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**GUIDELINES
CONTAINING ILLUSTRATIVE ARTICLES OF
A LICENSING
AND ENGINEERING SERVICES AGREEMENT
FOR THE CONSTRUCTION OF A FERTILIZER PLANT,
INCLUDING TECHNICAL ANNEXURES**

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

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Abbreviations

ASTM	American Society for Testing and Materials
IATA	International Air Transport Association
NPK	nitrogen, phosphorus, potassium
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, recommended that UNIDO should include among its activities a system of continuing consultations between developed and developing countries with the object of raising the developing countries' share in world industrial output through increased international co-operation.*

The General Assembly, in its resolution 3362 (S-VII) of 16 September 1975, decided that the System of Consultations called for by the Lima Declaration and Plan of Action on Industrial Development and Co-operation should be established at the global, regional, interregional and sectoral levels** and that UNIDO, at the request of the countries concerned, should provide a forum for the negotiation of agreements in the field of industry between developed and developing countries and among developing countries themselves.

The First Consultation on the Fertilizer Industry was convened at Vienna from 17 to 21 January 1977, and recommended that UNIDO should examine contract procedures intended to ensure the successful construction and operation of fertilizer plants.***

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 model forms of turnkey lump-sum and cost-reimbursable 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 contract.

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 experts should be selected by UNIDO from developed and developing countries, with due regard to an equitable

*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.

geographical distribution. The group of experts should finalize both model forms of contract; in cases of disagreement on specific clauses, the various alternatives should be presented and given equal weight.*

The experts met at Vienna twice, from 23 February to 6 March 1981 and from 4 to 6 May 1981, and finally completed the texts of both model forms of contract.

In pursuance of the recommendations of the Second Consultation, second drafts of the UNIDO model form of semi-turnkey contract and of a licensing and engineering services agreement for the construction of a fertilizer plant were prepared. The model form of semi-turnkey contract was drafted taking into account the negotiated positions of the parties reflected in the model forms of turnkey lump-sum and cost-reimbursable contract. The licensing agreement was prepared considering the negotiated positions reflected in a similar model agreement on the petrochemical industry.

*See Report of the Third Consultation on the Fertilizer Industry, Sao Paulo, Brazil, 29 September-2 October 1980 (ID/260), paras. 2 and 16-22.

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INTRODUCTION

An expert group meeting convened at Bangkok 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 Meeting on the Fertilizer Industry, held in January 1977, agreed that the work done by UNIDO on model contracts would be of interest to many countries, particularly those in the early stages of development. The meeting 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 that country's experience and needs in a 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 for meeting 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 the purchaser and the contractor in entering into a contract, it was necessary that certain fundamental technical, legal and contractual safeguards should be maintained for their mutual protection. The participants therefore proposed that UNIDO should develop model forms of contract.

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

As a first step towards the development of model forms of contract, the participants identified several areas for particular coverage in 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 principle clauses of the model forms of contract, together with a description of recommended additional arrangements, both within and outside the contract, to cover training of local personnel required by inexperienced plant operators.

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

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

The five model forms of contract were originally 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 purchasers and contractors.

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

UNIDO invited written comments on the model forms of turnkey lump-sum and cost-reimbursable contract, and revised drafts of both 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 model forms of contract article by article, it would be appropriate to consider the main principles on which the model forms of contract were based.

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

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

Revised drafts of both model forms of contract were prepared taking into account the comments made by the participants. As recommended, the order of the articles was changed to correspond to the plan of implementing the work and some articles were combined, thereby reducing the number of articles 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 prepared by UNIDO, namely the third draft of the model form of cost-reimbursable contract (ID/WG.318/3 and Add.1) and the second draft of the 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 meeting. 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 a specific contract, however the model forms of contract were useful documents for the developing countries because of their comprehensiveness.

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

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

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

(a) An international group of experts should be convened by UNIDO to complete the examination of the UNIDO model forms of turnkey lump-sum and 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 was convened in Vienna from 23 February to 6 March 1981 to finalize, on behalf of the Third Consultation, the UNIDO model forms of turnkey lump-sum and cost-reimbursable contract for the construction of a fertilizer plant. Extensive and constructive discussions between participating purchasers and contractors facilitated the finalization of both the cost-reimbursable contract, and the pending articles of the turnkey lump-sum contract not discussed at the Third Consultation, with fewer areas of genuine disagreement.

