOR referred to in Article 23.1.
- 23.5 The CONTRACTOR and the PURCHASER (as the case may be) shall keep accurate records of the costs referred to in Article 29.
- 23.6 The PURCHASER or any auditor nominated by the PURCHASER, or his 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, and/or shall receive from the CONTRACTOR 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 24

Insurance

- 24.1 Without restricting in any manner the generality of any other provision of the Contract, and in particular any such provision pertaining to the liability or responsibility of the CONTRACTOR, it is expressly agreed that throughout the period beginning from the date of commencement of the related work, and continuing until Provisional Acceptance of the Plant in the case of the policies mentioned under Article 24.1.1 below and Final Acceptance for the policies mentioned under Article 24.1.2 (and/or for such extended periods that the PURCHASER and the CONTRACTOR may agree upon and/or required by law):
- 24.1.1 The CONTRACTOR shall take out and keep in force the various insurance policies enumerated in Article 24.7.
- 24.1.2 The CONTRACTOR shall, at the CONTRACTOR's expense, maintain insurance policies including professional indemnity insurance, if applicable, normal to his activities through his corporate coverage. If the CONTRACTOR does not have corporate coverage, he shall so inform the PURCHASER at the time of the signing of the Contract.
- 24.2 Whenever required from time to time, the CONTRACTOR and the PURCHASER shall submit to the other party adequate proof that the insurance(s) contemplated by Article 24.5 to be within his responsibility has (have) been taken out and remains (remain) in force. The parties hereto shall also provide each other with certified documentation with regard to the coverage and value of the policies.
- 24.3 Should the CONTRACTOR fail to take out and/or keep in force the insurances contemplated by this Article as being within the scope of his responsibility, together with any other insurance(s) to be taken out by the CONTRACTOR as agreed between the PURCHASER and the CONTRACTOR, then the PURCHASER may at the PURCHASER's option take out insurance(s) 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 may be retained as the PURCHASER's monies out of any amount(s) otherwise payable by the PURCHASER to the CONTRACTOR.
- 24.4 Should the PURCHASER fail to take out and/or keep in force the insurance(s) contemplated by this Article as being within the scope of his responsibility, then the CONTRACTOR may at the CONTRACTOR's option take out insurance(s) considered appropriate and necessary in the circumstances in which event any premium paid or payable by the CONTRACTOR shall immediately constitute a debt due from the PURCHASER to the CONTRACTOR.
- 24.5 The insurance policies referred to in Article 24.1 as being required to be taken out by either one or the other of the parties shall be as follows:
- 24.5.1 "Construction all risks" (CAR) liability or "erection all risks" (EAR) policy (inclusive of third-party cover) in the name of the PURCHASER and the CONTRACTOR to insure the Plant at the Site from the start of work until Provisional Acceptance. Endorsements to the policy shall include coverage for EAR,

"faults in design", requiring the replacement and repair of damaged Equipment due to faults in design, faulty workmanship and faulty materials, up to the Performance Guarantee Tests. Specific insurances for bodily injury and personal liability insurance (excluding that to third parties) and endorsements for such items as elevator and hoist liability, shoring, blasting, excavating may also be included.

- 24.5.2 "Loss of advanced profits insurance" (otherwise called "machinery consequential loss (interruption) insurance") to cover consequential losses to the PURCHASER, which may arise following any damage to the Plant during testing and maintenance periods providing extended cover to that already provided by the CAR/EAR policy.
 - 24.5.3 "Machinery breakdown policy" to cover the breakdown of equipment during testing, Start-Up or operation, including boilers, pressure vessels, turbines etc., and explosion risks incidental thereto.
 - 24.5.4 "Marine insurance" or "cargo insurance policies" to cover the transit of Equipment and Materials ex works from the shops of the Vendor to the Site. (This may or may not include war risks insurance, as agreed by the PURCHASER and the CONTRACTOR).
 - 24.5.5 Insurance liability cover for the use of automobiles, trucks, aircraft, launches, tugs, barges etc.
 - 24.5.6 Liability insurance for payments under workmens' compensation acts, as required under applicable legislation in the PURCHASER's country.
- 24.6 To the extent not covered by the above policies and provided such a policy is available, the PURCHASER and the CONTRACTOR shall by mutual agreement obtain a special insurance policy (where the PURCHASER shall 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 the Vendors. It is expressly agreed, however, that no liability shall attach to the PURCHASER or the CONTRACTOR purely by reason of payment of the premium for such a policy.
- 24.7 The PURCHASER shall be responsible for taking out all the policies enumerated in Article 24.5, except the following which the CONTRACTOR shall carry (unless otherwise agreed between the parties):
- 24.7.1 Corporate coverage as referred to in Article 24.1.2.
 - 24.7.2 Accident insurance for the CONTRACTOR's personnel at the Site.
 - 24.7.3 Insurance for the CONTRACTOR's transport (e.g. automobiles) of which the CONTRACTOR is the owner.
 - 24.7.4 Third-party liability insurance for an amount agreed with the PURCHASER.

24.8 Wherever required, as for example when there is an endorsement to the EAR policy, for faulty design, the policies shall be jointly in the name of the CONTRACTOR and the PURCHASER; in all other cases, the policies enumerated in Article 24.7 shall be in the name of the CONTRACTOR and the other policies shall be in the name of the PURCHASER.

ARTICLE 25

Control of workmanship and materials

- 25.1 The CONTRACTOR shall issue through the purchase orders to the Vendors appropriate instructions and specifications in order that the quality of the materials and workmanship of Equipment and Materials required to be procured for the Plant are new and of the most suitable grade for the duties intended and conform to the design specifications, the standards and regulations detailed in annexures II, IV and XXVI, and whenever applicable to the standards and regulations in the PURCHASER's country.
- 25.2 The CONTRACTOR shall undertake appropriate inspection in order that the quality of materials and workmanship throughout the manufacture of Equipment and Materials ordered from the Vendors completely conform to the specifications issued by the CONTRACTOR. The suppliers' certificates for Equipment and Materials shall satisfy the minimum regulations (physical and chemical) specified by the CONTRACTOR, and random testing of Materials shall have been done by the Vendor under the supervision of, and to the satisfaction of, the CONTRACTOR.
- 25.3 The CONTRACTOR or his representatives shall at all times have the right to inspect and spot-check all work being undertaken at the Site and to arrange for any testing of samples to ensure their conformity with design requirements.
- 25.4 The standards and codes to be used for the Plant(s) are given in annexure II. The CONTRACTOR shall utilize these standards (or where applicable mandatory national standards) and/or superior standards if known to the CONTRACTOR (as required by the provisions of Article 4.7) for the design and procurement of all Equipment and Materials. Wherever standards or codes are not explicitly stated in the Contract, internationally recognized standards or codes or those which have been previously used by the CONTRACTOR in a working Ammonia/Urea Plant may be used, subject to the acceptance of the PURCHASER.
- 25.5 In the case of a dispute arising out of any matter concerning the acceptability or qualitative level of standard(s) or code(s) the onus shall be on the CONTRACTOR to prove to the PURCHASER the superiority of those standard(s) or code(s) recommended (or adopted) by the CONTRACTOR pursuant to this Contract.

ARTICLE 26

Guarantees and Performance Guarantee Tests

- 26.1 The Plant shall be capable of sustained, steady and continuous operation and of meeting the full requirements stated below in Articles 26.1.1 to 26.1.6, all of which are hereby guaranteed by the CONTRACTOR, which shall be proven and demonstrated by test runs as specified in this Article and in annexures XVI and XXXI and such tests are to be conducted in accordance with the conditions set forth therein. The PURCHASER shall comply with the provisions of Articles 5.7 to 5.9.
- 26.1.1 The production capacity of ammonia and urea from the Plants shall be (1,000) Tonnes per Day of ammonia and (1,725) Tonnes per Day of urea.
- 26.1.2 The quality of the ammonia from the Ammonia Plant and of the urea from the Urea Plant shall be in accordance with annexure XVI.
- 26.1.3 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.
- 26.1.4 The Off-Sites shall be adequate for the sustained and continuous operation of the Plant.
- 26.1.5 The consumption of utilities and raw materials in each of the Ammonia and Urea Plants shall be in accordance with the guarantees given below.
- 26.1.6 The effluents from the Plant shall be in accordance with annexure XVII.
- 26.2 The guarantees outlined in Article 26.1 shall be divided into Absolute Guarantees and Penaltiable Guarantees.
- 26.2.1 Absolute Guarantees shall be defined as those guarantees which the CONTRACTOR shall establish without any limitation to his cost, and which cannot be satisfied by the payment of liquidated damages.
- 26.2.2 Penaltiable Guarantees shall be defined as those guarantees which can be satisfied by the CONTRACTOR on payment of liquidated damages in accordance with Article 27.
- 26.3 Absolute Guarantees and Penaltiable Guarantees shall be:
- 26.3.1 Absolute Guarantees:
- 26.3.1.1 95 per cent of the capacity of the Ammonia Plant corresponding to 95 per cent of (1,000) Tonnes per Day of specification-grade ammonia.
- 26.3.1.2 The quality of ammonia as per annexure XVI.
- 26.3.1.3 95 per cent of the capacity of the Urea Plant corresponding to 95 per cent of (1,725) Tonnes per Day of specification-grade urea.

26.3.1.4 The quality of urea as per annexure XVI.

26.3.2 Penaltiiable Guarantees:

26.3.2.1 The capacity of the Ammonia Plant if below 100 per cent of the capacity, but not less than 95 per cent of the capacity.

26.3.2.2 The capacity of the Urea Plant if below 100 per cent of the capacity, but not less than 95 per cent of the capacity.

26.3.2.3 The quality and quantity of carbon dioxide adequate and suitable to produce 100 per cent of the guaranteed capacity of urea (1,725) Tonnes per Day of the stipulated quality.

26.3.2.4 The adequacy of the Off-Sites to sustain the continuous production of ammonia and urea at 100 per cent of capacity.

26.3.2.5 The capacity of the power plant shall be (___) kW when operating at a power factor of (___). The steam and power plant shall also produce the quantities of steam given below for use outside the Plant (steam quantities and pressures to be stated.)

26.3.3 The following guarantees shall be negotiable 13/ and shall become Penaltiiable or Absolute, according to negotiation:

26.3.3.1 The effluents and emissions from the Plant shall be in accordance with annexure XVII.

26.3.3.2 The consumption of raw materials shall be in accordance with annexure XXX (up to a maximum of _____ per cent above that guaranteed) 14/ subject to the provisions of Article 27.2.4.

26.3.3.3 The consumption of utilities shall be in accordance with annexure XXXI (up to a maximum of _____ per cent above that guaranteed) 14/ subject to the provisions of Article 27.2.4.

26.3.3.4 (The consumption of raw materials if in excess of _____ per cent of that guaranteed in annexure XXXI). 14/

13/ Following negotiation and the renumbering of the guarantees contained in this sub-Article, under sub-Article 26.3.1 (Absolute Guarantees) or sub-Article 26.3.2 (Penaltiiable Guarantees), this sub-Article 26.3.3 will become redundant, and should be deleted.

14/ The words in brackets and underlined are to be used when consumption guarantees for raw materials and utilities above an agreed percentage are Absolute; otherwise, if only Penaltiiable, these words can be deleted.

26.3.3.5 (The consumption of utilities if in excess of _____ per cent of that guaranteed in annexure XXXI). 14/

26.4 Performance Guarantee Test procedures

26.4.1 Ammonia Plant

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

26.4.1.1 A minimum (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) per cent of capacity of the Ammonia Plant, together with the capability to produce specification-grade ammonia and carbon dioxide, followed immediately by:

26.4.1.2 A (10)-Day uninterrupted continuous test under normal operating conditions, in which the operation of the Ammonia Plant at 100 per cent capacity and the consumption of raw materials and utilities shall be demonstrated, while producing specification-grade ammonia. The tests for capacity and quality shall be applicable for all (10) Days of the test. One hundred per cent capacity of the Ammonia Plant shall be (10,000) Tonnes of 99.8 per cent of the Product and shall be corrected for any increase in strength. For consumption of the raw materials and utilities the test period shall be any consecutive (7) Days within the (10)-Day period.

26.4.2 Urea Plant

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

26.4.2.1 A minimum (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) per cent of the Urea Plant together with the capability to produce urea of specification grade, to be followed immediately by:

26.4.2.2 A (10)-Day uninterrupted continuous test under normal operating conditions in which the operation of the Urea Plant at 100 per cent of capacity, and the consumption of raw materials and utilities shall be demonstrated while producing specification-grade urea. The tests for capacity and quality shall be applicable for all (10) Days, and the test for consumption shall be for any consecutive (7) Days within the (10)-Day test period. One hundred per cent capacity of the Urea Plant shall be (17,250) Tonnes of specification-grade Product and shall be corrected for any increase in strength.

26.4.3 Power plant

The power plant shall be operated at capacity (as soon as the load permits) for the said period of (7) consecutive Days to prove its guarantee of capacity for both power and steam, and its guarantee for consumption of fuel.

26.4.4 During the specified (10)-Day period under Article 26.4.2.2 (unless as otherwise agreed) the Ammonia and Urea Plants shall be run simultaneously at capacity for any consecutive (7) Days within the (10)-Day period to prove that the power plant and utilities are adequate for the continuous and uninterrupted operation of the Ammonia and Urea Plants and Off-Sites together.

26.4.5 The Performance Guarantee Tests shall be run in accordance with annexure XXXI.

26.4.5.1 The CONTRACTOR shall have the right to have the Plant(s) operated in accordance with his requirements for performing the test(s), and the PURCHASER's personnel shall work under the technical instructions of the CONTRACTOR.

26.4.5.2 The detailed procedures to be followed for the execution of the Performance Guarantee Tests shall be agreed upon between the parties within (3) months before the commencement of the above tests. Instrument tolerances shall be warranted by the CONTRACTOR. The PURCHASER and the CONTRACTOR shall agree on the instruments and shall jointly calibrate them for measurement of the capacity and consumption of the Plant.

26.4.6 If the (10)-Day Performance Guarantee Test(s) is (are) interrupted owing 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) has (have) reached normal operating conditions, the Performance Guarantee Test(s) shall continue immediately thereafter. The duration of the Performance Guarantee Test(s) shall be extended by the duration of such interruptions and the Performance Guarantee Test(s) shall then be deemed to have been performed continuously provided, however, that the Plant has been operated for a minimum (7)-Day period without interruption.

26.5 The CONTRACTOR shall be obligated to complete the Performance Guarantee Tests of the Plant within the period stipulated in Article 27.3 or to pay liquidated damages in accordance with that Article.

26.6 After the successful completion of any Performance Guarantee Test, in accordance with the Contract, the CONTRACTOR shall prepare a Performance Test Report, which shall be signed by the CONTRACTOR and submitted to the PURCHASER for approval.

26.6.1 If the said report is satisfactory, the PURCHASER shall issue within (30) Days from the receipt of the CONTRACTOR's report a Provisional Acceptance Certificate or shall inform the CONTRACTOR's Site representative within the same period of the reasons for non-acceptance.

26.6.2 Provided Article 26.6 has been complied with, in the event of the PURCHASER failing to issue the Provisional Acceptance Certificate or to inform the CONTRACTOR as provided in Article 26.6.1, the CONTRACTOR shall request the PURCHASER for an explanation for the delay and if the PURCHASER fails to respond within another (30) Days, the acceptance of the Plant for which the Performance Guarantee Test was conducted shall be deemed to have taken place, on the date that the Performance Guarantee Test was successfully completed.

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26.7 The obligations of the CONTRACTOR shall be deemed to have been fulfilled, if for reasons not attributable to the CONTRACTOR the Performance Guarantee Tests under Article 26.4 cannot be carried out within (30) months from the last shipment of Equipment, or within (60) months from the Effective Date of the Contract, whichever comes earlier, provided that in the event of force majeure the period shall be extended by the period of force majeure but not exceeding (__) months. In the event of a dispute as to the fulfilment of the CONTRACTOR's obligations and as to the entitlement for payment, the parties shall resort to arbitration.

26.7 The obligations of the CONTRACTOR shall be deemed to have been fulfilled, if for reasons not attributable to the CONTRACTOR the Performance Guarantee Tests under Article 26.4 cannot be carried out within (__) months from the Effective Date of the Contract, provided that in the event of force majeure the period shall be extended by the period of force majeure but not exceeding (__) months. In the event of a dispute as to the fulfilment of the CONTRACTOR's obligations and as to the entitlement for payment, the parties shall resort to arbitration.

