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

Prepared by the
DEPARTMENT FOR INDUSTRIAL PROMOTION, CONSULTATIONS AND TECHNOLOGY

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Abbreviations

C and F	cost and freight
CIF	cost, insurance, freight
DIN	Deutsche Industrie-Norm
FOB	free on board
FOR	free on rail
IATA	International Air Transport Association
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. High cost and 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 and the importance of the negative impact of delays in meeting the performance specifications of the supplied plants, and because of 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 who 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 this 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 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 that currently existed were not entirely suitable to meet the requirements of developing countries for the construction of fertilizer and chemical processing plants, and significant changes would have to be incorporated 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 had revealed fundamental weaknesses in contractual and legal terminology, which had worked to the detriment of both parties. In particular, inadequate use had been made of (a) legal securities available by way of bonds and other instruments that might 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.

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

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 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.

In order 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 to 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 most widely used one 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 draft 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 and expressed the opinion that these would be valuable in arriving at a final model form of contract that would be acceptable to both purchaser and contractor.

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 form of (a) the cost-reimbursable contract, and (b) the turnkey lump-sum contract to the Third Consultation on the Fertilizer Industry. Furthermore, the final drafts of the cost-reimbursable and the turnkey lump-sum contracts should be prepared as follows, UNIDO should: (a) invite comments on the first drafts of both contracts; (b) consolidate these comments and incorporate them as appropriate in the revised text of each model form of contract; (c) convene an expert group meeting comprising 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 them to the Third Consultation.

UNIDO invited written comments on both the turnkey and cost-reimbursable contracts, and revised drafts of the model forms of contract 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 and cost-reimbursable contracts, 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

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

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 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 Meeting, 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 given in the text 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 who finalized the model forms of contract.

In addition, 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 guidelines.

Part One

GUIDELINES FOR THE MODEL FORM OF TURNKEY
LUMP-SUM CONTRACT

I. GENERAL GUIDELINES FOR THE MODEL FORM OF TURNKEY LUMP-SUM CONTRACT

The UNIDO Model Form of Turnkey Lump-Sum Contract follows, in general, the methodology laid down in most turnkey contracts, although the UNIDO model imposes more rigid conditions on the contractor for meeting his obligations than most contracts do. Basically, the contract calls upon the purchaser to provide land for the plant, the necessary Government permission and approval, the operating and maintenance staff, and the feedstock and chemicals for start-up and operation of the plant; to make payments to the contractor according to an agreed schedule, and to pay customs duties.

The contractor is required, for an agreed contract price, to construct a turnkey plant that includes the provision of all the know-how, design and engineering services; to procure, inspect, supply and deliver to the site all the equipment (within agreed battery limits); to undertake all the civil works, erection and testing of the plant; to commission and start-up the plant (using the staff of the purchaser, some of whom he is obligated to train) and to demonstrate that the plant can produce products of contractual specifications and capacity. The purchaser takes over the plant only at this stage, and thus it represents a true "turnkey" supply.

However, in some turnkey contracts the contractor is totally left on his own to buy the equipment and build the plant without any continuous consultation with the purchaser. In the UNIDO model forms of contract, the purchaser would be continuously associated with the project so that his interests and requirements were taken into account. Moreover, consultations would allow the plant layout to take care of future expansions. In addition, such an arrangement would facilitate the transfer of know-how and experience to the purchaser and increase his knowledge of project implementation.

The UNIDO model form of contract calls for arrangements whereby the purchaser, should he so desire, not only receives all technical information in the contract, but is continuously in touch with the project:

(a) By specifying, in consultation with the contractor, the vendors from whom critical equipment is to be purchased;

(b) By being able to approve all the layout plans for the plant, in order to provide for future expansion and orderly site development;

(c) By having direct access to the basic documentation provided by the process licensor(s) to the contractor;

(d) By being able to post engineers at the contractor's offices to look at the detailed engineering and procurement specifications (without seeing the subcontractor's prices);

(e) By being able to approve all changes in the technical parameters and materials of construction, as stated in the contract, or other changes in the equipment or construction specifications;

(f) By being able to inspect the equipment independently, although this is normal in most turnkey contracts;

(g) By following the progress of the civil works and plant erection through payments linked to actual work done at the site.

While the purchaser has substantial powers in requesting changes, it should be clearly understood that any change increasing the cost of equipment or site construction would have to be paid for by the purchaser by additional payments (under article 15). It is therefore absolutely necessary for the purchaser, before signing a turnkey contract, to check carefully all the technical specifications included therein, particularly the design basis, the equipment specifications, civil works and erection specifications, and the feedstock and product specifications. Consultants should be appointed for this purpose if the purchaser does not have adequate experience to specify them at the contract stage.

While the purchaser has rights under the Contract to make changes, those rights should be judiciously exercised for it is the contractor who must build the plant in a given time and demonstrate performance guarantees, which are quite rigid in the UNIDO model forms of contract.

The model form of contract lays great emphasis on the early completion of the plant, in demonstrating its ability to perform, and on correction of latent defects that appear in a period of 12 months after the plant has completed its guarantee tests.

Consequently, substantial payments are tied to the completion dates of the plant. The performance guarantees for capacity (up to 95 per cent) and for quality of products are "make-good" guarantees without limitation of liability on the part of the contractor, and some payments are retained up to 12 months after completion of guarantee tests to cover equipment warranties and latent defects.

It should be stressed that such rigid conditions may make the contract more expensive than standard turnkey contracts. However, the purchaser is provided with more surety in obtaining a properly working plant.

In using the model form of contract it should be noted that the figures and periods of time mentioned in the various articles and clauses are entirely illustrative and are not binding on the parties; 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 feedstock. The contract can, however, be used to set up other kinds and sizes of fertilizer plants as well, with suitable modifications.

The technical annexures to the model form of contract detail all the technical parameters of the works, 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 TURNKEY LUMP-SUM CONTRACT

Article 1. Definitions

This Article contains the definitions of the terms used in the Contract. Wherever 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 felt necessary or if substantial changes were made in the model form of Contract during negotiations.

This Article includes the definition of "Engineer", which has been used in the model form of turnkey contract in preference to the word "Technical Adviser" used in the model form of cost-reimbursable contract. Where the Engineer has a statutory legal function, a suitable change may be made in his definition in the Contract. Considering that in the model form of Contract the Engineer represents the PURCHASER and takes decisions on his behalf, it is necessary to spell out clearly the terms of delegation of authority to him.

Article 2. Object of the Contract

This Article gives the general objectives of the Contract, including the overall time schedule. The general objectives are a statement of the type of Plant covered by the turnkey Contract, and its location.

In the model form of cost-reimbursable contract, a total project cost has been estimated in this Article. In a turnkey contract this has not been felt necessary, for the Contract Price (Article 20) contains all the elements of the total project price covered by the Contract. To arrive at the total project cost, the PURCHASER only has to add those elements for which he is solely responsible, such as the cost of land, customs duties (if any), interest charges during construction, consultancy fees, PURCHASER's Site and head office expenses etc., to the Contract Price.

- 2.3 The training of the PURCHASER's personnel is one of the most important factors leading to the success of the project and, hence, it has been specifically singled out in the objectives of the Contract.
- 2.4 This Article contains the time schedule for the Plant. The importance of the time schedule for any plant, 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 delay 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.

For these reasons, liquidated damages are provided in Article 27.1 for delays in the CONTRACTOR completing his Services. But the liquidated damages would not compensate the PURCHASER for all the losses that he would suffer for delays.

The figures in this Article indicate achievable dates for an Ammonia/Urea Plant. However, a realistic time schedule should be fixed, taking into account the specific elements of the case. The time-schedule figures are therefore shown in brackets. The detailed time schedule is given in annexure XV.

In developing countries there can be several reasons for delays, even in turnkey contracts. The most important are delays in pre-contracting procedures; but even after the Contract is signed, there are often substantial delays in making the Contract effective owing to governmental procedures and/or procedures of financing institutions, the latter being the more cumbersome in many countries. After the Contract comes into force, the PURCHASER may incur further delays on securing the Site, payments in arrears, untimely availability of feedstock, and, sometimes, delays in giving approvals (which are discussed later).

The monitoring of the time schedule is very important, and this is discussed in Article 11.

Article 3. Overall scope of work and division of responsibility

This Article outlines the overall work required to build the Plant under two main headings. Article 3.1, which is common to all contracts 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. In some cases, individual functions for an item of work are allocated to the CONTRACTOR and the PURCHASER, e.g. Article 3.2.4 of the model form of turnkey lump-sum Contract provides that the PURCHASER shall supply the feedstock and other raw materials and catalysts for the Start-Up of the Plant, but the CONTRACTOR shall supply complete specifications in good time to allow the PURCHASER to purchase the raw materials.

It should be noted that in a turnkey contract, the responsibilities of the CONTRACTOR far outweigh those of the PURCHASER.

- 3.1.4 To establish the list of Equipment for the Plant, it is necessary that the main technical parameters of the Equipment should be specified and, in particular, the materials of construction should be agreed upon. This is to be done at the contractual stage, but modifications could take place later by mutual agreement. However, more important, is the identification of Critical Items, which should be specified in greater detail.
- 3.1.5 The CONTRACTOR and the PURCHASER should jointly pre-qualify the Subcontractors for the supply of Critical Items of Equipment, e.g. the centrifugal compressors in an Ammonia Plant. It is recommended that only those suppliers who have already furnished similar equipment to

satisfactorily working plants should be pre-qualified as Subcontractors.

3.1.30 In some turnkey contracts, after Mechanical Completion, the management of the Plant passes to the PURCHASER who thus "manages" the commissioning, Start-Up and operation of the Plant. However, in the UNIDO model form of contract, it has been felt (Article 17.1) that the CONTRACTOR should be required to manage the commissioning, Start-up and operations of the Plant until completion of the Performance Guarantee Tests (Provisional Acceptance) to avoid disputes. Since such management services may cost a substantial amount of money, some of the more advanced developing countries could take over management during this period, although this may dilute the CONTRACTOR's liabilities.

3.2.2 The design basis of the Plant is usually provided by the PURCHASER at the tender stage, or amplified during Contract negotiations. However, since this is a turnkey contract, the CONTRACTOR usually satisfies himself that these specifications are reasonable. Thereafter, the design basis is incorporated in the Contract in annexures II and IV.

The problem of the ultimate responsibility for the design basis remains. In text A, the CONTRACTOR is made responsible because it is presumed that in agreeing to his final Contract Price he has checked these specifications. However, variations in the soil characteristics (Article 4.4.2) and the feedstock characteristics (Article 5.8.1) may require contractual changes.

In text B, the CONTRACTOR only reviews the contractual design basis. This means that the responsibility for the design basis falls on the PURCHASER. In this case, it is assumed that the PURCHASER has fully checked and verified all of the data in annexures II and IV. In addition, if the CONTRACTOR finds that changes are required in the design basis during his review, the presumption would be that the PURCHASER should have to pay for them.

3.3 It is necessary in a turnkey contract to provide a general article relating to the overall obligations of the CONTRACTOR, for it is not always possible to anticipate all the activities needed for a turnkey project at the contractual stage. Hence provision is made that any activity or work not specifically mentioned as being that of the PURCHASER, which is necessary for the establishment of the turnkey Plant, should be considered as being included in the CONTRACTOR's responsibilities.

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 4.27 and 5.8) to avoid difficulties of interpretation and understanding. Thus, Articles 4 and 5 should be read in conjunction with each other.

4.4 This Article, which refers to the design basis, is essentially an amplification of Article 3.2.2, which has already been discussed.

Text A places on the CONTRACTOR the entire responsibility for having checked the design basis and for obtaining all the necessary information.

In text B, the PURCHASER shall provide all information pertaining to local laws for review by the CONTRACTOR, subject, however, to the CONTRACTOR obtaining all the information required to carry out his obligations under the Contract. Thus, responsibility for the design basis and for all local regulations is borne by the PURCHASER.

In all cases, as already mentioned under Article 3.2.2, two factors, soil characteristics and feedstock characteristics, would need re-checking. The former, before commencement of the Civil Works, and the latter, before the meeting contemplated under Article 6.8 and, again, at least (6) months before Initial Operation because feedstock characteristics can change with time. Articles 4.4.2 and 5.8.1 provide for variations in such cases.

- 4.4.2 The normal procedure for estimating ground load-bearing capacity is for the PURCHASER to undertake a few tests before the Contract is negotiated (or even at the tender stage). The Contract is based upon the load-bearing capacity from these tests. However, the CONTRACTOR is obligated (Article 4.17) to run new tests to check the soil conditions. If the new tests give significantly different results, Article 4.4.2 obligates both parties to review the effect of these results. They can affect mainly the cost of civil work.
- 4.5 The CONTRACTOR's obligation to supply the know-how from particular process licensors is contained in this Article. However, if the CONTRACTOR is himself the supplier of the know-how, this Article would need appropriate modifications.

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.

In some cases, there may be objections on the part of the licensor(s) to giving all the design details (for instance, heat transfer coefficients used in the design of heat exchangers) to the PURCHASER, although they may be prepared to give them to the CONTRACTOR for checking of the basic engineering, if needed by the CONTRACTOR.

- 4.8 The words "notwithstanding anything to the contrary" in this Article, are not meant to increase the contractual obligations of the CONTRACTOR with regard to the warranties, guarantees and liabilities. The purpose of these words is that if the Equipment supplied by the CONTRACTOR under the Contract, and particularly in the annexures, is inadequate to meet the contractual guarantees and warranties, the CONTRACTOR should take complete responsibility to correct it.
- 4.9 It is essential that the CONTRACTOR takes on the obligation to provide a turnkey Plant within the specified Battery Limits. This Article stresses that if any piece of equipment is required to complete the Works within Battery Limits (other than the exclusions specifically mentioned as being the PURCHASER's responsibility in annexure III), it has to be supplied by the CONTRACTOR, whether or not it is included in

the list of machinery and materials (annexures VIII, IX, X and XI). This is the essence of Equipment supply under a turnkey contract.

- 5.9 The PURCHASER generally hires the operating personnel and they have to commence work while the Plant is still being managed by the CONTRACTOR (from Start-Up to Provisional Acceptance). This Article covers the obligation of the PURCHASER to provide such personnel, while the CONTRACTOR develops the manpower and qualifications chart.

In text A, the number and qualifications of the personnel required are subject to approval by the PURCHASER because, as he has ultimately to run the Plant, he must obtain the manpower in accordance with a programme suitable to his ultimate needs.

In text B, the CONTRACTOR alone defines the personnel required because, as he is responsible for demonstrating the Performance Guarantees, he must have the personnel required for this purpose.

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

This Article sets out the procedures for co-operation and co-ordination between CONTRACTOR and PURCHASER. Although in a turnkey contract the CONTRACTOR is permitted to proceed with the implementation of the contract in his own way, there are many important details that have to be co-ordinated between the parties from time to time. Therefore, it is necessary to lay down in the Contract the precise methodology for technical meetings at which the different co-ordination and procedural matters shall be finalized or completed and their agenda.

The most important of these are the first ("kick-off") meeting in the (first) month after the Effective Date of the Contract (Article 6.5), and the second meeting to firm up the design in the (fourth) month (Article 6.8). In view of the importance of these meetings, some of the main points to be discussed have been detailed under Articles 6.7 and 6.8.

The design meetings should draw up a detailed check-list of the various records to be kept, approvals to be given, and items to be considered at various stages of the Contract.

While approvals from the PURCHASER in a turnkey contract are not as extensive as in a cost-reimbursable contract, nevertheless they are important for meeting the time schedule. Therefore, approvals should be given promptly by the PURCHASER, particularly for those items mentioned under Article 6.8. The time allowed for the PURCHASER's approval is to be stated in Article 6.12 and is negotiable.

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 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 licensors.

- 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, they can be adopted.

This Article requires the licensor 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 that could result in significant improvements in the 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, the 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 keep 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 there are instances where because of deficiency or defects, the intended performance in terms of capacity or efficiency is not attained. In such situations, the PURCHASER 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 from 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, the approval of the Government 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 is 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
8.2 or 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 to 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, 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 of spare parts

In a turnkey contract the procurement of the Equipment, Plant and Materials falls under the responsibility of the CONTRACTOR. However, experience has shown that the procurement of spare parts, even in a turnkey contract, should be done on a cost-reimbursable basis for this method would better protect the interests of the PURCHASER. Nevertheless, the CONTRACTOR is not relieved from his responsibility to submit an accurate list of spare parts to the PURCHASER for approval, which is based upon his experience of commercial operation of such plants.

In special cases, where some equipment is being purchased on a cost-plus basis by the CONTRACTOR on behalf of the PURCHASER (e.g. air-conditioning equipment for the housing), the same method of procurement can be used, and Article 10 can be modified accordingly. The title of this Article can also be modified to read "Procurement of spare parts and specialized equipment". Such equipment should be added to, and clearly specified in, annexure X.

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.

Article 12. Delivery and execution of the Work(s)

This Article lays down the conditions for the supply of Equipment and Materials and their dispatch to the Site, for the execution of the Civil Works and the erection of the Plant, and for the Start-Up and commissioning of the Plant. After the Plant is commissioned, the provisions of Articles 18 and 26 shall apply.

- 12.1 This Article deals with the supply of Equipment and Materials and ensures that the Equipment is "brand-new" (Article 12.1.1), that it conforms with the agreed technical specifications (Articles 12.1.2 and 12.1.3), and, where those are not specified, that the list will amplify (Article 12.1.4), and that the Equipment is suitable for the use contemplated (Articles 12.1.5, 12.1.6). It is also agreed that Critical Items shall be obtained from selected Subcontractors (Article 12.1.7) and that the initial charge, and one spare charge of each catalyst required, the imported chemicals and refrigerants etc. shall be included (Articles 12.1.8, 12.1.9, 12.1.10).
- 12.2 This Article deals with the marking, packing and dispatch of Equipment and Materials. Wherever the PURCHASER desires or is required by statutory rules to mark the packages in a specific manner, this should be specified here. However, the CONTRACTOR is responsible for storage at the Site and, therefore, he should have the right to mark the packages at his discretion.

In Article 12.2.7, the CONTRACTOR acknowledges his familiarity with the transport and handling facilities and takes responsibility for the movement of goods to the Site. This is particularly important where inland sites are concerned, because limitations on the size of Equipment that can be moved to the Site may alter the engineering design (e.g. two carbon dioxide absorption towers, instead of one, in the Ammonia Plant).

- 12.4 This Article provides for storage of Equipment and Materials at the Site. The PURCHASER has an interest in seeing that the Equipment is adequately protected at the Site, particularly when it is temporarily stored. Since he is generally more familiar with possible reasons for deterioration at the Site (high winds, heavy rainfall etc.), his Engineer is given the right to ensure that the Equipment is properly stored (Article 12.4.1).
- 12.5 This Article deals with the construction of roads, railway sidings and other facilities. It provides for the CONTRACTOR to undertake all this construction, even if some part of the work is outside the Battery Limits. Where some of the work is outside the Plant limits, the necessary qualification should be made in the Battery Limits as stated in annexure III, and the additional areas of work clearly specified.

In many cases, the railway sidings may be the responsibility of the railway authorities in the PURCHASER's country, and the PURCHASER may wish to, or be required to, make road connections with the main highway network. In such cases, Article 12.5 should be modified appropriately.

- 12.6 This is a general Article with detailed provisions on the Civil Works which, however, should be specified further in annexure XXVIII. Both Article 12.6 and annexure XXVIII may need modifications on a country-to-country basis, as there are statutory laws for Civil Works in certain countries and, sometimes, in or near large towns.

In Article 12.6.7, provision is made for areas without physical infrastructure where labour has to be imported from a distance (or from third countries), and where there is an obligation on the part of the CONTRACTOR to repatriate the labour either by law or by Contract. Therefore, this Article may need modification on a case-to-case basis, and may even be eliminated in some cases.

Article 13. Supervision and access

13.6 The right of access of the PURCHASER or his Engineer to the Site and to all places where work is going on for the Plant must be unlimited and
13.9 this is stated in these Articles.

13.14 This Article allows third parties to visit the Site, if required by the PURCHASER, but subject to their entering into a secrecy agreement in accordance with Article 7. Such parties should not be direct competitors of the CONTRACTOR, and should not interfere with the work of the CONTRACTOR.

Article 14. Inspection, testing and certification

This Article deals with the inspection of the Plant. Since the CONTRACTOR is also the supplier of the Plant, while he undertakes his own inspection, he must allow the PURCHASER or his inspection agency to inspect the Equipment when required, and to be present at all tests on the Equipment.

In appointing his own inspectors, the PURCHASER should ensure that they have substantial experience in the inspection of chemical plants. However, Article 14.15 states that the presence of the PURCHASER's representatives during the inspection in the workshops of the CONTRACTOR or his Subcontractors does not relieve the CONTRACTOR from his obligations under the Contract, such as good workmanship, and other liabilities for quality etc. of the Equipment.

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

This Article lays down a smooth working procedure for making changes and variations, which can sometimes be substantial in a major turnkey contract. It is essential, however, that such changes, particularly where they affect the price, time schedule or the technical parameters and materials of construction of the Equipment, are embodied in written change orders. The carrying out by the CONTRACTOR of verbal arrangements can lead to disputes. Detailed procedures are given in annexure XIX for making changes according to this Article or Modifications under Article 29. It should be pointed out that payments for changes under Article 15 are to be made outside the payments laid down in the Contract (Article 20). Where there are foreign exchange regulations, it may be advantageous to lay aside a sum of money (by appropriate modifications in Article 20) for this purpose.

15.10 This Article deals with disputes as to whether a particular variation is part of the CONTRACTOR's contractual responsibilities, or whether it requires the PURCHASER to pay additional costs. The Article provides that in the first instance the advice of a neutral person may be taken, and if this is unacceptable, resort may be made to arbitration. This independent expert should be an expert in the particular field to which the dispute pertains and need not necessarily be the neutral person contemplated in Article 37.1.1.

15.11 These Articles stress that wherever there are any changes in price, time and schedules, or technical specifications of the Equipment, these should
15.12 be embodied in written change orders to be signed by authorized representatives of the PURCHASER and the CONTRACTOR.

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 Article 15 be followed, but that 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

Experience has shown that 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 Plant operation is facilitated by providing for suitable management assistance.

The CONTRACTOR also has a commitment to 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.

- 17.2 This Article enables the CONTRACTOR to provide management assistance services to the PURCHASER 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 Works, which is (12) months after 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 Works.
- 17.3 These Articles define the services to be provided by the CONTRACTOR to under Article 17.2. Article 17.3 lists the number of the CONTRACTOR's personnel to remain at the Site, which would depend upon the experience of the PURCHASER's operating personnel. Article 17.3.1 provides that, as far as possible, the CONTRACTOR's personnel should be selected from those that operated the Plant up to Performance Guarantee Tests, while Article 17.4 lists their duties. It is necessary to list the number and functions of the CONTRACTOR's staff, for these are not directly tied up with the Contract.
- 17.6 An option to keep some of the CONTRACTOR's personnel after Final Acceptance of the Works at extra fees is desirable for the PURCHASER, in order to cover whatever management problems may still remain.
- 17.7 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. A suggested period for such services is 5 years. Such an agreement would require the CONTRACTOR to make experienced personnel available to review the Plant's performance periodically and offer recommendations for improvements, and to identify Plant problems and suggest remedial measures.

Article 17.7 ensures that the CONTRACTOR accepts the rendering of continuing technical assistance services in the Contract itself. Although the technical advisory services agreement stems from the Contract, it is wholly separate and distinct from the liabilities and responsibilities contained in the Contract and would have to be negotiated separately.

Article 18. Completion of Work(s) and conditions of Provisional and Final Acceptance

This Article deals with the certificates of work completion and acceptance of the Plant. The Turnkey Contract calls for a construction completion report at the end of civil engineering, a Mechanical Completion Certificate at the end of erection and dry tests; the important 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.

Provisional Acceptance upon the satisfactory completion of the Performance Guarantee Tests is the most important milestone. At this point, the PURCHASER takes over the Plant and shall have paid 95 per cent of the payments to the CONTRACTOR.

In some turnkey contracts, take-over of the Plant has been at Mechanical Completion because, as all operating personnel is hired by the PURCHASER and the CONTRACTOR provides supervision, the Plant operation must be the responsibility of the PURCHASER. Since in many cases the Start-Up raises problems relating to subsequent Equipment damage, the model form of contract includes the take-over of the Plant upon issuance of the Provisional Acceptance Certificate. Nevertheless, the CONTRACTOR still has liabilities for warranties (Article 28) and for latent defects in the Plant for another (12) months until Final Acceptance.

18.14.2 The application of this Article may be deferred to the Final Acceptance Certificate. In such a case, appropriate amendments should be made to Article 18.8.

18.16 In the event that the CONTRACTOR is unable to complete the Plant, or to perform the Performance Guarantee Tests satisfactorily, he has a contractual obligation to rectify and modify the Plant in accordance with Article 29. Article 18.16 defines the circumstances in which the CONTRACTOR must rectify or modify the Plant. This Article can be shifted to Article 29, if so desired.

Article 19. Extension of time 3/

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

^{3/} Text A and text B have the heading "Extension of time" but only text B has the additional heading "and compensation of cost".

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 international practice in this regard. This is also one of the reasons for the two texts.

The wording of text B could include in the definition of force majeure strikes at the Site if these were beyond the CONTRACTOR's control. This would mean that the PURCHASER might have to pay for strikes of the Subcontractors at the Site.

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

Articles covering Contract Price and terms of payment are specific to each project and may need substantial changes, particularly when a project is financed by loans. In financed projects, lending agencies often have their own rules on payment conditions.

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. However, the figures in brackets are only indicative and in an actual contract would have to be settled on a case-to-case basis.