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

The additional expert group meeting 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 higher built-in safety and reliability in fertilizer plants which warrant a commensurate liability and financial compensation. The areas of disagreement are presented as alternative articles, reflecting two schools of thought. The figures without brackets are indicative, whereas those in brackets are negotiable. The model forms of contract, as finalized, are considered to reflect a fair and realistic balance between the interests of both parties, and are expected to become practical and useful instruments to purchasers and contractors alike.

The annexures to the model forms of turnkey lump-sum and cost-reimbursable contract were brought into line with their respective texts by UNIDO, taking into account also the needs of field personnel in charge of implementing the contracts. The guidelines for each model form of contract were prepared in co-operation with the international group of experts and, later, a small group of them discussed and finalized both sets of guidelines.

The second draft of the UNIDO model form of semi-turnkey contract for the construction of a fertilizer plant was prepared taking into account the negotiated positions reflected in the turnkey lump-sum and cost-reimbursable model forms of contract. The obligations, liabilities and compensations of the parties in the semi-turnkey model form of contract lie in between and largely follow the terms of the other two model forms of contract.

In preparing the fourth and last model form of contract, the supply of know-how and engineering services, the discussions at the Second Consultation on the Petrochemical Industry, held in June 1981, were taken into consideration, which recommended the use of the term "licensing agreement" instead of "licensing contract", in order to conform with current practice. ^{3/} This recommendation was also adopted for the fertilizer industry.

In general, licensing agreements are much simpler documents than engineering contracts. So far, UNIDO has only fully discussed engineering contracts for the fertilizer industry whilst a licensing agreement has already been negotiated for the petrochemical industry (UNIDO/PC.50/Rev.1). Therefore, the second draft of the UNIDO model form of licensing and engineering services agreement for the construction of a fertilizer plant was prepared taking into account the negotiated positions reflected in a similar licensing agreement that was prepared for the petrochemical industry.

The annexures to and guidelines for the model forms of semi-turnkey contract and licensing and engineering services agreement have been brought into line with their respective texts by UNIDO. The guidelines have been complemented by explanations on selecting a suitable model form of contract according to the specific conditions of individual developing countries.

The draft UNIDO model form of licensing and engineering services agreement was submitted to the Fourth Consultation on the Fertilizer Industry, which was held at New Delhi from 23 to 27 January 1984. In accordance with a recommendation of that Consultation meeting, the draft document was finalized by a group of experts in July 1984. The present version was edited by the UNIDO secretariat and reflects, as far as possible, the views of the experts.

^{3/} See Report of the Second Consultation on the Petrochemical Industry, Istanbul, Turkey, 22-26 June 1981 (ID/273), para. 49.

I. GENERAL GUIDELINES FOR A LICENSING AND ENGINEERING SERVICES AGREEMENT

The aim of the guidelines is to inform licensees, particularly those in developing countries, of the conditions and obligations under which they shall be bound in choosing a licensing and engineering services agreement, and the safeguards and guarantees that should be sought accordingly in the actual negotiation of an agreement. The illustrative articles should not be seen as a model form of contract; both guidelines and illustrative articles are meant to provide a basis from which a fair balance between mutual obligations, liabilities and financial compensation could be achieved by both the parties according to the particular requirements of most developing countries and the type of process licensed.

The guidelines are presented in two parts:

(a) General guidelines, which give the main features and obligations of the parties under a licensing and engineering services agreement;

(b) Guidelines for specific illustrative articles, which explain both the essential aspects of each article and the reasoning behind key clauses in the more important articles.

Unlike other industries, such as petrochemicals where the know-how has been developed predominantly by the manufacturing companies, or the paper and sugar industries where the know-how has been developed generally by equipment manufacturing companies, in the fertilizer industry the know-how has been developed mainly by the manufacturing companies and engineering contractors, often working together. In general, the know-how packages for constructing fertilizer plants are available from, or through, engineering contractors.

Certain countries may have special problems and since the fertilizer industry is generally based on petroleum products or natural gas (for nitrogenous fertilizers) and on phosphate rock (for phosphatic fertilizers), quality differences in the raw materials require tailor-made plants.

Licensing agreements in the fertilizer industry are the exception rather than the normal procedure for contracting for the construction of a fertilizer plant in a developing country.