26.8 In the event that the Performance Guarantee Tests cannot be made within the period stipulated in Article 26.7 above, the CONTRACTOR shall be obligated to send personnel to the Site to assist in starting-up and testing the Plant, provided, however, that the PURCHASER shall pay additional fees and travel expenses for this service as may be agreed between the PURCHASER and the CONTRACTOR.

ARTICLE 27

Liquidated damages

27.1 The CONTRACTOR shall be liable to the payment of liquidated damages for default of the responsibilities under the Contract, as follows:

27.1.1 For delay in the delivery of the Technical Documentation stipulated in annexure XV the agreed liquidated damages shall be as follows: for each week of delay in the submission of a required document an amount of (15/) subject to an overall maximum liability of () under this Article.

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27.1.2 For delay in the submissions of bid tabulations for a mutually agreed predetermined list of Critical Items and including complete bulk supplies required for the Contract beyond the period of () months after the Effective Date of the Contract for each week of delay an amount of (15/) of the Contract Price, subject to an overall maximum liability of () under this Article.

27.1.2 For delay in the submissions of bid tabulations for a mutually agreed predetermined list of Critical Items and including complete bulk supplies required for the Contract beyond the period of () months after the Effective Date of the Contract for each week of delay an amount of (15/) of the Contract Price, subject to an overall maximum liability of () under this Article. Liquidated Damages shall not apply if the CONTRACTOR can show that the delay was caused by delays of the PURCHASER or the Vendors.

27.2 In the event that the Absolute Guarantees have been successfully demonstrated but the Penaltiable Guarantees have not been met, the CONTRACTOR shall immediately thereafter proceed to execute the required modifications to the Plant(s) or at the CONTRACTOR's option, the CONTRACTOR shall pay by way of liquidated damages, in consideration of any and all claims in connection with the fulfilment of Penaltiable Guarantees as follows:

27.2.1 For the Ammonia Plant: for each full 0.5 per cent exceeding the daily guaranteed cost of manufacture as given in Article 27.2.4 below, an amount of (15/) up to a maximum of ().

27.2.2 For the Urea Plant: for each full 0.5 per cent exceeding the daily guaranteed cost of manufacture as given in Article 27.2.4 below, an amount of (15/) up to a maximum of ().

15/ Fixed sum to be negotiated.

27.2.3 For the power plant: for each additional (___) kcal of fuel per kWh of power generated and the guaranteed quantities of net export steam over and above the guaranteed consumption, an amount of (15/) up to a maximum of (_____).

27.2.4 The guaranteed daily cost of manufacture referred to in annexure XXXI shall be computed by calculating the guaranteed daily cost of inputs of raw materials and utilities minus the guaranteed output of utilities, according to the costs given below for each item, and multiplied by the guaranteed daily capacity of each Plant, to obtain the guaranteed daily net cost of raw materials and utilities.

Natural gas	(<u>value</u>) per million kcal
High pressure steam	(<u>value</u>) per Tonne
Medium pressure steam	(<u>value</u>) per Tonne
Low pressure steam	(<u>value</u>) per Tonne
Cooling water	(<u>value</u>) per m ³
Boiler feed water	(<u>value</u>) per m ³
Purge gas of Ammonia Plant	(<u>value</u>) per million kcal
Condensate	(<u>value</u>) per Tonne
Ammonia	(<u>value</u>) per Tonne

27.2.5 By virtue of the application of Article 27.2.4 the obligations of the CONTRACTOR solely in connection with the demonstration of the Penaltiable Guarantees for raw materials and utilities shall be considered as fulfilled. 16/

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27.2.6 For non-fulfilment of the Absolute Guarantees at 100 per cent capacity but subject to fulfilment of the Absolute Guarantees at 95 per cent capacity of the Ammonia Plant, a sum of (5) per cent of the total fixed Contract Price (amount) as stated in Article 20.1 for each 1 per cent of lower production than of the 100 per cent capacity of ammonia.

27.2.6 For non-fulfilment of the Absolute Guarantees at 100 per cent capacity but subject to fulfilment of the Absolute Guarantees at 95 per cent capacity of the Ammonia Plant, a sum of (1) per cent of the total fixed Contract Price (amount) as stated in Article 20.1 for each 1 per cent of lower production than of the 100 per cent capacity of ammonia.

27.2.7 For non-fulfilment of the Absolute Guarantees at 100 per cent capacity but subject to fulfilment of the Absolute Guarantees at 95 per cent

27.2.7 For non-fulfilment of the Absolute Guarantees at 100 per cent capacity but subject to fulfilment of the Absolute Guarantees at 95 per cent capacity of the

16/ To be modified if Article 26.3.3.4 and/or Article 26.3.3.5 are negotiated as Absolute Guarantees.

capacity of the Urea Plant, a sum of (5) per cent of the total fixed Contract Price (amount) as stated in Article 20.1 for each 1 per cent of lower production than of the 100 per cent capacity of urea.

Urea Plant, a sum of (1) per cent of the total fixed Contract Price (amount) as stated in Article 20.1 for each 1 per cent of lower production than of the 100 per cent capacity of urea.

- 27.2.8 For not meeting the guarantees for emissions and effluents, liquidated damages of (fixed sum to be agreed). 17/
- 27.2.9 For insufficiency in carbon dioxide, resulting in a lowering of urea production, the liquidated damages shall be the same as under Article 27.2.7 above. 18/
- 27.2.10 For inadequacy of Off-Sites an amount of (15/) up to a maximum of (_____). 18/
- 27.2.11 For each 1 kW shortfall in the power plant capacity (at a power factor of (___) an amount of (15/) up to a maximum of (_____).
- 27.2.12 In the event that the CONTRACTOR does not elect to pay the liquidated damages for the non-fulfilment of the Penaltiiable Guarantees, the CONTRACTOR shall be liable to complete the necessary work and services pertaining to the required modifications, referred to in Article 29, within 9 months from the date of Initial Operation of the Plant(s).

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27.3 In the event that the CONTRACTOR does not or is unable to complete his Performance Guarantee Tests within 9 months after Initial Operation of the Plant extended by such time for repair and/or replacement of Equipment as provided in Article 29.1.1 (whichever is earlier), except where an extension has been granted due to circumstances outside the control of the CONTRACTOR or fault of the PURCHASER as provided therein, the CONTRACTOR shall pay

27.3 Not used.

17/ Provided this guarantee is a Penaltiiable Guarantee.

18/ This Article is meant for cases when the Ammonia and Urea Plants are built by different contractors. Liquidated damages should be imposed only once for insufficient urea capacity if there is a single contractor for both plants.

liquidated damages to the PURCHASER in the amount of (5) per cent of the fixed Contract Price for each month of delay subject to a maximum of (50) per cent of the fixed Contract Price.

- 27.4 Should the CONTRACTOR be unable or unwilling to fulfil the Absolute Guarantees within 18 months after Initial Operation, extended by such time for repair and/or replacement of Equipment as provided in Article 29.1.1 (whichever is earlier), the PURCHASER shall (at his option) have the right to recover the cost necessary to correct the Plant, to the extent of the CONTRACTOR's liabilities under Article 29.1, or shall have the right to proceed to modify the Plant(s) through the engagement of such parties as the PURCHASER may deem fit, and the provisions of Article 30 shall apply. The determination of costs incurred by the PURCHASER shall be made by mutual agreement or through arbitration procedures or court action.

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- 27.5 If the CONTRACTOR should fail to complete the Performance Guarantee Tests within the limits of time guaranteed in the Contract and within the authorized extension(s) of time (governed by Article 19), the CONTRACTOR, in addition to the liquidated damages stated to be payable in Article 27.3, shall be liable for fundamental breach of Contract.

27.5 Not used.

- 27.6 The payment of such liquidated damages shall not relieve the CONTRACTOR from any of his obligations and liabilities under the Contract other than the obligations and liabilities covered by liquidated damages.

ARTICLE 28

Warranties

- 28.1 In inviting bids for the Equipment and Materials, the CONTRACTOR shall use his best endeavours to ensure that adequate warranties for mechanical soundness and guarantees for performance are given to the PURCHASER by the successful Vendor. The PURCHASER acknowledges that the Equipment purchased from the Vendors is not warranted by the CONTRACTOR. However, the CONTRACTOR shall assist the PURCHASER in obtaining and enforcing warranties and guarantees to ensure satisfactory performance of the Equipment supplied by the Vendors: (a) when issuing the purchase order(s); (b) during inspection of the Equipment; (c) on completion and during test running in the Vendor's shops (if any); (d) at the time of taking delivery of the Equipment; and (e) when operating the Plant, provided the deficiency, inadequacy or defects are noticed within the period of warranty.
- 28.2 The mechanical guarantees and warranties from the Vendors shall be valid for a minimum period of 12 months after Start-Up of the Plant or for a period of not less than 30 months from the date of shipment, whichever is earlier. While undertaking the obligations for the preparation, issuance and administration of the purchase orders, the CONTRACTOR shall use his best endeavours to ensure that the shipment(s) of Equipment are properly phased (and not undertaken sooner than necessary) to make certain that the warranties especially attaching to principal Equipment do not expire before the 48th month from the Effective Date of the Contract. The CONTRACTOR shall be required to assist the PURCHASER in all the dealings with the Vendors in accordance with the terms of this Contract. If any of the Vendor's supplies are found to be defective, the CONTRACTOR shall assist the PURCHASER in requiring the Vendors to undertake promptly the necessary corrective measures and, if required, to substitute or replace the defective Equipment, machinery spare parts or materials within the shortest possible time.
- 28.3 The CONTRACTOR shall assume responsibility for the quality, duration and effect of the warranties and guarantees provided for those portions of the Equipment being supplied by the CONTRACTOR, if any.

ARTICLE 29

Rectification of defects and modifications to the Plant

Text A

Text B

29.1 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 specifications the CONTRACTOR is unable to demonstrate the Absolute Guarantees, the CONTRACTOR shall ask the PURCHASER to proceed to effect the rectifications, modifications, replacement and/or changes which in the CONTRACTOR's professional judgement are necessary to eliminate the defects and/or faults and thereby to achieve the specified guarantees. The CONTRACTOR shall provide free of charge to the PURCHASER all the engineering, drawings, procurement inspection, as well as supervision services which are in the CONTRACTOR's scope of work connected with the above work. In addition, the CONTRACTOR shall pay for the cost of incorrectly specified equipment delivered to the Site, should a substitution or replacement of equipment be necessary, or shall reimburse such costs to the PURCHASER if such payments have been made by the PURCHASER.

29.1 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 specifications the CONTRACTOR is unable to demonstrate the Absolute Guarantees, the CONTRACTOR shall ask the PURCHASER to proceed to effect the rectifications, modifications, replacement and/or changes which in the CONTRACTOR's professional judgement are necessary to eliminate the defects and/or faults and thereby to achieve the specified guarantees. The CONTRACTOR shall provide free of charge to the PURCHASER all the engineering, drawings, procurement inspection, as well as supervision services which are in the CONTRACTOR's scope of work connected with the above work. In addition, the CONTRACTOR shall pay for the cost of incorrectly specified equipment delivered to the Site, should a substitution or replacement of equipment be necessary, or shall reimburse such costs to the PURCHASER if such payments have been made by the PURCHASER. 19/

29.1.1 The CONTRACTOR shall be allowed to conduct up to 2 additional Performance Guarantee Tests as required within a period of 12 months from the date of Start-Up; if the necessity for modifications, replacement and changes should have arisen, the period during which the Plant(s) cannot be operated normally by the CONTRACTOR or the period spent in excess of 10 months in the replacement of equipment (if any such replacement is required under the Contract) shall not be counted in computing the said 12-month period.

19/ In the case of a standard type of "cost-reimbursable" contract, the CONTRACTOR's responsibility is limited to the "redoing" of the services and the "make-good" cost of the hardware is borne by the PURCHASER (for text B only).

29.2 Where in pursuance of this Article, any defective equipment is removed and replaced with new equipment, the CONTRACTOR shall ensure directly or through the Vendors, as the case may be, that the liability period for defects shall begin to run anew in relation to such replaced equipment and it shall be subject to the same criteria for take-over test(s) as were required for the removed equipment, or, where no such test would have been required to have been carried out, on the date when the replaced equipment is actually first put into satisfactory use.

29.3 If the CONTRACTOR shall neglect or refuse to take the necessary measures to ensure the elimination of the defects and/or faults within a reasonable time, then the PURCHASER may take such remedial steps to carry out the engineering, procurement, inspection and supervision of erection of new equipment or undertake repair and/or replacement of used equipment to rectify the defects and correct all associated problems, and the cost of such remedial steps taken by the PURCHASER shall be to the CONTRACTOR's account and should constitute a debt due from the CONTRACTOR to the PURCHASER.

Text A

Text B

29.4 In the event that the CONTRACTOR does not comply with Article 29.1 or the PURCHASER does not agree to extend further any periods requested by the CONTRACTOR for such modifications, additions, and/or changes, 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 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.

29.4 In the event that the CONTRACTOR does not comply with Article 29.1 or the PURCHASER does not agree to extend further any periods requested by the CONTRACTOR for such modifications, additions, and/or changes, 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 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, subject to Article 30.5 and excluding consequential loss liability. 20/

29.5 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.

20/ This text is to be adopted if text B of Article 30.5 is adopted.

- 29.6 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, which require rectification(s) to be undertaken to correct the defects pursuant to Article 29, 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 Article 27 and this Article, as the case may be, except as provided otherwise in this Contract.
- 29.7 The CONTRACTOR's obligation to rectify defects and to take corrective steps shall continue unabated even if the period of extension granted by Article 29.1 is exhausted, and the CONTRACTOR shall continue his endeavours at his own cost to rectify the defects and take corrective measures in accordance with Article 29.1, provided the PURCHASER agrees to allow such further extension(s) in time (in writing), as requested by the CONTRACTOR. The obligation of the CONTRACTOR herein shall not end until the Absolute Guarantees of the Plants are successfully demonstrated.
- 29.8 The CONTRACTOR's obligations to execute the rectifications pursuant to Article 29.6 shall be limited to 12 months from the date of Start-Up of the Plant(s), however, the period during which the Plant(s) cannot be operated normally due to any default on the part of the PURCHASER or the period in excess of 10 months spent in the replacement of equipment (if any such replacement is required from the Vendors) shall not be counted in computing the said 12-month period.
- 29.9 If any defect is found during inspection (before dispatch) of Equipment or Materials of the 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. 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 the Vendor's cost.

ARTICLE 30

Liabilities, set-off and waiver

- 30.1 The CONTRACTOR shall be subject to liabilities and damages for default of his contractual responsibilities, and shall be duty-bound to fulfil all the obligations as expressed more particularly in each of the Articles of the Contract.
- 30.2 The CONTRACTOR shall be liable for the satisfactory fulfilment of the guarantee requirements and Performance Guarantee Tests; for adequacy and sufficiency of inspections, and shall be responsible for necessary modifications and rectifications to the Plant(s), and/or sections thereof, pursuant to Article 29 and shall be accountable for the completion of the scope of the work and objectives of the Contract as expressly specified.
- 30.3 The CONTRACTOR shall not be liable for any property or Equipment of the PURCHASER damaged or lost during transportation, erection, Start-Up and Performance Guarantee Tests, except where:

(a) Such loss or damage has occurred due to a negligent act or omission of the CONTRACTOR;

(b) Such loss or damage is not covered by the insurance specified in Articles 24.5.1, 24.5.3 and 24.5.4.

Notwithstanding the above, the CONTRACTOR's liability for loss or damage to the PURCHASER's property and Equipment shall in any event be limited to the amounts recovered by the CONTRACTOR from his third-party liability insurance, the coverage and value of which must be reasonable and agreed to by the PURCHASER before the Effective Date of the Contract.

- 30.4 The amounts received by the CONTRACTOR under any insurance policies held by the CONTRACTOR pursuant to Article 24 as well as through those others specifically taken out for the purposes of this Contract shall either be used to make necessary modifications or rectifications or to meet the obligations of the CONTRACTOR under this Contract or the CONTRACTOR shall pay these amounts to the PURCHASER for these purposes.