In particular, payments for Civil Works (Article 20.12) and erection (Article 20.13) are dependent upon progress at the Site, as certified by the PURCHASER's Engineer. The mode and method of checking this progress should be worked out no later than at the second design meeting (Article 6.8). One method is to agree on a bill of quantities and a unit rate for each item of construction or erection, and pay monthly by actual measurement of quantities. In such cases, the bill of quantities has to be reviewed periodically to ensure that the total remains within the amount earmarked for civil construction and Plant erection.

20.1 No provision is made in the model form of contract for price escalation (Article 20.1.1), for it recommends a firm price Contract.

Often PURCHASERS in developing countries wish to have a price as fixed as possible, mainly from the point of view of the allocation of resources. However, since the CONTRACTOR would have to introduce contingencies into his price to cover escalations, it might result in a higher Contract Price being paid. Some PURCHASERS, on the other hand, feel that competitive bidding would keep such contingencies to a minimum.

20.2 These Articles provide a breakdown of the entire Contract Price to facilitate payments. However, in some cases this separation
20.7 (e.g. Articles 20.2 and 20.3) may increase the tax liability within the PURCHASER's country. Therefore, the breakdown of prices should be carefully considered.

Article 20.3 includes the procurement services for the purchase of spare parts under an overall fixed price, although the purchase is actually being undertaken on a cost-reimbursable basis (Article 20.8). This means that the PURCHASER can buy as many spare parts as possible within

this ceiling. The working of this Article may be made differently, if desired, to make this price truly cost-reimbursable.

- 20.10 These Articles deal with the payment schedule for each of the
to CONTRACTOR's Services.
20.16

It should be noted that in the periods (which are subject to negotiation) indicated in the model form of contract, substantial amounts are kept until the PURCHASER can be satisfied about the operation of the Plant. The amounts held back are as follows:
(a) until Commercial Production: (25) per cent of management costs under Article 20.6.1; (b) until Provisional Acceptance: (25) per cent of the licensors' fees, (10) per cent of the cost of Equipment and materials, 10 per cent of the cost of Civil Works, (10) per cent of the cost of erection, (25) per cent of management costs under Article 20.6.1, (10) per cent of the cost of spare parts; (c) until Final Acceptance: (10) per cent of the cost of Equipment and Materials.

- 20.17 These Articles lay down the certificates or other documentation (bills
to of lading, acceptance certificates etc.) against which the payments
20.21 under Articles 20.10 to 20.16 shall be paid.

It should be stressed that unreasonable delays in the issuance of these certificates place an unnecessary burden on the CONTRACTOR, therefore it is advisable to ensure the prompt issuance of certificates when due.

- 20.22 These Articles deal with the CONTRACTOR's rights to receive Provisional
to Acceptance payments, if the Plant has not been Started-Up (18) months
20.24 after Mechanical Completion through no fault of the CONTRACTOR, and
Final Acceptance payments, on the same basis, (30) months after
Mechanical Completion.

In turnkey Contracts the CONTRACTOR has a time limit for running Performance Guarantee Tests and if these cannot be run, through no fault of the CONTRACTOR, he can claim the payments due under Article 20.22. In the event that such a claim is disputed by the PURCHASER, a procedure is laid down in Article 20.23 that protects the PURCHASER.

- 20.29 These Articles provide a bonus or incentive payment to the CONTRACTOR,
and if he demonstrates the Performance Guarantees earlier than (36) months
20.30 after the Effective Date of the Contract, and if he accomplishes the
Mechanical Completion of the Works within (32) months after the same
date but, through no fault of his, the Plant cannot be Started-Up
within (4) months thereafter. It is suggested that this bonus should
be of the same order as the liquidated damages for delay in the
Mechanical Completion of the Works (Article 27.1.2).

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 law suits, claims or damages. This protection is required because the PURCHASER may not be aware of such occurrences 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 etc. arising out of a lack of legitimate or legal title or access to the property or premises where the Works are being undertaken. This protection is necessary because the CONTRACTOR has no control over the title and ownership of the Site, and only the PURCHASER can guarantee safe and clear title, access to the Site and the necessary permissions to build a Plant on it.

Article 23. Project accounting and audit

In a turnkey project, the CONTRACTOR has his internal accounting system for the project and this is not open for inspection by the PURCHASER.

However, the PURCHASER has a right to inspect the records of the CONTRACTOR for any additional payments made to him arising out of Articles 15, 19 etc., where such payments have been agreed to be made on an actual cost-plus basis or on time charges at the CONTRACTOR's home office. For this purpose, the agreed time charges are set out in annexure XXVII.

With regard to payments made by the PURCHASER to the CONTRACTOR, some developing countries, particularly when public-sector agencies are involved, want to check overseas payments during their own audits. For this reason, the CONTRACTOR is required to keep records of such payments for (2) years (Article 23.1).

Where auditing and accounting are not required, most of this Article could be eliminated. However, Article 23.2 should remain, as it is tied up with Article 36.2.2, which covers extra payments to be paid to the CONTRACTOR for changes in local laws and statutes requiring changes in the CONTRACTOR's Services or supplies.

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.

In general, CONTRACTORS are careful in taking out insurance policies where a turnkey contract is involved. However, where CONTRACTORS do not do so, the PURCHASER has the right to take out insurance policies which are the CONTRACTOR's responsibility at the CONTRACTOR's cost (Article 24.3). However, some insurance, such as corporate coverage, can only be taken out by the CONTRACTOR.

In a turnkey contract, most insurance policies are to be taken out by the CONTRACTOR up to Provisional Acceptance. Thereafter, the PURCHASER should be careful to provide adequate coverage. Although consequential loss insurance is not currently available for design faults, UNIDO is attempting to work out an arrangement for this purpose, hence the reason for Article 24.5.

At the same time, consequential loss cover for production breakdowns owing to any normal cause such as equipment failure, power interruptions etc. would be available when the Plant is operating satisfactorily (usually at least six months after Provisional Acceptance), and the PURCHASER may wish to take advantage of the availability of such cover.

Article 25. Guarantee for workmanship during manufacture, construction and erection of the Works

This Article deals with guarantees of good workmanship in the construction and erection of the Works, and the guarantee that the proper standards shall be used. These guarantees are only for the construction and pre-operation stage of the project and expire when the warranties under Article 28 become effective. The CONTRACTOR's warranties starting from Provisional Acceptance are set forth under Article 28 whereas Article 25 deals with the same subject during construction up to Provisional Acceptance. From a legal viewpoint, Article 25 might not have been necessary in a turnkey contract, for the CONTRACTOR is still in the stage (before Provisional Acceptance) of fulfilling his obligations to design, supply and construct the Plant free from defects and that includes his obligation to verify any defect. But to avoid doubt regarding the PURCHASER's rights at this stage, it was considered useful to add 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.

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.

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.

Penaltable 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 becomes indirectly 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;

(d) 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 penaltable 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 Penaltable, they should be transferred accordingly as new headings to Article 26.3.1 (Absolute Guarantees) or Article 26.3.2 (Penaltable 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 Penaltable 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 penaltable;

(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 Penaltiiable 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 penaltiiable. 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 penaltiiable;
- (ii) The consumption of raw materials (ammonia) for the Urea Plant could be penaltiiable if there was surplus saleable ammonia in the capacity of the Ammonia Plant. However, if the capacity of the Ammonia Plant 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 Performance Guarantees have been successfully demonstrated in limited test periods of 72 hours, but the Plants have not operated 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, a time limit is placed on the CONTRACTOR's obligations to run Performance Guarantee Tests if, within a specified period after Mechanical Completion extended by an agreed term in the event of force majeure, the Plant cannot be Started-Up for reasons not attributable to the CONTRACTOR. In text A, the period specified is (18) months; in text B, this period is negotiable. It is normal to provide for a "cut-off" point in such contracts and the period selected would depend upon Site conditions. If the Plant had 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 was 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 was 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 the payment of liquidated damages.

- 27.1 This Article provides liquidated damages for delay in the delivery of technical documents, in the timely Mechanical Completion of the Plant, and, in text A, in the obtaining of Commercial Production (not in text B).
- 27.2 This Article provides liquidated damages for the non-fulfilment of the Penaltiable 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.
- 27.3 In text A, a time limit of (43) months after the Effective Date of the Contract, or (9) months after Initial Operation, is set for the CONTRACTOR to complete 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 profit and should, therefore, be subject to penalty. The penalty suggested is (1) per cent for each month of delay up to a maximum of (9) 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 (52) months of the Effective Date of the Contract or (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 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 be able to make it do so later. Hence, the PURCHASER should have the right to bring in a third party.

- 27.5 In cases where the PURCHASER has satisfactorily fulfilled his obligations 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

This Article provides the conditions of warranties for the Plant as a whole and for the sections of the Equipment, Materials, tools and supplies etc. that are incorporated in the overall Works. The warranties specified provide the basis for the Plant and Equipment etc. conforming to the technical specifications, engineering specifications, fabrication workmanship and materials.

- 28.2 The PURCHASER must be assured of the satisfactory and continuous to operation of the Plant and Equipment and, accordingly, Article 28.2
- 28.4 requires the CONTRACTOR to warrant the Plant and Works for (12) months from the date of Provisional Acceptance (completion of Performance Guarantee Tests), or (30) months from Mechanical Completion if the Plant cannot be Started-Up for reasons beyond the CONTRACTOR's control. The conditions of warranty must apply to defects or failures of the Works or any parts of the Works owing to faulty or improper design, manufacture etc., and the CONTRACTOR is bound under Article 28.3 to correct all such defects and failure without cost to the PURCHASER. The CONTRACTOR is also fully liable for all costs that may be incurred by the PURCHASER in connection with corrective work, rectification or modification.
- 28.5 This Article ensures that replacement of Equipment is accomplished in as reasonably short a time as possible and provides for the commencement of new warranty periods for both repaired or replaced items for a further (12) months. In text A this is an "evergreen" warranty, for the failure of a part within (12) months and continues until the part is supplied, which lasts for (12) months or more. In text B, this warranty period is limited to a maximum of two periods of (12) months each.
- 28.6 The PURCHASER should be aware that the CONTRACTOR's warranties, however, are not carte blanche to cover all defects in all situations. For example, damage that is caused through disregard of the CONTRACTOR's instructions or regular wear and tear would not be subject to warranty. The PURCHASER should also be aware that he is duty-bound under Article 28.9 to advise the CONTRACTOR of defects noticed in the Equipment in order that the CONTRACTOR has the opportunity to undertake remedial measures. However, the PURCHASER is not obliged to wait for an unreasonable period for the CONTRACTOR to undertake the necessary corrections and, where a lapse of time has occurred without any action having been taken by the CONTRACTOR, the PURCHASER may proceed to undertake such correction of defects as may be necessary. Such work undertaken by the PURCHASER shall be at the CONTRACTOR's cost.

28.7 This Article is a warranty for Civil Works. The periods and conditions of such warranties should meet the statutory rules and regulations in the PURCHASER's country and should be considered on a case-to-case basis.

Article 29. Rectification of defects and modifications to the Works

This Article deals with the details for correcting defects and making modifications to the Works. There are two periods when the PURCHASER's rights and the CONTRACTOR's obligations are affected. The first is the period up to the running of the Performance Guarantee Tests, and the second is the period when rectifications and modifications are required after a test has failed.

29.2 In both cases the CONTRACTOR is obligated to undertake the rectifications and modifications at his own cost and to keep the PURCHASER informed of all rectifications being undertaken, and the PURCHASER can suggest, with or without help from third parties, the methods for carrying out the rectifications. However, the final decision on what has to be done rests with the CONTRACTOR.

29.4 After repairs or rectifications have been carried out, the PURCHASER has the right to insist on new tests being run to ascertain that the parts have been properly repaired or rectified.

29.5 If, after all the CONTRACTOR's efforts, the Absolute Guarantees still cannot be met, the PURCHASER, after giving due notice, may himself or with the help of third parties take all measures to correct the Works at the cost of the CONTRACTOR.

Article 30. Liabilities, set-off and waiver

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

30.2 This Article provides that the CONTRACTOR is responsible for any damage or loss to the PURCHASER before Provisional Acceptance of the Plant. Text A provides for making good the full loss to the PURCHASER, whereas text B provides for the CONTRACTOR's liability being limited to his insurances, the limits of which, however, must be reasonable and agreed to by the PURCHASER.

Text A stresses that the CONTRACTOR has been selected on the basis of his competence and, therefore, should be fully responsible for the consequences of his negligence. Text B considers that, while the CONTRACTOR would exercise normal professional skill, his liability should not exceed his recoveries from insurance because the extent of such insurance cover has been agreed with the PURCHASER.

30.3 This Article limits the total liability of the CONTRACTOR to an expressed percentage of the total Contract Price (aside from reimbursement of monies under insurance policies), except for his obligation to meet the Absolute Guarantees and warranties. Consequently, the foregoing does not restrict the CONTRACTOR's liability to make good defects or inadequacies for which the CONTRACTOR is liable pursuant to the other provisions in the Contract, particularly his liability for meeting the Absolute Guarantees. If the CONTRACTOR does not make good such defects or inadequacies, the PURCHASER may make them good at his own discretion and the CONTRACTOR shall be liable to compensate the PURCHASER for such costs.

- 30.4 This Article exempts the CONTRACTOR from liability under the Contract for loss of future profits of the PURCHASER or for consequential loss to the PURCHASER arising from any reason.
- 30.5 This Article provides that if the CONTRACTOR has failed within a reasonable time to rectify or make good any defect, after being required so to do by the PURCHASER, the PURCHASER may do so. Text A states that the PURCHASER may undertake the repairs as he deems fit at the CONTRACTOR's expense and without limitation to costs, in order to avoid production losses. Text B requires that such repairs should be undertaken only after giving due written notice to the CONTRACTOR indicating the exact details of the defects that the PURCHASER wishes to put right and only when the cost of such repairs is reasonable.
- 30.6 Text A provides that any bond, payment or undertaking given by the CONTRACTOR should not limit his liability under the Contract, particularly if the liability exceeds the bond or payment, for customarily the performance bond may be limited to only 10 to 15 per cent of the Contract Price and the actual non-performance costs may be much more. Text B suggests that the whole Article should be removed because it is too general and not specific enough, and also covers payments and undertakings apart from bonds.
- 30.7 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 that 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 taxes 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. This is particularly necessary for a turnkey contract where the CONTRACTOR is undertaking substantial work at the Site.

- 31.1 This Article lays down that the CONTRACTOR is fully responsible for all taxes outside the PURCHASER's country including licence fees, royalties, the Equipment and Materials supplied, and the CONTRACTOR's Services abroad.
- 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 provision 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 and 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 the tax laws; otherwise he is likely to build into the Contract Price a contingency 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 Works 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)

32.6 Days (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 that 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 where he 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. In turnkey contracts, if this exception is not made, a

strike at the Site, because of a demand for higher wages by erection or construction personnel, may constitute force majeure and could ultimately lead to the termination of the Contract, which would be against the spirit of the Contract.

- 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, which uses 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 Independent 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 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 TURNKEY LUMP-SUM CONTRACT

Text of the Model Form of Turnkey Lump-Sum 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 Works 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 and Urea Plants as set forth in Articles 26.2.1, 26.3.1 and annexures XVI and XXX.
- 1.5 "Act of Bankruptcy" shall have 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 as 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 (the Ammonia Plant and the Urea 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 18.11.
- 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 Works, 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 "Engineer" shall mean the person(s) or firm(s) appointed from time to time and designated by the PURCHASER as his representative with specified authority to review all work on the PURCHASER's behalf and to 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 to be supplied by the CONTRACTOR 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.
- 1.18.1 "Materials" shall mean the chemicals, catalysts and other consumable materials to be supplied by the CONTRACTOR in accordance with annexures IX and XI.
- 1.19 "Final Acceptance" shall mean the acceptance by the PURCHASER of the Works in accordance with Article 18 and specifically Article 18.18 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 "Modifications" or "Modify" shall in all cases cover the work and/or services of the CONTRACTOR within the scope of the Contract which require implementation by change order.
- 1.24 "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.

- 1.25 "Penaltiible Guarantees" shall mean the Performance Guarantees of the Plant(s) as set forth in Articles 26.2.2 and 26.3.2.
- 1.26 "Performance Guarantees" shall mean the Absolute Guarantees and the Penaltiible Guarantees.
- 1.27 "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.
- 1.28 "Plant" shall mean the Ammonia Plant, the Urea Plant, the Off-Sites and the administrative, maintenance, laboratory and other facilities, as defined in this sub-Article and in the annexures, to be supplied by the CONTRACTOR under the terms of this Contract, to be constructed at the Site and in respect of which the CONTRACTOR's Services are to be provided.
- 1.28.1 "Ammonia Plant" shall mean the facilities for the production of ammonia, as described in annexure VIII.
- 1.28.2 "Urea Plant" shall mean the facilities for the production of urea, as described in annexure VIII.
- 1.28.3 "Off-Sites" shall mean the facilities demarcated and indicated in the general annexures and the plot plan attached to annexure III.
- 1.29 "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.
- 1.30 "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.
- 1.31 "Ready for Operation" shall mean that the Plant(s) concerned have completed the Mechanical Completion Tests and is (are) ready for Initial Operation.
- 1.32 "Rectification" or "Rectify" shall in all cases cover work and/or services of the CONTRACTOR within the scope of the Contract which do not require implementation by change order and do not involve any increase in price.
- 1.33 "Site" shall mean the land upon which the Works are to be constructed as specified in annexure I.
- 1.34 "Subcontractor" shall mean any person or firm to whom any part of the CONTRACTOR's Services or the execution of any part of the Works is sub-contracted by the CONTRACTOR.
- 1.35 "Start-Up" shall refer to the date by which the operations of pre-commissioning and commissioning shall have been completed and the Plant(s) commences (commence) the production of Product(s).

- 1.36 "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.
- 1.37 "Tonne(s)" refers (refer) to metric tonne(s).
- 1.38 "Work(s)" shall mean the whole of the Work(s), Equipment, Plant (as defined in this Article) and matters and things to be done, furnished, performed, accomplished and provided by the CONTRACTOR (inclusive of his services under this Contract).
- 1.39 "Vendor(s)" shall mean the person or persons from whom the supply of any part of the Plant and in particular the spare parts is obtained by the PURCHASER in accordance with Article 10.

ARTICLE 2

Object of the Contract

- 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 this Contract. The scope of the Contract covers a turnkey supply, which includes the grant of licence and supply of know-how, to provide basic and detailed engineering to supply all the Plant and Equipment, to design and construct all Civil Works, to erect the Plant and Equipment, to commission and Start-Up the Plant and to demonstrate 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, to enable it to operate and manage the Works at optimum capacity and efficiency.
- 2.4 The time schedule(s) required to be maintained to complete the Plant on time shall be 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 Basic engineering and know-how documents shall be made available to the PURCHASER from (2 to 8) months.
 - 2.4.2 Construction of Equipment foundations and Plant buildings shall start in the (10th) month, and all major Plant buildings shall be completed (except for finishing) in the (24th) month. The buildings shall, however, be ready for machinery erection in sufficient time.
 - 2.4.3 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.
 - 2.4.4 Delivery FOB of Critical Items shall not exceed (26) months.
 - 2.4.5 Erection of the Plant shall start no later than in the (15th) month.
 - 2.4.6 The Plant shall be mechanically complete by the (32nd) month, and shall be Started-Up not later than (2) months thereafter.
 - 2.4.7 The Plant shall be in Commercial Production on or before the end of the (36th) month.
 - 2.4.8 Training of the PURCHASER's personnel outside the Plant shall be completed by the (_____) month.

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 is as follows:
- 3.1.1. Establishment of the design basis of the Plant.
 - 3.1.2 Supply of know-how and basic engineering, including but not limited to:
 - Process flow diagrams
 - Material and energy balances
 - Equipment data and specifications
 - Piping and instrument diagrams and specifications
 - Plant layout
 - Electric, steam and other distribution systems
 - 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 identification of Critical Items.
 - 3.1.5 Pre-qualification of Subcontractors for the supply of Critical Items.
 - 3.1.6 Procurement of all Equipment and Materials for the Plant, and for workshops, other maintenance shops, laboratory facilities, storages, and other facilities at the Site, including the administrative office and first aid facilities, and procurement of spare parts, in accordance with but not limited to the itemized lists contained in annexures VIII, IX, X and XI.
 - 3.1.7 Inspection of Equipment during fabrication, on completion, and after packing, and providing certificates of inspection.
 - 3.1.8 Provision of test certificates for Equipment 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 in seaworthy/roadworthy packing, marking of the packages, and transport of the Equipment from the fabricators' workshops to the point of dispatch, FOB/FOR as the case may be.
 - 3.1.9.2 Transport of the Equipment from the point of dispatch FOB/FOR to the Site, including loading and unloading at harbours and customs clearance, if any.
 - 3.1.10 Taking out of all necessary insurance coverage.
 - 3.1.11 Purchasing and acquiring the Site for the Plant.

- 3.1.12 Clearing, levelling and the development of 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 the Battery Limits.
- 3.1.15 (Optional.) Construction of railway sidings within the Battery Limits and connection 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 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 at the Site and making claims for insurance or for short supply, if required.
- 3.1.21 Storage of Equipment at the Site prior to erection.
- 3.1.22 Providing all erection equipment, tools and tackle, and erection materials.
- 3.1.23 Erecting all Equipment.
- 3.1.24 Providing training for plant managers, plant engineers, plant operators, maintenance and administrative personnel
- 3.1.25 Testing all erected Equipment individually, by section and as a complete Plant, and carrying out all pre-commissioning procedures.
- 3.1.26 Supplying feedstock, chemicals and all other material inputs, including outside-purchased utilities, necessary for the Start-Up of the Plant.
- 3.1.27 Commissioning and Start-Up of the Plant, until 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 Conducting and completing the Performance Guarantee Tests.
- 3.1.30 Providing management of the operations of the Plant after Mechanical Completion and until satisfactory completion of the Performance Guarantee Tests and Provisional Acceptance of the Plant, pursuant to the provisions of Article 17.1.

- 3.1.31 Providing management assistance following Provisional Acceptance of the Plant until Final Acceptance as specified in Article 17.2.
- 3.1.32 (Optional.) Provision of technical advisory services in accordance with terms and conditions to cover those services referred to in Article 17.7.

3.2 For each of the functions described in the scope of work above, the obligations of the CONTRACTOR and the PURCHASER (as more particularly expressed in Articles 4 and 5 and elsewhere in the Contract) and the responsibilities for co-operation, co-ordination, tests, guarantees, commissioning and conditions of acceptance as laid down elsewhere in the Contract shall be as follows:

3.2.1 The PURCHASER shall be responsible for the work to be undertaken under Article 3.1.11 and Article 3.1.19.

Text A

Text B

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|---|---|
| 3.2.2 Unless otherwise agreed, the CONTRACTOR shall be responsible for the design basis as stated in Article 3.1.1 above, and the CONTRACTOR also agrees and acknowledges that he shall accept final responsibility for the accuracy, suitability and adequacy of the information supplied by the PURCHASER, and shall ensure that the operational characteristics of the Plant are secure and guaranteeable. | 3.2.2 The CONTRACTOR shall review the design basis laid down in annexures II and IV in accordance with Article 4.4. |
| 3.2.3 The CONTRACTOR and the PURCHASER shall be responsible for taking out the insurances referred to in Article 3.1.10, in accordance with Article 24. | |
| 3.2.4 The PURCHASER shall be responsible for providing the Start-Up feedstocks and other materials as contemplated under Article 3.1.26, subject to the CONTRACTOR giving adequate advance notification of the dates when they shall be required together with complete specifications of materials which may or may not be specified in the Contract, as provided in Article 5.8. | |
| 3.2.5 All other work whether specifically mentioned in Article 3.1 or otherwise, required for the establishment of a turnkey Plant within the contractual terms, the specified plot plan and Battery Limits shall be undertaken by the CONTRACTOR, and shall include, but shall not be limited to the obligations of the CONTRACTOR specified in Article 4. | |
| 3.2.6 The services relating to management of Plant operations, management assistance and optional technical advisory services contemplated under Articles 3.1.30, 3.1.31 and 3.1.32 shall be embodied in appropriate arrangements and agreements executed by virtue of the application of Article 17. | |

- 3.3 In the event that any activity or work within the Battery Limits of the type necessary for the successful implementation of this Contract is not specifically mentioned in the scope of work above or in the specifications, drawings, or in 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 CONTRACTOR shall be fully responsible for all such work, and all costs and expenses incidental thereto shall be to the CONTRACTOR's account.
- 3.4 The PURCHASER and the CONTRACTOR may by mutual agreement amend or change the conditions governing the responsibilities or work to be undertaken. All amendments and/or changes to be incorporated in the terms of the Contract shall be properly made by duly constituted and authorized representatives of the parties herein, and the Contract together with such amendments and/or 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 specific items in the scope of the work are described more particularly in this Article, and in annexure VI, as well as in other relevant parts of this Contract. The CONTRACTOR shall accept total responsibility for all work except that which is within the scope of the PURCHASER's responsibilities.
- 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 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 pursuant to the specifications and basic design 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.