Licensing agreements require that the licensee, starting from the process know-how package, undertakes to carry out himself, if he has the necessary capability, or through an experienced contractor or contractors, the detailed engineering, procurement, erection and start-up of the plant, which should meet its contractual performance guarantees. Considering the heavy responsibilities that licensing agreements place upon the licensee, these agreements should only be entered into by experienced companies in developing countries that have substantial engineering and equipment manufacturing capabilities, and using the services of an experienced contractor for the management of the project.

It should be noted that the experience of the licensee's project management team, including outside expertise, and the qualifications and capability of the selected licensor and the contractor are the essential components for the successful implementation of the project; there is no substitute for them.

The advantages of the licensing agreement are that it enables the licensee to select the most suitable process and the most suitable contractor independently. A more detailed cost evaluation can be made, which could influence the total project cost, and the licensee's personnel can obtain an in-depth knowledge of the process and the equipment for the plant.

In a licensing agreement, the licensor's fees represent a relatively small part of the total project cost; hence his liabilities are always more limited than that of a contractor. By contrast, the contractor's share in the implementation of a project under a cost-reimbursable contract is greater but remains a relatively low percentage of the total project cost, whilst under a semi-turnkey contract it is much higher and under a turnkey contract it becomes a substantial part of the project costs. Therefore, in a licensing agreement, the risk of the licensee (or purchaser) is far greater than under any of the other three contracts for which UNIDO model forms of contract have been prepared separately. ^{4/}

The disadvantages of a licensing and engineering services agreement stem from the fact that the licensor and the contractor each have independent responsibilities towards the licensee or purchaser. Therefore, because of the deep involvement and co-ordination responsibilities of the licensee, the experience, knowledge and skill of his own personnel is of the utmost importance. These disadvantages could be offset, but at a higher cost, by the appointment of an experienced independent consulting organization to advise the licensee and to act as overall co-ordinator on his behalf. Nevertheless, a licensing agreement places a higher burden in terms of cost and personnel on the licensor, who must provide all the explanations and clarifications that the licensee or the contractor may need.

Although there are many different types of licensing agreement dealing mainly with the outright purchase of the licence, the present guidelines and comprehensive illustrative articles have been drawn up for purchasing access to technology for a large fertilizer plant under the conditions prevailing in most developing countries. In simpler cases, the licensee may require a simplified agreement that provides fewer guarantees and engineering services.

The extent of the guarantees and the engineering services that need to be built into a licensing agreement would depend largely on the contractor's experience of the licensor's process and the nature of the licensee's contract with the contractor.

The UNIDO guidelines and illustrative articles for a licensing and engineering services agreement for the construction of a fertilizer plant cover the grant of the right to use the licensor's patents and know-how and the provision of the process engineering design package and related engineering services. It has been assumed that the detailed engineering and construction of the plant either will be done by the licensee himself or will be the subject of a separate contract with a contractor. In order to obtain a properly

^{4/} See "UNIDO model form of turnkey lump-sum contract for the construction of a fertilizer plant including guidelines and technical annexures" (UNIDO/PC.25/Rev.2); "UNIDO model form of cost-reimbursable contract for the construction of a fertilizer plant including guidelines and technical annexures" (UNIDO/PC.26/Rev.2); "UNIDO model form of semi-turnkey contract for the construction of a fertilizer plant including guidelines and technical annexures" (UNIDO/PC.74/Rev.1).

working plant, the agreement requests the licensor to review the critical parts of the detailed engineering and to advise on the procurement, erection and start-up of the plant so as to demonstrate the performance guarantees of his process as built into the plant.

The main conditions of a licensing agreement are the following:

(a) That the process has been commercially proven;

(b) That the licensor has a patent or patents and/or proprietary know-how on the process that can be licensed in the licensee's country;

(c) That the licensee obtains a non-exclusive, non-transferable licence for fertilizer production for a specific plant. Normally there are no restrictions placed by the licensor on the sales of the product (fertilizers) in third countries;

(d) That the licensee shall appoint a contractor, who is independent of the licensor, to undertake the detailed engineering and construction of the plant. The appointment of the contractor will require the concurrence of the licensor;

(e) That the licensor shall provide the process know-how in the form of a process engineering design package, and shall assist the licensee, through review or participation, from detailed engineering and erection to commission and operation of the plant, the scope of which is defined in the illustrative articles;