Text A

Text B

30.5 The total liability of the CONTRACTOR under the Contract shall not exceed (__) per cent of the total Contract Price ^{21/} with the exception of the CONTRACTOR's unlimited liability for rectifications or modifications for the fulfilment of the Absolute Guarantees, as well as the reimbursement to the PURCHASER of any amount(s)

30.5 Notwithstanding anything to the contrary, the total liability of the CONTRACTOR under the Contract or otherwise, including negligence, shall in no event exceed (__) per cent of the firm Contract Price plus reimbursement to the PURCHASER of any amounts received by the CONTRACTOR under any insurance policies agreed under Article 24 to be held for the benefit of the PURCHASER.

^{21/} Alternatively, the parties could negotiate a fixed sum of money to act as the ceiling for the CONTRACTOR's total liability.

received by the CONTRACTOR under any insurance policies held by the CONTRACTOR as well as through those others specifically taken out for the purposes of this Contract.

30.6 The CONTRACTOR shall not be liable under the Contract for loss of anticipated profits or for any consequential loss or consequential damage.

Text A

Text B

30.7 If the CONTRACTOR has failed within a reasonable time after being required by the PURCHASER to undertake any rectification or replacement for which the CONTRACTOR is liable under this Contract, the PURCHASER may take such remedial steps as are necessary to carry out the rectification or the replacement and the CONTRACTOR shall thereupon be liable to the PURCHASER for the cost of the remedial steps taken by the PURCHASER and shall on demand pay the amount due.

30.7 If the CONTRACTOR has failed within a reasonable time after being required by the PURCHASER to make good any loss or damage for which the CONTRACTOR is liable under this Contract, the PURCHASER may cause the loss or damage to be made good as the CONTRACTOR should have done under the Contract, and the CONTRACTOR shall thereupon be liable to the PURCHASER for such costs, expenses and charges, but only to the extent of his liability under Article 29.1, as are reasonably and inevitably incurred. The CONTRACTOR's obligation is conditional upon written notice being given by the PURCHASER to the CONTRACTOR specifying the particulars of the CONTRACTOR's failure and the PURCHASER's intention to make good the loss or damage itself.

Text A

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30.8 No bond, undertaking or payment given, supplied or offered 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, undertaking or payment 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-right or remedies under this Contract.

30.8 Not used.

Text A

30.9 In the event that the PURCHASER considers that he 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 affected 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 inter alia Articles 11, 12, 28, 29 and 40) any sum so deemed payable or retainable to or by the PURCHASER by virtue of any other provisions of this Contract or by virtue of the right of set-off or counter-claim, whether as conferred by this Article or otherwise. Should the PURCHASER exercise any such right of set-off as envisaged herein, 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 by the PURCHASER shall constitute such notification to the CONTRACTOR unless the said letter or other communication so stipulates. At any time up to 60 Days after the receipt of the notification contemplated above, the

Text B

30.9 The PURCHASER shall have no right to set off or deduct any claims from payments due to the CONTRACTOR. The PURCHASER hereby waives any such right of set-off or counter-claim given or implied by law.

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 60 Days the CONTRACTOR shall be deemed to have acknowledged the validity, both as regards quantum and otherwise of the aforesaid claim of the PURCHASER. Should the amount of the above-mentioned claim of the PURCHASER exceed the amount or value of the set-off 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.

- 30.10 No previous waiver of a particular right or remedy by either party shall operate as a waiver of a future right or remedy (which would normally be invocable) unless otherwise stated.

ARTICLE 31

Taxes and levies

- 31.1 Except as otherwise specified in this Contract each and every price cited in or contemplated by this Contract as described in Articles 20.2 to 20.8 includes and covers all patent royalties and all taxes, rates, charges and assessments of any kind whatsoever (whether federal, State or municipal, and whether or not in the nature of excise taxes/duties, customs tariffs, sales taxes, land taxes, licence fees or otherwise) outside the PURCHASER's country pertinent to the Equipment and Material; and CONTRACTOR's Services provided pursuant to this Contract, and/or to the performance of the work, and all other costs and charges whatsoever relevant to such Equipment and Materials, CONTRACTOR's Services and/or to such performance of the work by the CONTRACTOR.
- 31.2 22/

22/ This sub-Article should cover income tax, other taxes, customs duties, imposts and levies imposed on the CONTRACTOR, his Subcontractors or on their employees in the PURCHASER's country to be agreed upon from case to case:

(a) Considering the corresponding laws in the PURCHASER's country including the existence or non-existence of an agreement for the avoidance of double taxation between the countries of the PURCHASER and the CONTRACTOR;

(b) Enabling the CONTRACTOR either to receive the payments from the PURCHASER free of the above taxes etc. or to have considered them when fixing the amounts to be received by the CONTRACTOR;

(c) The CONTRACTOR, in case of any of his taxes having been assumed by the PURCHASER, being obligated to co-operate with the PURCHASER to minimize such tax burden and to reimburse the PURCHASER with any tax savings which the CONTRACTOR may have in his country resulting from tax payments effected by the PURCHASER.

ARTICLE 32

Suspension of work

- 32.1 The PURCHASER may, when in the PURCHASER's opinion it is deemed necessary, require the CONTRACTOR to suspend execution of the work, or part of the work, either for a specified or unspecified period by communicating notice to that effect to the CONTRACTOR. If the period is unspecified, the PURCHASER shall specify the period of suspension within (45) Days thereafter.
- 32.2 The CONTRACTOR, upon receiving notice of the PURCHASER's requirement pursuant to Article 32.1 above, shall suspend all operations except those which, in the PURCHASER's and the CONTRACTOR's opinion, are necessary for the care or preservation of the Plant.
- 32.3 During the period of suspension, the CONTRACTOR shall not remove from the Site any Materials, any part of the Plant, or any Equipment without the consent of the PURCHASER.
- 32.4 If the period of suspension is (90) Days or less, the CONTRACTOR, upon the expiration of the period of suspension, shall resume the execution of the Contract in accordance with an extension of time granted by the PURCHASER reasonably commensurate with the period during which the execution of the Plant or part of the Plant was suspended and the CONTRACTOR shall be reimbursed for his reasonably justified additional costs which should be evidenced by necessary documentation.
- 32.5 If the period of suspension is more than (90) Days, upon the expiration of the period of suspension, the CONTRACTOR shall resume operations and fulfil the Contract in accordance with the terms and conditions of this Contract, provided, however, that the time schedule will be extended accordingly and his reasonably justified costs as evidenced by documentation will be reimbursed to him for the period of suspension subject to any further amendments to the Contract in accordance with Article 19.3.

Text A

Text B

- | | |
|---|---|
| 32.6 If the period of suspension exceeds 365 Days and if either the PURCHASER requests the CONTRACTOR to recommence the work upon amended terms (to be agreed mutually) and the PURCHASER and the CONTRACTOR are unable to reach agreement on the method for the completion of the Contract, or the CONTRACTOR states in writing that he is unwilling in any event to undertake further work, the Contract shall be terminated according to Article 33. | 32.6 If the period of suspension exceeds 180 Days, either party can ask for a complete review of the Contract, and for a re-negotiation of the terms including the time of recommencement of work. If within a further period of (18) months the parties are unable to reach an agreement, or have not resorted to arbitration, then the CONTRACTOR can seek termination of the Contract without, however, compensation for consequential losses. |
| 32.7 Both the PURCHASER and the CONTRACTOR shall make bona fide endeavours to resume the work as expeditiously as possible. | |
| 32.8 Payments if any made under this Article shall be governed by the provisions of Article 19.2. | |

ARTICLE 33

Termination or cancellation of the Contract

33.1 Termination

In the event that the PURCHASER is subject to any circumstances which are wholly unavoidable and/or beyond his control (but not including occurrences which are covered by Article 34) then the PURCHASER may at any time by giving notice in writing to that effect terminate this Contract.

33.2 The CONTRACTOR shall upon receipt of a notice pursuant to Article 33.1 above cease all operations forthwith.

33.3 If the Contract is terminated pursuant to Article 33.1, 23/ the PURCHASER shall pay to the CONTRACTOR an amount equal to the greater of:

33.3.1 The cost of the work properly supplied or done by the CONTRACTOR as at the date of the termination, including the cost of terminating commitments made in good faith to his Subcontractors, as substantiated by appropriate evidence, less all amounts already paid to the CONTRACTOR by the PURCHASER, and less all amounts which the CONTRACTOR is liable under the Contract to pay to the PURCHASER or owing to the PURCHASER, and

33.3.2 The amount calculated in accordance with the terms of payment which would have been legitimately payable to the CONTRACTOR up to the date of termination provided the CONTRACTOR had in fact fulfilled his contractual obligations to such date.

33.4 In the event that the CONTRACTOR and the PURCHASER are unable to agree upon the amount of payments then the aggrieved party may resort to arbitration as provided for in Article 37.

33.5 In the event of a termination of this Contract pursuant to this Article, the following rights shall accrue to the PURCHASER:

Text A

Text B

33.5.1 To the extent that the PURCHASER has made payments pursuant to Article 20.2 (subject to recovery or deduction of other monies by the PURCHASER under the terms of Contract) the PURCHASER shall have the right to obtain from the CONTRACTOR when he is also the process licensor the documentation for know-how and basic engineering, unless already supplied by the CONTRACTOR. To the extent that the PURCHASER has made payments

33.5.1 Not used. 25/

23/ In connection with the termination of the Contract under this Article 33.3, a provision may be included for compensating the CONTRACTOR for loss of profits.

to the CONTRACTOR pursuant to Article 20.2, the PURCHASER shall have the right to obtain directly from the process licensor (when the CONTRACTOR is not the process licensor) the documentation referred to above, unless already supplied through the CONTRACTOR. 24/

33.5.2 The PURCHASER shall be entitled to receive:

	<u>Text A</u>		<u>Text B</u>
33.5.2.1	All the Technical Documentation completed or done at the date of termination, in accordance with annexures VI and XV.	33.5.2.1	All the Technical Documentation completed or done at the date of termination, in accordance with annexures VI and XV. <u>26/</u>
33.5.2.2	All calculations, computer print-outs or other materials pertaining to the detailed engineering, completed at the date of termination.	33.5.2.2	Not used.
33.5.2.3	All detailed civil engineering drawings, all detailed electrical, mechanical, instrumentation and other erection drawings available at the Site, or completed at the date of termination.	33.5.2.3	All detailed civil engineering drawings, all detailed electrical, mechanical, instrumentation and other erection drawings available at the Site, or completed at the date of termination. <u>26/</u>

24/ The validity of the process licence and the submission of the basic and detailed engineering documents should be dependent upon a mutual agreement from case to case, taking into consideration the stage of implementation upon the termination of the Contract, and consequential adjustments in the price paid (for text A only).

25/ Article 33.5.1 shall cover the right of the PURCHASER to use the process licence and to receive the basic engineering documents, depending on a mutual agreement from case to case, and taking into consideration the stage of implementation upon the termination of the Contract and consequent financial adjustment (for text B only).

26/ The right of the PURCHASER to receive the detailed process engineering documents is dependent on whether the PURCHASER will remain entitled to the licence or not (Article 33.5.1) (for text B only).

- 33.5.3 The PURCHASER shall be provided with all procurement documentation, including copies of all tenders issued or prepared, bids received, bid tabulations completed or under preparation, and CONTRACTOR's recommendations completed, and purchase orders prepared and issued up to the date of termination.
- 33.5.4 The PURCHASER shall be given all inspection reports, reports on visits to Vendor's factories and copies of test certificates received from Vendors up to the date of termination.
- 33.5.5 The PURCHASER shall have the right to establish direct contractual arrangements with the process licensors as provided in Article 7.2.2.

33.6 Nothing herein shall invalidate the rights of the PURCHASER or the CONTRACTOR as to contractual grounds of action (in relation to damages or costs due to either party) whether through litigation or arbitral procedures, and notwithstanding the termination of the Contract herein, the parties to this Contract may proceed to arbitration or may institute actions in the courts of competent jurisdiction.

33.7 Cancellation

In any of the following cases, the PURCHASER may, without any other authorization, cancel the Contract and take all or any part of the Contract and/or of the work to be undertaken by the CONTRACTOR out of the CONTRACTOR's hands and may employ such means as the PURCHASER sees fit to complete this Contract:

- 33.7.1 Where the CONTRACTOR has delayed commencement of work for (6) months, for reasons attributable to the CONTRACTOR and the PURCHASER has given notice to the CONTRACTOR and the CONTRACTOR has not replied or not taken action to commence work for (___) months after such notice was given.
- 33.7.2 Where the CONTRACTOR has become insolvent and/or made an assignment of the Contract without the approval of the PURCHASER.
- 33.7.3 Where the CONTRACTOR has committed an Act of Bankruptcy.
- 33.7.4 Where the CONTRACTOR has abandoned work.

Text A

Text B

- 33.7.5 Where the CONTRACTOR has failed to make proper disclosures as referred to in Article 40.
- 33.7.5 Not used.

33.8 Where this Contract or any portion or portions thereof has or have been taken out of the CONTRACTOR's hands under Article 33.7, the CONTRACTOR shall not, except as provided in Article 33.9 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 either party at its option may proceed to arbitration for recovery of damages.

- 33.9 Where this Contract, or any portion or portions thereof has or have been taken out of the CONTRACTOR's hands under Article 33.7 and is (are) 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 subject to any actions already instituted or proposed to be commenced in the courts or under arbitration, the PURCHASER shall, if he is of the opinion that no financial prejudice to the PURCHASER will result, authorize payment of that amount to the CONTRACTOR.
- 33.10 The taking of this Contract, 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 the obligations imposed upon the CONTRACTOR by law except the obligation to complete physically the execution of such portion of the Contract as has been taken out of the CONTRACTOR's hands.

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 any one or other of 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 or communication (occurring concurrently);

Any accident, fire or explosion;

Any strike, lock-out or concerted act of workers (except where it is within the power of the party invoking the force majeure to prevent such occurrence);

Shortages or unavailability of materials (compounded by the same shortage or unavailability from alternative sources).

34.2 If either party is prevented from or delayed in the performance of any of his obligations under this Contract by circumstances of force majeure, and if the affected party has given written notice thereof to the other party within 15 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. Either party upon receipt of the notice of force majeure under Article 34.2 shall confer promptly with the other and agree upon a course of action to remove or alleviate such cause(s), and shall seek reasonable alternative methods of achieving the same 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 (6) months, then 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.

Text A

Text B

- 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 (9) months for one or more causes and if the consultations referred to in the preceding Article 34.4 have not resulted in mutual agreement (or have not taken place because the parties have been unable to communicate with one another), the parties shall thereupon agree to amend the terms of this Contract by virtue of the prevailing force majeure circumstances and shall determine the course of further action. If the parties are unable to reach an agreement to amend the terms of this Contract by virtue of the prevailing and continuous force majeure, or to terminate the Contract, then the parties may resort to arbitration pursuant to Article 37.
- 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 (9) months for one or more causes and if the consultations referred to in the preceding Article 34.4 have not resulted in mutual agreement (or have not taken place because the parties have been unable to communicate with one another), the parties shall thereupon agree to amend the terms of this Contract by virtue of the prevailing force majeure circumstances and shall determine the course of further action. If the parties are unable to reach an agreement to amend the terms of this Contract by virtue of the prevailing and continuous force majeure, then either party shall have the right to terminate the Contract under the provisions of Article 33.1 by giving written notice to the other party.
- 34.6 The PURCHASER acknowledges that any eventual inability on his part to make bona fide payments to the CONTRACTOR under this Contract shall not be claimed or deemed to constitute force majeure. In the event of a dispute as to the bona fide payments due, payments shall be determined by the provisions of Article 19.2 in like manner as suspension of the work, failing which the parties shall have recourse to the provisions of Article 37.
- 34.7 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

Language governing the Contract

- 35.1 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.
- 35.2 All correspondence, information, literature, data, manuals etc. required under the Contract shall be in the _____ language.
- 35.3 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 36

Applicable laws and conformity with local statutes

- 36.1 The laws applicable to the Contract shall be the laws of (country to be agreed), in conformity with the laws of the country where the Plant is located.
- 36.2 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 are proven to the satisfaction of the PURCHASER to have an adverse effect on the CONTRACTOR's obligations, scope of work, prices and/or time schedule under this Contract), the PURCHASER shall either:
- 36.2.1 Obtain appropriate exemption(s) from the relevant authorities on the CONTRACTOR's behalf, or
- 36.2.2 Negotiate with the CONTRACTOR for commensurate change(s) in the scope of the work to be performed under the Contract, together with such changes in price as properly reflect the actual increased costs that are anticipated. The increased amount shall be subject to full audit by the PURCHASER in accordance with Article 23.2.
- 36.3 Nothing herein shall in any manner affect the validity of the Contract or derogate from the specified obligations of the CONTRACTOR, and his liabilities under the Contract and law.