Text A

Text B

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| 4.4 The CONTRACTOR acknowledges that he has fully satisfied himself as to the nature and location and suitability of the Site, the applicable laws, agreements and regulations, the general and local conditions applicable to the CONTRACTOR's work, particularly those bearing upon transportation, disposal, handling and storage of materials, availability of labour, water, electrical power, approach roads and uncertainties of weather or similar physical conditions at the Site, the conformation and condition of the ground and the sub-surface, the character of the Equipment and facilities needed preliminary to, and during the progress of the work and all other matters which can in any way affect the CONTRACTOR's work, Services, obligations, or the costs thereof to the CONTRACTOR under this Contract. The CONTRACTOR further acknowledges that subject to the provisions of Article 4.4.2 he has satisfied himself as to and assumes all risks relating to the quantity and quality of all surface and sub-surface materials, including ground water to be encountered. The CONTRACTOR has reviewed all | 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 (<u>PURCHASER's country</u>) 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, handling and storage of 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 information required for him to carry out his obligations under the Contract. |
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exploratory work done by or for the PURCHASER and information presented in the drawings and technical specifications and other pertinent documentation. Any failure of the CONTRACTOR to acquaint himself with all the necessary data and information shall not relieve him from his ultimate responsibilities under the Contract, and in any event shall not be cause for any claims for increase in the payments pursuant to the Contract.

4.4.1 The design basis for the Works 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.

4.4.2 If the soil tests conducted under Article 4.17 indicate that the load-bearing capacity is less than as indicated in annexure IV, the PURCHASER and the CONTRACTOR shall mutually agree on the resultant change and implications in the design of the Plant foundations. Any changes in contractual obligations 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 for various processes from the process licensor(s) as follows:

Ammonia Plant	(<u>name of licensor(s)</u>)
Urea Plant	(<u>name of licensor(s)</u>)
(Specify any other, e.g. water treatment)	

and shall design the Plant in conformity with the basic engineering criteria of the process licensor(s). Documentation relative to all know-how and basic engineering provided by the CONTRACTOR or obtained from the licensor(s) shall be provided to the PURCHASER by the CONTRACTOR. The CONTRACTOR also hereby agrees that such documents referred to in this Article 4.5 shall cover and be based upon the 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. The CONTRACTOR further specifically agrees to provide documentary evidence of the acceptance by the process licensor(s) of the conditions governing the supply of know-how and basic engineering referred to herein, and furthermore shall ensure that the process licensor(s) is (are) in full agreement with the requirements of Articles 7 and 33 of this Contract in connection therewith.

4.6 The CONTRACTOR shall undertake the detailed engineering of the Work(s) and shall perform the basic and detailed engineering and civil 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 complying 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 latter to carry out his obligations in accordance with Article 3 and Article 5, so that the Plant can meet the time schedules laid down in the Contract.
- 4.7 The CONTRACTOR shall carry out the engineering of the Plant(s) in accordance with the standards and codes laid down in Article 25 and annexure II. 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 Article 25 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 these 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 The CONTRACTOR shall be responsible for the selection of Subcontractors, provided, however, that wherever specified in annexure VIII and/or annexure XII the Equipment so specified therein shall be obtained from the selected Subcontractors. The CONTRACTOR agrees and acknowledges that notwithstanding anything to the contrary regarding arrangements for subcontracting and Equipment supply, the CONTRACTOR shall assume complete responsibility for all the terms of warranty and guarantee provisions and such other criteria established by this Contract.
- 4.9 The CONTRACTOR shall be responsible for the supply of the complete Equipment and Materials in accordance with Article 12 and as expressed elsewhere in this Contract. The list of the Equipment as well as Materials in annexures VIII, IX, X and XI shall represent supply from the CONTRACTOR, which together with annexure XIII (with the exclusions therein), to be provided by the PURCHASER, shall represent the complete Plant. The CONTRACTOR shall establish and submit to the PURCHASER a more complete list of Equipment and Materials to be procured under this Contract, within (4) months from the Effective Date of the Contract. Any additional item(s) required but not specified in annexures VIII, IX, X, and XI shall be supplied by the CONTRACTOR. The CONTRACTOR shall supply a complete turnkey Plant for the production of (1,000) Tonnes per Day of ammonia and (1,725) Tonnes per Day of urea, together with all the specified Off-Sites and utility Plants with the other facilities within the Battery Limits specified in annexure III, excluding those items which are the PURCHASER's responsibility as specified in Article 5 and other exclusions as may be expressed in the Contract.
- 4.10 The CONTRACTOR shall ensure that all supply, construction and erection is undertaken so as to enable the Plant to meet the objectives stated in Article 2, and the time schedules contained in annexure XV, and the CONTRACTOR shall be fully responsible for meeting the contractual

guarantees, and carrying out the Performance Guarantee Tests specified in Article 26, and for delivering a complete, operable Plant in accordance with the Contract.

- 4.11 The CONTRACTOR shall undertake, in association with the PURCHASER, the procurement of spare parts, in accordance with the provisions of Article 10 and annexure XXVI of this Contract.
- 4.12 The CONTRACTOR shall inspect all Equipment in accordance with Article 14 and arrange for all test certificates and shall arrange for all packing, export permits and transportation FOB to the point of dispatch.
- 4.13 The CONTRACTOR shall be responsible for the transportation of Equipment and Materials from the port of dispatch FOB to the receiving CIF port of entry in the PURCHASER's country and onward dispatch to the Site. The CONTRACTOR shall be responsible for the clearance of Equipment and Materials at the port of entry, but the PURCHASER shall provide all necessary import permits or authorizations required for this purpose and shall be responsible for demurrage and charges arising out of his failure to provide such permits. The PURCHASER shall be responsible for the payment of customs duties at the port of entry.
- 4.14 The limitations as to the size and weight of packages at the port of entry and to the Site are specified in the annexures to this Contract, and the CONTRACTOR shall design the Plant and procure the Equipment accordingly. Notwithstanding the limitation on size specified in annexure II, 6, the CONTRACTOR shall be fully responsible for the proper movement of Equipment and Materials to the Site, and their installation at the Site.
- 4.15 The CONTRACTOR shall be responsible for arranging insurance during transportation as required by Article 24.
- 4.16 The CONTRACTOR shall be responsible for all levelling, clearing or other development of the Site.
- 4.17 While design soil conditions are specified in annexure IV of the Contract, the CONTRACTOR shall ensure that soil tests are carried out at points where heavy loads are to be expected, and shall also review all load tests. If the results of the soil tests indicate a bearing capacity different from that specified in annexure IV, the CONTRACTOR and the PURCHASER shall review this in accordance with Article 4.4.2.
- 4.18 The CONTRACTOR shall be responsible for the design and construction of all road (rail) and other communications within the Battery Limits of the Plant, as well as for connecting the road to the main highway. The CONTRACTOR shall be responsible for rail communications up to the agreed "take-over" point near the Site, which take-over point shall be established by the railway authorities in (PURCHASER's country). (Railway sidings are often undertaken by national railway authorities only.) 4/

4/ The part of this Article dealing with rail is optional.

- 4.19 The CONTRACTOR shall be responsible for the design of all Civil Works. The CONTRACTOR shall supply the line drawings for the buildings, machinery and piping layout, and road and rail layouts for approval by the PURCHASER, which approval shall not be unreasonably withheld.
- 4.20 The CONTRACTOR shall be responsible for the construction of all Civil Works including the housing for the erection staff. The PURCHASER shall be responsible for the permanent housing. The PURCHASER shall have the right of first refusal to purchase the housing built by the CONTRACTOR for his erection staff.
- 4.21 The CONTRACTOR shall inspect all Equipment at the Site and make arrangements for the speedy replacement of any shortages in receipt, or of any damaged Equipment. The CONTRACTOR shall be responsible for storage at the Site.
- 4.22 The CONTRACTOR shall provide all erection equipment and materials for the erection of the Plant. The CONTRACTOR shall be permitted to remove erection equipment from the Site (unless otherwise agreed upon) and the PURCHASER shall be obliged to apply for the necessary permits for import and re-export of the erection equipment from (country) and shall undertake all necessary steps to obtain these permits as early as practicable.
- 4.23 The Plant shall be erected by the CONTRACTOR as specified in Article 12.7 and in annexure XXIX.
- 4.24 The CONTRACTOR shall provide an adequate number of personnel for the construction, erection and mechanical testing, commissioning, Start-Up and Initial Operation of the Plant, so as to meet the specified time schedules. The CONTRACTOR shall train the PURCHASER's personnel to assist in the commissioning, Start-Up, operation and maintenance of the Plant in accordance with the requirements of Article 16. The CONTRACTOR shall provide the necessary supervisory personnel and shall ensure that all such personnel reach the Site in time so as to meet the requirements of the time schedule contained in annexure XV.
- 4.25 The CONTRACTOR shall complete the Mechanical Completion of the Plant within (32) months from the Effective Date of the Contract, and shall comply with the requirements of Article 18.
- 4.26 The CONTRACTOR's personnel at the Site shall carry out or cause to be carried out all mechanical testing of the Plant and the PURCHASER's personnel shall assist in the Start-Up and operation of the Plant until completion of the Performance Guarantee Tests, under the responsibility and direction of the CONTRACTOR.
- 4.27 While the PURCHASER shall provide all feedstocks, outside utilities, chemicals and other materials required for the operation of the Plant in accordance with Article 5.8, the CONTRACTOR shall supply a first charge of all catalysts, and the chemicals included in the CONTRACTOR's scope of supply in annexures IX and XI. The maximum quantity per hour and conditions of outside utilities (power, water etc.) shall be intimated by the CONTRACTOR to the PURCHASER within (9) months of the Effective Date of the Contract. The requirement for the Initial Operation of the Plant and for subsequent operation until Provisional Acceptance shall be intimated by the CONTRACTOR to the PURCHASER at least (9) months before the Mechanical Completion of the Plant.

- 4.28 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.
- 4.29 Subject to Articles 18 and 26 the CONTRACTOR shall commence the initial Guarantee Tests of the Plant within (15) Days after the Start-Up of the Plant, but in any event not later than (90) Days following after Mechanical Completion of the Plant, provided that the PURCHASER has carried out his obligation to supply feedstock, outside utilities, chemicals and other agreed materials in accordance with his obligation under Article 5. The CONTRACTOR shall be allowed to extend this period and repeat Performance Guarantee Tests in accordance with annexure XXXI of the Contract.
- 4.30 In furtherance of Article 4.24 the CONTRACTOR shall provide training to the PURCHASER's personnel in accordance with Article 16. The CONTRACTOR shall ensure that the amount and level of training (to be arranged by the CONTRACTOR within or outside the country of the PURCHASER) of the PURCHASER's personnel is adequate for the smooth operation and maintenance of the Plant in peak condition.
- 4.31 The CONTRACTOR shall be responsible for the necessary rectifications, corrections and/or modifications of the Plant pursuant to the Contract's requirements (free of any additional costs to the PURCHASER) within (12) months of the Provisional Acceptance of the Plant in the event that for any reason attributable to the CONTRACTOR, the Plant is found to be incapable of continued production at the rated capacity on account of design defects, latent and/or patent faults, and/or other inadequacies in any one/or other of process(es)/design/Equipment supply/civil engineering/erection and the Works or portions or parts thereof which were not apparent or recognizable at the time when the CONTRACTOR demonstrated the Performance Guarantee Tests.
- 4.32 The CONTRACTOR shall assume the responsibilities of managing the Plant (and shall provide in-Plant training to the PURCHASER's personnel upon agreed conditions) in accordance with the provisions of Article 17.1 following Mechanical Completion of the Plant until Provisional Acceptance of the Works, and management assistance in accordance with Article 17.2.
- 4.33 Throughout the execution of the Work(s), 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 safety laws, rules and regulations. The conduct and safety of all persons employed by the CONTRACTOR and his Subcontractors on the PURCHASER's premises for reasons relating to this Contract shall be the sole responsibility of the CONTRACTOR. The CONTRACTOR shall at all times maintain good order among his employees and shall not employ on the Work any unfit, undesirable person or anyone not skilled in the work assigned to him.
- 4.34 The CONTRACTOR shall provide the PURCHASER with (_____) m² of office space and facilities and secretarial and typing services and telephone and telex services for the (number) of representatives of the PURCHASER assigned to the CONTRACTOR's offices.
- 4.35 The CONTRACTOR shall be responsible for taking out and keeping in force the various insurance policies which are his responsibility under Article 24 (and as specified therein).

- 4.36 Within (6) months of the Provisional Acceptance of the Plant (as specified in Article 18 of this Contract) the CONTRACTOR shall prepare for the Plant a set of "as-built" drawings or their equivalent.
- 4.37 The CONTRACTOR shall do whatever is necessary to ensure reasonably that: no person, property, right, easement, or privilege is injured, damaged or infringed by reason of the CONTRACTOR's activities under this Contract; pedestrian and other traffic on any public or private road or waterway outside the Battery Limits of the Plant are not unduly impeded, interrupted or endangered by the execution or existence of the Work, material and/or Plant; fire hazards are eliminated and in the case of a fire in or about the Works, that it is promptly extinguished; the health of all persons employed in connection with this Contract is not endangered; adequate medical supervision of all persons employed by him or his Subcontractors in connection with this Contract is maintained; adequate sanitation measures in respect of the Works are taken; and all stakes, pegs, buoys and marks placed on or about the Works by or under the authority of the Engineer are protected and are not removed, defaced or altered; on completion of the Works, the Site is cleared of all obstructions, temporary structures and unused material.
- 4.38 The Engineer may direct the CONTRACTOR to do such things and to construct such Works as the Engineer considers reasonable and necessary to ensure compliance with or to remedy a breach of Article 4.37 relating to fire, accident or danger to health.

ARTICLE 5

Obligations of the PURCHASER

- 5.1 The scope of work to be undertaken by the PURCHASER within the overall scope of work shall be as given below and as described in annexures VII and XIV or as elsewhere expressed in the Contract. The PURCHASER shall carry out his obligations so as to enable the CONTRACTOR to meet the time schedules contained in annexure XV.
- 5.2 The PURCHASER shall be responsible for the acquisition and obtaining of physical possession of the Site.
- 5.3 The PURCHASER shall secure and make available to the CONTRACTOR not later than the Effective Date of the Contract: the land indicated on the layout and plot plan for construction of the Works, free of all encumbrances, including the necessary right of way. The PURCHASER shall also make available adequate space for storage depots at or near the Site.
- 5.4 The PURCHASER shall obtain and make available to the CONTRACTOR (and/or facilitate the arrangements for) all necessary permits/approvals and/or licences from local authorities and/or the Government of (PURCHASER's country) as may be necessary for the execution of the Contract inclusive of import licences, visas for the CONTRACTOR's personnel, entry permits for erection equipment and any other equipment of the CONTRACTOR which has to be imported. The applicable procedure and division of responsibilities shall be as detailed in the co-ordination procedure envisaged in Article 6.7.12.
- 5.5 The PURCHASER shall be responsible in a timely manner for the payment of customs duties, or the reimbursement of the CONTRACTOR for such duties as may be assumed, in accordance with Article 4.13.
- 5.6 Whenever any approval(s) are required from the PURCHASER under the provisions of this Contract, such approval(s) or reasons for withholding such approval(s) shall be conveyed to the CONTRACTOR within (10) 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.
- 5.7 The PURCHASER shall provide free of charge all the raw materials, utilities, fuel, consumable items and make-up items necessary for the construction, testing, commissioning, operation and maintenance of the Plant unless otherwise specifically mentioned in the Contract as to be supplied by the CONTRACTOR.
- 5.8 The PURCHASER shall provide all feedstocks, outside utilities, chemicals and other materials required for the operation of the Plant except the first charge of catalysts and chemicals to be supplied by the CONTRACTOR within his scope of supply. The feedstocks shall be in accordance with the specifications contained in this Contract or as otherwise agreed. The maximum quantity per hour and conditions of outside utilities (power, water etc.) shall be intimated by the CONTRACTOR to the PURCHASER within (9) months of the Effective Date of the Contract. The requirement of all chemicals and other material inputs required for the Start-Up of the Plant and regularly thereafter, shall be intimated by the CONTRACTOR to the PURCHASER at least (9) months before the Mechanical Completion of the Plant.

5.8.1 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 shall determine the technical changes required, if any, and these may constitute the basis for a change order under Article 15.

Text A

Text B

5.9 The PURCHASER shall provide free of charge operations and maintenance personnel for the CONTRACTOR throughout the period from the beginning of the mechanical testing of the Equipment until the date of Provisional Acceptance of the Plant in numbers and of competence corresponding to the manning requirements which are to be developed by the CONTRACTOR in the form of a manpower and qualifications chart and approved by the PURCHASER. This obligation of the PURCHASER shall be subject to the CONTRACTOR carrying out his obligations under Article 4.30 and Article 16.

5.9 The PURCHASER shall provide free of charge operations and maintenance personnel for the CONTRACTOR throughout the period from the beginning of the mechanical testing of the Equipment until the date of Provisional Acceptance of the Plant in numbers and of competence corresponding to the manning requirements which are to be developed by the CONTRACTOR in the form of a manpower and qualifications chart.

5.10 The PURCHASER shall provide the CONTRACTOR and his personnel deputed to the Site after take-over with such facilities as are stipulated in annexure XXVII.

5.11 The PURCHASER shall be responsible for making all payments to the CONTRACTOR in accordance with the provisions of this Contract.

5.12 The PURCHASER shall provide and maintain the insurance policies which may be his specific responsibility as contained in Article 24.

5.13 The PURCHASER shall provide the CONTRACTOR with (_____) m² of office space, secretarial facilities and typing services for the number of the CONTRACTOR's personnel assigned to the PURCHASER's office at (town).

ARTICLE 6

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

- 6.1 The parties to this Contract hereby agree to undertake all reasonable co-operation to implement the Works as stipulated in the Contract. The parties to the Contract through their designated representatives shall meet periodically to take stock of the progress of Work, and suggest ways and means to improve the operations and to expedite the Work and resolve outstanding issues between the parties. Minutes of meetings shall be recorded and circulated for confirmation and necessary action.
- 6.2 The PURCHASER and the CONTRACTOR shall each appoint a project manager to co-ordinate and monitor the Work under this Contract with permission to act in accordance with specific terms of authority.
- 6.3 The PURCHASER shall appoint or designate an Engineer (or Engineers for different parts of the Work) to represent him for the purposes of technical approvals as contemplated under the Contract. If the PURCHASER so desires, the project manager appointed by him under Article 6.2 may also be designated as the Engineer. 5/
- 6.4 All notices, instructions and decisions on the meetings shall be given in writing. Minutes of meetings between the CONTRACTOR and the PURCHASER or their authorized representatives held at the Site, or in the office of the PURCHASER or the CONTRACTOR, after confirmation, shall have the same effect as notices in writing.
- 6.5 Within (30) Days from the Effective Date of the Contract, a meeting shall be held in (PURCHASER's country) between the CONTRACTOR and the PURCHASER and/or the Engineer to discuss all matters of common interest, including but not restricted to, the finalization of the co-ordination procedure, the detailed time schedules and a critical examination of the design basis.
- 6.6 The co-ordination procedure (which shall be prepared in accordance with accepted international practice) shall become part of the Contract by reference, following agreement and respective approval by the CONTRACTOR and the PURCHASER.
- 6.7 The co-ordination procedure shall include but shall not be limited to:
- 6.7.1 Procedure for giving instructions, decisions and approvals.
- 6.7.2 Assignment of responsibilities to the project managers and Engineers of both the CONTRACTOR and the PURCHASER.
- 6.7.3 Procedure for submission of drawings, Equipment specifications and other documents as may be required for approval.
- 6.7.4 Procedure for approval on behalf of the PURCHASER.

5/ If the PURCHASER intends to appoint a consulting company to act as the Engineers under this Contract on his behalf, the name of the consulting company should be mentioned in this paragraph.

- 6.7.5 Procedure for accounting the invoicing for the payments receivable by the CONTRACTOR, in accordance with Article 20.
 - 6.7.6 Procedure for approving and effecting payment to the CONTRACTOR pursuant to Article 20.
 - 6.7.7 Address lists and telephone numbers of the project managers and/or Engineers of the CONTRACTOR and the PURCHASER responsible for any work under this CONTRACT.
 - 6.7.8 Procedure for drawings and documents distribution for the CONTRACTOR and the PURCHASER.
 - 6.7.9 Procedure for the approval of technical specifications where not specified in the Contract.
 - 6.7.10 Procedure for the furnishing of Vendors' lists or sources of procurement of Equipment as may be necessary.
 - 6.7.11 Limitation of authority relative to Contract amendments and/or modifications.
 - 6.7.12 Division of responsibilities for the provision of permits and approvals (as more particularly referred to in Article 5.4) with a clear delineation of the specific responsibilities for obtaining the necessary permits, approvals, on the part of the PURCHASER and the CONTRACTOR respectively.
- 6.8 Within (4) months from the Effective Date of the Contract, a further meeting shall be held at (PURCHASER's country) between the CONTRACTOR and the PURCHASER to discuss the progress of Work completed up to that time. This meeting shall, in accordance with the Contract, review and finalize the following listed matters and those items that are not yet concluded:
- 6.8.1 The detailed Plant layout and the line drawings of the buildings.
 - 6.8.2 The final list of Equipment, including sizes, materials of construction, and Subcontractors where not specified in the Contract.
 - 6.8.3 The critical path network, which shall be prepared by the CONTRACTOR.
 - 6.8.4 Any problems arising from the detailed soil investigations.
 - 6.8.5 Establishment of the procedure and details for training of the PURCHASER's personnel.
 - 6.8.6 The co-ordination procedure referred to above in Article 6.6 shall be revised as required in accordance with the agreed minutes of the meeting referred to above, and shall thereafter be finalized.
 - 6.8.7 Procedures for customs clearance and payment of import duties and taxes etc.
 - 6.8.8. Procedure for clearance by the PURCHASER of the CONTRACTOR's personnel coming to the Site.

- 6.8.9 The method agreed for computation of overtime, if applicable.
- 6.8.10 Facilities to be provided to the CONTRACTOR's personnel at the Site by the PURCHASER.
- 6.9 As soon as work at the Site commences, review meetings shall be held at the Site at the beginning of every month to review the progress at the Site, to estimate the work done for the purpose of maintaining the critical path network (Article 11) and to discuss and settle outstanding issues. Costs in connection with any review meetings shall be borne by each party for its own personnel.
- 6.10 For this purpose, the PURCHASER and the CONTRACTOR shall both maintain, at their own cost, offices at the Site.
- 6.11 Throughout the period of the Contract, the PURCHASER shall have the right to inspect the CONTRACTOR's Work and the CONTRACTOR shall provide all relevant information to enable the PURCHASER or his designated representatives to report monthly on the progress of the Work and the deviations, if any.
- 6.12 The CONTRACTOR shall submit drawings, Equipment specifications, and other documents, where required, for approval or distribution to the PURCHASER under this Contract. The PURCHASER shall respond with such approval or disapproval as required (with reasons to have been indicated if certain of the requirements under the Contract do not appear to have been met with technically and/or commercially) or suggest modifications within a period of (___) Days after the date of submission, after which period such of these documents shall be deemed to be approved.
- 6.13 In the event that the PURCHASER requires changes, additions and modifications, these shall be reviewed by the CONTRACTOR within (30) Days of receipt and the provisions of Articles 15 and 29 shall apply. If the CONTRACTOR does not request a change order within (30) Days, it shall be assumed that the modifications proposed by the PURCHASER are accepted.
- 6.14 In the event of a request for a review by the CONTRACTOR, the same terms as those applicable to Article 6.13 shall apply, and if urgent resolution of a matter is required, the said (30)-Day period referred to in Article 6.13 shall be reduced as agreed between the parties.
- 6.15 Failure to reach agreement(s) at the review meeting(s) referred to in Articles 6.5 and 6.8 shall not in any way modify, alter, change or affect the contractual obligations of the CONTRACTOR and the PURCHASER as stated in this Contract or as agreed between the parties.
- 6.16 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. The CONTRACTOR shall make available Technical Documentation, as defined in annexure XV, on the detailed design of the Plant and the procurement to the Engineers of the PURCHASER. All costs in connection with the travel and stay of the 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 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 3.1.2. The CONTRACTOR also undertakes to make available to the PURCHASER the latest know-how and techniques available to the process licensor(s) at the time of the signing of 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 (___) 6/ 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 licensor(s) 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. | |
| 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 the quality of the Products. | |

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

- 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 an 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 this Contract.

7.10 The PURCHASER and 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 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 Articles 7.5, 7.7 and 7.9 shall be valid for a period (___) 6/ years from the Effective Date of the Contract.
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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 incur 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 its 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 arising out of patent infringement or use of proprietary information referred to in Article 7.7 in accordance with the requirements of Article 22.11.	7.15 The CONTRACTOR shall indemnify and hold harmless the PURCHASER in connection with any 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:
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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 in accordance with the applicable law. The Effective Date of the Contract shall be the date on which the PURCHASER's definitive advice to proceed is received by the CONTRACTOR, which shall occur when 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 Article 21.2, secured by the bank guarantee or surety bond 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. 7/
- 8.2 In case the conditions of Article 8.1 above 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 period of delay. 7/

7/ Articles 8.1.5 and 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 9.1, with assured guarantees for payment(s) under the Contract.
- 9.4 The CONTRACTOR shall not subcontract the whole or any part of the Work and/or services relating to the design of the Plant, procurement of the Equipment, Start-Up operations or any tests of the Plant and the Equipment (as defined in the Contract) without the written consent of the PURCHASER. Furthermore, the CONTRACTOR shall also strictly adhere to the requirements of Article 12.1.7 and as specified in annexures VIII and XII in connection with the supply of Critical Items by selected manufacturers and of machinery from specified manufacturers.
- 9.5 The CONTRACTOR may subcontract any other work or services under the Contract, provided the PURCHASER is advised of all such subcontracts. When subcontracts are to be awarded to firms or individuals in (PURCHASER's country), the PURCHASER shall have the right to pre-qualify all firms or persons bidding for such subcontracts. If the CONTRACTOR so desires, the PURCHASER shall pre-qualify such firms or persons at the time of the signing of the Contract.
- 9.6 The CONTRACTOR shall ensure that every subcontracting by the CONTRACTOR shall comply with all terms and conditions of this Contract.