(f) That the payment to the licensor shall be in the form of a lump-sum fee together with payments for the assignment of the licensor's personnel according to the engineering services to be provided;

(g) That additional services of the licensor for expanding capacity, adapting the process technology and operating the plant shall be agreed upon under separate contract(s) or licence(s) and for additional fees. Where a licensee intends to build other plants that are identical to the plant licensed, he could negotiate licence fees for the subsequent plants on the basis of a sliding scale as part of the original licensing agreement;

(h) That the licensor shall provide a comprehensive training programme for an agreed number of the licensee's personnel to enable the plant to be properly operated and maintained;

(i) That the licensor and the licensee accept a continuing obligation for an agreed period of time to exchange information on improvements in the process. It is recommended that licensees should not buy rights for extended periods unnecessarily, as the cost of the licence will be higher.

The guidelines and illustrative articles lay great emphasis on the timely completion of the plant, in demonstrating its ability to perform by meeting the contractual performance guarantees and on the correction of defects if the plant fails to meet its first guarantee test.

The licensee should first select the most suitable process for manufacturing the product according to his conditions, because the selection of the right technology is almost always more important than the terms on which the licence is obtained. In normal practice, the licensee invites offers from a number of potential licensors, which are then evaluated from a technical and

economic viewpoint. It should be noted that the prospective licensor offering the best guarantees or the lowest price does not necessarily offer the most suitable technology. Once the process has been chosen from the offers received, negotiations with the selected licensor can begin in order to arrive at the most equitable terms and conditions. The present illustrative articles are intended to serve as a model for safeguarding the legitimate interests of both parties.

The actual drafting of a licensing agreement usually starts only after all the major points relating to the process have been satisfactorily clarified. Usually, the first draft of the agreement that the licensor presents is based on the terms and conditions that he has granted earlier to other licensees. If the licensee has considerable experience, he may present his own proposals, and/or counter-proposals to those of the licensor, that he wishes to include in the final licensing agreement. However, as only a few developing countries have such experience in the fertilizer industry, UNIDO has prepared the present illustrative articles.

These illustrative articles attempt to reconcile the often conflicting viewpoints of both parties in a balanced manner. In articles where reconciliation or compromise could not be achieved so far, two equally valid alternative illustrative texts have been presented for negotiation.

The technical annexures to a licensing agreement should be specific to the process licensed and the product to be manufactured in the plant. Hence, the present document outlines only the contents of those annexures except for annexures II, III and XI, which have been prepared for the production of ammonia using natural gas as a feedstock.

This form of licensing agreement is based upon cash payment conditions. Should it be necessary to finance the agreement under credit arrangements, the conditions could be changed to reflect the requirements of those arrangements.

The guidelines and illustrative articles for a licensing and engineering services agreement for the fertilizer industry depart from the text of other model forms of contract for the fertilizer industry. The main reason is that when the purchaser (called the licensee in the agreement) buys only a licence and a limited amount of engineering services, he normally hires a contractor to undertake most of the engineering services. Thus in effect there are two contracts: a licensing agreement with the licensor and an engineering contract with a contractor. When taken together, the two contracts are closer to one or other of the UNIDO model forms of contract for the fertilizer industry. Thus the licensing agreement by itself is a relatively small part of the contractual services required and hence it follows a simpler format.

It is clear that both contracts must be carefully dovetailed and it is generally in the interest of the licensee to select a contractor who has already engineered a successful working plant using the licensor's know-how.

II. GUIDELINES FOR SPECIFIC ILLUSTRATIVE ARTICLES OF A LICENSING AND ENGINEERING SERVICES AGREEMENT

Article 1. Definitions

Definitions of the terms used in an Agreement are usual and generally useful as the meaning of the defined terms becomes clear and unambiguous and detailed technical concepts, such as "the Process", do not have to be discussed each time the concept is used. Wherever the defined terms are subsequently used throughout the illustrative Articles, the initial letter of each substantive word is capitalized to indicate that the term has been defined in Article 1. As the definitions mentioned in this Article are examples, the parties to the Agreement could add additional definitions if necessary or if substantial changes were made to the Agreement during negotiations.

With regard to some of the definitions specified in Article 1, the following comments should be made.