ARTICLE 37

Settlement of disputes and arbitration

- 37.1 In the event of any dispute, difference or contention over 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.
- 37.1.1 Should the dispute or differences continue to remain unresolved, both parties may each nominate a person to negotiate and reconcile the dispute or differences to resolve thereby the matter of contention between the parties arising out of the Contract. In the event that these two persons referred to cannot agree, they shall nominate a third Neutral Person to reconcile the dispute or difference. In case the two persons cannot agree on a third Neutral Person or in case the efforts of the Neutral Person nominated by the two parties fail to resolve the differences within (6) months, both parties to the Contract shall proceed to arbitration as provided for herein.
- 37.1.2 Pending resolution of any such claim or dispute pursuant to Article 27.1.1, the CONTRACTOR shall perform in accordance with the Contract without prejudice to any claim by the CONTRACTOR for additional compensation and/or time to complete the work if such instructions are (in his opinion) above and beyond the requirements of the Contract.
- 37.2 Notwithstanding the existence of a dispute, the CONTRACTOR and the PURCHASER shall continue to carry out their obligations under the Contract, and payment(s) to the CONTRACTOR shall continue to be made in accordance with the Contract that in the appropriate cases qualify for such payment(s).
- 37.3 Subject to the provisions of this Article, either the PURCHASER or the CONTRACTOR may demand arbitration with respect to any claim, dispute or other matter that has arisen between the parties.
- 37.3.1 However, no demand for arbitration of any such claim, dispute or other matter shall be made until the later of (a) the date on which the PURCHASER or the CONTRACTOR, as the case may be, has indicated his final position on such claim, dispute or matter, or (b) the (20th) Day after the CONTRACTOR or the PURCHASER, as the case may be, has presented his grievance in written form to the other, and no written reply has been received within (20) Days after such presentation of the grievance.
- 37.3.2 No demand for arbitration shall be made after the (___) Day following the date on which the PURCHASER or the CONTRACTOR, as the case may be, has rendered his written final decision in respect of the claim, dispute or other matter as to which arbitration is sought. The PURCHASER or the CONTRACTOR, as the case may be, shall be obliged to specify that the written decision is in fact the final decision within the meaning of this sub-Article. Failure to demand arbitration within the said (___)-Day period shall result in the decision being final and binding upon the other party.

- 37.4 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 shall be decided by arbitration in accordance with the terms contained in annexure XXXII. 27/ This agreement so to arbitrate shall be enforced 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.
- 37.5 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 37.4 above. The demand for arbitration shall be made within the period specified in Article 37.3, 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.
- 37.6 The CONTRACTOR and the PURCHASER shall continue the work and undertake their obligations under the Contract in accordance with Article 37.2 and the CONTRACTOR shall maintain the progress schedule during any arbitration proceedings, unless otherwise agreed by the PURCHASER in writing.
- 37.6.1 Before commencement or continuation of the work which is the subject of the dispute under arbitration, the CONTRACTOR may request, at his discretion, a bank guarantee from the PURCHASER to cover the CONTRACTOR's estimate of the additional costs involved. The bank guarantee shall be payable in part or full only as a result of arbitration proceedings in favour of the CONTRACTOR, and shall be valid until 30 Days after the arbitration award.
- 37.7 In the event of arbitration, the CONTRACTOR and the PURCHASER agree that the arbitrator(s) shall have unrestricted access to the Plant (notwithstanding the secrecy provisions of Articles 7.8 to 7.13) for the purpose of the said arbitration.
- 37.8 Arbitration shall be at (town) and all proceedings shall be in the _____ language. The governing law shall be in accordance with Article 36.

27/ This annexure will contain details of the specific arrangements relating to arbitration agreed to by the two parties.

ARTICLE 38

General provisions

- 38.1 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 The express covenants and agreements herein contained and made by the PURCHASER and the CONTRACTOR are and shall be the only covenants and agreements upon which any rights against the PURCHASER or the CONTRACTOR are to be founded.
- 38.3 The provisions of the Articles of this Contract and the contents of the annexures shall be complementary to each other, but in the event of any conflict, the provisions of the Articles shall prevail.
- 38.4 The invalidity of a portion of this Contract shall not affect the validity of the remainder of the Contract unless such remaining portion should be thereby rendered meaningless or impracticable.
- 38.5 Article headings appearing herein are included for convenience only and shall not be deemed to be a part of this Contract.
- 38.6 Protection of work and documents.
- 38.6.1 If any document or information given or disclosed to the CONTRACTOR is given a security rating the CONTRACTOR shall take all reasonable measures directed by the PURCHASER to ensure the maintenance of the security rating.
- 38.7 Sales territory.
- 38.7.1 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

Notices and approvals

- 39.1 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:
- 39.1.1 Provided that:
- 39.1.1.1 Any notice to be given to the CONTRACTOR is to be conveyed by registered airmail 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, marked for the attention of (designation))
- 39.1.1.2 In the case of a notice to be served on the PURCHASER it is to be sent by registered airmail 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, marked for the attention of (designation))
- 39.1.1.3 In the case of a notice or information to be sent to the Technical Adviser by the CONTRACTOR, or to be sent by the Technical Adviser to the CONTRACTOR, such notice shall be delivered to the respective Site offices at (town).
- 39.1.2 When any such notice is sent by registered mail post it shall be deemed to have been duly served following the expiration of (___) Days following the date of posting and in proving such services it shall be sufficient to show that the letter containing the notice was properly addressed and conveyed to the postal authorities for transmission by registered airmail.
- 39.2 Either party may, by giving notice to the other party in writing, change its postal address, cable address or telex address for receiving and/or forwarding such notices.
- 39.3 For the purposes of this Contract "approval" shall be deemed to mean approval in writing. Decisions requiring approval shall also be deemed to encompass modifications or rejections, all of which shall be in writing. Any and all approval(s) which amend, modify or vary the Contract and/or involve an increase in payment(s) shall be forwarded in like manner as the procedure specified for the notices under this Article.

ARTICLE 40

Disclosures

40.1 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.

Text A

40.2 The CONTRACTOR shall not pay fees, discounts or other commissions in relation to the award to him of this Contract. If any agent's fees are payable to agents in (PURCHASER's country) by virtue of legal agency agreement(s) made before the award of this Contract, then the CONTRACTOR shall (before the award of this Contract) make full disclosure to the PURCHASER of the name of the agent and quantum of fees that were or are to be paid.

Text B

40.2 The CONTRACTOR shall not pay fees, discounts or other commissions in relation to the award to him of this Contract either directly or indirectly to any employee of the PURCHASER.

ANNEXURE I

Brief description of the Plant

The object of this Contract is to establish an Ammonia Plant with a daily capacity of (1,000) Tonnes per Day integrated with a Urea Plant with a capacity of (1,725) Tonnes per Day, to be located at (details of location) in (country). The Site is shown on the map (attached) along with the existing rail and road network in (country).

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

The basic steps in the manufacture of ammonia shall start from the specified natural gas as feed and shall consist of natural gas compression, hydro treating 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 shall be as follows:

(insert here a brief description of the urea process used).

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

All utilities and Off-Sites, including workshops and laboratory facilities, shall also be provided as laid down in the Contract.

The effluents from the Plant shall be disposed of at (disposal point), as shown in the attached map, and effluent treatment facilities shall be provided to make the effluents fit for such disposal.

The Plant Site is located at a distance of (_____) kilometres from the nearest large habitations as shown in the attached map and Plant discharges to the air shall be controlled, keeping in mind the wind directions, temperature inversion and other relevant factors.

ANNEXURE II

Basis of design

1. Raw material specifications

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

- (a) Source;
- (b) Pressure and temperature at the Battery Limits of the Plant Site; a/
- (c) Analysis of the gas including, to the extent possible, the following:

<u>Components</u>	<u>Percentage by volume</u>
Methane	%
Ethane	%
Propane	%
Butane	%
Pentane	%
Hexane	%
	} If available, the proportions of the iso and normal forms and should be given as percentages.
Nitrogen	%
Carbon dioxide	%
Inerts (specify)	%
Oxygen	%
Water content	%
Total sulphur	ppm v/v
Sulphur as H ₂ S	ppm v/v
Sulphur as organics	ppm v/v (including COS) <u>b/</u>
Lower calorific value	kcal/Nm ³ at STP

2. Meteorological data

Meteorological data should be given for at least 10 years and include:

(a) Available average data

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

- (a) Daily average maximum temperature, °C;
- (b) Daily average minimum temperature, °C;

a/ Upper and lower limits of pressure should be indicated as they may have a bearing on the standard design pressure of Equipment at the Plant inlet point.

b/ If data on organic sulphur, such as COS, mercaptans, thiophenes etc. are available, this should be indicated.

- (c) Monthly rainfall, mm;
 - (d) Dry and wet bulb temperatures (°C), preferably both for morning (indicate time) and afternoon;
 - (e) Prevailing wind direction. (If available, a complete thumb-card indicating the yearly average occurrences of winds in the prevailing direction should be attached.)
- (b) Extremes recorded

This should contain data on the extremes recorded for:

- (a) Maximum temperature, °C;
- (b) Minimum temperature, °C;
- (c) Maximum rainfall recorded in 24 hours (indicate one- and two-hourly intensity);
- (d) 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 and seismic conditions

These should include:

- (a) The types of soil conditions;
- (b) The subsoil water-table level at the site (indicate whether water is sweet, saline or sea water);
- (c) The load-bearing capacity in the area. If the soil-bearing capacity differs considerably in various places of the plot, a plot plan indicating drilling points and findings should be attached;
- (d) Available data on earthquakes in or near the Site and seismic design data commonly used in the area.

4. Standards and codes c/

British and American standards applicable to Ammonia and Urea Plants and Off-Sites are as follows:

Reinforced and pre-stressed 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, section I

c/ The British and American Standards agreed upon for one particular plant are given as examples. Other standards, such as the Deutsche-Industrie Norm (DIN), the Japanese Industrial Standard (JIS) etc., should be specified accordingly if required or envisaged as alternatives. Where national standards or codes exist, these should be clearly stated.

Convection coils Tubular exchangers	ASME ASME code, section VIII, divisions I and II, TEMA standards (class R)
Surface condensors etc.	American Heat Exchanger Institute
Refractory and insulation	ASTM
Centrifugal pump	API 610
Reciprocating compressor	API 618 and manufacturer's standard
Steam turbine	API 611 or 612/615
Centrifugal compressors	API 617 and 614
Pressure vessels (including condensor shells)	ASME code, section VIII, divisions I and II.
Refrigerated tanks	API standard 620 (with appendices)
Atmospheric storage tanks	API standard 650
Piping systems	ANSI B 31.3 ANSI B 16.5 ASMI and API codes
Pressure-relieving system	API RP-520
Electrical code of practice	BS CP 321, 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 the CONTRACTOR and the PURCHASER.
Hazard area classification	API safety codes
Effluent standards	See annexure XVII
Civil engineering and erection	See annexures XXVIII and XXIX

Note: ANSI: American National Standards Institute; API: American Petroleum Institute; ASME: American Society of Mechanical Engineers; ASTM: American Society for Testing and Materials; BS: British Standard; CP: Code of Practice; ISA: Instrument Society of America; TEMA: Tubular Exchanger Manufacturers Association.

5. Statutory regulations

The statutory regulations relating to standards or other codes, or factory acts applicable in the PURCHASER's country, should be specified herein. This particularly refers to boiler codes and acceptance procedures applicable to the 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 to Site d/

The data supplied here should include:

- (a) Maximum lift available at the port (if the ship's derricks can be used this should be stated);
- (b) Maximum dimensions and weights that can be carried by road from the port to the Site;
- (c) Maximum dimensions and weights that can be carried by rail from the port to the Site.

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

7. Characteristics of utilities and services and limits of supply

7.1 Electric power

(a) All purchased stand-by electric power shall have the following characteristics:

(indicate voltage including voltage and frequency fluctuations, phases, cycles, 3- or 4-wire systems);

(b) All generated power shall have the following characteristics:

(these 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:

(indicate voltage, phases, cycles, 3- or 4-wire systems).

7.2 Water

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

(a) The source of water is (source);

(b) The water has the analysis given below:

d/ In a cost-reimbursable Contract, the PURCHASER would be well advised to investigate all aspects of transportation by sea such as harbour conditions, availability of storage, road and rail trailers etc.

	<u>Unit</u>	<u>Normal</u>	<u>Variations e/</u>
Total hardness, CaCO ₃	mg/l		
P value, CaCO ₃	mg/l		
M value, CaCO ₃	mg/l		
Calcium, CaCO ₃	mg/l		
Magnesium, MgCO ₃	mg/l		
Sodium, Na	mg/l		
Iron, Fe	mg/l		
Chloride, Cl	mg/l		
Sulphate, SO ₄	mg/l		
Silica (dissolved), SiO ₂	mg/l		
Total dissolved solids	mg/l		
Total suspended solids	mg/l		
pH			
Colour and turbidity (silica scale)			

e/ If there are large variations, they should be explained.

ANNEXURE III

Battery Limits of the Plant

1. Definition of Battery Limits

The Battery Limits of the area of Plant design should be clearly stated and indicated on the preliminary plot plan (attached) with approximate data on the elevation of the connecting points above and below ground. An example is given below:

Inputs Natural gas shall be supplied by the gas distribution agency at a single point on the boundary of the Plant (unit inlet or Battery Limit).

Water shall be pumped to the Plant Site and shall 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 a ground level of (_____)m³ will be provided, and water shall flow to this storage. All treatment and pumping facilities for the water are part of the design.

Steam and power requirements shall be generated in the Plant. External steam and power supplies shall be connected to the prospective points as indicated on the plot plan (separately for different parameters).

Stand-by and construction electric power shall (or shall not) be available. (Give details if available. Otherwise indicate the type of emergency power source desired. This can also be used for construction.)

All chemicals and catalysts shall be supplied at storages/ warehouses at ground level. (Indicate location at the construction site or within the plot.)

Outputs Additional power to the extent of (_____)kW shall be generated for use by the PURCHASER.

Surplus steam and condensate (specify parameters and quantities) shall be piped to point (_____) indicated on the plot plan.

Facilities shall be designed for filling liquid ammonia cylinders/ ammonia tank wagons at a maximum rate of (_____) Tonnes per 8 hours.

Urea (50 kg net weight) shall be packed in bags. The bags shall be (give details).

Transport of urea shall be:

(_____) per cent by road in (_____)-Tonne trucks
(_____) per cent by rail in (_____)-Tonne wagons

Adequate facilities shall be designed for loading rail wagons/trucks at the bagging plant or at locations to be finalized by the PURCHASER. Should the loading terminal be

located away from the bagging plant, facilities shall be designed for conveying filled bags from the bagging plant to the terminal and storage at the terminal.

Effluents shall be disposed of to (_____).