ARTICLE 10

Procurement of spare parts

- 10.1 The CONTRACTOR shall supply to the PURCHASER the following services in connection with the procurement of a (2)-years' requirement of spare parts, for use from the period after successful completion of the Performance Guarantee Tests, in accordance with annexure XXVI.
- 10.1.1 The CONTRACTOR shall submit a list of spare parts for the approval of the PURCHASER in any event not later than the (12th) month after the Effective Date of the Contract.
- 10.1.2 Where spare parts of a proprietary nature are to be procured, the CONTRACTOR shall obtain from the suppliers directly in the name of, and for, the PURCHASER a list of (2)-years' supply of spare parts as recommended by the supplier, for the approval of the PURCHASER.
- 10.1.3 For all other spare parts, and for any other equipment to be purchased through the CONTRACTOR, the CONTRACTOR shall prepare bid documents on the basis of the technical specifications prepared by him and submit the same to the PURCHASER, for relevant approval, and shall issue the same to the Vendors.
- 10.1.4 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 previously agreed upon between the parties).
- 10.1.5 The CONTRACTOR shall use his best endeavours to obtain from the Vendors a minimum of (3) competitive offers.
- 10.1.6 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(s) shall be communicated to the CONTRACTOR within (20) Days from the date of the CONTRACTOR's submission of the bid tabulation.
- 10.1.7 After the selection of the Vendor(s) by the PURCHASER, the CONTRACTOR shall purchase the spare parts or other equipment and on delivery dispatch them, in accordance with Article 12.

ARTICLE 11

Time schedule

- 11.1 The target date for different elements of the construction and completion of the Plant are indicated in the bar chart attached to annexure XV. It is, however, agreed that within (2) months after the Effective Date of the Contract (Article 8), the CONTRACTOR shall prepare a critical path network, which shall list significant activities connected with the completion of the Works.

- 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 required to maintain the print-outs 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(s)

12.1 Supply of Equipment and Materials

- 12.1.1 All Equipment and Materials to be supplied under this Contract shall be "brand-new" and in accordance with the provisions of this Contract, and all Equipment shall have been inspected and tested before dispatch in accordance with Article 14.
- 12.1.2 The Equipment to be supplied under this Contract is itemized in annexure VIII, and indicated on the flow-sheet and general diagrams attached to the annexure. The Materials are itemized in annexures IX and XI.
- 12.1.3 The technical specifications for the Equipment and its materials of construction are contained in annexure VIII and the CONTRACTOR shall supply such Equipment in strict conformance with the technical specifications and materials of construction specified. Any change in the materials of construction shall be subject to approval by the PURCHASER which approval shall not be unreasonably withheld.
- 12.1.4 The CONTRACTOR acknowledges that the list contained in annexure VIII is not exhaustive and within (4) months after the Effective Date of the Contract, the CONTRACTOR shall provide a revised list to the PURCHASER for his review and approval, particularly where the list or technical specifications and/or materials of construction have been altered. This list shall also indicate the auxiliary equipment, such as pipes, valves, instruments, electrical cables etc. which are to form part of the Plant.
- 12.1.5 Where materials of construction or technical specifications are not specified, the materials shall be such as are proven to be resistant to those chemicals with which they come into contact, and the technical specifications shall be such as to ensure that the guarantees for the Plant are met.
- 12.1.6 Notwithstanding any approval(s) of the PURCHASER to any of the technical specifications and for materials of construction, the Equipment shall be of such quality and criteria as to be able to meet the contractual obligations of the CONTRACTOR, particularly those relating to guarantees and warranties.
- 12.1.7 The PURCHASER and CONTRACTOR agree that certain items of Equipment shall be obtained by the CONTRACTOR from selected Subcontractors only. The list of these items and the selected Subcontractors from whom they shall be procured are provided in annexures VIII and XII. The CONTRACTOR shall procure these items from such Subcontractors only, unless otherwise agreed in writing between the CONTRACTOR and the PURCHASER.
- 12.1.8 The CONTRACTOR shall include the cost of one charge of each catalyst required and one spare charge, within the Contract Price. The type and specifications of catalysts to be supplied are given in annexure IX.

- 12.1.9 The CONTRACTOR shall provide the type and quantities of chemicals identified as being within the scope of his supply in annexure XI.
- 12.1.10 The CONTRACTOR shall supply all other materials required for the operation of the Plant including, in particular, a first charge of refrigerant for all equipment requiring such charge.
- 12.1.11 The CONTRACTOR shall inspect the items of Equipment and Materials referred to in this Article 12.1 before dispatch and on receipt at the Site and if the PURCHASER so desires, inspection reports for such items of Equipment and Materials shall be made available to the PURCHASER.
- 12.1.12 The PURCHASER or his agent shall have the right to inspect Equipment and Materials during fabrication or before dispatch in accordance with Article 14.

12.2 Marking, packing and dispatch of Equipment and Materials

- 12.2.1 All Equipment and Materials shall be marked and the invoices prepared in accordance with the instructions of the PURCHASER, as specified in annexure XXIV and/or as provided to the CONTRACTOR not later than the review meeting contemplated under Article 6.8.
- 12.2.2 On dispatch of all Equipment and Materials, two copies of the invoices shall be sent to the PURCHASER, or his Site representative, by airmail so that the PURCHASER may promptly obtain any permits required. For Equipment and Materials requiring extended customs clearance procedures (significant details of which shall be reasonably given by the PURCHASER prior to the review meeting contemplated under Article 6.8) the CONTRACTOR shall advise the PURCHASER sufficiently in advance, in order to obtain clearance.
- 12.2.3 The CONTRACTOR acknowledges that certain Equipment and Materials, including materials for Civil Works, shall not be imported into the PURCHASER's country. The CONTRACTOR shall purchase such Equipment and Materials locally and shall not be entitled to any claim(s) for increased costs in making such purchases. The CONTRACTOR shall ensure that the requirement for the purchase of local materials does not adversely affect any of the criteria expressed in the specifications or warranties or guarantees under this Contract, and the CONTRACTOR shall be obliged to advise the PURCHASER in advance (of any such purchase being made) in any such eventuality. Permits required for local purchase(s) shall be obtained by the PURCHASER. In the event that import restrictions are introduced after the Effective Date of the Contract, which substantially raise the price of imported materials, the PURCHASER and CONTRACTOR shall meet to decide on the net result and effect of such restrictions, including the impact on the time schedule(s) or cost(s), if any.
- 12.2.4 The CONTRACTOR shall supply particulars of the manufacturer from whom the CONTRACTOR has purchased any Equipment and Materials, and shall supply a "certificate of origin" if required by the PURCHASER.

12.2.5 All Equipment and Materials shall be adequately and properly packed before dispatch to cope satisfactorily with the mode of transportation utilized (particularly to ensure the avoidance of damage and deterioration) and for subsequent storage at the Site. All packing cases shall be properly marked in accordance with annexure XXV. All Equipment and Materials dispatched, by sea or over land, shall be adequately protected by protective coatings. Cargo shall not be dispatched on deck except where size limitations so require, and in such event further precautions for packing and latching down shall be taken. The deck cargo shall be completely protected, and fully painted with adequate types of protective paint. All closed packings shall contain a packing list(s).

12.2.6 The CONTRACTOR shall be responsible for all dispatches of Equipment and Materials to the Site, and shall use the safest and most expeditious means of transport available to comply with the time schedules for Mechanical Completion of the Plant. The CONTRACTOR shall dispatch, at his own expense, Equipment and Materials by air freight, if this is necessitated by the time schedules.

12.2.7 The CONTRACTOR acknowledges his familiarity with facilities at the harbours (both in the manufacturer's and the PURCHASER's country) and between the harbour and the Site. The CONTRACTOR shall be responsible for the packing and delivery of the Equipment (packed in proper dimensions as to size) in such a manner that the Equipment arrives at the Site for erection, within the contractual time schedules. The CONTRACTOR shall be responsible for obtaining any road or rail permits required for the purpose, but the PURCHASER shall assist the CONTRACTOR in obtaining such permits.

12.2.8 For purposes of storage at the Site, all packages shall be marked in an appropriate manner for storage outdoors, under a roof, in locked warehouses or in rented premises etc. as agreed upon at the meeting contemplated under Article 6.8.

12.3 Supply of documents

12.3.1 The documents and manuals to be supplied by the CONTRACTOR within the deadline dates are indicated in annexures V, XV and XXI.

12.3.2 All documents shall be forwarded to the PURCHASER by air freight with a minimum of five copies, including one reproducible copy. Immediately upon dispatch, a telegram/telex shall be sent to the PURCHASER confirming the dispatch, indicating the air waybill number, the flight number or other express means of transportation. The documents shall as far as practically possible be sent by a direct flight to (name of airport in the PURCHASER's country).

12.4 Storage of Equipment and Materials at the Site

12.4.1 The CONTRACTOR shall be obliged to arrange for and have ready adequate warehouse facilities at the Site to receive packages. In the event that permanent facilities are not ready or available, the CONTRACTOR shall provide adequate temporary

facilities at his cost in good time at the Site. Notwithstanding the requirement for the marking of packages, under Article 12.2.8 above, and the instructions contained in annexure XXV, the instructions of the Engineer as regards storage shall be taken into account in the event that additional storage protection is required.

12.4.2 The CONTRACTOR shall expeditiously check all Equipment and Materials for shortage or damage and shall obtain immediate replacements, and the CONTRACTOR shall advise the Engineer of appropriate details, or the CONTRACTOR shall undertake repairs satisfactory to the Engineer.

12.4.3 In the case of Equipment or Materials damaged in transit, such shall be replaced. Where the damage is determined to be minor, repairs shall be undertaken at the Site and the costs incurred shall be to the account of the CONTRACTOR. In the event of any dispute as to the extent of the damage sustained, the Equipment or Materials shall be replaced and the CONTRACTOR shall abide by the decision of the PURCHASER.

12.5 Design and construction of roads, railway sidings and other facilities

12.5.1 The roads shall be constructed by the CONTRACTOR in accordance with the dimensions laid down in the final layout plan, which shall generally conform with the plot plan attached to this Contract and shall be approved by the PURCHASER.

12.5.2 All roads shall be constructed in accordance with the specified materials, and the designs shown in annexure XXVIII, except where otherwise agreed by both parties. The layout of the railway lines shall be generally in conformity with the plot plan attached to this Contract and shall be approved by the PURCHASER as regards the final layout.

12.5.3 All railway sidings shall be of (_____) gauge, and shall meet the requirements of the national rail network of (PURCHASER's country). The materials used shall be in accordance with the requirements and the specifications of the national rail network as specified in annexure XXVIII. 8/

12.5.4 The railway sidings shall be as indicated in the plot plan and designed to transport (____) per cent of the production of the Plant, i.e. (_____) Tonnes per Day of Urea, and to transport (_____) Tonnes per Day of raw materials, and adequate provision shall be made accordingly (in consultation with the railway authorities in (PURCHASER's country)). 8/

12.5.5 The CONTRACTOR shall provide and install a telephone exchange in the Works. The maximum number of lines shall be (____) and the location of telephone points shall be as agreed between both parties at the meeting contemplated under Article 6.8. (____) lines shall be left for connections by the PURCHASER to the

8/ Alternative Articles can be provided for countries where all design is done by the railway authorities.

housing. The telephone exchange shall be compatible with and connected to (___) outside lines. The connection to the outside lines shall be arranged by the PURCHASER, but all costs in this connection shall be borne by the CONTRACTOR.

12.6 Civil Works

- 12.6.1 Immediately upon completion of the soil-bearing tests, and acknowledgement of the load-bearing capacity and approval of the building layout plan and the line drawings, the CONTRACTOR shall undertake the design and construction of all Civil Works within the Battery Limits (inclusive of process, utility and Off-Sites, all underground buildings, sewerage, drainage, water treatment plants etc.). The Civil Works are described further and their execution specified in annexures IV and XXVIII, and such Works shall be constructed in a timely manner for the erection of machinery and in order to meet the agreed time schedules.
- 12.6.2 The CONTRACTOR shall furnish all materials, perform all labour and fulfil all requirements related thereto to the extent that the said labour and materials may be necessary for, or incidental to, the execution and completion of the Works, and the testing of the quality of the same in whole or in part (unless otherwise provided) under the terms of the Contract. All work and material supplied under the Contract shall be of the best and most suitable workmanship and quality, strictly in accordance with the provisions of Article 25, annexures IV and XXVIII to the reasonable satisfaction of the Engineer as to the quality and suitability of materials and/or work. The PURCHASER shall have the right to decide whether materials of local (indigenous) origin shall be used when available provided that they are in conformity with the specifications contained in annexures IV, VIII and XXVIII, and in conformity with the time schedules. In the event that the use of local materials results in higher delivery costs at the Site (even though imported materials are freely available), the CONTRACTOR shall so advise the PURCHASER together with an estimate of the increased costs. The PURCHASER at his discretion may decide to use the higher-cost local materials, in which event an adjustment of price shall be made as necessary.
- 12.6.3 The CONTRACTOR shall be responsible for the true and proper setting out of the Works, as approved by the PURCHASER, and for the provision of all necessary instruments, appliances and labour in connection therewith. If at any time during the progress of the Works, faults and/or errors manifest themselves with regard to details of the position(s), levels, dimensions or alignment of any part of the Works, the CONTRACTOR shall of his own accord and expense rectify such faults and/or errors to the reasonable satisfaction of the Engineer. The review or approval of any setting out or of any line or level by the Engineer shall not in any way relieve the CONTRACTOR of his responsibility for the correctness and adequacy thereof. The CONTRACTOR shall carefully protect and preserve all bench-marks, site rails, pegs and other things utilized in setting out the Works.

- 12.6.4 The undertaking of the Works throughout shall be carried out in such a manner as not to interfere with the traffic on any roads or footpaths leading to the Site and/or in the vicinity thereof, and wherever required by the Engineer, the CONTRACTOR shall promptly remove any material or staging used by him or any of his Subcontractors which cause interference with the use of the roads, footpaths leading to the Site and/or areas adjacent thereto.
- 12.6.5 On the completion of the Works, the CONTRACTOR shall clear away and remove from the Site all constructional plant, CONTRACTOR's equipment, erection tools and equipment, surplus materials, rubbish and temporary works of every kind and leave the whole of the Works clean and in a tidy condition to the reasonable satisfaction of the Engineer.
- 12.6.6 Unless otherwise agreed, the CONTRACTOR shall make adequate arrangements during the phases of construction for the availability of drinking water, construction water and other utilities, provisions for the safety of workmen, for security of the Works, for the prevention of damage to property and for constructing Civil Works in such a manner that access to all parts of the Site is available to the PURCHASER's representative(s).
- 12.6.7 The CONTRACTOR shall be responsible for the repatriation of labour from the place(s) of recruitment and shall bear all costs and expenses incidental thereto and shall maintain such persons in a suitable manner during such time as they are employed or utilized (through subcontracting) by the CONTRACTOR. (If at the appropriate time(s) such persons are not repatriated within a reasonable period or if they are not maintained by the CONTRACTOR as required, the PURCHASER may maintain and repatriate such persons and such costs incurred shall be to the account of the CONTRACTOR.) 9/

12.7 Erection

- 12.7.1 The CONTRACTOR shall be responsible for the erection of all the Equipment within the Battery Limits (as specified in annexure III). Without limiting the generality of the foregoing, these shall include, but shall not be limited to:
- 12.7.1.1 Erection of all Equipment in place.
- 12.7.1.2 Erection of all steel structures, walkways, gangways, stairs, platforms etc.
- 12.7.1.3 Assembly and welding of all piping, fittings etc. both above and below the ground.
- 12.7.1.4 Assembly and erection of instrumentation, panel control boards and all interconnecting wiring, piping etc.

9/ The words in parentheses apply to specific cases and can be deleted if necessary.

- 12.7.1.5 Installation of all electrical equipment, and connection of all cables, starters and all other items.
- 12.7.1.6 Installation of all Off-Sites equipment, and connecting such items.
- 12.7.1.7 Insulation of all Equipment where required (including supply of insulation).
- 12.7.1.8 Painting of all Equipment (including supply of paint).
- 12.7.1.9 Installation of all workshop, laboratory and office equipment, including air-conditioning equipment and telephone facilities.
- 12.7.1.10 Installation and erection of all waste treatment and sewerage facilities.
- 12.7.1.11 Installation of all safety and warning devices.
- 12.7.1.12 All or any other erection work that may be required to complete the Plant, other than the exclusions contained in annexure XIII.
 - 12.7.1.12.1 The erection of the Equipment shall conform with the details specified in annexure XXIX.
- 12.7.2 The CONTRACTOR shall supply all materials needed for the erection and installation of the Works, all tools, tackles, cranes and other erection equipment required, and shall provide all instruments required for the proper erection and testing of the Works.
- 12.7.3 Before commencement of erection work in any building or Plant area, the Engineer shall check that the Civil Works have proceeded to the stage wherefrom erection can be commenced. The CONTRACTOR shall commence erection work only after such verification is entered in the erection journal referred to below.
- 12.7.4 In the course of the erection work, a journal or journals shall be kept for each unit of the Plant separately, which shall progressively show the erection programme, the work actually completed on a weekly basis, and as at the end of each calendar month. The Site representative of the CONTRACTOR and the PURCHASER shall each sign the journal(s) every month.
- 12.7.5 The authorized representatives of the PURCHASER and the CONTRACTOR shall mutually agree on a procedure for testing/ checking that any part(s) or the whole of the Plant or the Works has (have) been properly erected, constructed, tested and/or completed, before at least (2) months prior to the Mechanical Completion of the part to be tested, or the complete mechanical testing of the Plant or completion of the Works, as the case may be. The test procedures leading to Mechanical Completion of the Works shall thereafter follow as stated in Article 18.

12.8 Start-Up and commissioning

- 12.8.1 The CONTRACTOR shall inform the PURCHASER that the Plant(s) is (are) proposed to be Started-Up at least (3) months prior to the estimated time for Mechanical Completion of the Plant(s).
- 12.8.2 The PURCHASER shall accordingly arrange to supply the necessary feedstock, materials etc. as obligated by the Contract, and shall also supply all labour and personnel for the operation of the Plant.
- 12.8.3 The Plant shall thereafter be Started-Up and operated under the direction and supervision of the CONTRACTOR until the Performance Guarantee Tests have been satisfactorily completed.

ARTICLE 13

Supervision and access

- 13.1 The CONTRACTOR shall provide all of the required supervisory and management services pursuant to the Contract. An adequate number of suitably qualified and experienced personnel shall be available for the supervision of all work at the Site until Provisional Acceptance of the Works. Such services shall include, but shall not be limited to, the following:
- 13.1.1 Supervision and management of transportation equipment.
 - 13.1.2 Supervision and management of construction and erection equipment.
 - 13.1.3 Supervision and management of the Civil Works.
 - 13.1.4 Supervision and management of erection.
 - 13.1.5 Supervision and management of storing and warehousing.
 - 13.1.6 Supervision and management of all tests.
 - 13.1.7 Supervision and management of pre-commissioning and Start-Up operations.
 - 13.1.8 Supervision and management of the operation of the Plant until Provisional Acceptance.
- 13.2 The CONTRACTOR (as represented by a duly authorized person on his behalf) shall be constantly on Site during working hours, until the Provisional Acceptance of the Works has been issued and such person shall devote his entire time to the superintendence of this work. Such authorized person shall have appropriate authority to act for and bind the CONTRACTOR and shall receive, on behalf of the CONTRACTOR, directions and instructions from the PURCHASER's Engineer. The authorized person shall be sufficiently fluent in the language governing the Contract and/or in languages as agreed upon with the PURCHASER so as to be able to receive directions and instructions and to correspond with the PURCHASER and the Engineer in that language.
- 13.3 The CONTRACTOR shall, upon a request of the PURCHASER or his Engineer, remove his authorized representative or any workman, if such representative or workman has been conducting himself improperly, and the CONTRACTOR shall promptly replace such representative or workman in equal number.
- 13.4 The PURCHASER shall appoint representatives (which shall include the Engineer) who shall be on duty at the Works wherever and whenever necessary, and in any event during all normal working hours. The PURCHASER's appointee shall be competent and duly qualified to discharge the project responsibilities entrusted to him and he shall be vested with appropriate authority to act on the PURCHASER's behalf. Copies of contractual instructions issued by either party to the Contract to the other shall be kept at all times at the Site by the CONTRACTOR.

- 13.5 Subject to specific approval for the exercise of, and delegation of powers authorized by the PURCHASER vis-à-vis his representatives, the Engineer may formally delegate to such persons specified by him, limited powers, discretions and authority as necessary, and the CONTRACTOR shall recognize such persons on written notice from the Engineer of their appointment and as regards their powers, discretions and authority so delegated. The CONTRACTOR acknowledges that the members of the Engineer's subordinate staff or delegates and persons, including the Engineer, shall have such qualified authority to approve or bind the PURCHASER as regards any approvals, passing of work or materials, authority to order any action or work involving delay or extra payment in accordance with the specific powers delegated by the PURCHASER to his representatives, within the rights accorded to the PURCHASER under this Contract.
- 13.6 The CONTRACTOR shall permit the Engineer to have access to the Work(s) at all times during the tenure of the Contract and shall provide the Engineer with full information and data concerning the progress and execution of the Work(s). The Engineer shall be rendered all necessary assistance to facilitate the performance of his duties, to ensure that the Work(s) is (are) being executed in accordance with this Contract.
- 13.7 The CONTRACTOR shall not be prevented from making application directly to the PURCHASER for appeal and/or clarifications arising out of instructions or directions given by the Engineer.
- 13.8 For the purposes of this Article the expression "supervision" shall be deemed to include direction and responsibility for the activities or matters or work or procedures being the subject of supervision and management (as described in Article 17.1) of all of the Works until Provisional Acceptance.
- 13.8.1 Following the Provisional Acceptance of the Works the obligations of the CONTRACTOR relating to supervisory activities shall comprise management assistance and technical advisory services pursuant to Articles 17.2 to 17.7 (inclusive). 10/
- 13.9 The CONTRACTOR and the PURCHASER and any person(s) authorized by either of them shall at all times have access to the Works, and at agreed times access to all workshops and places where work is being done, undertaken or prepared or where materials, manufactured articles or machinery are being obtained for the Works. The CONTRACTOR shall afford every facility for access to any place where work is being undertaken under this Contract and shall give every assistance in obtaining the right for such access in connection with the execution of the Work under this Contract.
- 13.10 The PURCHASER shall afford every facility and assistance in, or for obtaining, the right of access to such information, the Site, workshops or persons within (PURCHASER's country) as is required in connection with this Contract.
- 13.11 The CONTRACTOR and his authorized personnel shall have free access to the Site, storage yards, fabrication sheds, facilities for the supply

10/ This is partly optional and should be related to the services being obtained under Articles 17.2 to 17.7.

of utilities, and laboratories set up or intended for use in setting up the Works under the Contract. In the areas of the Site where the CONTRACTOR is working, he shall have exclusive access, except for the supervising staff of the PURCHASER and/or the Engineer. The PURCHASER shall provide the necessary assistance in obtaining permission from his Government for visits/stay and travel of the CONTRACTOR or his authorized personnel.

- 13.12 The PURCHASER shall accord facilities to the CONTRACTOR to visit the Work(s) in operation for a period of (____) years after Provisional Acceptance to examine it as to its operating results, to take the measurements required for establishing exact operating data and to demonstrate the Plant 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 PURCHASER. However, the PURCHASER may exclude certain persons from visiting the Plant and/or the Site.
- 13.13 The CONTRACTOR shall be responsible, under applicable laws, rules and regulations, for damage done to highways, roads, bridges and other public utilities, by himself, his agents, his Subcontractors and their staff in the execution of work under the Contract, and shall at his own cost repair and/or rectify such damage.
- 13.14 The Engineer shall be allowed to authorize third parties who are not direct competitors (contractors of the same licensors shall not be considered as direct competitors) of the CONTRACTOR to check the Work of the CONTRACTOR, subject, however, to any valid objection raised by the CONTRACTOR. The CONTRACTOR shall allow them access to the Work and/or the Site thereof and shall co-operate with them in the carrying out of their duties and obligations. The foregoing shall not prejudice the rights of the CONTRACTOR relative to the terms of Article 7, and the third parties shall not disrupt the activities or obligations of the CONTRACTOR.
- 13.15 If the sending on to the Works and/or the Site of a third party under Article 13.14 does not arise from any non-fulfilment of the CONTRACTOR's obligations and, in addition, could not have been reasonably foreseen or anticipated by the CONTRACTOR when entering into this Contract, and, if proven to the reasonable satisfaction of the PURCHASER, the CONTRACTOR has incurred expenses in complying with Article 13.14 in respect of such third party, the PURCHASER (if the CONTRACTOR has given written notice of the CONTRACTOR's claim before the expiration of (30) Days from the sending on to the Work and/or Site thereof of the third party or third parties involved) shall pay to the CONTRACTOR the necessary cost of any services provided by the CONTRACTOR.

ARTICLE 14

Inspection, testing and certification

- 14.1 The CONTRACTOR shall assume full responsibility for the inspection, testing and certification of all Equipment and Materials during manufacture and prior to dispatch, prior to and during inspection and upon arrival at the Site for incorporation into the Works. Notwithstanding the appointment of a duly authorized representative (if any) by the PURCHASER to witness the activities referred to, the CONTRACTOR shall be liable for the proper, adequate and sufficient conduct of the functions envisaged in this Article, pursuant to Articles 25 and 28.
- 14.2 The CONTRACTOR shall inspect the Equipment and Materials and obtain certification at all stages of work by the Subcontractors and on completion of the orders.
- 14.2.1 The CONTRACTOR shall undertake, at the shops of the Subcontractors during manufacture and before dispatch (in accordance with agreed procedures), the necessary inspection and certification testing to assure conformance with the relevant codes and standards provided in the specifications.
- 14.2.2 During progressive inspection of Equipment fabrication the CONTRACTOR shall take every necessary measure to ensure that the Subcontractors and/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 Equipment and other items to be produced in accordance with the qualitative and quantitative standards expressed in the Contract.
- 14.2.3 The CONTRACTOR shall require his Subcontractors to provide the necessary test certificates in the proper form together with 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 specifications.
- 14.3 The CONTRACTOR shall issue certificates of inspection for all Equipment and Materials.
- 14.3.1 The CONTRACTOR shall issue such confirmation to the PURCHASER's inspectors prior to their inspection, when the Equipment and Materials are ready for final inspection.
- 14.3.2 The CONTRACTOR shall issue proper certificates of inspection in respect of all items of 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 The PURCHASER may appoint representatives or a third party to act as his representative for inspection of the Equipment and Materials during manufacture or prior to dispatch. When such Equipment is ready for inspection, the CONTRACTOR shall give at least (45) Days' notice to the PURCHASER's representative of the time, place and Equipment to be inspected. Should the PURCHASER's representative desire to be present,

the CONTRACTOR shall be advised within (30) Days thereafter. Wherever required by the PURCHASER, the CONTRACTOR shall associate the PURCHASER or his representative with such inspection, and shall undertake the necessary co-ordination for joint inspections. The presence of the PURCHASER's representatives shall not in any manner qualify the CONTRACTOR's obligations under this Contract. The presence of the PURCHASER's representatives also shall not in any way imply contractual acceptance of Equipment or Materials or transfer of ownership.

- 14.4.1 Inspection and tests at factory. All work shall be subject to inspection and testing at the Subcontractor's shops and shall conform to the requirements of the Contract.
 - 14.4.2 Inspection and test at the Site. All work shall be subject to inspection and testing on the Site and shall conform to the requirements of the Contract. After installation on the Site, the CONTRACTOR shall carry out such tests as are required to prove compliance with the Contract, notwithstanding any tests which may have been carried out earlier at the Subcontractor's shops.
 - 14.4.3 Inspection and tests on Mechanical Completion. Pursuant to the provisions of Article 18, the CONTRACTOR shall, upon due notice by the PURCHASER of his readiness to undertake the tests to demonstrate and prove completion of the Works, proceed forthwith to commence the procedures in accordance with the requirements of Article 18, but subject to the provisions referred to therein.
- 14.5 All Equipment, Materials and work performed in connection with this Contract with the exceptions to be agreed between the CONTRACTOR and the PURCHASER, shall be available for inspection by the PURCHASER (through his duly authorized representatives). The CONTRACTOR and his Subcontractors shall provide safe and necessary access for the inspection envisaged by this Article. The PURCHASER shall be afforded full and free access to the shops, factories, site or places of business of the CONTRACTOR, the Subcontractors and/or suppliers for such inspection to determine the conditions and progress of work under the Contract. Neither the failure to make such inspection nor the failure to discover defective workmanship, Materials or Equipment, nor approval of, or payment to the CONTRACTOR for such Work, Materials or Equipment (pursuant to this Contract) shall prejudice the rights of the PURCHASER thereafter to require correction, replacement or to reject the same as herein provided. If any Services or workmanship supplied by the CONTRACTOR, and his Subcontractors are established, either during the performance of the work, on inspection, or during any applicable warranty period(s), to be defective and not complying with the requirements of this Contract and arising out of the fault or negligence of the CONTRACTOR and his Subcontractors, the PURCHASER shall notify the CONTRACTOR in writing that such work is being rejected. Thereupon the CONTRACTOR shall, at his own expense, promptly remove and replace or correct such defective work by making the same comply strictly with all requirements.
- 14.6 If the PURCHASER waives his right of inspecting or testing as herein provided, it shall in no way relieve the CONTRACTOR of full liability for the quality, proper operation and performance of the completed work, and/or sections or parts thereof, nor shall it prejudice or affect the rights of the PURCHASER set forth under the Contract.

- 14.7 Should the PURCHASER's representative establish during inspection any deficiencies in the inspected items, the CONTRACTOR shall take immediate steps to eliminate them. The CONTRACTOR shall maintain records of deficiencies noted and corrected. In case of a difference of opinion, the CONTRACTOR may proceed to act on his own responsibility as regards the dispatch of such Equipment and Materials, but subject, however, to the relevant provisions of Article 25 and Articles 27 to 30 inclusive.
- 14.8 Where the CONTRACTOR or any of his Subcontractors are undertaking any performance tests of any equipment to be supplied under this Contract, or any tests required under statutory law, the CONTRACTOR shall give at least (45) Days' notice of such tests to the PURCHASER, or his representatives if such have been designated, and if desired the said representatives shall be present at such tests.
- 14.9 The PURCHASER shall have the right to inspect all Civil Works during and after construction (except for minor items such as painting etc. which may be inspected subsequently) and shall certify that such works are complete, in accordance with annexure XXVIII, and Article 18.
- 14.10 The PURCHASER shall have the right to inspect all the erection of Equipment including all piping, instrumentation, electrical installation and wiring, insulation, painting and all other work connected with erection as detailed in annexure XXIX.
- 14.11 During all inspection, the PURCHASER or his representatives may have recourse to such tests as they may consider necessary in order to establish whether the materials, objects, supplies or methods of construction and erection are of the requisite quantity and quality. The PURCHASER or his representatives may require the replacement or repair, as the case may be, of items which do not conform with the Contract, even after they have been incorporated into the Works.
- 14.12 The CONTRACTOR shall place at the disposal of the PURCHASER, free of charge, such instruments as are available at the Site, and in particular, equipment for the radioactive checking of welds, along with specialized operating staff, if requested by the PURCHASER, to enable the PURCHASER to carry out his inspection of the CONTRACTOR's work or supplies, efficiently.
- 14.13 The CONTRACTOR shall ensure that the dispatch and delivery of Equipment are expeditiously implemented and efficiently co-ordinated in complete accordance with the terms, conditions and procedures for delivery in this Contract and/or also as may be contained therein, regarding spare parts, in any purchase orders issued to Vendor(s).
- 14.14 The CONTRACTOR shall take all necessary measures to ensure that all export licences (if necessary) and shipping documentation are arranged and issued in a timely manner.
- 14.15 The inspection by the PURCHASER and/or repair or replacement of Equipment or Civil Works at the request of the PURCHASER shall not excuse the CONTRACTOR from the liabilities, warranties or guarantees as expressed in this Contract.

ARTICLE 15

Variations, changes and additions
to the scope of the Contract

- 15.1 The PURCHASER shall have full powers, subject to this Article and other provisions of the Contract from time to time during the execution of the Contract by notice in writing to direct the CONTRACTOR to alter, amend, omit, change, modify, add to or otherwise vary any of the work under the Contract and the CONTRACTOR shall carry out such work and be bound by the same conditions, so far as applicable, as though the said variation(s) were stated in the Contract.
- 15.2 When the CONTRACTOR has received any direction from the PURCHASER/ Engineer which may, in the opinion of the CONTRACTOR, involve a change in the Contract Price, the CONTRACTOR shall, as soon as reasonably possible and before proceeding with the variation(s), advise the PURCHASER in writing to that effect. Subject to the provisions of Article 15.3 the difference in price, if any, occasioned by any such variation(s), shall be added to or deducted from the Contract Price as the case may be. The amount of such difference shall be agreed to after discussions between the PURCHASER and the CONTRACTOR. In the event of any difference of opinion, the cost of the variation(s) may be assessed in accordance with Article 37.
- 15.3 The CONTRACTOR acknowledges that there shall be no entitlement for any claims for any increases in the amount of work undertaken or to be undertaken for rectifications or modifications whether or not related to design and/or other errors, mistakes, omissions and lack of accuracy, in undertaking his obligations herein, including that mentioned in Article 15.5.
- 15.4 The CONTRACTOR may at any time during his performance of the Contract submit to the PURCHASER for his approval written proposal(s) for a modification of the work to be performed under the Contract. The CONTRACTOR, in connection with any proposal he makes pursuant to this Article and Article 4.4.2 and/or for a Contract modification pursuant to Article 29 and/or to any other Article, shall furnish the reasons for his proposal and a breakdown in sufficient detail to permit an analysis of all material, labour, equipment, subcontracts and the estimated project time schedule overruns and design changes, and shall include in such proposal or report all work involved in the modification, whether such work was to be deleted, added or changed. Any request for time extension shall be supported by such justification as may be required.
- 15.5 Changes or variations pursuant to this Article shall not justify extra costs in any event, if such changes or variations are a result of changes in the detailed project schedule created by a change in deliveries of material, and/or incidental to time changes related to Mechanical Completion, or due to changes in piping layout or design performed by the CONTRACTOR as a result of detailed engineering.
- 15.6 If the PURCHASER approves the CONTRACTOR's proposal, then subject to Articles 15.3, 15.5 and 15.9, the CONTRACTOR shall make the variation(s) so approved. The PURCHASER shall not refuse to approve any variation(s) which is (are) necessary to correct any defect in the Works which has occurred, or which would otherwise occur if the CONTRACTOR's proposal was not accepted, or if any modifications or rectifications are required

pursuant to Article 18.16. In all other cases, the PURCHASER may give or refuse his approval as he thinks fit and his decision shall be final.

- 15.7 The CONTRACTOR shall not be entitled to any extra cost or extension of time on account of a variation proposed or initiated by him, unless approved by the PURCHASER through a change order.
- 15.8 Upon receiving a notice of a change order from the PURCHASER and if in the opinion of the CONTRACTOR such variation is 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 variation(s) then the said obligations of the CONTRACTOR shall be modified to such an extent as may be justified.
- 15.9 Except for the provision of Article 15.8, any variations or alterations ordered by the PURCHASER shall not in any way vitiate or invalidate the obligations of the CONTRACTOR under the Contract.
- 15.10 In the event that the PURCHASER and the CONTRACTOR are unable to agree on whether such required services are within the contractual obligations of the CONTRACTOR, or if the PURCHASER considers that the payment demanded for such required services by the CONTRACTOR is excessive, a neutral person (mutually appointed by the CONTRACTOR and the PURCHASER) shall have the right to decide on the quantum of payment, if any, which may be payable by the PURCHASER to the CONTRACTOR. In such an eventuality the CONTRACTOR shall proceed without delay, after the appointment of the neutral person, to carry out the design changes, and/or provide the services which are the subject of the dispute, pending the decision of the neutral person. The decision of the neutral person shall be immediately implemented, without prejudice to the rights of the CONTRACTOR and the PURCHASER to submit the dispute to arbitration.
- 15.11 All additional payments for the required work or services due from the PURCHASER to the CONTRACTOR under the provisions of this Article shall be embodied in a change order upon conditions specified therein which shall be signed by the PURCHASER and the CONTRACTOR (or their authorized representatives), and such change order(s) shall be deemed to form part of the Contract and subject to all of the terms and conditions therein, unless otherwise excepted.
- 15.12 Any and all modifications to the technical specifications contained in annexures III, IV, V, VIII, IX, XI, XII, XIII, XV, XVI, XVII, XX, XXI, XXVIII, XXIX, XXX and XXXI agreed to by the PURCHASER shall be embodied in a change order which shall be signed by the PURCHASER and the CONTRACTOR (or their authorized representatives), and such change order(s) shall be deemed to form part of the Contract and subject to all of the terms and conditions therein, unless otherwise excepted.

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 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 which 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 11/

- 17.1 The CONTRACTOR shall manage the operations of the Plant following the Mechanical Completion stage as specified in Article 18. The management of the Plant by the CONTRACTOR shall cease upon the successful completion of the Performance Guarantee Tests and Provisional Acceptance of the Works by the PURCHASER.
- 17.2 The CONTRACTOR shall provide management assistance services to the PURCHASER from the Provisional Acceptance stage until the Final Acceptance of the Works. The CONTRACTOR shall provide the necessary Site personnel in accordance with Article 17.3 hereunder.
- 17.3 The CONTRACTOR's staff required to accomplish management assistance services in accordance with Article 17.2 above shall consist of:
- (list of personnel as indicated in (supplementary document)). 12/
- 17.3.1 The number and type of the CONTRACTOR's personnel to be maintained at the Site for the purposes of management assistance shall as far as practicable be selected by the CONTRACTOR and the PURCHASER from the category of personnel who have been responsible for the actual Start-Up and operation of the Plant up to and including the Performance Guarantee Tests.
- 17.4 The CONTRACTOR's obligations pursuant to the requirements of Article 17.2 shall be as follows:
- 17.4.1 To provide management assistance to the PURCHASER to ensure maintenance of production levels at optimum capacity, and with maximum efficiency.
- 17.4.2 To provide management assistance to the PURCHASER to assure maintenance of the Plant and the Equipment to enable operations to be kept at design levels of production, and efficiency ratios.
- 17.4.3 To provide management assistance to the PURCHASER through in-Plant training of the PURCHASER's personnel.
- 17.5 During the period between the Provisional Acceptance stage and the Final Acceptance of the Works, all Plants shall be operated at pre-established levels and under agreed conditions.
- 17.5.1 In the event of a disagreement between the CONTRACTOR and the PURCHASER as to the capacity at which a Plant or Plants should operate, the views of the PURCHASER shall prevail.

11/ This Article is optional (except Article 17.1), and to be discussed on a case-by-case basis, because of differences in the quantum of management services required, and can be a separate agreement.

12/ It is suggested that the minimum requirements should be: two production engineers, one maintenance engineer (mechanical) and one maintenance engineer (instrumentation).

- 17.5.2 In every case where the CONTRACTOR's personnel at the Site apprehend any damage to the Plant and/or Equipment, as a result of conditions leading to overloading, and/or inadequate or poor maintenance, the PURCHASER's representative at the Site shall be informed forthwith in writing.
- 17.5.3 Provided however that if the PURCHASER elects to operate any piece of Equipment above its designed (name-plate) capacity, or operates such of it with inadequate maintenance in disregard of the instructions given by the CONTRACTOR, the mechanical warranties in respect of such Equipment shall (in the appropriate case) lapse, and the CONTRACTOR shall not be held responsible for mechanical failure of the Equipment even though the mechanical warranties specified in Article 28.3 in respect of such Equipment have not been exhausted.
- 17.6 In the event that the PURCHASER so desires, he may retain part or all of the personnel covered by Article 17.3 for an extended period, not to exceed (18) months after Final Acceptance of the Plant, on terms and conditions to be mutually agreed in advance and the payment of additional fees to the CONTRACTOR.
- 17.7 Following the management of the Plant by the CONTRACTOR in accordance with the provisions of Article 17.2 and subsequent to Final Acceptance of the Plant, 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 not less than (___) years. The PURCHASER may exercise the said option not later than the expiry of (1) month following Provisional Acceptance. 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 an agreement shall include (but shall not be restricted to) any one and/or other of the following matters:
- 17.7.1 Provision of senior advisory personnel to conduct a half-yearly review of the Plant and the efficiency of its operations.
- 17.7.2 Recommendations as to the improvement of Plant operations.
- 17.7.3 Provision of answers to technical queries related to Plant operations.

ARTICLE 18

Completion of Work(s) and conditions of
Provisional and Final Acceptance

- 18.1 The CONTRACTOR shall execute the work diligently and shall adhere strictly to the requirements for the expeditious completion of the Works.
- 18.2 The Work(s) and/or sections and/or parts thereof shall be considered to have been completed when the requirements of Articles 18.4 to 18.7 have been satisfied, but subject to the provisions of Articles 18.9, 18.15 and 18.16 herein.
- 18.3 As soon as any parts of the Works or Plant, or any part thereof, is (are) in the opinion of the CONTRACTOR substantially complete and ready for inspection the CONTRACTOR shall notify the PURCHASER, by means of a construction completion report, that the Plant or a section thereof is ready for Mechanical Completion tests. This report shall indicate which parts of the the Works or the Plant the CONTRACTOR proposes to demonstrate have been completed in accordance with the specifications and have passed such initial inspection tests as may have been specified in the Contract. The CONTRACTOR shall prepare and submit a programme of tests for the individual equipment and/or sections of the Plant.
- 18.4 Upon satisfactory inspection of the Plant or part thereof or Equipment, the CONTRACTOR and the PURCHASER shall sign the construction completion report stating that the Plant or part thereof has been inspected and is substantially complete and that any procedures required to prove the mechanical fitness and demonstration of the Mechanical Completion prior to the Plant or part thereof being put into operation may safely be carried out. Such construction completion report may include a note of any minor items which can be completed after Start-Up. The signing of the construction completion report by the PURCHASER shall not be deemed to constitute an acknowledgement or confirmation or agreement as to the suitability or fitness of the Equipment and/or sections of the Plant or parts thereof for the purposes intended.
- 18.5 If the PURCHASER is not satisfied that the Plant or part thereof referred to in Article 18.3 is substantially complete he may endorse the construction completion report accordingly, and particularize as to the reasons why such Works or Plant or part thereof is not in accordance with the Contract. The CONTRACTOR shall thereafter complete the Works or Plant or part thereof as shall be required and shall be prepared to provide adequate proof of such completion.
- 18.6 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 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 (or otherwise) and the detailed procedures therewith.
- 18.7 The pre-commissioning of the Plants and 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 utility Plants and Off-Sites (subject to the provisions of Article 18.9) and the Mechanical Completion of the Works has been achieved, the CONTRACTOR shall thereupon prepare a Mechanical Completion Certificate which shall be signed by both parties following a joint examination of the Plant(s) or those sections of the utility Plants and Off-Sites concerned. The considerations applying to the signing of the Mechanical Completion Certificate by the PURCHASER shall be similar and in like manner to the signing of the construction completion report by the PURCHASER pursuant to Article 18.4 and the PURCHASER shall not be deemed to have made any acknowledgement, or confirmation or agreement thereby.

- 18.8 The operations and tests referred to in Articles 18.6 and 18.7 above shall be carried out in a competent manner by the CONTRACTOR's personnel under his direction and responsibility and in the presence of the PURCHASER's personnel.
- 18.9 If during the course of the tests mentioned above, any defect(s) or malfunction(s) become apparent in the Plant and/or Equipment, or in any part of the Works, the CONTRACTOR shall immediately take steps to replace the defective Equipment and/or rectify the defective part of the Works in the minimum of time.
- 18.10 Upon Mechanical Completion of any Plant and testing of each Plant in accordance with Article 18.7 and annexure XX, or as soon as possible thereafter, the relevant Plant shall be brought into operation.
- 18.11 When all sections of the Plants are in a satisfactory operating state, and specification-grade ammonia and urea are in continuous and uninterrupted 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.
- 18.12 The CONTRACTOR shall thereafter demonstrate that the Plant(s) is (are) capable of achieving the Performance Guarantees through Performance Guarantee Tests as specified in Article 26 and annexures XXX and XXXI.
- 18.13 The Plant shall be deemed to have attained Provisional Acceptance 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 following satisfactory discharge of the conditions of Article 18.14 below.
- 18.14 The Provisional Acceptance Certificate shall be issued when the Plant has been completed in accordance with the Contract, including the satisfactory discharge of the following:
 - 18.14.1 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.
 - 18.14.2 When the CONTRACTOR has prepared a statement indicating the start and end of the mechanical warranty period for each item of Equipment and provided the same to the PURCHASER.

- 18.14.3 When the CONTRACTOR has provided to the PURCHASER all the documents listed in annexure XV.
 - 18.14.4 When the CONTRACTOR has completed the Civil Works and has obtained a civil construction completion report in respect thereof, except for minor works.
 - 18.14.5 When the CONTRACTOR and the PURCHASER have signed the Mechanical Completion Certificate following joint examination of the Plant.
 - 18.14.6 When the Performance Guarantee Tests (governed by Article 26 and annexures XXX and XXXI) have been successfully demonstrated and completed, in accordance with the Contract, or, where applicable, the liquidated damages have been paid and the CONTRACTOR has prepared Performance Guarantee Test certificate(s) and submitted the same for signature and acceptance by the PURCHASER. The approval of the Performance Guarantee Test certificate(s) by the PURCHASER (if without reservations) shall be expressed in the Provisional Acceptance Certificate which shall be signed by the PURCHASER signifying the acceptance of the Plant(s)/Works, and the completion of the obligations of the CONTRACTOR with respect to the Performance Guarantee Tests.
- 18.15 The Provisional Acceptance of the Plant or the take-over of any specified part or section of the Plant(s) by the PURCHASER shall not in any way release the CONTRACTOR from his other obligations (expressed or implied) under the terms of this Contract.
- 18.16 The CONTRACTOR shall be responsible for undertaking repairs and modification(s) of the Plant(s) and/or of any of the sections and/or parts thereof, in relation to any part of the Work(s) supplied by him or for which he is responsible under this Contract, and in any one and/or other of the following circumstances, namely:
- 18.16.1 If the Performance Guarantees and/or Performance Guarantee Tests and/or any of the tests or pre-commissioning tests required are not capable of being commenced, undertaken, met or completed for reasons attributable to the CONTRACTOR's work and/or services, referred to in the Contract.
 - 18.16.2 If the Plant(s) and/or parts or sections thereof, and/or Process(es) is (are) found to be incapable or insufficient due to the reasons referred to in Article 4.31.
 - 18.16.3 If the quality of workmanship and materials fails to comply with the requirements of the Contract as specified in Article 25.
 - 18.16.4 If the requirements as to warranties are found to have been breached or are not in accordance with the Contract pursuant to Article 28.
 - 18.16.5 If any of the civil engineering and/or Site work required to be undertaken by the CONTRACTOR under the Contract is incomplete or inadequate.

18.16.6 If any work pursuant to the requirements of the Contract is incomplete, insufficient or inadequate.

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 29. 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) is (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.

18.17 Unless otherwise agreed to or in the event that the rectifications and modifications have not been satisfactorily completed and in any event without prejudice to the rights of the PURCHASER under the Contract, the PURCHASER shall take over the Plant upon the issue of the Certificate of Provisional Acceptance. Upon take-over, the PURCHASER shall be responsible for the management, operation and maintenance of the Work(s), and shall take out and carry such insurances as may be deemed necessary.

18.18 The PURCHASER shall issue a Final Acceptance Certificate when all the conditions specified in this Article, Article 4.31 and in Articles 17.2 to 17.5 (inclusive) 13/ together with all of the contractual requirements have been satisfactorily complied with including the provision of as-built drawings. Subject to Articles 18.14 and 18.16 the PURCHASER shall issue the Final Acceptance Certificate within (12) months of the Provisional Acceptance of the Plant, unless during the intervening period the Plant has shown defects which have not been rectified.

13/ Reference to Articles 17.2 to 17.5 (which are optional) to be modified if these Articles are deleted or altered.

ARTICLE 19

Text A. Extension of time

Text B. Extension of time and compensation of cost

Text A

Text B

Extension of time

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 or the PURCHASER's control, namely:
 - 19.1.1 Vandalism;
 - 19.1.2 Failure on the part of the Vendor or other sub-contractor 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;

- 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 obligations 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 Works in the PURCHASER's country;

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 and 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 delay(s) suffered by the CONTRACTOR. The CONTRACTOR shall be responsible for the completion of all the work and activities affected by

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 over time and amount, the matter shall be settled in a similar manner as stated in Article 15.10. The CONTRACTOR shall be responsible for the completion of all of

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 delay(s) 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.

the works 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, as consideration for the execution of this turnkey Contract the amounts mentioned in this Article. The overall price for the Contract covers the payments for the CONTRACTOR's total obligations under the Contract and is divided into:

A firm price, being the sum of:

(amount)

for the items detailed in Articles 20.2 to 20.7.

A price of a reimbursable nature estimated at

(amount)

for the items detailed in Article 20.8.

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 is divided into the categorized amounts stated in each of Articles 20.2 to 20.8 below, only 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	(<u>amount</u>)	(<u>currency</u>)
for the Urea Plant	(<u>amount</u>)	(<u>currency</u>)
for Utilities	(<u>amount</u>)	(<u>currency</u>)

20.3 For the supply of Plant, Equipment, Materials ex Site (inclusive of the complete engineering and related services) referred to in Articles 4.4, 4.6 to 4.15 and 4.21 of the Contract:

(amount) (currency)

20.4 For the detailed civil engineering design work, and completion of all Civil Works, including road, (rail) and telephone connections and related services, referred to in Articles 4.16 to 4.20 of the Contract:

(amount) (currency)

20.5 For complete erection of the Plant and Equipment including the supply of erection materials and hire of erection equipment and related services, referred to in Articles 4.22 to 4.25 of the Contract:

(amount) (currency)

20.6 For services related to management, operations and supervision, referred to in Articles 4.26 to 4.28 and Article 17 of the Contract:

(amount) (currency)

20.6.1 For management, supervision, pre-commissioning, commissioning and operations from Mechanical Completion of the Plant until completion of the Performance Guarantee Tests and issue of the Provisional Acceptance Certificate:

(amount) (currency)

20.6.2 (Optional.) For providing management assistance from the completion of the Performance Guarantee Tests until Final Acceptance of the Plant as required by Articles 17.2 to 17.5 of the Contract:

(amount) (currency)

20.7 For providing training and training facilities for the PURCHASER's personnel as provided in Article 16 and annexure XVIII of the Contract:

(amount) (currency)

20.8 For the procurement and supply of spare parts, and services related thereto as required by Article 10 of the Contract:

(amount) (currency)

20.9 The total estimated cost of the CONTRACTOR's Services specified in Articles 20.6 to 20.8 (inclusive) 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 payment due to the CONTRACTOR under Article 20.2 above shall be made as follows:

20.10.1 (25 per cent) as an advance payment.