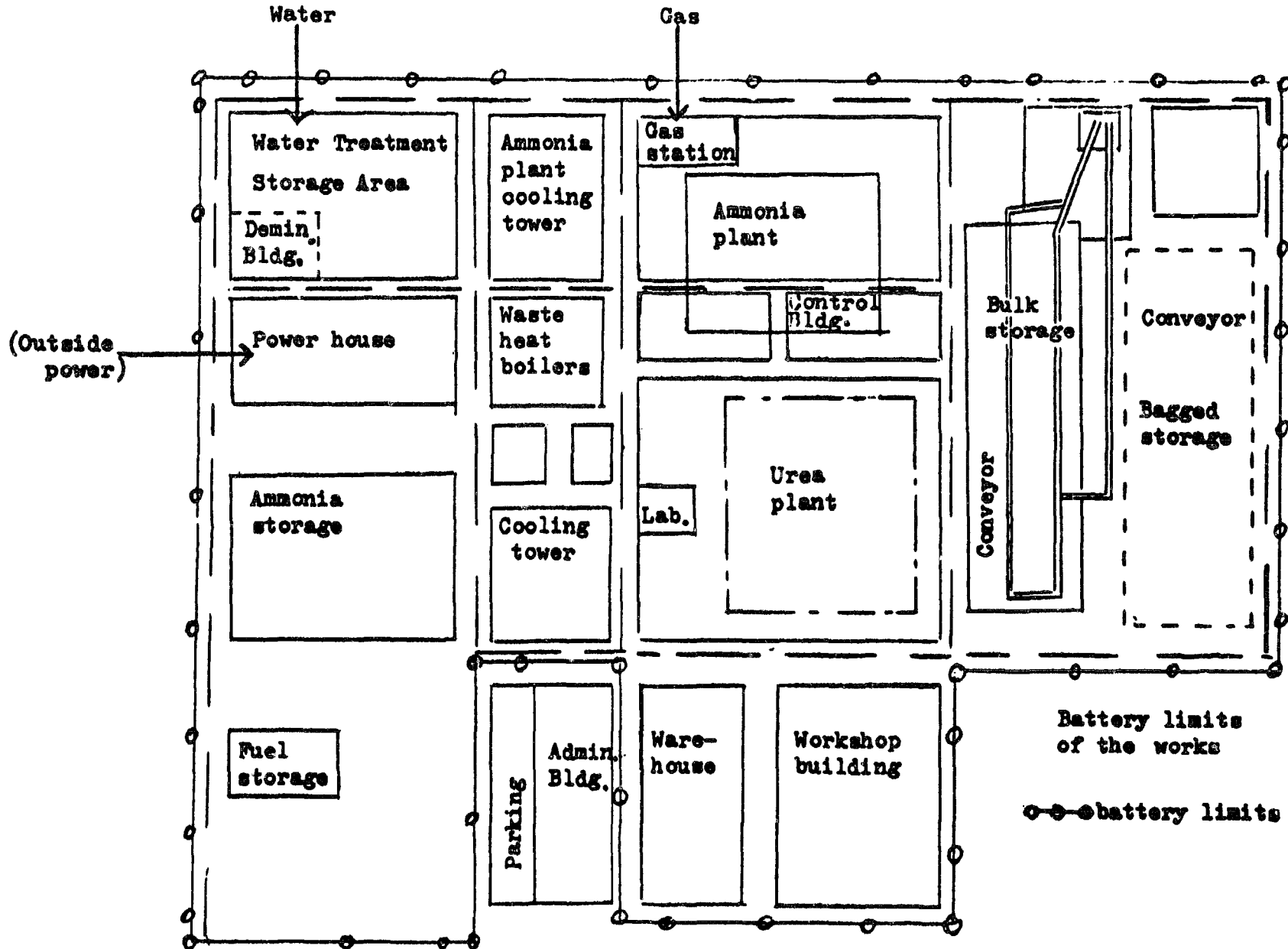
2. Scope of supply

Within the above Battery Limits, the entire Plant, including the utilities and Off-Sites specified 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 shall be one metre outside the Battery Limits or 250 millimetres above ground-floor level, flanged or unflanged, with the cut-off valves included in the scope of delivery or design.

3. Extension of Battery Limits

In some cases, the CONTRACTOR's Services may relate to facilities outside the plot plan attached (e.g. a transmission line from a power station 12 kilometres away from the Site). In such cases, the definition of Battery Limits should be extended to include such facilities, by specifically mentioning them in this annexure.

Preliminary plot plan



ANNEXURE IV

Design criteria agreed

1. Meteorological

(a) The Plant and Equipment, particularly the 100 per cent capacity of the air compressor and the prilling tower shall be designed for a maximum ambient temperature of (_____) °C and relative humidity of (_____) (suggested equivalent to extremes recorded);

(b) 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 (suggested temperature is the minimum recorded);

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

(d) The cooling tower shall be designed for an extreme wet bulb temperature of (_____) °C and dry bulb temperature of (_____) °C and shall be designed to give an approach of 3 °C to the wet bulb temperature (suggested maximum temperature of 32 °C for cooling water in tropical countries);

(e) 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;

(f) Design wind velocity shall be (_____) kph (or indicate local standards if applicable and specified for different levels/above ground) at (_____) height.

2. Seismic factor

For design purposes, the seismic factor at the Site can be taken as (_____). As regards the structure, seismic conditions and maximum wind velocity may not be considered as occurring simultaneously.

3. Natural gas

(a) 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);

(b) The sulphur guard shall be for (_____) ppm of sulphur. For design purposes the ratio of non-reactive to reactive sulphur shall be (_____) per cent to (_____) per cent;

(c) The design intake pressure of gas shall be (_____) kgf/cm² at the Battery Limits of the Plant Site (refer to maximum pressure or standard design pressure of supply);

(d) The design temperature of natural gas at the Battery Limits shall vary between (_____) °C and (_____) °C;

(e) There should be provision for a knock-out drum with automatic draining and a high-level alarm to separate water and condensables carried with the natural gas, if required.

4. Water

(a) The analysis of make-up water used for design shall be the extreme conditions specified in annexure II;

(b) Make-up water shall not exceed (_____) per cent of the circulating water (for desert conditions 5-7 per cent);

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

(d) The cooling water circuit shall be designed for a maximum ΔT of (_____) °C (suggested maximum temperature of 10 °C for tropical countries);

(e) The analysis of the demineralized water produced in the Plant, in particular the silica, iron and copper content, shall show that it is suitable for use in (105) kgf/cm² steam boilers and in the Ammonia Plant circuit;

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

5. Soil conditions

Design load-bearing capacity shall be as specified in annexure II, but is subject to further tests as laid down in the Contract.

6. Electrical generation

(a) The works shall be self-sufficient in electrical power. Power exported from the Battery Limits shall be (_____) kW;

(b) An emergency power supply of (_____) kW generated by a (_____) is to be provided;

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

High tension: () V, 3-phase, 3 wire, 50 or 60 Hz AC
3-phase: () V, 3-phase, (3 or 4) wire, 50 or 60 Hz AC
1-phase: () V, 1-phase, (3 or 4) wire, 50 or 60 Hz AC

(d) Voltages for electrical motors shall be high-tension voltage for motors of 200 kW or more, and low tension 3-phase voltage for smaller motors;

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

7. Instrument air

The works shall be self-sufficient in instrument air supply under the following conditions:

Outlet pressure conditions from (7) kgf/cm² instrument air unit.

Quality Dew-point below -20 °C (for tropical countries, otherwise -40 °C). Free of dust and oil.

8. Inert gas

Inert gas for the works shall be produced by the combustion of natural gas in the following conditions:

Pressure (6) kgf/cm² minimum
Temperature Ambient
Quality Suitable for plant purging and catalyst reduction.

(Alternatively: specify pure nitrogen, if available from existing external source, air fractionation unit etc.)

9. Steam

(Three) steam systems shall be provided in the works. These are: a/

<u>System</u>	<u>Pressure</u> kgf/cm ² (g)	<u>Temperature</u> °C
High pressure (HP) steam	(105)	(500)
Medium pressure steam (MP) ranges	(37/25)	(370/225)
Low pressure (LP) steam ranges	(4.5/2.5)	(155/138)

The non-contaminated condensate recycled from the various turbine condensers should be recycled to the boiler feed system through a polishing unit.

Surplus or contaminated condensate shall be:

Cooled locally to the temperature of (_____) °C and discarded into the (sewage or cooling water system).

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

10. Primary reformer furnace

The design of the reformer furnace shall be based on (specify whether a single-row arrangement of reformer tubes or as otherwise agreed). The reformer furnace shall be based on a proven design that has been in commercial operation for at least 5 years.

11. Other design criteria

(a) All dimensions and weights and measures including instrumentation shall be indicated in the (metric) system. The dimensions of piping and parts

a/ The figures shown in brackets refer to one system. However, the pressure of the high pressure steam should not be too high.

of the heat exchangers may be indicated in the (British) system (indicate applicable standards);

(b) Copper and copper-bearing alloys shall not be used in the works except for the electrical system, other than the grounding system, and where otherwise agreed;

(c) The synthesis gas compressor system shall operate at a pressure of (_____) kgf/cm^2 at the intake of the synthesis gas loop (indicate standard design pressure, if higher). The speed of the synthesis compressor shall be preferably limited to (11,000) rev/min and the choice of the discharge pressure of the synthesis gas compressor, i.e. for the synthesis gas loop, should be based on a proven design and the operation of the compressor.

ANNEXURE V

Documents requiring approval of the PURCHASER

1. Technical Documentation containing the following data shall require the approval of the PURCHASER:

1.1 Process

- (a) Process flow-sheets with material balances (Plants and utilities);
- (b) Piping and instrumentation diagrams (Plants and utilities).

1.2 Equipment and machinery

- (a) Specifications for all Equipment and machinery;
- (b) List of recommended Vendors;
- (c) List of recommended spare parts.

1.3 Layout and piping

- (a) General layout of the works;
- (b) Plot plan for the Plants;
- (c) Layout of machinery in each Plant and in the works;
- (d) Terminal point drawings for the interconnection of pipes going in and coming out of the works.

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;
- (c) Lighting proposals for the Plant.

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, cables and sewage disposal;
- (d) Preliminary profile drawings of the buildings giving location of Equipment and details of loads including anticipated loads and stresses from heavy piping supports;
- (e) Drawings showing areas where anti-corrosion protection of structures and floors is necessary, suggested maintenance access areas and apertures.

1.7 Others

Any other document identified in annexure XV or in the Contract as requiring the approval of the PURCHASER.

2. Any Technical Documentation that specifies basic design data for detailed engineering to be carried out by the PURCHASER.

3. As-built documentation (this does not require the PURCHASER's approval but the PURCHASER shall have the right to check it, if he so desires):

- (a) Complete as-built Equipment layout;
- (b) Complete as-built piping and instrumentation drawings and piping isometrics;
- (c) Complete instrumentation details and connections;
- (d) Complete as-built electrical layout and cable details;
- (e) Complete list of Plant and Equipment, with relevant purchase order numbers.

ANNEXURE VI

List of technical services to be performed
by the CONTRACTOR

In addition to or amplification of the services to be performed by the CONTRACTOR, as detailed in Articles 3, 4 and 6 or elsewhere specified in the Contract, the technical services to be performed by the CONTRACTOR shall include but not be limited to:

(a complete list should follow of the technical services to be performed by the CONTRACTOR. This list should, however, not include the supply of documents covered by annexure XV).

ANNEXURE VII

List of technical services to be provided
by the PURCHASER

In addition to or amplification of the services to be performed by the PURCHASER, as detailed in Articles 3, 5 and 6 or elsewhere specified in the Contract, the technical services to be performed by the PURCHASER shall include but not be limited to:

(a complete list should follow of the technical services and information to be provided by the PURCHASER. This list is primarily meant as a check-list for the technical personnel undertaking the project).

ANNEXURE VIII

Process description, supply of Equipment
and service facilities

1. Process description a/

(The process description, as finally agreed between the CONTRACTOR and the PURCHASER should be inserted here. In the process description, the Equipment referred to should be given the same distinguishing numbers as those contained in a flow-sheet, which should be attached.)

2. Preliminary layout

- 2.1 The preliminary layout of the Plant(s), utility buildings and Off-Sites are shown in the drawing (attached), no. (_____).
- 2.2 This layout is preliminary and shall be discussed further at the first co-ordination meeting contemplated under Article 6.5 of the Contract.

3. Plant and Equipment layout and interconnections

- 3.1 The preliminary Plant and Equipment layout in the Ammonia and Urea Plants is indicated in drawings, no. (_____) and no. (_____).
- 3.2 The general layout of Equipment in each Plant in the Off-Sites, in the sub-station and all auxiliary buildings shall be discussed and finalized at the meeting contemplated under Article 6.8.
- 3.3 Notwithstanding the finalization of the layout under 3.2 above, changes may be required during and after procurement, and these changes shall be made following discussions at further meetings contemplated under Article 6, or by the Engineers of the CONTRACTOR and the PURCHASER at (CONTRACTOR's design offices), without additional cost to the PURCHASER.
- 3.4 The preliminary piping and instrumentation proposed is indicated on the piping and instrumentation drawing (attached), nos. (_____). This is tentative only and shall be discussed further along with the Equipment layout.
- 3.5 A one-line diagram showing the electrical design is (attached) drawing no. (_____). This is tentative only and shall be discussed further along with the Equipment layout.
- 3.6 Location and details of control panels, including relevant control diagrams.

a/ Process descriptions and block flow diagrams and/or preliminary piping and instrumentation flow-sheets may be taken from the tender documentation, or should comply with those agreed upon at the offer stage of pre-contract discussions.

4. Equipment List b/

4.1 A preliminary list of Equipment to be procured is given below. This list is not exhaustive. The Equipment to be engineered or procured shall include all the Plant and Equipment within the Battery Limits (annexure III) to produce the required quantities of ammonia and urea and to meet the Performance Guarantees contained in the Contract.

(Each piece of Equipment should now be detailed under the Plant sections suggested in 4.2 below. The details for each piece of Equipment should contain:

- (a) Name of Equipment;
- (b) Number on flow-sheets;
- (c) Size and other technical data (e.g. heat transfer area for heat exchangers);
- (d) Approximate weight (this could be the total for a section as a whole);
- (e) Materials of construction (complete details should be given, e.g. "stainless steel" is not enough; the type of stainless steel should be specified).

4.2 The sections of the Plant suggested are:

(The following list may be expanded as appropriate.)

4.2.1 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.

4.2.2 Urea plant

- (a) Reactors
- (b) Towers and vessels

b/ The necessity of an exhaustive list, giving all details of each piece of Equipment to be procured, must be emphasized. The detailed check of this list by the PURCHASER is very important.

- (c) Heat exchangers
- (d) Separators
- (e) Tanks
- (f) Ejectors
- (g) Compressors
- (h) Turbines
- (i) Pumps
- (j) Miscellaneous equipment
- (k) Instrumentation and control

4.2.3 Product handling, bagging and storage

- (a) Urea handling equipment to the storage;
- (b) Urea storage (suggested capacity 60,000 Tonnes);
- (c) Urea-reclaiming equipment with a capacity of 160 Tonnes per hour;
- (d) Screening and dedusting of the reclaimed urea from the storage;
- (e) Bagging station provided with a suitable number of bagging lines for a total bagging capacity of 160 Tonnes per hour of urea. Each line shall be complete 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) Storage for empty bags (suggested capacity: two months' requirement) with a conveyor system for moving bags to the bagging plant;
- (g) Storage for bagged urea (suggested capacity: 7,000 Tonnes) with a conveyor system for moving bags to the loading terminal;
- (h) Road and railcar loading system for shipment of bags to be dispatched as follows:
 - () per cent by road
 - () per cent by rail

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

The actual list of the Equipment shall be determined during the engineering design. All lists contained above are preliminary.

5. Utilities

- 5.1 The services that shall be designed and procured for the works are (supplement as appropriate):
- 5.1.1 Cooling water system
 - 5.1.2 Raw water treatment
 - 5.1.3 Demineralized water system
 - 5.1.4 Fire-fighting and fire alarm system
 - 5.1.5 Plant and instrument air system
 - 5.1.6 Natural gas distribution system
 - 5.1.7 Inert gas system
 - 5.1.8 Effluents collection and disposal system
 - 5.1.9 Steam generation, distribution and condensate recovery system
 - 5.1.10 Interconnection (piping) system within the complex
 - 5.1.11 Electric power generation and distribution system, lighting system, earthing system, emergency power generation and distribution system. (Motors should be detailed under each Plant section, utility or Off-Site.)
- 5.2 The actual list of itemized Equipment shall be determined during the layout and engineering design.

6. Off-Sites

- 6.1 The Off-Sites facilities that shall be designed and procured for the works are:
- 6.1.1 Workshops for mechanical, electrical and instrumentation, maintenance and motor garage
 - 6.1.2 Control laboratory
 - 6.1.3 Warehouses for spare parts, stores, chemicals and lubricants
 - 6.1.4 Administrative and community buildings
 - 6.1.5 Telephone and Plant intercommunication system
 - 6.1.6 Erection equipment (for use in the Plant after take-over)
 - 6.1.7 Fire-fighting equipment and health security appliances

Note relating to items 4 to 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 works are included in the scope of design and procurement of the Equipment. It is recommended, however, that the instrumentation should be detailed in each section.

7. Critical Items

7.1 The items specified under 7.2 below represent Critical Items either for the process or from the point of view of delivery. These items shall be purchased under a separate procedure, as laid down in annexure XXVI.