20.10.2 (50 per cent) on receipt by the PURCHASER of a copy of all the documents listed in 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 the Provisional Acceptance Certificate by the PURCHASER.

20.11 Payments due under Article 20.3 shall be made as follows:

20.11.1 (10 per cent) as an advance payment.

20.11.2 (10 per cent) at the end of the (6th) month from the Effective Date of the Contract, provided that the meetings contemplated under Articles 6.5 and 6.8 have been held, unless otherwise agreed upon.

20.11.3 (60 per cent) shall be paid pro rata on shipment of the Equipment and Materials.

20.11.4 (10 per cent) shall be paid on completion of the Performance Guarantee Tests of the Plant and issuance of the Provisional Acceptance Certificate by the PURCHASER.

- 20.11.5 (10 per cent) shall be paid on the issuance of the Final Acceptance Certificate by the PURCHASER.
- 20.12 Payments under Article 20.4 shall be made as follows:
 - 20.12.1 (10 per cent) as an advance payment
 - 20.12.2 (10 per cent) on completion of the design work for the main buildings and structures of the Plant.
 - 20.12.3 (65 per cent) shall be paid as progressive payments in monthly instalments against actual progress of work on the Site as reported and approved by the Engineer.
 - 20.12.4 (15 per cent) on completion of the Performance Guarantee Tests of the Plant and issuance of the Provisional Acceptance Certificate by the PURCHASER.
- 20.13 The payment due under Article 20.5 shall be made as follows:
 - 20.13.1 (10 per cent) as an advance payment.
 - 20.13.2 (15 per cent) on the arrival of an agreed quantity 14/ of the CONTRACTOR's erection equipment at the Site.
 - 20.13.3 (50 per cent) as progressive payments in monthly instalments against actual progress of erection work on the Site as reported in the CONTRACTOR's monthly progress report and certified by the PURCHASER or his authorized representative.
 - 20.13.4 (15 per cent) on mechanical completion of the Plant and issuance of a Mechanical Completion Certificate.
 - 20.13.5 (10 per cent) on completion of the Performance Guarantee Tests of the Plant and issuance of the Provisional Acceptance Certificate by the PURCHASER.
- 20.14 The payments under Article 20.6 will be made as specified herein:
 - 20.14.1 Payments pursuant to Article 20.6.1 shall be made as follows:
 - 20.14.1.1 (25 per cent) of the amount stated in Article 20.6.1 on the Mechanical Completion of the Plant.
 - 20.14.1.2 (25 per cent) of the amount stated in Article 20.6.1 on the first input of feedstock to the Plant.
 - 20.14.1.3 (25 per cent) of the amount stated in Article 20.6.1 on Commercial Production of specification-grade urea as defined in Article 18.11.
 - 20.14.1.4 (25 per cent) of the amount stated in Article 20.6.1 on completion of the Performance Guarantee Tests of the Plant and issuance of the Provisional Acceptance Certificate by the PURCHASER.

14/ The quantity to be agreed at the time of the signing of the Contract.

- 20.14.2 (Optional.) Payments pursuant to Article 20.6.2 shall be made on a monthly basis (1/12th each month).
- 20.15 The amount(s) due under Article 20.7 shall be payable as follows:
- 20.15.1 (15 per cent) upon agreement of the programme of training.
- 20.15.2 (60 per cent) pro rata during training as specified in annexure XVIII.
- 20.15.3 (25 per cent) on completion of the overseas training of the PURCHASER's personnel, in accordance with annexure XVIII.
- 20.16 The payments under Article 20.8 shall be paid as follows:
- 20.16.1 (15 per cent) on approval by the PURCHASER of the list of spare parts.
- 20.16.2 (75 per cent) pro rata on shipment of the spare parts.
- 20.16.3 (10 per cent) on the successful completion of the Performance Guarantee Tests of the Plant and issuance of a Provisional Acceptance Certificate by the PURCHASER after deducting the value of the spare parts consumed by the Plant before the Performance Guarantee Tests have been completed, unless such spare parts have been fully replaced by the CONTRACTOR.
- 20.17 The advance payments due from the PURCHASER to the CONTRACTOR pursuant to Articles 20.10 to 20.13 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.
- 20.18 For the purpose of making payments under Articles 20.10 to 20.16 other than the advance payments mentioned under Article 20.17 and final payments under Article 20.20, the PURCHASER shall establish in favour of the CONTRACTOR at a specified bank in (the CONTRACTOR's country or as agreed otherwise) irrevocable transferable and divisible letters of credit providing for payments in accordance with the stages and schedule laid down in Articles 20.10 to 20.16, in conjunction with the documents supply specified hereinafter. The payments under the letter of credit referred to in this Article shall be made in accordance with Article 20.19.
- 20.19 The payments referred to in Article 20.18 shall be made only upon the fulfilment of the following:
- 20.19.1 For payments under Article 20.10.2, a certificate from the PURCHASER shall be presented stating that the documents required to be provided under Article 3.1.2 have been received.
- 20.19.2 For payments under Article 20.11.2, an invoice from the CONTRACTOR dated at the end of the (6th) month of the Effective Date of the Contract shall be presented accompanied by a certificate from the PURCHASER stating that the meetings contemplated under Articles 6.5 and 6.8 of the Contract have been held, or any other document agreed.

- 20.19.3 For payments under Article 20.11.3 (60 per cent) of the value of each shipment, against invoices, to the PURCHASER supported by the following documents:
- 20.19.3.1 Clean on-board bills of lading (except for Equipment forwarded as deck cargo in which event a bill of lading shall be sufficient).
 - 20.19.3.2 Packing list.
 - 20.19.3.3 Certificate of origin (where required).
 - 20.19.3.4 Certificate of the CONTRACTOR that all tests and inspections required under the Contract have been successfully performed.
 - 20.19.3.5 (Other documents as specified.) 15/
- 20.19.4 For payments under Article 20.12.2, a certificate from the PURCHASER shall be presented confirming that copies of civil engineering designs have been received by the PURCHASER.
- 20.19.5 For payments under Article 20.12.3, against a monthly invoice from the CONTRACTOR indicating the percentage of Civil Works completed, duly certified by the PURCHASER or his representative that the percentage of work stated in the monthly invoices submitted by the CONTRACTOR has been completed, and that the value related to such percentage of progress has not been previously compensated and that the amount indicated in the invoice represents the amount due under the Contract.
- 20.19.6 For payment under Article 20.13.2, a certificate from the PURCHASER shall be presented confirming that the agreed quantity of erection equipment has arrived at the Site.
- 20.19.7 For payments under Article 20.13.3, against an invoice from the CONTRACTOR indicating that the percentage of progress in the erection of Equipment as indicated in the monthly progress report has not been previously compensated, duly certified by the PURCHASER or his representative.
- 20.19.8 For payment under Article 20.14.1.2, a certificate shall be issued by the PURCHASER confirming that the first input of feedstock has been introduced into the Plant, and for payments under Article 20.14.1.3 a certificate from the PURCHASER shall be issued confirming that the Plant has been Started-Up and that continuous commercial-grade urea is being obtained at the rate specified in Article 18.11.
- 20.19.9 (Optional.) For payments under Article 20.14.2, a certificate shall be issued by the PURCHASER confirming that the management assistance personnel has been present at the Site pursuant to Article 17.3 during the period regarding which payment is to be made.

15/ To be added in accordance with the requirements of each country.

- 20.19.10 For payment under Article 20.15.1, a certificate from the PURCHASER shall be presented stating that the overseas training programme has been agreed upon.
 - 20.19.11 For payment under Article 20.15.2, 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.
 - 20.19.12 For payment under Article 20.15.3, a certificate from the PURCHASER shall be presented stating that the overseas training programme as envisaged in annexure XVIII has been carried out.
 - 20.19.13 For payment against Article 20.16.1, a certificate from the PURCHASER confirming that a list of spare parts with necessary details has been received and approved.
 - 20.19.14 For payment due under Article 20.16.2, being 75 per cent of the value pro rata on shipment of the spare parts, proper invoices shall be presented to the PURCHASER supported by the documents of the same nature mentioned in Article 20.19.3 above.
 - 20.19.15 Certificate(s) to be issued by the PURCHASER under the provisions of Article 20.19 shall not be unreasonably withheld.
- 20.20 The final payments under Articles 20.10 to 20.14 and Article 20.16 shall be made as follows:
- 20.20.1 The payments under Articles 20.10.3, 20.11.4, 20.12.4, 20.13.5, 20.14.1.4 and 20.16.3 shall be made against Certificate(s) of Provisional Acceptance issued by the PURCHASER.
 - 20.20.2 The payment under Article 20.11.5 shall be made against the Certificate of Final Acceptance issued by the PURCHASER.
 - 20.20.3 The CONTRACTOR may request that the payments to be made pursuant to Article 20.20.2 be released upon issue of the Provisional Acceptance Certificate of the Plant, in consideration of an unconditional bank guarantee issued in the PURCHASER's favour for an equivalent amount to be provided by the CONTRACTOR in the form and manner specified by Article 21.3.
- 20.21 The certificates referred to in Article 20.20 shall not be unreasonably withheld by the PURCHASER.
- 20.22 In the event that, for reasons not attributable to the CONTRACTOR, the Plant has been mechanically completed but not Started-Up within the required (18) months after the Mechanical Completion of the Plant, the CONTRACTOR shall be entitled to the payments due under Articles 20.10.3, 20.11.4, 20.12.4, 20.13.5, 20.14.1.4 and 20.16.3 (in like manner as if the Plant had been mechanically completed and the Performance Guarantee Tests had been fulfilled) within (60) Days after notifying the PURCHASER in accordance with the provisions of Article 20.23, and by presenting:

- 20.22.1 An invoice in triplicate signed by the CONTRACTOR.
 - 20.22.2 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 Started-Up as the case may be.
 - 20.22.3 Proof as to the issue of an unconditional bank guarantee in the form specified in annexure XXIII for the proper amount (as specified in Article 20.23 below).
 - 20.22.4 Proof as to the notification made by the CONTRACTOR to the PURCHASER as required by the provisions of Article 20.23, together with presentation of bank guarantee(s) commensurate with the payment(s) claimed.
- 20.23 Should the CONTRACTOR wish to invoke his rights for payment of the amount under Article 20.22, he shall promptly notify the PURCHASER by telegram, and by letter, of his claim. Should the PURCHASER dispute such claim, the CONTRACTOR shall nevertheless be entitled to receive the payments stated to be due under Article 20.22 against presentation of the said documents specified in Articles 20.22.1, 20.22.2 and 20.22.4, together with a bank guarantee (for amount(s) equivalent to payments under the relevant Articles referred to in Article 20.22) 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.
- 20.24 In the event that, for reasons not attributable to the CONTRACTOR, the Plant has been mechanically completed but not Started-Up within (30) months after Mechanical Completion of the Plant, the CONTRACTOR shall be entitled to the payments under Articles 20.11.5, 20.13.5, and the procedure to be applied on the CONTRACTOR's entitlement to payment(s) claimed, shall be in like manner as that provided in Article 20.22 above, subject, however, to the CONTRACTOR complying with the requirements of Article 20.23.
- 20.25 The PURCHASER and the CONTRACTOR agree that the payments due under this Article shall be made subject to claims, the PURCHASER's right to, or debts arising out of default and/or reduced work and services other than those contemplated by the terms of the Contract.
- 20.26 Any payments due under the Contract (which are not secured by letters of credit) shall be made to the CONTRACTOR within (8) weeks of receipt by the PURCHASER of invoices duly certified by the PURCHASER's Site representative, subject nevertheless to such legitimate deductions as the PURCHASER shall be entitled to make under the provisions of the Contract.
- 20.27 In the event of disputes as to any amount(s) or payment which the CONTRACTOR claims is presently due (including any question or dispute related to the amount of any deduction that may have been made by the PURCHASER under any provisions of the Contract), the CONTRACTOR shall be entitled to receive the uncontested portion of the amount; however, such payment of the uncontested portion of the amount shall not prejudice the rights of the PURCHASER to recover such amount in any

manner that he may deem fit; such uncontested portions of amounts shall be receivable by the CONTRACTOR within (8) weeks following ascertainment of the amount.

20.28 Any and all bank guarantees to be provided by the CONTRACTOR pursuant to the Contract shall be encashable by the PURCHASER in (indicate 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.

20.29 In the event that the CONTRACTOR fully accomplishes the Mechanical Completion of the Plant/Work under Article 18 and demonstrates the Performance Guarantees required pursuant to Article 26 during a period before the end of (36) months after the Effective Date of the Contract, the CONTRACTOR shall be entitled to receive a bonus or incentive as hereunder specified for each complete week of saved time in terms of the completion of the Works:

20.29.1 () per cent of fixed price(s) under Article 20.1, subject to a maximum of (amount).

Payments under this Article shall be made within (12) months after the Provisional Acceptance of the Plant provided no defects appear in the Plant and/or Equipment during this period affecting its capacity, performance and/or operation and which have not been corrected within this period.

20.30 Should the Mechanical Completion of the Works be accomplished by the CONTRACTOR within (32) months of the Effective Date of the Contract, and if for reasons attributable solely to the PURCHASER, the Plant cannot be Started-Up within (4) months thereafter, the CONTRACTOR shall be entitled to a bonus or incentive as below for each complete (15) Days of saved time:

20.30.1 () per cent of the fixed price under Article 20 subject to a maximum of (amount).

20.31 All amounts payable pursuant to this Article shall not prejudice the PURCHASER's rights and the CONTRACTOR's obligations under the other Articles of the Contract.

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, 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 contained in annexure XXIII for an amount equivalent to the sum total of the advance payments required to be made by the PURCHASER pursuant to Articles 20.10 to 20.13. 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 20.20, the CONTRACTOR shall deliver a bank guarantee from a first-class bank in the form contained 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 20.20 from the (name of the bank) and confirmed by a bank in (PURCHASER's country). 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.
- 21.4 The bank guarantee envisaged in Article 20.23 shall be in like form as that specified in Article 21.2 above and such bank guarantee shall remain valid for the period(s) mentioned in Article 20.23.

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, brought or prosecuted in any manner based upon, arising out of, related to, occasioned by or attributable to the activities of the CONTRACTOR under or in connection with this Contract.

22.1.1 For the purpose of Article 22.1 above, "activities" includes an act improperly carried out, an omission to carry out an act and a delay in carrying out an act.

22.2 The PURCHASER shall indemnify and hold harmless the CONTRACTOR and anyone employed by him from and against all claims, demands, losses, costs, damages, actions, suits or proceedings arising out of the CONTRACTOR's activities under this Contract which are directly attributable to a lack of, or a defect in title, or an alleged lack of, or a defect in title to the Site.

ARTICLE 23

Project accounting and audit 16/

- 23.1 The CONTRACTOR shall maintain suitable accounting and other relevant records pertaining to the payments received by him from the PURCHASER and the quantum of work done or Equipment supplied against which such payments were made, and shall preserve these records for a period of at least (2) years after Final Acceptance of the Works or the termination of the Contract.
- 23.2 The CONTRACTOR shall provide facilities to the PURCHASER and the Engineer to have access to and inspect the CONTRACTOR's accounting and other records for evaluating (if necessary) the cost of any work undertaken pursuant to Article 15 or in assessing the cost of any work done at the request of the PURCHASER.
- 23.3 The CONTRACTOR shall be subject to audit by the PURCHASER of the time-logs of the CONTRACTOR, if any prices or part of the prices under the provisions of Article 15 are based on time-charges as well as increased costs incidental to Article 36.2.2.
- 23.4 The PURCHASER or any auditors 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 the CONTRACTOR shall be obliged to provide any other financial data and information required at the option of the PURCHASER in regard to the transactions between the PURCHASER and the CONTRACTOR, pursuant to this Contract.

16/ This Article is optional, and may be eliminated where not required, except for Article 23.2 (in accordance with Article 36.2.2).

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 Work(s) 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 24.4.
- 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 Within (30) Days after obtainment of each of such policies contemplated by Article 24.4 below, the CONTRACTOR shall deposit authenticated copies of each of such policies with the PURCHASER as required by Article 24.4 below, provided, however, that receipt by the PURCHASER of any such copy shall not be construed as an acknowledgement by the PURCHASER that the insurance is adequate in nature, amount and/or scope. The CONTRACTOR shall also give proof that the insurance(s) contemplated by Article 24.4 below as being his responsibility, remain in force and the PURCHASER shall be entitled to ask for such proof updated from time to time and duly authenticated.
- 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 The insurance policies referred to in Article 24.1.1 as required to be taken out by the CONTRACTOR shall be as follows:
- 24.4.1 "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 of the Plant. 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 material, 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 shall also be included.

- 24.4.2 "Loss of advanced profits insurance" (otherwise called "machinery consequential loss (interruption) insurance") to cover consequential loss amounting up to (amount) to the PURCHASER, which may arise following any damage to the Plant during testing and maintenance periods for a total period of (months) providing extended cover to that already provided by the CAR/EAR policy.
 - 24.4.3 "Machinery breakdown policy" (if not included in Article 24.4.1) to cover the breakdown of machinery during testing, Initial Operation and operation of the Plant, including boilers, pressure vessels, turbines etc., and explosion risks incidental thereto.
 - 24.4.4 "Marine insurance" or "cargo insurance policies" to cover the transit of Equipment and Materials from the Subcontractors' shops to the Site. (This shall include war risks insurance, under the discretionary responsibility of the CONTRACTOR.)
 - 24.4.5 Insurance liability to cover the use of automobiles, trucks, aircraft, launches, tugs barges etc.
 - 24.4.6 Liability insurance for payments under workmen's compensation acts, as required under applicable legislation in the PURCHASER's country.
- 24.5 To the extent not covered by the above policies and provided such 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 his Subcontractors. It is expressly agreed, however, that no liability to the extent that it refers to consequential loss only shall attach to the PURCHASER or the CONTRACTOR purely by reason of payment of the premium for such a policy.
- 24.6 The CONTRACTOR shall be responsible for taking out all the policies referred to in Article 24.1.1 as enumerated in Article 24.4 together with the other policies referred to in Article 24.1.2, except the following which the PURCHASER shall carry (unless otherwise agreed between the parties):
- 24.6.1 Accident insurance for the PURCHASER's personnel at the Site.
 - 24.6.2 Insurance for the PURCHASER's transport (e.g. automobiles) of which PURCHASER is the owner.
- 24.7 All policies taken out by the CONTRACTOR under Articles 24.4.1, 24.4.3, 24.4.4 and 24.4.5 shall be taken out by the CONTRACTOR jointly in the name of the CONTRACTOR and the PURCHASER, with the PURCHASER being the beneficiary.

24.8 If any monies are payable to the PURCHASER, particularly in relation to the policies contained in Articles 24.4.2 and 24.4.6 under the insurances maintained by the CONTRACTOR pursuant to this Article above or otherwise, the monies shall be held by the PURCHASER for the purposes of this Contract, and:

24.8.1 The PURCHASER may elect to retain absolutely the said monies; in such event, the monies belong absolutely to the PURCHASER, and,

24.8.2 There shall be a financial accounting between the PURCHASER and the CONTRACTOR in respect of the payments due from the CONTRACTOR of which monies have been retained absolutely by the PURCHASER, and there shall be included in the financial accounting all amounts paid or payable by the CONTRACTOR under this Contract to the PURCHASER, and the PURCHASER shall pay to the CONTRACTOR any amount which the financial accounting shows to be payable by the PURCHASER to the CONTRACTOR under this Contract and similarly the CONTRACTOR shall pay to the PURCHASER any amount which the financial accounting shows to be payable by the CONTRACTOR to the PURCHASER under this Contract.

ARTICLE 25

Guarantee for workmanship during manufacture,
construction and erection of the Works

- 25.1 The CONTRACTOR guarantees the quality of all materials and workmanship of the complete Work(s). All Equipment and Materials shall be brand-new and shall comply with the Contract specifications detailed in Article 12 and in the respective annexures.
- 25.2 The standards and codes to be used for the Works are provided in annexures II, XXVIII and XXIX. The CONTRACTOR shall utilize these standards (or, where applicable, mandatory national standards) and/or superior standards if known to the CONTRACTOR (as laid down in Article 4.7) for the design, procurement, supply and erection of the Works. 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 successfully working Ammonia/Urea Plant may be used, subject to the approval of the PURCHASER.
- 25.2.1 In case of dispute arising on any matter concerning the acceptability or the qualitative level of standard(s) or code(s) the onus shall be upon the CONTRACTOR to prove to the PURCHASER the superiority or better competence of those standard(s) or code(s) recommended (or adopted) by the CONTRACTOR pursuant to this Article, if such codes are not specified in annexures II, XXVIII and XXIX or elsewhere in the Contract.
- 25.3 The CONTRACTOR shall comply with the inspection procedures, detailed in Article 14, so that the materials of construction and workmanship of the Plant and Equipment satisfy the CONTRACTOR's obligations under the Contract.
- 25.4 The CONTRACTOR shall be responsible for all Civil Works and for the erection of the Work. The PURCHASER shall have the right to appoint inspectors for reviewing the Civil Works (including roads, rail connections) and erection works at the Site, and to assure themselves that the work is being conducted with suitable materials and in the approved manner, as specified in annexures XXVIII and XXIX, or as otherwise agreed. The PURCHASER's representatives shall have the right to take any samples of materials for analysis. The CONTRACTOR shall fully co-operate with the PURCHASER in the exercise of such rights and activities by the PURCHASER. The CONTRACTOR shall not be absolved from any liabilities as mentioned in this Article due to the PURCHASER exercising his rights of inspection.
- 25.5 If the materials or workmanship fail to comply with the requirements of the Contract, the CONTRACTOR shall forthwith (at his own cost) re-execute or make good the defective materials and/or faulty workmanship to ensure compliance with the Contract, in accordance with the provisions of Article 29.
- 25.6 The CONTRACTOR also warrants as to the correctness and completeness of the plans, all technical data and Technical Documentation supplied by him as well as to the technical criteria of the Equipment fabricated in accordance with his plans and instructions under the present Contract.
- 25.7 The above guarantees and warranties are valid until the warranties under Article 28 come into being.

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 Performance Guarantee Tests as specified in this Article and in the annexures and such tests are to be conducted in accordance with the conditions set forth herein. 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 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 steam and 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 17/ 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) 18/ subject to the provisions of Article 27.2.4.

26.3.3.3 The consumption of utilities shall be in accordance with annexure XXX (up to a maximum of (___) per cent above that guaranteed) 18/ 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 the guaranteed in annexure XXX.)

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

18/ The figures and 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, the figures and words in brackets can be deleted.

26.3.3.5 (The consumption of utilities if in excess of () per cent of that guaranteed in annexure XXX.)

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 the 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 of 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 (100) 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 (100) 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 Articles 26.4.1.2 and 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 Off-Sites 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 to perform 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. ^{19/} The PURCHASER and the CONTRACTOR shall agree on the instruments and shall jointly calibrate them for measurement of the Plant capacity and consumption.

26.4.6 If the (10) Days' Performance Guarantee Test(s) is (are) interrupted due to reasons for which the CONTRACTOR is not responsible, the Plant(s) shall be started again as soon as possible and when the Plant(s) has (have) reached normal operating conditions, the test(s) shall continue immediately thereafter. The duration of the test(s) shall be extended by the duration of such interruptions and the test(s) shall then be deemed to have been performed continuously provided, however, that the Plant has 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 periods 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

^{19/} These may be warranted at the time of the signing of the Contract and the tolerances stated in annexure XXXI.

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 Provisional Acceptance of the Plant for which the Performance Guarantee Test was conducted shall be deemed to have taken place, on the date that the 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 (18) months from the Mechanical Completion of the Plant, 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 hereto 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 Mechanical Completion of the Plant, provided that in the event 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 hereto shall resort to arbitration.

26.8 In the event that 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 several 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 (_____ 20/) subject to an overall maximum liability of (_____) under this Article.

27.1.2 For delay in the Mechanical Completion of the Work(s) beyond the period of (32) months after the Effective Date of the Contract: for each week of delay an amount of (_____ 20/) of the Contract Price.

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27.1.3 For delay in obtaining Commercial Production as defined in Article 18.11 beyond a period of (75) Days after Mechanical Completion of the Plant(s), an amount of (_____ 20/) for each week of delay, subject to a maximum of (_____) weeks.

27.1.3 Not used.

27.2 In the event that the Absolute Guarantees have been successfully demonstrated but the Penaltiible 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 Penaltiible 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 (_____ 20/) 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 (_____ 20/) up to a maximum of (_____).

27.2.3 For the power plant: for each additional (_____) kcal of fuel (alternatively (_____) m³ of gas or (_____) Tonnes of fuel oil) per kWh of power generated and the guaranteed auxiliary quantities of steam over and above the guaranteed consumption, an amount of (_____) 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 multiplying by the guaranteed daily capacity of each Plant, to obtain the guaranteed daily net cost of raw materials and utilities.

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

27.2.5 By virtue of the application of Article 27.2.4 the obligations of the CONTRACTOR in connection with the performance of the Penaltiible Guarantees for raw materials and utilities shall be considered as fulfilled. 21/

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 (0.6) per cent of the total 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 capacity of the Urea Plant, a sum of (0.4) per cent of the total 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 (20/). 22/

27.2.9 For insufficiency in carbon dioxide, resulting in a lowering of urea production, liquidated damages shall be the same as under Article 27.2.7 above. 23/

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

22/ Provided this guarantee is a Penaltiible Guarantee.

23/ 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.