7.2 (Critical Items change from time to time. Items for one contract were:

7.2.1 Ammonia

- (a) Primary reforming furnace, including reformer tubes
- (b) Waste heat boiler*
- (c) Ammonia synthesis converter
- (d) Ammonia chillers*
- (e) Air compressor with turbine*
- (f) Refrigerating ammonia compressor with turbine*
- (g) Synthesis gas compressor, with turbine

7.2.2 Urea

- (a) Synthesis reactor
- (b) Urea stripper
- (c) First carbamate condensor
- (d) Second carbamate condensor
- (e) Carbon dioxide compressor with turbine*
- (f) Pumps

7.2.3 Utilities

- (a) Turbo-generators*
- (b) Boilers)

Note: Items marked with an asterisk are usually time critical at that time.

ANNEXURE IX

List of catalysts a/

The following catalysts are required for the Ammonia Plant:

<u>Tasks</u>	<u>Particle size (mm)</u>	<u>Bulk density (kg/l)</u>	<u>Expected life (year)</u>	<u>Quantity b/</u>
<u>Desulphurization</u>				
Hydrogenation of natural gas	2-5	0.85	4	
H ₂ S absorption	4 x 6	1.38	1/2/5	
Activated carbon				
<u>Reforming</u>				
Primary reforming	-	1.66	3	
Secondary reforming	-	1.0	5	
<u>Conversion</u>				
High tension shift	6 x 6	1.06	3	
Low tension shift	4 1/2 x 4 1/2	1.06	2	
<u>CO removal</u>				
Methanation	5-10	0.90	5	
<u>Synthesis</u>				
NH ₃ synthesis	3-6	2.12	5	
	1 1/2-3	2.7	5	

a/ All the figures are only indicative and have been taken from one contract.

b/ The quantity depends on the process to be used. The quantity should be for one charge plus one replacement charge.

ANNEXURE X

List of spare parts

1. For the spare parts of Critical Items and proprietary items, orders shall be placed along with the order for the items concerned.
2. Within 12 months of the Effective Date of the Contract, the CONTRACTOR shall submit to the PURCHASER a list of spare parts required for the operation of the Plant for 2 years, along with an estimate of costs. This list shall also include spare parts of a proprietary nature already ordered or to be ordered and spare parts for Critical Items.
3. The CONTRACTOR shall also submit a list of spares required during commissioning.
4. Following the supply of lists for spares, the CONTRACTOR and the PURCHASER shall scrutinize such lists, and shall decide on the spare parts to be procured, and the estimated costs thereof. a/
5. The spare parts shall thereafter be purchased in accordance with the Contract, and annexure XXVI.

a/ Recommended overall purchase of spare parts for two years' operation is 8 per cent of the C and F cost of Equipment.

ANNEXURE XI

List of chemicals

1. In addition to the catalysts specified in annexure IX, the following additional chemicals shall be required to commission and operate the Plant:

(list of chemicals required for water treatment, anti-corrosion and anti-scaling, carbon dioxide removal system etc.).

2. The CONTRACTOR at the time of contracting shall provide the PURCHASER with a list of the chemicals required, the quantities required as initial charge, the annual requirements for make-up and replacement stock for emergency cases.

3. At the meeting projected in Article 6.8, the PURCHASER shall advise the CONTRACTOR which chemicals can be procured in the PURCHASER's country, and which must be procured abroad by the CONTRACTOR, as well as the quantities to be procured. (The quantity should normally be the initial requirement plus one year's requirement of the chemicals.)

4. The CONTRACTOR shall thereafter arrange to procure those chemicals in accordance with the Contract and annexure XXVI.

ANNEXURE XII

List of pre-qualified Vendors for Critical Items of Equipment

1. The Critical Items specified in annexure VIII shall be procured only from the pre-qualified Vendors stated below, unless otherwise agreed between the PURCHASER and the CONTRACTOR.

Critical Item

List of pre-qualified Vendors

Name

Country

Note: While Vendors should be pre-qualified jointly by the CONTRACTOR and the PURCHASER for all Equipment, as provided in Article 10, pre-qualification for Critical Items may be made even at the stage of contracting and should be incorporated in this annexure.

ANNEXURE XIII

Exclusions from the scope of delivery of the CONTRACTOR

Not applicable to the cost-reimbursable contract.

ANNEXURE XIV

Scope of delivery of Equipment and Materials by the PURCHASER

(If any items are to be directly purchased by the PURCHASER in the PURCHASER's country without using the CONTRACTOR's procurement services, then they should be specified below, also in cases when some Off-Sites are to be procured by the PURCHASER. It should, however, be clearly understood by the PURCHASER and the CONTRACTOR that the exclusion of these items would not affect the CONTRACTOR's Performance Guarantees.)

ANNEXURE XV

Time schedule of implementing each stage of the Contract and delivery of documents

1. Time schedule

The overall time schedule for the completion of the works is shown in the bar chart attached hereafter as part of this annexure and is based on the following considerations:

- 1.1 All dates and/or periods referred to hereafter shall start from the Effective Date of the Contract.
- 1.2 Delivery FOB of the Equipment (with the exclusion of the Critical Items) shall start from the () month and end (95 per cent of the value) by the (24th) month. a/
- 1.3 Delivery FOB of Critical Items shall end by the (26th) month. a/
- 1.4 The average estimated duration of transport from FOB deliveries to the Site is approximately 2 months.
- 1.5 Civil works construction shall begin in the (12th) 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 delivery, as shown in the time schedules attached, are not the dates when shipment shall be made. It is understood that there shall be shipments prior to those dates, 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 procure the Equipment and spare parts, to carry out such detailed engineering as is to be undertaken by the PURCHASER at the Site, and to perform the erection of the complex. The Technical Documentation shall be in (name of language) 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 times are indicated in months and refer to the time allowed for the final issue of the documents, starting from the Effective Date of the Contract).

2.1.1 Process documentation

Delivery
(within months)

(a) Process flow-sheets*

- (i) for the Plants 5
- (ii) for the utilities 8

a/ The delivery schedules indicated were based on the longer delivery schedules that existed in 1977-1978. The schedules should, however, be reviewed at the time of contracting.

*See 2.4 below.

(b) Piping and instrumentation diagrams*	
(i) for the Plants	12
(ii) 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) Lists and process data sheets for all Equipment and machinery	9
(f) Specification of raw materials, utilities and chemicals	6
(g) Consumption of raw materials, 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, tempera- tures etc. of effluents and waste materials	9
(k) Operating personnel required and their duties	12
2.1.2 <u>Equipment and machinery documentation</u>	
(a) Specifications for all Equipment and machinery*	12
(b) Manufacturers' catalogues	24
(c) Manufacturers' 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 and fabrication drawings for Equipment and piping that requires assembling and fabrication at the Site	15
(f) List of recommended spare parts*	12

*See 2.4 below.

- (g) Manufacturers' certificates and documents concerning workshop testing, pressure testing and acceptance by authorized inspection or official inspection authorities in the manufacturers' countries 25
- (h) Preliminary lubrication schedules and summary list of types and grades of lubricants as recommended by Equipment manufacturers 18

2.1.3 Piping documentation

- (a) Pipeline list and specifications including insulation requirements 9
- (b) General layout of the complex* 6 (p)
- (c) Plant plot plan* 9 (p)
- (d) Terminal point drawings for the interconnection of pipes, going in and coming out of the complex* 6 (p)
- (e) Isometric drawings for 50 mm and larger pipes 16
- (f) Piping erection drawings 16
- (g) Model of the process Plants and utilities 18
- (h) Stress analysis 12
- (i) Piping take-off list, including fittings
 - First (50 per cent of piping material) 9
 - Second (85 per cent of piping material) 12
 - Third (100 per cent of piping material) 18
- (j) Specification of supports 18
- (k) Specification of insulation 18
- (l) Welding procedures, where speedily required, including specifications for electrodes 9
- (m) Procedures for treatment of pipes and structurals, where required 12

*See 2.4 below.

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*	12
(c) Detailed description of the alarm and interlocking 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 specifications and typical calculations	18
(k) Control valve specifications and typical calculations	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
---	---

*See 2.4 below.

(b) Electrical diagrams	
(i) One-line diagram*	6
(ii) General and detailed diagrams	12 (p)
(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
(g) Plant lighting proposals*	16

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, cables, sewage disposal etc.*	6 (p)
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, anti-corrosion protection of structures and floors, maintenance access areas and apertures)*	9
(f) Details of lightning protection required for the Plant	10
(g) Recommendations on air-conditioning and ventilation	10

2.1.7 General documentation

(a) Estimates of FOB cost of all Plant and Equipment, with details by Plant and section	4 (p)
---	-------

*See 2.4 below.

(b) Operating manuals including detailed instructions for Start-Up, shut-down, operation at reduced capacity and for action in the Plants in the event of a breakdown 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 the Equipment	24
(d) Instructions for the maintenance of the Plant(s) with drawings	24 (p)
(e) Final recommendations for the number and qualifications of personnel necessary to operate and maintain the Plant(s) properly	20
(f) Final recommendations for quality, quantity, frequency and points of lubrication, preferably on internationally available and acceptable products. These will cover initial and current requirements.	24
(g) Recommended list and general specifications of:	
(i) Maintenance workshop equipment	9
(ii) Laboratory equipment	9
(iii) Mobile fire-fighting and safety equipment	9
(iv) Warehouse materials handling equipment	9
(v) Erection equipment	4 (p)
(vi) Intercommunication system of Plant	12
(vii) Painting codes and specifications	20

2.1.8 Procurement documentation

(a) Critical Items	4 (p)
(b) List of pre-qualified Vendors*	8 (p)
(c) Itemized Equipment and machinery lists (95 per cent of the value)	12 (p)
(d) Itemized list of remaining Equipment (95 per cent of the value)	18

*See 2.4 below.

- (e) Procurement specifications, procurement documentation, final Contract documents with Vendors, in accordance with Article 10.

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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 dispatched to the PURCHASER by air waybill on a freight pre-paid basis and the PURCHASER shall acknowledge each dispatch 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 waybill, as the case may be.
- 2.2.2 The documentation shall be supplied in (6) copies and a reproducible copy (with the exclusion of the catalogues, pamphlets and manuals supplied by the Subcontractors).
- 2.3 The items of Technical Documentation marked "(p)" are the documents liable to liquidated damages pursuant to Article 27 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 Articles 10 and 12 of the Contract.

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

- (a) CONTRACTOR's documentation;
- (b) PURCHASER's documentation;
- (c) Approval by the PURCHASER as per annexure V.

AMMONIA/UREA COMPLEX OVERALL EXPECTED TIME SCHEDULE

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TIME SCHEDULE

JOB REVISION PAGE

DESCRIPTION	MONTH	TIME SCHEDULE																																																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42										
1. ENGINEERING																																																					
11 PROCESS ENG.																																																					
12 DETAILED ENG.																																																					
121 CIVIL ENG.																																																					
122 PIPING ENG.																																																					
123 ELECTRICAL & INSTRUM. ENG.																																																					
124 EQUIPMENT & MACHINERY																																																					
2. PROCUREMENT & SHIPPING																																																					
21 VESSEL COLUMNS TANKS																																																					
22 HEAT EXCH. & HEATERS																																																					
23 MACHINERY																																																					
23 PIPING MATERIAL																																																					
25 ELECTRICAL MATERIAL																																																					
25 INSTRUM. MATERIAL																																																					
27 STEEL STRUCTURE																																																					
3. CONSTRUCTION																																																					
31 CIVIL WORKS																																																					
31 STEEL STRUCTURES																																																					
33 PILING 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 PRODUCTION

ANNEXURE XVI

Quality of Products a/

1. Ammonia

NH ₃ content	99.8 per cent by weight minimum (G)
Water and inerts	0.2 per cent by weight maximum (G)
Oil	5 ppm maximum (G)
Pressure at the Battery Limits of the Ammonia Plant	(20 kgf/cm ²)

2. Carbon dioxide (on dry basis)

CO ₂	Minimum 98.5 per cent by volume (G)
Inerts, including water vapour	Maximum 1.5 per cent by volume (G)
Hydrogen in inerts	Maximum (___) per cent by volume (G)
Sulphur	Maximum (___) mg/m ³ (G)
Methanol	Maximum (___) ppm (G)
Pressure at the Battery Limits of the Ammonia Plant	Depending upon the pressure of regeneration (0.05% kgf/cm)

3. Urea

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

4. The characteristics marked with (G) are those for which the Performance Guarantees for quality of Products shall apply. The analytical procedures for the guarantees shall be as given below: b/

(Alternatively: the analytical procedures for the guarantees shall be agreed by the parties at the co-ordination meetings contemplated under Article 6)

a/ The product specifications may vary from country to country; these are suggested typical figures.

b/ To avoid disputes, it is recommended that the analytical procedures be specified in the annexures, particularly if they are internationally known.

ANNEXURE XVII

Quality and quantity of effluents: effluents
and emission standards a/

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

(1) From the Ammonia Plant

Flow rate	3.3 Tonnes/h
Quality	Waste water saturated with CO ₂ at 42 °C with approximately 50 ppm K ₂ CO ₃ and traces of diethanolamine

(2) From the Urea Plant

Flow rate	39 Tonnes/h
Quantity	Condensate at 55 °C containing approximately 200 ppm NH ₃ and 400 ppm urea

Note: In some cases, in compliance with local standards, the process condensate may require further treatment within the Battery Limits of the Plant, e.g. under (2) above, the effluent from various sections of the Urea Plant may require treatment, and the final quality will be different.

(3) Cooling tower system

(a) Losses (evaporation)	400 m ³ /h
(b) Blow down and mist loss	230 m ³ /h
(c) (i) Ammonia and urea content in blow down	(____) ppm NH ₃ , (____) ppm urea
(ii) Other characteristics of the blow down	

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

a/ The figures given in each case are typical for a particular process. The quality and volume of effluents and gaseous emissions should conform to national standards.

ANNEXURE XVIII

Training of PURCHASER's personnel

1. The training of the PURCHASER's personnel shall consist of training at the Site and abroad. Training at the Site shall be given by the CONTRACTOR's personnel and training abroad shall be arranged entirely by the CONTRACTOR, and shall include operational experience at factories using the same or similar processes.

2. The PURCHASER and the CONTRACTOR have agreed that training abroad shall be at the following operational factories. a/

(names of factories and locations)

3. The CONTRACTOR shall provide technical training for the PURCHASER's personnel, in accordance with Articles 4.19, 16 and 20.5 of the Contract, for the following personnel and for the time stated against each person. b/

<u>Designation</u> <u>c/</u>	<u>Number</u>	<u>Time</u> (months)	<u>Training units</u>
Chief production manager	1	7	Ammonia Plant Urea Plant Overall management
Chief mechanical engineer	1	6	Ammonia Plant and Urea Plant maintenance facilities Instruments
Production engineers	5	6 1 6 1	Ammonia Plant Urea Plant Urea Plant Ammonia Plant
Electrical engineer	1 <u>d/</u>	3	Power station
Instrument engineers	2	6	Instruments Course on Plant instrument maintenance
Maintenance engineers	5	6	Maintenance of Plants/Workshop
Chemist	1	3	Laboratory and field analysis
Chief chemist	1	3	Laboratory and field analysis Research

a/ It is suggested that a list should be given in this annexure and a selection made after the meeting contemplated under Article 6.8.

b/ These are typical for a country where chemical plants already exist.

c/ Designation indicates the ultimate functions of the trainee.

d/ May be increased to four engineers, if required, and six months' duration.

4. The CONTRACTOR and the PURCHASER shall agree on the contents of the training programme, the training methods, and the procedure for evaluation of progress. The training given to the PURCHASER's personnel shall involve specifically operating for short periods the sections of the Plant that concern them (under the direction and control of the CONTRACTOR), and for maintenance staff, the actual operation of maintenance Equipment.

5. The CONTRACTOR shall appoint a training officer for the PURCHASER's trainees abroad, who shall send a monthly progress report on each trainee to the PURCHASER.

6. In addition to the training given abroad, the CONTRACTOR shall organize and supervise a training programme at the Site. For this purpose, the CONTRACTOR shall provide books and manuals and the CONTRACTOR and the PURCHASER shall have agreed to purchase a simulator (or similar equipment) for this purpose on a cost-reimbursable basis (as per Article 10 and annexure XXVI). Both parties shall agree on a detailed training programme at the Site as early as possible, but not later than the 12th month after the Effective Date of the Contract.