- 27.2.10 For inadequacy of Off-Sites an amount of (____ 20/) up to a maximum of (____). 23/
- 27.2.11 For each (1) kW shortfall in the power plant capacity (at a power factor of ____), an amount of (____ 20/) 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 Penaltiable 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 the Performance Guarantee Tests within (43) months from the Effective Date of the Contract or (9) months after the Initial Operation of the Plant, extended by such time as is required for repair and/or replacement of Equipment in accordance with Article 29.1 (whichever is earlier), except when an extension has been granted due to circumstances outside the control of the CONTRACTOR or owing to a fault of the PURCHASER as provided therein, the CONTRACTOR shall pay liquidated damages to the PURCHASER in the amount of (1) per cent of the Contract Price for each month of delay subject to a maximum of (9) per cent.

27.3 Not used.

27.4 Should the CONTRACTOR be unable or unwilling to fulfil the Absolute Guarantees within (52) months of the Effective Date of the Contract or (18) months after the Initial Operation of the Plant, extended by such time as is required for repair and/or replacement of Equipment in accordance with Article 29.1 (whichever is earlier), the PURCHASER shall (at his option) have the right to recover the full costs necessary to correct the Plant or shall have the right to proceed to modify the Work(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 Work(s) thereof within the limits of time

27.5 Not used.

guaranteed in the Contract (annexure XV) and within the authorized extension(s) of time (governed by Article 19 and Article 34), the CONTRACTOR in addition to the liquidated damages stated to be payable in Article 27.3, shall be liable for fundamental breach of Contract.

- 27.6 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 such liquidated damages.

ARTICLE 28

Warranties

- 28.1 The CONTRACTOR warrants that the Plant and Equipment, Materials, tools and supplies incorporated in the Works pursuant to this Contract properly conform with the specifications of the Contract. The CONTRACTOR warrants the mechanical capabilities of the Plant and Equipment in accordance with Article 28.2, the Civil Works in accordance with Article 28.7 and the erection of the Plant in accordance with Article 28.8.
- 28.2 The CONTRACTOR's warranty for mechanical capabilities under Article 28.1 shall be for (12) months, commencing from the date of Provisional Acceptance as defined in Article 18. This period shall not exceed (____) months from the Mechanical Completion of the Plant under this Contract but this (____)-month period shall be extended for such period that the Provisional Acceptance of the Plant cannot take place due to the fault of the CONTRACTOR provided, however, in case of a force majeure occurrence as to both parties this (____)-month period shall be extended by the time caused by force majeure but not to exceed an additional (____) months.
- 28.3 If within the period specified in Article 28.2 the Works or any part thereof becomes defective or broken or fails due to faulty or improper design, workmanship, material, manufacture, fabrication, shipment or delivery, or fails to meet the requirements of the Contract, then the CONTRACTOR, upon notification in writing from the PURCHASER, shall forthwith make good every such defect, breakage or failure without cost (including without limitation, transportation cost) to the PURCHASER. If after such notification, the CONTRACTOR shall make default or delay in diligently commencing, continuing and completing the making good of such defect, breakage or failure in a manner satisfactory to the PURCHASER, the PURCHASER may proceed to do so independently and to place the Works in good operating condition in accordance with the Contract, and the CONTRACTOR shall be liable for all costs, charges and expenses incurred by the PURCHASER in connection therewith and shall pay the PURCHASER an amount equal to such costs, charges and expenses upon receipt of invoices.
- 28.4 Pursuant to Article 28.3 above, should the removal of the defect require replacement of the Equipment, the replacement shall be accomplished in minimal time, plus the shortest possible erection time for this Equipment. Subject to prior approval by the CONTRACTOR (which shall not be unreasonably withheld), the PURCHASER shall have the right to repair minor defects at the CONTRACTOR's cost.

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| 28.5 If any part(s) of the Work(s) are repaired or replaced pursuant to this Article and/or Article 29, the warranty period for the repairs or the replaced items shall begin anew for another (12) months after bringing into satisfactory operation the repaired and/or | 28.5 If any part(s) of the Work(s) are required or replaced pursuant to this Article and/or Article 29, the warranty period for the repairs or the replaced items shall begin anew for another (12) months after bringing into satisfactory operation the repaired and/or |
|---|---|

replaced part(s) of the Work(s) irrespective of any portion of the original warranty period relating to the same having expired. In relation to such other Equipment which could not be operated due to the necessity for repair or replacement of the defective part(s) of the Work(s) referred to herein, the warranty period shall be extended by a time equivalent to their periods of non-operation.

replaced part(s) of the Work(s) irrespective of any portion of the original warranty period relating to the same having expired. In relation to such other Equipment which could not be operated due to the necessity for repair or replacement of the defective part(s) of the Work(s) referred to herein, the warranty period shall be extended by a time equivalent to their periods of non-operation. But in no event shall the warranty period be extended beyond (12) months after the expiration of the original guarantee period defined in Article 28.2.

28.6 The CONTRACTOR's warranty shall not be deemed to cover:

28.6.1 Damage arising through disregard of the CONTRACTOR's written instructions after Provisional Acceptance by the PURCHASER.

28.6.2 Normal wear and tear.

28.7 The CONTRACTOR shall warrant all Civil Works for a period of (24/) years after Mechanical Completion, and in particular for the foundations for all buildings, Plant and Equipment.

28.8 In the event of any erection defect being found within the period stated in Article 28.2, the CONTRACTOR shall eliminate the defect without any cost to the PURCHASER.

28.9 In the event that any defects are found in the Equipment, erection or Civil Works within their warranty period, the PURCHASER shall immediately inform the CONTRACTOR by telegram/telex and the CONTRACTOR shall promptly respond to the communication. In emergency circumstances and where the damage is not more than (\$US 3,000) in value, and if the CONTRACTOR's personnel is not on the Site, the PURCHASER shall have the right to institute remedial measures immediately at the CONTRACTOR's cost in accordance with the Contract.

24/ The period of warranty for Civil Works is often governed by national laws and the applicable criteria shall apply on a case-by-case basis.

ARTICLE 29

Rectification of defects and modifications to the Works

- 29.1 In the event that for whatever reason due to the fault of the CONTRACTOR any rectifications or modifications are to be undertaken to the Works, the rectifications and modifications shall be performed in accordance with this Article.
- 29.2 Whenever any of the defects (other than minor defects) requiring rectifications or modifications referred to in Article 29.1 appear, the CONTRACTOR shall immediately thereafter advise the PURCHASER.
- 29.3 The CONTRACTOR shall keep the PURCHASER informed of the method he plans to use to rectify the defects. The CONTRACTOR shall employ the most efficient means to be recommended in a report indicating the method to be used and the detailed reasons for the course of action intended to be taken. The PURCHASER has the right to ask a consultant to help him review the method which is to be used by the CONTRACTOR. The PURCHASER shall communicate the results of this review to the CONTRACTOR. However, the right of final decision on what has to be done to rectify the defects and the responsibility for carrying out the rectifications and modifications shall remain with the CONTRACTOR. The provision as to warranties, guarantee requirements as elsewhere expressed in this Contract shall continue to apply with equal force.
- 29.4 The PURCHASER and the CONTRACTOR shall by mutual agreement determine whether additional tests are necessary to establish the efficacy of such repair, rectification or replacement, and in that case the CONTRACTOR shall perform tests such as agreed upon. In case the CONTRACTOR is unsuccessful in performing such tests, the CONTRACTOR shall, at his cost and option, either repair or replace again or decide in agreement with the PURCHASER on the further action needed. The CONTRACTOR shall undertake, at his cost, all agreed and necessary actions within the time limits. The CONTRACTOR shall extend the periods of validity of the bank guarantee(s) and performance bond(s) commensurate with the period of extension(s) granted by the PURCHASER. The extension and time allowed to the CONTRACTOR hereby shall not in any way absolve him of any liabilities for the period of delay.
- 29.5 If the CONTRACTOR neglects or refuses to take the necessary measures to undertake the necessary modifications or rectifications to meet his Absolute Guarantees in the agreed time, and has been given written notice by the PURCHASER and still fails to take the necessary measures within a reasonable time, the PURCHASER may take all measures he considers necessary to eliminate the defect(s) and the cost of such remedial steps taken by the PURCHASER shall be recoverable from the CONTRACTOR, in accordance with the provisions of the Contract.
- 29.6 The PURCHASER shall in every case keep accurate records of the costs of making good any defect(s) in pursuance of this Contract and the CONTRACTOR shall be entitled to receive copies of all documents he considers appropriate.

ARTICLE 30

Liabilities, set-off and waiver

30.1 The CONTRACTOR shall, as provided in the Contract, be subject to liabilities and damages for default of his contractual responsibilities.

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30.2 The CONTRACTOR shall be liable for any damage or loss to property or equipment of the PURCHASER during transportation, erection, Start-up, during Performance Guarantee Tests and for any other cause before take-over by the PURCHASER and in any event during the period thereafter until Final Acceptance where such loss or damage has occurred due to the negligence, errors, omissions or instructions attributable to or falling within the responsibility of the CONTRACTOR within the scope of work and Services in the Contract.

30.2 The CONTRACTOR shall be liable for any damage or loss to property or equipment of the PURCHASER during transportation, erection, Start-up, during Performance Guarantee Tests and for any other cause before take-over by the PURCHASER and in any event during the period thereafter until Final Acceptance where such loss or damage has occurred due to the negligence, errors, omissions or instructions attributable to or falling within the responsibility of the CONTRACTOR within the scope of work and Services in the Contract. However, this liability is limited to the sum recovered by the CONTRACTOR from his applicable insurance, the coverage and limits of which must be reasonable and agreed to by the PURCHASER before the Effective Date of the Contract.

30.3 The total liability of the CONTRACTOR, whether due to his negligence or otherwise arising out of or under the Contract, shall not exceed (___) per cent of the Contract Price, or (amount) whichever is the greater, with the exception of the CONTRACTOR's unlimited liability for the fulfilment of the Absolute Guarantees and the CONTRACTOR's liabilities for warranties and for making modifications, rectifications and completions of the Work in accordance with the Contract, as well as the reimbursement to the PURCHASER of any amount(s) received by the CONTRACTOR under insurance policies pursuant to Article 24.

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

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30.5 Without restricting any liability or obligation of the CONTRACTOR and/or right of the PURCHASER imposed, conferred or contemplated by any of the other Articles of this Contract, it is expressly agreed that, if the CONTRACTOR

30.5 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

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 he deems fit, and the CONTRACTOR shall thereupon be liable to the PURCHASER for such costs, expenses and charges thereof and shall on demand compensate the PURCHASER for such losses and damages sustained.

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 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

Text B

30.6 Unless otherwise stated in the Contract or as otherwise agreed among the parties, no bond, undertaking or payment given, supplied or offered by the CONTRACTOR to the PURCHASER 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-rights or remedies under this Contract.

30.6 Not used.

Text A

Text B

30.7 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

30.7 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.

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 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.

- 30.8 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 Materials and the 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 25/

25/ 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

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|---|--|
| 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 renegotiation of the terms including the time of re-commencement 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, 26/ the PURCHASER shall pay to the CONTRACTOR an amount equal to the greater of:

33.3.1 The cost of the Works 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 suppliers or 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.

33.3.3 The PURCHASER may at his own option take over any or all of the commitments made by the CONTRACTOR to suppliers or Subcontractors and in such case the cost of termination of such commitments shall not be included in Article 33.3.1 above.

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 the Contract) the

33.5.1 Not used. 28/

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

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 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. 27/

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>29/</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.

27/ The validity of the process licence and the submissions 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).

28/ 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 adjustments (for text B only).

29/ 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).

- | | |
|--|--|
| 33.5.2.3 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>29/</u> |
|--|--|

33.5.3 The PURCHASER shall be entitled to receive lists of all Equipment for which orders have been placed, together with all copies of purchase orders for Plant supplied and not supplied.

33.5.4 The PURCHASER shall be entitled to take delivery and receive the shipping papers for all Equipment for which whole or partial payment(s) has (have) been made by the CONTRACTOR.

33.5.5 The PURCHASER shall be provided with all the procurement documentation for purchases under Article 10, 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.

33.5.6 The PURCHASER shall be provided with all inspection reports, reports on visits to Subcontractors' factories and copies of test certificates received from Subcontractors up to the date of termination.

33.5.7 The PURCHASER shall have the right to establish direct contractual arrangements with the process licensor(s) as provided under Article 7.2.2

33.5.8 The PURCHASER shall have the right to take over the Works including all Work done to date on the Site.

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 and/or the Works:

- 33.7.1 Where the CONTRACTOR has delayed commencement of the Works for (6) months or the Mechanical Completion of the Plant has not taken place within (12) months beyond the scheduled date, 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 or mechanically complete the Works 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 the 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 their option may proceed to arbitration for recovery of damages.
- 33.9 If this Contract, the Works, or any part thereof is taken out of the CONTRACTOR's hands pursuant to Article 33.7, all Materials, Plant and interest of the CONTRACTOR in all property, licences, power and privileges acquired, used or provided by the CONTRACTOR for the purposes of this Contract shall be the property of the PURCHASER and in particular, the PURCHASER may, at his option, utilize the Equipment or sell or otherwise dispose of, at public auction or at private sale or otherwise, the whole or any portion, of such Materials, and/or Plant at such price or prices as he may consider reasonable and retain the proceeds of any such sale or disposition as well as all other amounts then or thereafter due by the PURCHASER to the CONTRACTOR, all in satisfaction or partial satisfaction of any loss or damage which the PURCHASER has sustained or may sustain by reason aforesaid.
- 33.10 Subject to Article 33.9 above, if the PURCHASER considers that any PURCHASER property-interest by virtue of the application of Article 33.9 above, is no longer required for the purposes of the Contract, and that it is not in the interests of the PURCHASER to retain such property-interest then, upon written notice to such effect from the PURCHASER to the CONTRACTOR, such property-interest shall become the property of the CONTRACTOR.

ARTICLE 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 acts of workmen (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 circumstances, 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 circumstances, 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. 30/ 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 shall 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.

30/ 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 Engineer by the CONTRACTOR, or to be sent by the Engineer to the CONTRACTOR, such notice is to 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, discount 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 (which should be 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 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 a 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 workshop 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 normal forms 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 should 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;

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.

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

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.

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
Convection coils	ASME
Tubular exchangers	ASME code, section VIII, division I and II, TEMA standards (class R)
Surface condensers 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
Pressure-relieving system	ANSI B 16.5
Electrical code of practice	ASME and API codes
Electrical systems and electrical equipment	API RP-520
Instruments	BS CP 321, 326, 1003 (for tropical usage) with class E insulation
Hazard area classification	National codes
Effluent standards	ISA standards. (These depend on supplier practices and types of instruments.)
Civil engineering and erection	Applicable standards should be agreed upon between the CONTRACTOR and the PURCHASER
	API safety codes
	See annexure XVII
	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

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. In the turnkey Contract, it should be stated that the Contractor shall have an obligation to check this data.

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:

	<u>Unit</u>	<u>Normal</u>	<u>Variations d/</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		

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

	<u>Unit</u>	<u>Normal</u>	<u>Variations d/</u>
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)			

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 shall 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 from (number) outlets.

(_____) per cent by rail in (_____)-Tonne wagons from (number) outlets

Rail/truck locations shall be indicated by the CONTRACTOR but shall be finalized after discussions with the PURCHASER and the national rail authorities.

Effluents shall be disposed of to (_____).

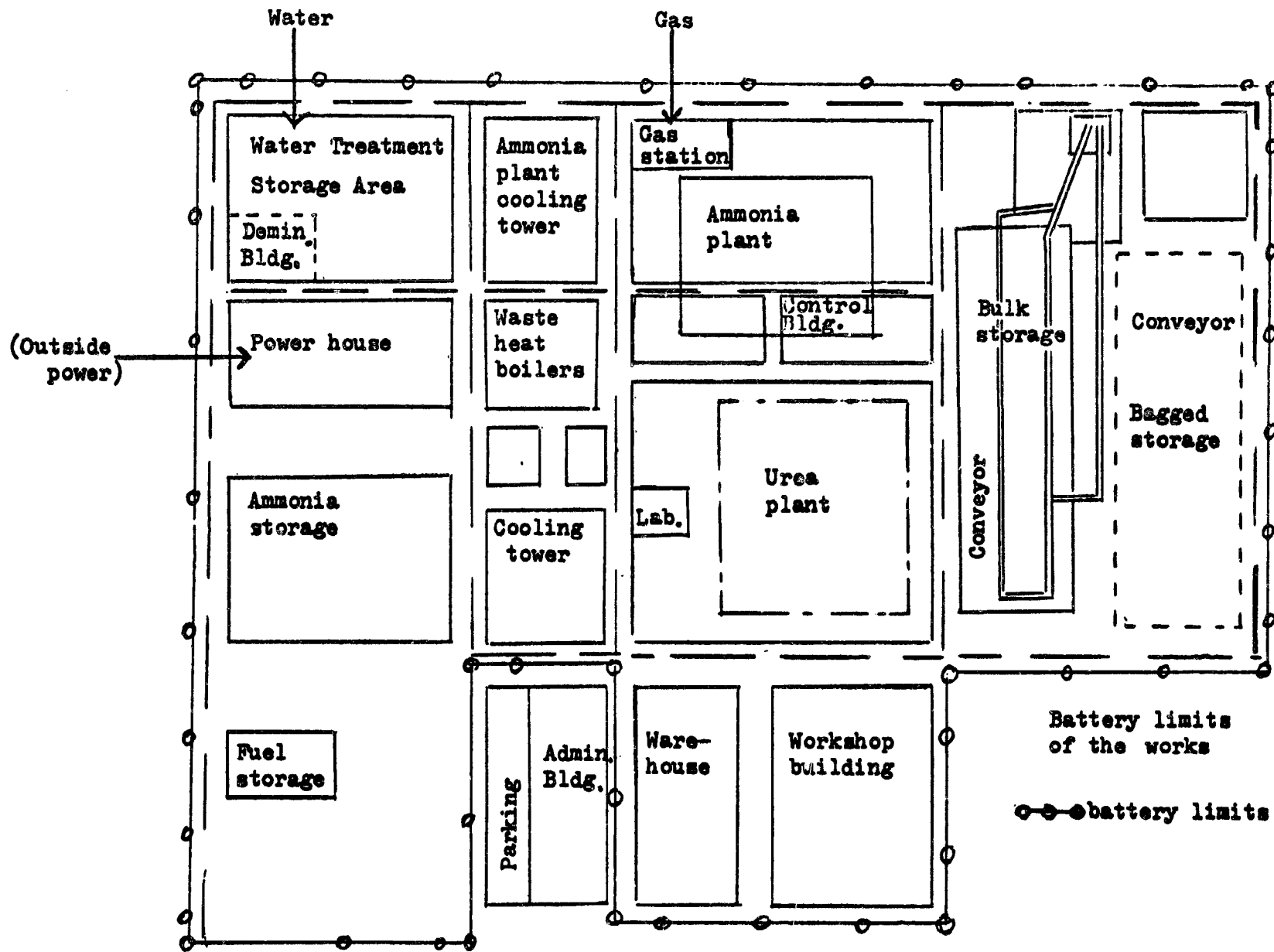
2. Scope of supply

Within the above Battery Limits, the entire Plant and structures (including the utilities and Off-Sites) specified in annexure VIII and in the Contract, other than the exclusions in annexures XIII and XIV to be provided by the PURCHASER, shall be designed, supplied and constructed 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, with the cut-off valves included in the scope of deliveries under this Contract.

3. Extension of Battery Limits

In some cases, turnkey supply may include Off-Sites 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 the Battery Limits should be extended to include such supplies, 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 entire Works (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 at 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 T 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/

Table with 3 columns: System, Pressure (kgf/cm^2), Temperature (°C). Rows include High pressure (HP) steam, Medium pressure (MP) steam ranges, and Low pressure (LP) steam ranges.

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, which 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. The pressure of the high pressure steam, however, 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 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 with location of Equipment and details of loads including anticipated loads and stresses from heavy piping supports (for information only, not for approval);
- (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. As-built documentation (this does not require the PURCHASER's approval but the PURCHASER shall have the right to check it if desired):

- (a) Complete civil engineering drawings for all buildings including foundation details, steel details, and all structural details;
- (b) Complete as-built Equipment layout;
- (c) Complete as-built piping and instrumentation drawings and piping isometrics;
- (d) Complete as-built instrument details and connections;
- (e) Complete as-built electrical layout and cable details;
- (f) Complete list of Plant and Equipment, with sizes of all technical parts, materials of construction, and for moving Equipment; names of suppliers.

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 here 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 here 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 to this annexure.)

2. Preliminary layout

- 2.1 The preliminary layout of the Plant(s), utility buildings and Off-Sites in relation to the Site 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 and for all utilities and Off-Sites as indicated in drawings no. (_____) and no. (_____).
- 3.2 The generalized layout of Equipment in each Plant, in the power station and sub-stations and all Off-Sites and utilities and auxiliary buildings shall be discussed and finalized at the meeting contemplated under Article 6.8.
- 3.3 The layout of roads, railway sidings and other civil engineering works is generally indicated on drawings nos. (_____) (attached to this annexure) and shall be finalized at the meeting contemplated under Article 6.8.
- 3.4 The piping and instrumentation proposed are indicated on the piping and instrumentation drawings (attached), nos. (_____). This is tentative only and shall be discussed further along with the Equipment layout. However, the number and type of instruments shall not be reduced in any way.
- 3.5 A one-line diagram showing the electrical design is (attached) drawing no. (_____). This shall be amplified at the meeting contemplated under Article 6.8.
- 3.6 Location and details of panel control boards for each Plant, including the relevant control diagram(s).

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 The list of Equipment to be supplied under the Contract is given below. c/ This list is not exhaustive. The Equipment to be supplied 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, as laid down in the relevant articles of the Contract.

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

- (a) Name of Equipment and Plant;
- (b) Number on flow-sheet;
- (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). An example is given below:

- (i) Urea Plant - carbamate stripper
- (ii) Number H-306 in flow-sheet for Urea Plant
- (iii) Area - 1,650 square metres
- (iv) (Not applicable in this case)
- (v) Stainless steel 25 - 22 -2.)

4.1.1 At the meeting contemplated under Article 6.8, the CONTRACTOR shall give an exhaustive list of Equipment for approval by the PURCHASER

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

b/ The necessity of an exhaustive list, if possible at the time of Contract, giving all details of each piece of Equipment being supplied must be emphasized. The detailed check of this list by the PURCHASER is extremely important in a turnkey contract.

c/ Since this is voluminous, it is often contained in a separate volume of the annexures.

- (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
- (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 a conveyor system for bulk and bagged urea;
- (f) Storage for empty bags (suggested capacity: two months' requirement) with conveyor system for moving bags to the bagging plant;

- (g) Storage for bagged urea (suggested capacity: 7,000 Tonnes) with conveyor system for moving to 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.

5. Utilities

5.1 The services that shall be designed and supplied 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.)

(Equipment for such services should also be detailed under each item in the same manner as under 4.2 above.)

6. Off-Sites

6.1 The Off-Sites facilities that shall be supplied 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

(Details of Equipment should be provided under each item, as recommended under 4.2 above.)

Note relating to items 4 to 6: Lists of Equipment given for the Plant, Off-Sites and utilities 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 clause 7.2 represent Critical Items for the process and shall be purchased from the suppliers stated under annexure XII.

7.2 Suggested Critical Items d/ in accordance with the Contract are:

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
- (h) Other steam turbines

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 Power plant

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

d/ An indicative list.

7.2.4 Instruments and laboratory equipment

(Note: Certain instruments are critical and need to be supplied from a limited number of Vendors. In some cases continuously-analysing laboratory equipment may also have to be obtained from specified suppliers. Some equipment should also be specified here.)

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>				
1. Hydrogenation of natural gas	2-5	0.85	4	
2. H ₂ S absorption	4 x 6	1.38	1/2/5	
3. Activated carbon				
<u>Reforming</u>				
4. Primary reforming	-	1.66	3	
5. Secondary reforming	-	1.0	5	
<u>Conversion</u>				
6. High tension shift	6 x 6	1.06	3	
7. Low tension shift	4 1/2 x 4 1/2	1.06	2	
<u>CO removal</u>				
8. Methanation	5-10	0.90	5	
<u>Synthesis</u>				
9. NH ₃ synthesis	3-6	2.12	5	
	1 1/2-3	2.7	5	

a/ All 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. Within (12) months of the Effective Date of the Contract, the CONTRACTOR shall submit to the PURCHASER a list of spare parts required for operation of the Plant for (2) years, along with an estimate of costs.
2. This list shall also include and identify spare parts of a proprietary nature that are to be purchased from Subcontractors along with the main Equipment. If such spare parts are to be purchased earlier than the general spare parts, the PURCHASER shall be advised accordingly.
3. For the spare parts of Critical Items, orders shall be placed along with the order for Critical Items, and such spares need not be included in the list under item 1 above.
4. Following the supply of lists for spares, the CONTRACTOR and the PURCHASER shall scrutinize such lists and shall decide on the spare parts to be procured, within the estimated costs, contained in Article 20.8 of the Contract. a/
5. The spare parts shall thereafter be purchased in accordance with Article 10 of the Contract and annexure XXVI.
6. The CONTRACTOR is required to ensure that the quantity of spare parts used by him until he completes his Performance Guarantee Tests are replaced by him at his own cost. In the event that the Performance Guarantee Tests are not completed (for whatever reason) the value of spare parts used by him until his responsibility ceases is required to be compensated to the PURCHASER by way of deductions from any payments due to him and/or his performance bonds or other securities.

a/ Recommended overall spare-part purchase 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, particularly overall charges of chemicals for the sulphur guard, carbon dioxide removal system, water treatment, anti-corrosion, anti-scaling etc.).

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

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

3. The quantities of the chemicals to be supplied by the CONTRACTOR under the Contract are as follows:

(quantities are dependent on the process. They should normally include a first filling plus one year's requirement of the chemicals, if imported, or one month's requirement if locally available).

ANNEXURE XII

List of prequalified 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

ANNEXURE XIII

Exclusions from the scope of delivery of the Contractor

1. The PURCHASER shall deliver to the CONTRACTOR the Site required for the Plant as indicated in drawing no. (____).
2. All buildings and structures outside the Battery Limits including (administrative buildings, time office etc.).
3. All utility connections (unless otherwise specified in annexure III and/or annexure VIII) outside the Battery Limits.
4. (Any other facilities that are to be supplied by the PURCHASER such as:
Telephone and telex lines to the Site
Power and water for construction purposes
First-aid facilities)

ANNEXURE XIV

Scope of delivery of Equipment and Materials by the PURCHASER

(Usually not applicable to turnkey contracts as all in Equipment and Materials are supplied by the CONTRACTOR. However, if some locally-purchased Equipment or chemicals are to be supplied by the PURCHASER, they should be detailed here.)

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. Some Critical Items (these are time-critical items and should be specified) may be delivered as in 1.3 below.
- 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 Mechanical Completion of the Plant shall be reached by the (32nd) month.
- 1.7 The Plant shall be in Initial Operation in the (33rd) month (but in any case no later than (2) months after 1.6 above) and shall be in Commercial Production by the (36th) month.

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 enable the PURCHASER to establish the source of the Equipment and spare parts. The Technical Documentation shall be in (name of language) and shall include but not be limited to the following items, which shall be supplied normally within 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). The documents marked as penaltiable documents (p) shall be supplied on or before the date indicated.

2.1.1 Process documentation

Delivery
(within months)

- (a) Process flow-sheets
 - (i) for the Plants 5
 - (ii) for the utilities 8

a/ The reason longer periods are specified for Critical Items is because of the long delivery time needed for such items as synthesis gas compressors in 1977-1978. Currently, however, deliveries are much better.

(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	18
(f)	Specification of raw materials, utilities and chemicals	4
(g)	Consumption of raw materials, utilities and chemicals	9
(h)	Peak and average requirements of utilities for use in engineering of utilities	6
(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 (p)
(k)	Preliminary list of operating personnel required and their duties	12 (p)
2.1.2	<u>Equipment and machinery documentation</u>	
(a)	Detailed 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 drawings for Equipment that requires assembling at the Site	15
(f)	List of recommended spare parts*	12 (p)

*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	<u>Piping documentation</u>	
(a)	Detailed piping and instrumentation diagrams	18 (p)
(b)	General layout of the complex*	6
(c)	Plant plot plans*	9
(d)	Terminal point drawings for the interconnection of pipes, going in and coming out of the complex*	6 (p)
(e)	Model of the process Plants and utilities	18
2.1.4	<u>Instrumentation documentation</u>	
(a)	General description of the process with regard to instrumentation*	8 (p)
(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

*See 2.4 below.

(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	<u>Electrical documentation</u>	
(a)	Electrical power balance*	6
(b)	Electrical diagrams	
(i)	Revised and final one-line diagram*	6 (p)
(ii)	General and detailed diagrams	12
(c)	Electrical layouts and cable routing	18
(d)	Electrical equipment specifications and list	15
(e)	Operation and maintenance instructions	24
(f)	Plant lighting proposals and list of Equipment	16
2.1.6	<u>Civil engineering</u>	
(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)

*See 2.4 below.

(d)	Preliminary profile drawings of the buildings with location of Equipment and details of loads including anticipated loads and stresses from heavy piping supports	6
(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
(h)	Detailed civil engineering drawings of all buildings and civil engineering Works including foundations	24
(i)	Detailed layout of roads	24
(j)	Detailed layout of railroad sidings	24
(k)	Detailed layout of all underground works including sewage, piping, cable trenches etc.	24
2.1.7	<u>General documentation</u>	
(a)	All documentation supplied by the process licensors	12 (p)
(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 (p)
(d)	Instructions for the maintenance of the Works with drawings	24 (p)

*See 2.4 below.

- (e) Final recommendations for the number and qualifications of personnel necessary to operate and maintain the Works properly 20 (p)
- (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) All other documentation required, particularly for Off-Sites and facilities, containing final lists of Equipment, including the following:

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
- (h) All as-built documentation 42

2.1.8 Procurement documentation

- (a) Detailed list of spare parts (95 per cent) 12-18 (p)
- (b) List of pre-qualified Vendors for spare parts* 8 (p)
- (c) Itemized list of remaining spare parts 24 (p)
- (d) Procurement documentation, in accordance with Article 10. 18 (p)

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

*See 2.4 below.

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 approval of the PURCHASER shall be obtained for documents marked with an asterisk (*), as mentioned in Articles 10 and 12 of the Contract.

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 ²)

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 suggested may vary from country to country; these are 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 ,
(ii) Other characteristics of the blow down	(____ ppm) urea

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 one particular process. The quality 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 in 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 4.30, 16 and 20.7 of the Contract, for the following personnel and for the time stated against each person. b/

<u>Designation 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

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.

Chemist	1	3	Laboratory and field analysis
Chief chemist	1	3	Laboratory and field analysis Research

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. Either party can request a variation, change or addition in accordance with Article 15 of the Contract. The CONTRACTOR can also propose alterations under Article 7.3 involving the use of new technology developed after the cut-off date contemplated in Article 7.

2. A proposal shall be made in writing, by the party making the request, to the authorized representative of the other party, along with all the required supporting data as required in Article 15.4 if the request is made by the CONTRACTOR, and with clear reasons for making the request if it is made by the PURCHASER.

2.1 In addition to the information required under Article 15.4, a request from the CONTRACTOR involving changes to Plant and Equipment already procured or installed, whether under Article 15 or Article 29, shall include details of any resulting changes in the anticipated life of the Plant, or any part thereof, its technical performance and/or any alterations in the contractual guarantees or warranties of the CONTRACTOR that may arise from such changes.

3. 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.

4. Within (30) Days of a request for an addition, variation or change requiring the approval of the PURCHASER in accordance with Article 15, and if such approval has not been given, both parties shall meet at the Site, or at another agreed venue, to discuss all the implications of such a request in regard to the Plant.

5. Following an agreement to make any change, whether given in a meeting contemplated under 4 above, or otherwise, or as a rectification or modification under Article 29, all agreed changes, additions, variations and modifications 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, that have been agreed to by both parties as a result of the change, variation and addition.

6. 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.

7. The extent to, and manner in which, rectifications (not requiring a change in price, 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, without formal approval of the PURCHASER, shall also be agreed at such meeting.

7.1 Where such changes require changes in drawings, the PURCHASER may require the CONTRACTOR to modify the relevant drawings at the same time as the changes are made.

ANNEXURE XX

Mechanical completion and pre-commissioning procedures

1. 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).

2. 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 Turnkey Lump-Sum 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 (3) 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

a/ Only one to be selected.

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 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 (_____) (here insert full name and address or legal title of CONTRACTOR)

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

as Surety, hereinafter called Surety, are held and firmly bound unto (_____) (here 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 (_____) (here 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
(_____)
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 Turnkey Lump-Sum 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 that 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 Turnkey Lump-Sum 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, 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 to his Subcontractors.
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 Subcontractors.
5. During inspection the CONTRACTOR shall ensure that:
 - (a) A packing list is enclosed with all closed packages;
 - (b) The packages are marked as stipulated in annexure XXV;
 - (c) 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 Article 12.

ANNEXURE XXV

Receipt and storage at the Site
and marking instructions

The CONTRACTOR shall be responsible for the proper receipt and storage of Equipment and Materials at the Site in order to protect them and to facilitate the smooth erection of the Plant.

The CONTRACTOR shall in addition to any instructions of the Engineer take the precautions given below.

1. The area for the storage of Equipment shall be:

(a) At a distance from any fuel oil storages;

(b) Near the points of erection and near railway sidings for heavy equipment;

(c) Higher in level by about (_____) centimetres than the rest of the Site or raised by earth filling;

(d) Properly consolidated and paved with (bricks) suitable for heavy trucks and mobile cranes and sloping towards arterial drains;

(e) Provided with arterial drains joining with common drains at either end;

(f) Adequate to store all Equipment (area approximately _____), machinery and Materials except large towers, reactors and boilers;

(g) Well connected by internal roads to different points where Equipment is to be installed;

(h) Cordoned off with boundary walls/barbed wire;

(i) Properly lit.

2. Storage instructions:

(a) Equipment packages are to be stored in warehouses or in yards, so that a package can be reached from one side by a lifting device (crane, trolleys, fork lifters etc.) and access is provided on two other sides for fire-fighting purposes;

(b) Packages are to be placed on bricks allowing the free flow of water or approach of lifting tackle underneath them;

(c) Packages are to be stored in rows, depending on the erection plan which the CONTRACTOR shall provide;

(d) All heavy/large packages may be stored outdoors but, where required, protected;

(e) All very large/heavy equipment (viz. boilers/reactors etc.) shall be properly unloaded and stored as close to the place of their erection as possible;

(f) A package shall be so stored that all marking instructions on it are visible;

(g) Lighter packages should not be stored under heavy packages;

(h) Packages containing instruments, control valves as well as small packages shall be stored in properly-covered stores, air-conditioned where necessary;

(i) Large packages, liable to be affected by rain or dust, shall be covered with tarpaulin;

(j) All packages shall contain a packing list containing details of the contents of the packages, clearly specifying the Equipment along with the identifying number of the Equipment, as given in annexure VIII, or as otherwise agreed between the PURCHASER and the CONTRACTOR.

3. Marking instructions:

(a) The packages shall carry markings (in (____) and (____) languages) as follows:

(i) On top and three sides, an arrow indicating top of Equipment;

(ii) Name of the PURCHASER and country, and the PURCHASER's mark (as given by the PURCHASER);

(iii) Package number, part number and number of pieces. The markings should be in indelible ink or paint and easily readable;

(iv) Storage instructions, where required;

(b) Fragile packages should be clearly marked;

(c) Packages for the same Plant should have one common number followed by an equipment number (in series);

(d) All other marking instructions as given by the PURCHASER from time to time. a/

a/ Some countries require special markings such as import licence numbers.

ANNEXURE XXVI

Procurement procedures

1. Procurement procedures for spare parts have been outlined in Article 10 of the Contract, and shall be followed. In addition, details of the mode of procurement are given in this annexure.
2. The CONTRACTOR shall issue pre-qualifying notices a/ for all groups of spare parts (other than spare parts for proprietary 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 on the newspapers in which such notices are to appear at the first design meeting after the Effective Date of Contract.
3. The CONTRACTOR shall send to the PURCHASER a list of companies pre-qualified by him for purchase of different types of spare parts, 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 type of spare part, 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. b/ Any clarification requested from the bidders shall be undertaken in writing or in the presence of the representatives of the PURCHASER. Where 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 Vendor. Should this Vendor not be the lowest bidder, full details shall be supplied on the reasons for rejecting of the lowest bidder. The actual selection of the Vendor 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/ These may not be required for spare parts, but some Governments and agencies require pre-qualification.

b/ The procedure may also need to comply with that of a financing agency.

9. The PURCHASER shall thereafter open letters of credit or, in the case of reimbursable procedures (such as those of some financing agencies), b/ 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 use at the Site. The PURCHASER shall ensure that payment is made in accordance with the purchase orders.

11. Purchase of spare parts for proprietary items of Equipment for which quotations shall be obtained by the CONTRACTOR at the time of purchase by him of the Equipment shall be in accordance with a separate protocol between the PURCHASER and the CONTRACTOR (but in all cases where procedures of the financing agency are required, these shall be followed). b/

12. In addition to spare parts, other equipment (e.g. a simulator for training purposes) may also be purchased by the CONTRACTOR for and on behalf of the PURCHASER, if agreed by the PURCHASER and the CONTRACTOR. In such cases also, the provisions of Article 10 and this annexure shall apply unless other procurement methods are agreed upon between the CONTRACTOR and the PURCHASER.

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 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 where 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 whom the PURCHASER is requested in writing to pay, shall be as follows:

For each Day of absence from the home office:

<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.

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	(100 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 for overtime.

4. Personnel to be deputed by the CONTRACTOR

4.1 The PURCHASER may at any time before the Final Acceptance of the Plant require the services of any of the Engineers/specialists of the CONTRACTOR who have been in (PURCHASER's country) and request them to return to (PURCHASER's country) for periods to be mutually agreed upon.

5. Terms and conditions of personnel services

5.1 If any of the CONTRACTOR's personnel is guilty of misconduct, the PURCHASER shall have the right, after giving reasons thereof to the CONTRACTOR in writing, to send him back to his home country, and ask for and obtain an adequate replacement at the CONTRACTOR's expense.

5.2 In consideration of the services to be rendered by the CONTRACTOR's personnel under this annexure, the PURCHASER shall provide, in addition to what is specified under clauses 1, 2 and 3 above, the following allowances, services and facilities to the CONTRACTOR's personnel engaged in work at the Site.

5.2.1 Local allowances

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.

5.2.2 Travelling

5.2.2.1 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.

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

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

- 5.2.3 The PURCHASER shall also provide free of charge (or give an allowance in lieu thereof) to the CONTRACTOR's expatriate personnel the following:
- 5.2.3.1 Furnished residential accomodation, adequate for a single expatriate, as well as water, electricity and gas for domestic use.
 - 5.2.3.2 Furnished office accomodation, as well as secretarial assistance and facilities for official communications including telephone and telex services.
 - 5.2.3.3 Medical assistance and other facilities to the extent available at the PURCHASER's own or nominated medical centre(s).
- 5.2.4 Holidays and leave
- 5.2.4.1 For every completed month of his stay in (PURCHASER's country), the CONTRACTOR's expatriate personnel shall be entitled to a paid holiday of (1) Day.
 - 5.2.4.2 The expatriate shall avail himself of his holiday 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 (18) months continuously in which case, at his option, he can avail himself of his holiday leave.

ANNEXURE XXVIII

Civil engineering specifications

1. List of civil engineering Works

A complete list of all buildings with their names (e.g. urea storage) as well as of all other civil engineering Works including:

Roads
Railway sidings
Drainage work
Underground sewerage
Underground pipe and cable trenches
Foundations for machinery at ground level
Any other Civil Works

shall be given so that they can be identified later.

2. General specifications

2.1 Each building should be detailed as follows;

- (a) Dimensions of the buildings;
- (b) Location of floors, interfloors etc.;
- (c) Details of the type of:
 - (i) Foundations
 - (ii) Frame structure
 - (iii) Walls
 - (iv) Roof
 - (v) Doors and windows
 - (vi) Flooring of each floor
 - (vii) Other structural and architectural details
(e.g. spans etc.)
 - (viii) Protective coatings (type and where applied)
- (d) If possible, line drawings of each building should be provided.

2.2 Each road should be detailed including:

- (a) Level and slope
- (b) Type of earthwork
- (c) Width of road
- (d) Type of soiling etc.
- (e) Specifications of the road (tarred, concrete etc.).
A drawing should be provided for all road layouts.

2.3 Railway sidings

(These should follow national patterns.) A drawing should be provided for all railway sidings.

2.4 Site drainage work

(a) A line drawing of drainage work

(b) Type of drainage works (e.g. brick drains etc.)

(Details can be discussed at the (4)-month design meeting.)

2.5 Underground works

(these can be discussed at the (4)-month design meeting.)

2.6 Foundations for machinery

(these should be given in as much detail as possible so that if load-bearing conditions are later found to be different, adjustments can be made).

3. Design codes, materials specifications, individual specifications of civil engineering

(these should be detailed, preferably in a separate volume of specifications, a/ and should follow national specifications for each type, for example:

Structural steel

Reinforced concrete

Brick walls

Concrete flooring (exhibit I attached provides illustrative details)

Terrazzo flooring).

a/ Such a volume may extend to 60 pages.

Exhibit I. Example of civil engineering specifications

1. Cement concrete floors

1.1 Scope

This section of work includes flooring and paving at the places shown on the drawings, and consists of furnishing all plant, labour, equipment, appliances, materials and the performance of all operations required in connection with the laying of cement concrete floors.

1.2 Standard

Flooring work shall conform to British Standard (BS) Code of Practice 204, as applicable to the work shown on the drawings, and specified.

1.3 Material

Cement, sand, aggregate and water shall be in conformity with the specifications laid down under the section "Concrete work". Bricks and tiles, where needed, shall be as specified under "Brickwork".

1.4 Samples

All the material used shall be approved by the Engineer and the same type of material shall be used throughout the work. If the Engineer desires to get the material tested, this shall be done by the CONTRACTOR at his own expense from a laboratory approved by the Engineer.

1.5 Workmanship

The method of mixing and laying of cement concrete floors shall be as specified for cement concrete under "Concrete work". The cement concrete shall be laid as per BS Code of Practice 204 and specified in the section "Concrete work". Unless otherwise specified, the cement concrete used for topping shall have a minimum crushing strength of 210 kg/sq cm. Before laying the concrete, the base surface shall be cleaned and wetted so that it is well bonded. The concrete after laying shall be finished by tamping the concrete with straight edges to bring the surface to the required smooth, even, impervious finish level with no coarse aggregate visible and free from trowel or other such marks. While the concrete is still green it shall be roughened where topping is to be laid directly on the concrete. When the concrete is sufficiently hardened to bear a man's weight without deep imprint, it shall be wood floated to a true, even plane with no coarse aggregate visible. Just so much pressure shall be used on the wood floats as to bring moisture to the surface. After the surface moisture has disappeared, the surface shall be steel trowelled to a smooth, even, impervious finish free from trowel marks. After the cement has set enough to ring the trowel, the surface shall be given a second steel trowelling to produce a furnished finish. The use of additional mortar or neat cement for giving a smooth finish is definitely prohibited. The surface over which topping is to be laid shall be divided into square or rectangular panels not exceeding 1.5 square metres and the exact size shall be decided by the Engineer. The symmetrical panels shall be formed by placing glass screeds of 5 millimetres thickness and of a depth equal to the thickness of the

floor concrete and mosaic or terrazzo to be laid where specified in drawings or directed by the Engineer. The top of these glass screeds shall be laid at the exact and true level of the finished floor. Alternate panels shall be laid on alternate Days. The surface shall be tested with a straight edge and a 10-inch spirit-level to detect high and low spots, which shall be eliminated.

Concrete shall be left undisturbed for 24 hours after laying. During laying and 14 Days thereafter the concrete shall be kept wet and protected from weather and extreme temperatures. In no case shall hammering be allowed on a finished surface.

Where expansion joints or construction joints are shown on drawings or specified by the Engineer, these shall be 15 millimetres thick, filled in with approved bitumastic filler, as directed by the Engineer, unless otherwise provided in the drawings.

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.

These specifications are often detailed in a separate volume. An example is provided as exhibit II, which is attached.

Exhibit II. Sample of erection specifications

2. Structural steel work

2.1 Scope of work

This section of work covers the erection of the "Structural steel work" of the project including the fabrication of certain items or part of the items where required, assembly of the parts of the structure already fabricated, putting and fastening in position by welding and bolting as required, in accordance with the drawings and instructions of the Engineer.

The work in this section consists of the following tasks:

(a) Assembly and erection of steel components that are already fabricated;

(b) Fabrication, assembly and fixture in position of steel structures manufactured from mill-size steel sections;

(c) Fabrication, assembly and erection of Embedded Pieces from mill-size steel sections and pipes;

(d) Manufacturing lugs from mild steel bars supplied by the CONTRACTOR and subsequently welded to the Embedded Pieces;

(e) Steel components to be held in concrete where openings are placed, and at other places where some fixtures have to be anchored, are defined as Embedded Pieces.

2.2 Material

The material to be supplied by the CONTRACTOR shall conform to the following:

<u>Material</u>	<u>Standard</u>
Structural steel	BS 4 ASTM A-7 ASTM A-373 BS 449 BS 2008
Steel plates	ASTM A-245
Galvanized steel	ASTM A-123 to A-153 A-385 A-475
Welding electrodes	ASTM A-223 BS 1856, 639
Rivets and bolts	ASTM A-320 BS 910, BS 3139, BS 3294
Mild steel bar	PS 231 (1962)

The CONTRACTOR shall prepare and obtain the approval of the Engineer for detailed shop drawings for all items of manufacture, fabrication and assembly required for the proper and satisfactory completion of the work before its commencement.

2.3 Fabrication

All material before assembly shall be straightened unless a curved form is required.

Cutting may be effected by shearing, cropping or sawing, and gas cutting when permitted by the Engineer, but loads shall not be transmitted through a gas-cut surface. Sheared edges shall be dressed to a neat and workmanlike finish and free of distortion.

Holes through more than one thickness of material shall be drilled after the members have been assembled and tightly clamped or bolted together. Punch holes when permitted by the Engineer shall be 3 millimetres (1/8 inch) less than the required size and reamed to full diameter. Punching shall not be allowed in material thicker than 15 millimetres (5/8 inch). Burrs shall be removed after drilling.

All matching holes for black bolts shall be only 2 millimetres more than the required size of a black bolt, which shall pass freely through the assembled members in a direction at right angles to such members.

Holes for turned bolts shall be drilled with a clearance of not more than 0.25 millimetres. If required, the holes, after assembly of the parts, shall be reamed throughout the thickness of all the parts and squared to the axis of the member. Holes for bolts shall not be formed by a burning process.

The threaded portion of each bolt shall project through the nut at least two threads. In all cases where the full bearing area of the bolt is to be developed, the bolt shall be provided with a washer of sufficient thickness under the nut so as to avoid any threaded portion of the bolt being within the thickness of the parts bolted together.

Fabrication for building shall be according to BS 449. The CONTRACTOR shall supply all nuts and bolts for the efficient erection of the structure. Washers shall be provided at slotted holes and at other places where required and shall be of the type to give the heads and nuts of bolts a satisfactory bearing.

2.4 Welding

Welding plant (including instruments and cables), as specified in ASTM A-371 or equivalent British Standard, shall be used. All electrodes conforming to ASTM A-371 shall be arranged by the CONTRACTOR for welding of special alloy steel if any. The welding procedure shall be as directed by the Engineer according to BS or ASTM standards. The capacity of the welding plant shall be available either as a part of the same or by the provision of a portable ammeter.

Electrodes shall be stored in a reasonably dry place probably protected from weather effects. If they become affected by dampness but are not damaged, the electrodes may be used only after being dried out as directed by the Engineer. Any electrode that has the area of flux-covering broken away or damaged, shall not be used. The welding procedure shall be such as to ensure the full and satisfactory deposition of weld metal throughout the length and thickness of all joints so that there are almost nil distortion and shrinkage stresses.

The fusion faces shall be prepared by shearing, chipping, machining, gas cutting or flame gouging. These faces shall be free from irregularities that would interfere with the deposition of the specified size of weld or be the cause of defects. Fusion faces and surrounding surfaces shall be free from heavy slag and reasonably free from oil, paint or any substance that might affect the quality of the weld. Where hand gas cutting or hand flame gouging is allowed by the Engineer, the cutting blowpipe or gouging blowpipe shall be adequately guided. The parts to be welded shall be maintained in their current relative positions during welding.

Welding shall not be commenced on fusion faces having temperatures less than 0 °C for parts thinner than 40 millimetres and 10 °C for parts thicker than 40 millimetres. In such cases, preheating shall be applied to meet the requirements.

For fillet welding, the parts shall be brought into close contact so that the gap due to faulty workmanship or incorrect fit-up shall not exceed 2 millimetres. If greater separation occurs locally, the size of fillet weld shall be increased at such local positions by the amount of gap. The minimum leg length of a fillet weld as deposited shall not be less than the specified size. The throat thickness as deposited shall not be less than that specified or indicated by the Engineer. In no case shall a concave weld be deposited.

In the case of butt welds, the joint shall be welded by the use of extension pieces so as to provide the full throat thickness. Weld faces, where out of line with the surface, shall be dressed off.

The weld metal as deposited shall be free from cracks, slag inclusions, gross porosity, cavities and other deposits in faults and in the case of such defects or overlapping of the weld over the parent metal or defective fusion, the welds shall have to be cut or gouged and replaced by new welds to the satisfaction of the Engineer.

As and when desired by the Engineer, the welded connections shall have to be tested by the CONTRACTOR at his own cost by any one of the approved methods acceptable to the Engineer. The positioning of the welded structure shall be carried out after such testing.

2.5 Shop painting

Steel structures fabricated by the CONTRACTOR in his workshop at the Site shall be painted or oiled before sending to the site of work for positioning, unless otherwise directed by the Engineer.

Welds and adjacent parent metal shall be painted or oiled after the same are dry, clean, free from scale and rust and approved by the

Engineer. Parts to be encased in concrete shall not be painted or oiled. All paints shall be of the best quality available and approved by the Engineer before their procurement. Preparation of surfaces, paints and their application shall conform to the section "Painting".

The steel surfaces to be welded shall not be painted or metal coated if the paint specified or the metal coating would be harmful to welders or impair the quality of the welds.

Plant and equipment, storing, handling, setting out and security during erection shall be made to the satisfaction and directions of the Engineer. When the steel delivered and used at work is unpainted, it shall be painted at the Site. All bolt heads and site welds after de-slaging shall be cleaned and bare surfaces made good before application of the paint at the Site.

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 (<u> </u>)	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

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.

shall be directly proportional to the lower heating value of the gas.

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 5.8.1 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 Performance Guarantees for the consumption of raw materials and utilities shall be demonstrated in the 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 Performance 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 5.8. 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 two 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 direction 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 Performance 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 figures in brackets are to be removed if Article 27.3 is not used.

- 4.1 During the operations 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 Performance 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 Performance 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

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 ± 5 per cent.

be agreed for the following:

- 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 his 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 Guarantee Tests 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 figures 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.