ANNEXURE XIX

Procedure for variations, additions, changes, rectifications
and modifications

1. The PURCHASER can request a change, variation or addition in accordance with Article 15. The CONTRACTOR can also request changes as rectifications and modifications in accordance with Article 29, and propose variations arising from new experience of the CONTRACTOR and/or the process licensor(s) as contemplated in Article 7.3.
2. Such requests shall be made by the party making such a request to the authorized representative of the other party in writing.
3. Where the request is made by the PURCHASER, whenever additional costs and/or time are involved as contemplated in Article 15.3, the CONTRACTOR shall give his cost breakdown and all other information, as required under Article 15.4 of the Contract, to the PURCHASER as soon as possible thereafter, and in any case within (30) Days of the request by the PURCHASER.
4. Before agreeing or disagreeing on the cost of such change, variation or addition, the PURCHASER may within (15) Days of receiving the CONTRACTOR's estimate of the cost involved call a meeting at the Site or at another agreed venue to discuss all the implications of the change involved, and take an appropriate decision.
5. Where the CONTRACTOR proposes a variation arising from new experience of the CONTRACTOR and/or the process licensor(s), or by technological improvements that have occurred after the cut-off dates contemplated in Article 7.2, the CONTRACTOR shall prepare a report outlining the variations and stating the benefits to the PURCHASER in detail. The CONTRACTOR shall also indicate the change in project cost (increase or decrease) and fees of the CONTRACTOR that would result from such variations and the modifications in the consumption of raw materials and utilities, if any, and the improvements in the contractual guarantees, if any, that would result from the adoption of such variations. The PURCHASER at his sole discretion may accept or reject the proposal or, with the concurrence of the CONTRACTOR, accept the proposal in a modified form.
6. When the CONTRACTOR requires a rectification or modification under Article 29, he shall inform the PURCHASER giving full reasons for the rectification or modification requested, together with full information on the implications of the rectification or modification for project cost and project schedule.
 - 6.1 In the event that the rectification or modification is to Plant already procured or installed, the CONTRACTOR shall also give details of any resulting changes in the life of the Plant or any part thereof, its technical performance and/or any changes in the contractual guarantees, or Vendor's warranties that may result from such a rectification or modification.
7. Following an agreement to make any change, whether as a change, variation or addition, or as a rectification or modification, the details thereof shall be incorporated in a change order, which shall contain:
 - (a) A list of the agreed changes, variations and additions in sufficient detail to identify them;
 - (b) The agreed increase or decrease in the Contract Price;

(c) The agreed increase or decrease in the time schedule of the CONTRACTOR or change in the date of delivery of the documents under the Contract;

(d) A clear statement of the modifications in the Contract, if any, or in the technical specifications contained in the annexures, which have been agreed to by both parties as a result of the change, variation or addition.

8. At the meeting contemplated in Article 6.8, a format of the change order, the number of copies required, and the authorized representatives who may sign the change order shall be agreed upon. It shall be understood, however, that any change order involving a modification of the Contract shall require the countersignature of the PURCHASER's and the CONTRACTOR's authorized representatives, as defined under the Contract.

9. The extent to, and manner in which, rectifications (not requiring an increase in cost, a change in time schedule or reductions in the size of Equipment or materials of construction), which can be carried out by the CONTRACTOR when urgently required during construction or erection at the Site, shall also be agreed at such meeting, together with the procedure for obtaining the concurrence of the PURCHASER's authorized representatives at the Site, and for documenting such changes.

ANNEXURE XX

Mechanical Completion and pre-commissioning procedures

Mechanical Completion operations

These operations include the following tasks:

- 1.1 Conduct the hydrostatic, pneumatic, and other field tests of operating Equipment embodied in the Plants that are set forth in the specifications, or manufacturers' instructions.
- 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.
- 1.6 Prepare radiographic photographs of all pressure and special piping (to be undertaken at or after welding).

Pre-commissioning operations

These operations include the following tasks:

- 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 Start-Up 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 high pressure steam system, demineralized water lines and CO₂ removal system. Boil out auxiliary boilers and waste heat boilers. Pickle and inertize any Equipment or pipelines requiring such treatment.
- 2.7 Pull all blinds except those installed for operation.
- 2.8 Install orifice plates after lines have been hydrostatically tested and flushed.
- 2.9 Check correct action of instruments as far as possible.
- 2.10 Connect thermocouples, check connections and check out circuits.

- 2.11 Remove all loose material from vessels and load all internals and packing materials. Close up vessels 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 for operability.
- 2.15 Conduct preliminary tightness tests and purge the unit.
- 2.16 Conduct pre-operation pressure testing and acceptance tests including those 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 that can be run on cold or hot water for an adequate period of time following special instructions worked out for this purpose.

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 and 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 shall be in addition to the Vendor's maintenance sheet and shall 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 on-line analysers.

2. All the above manuals shall be in the (_____) language.

3. In addition the CONTRACTOR shall provide the PURCHASER with the originals of all pamphlets, installation, operation and maintenance instructions etc., received from Equipment manufacturers and Subcontractors of the CONTRACTOR and, where required, shall identify the Equipment to which such instructions refer.

ANNEXURE XXII

Forms of performance bank guarantee
and performance bond a/

A. Form of performance bank guarantee

To: (legal name and address of PURCHASER)

At the request of (name and address of CONTRACTOR) (hereinafter called CONTRACTOR), we hereby open our irrevocable, confirmed guarantee No. _____ for an amount of maximum (amount). In consideration of the CONTRACTOR having entered into a Contract dated _____ (hereinafter called CONTRACT) with (name and address of PURCHASER) (hereinafter called PURCHASER) for the supply, construction and erection of a Cost-Reimbursable (Ammonia and Urea) Plant to be built at (town), we (bank) do hereby unconditionally agree and undertake to pay forthwith to the PURCHASER in repatriable currency on demand by the PURCHASER and without prior recourse to the CONTRACTOR such sum or sums not exceeding (amount), as may be demanded by the PURCHASER simply stating that the CONTRACTOR has failed to fulfil his obligations relevant to the supply of Equipment, the construction and erection of the works or other Contractual Responsibilities under the Contract, for reasons for which the CONTRACTOR is liable under the Contract. It is understood that any demand made hereunder by the PURCHASER shall be conclusive evidence of the CONTRACTOR's failure to comply with his obligations relevant to his Contractual Responsibilities under the Contract for reasons for which the CONTRACTOR is liable under the Contract. The amounts being guaranteed hereunder shall be applied towards the payment by the CONTRACTOR of damages under and in accordance with the Contract. This guarantee shall come into force immediately and remain in full force, operative and binding on us for a period of (_____) months. We agree to extend at the request of the PURCHASER this Bank Guarantee beyond the date mentioned above for three months at a time up to the date that a Provisional Acceptance Certificate is issued in accordance with the Contract. We (bank) shall at all times be bound on the simple demand of the PURCHASER to pay the PURCHASER forthwith the amounts hereby guaranteed until we are released and discharged by the PURCHASER from the liabilities/obligations hereby guaranteed and this guarantee is returned to us duly cancelled by the PURCHASER. Our (Guarantor's) liability to the PURCHASER hereunder shall be that of a principal debtor and the PURCHASER may at his option treat us as primarily liable for the aforesaid amount or any balance which may at any time be due and payable by us to the PURCHASER in terms of the Bank guarantee.

We hereby declare and confirm that under our Constitution and the applicable laws and regulations of (country of the bank), we have the necessary power and authority, and all necessary authorizations, approvals and consents of (governing body of bank), governmental and other regulatory authorities have been obtained (copies of which are attached hereto as annexure) to enable us to enter into, execute, deliver and perform the obligations undertaken by us under this guarantee, and the signatory to the guarantee is our duly authorized officer(s), and the obligations on our part contained in the Guarantee, assuming them to be valid and legally binding according to (name of banker's country) law by which we are expressed to be governed, are valid and legally binding on and enforceable against us under the aforesaid laws and in the court at (town). We further confirm that it is not necessary or advisable under the

a/ Only one to be selected.

laws of (country of the bank) in order to ensure the legality, enforceability and priority of the guarantee or of any parts thereof, that this guarantee be filed, registered or recorded in any public office or elsewhere or that any other instrument relating thereto be executed, delivered, filed, registered or recorded, that any tax or duty be paid or that any other actions be taken.

(bank)

B. Form of performance bond

KNOW ALL MEN BY THESE PRESENTS: that (_____)
(insert full name and address or legal title of CONTRACTOR)

as Principal, hereinafter called CONTRACTOR, and (_____)
(insert full name and address or legal title of surety)

as Surety, hereinafter called Surety, are held and firmly bound unto
(_____) (insert full name and address or legal title
of PURCHASER)

as Oblige, hereinafter called PURCHASER, in the amount of (_____)
for the payment whereof CONTRACTOR and Surety bind themselves, their
heirs, executors, administrators, successors and assigns, jointly and
severally, firmly by these presents.

WHEREAS,

the CONTRACTOR has by written agreement dated (day, month, year) entered
into a Contract with the PURCHASER for (_____) in
accordance with Drawings and Specifications prepared by (_____)
(insert full name and address or legal title of the CONTRACTOR)

which Contract is by reference made a part hereof, and is hereinafter
referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if
the CONTRACTOR shall promptly and faithfully perform the said Contract,
then this obligation shall be null and void; otherwise it shall remain in
full force and effect.

The Surety hereby waives notice of any alteration or extension of
time made by the PURCHASER.

Whenever the CONTRACTOR shall be, and declared by the PURCHASER to
be in default under the Contract, the Owner having performed the
PURCHASER's obligations thereunder, the Surety may promptly remedy the
default, or shall promptly:

(a) Complete the Contract in accordance with its terms and
conditions, or

(b) Obtain a bid or bids for completing the Contract in accordance
with its terms and conditions, and upon determination by Surety of the
lowest responsible bidder, or, if the PURCHASER elects, upon determination
by the PURCHASER and the Surety jointly of the lowest responsible bidder,
arrange for a contract between such bidder and the PURCHASER, and make

available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract Price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the Contract Price", as used in this paragraph, shall mean the total amount payable by the PURCHASER to the CONTRACTOR under the Contract and any amendments thereto, less the amount properly paid by the PURCHASER to the CONTRACTOR.

Any suit under this bond must be instituted before the expiration of (2) years from the date on which final payment under the Contract falls due.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the PURCHASER named herein or the heirs, executors, administrators or successors of the PURCHASER.

Signed and sealed this (_____) day of (month, year)

..... (_____)
witness (principal seal)
(_____)
witness (_____)
title

..... (_____)
witness (principal seal)
(_____)
title

ANNEXURE XXIII

Forms of bank guarantee

1. Form of bank guarantee for advance payment under Article 21.2

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

1. WHEREAS in Article 21.2 of the Contract dated (____) (hereinafter called CONTRACT), between PURCHASER and (_____) a Company incorporated in (____) (hereinafter called CONTRACTOR which expression shall, unless repugnant to the context or contrary to the meaning thereof, include its successors and assigns) for the supply of a Cost-Reimbursable Ammonia and Urea Plant, as envisaged in the Contract, it is stipulated that the sum of (____) shall be paid by (____) as advance payment against a Bank Guarantee of equal amount to be issued by the BANK.
2. WHEREAS in fulfilment of the said Contract and against receipt of the said advance by (name of CONTRACTOR), the CONTRACTOR has agreed to furnish a Bank Guarantee as hereinafter contained.
3. In consideration of the above, the BANK hereby guarantees as a direct responsibility, to pay to the PURCHASER any amount up to a total sum of (_____).
4. The BANK shall effect payment under this letter of guarantee immediately upon the PURCHASER's written request stating that the CONTRACTOR did not fulfil his contractual obligations without being entitled to enquire whether this payment is lawfully asked for or not.
5. In any case, however, the BANK's responsibility under this letter of guarantee comes into force as soon as and as far as the advance payment of (_____) has been received by the BANK in favour of the CONTRACTOR.
6. This letter of guarantee shall be initially valid for a period of (_____) months from the Effective Date of the Contract and shall be extended by suitable periods in accordance with the Contract (but not more than (6) months at a time). This guarantee shall be returned to the BANK after its expiry unless extended beyond this period for any reason whatsoever.
7. In the event of force majeure or in the event of recourse to arbitration according to the Contract, the validity of the present guarantee shall be extended for a period to be mutually agreed upon.
8. This guarantee shall be in addition to and shall not affect or be affected by any other security now or hereafter held by the PURCHASER, and the PURCHASER at his discretion, and without any further consent from the BANK and the PURCHASER's right against the BANK may, compound

with or give time or other indulgence to or make any other arrangement with the CONTRACTOR and nothing done or omitted to be done by the PURCHASER in pursuance of any authority contained in this guarantee shall affect or discharge the liability of the BANK.

(bank)

2. Form of bank guarantee under Article 21.3

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 the CONTRACTOR having entered into a Cost-Reimbursable 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 Plant and Equipment, the construction and erection and for other services for the Ammonia and Urea and auxiliary Plants to be built by the PURCHASER, we (Bank) do hereby agree and undertake to pay forthwith to the PURCHASER in repatriable currency on demand by the PURCHASER and without prior recourse to the CONTRACTOR such sum or sums not exceeding (amount) as may be demanded by the PURCHASER stating that the CONTRACTOR has failed to fulfil his obligations relevant to the Performance Guarantees and for other guarantees and warranties under the Contract for reasons for which CONTRACTOR is liable under the Contract. It is understood and agreed that any demand made hereunder by the PURCHASER shall be conclusive evidence of the CONTRACTOR's failure to comply with his obligations relevant to the guarantees and warranties 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 the 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 (6)-month periods, in accordance with the Contract, up to the date of Final Acceptance by the 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 the PURCHASER to pay the PURCHASER forthwith the amount guaranteed hereof, PROVIDED that the amount of the Bank Guarantee mentioned above shall be reduced to (amount) on the date of Provisional Acceptance by the PURCHASER of the Plants in accordance with the provisions of the Contract.

(bank)

ANNEXURE XXIV

Packing and shipping

1. The CONTRACTOR shall ensure that in procurement and in inspection, all items of Equipment are delivered in proper seaworthy packing, and where special protection is required, shall so specify in the procurement specifications, and shall 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, the CONTRACTOR shall specify the special protective measures required to protect the Equipment during sea transport.
3. Where air or land shipment is involved, the CONTRACTOR shall give appropriate packing instructions in the tender specifications.
4. In the event that due to late deliveries or procurement, shipment has to be made by air instead of by sea, the CONTRACTOR shall advise the 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 stipulated in annexure XXV;
 - (d) Certificates of origin, where required, are available.
6. The CONTRACTOR shall ensure that packages delivered to (port(s) of entry/Site) should be within a maximum of (specify size and weight of packages).
7. The number of invoices, the methods of dispatch of original invoices etc., shall be in accordance with annexure XXIV.

ANNEXURE XXV

Receipt and storage at the Site
and marking instructions

The CONTRACTOR and the PURCHASER should draw up a protocol, before any Equipment arrives on Site, for joint inspection of all Equipment and Materials on their arrival at the Site and for assessment of the value and nature of shortages or breakages in accordance with Article 4.15.

The CONTRACTOR shall review and elaborate at the time of planning of procurement, the instructions and strategy for the marking of the packages, allotment of numbers to Equipment and Materials, allocation of storage space (in warehouses or in the yard) in order to facilitate the smooth issue of Equipment and Materials for erection.

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

1. The area for the storage of Equipment should be as agreed between the PURCHASER and the CONTRACTOR.
2. Storage instructions shall be given by the CONTRACTOR's representative at the Site, subject to the PURCHASER's approval.
3. Marking instructions shall be as follows: a/

(specify marking instructions).

a/ Marking instructions could be agreed upon later. This clause should then read: "The packages shall be marked as agreed by the PURCHASER and the CONTRACTOR within (12) months after (____)".

ANNEXURE XXVI

Procurement procedures

1. Procurement procedures have been outlined in Article 10 of the Contract, and shall be followed. In addition, the mode of procurement is given in this annexure.
2. The CONTRACTOR shall issue pre-qualifying notices for all groups of Equipment inviting potential Vendors for pre-qualification. All documents required for this purpose shall be mentioned in these notices. The PURCHASER and the CONTRACTOR shall agree at the first design meeting after the Effective Date of Contract on the newspapers in which such notices are to appear.
3. The CONTRACTOR shall send to the PURCHASER a list of companies pre-qualified by him for purchase of different types of Equipment, indicating reasons for the rejection of any Vendor. The PURCHASER shall have the right to add to or subtract from such list of pre-qualified Vendors. All costs of the CONTRACTOR in satisfying himself on the competence of any bidders shall 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 the Effective Date of Contract.
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 shall approve such specifications.
6. The CONTRACTOR shall receive bids in two parts, technical specifications and prices, and shall open the price tenders in accordance with the procedure laid down between the PURCHASER and the CONTRACTOR (add the name of the financing agency). Any clarification requested from the bidders shall be undertaken in writing or in the presence of the representatives of the PURCHASER. When representatives of the PURCHASER are not present, complete minutes of such meetings shall 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 shall make recommendations to the PURCHASER on the selection of the Vendors. a/ Should this Vendor not be the lowest bidder, full details shall be supplied on the reasons for rejection of the lowest bidder. The actual selection of the bidder shall be in accordance with Article 10 of the Contract.
8. The CONTRACTOR shall prepare the final purchase orders, fully safeguarding the PURCHASER's interest, for the signature of the PURCHASER or his representative at the CONTRACTOR's offices, or as otherwise agreed between the PURCHASER and the CONTRACTOR in writing.

a/ It is suggested that a procedure should be developed whereby all orders above a certain value (say, \$US 100,000) are placed with the PURCHASER's active participation, and smaller orders can be placed by the CONTRACTOR, on behalf of the PURCHASER, if placed with the lowest bidder.

9. The PURCHASER shall thereafter open letters of credit, or in the case of reimbursable procedures (such as those of some financing agencies), 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 the Site. The PURCHASER shall ensure that payment is made in accordance with the purchase orders.
11. The PURCHASER and the CONTRACTOR shall agree at the time of the meeting contemplated under Article 6.8 on the items of Equipment that would be inspected by the CONTRACTOR alone and the items that would be jointly inspected by the PURCHASER and the CONTRACTOR, as contemplated in Article 14.4. They shall also draw up a protocol governing the procedure for joint inspection. In all cases, the CONTRACTOR shall make available at least (3) copies of certificates of inspection and tests.
12. For purchase of Critical Items of Equipment and the associated spares, quotations shall be obtained promptly after the Effective Date of Contract 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 specialized proprietary Equipment and associated spares, but in all cases where procedures of the financing agency are required these shall be followed.

ANNEXURE XXVII

Rates, charges and personnel services

1. Home office charges

The home office charges of the CONTRACTOR for work undertaken in accordance with Article 15 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>
—	—
—	—

1.2 To arrive at the overall direct costs, the direct personnel costs shall be multiplied by the hours worked by each category of staff. The CONTRACTOR shall prepare time logs specifying the name of the person undertaking the work, the dates and hours worked, and when the PURCHASER's Site representatives are present, the time logs shall be approved by them on a weekly basis.

1.3 To the direct personnel costs shall be added (_____) per cent 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 charges

2.1 The charges, in foreign exchange, for the deputation of the CONTRACTOR's expatriate personnel to (PURCHASER's country), for each day of absence from the home office shall be as follows:

<u>Personnel</u>	<u>Rates per Day</u>
Construction manager	
Start-Up manager	
Specialist engineers	
Erection specialists	
Assistant for erection and Start-Up	
(Others may be specified)	

2.2 (It is recommended that this should not have an escalation clause. In some cases, however, this may be required. The 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.)

2.3 In addition, the CONTRACTOR's expatriate personnel shall be entitled to tourist-class air travel tickets for themselves (and family, where permitted according to clause 5.5.2.1 below).

3. Overtime charges

3.1 Overtime charges in accordance with the Contract shall be paid as follows:

Up to 54 hours/week	(100 per cent) of normal rates
Above 54 hours/week	(130 per cent) of normal rates
For weekly and public holidays	(130 per cent) of normal rates

3.2 No additional payments shall be made in local currency.

4. Personnel to be deputed by the CONTRACTOR

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

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

(The requirements shall depend upon the 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 the specialists of the Vendor. The CONTRACTOR estimates that the following specialists of the Vendor will be required:

<u>Category</u>	<u>Number</u>	<u>Expected man-months</u>
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Payments to the specialists of the Vendor 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 is 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 (4) months from the Effective Date of Contract, the parties shall further agree upon the details about the expected initial number of each category of the CONTRACTOR's personnel and the duration of their stay at the Site. This shall be subject to clause 1.2 above.

- 5.3 Before any of the CONTRACTOR's personnel is sent to the 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 replaced promptly by the CONTRACTOR. This right, however, shall 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 the country of his home office 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's personnel under the Contract, the PURCHASER shall provide, in addition to what is specified under this annexure, clauses 1, 2 and 3 above, the following allowances, services and facilities to the CONTRACTOR's personnel engaged in work under the Contract at the 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 at the 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 the Site by (air carrier) or an IATA carrier at the discretion of the PURCHASER. When an expatriate has completed 18 months at the Site he shall be entitled to a tourist-class return air fare to the country of his home office. Tourist-class return air fares shall be provided for families of expatriates whose assignments are anticipated to be for periods in excess of 12 months. The air fare shall be extended to cover the family defined as the wife and all accompanying unmarried children under the age of 18 years, up to a maximum of 4 children, of the said expatriate.

5.5.2.2 At the beginning and end of assignments, the CONTRACTOR's expatriate personnel and their wives shall each be entitled to a baggage allowance of 20 kg in addition to that included in the price of each air ticket.

5.5.2.3 Transport within (PURCHASER's country) by plane (economy class) or road (air-conditioned class) for expatriate personnel and their families on their arrival and departure, and for expatriate personnel travelling on official business.

5.5.3 The PURCHASER shall also provide free of charge 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.
- 5.5.3.3 Medical assistance and other facilities to the extent available at the PURCHASER's own or nominated medical centre(s).

5.5.4 Holidays and leave

- 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 (1) Day.
- 5.5.4.2 In the case of a CONTRACTOR's expatriate whose period of stay at the Site is likely to exceed 18 months and who desires to proceed on vacation leave before the completion of his 18-month stay for any compelling reason of his own, he can do so subject to his availing himself of this facility only in special cases and after obtaining the PURCHASER's approval in each case. In such cases, the payment to the CONTRACTOR of the daily rate in foreign currency for the vacation leave shall be made only subsequently after the expatriate concerned has completed a total of 18 months' stay at the Site.
- 5.5.4.3 In cases where an expatriate is required to stay at the Site for more than 18 months continuously due to the exigencies of work, the expatriate shall avail himself 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 option, he can avail himself of the vacation leave.
- 5.5.4.4 The expatriate, after availing himself of his vacation leave abroad as referred to in clauses 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) 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.

ANNEXURE XXVIII

Civil engineering specifications

Not applicable to the cost-reimbursable contract.

ANNEXURE XXIX

Erection codes and specifications

These are generally based upon the country of origin of the CONTRACTOR and/or the erection company undertaking the erection. Complete specifications are available, for instance in the DIN code. The codes to be used should be decided by the PURCHASER and the CONTRACTOR in consultation with the erection company selected.

ANNEXURE XXX

Guarantees of consumption of raw materials
and utilities

1. Ammonia Plant

1.1 The guarantees for the consumption of raw materials and utilities for the Ammonia Plant are:

<u>Items</u>	<u>Units</u>	<u>Units per Tonne of ammonia</u>
(a) Consumption		
Natural gas <u>a/</u>	millions of kcal	
High pressure steam	Tonnes	
Electrical power <u>b/</u>	kWh	
Cooling water ()	m ³	
Boiler feed water (110 °C, (120) kgf/cm ²)	Tonnes	
(b) Output		
Medium pressure steam	Tonnes	
Low pressure steam	Tonnes	
Purge gas	millions of kcal	
Boiler feed water preheating	millions of kcal	
Condensates	Tonnes	

1.2 The consumption of natural gas is based upon the following characteristics, within the limits specified:

(generally, these should be part of the characteristics given for gas in annexure IV. However, not all the characteristics given therein are required to be mentioned here).

1.3 In the event that there are variations in the gas analysis within the following limits:

(specify limits at which the Plant can operate.) The guarantee for gas consumption shall be as mutually agreed, in accordance with Article 5.8.1 of the Contract.

1.3.1 It being agreed that if the saturated hydrocarbon content of the gases (adjusted for hydrocarbons higher than methane) remains within the agreed limits, the agreed gas consumption shall be directly proportional to the lower heating value of the gas.

a/ Natural gas consumption includes requirements such as feedstock and direct fuel.

b/ Electric power consumption is for the Ammonia Plant only and excludes lighting, instrumentation and air-conditioning.

1.4 In case the gas analysis is outside the agreed limits, the parties shall discuss modifications, if any, to be made in the Plant(s) and the effect on the time schedule and payments to the CONTRACTOR.

1.4.1 If either the CONTRACTOR or the PURCHASER apprehends that the gas analysis is likely to change outside the agreed limits, he shall promptly inform the other party, and a review meeting shall be arranged within 30 days thereafter at (Site) to consider the implications thereof, in accordance with Article 5.16.1 of the Contract.

2. Urea Plant

2.1 The guarantees for the consumption of raw materials and utilities for the Urea Plant are:

	<u>Items</u>	<u>Units</u>	<u>Units per Tonne of urea</u>
(a)	Consumption		
	Ammonia (as 100%)	Tonnes	
	High pressure steam	Tonnes	
	Electric power <u>c/</u>	kWh	
	Cooling water (32 °C)	m ³	
(b)	Production		
	Low pressure steam	Tonnes	
	Condensate	Tonnes	

c/ Electric power consumption is for the Urea Plant only and excludes lighting, instrumentation and air-conditioning.

ANNEXURE XXXI

Performance Guarantee Test procedures

1. The Guarantees for the consumption of raw materials and utilities shall be demonstrated in Performance Guarantee Tests to be run in accordance with Article 26.4.1 of the Contract for the Ammonia Plant, Article 26.4.2 for the Urea Plant and Article 26.4.3 for the power plant.
2. The CONTRACTOR shall give at least 30 Days' notice to the PURCHASER in writing of his intention to run any guarantee test. If such test has to be repeated for faults due to the CONTRACTOR, 15 Days' notice shall be given to the PURCHASER unless otherwise agreed between the CONTRACTOR and the PURCHASER.
3. The Performance Guarantee Tests of the Plants shall be run under the direction and supervision of the CONTRACTOR's personnel but all measurements shall be taken jointly by the PURCHASER and the CONTRACTOR and in the event of any dispute relating only to the correctness, sufficiency and/or adequacy of the tests and/or the manner in which the tests were conducted, the provisions of Article 37 of the Contract shall apply.
 - 3.1 The first (20)-Day test of the Ammonia and/or Urea Plant shall commence within (90) Days of the Initial Operation of the Plant(s), provided that the PURCHASER fulfils his obligations for the supply of feedstock etc. under Article 5.16. Subject to the provisions of clause 3.2 below, this (90)-Day period shall be extended if the Plant(s) is (are) unable to operate normally and in the event of failure of this test, the CONTRACTOR shall be permitted not more than 2 other tests to be run within (6) months immediately thereafter (subject however to the provisions of Article 27.3 of the Contract). a/
 - 3.2 If, for reasons ascribable to mistake(s) and/or error(s) in process and/or detailed engineering or for any other reasons related to the work and services provided or performed by the CONTRACTOR, and/or mistake(s) and error(s) in the contractual specifications and instructions, the CONTRACTOR is not able to perform the test(s) within the period(s) stated in clause 3.1 above, the provisions of clause 7 below shall apply.
 - 3.3 The CONTRACTOR shall have the right to have the Plant(s) operated in accordance with his requirements at his own risk during the period permitted to the CONTRACTOR to perform the test(s) and the PURCHASER's personnel shall work under the directions and technical instructions of the CONTRACTOR. The PURCHASER shall have the right to operate the Plants as and when such operation shall not interfere with the CONTRACTOR's work.
4. The guarantee test periods for the Ammonia and Urea Plants shall, in each case, be a (20)-Day sustained continuous test at (90 per cent) of capacity followed immediately by a (10)-Day test at 100 per cent of capacity.

a/ The words in brackets are to be removed if Article 27.3 is not used (text B).

- 4.1 During the operation of the Urea Plant under Article 26.4.2.2, the ammonia in the ammonia storage at the beginning and end of the test shall not be depleted.
- 4.2 The production of ammonia shall be measured by (method of measurement of ammonia should be given). b/
- 4.3 The production of urea shall be measured by the use of the integrating on-line recorders on the conveyor for the (20)-Day test period, but shall be measured by isolating, packing and weighing the actual daily production of urea during the (10)-Day 100 per cent of capacity test period.
- 4.4 The measurement of the quantities of all inputs and outputs (other than ammonia and urea) in accordance with annexure XXX and their methods of measurement shall be discussed and agreed to in the meeting contemplated under Article 6.8 and appropriate instruments specified.

5. During the 10-day guarantee test for the Urea Plant under Article 26.4.2.2 (unless otherwise agreed), the Ammonia and the Urea Plants shall be run simultaneously for a consecutive (7) Days to prove the adequacy of the Off-Sites, utilities and carbon dioxide, in accordance with Article 26.4.4 of the Contract.

- 5.1 The adequacy of the Off-Sites, utilities and carbon dioxide shall only be considered as having been demonstrated if the Urea Plant operates at 100 per cent of capacity, or if the Urea Plant operates at 95 per cent of capacity and the agreed liquidated damages are paid by the CONTRACTOR.

6. The power plant shall be operated at 100 per cent of capacity for (7) consecutive Days to prove the guarantees for power and steam production, and the guarantee for fuel consumption.

- 6.1 The electrical production capacity shall be measured by aggregating the watt-hour meters over a period of 168 hours. The guarantee test shall be considered to be complete when the power plant averages (____) kWh/h during this period.

- 6.2 The method of measuring the steam shall be discussed at the meeting contemplated under Article 6.8 and appropriate instruments provided.

7. Detailed procedures for all the tests including the calibration of instruments shall be agreed upon by the CONTRACTOR and the PURCHASER at least 3 months before the commencement of the first test, in accordance with Article 26.4.5.2 of the Contract.

8. In all cases the CONTRACTOR shall supply the necessary instruments. Instrument tolerances for the measurement of different consumptions shall be agreed for the following:

b/ Weight tanks are initially expensive, but give an accurate measure of production. Flow meters, even when automatically controlled for temperature, give a high instrument error, which, in the case of some flow meters, can be as much as approximately \pm 5 per cent.

Natural gas flow meter: (_____)
Other gas meters: (_____)
Steam meters: (_____)
Power meters: (_____)
Cold water meters: (_____)
Hot water and condensate meters: (_____)
Temperature recorders: (_____)
Ammonia measurement system: (_____)

at the first design meeting contemplated under Article 6.5 of the Contract, except where already specified above. c/

9. Samples of ammonia and urea shall be withdrawn jointly at least twice every 8 hours and sent for analysis. The results shall be averaged over a (24)-hour period and each such result shall meet the product specifications contained in annexure XVI.

10. The maximum period in which the CONTRACTOR shall be allowed to run his tests shall be (18) months after Initial Operation of the Plant, or 52 months after the Effective Date of Contract, whichever is earlier, extended by such time as is required to replace equipment, after which the provisions of Article 27.4 shall apply. (Subject to the CONTRACTOR paying the liquidated damages, if any, in accordance with Article 27.3.) d/

10.1 In the event that the CONTRACTOR does not complete or is unable to complete any or all of the Performance Tests and Guarantees of the Plant(s) for reasons attributable to the CONTRACTOR within the 9 months after Initial Operation of the Plant(s), the PURCHASER shall in addition to the remedies under the Contract have the right to stop all payments due to the CONTRACTOR and the CONTRACTOR shall be required to undertake the work specified under Article 18.16, if any, without delay and the validity of his bank guarantee shall be extended.

c/ These tolerances should, preferably, be agreed upon at the contract stage.

d/ If Article 27.3 is not used (text B), the words in brackets should be removed.

ANNEXURE XXXII

Arbitration terms and rules

The terms and rules of arbitration as agreed upon by the PURCHASER and the CONTRACTOR should be stated here. If arbitration under the rules of the International Chamber of Commerce or some other agreed court is agreed upon, then the relevant documents should be specified here.