- 1.1 It is normal practice in the field of licensing to use the word "Agreement" and not "Contract", which is used for the construction of a Plant and is the word used in the other three UNIDO model forms of contract for the construction of a fertilizer plant.
- 1.6 Less experienced LICENSEES may not be able to provide by themselves all the information required in the Basic Design Data; for this purpose, they may obtain assistance either from the LICENSOR or Contractor or from an independent consulting organization.
- 1.12 The purpose of this definition is to make "Expanding the Capacity" a real expansion rather than a minor modification of the Plant or Process, which the LICENSEE may make on his own initiative and as a result of his own skill in operating or improving the original Plant. Hence, the LICENSEE is not expected to pay additional licence fees for an increase in the capacity of the Plant arising from and including changes in piping, instrumentation, balancing equipment, catalysts, auxiliary chemicals and additives, or in operating and maintenance conditions and procedures, which shall not be considered an expansion of capacity. Some LICENSORS may wish to receive payment for all increases in capacity arising from modifications to the Plant.
- 1.15 "Performance Guarantee Test" is the demonstration of the ability of the Plant to meet the Performance Guarantees. The LICENSOR prepares a report of the test and if the test has been satisfactory, the LICENSEE issues an acceptance certificate within a limited number of Days after receipt of the report.

Since such acceptance terminates the LICENSOR's obligations concerning the performance of the Plant, it is important for the LICENSEE that the test is comprehensive as regards the parameters of performance and of sufficient duration so as to demonstrate the Plant's operational capability in the long run. The definition of Performance Guarantees (Article 1.19) is therefore of major importance to both parties.

1.17 A clear distinction should be made between the two stages in the transfer of Know-How from the LICENSOR to the LICENSEE. First, all the information embodied in the Process Engineering Design Package, which is necessary to design, erect and Start-Up the Plant, should be delivered not later than the date provided for in the Agreement. In order to give the LICENSOR the time needed to prepare the Process Engineering Design Package with due care, it has been assumed that only the latest information on the Process that is available at the Effective Date can be taken into consideration.

Secondly, the LICENSOR has the obligation to provide under Article 3.2, "Improvements in the Process", new information related to the Process for the entire duration of the Agreement. Thus, during the interval between delivery of the Process Engineering Design Package and Start-Up of the Plant, the LICENSEE will have the opportunity to consider which Improvements (if any) can be introduced into the Process and the Plant without causing serious delays in the completion of the Plant and/or undue additional costs and risks.

In any case, the possibility of using the information supplied by the LICENSEE to effect changes in the design of the contracted Plant ends at the Start-Up as the design has to be frozen by then.

Some LICENSORS may consider the words "to enable the LICENSEE's personnel to operate the Plant" not precise enough for each specific case. The two parties should agree on a body of information (Know-How and training) to be provided by the LICENSOR that will be sufficient for the LICENSEE's purposes.

1.19 The Performance Guarantees are described at the beginning of Article 3.5 and in annexure XI (see guidelines for Article 3.5).

1.20 The design capacity may not be the same as the guaranteed capacity given in Article 3.5 (a) because the guaranteed capacity may be below the actual capacity of the Plant and below the design capacity.

1.21 In some cases, the latest Process may not always be the most suitable one for the LICENSEE. If so, the LICENSEE should insist that during the negotiations, he be told how the licensed Process differs from the latest available Process. In the present illustrative Agreement, the LICENSOR is required to give all the Know-How available to him at the Effective Date subject to his giving additional Know-How in accordance with Article 3.2.

1.25 An alternative definition of Start-Up could be: "Start-Up shall mean the initial operation of the licensed Plant after having reached the stage of being ready for Start-Up and upon the introduction of feedstock(s) into the reaction sections of the Plant. The date upon which the Start-Up has taken place shall be agreed in writing between the LICENSOR and the LICENSEE".

1.26 The appointment of a "Technical Adviser" by the LICENSEE would result in the possibility of the transfer of some approvals to him. However, in all such cases, the LICENSEE should co-ordinate the formal approval with the Technical Adviser.

Article 2. Description of the Plant and the Process

The purpose of this Article is to define in detail the licensed Plant and the licensed Process. In a licensing agreement, it is the Process that is licensed rather than the Product.

It is clear that the Plant shall be designed specifically to suit the location and feedstock; the LICENSEE or his Technical Advisor should provide the required information to the LICENSOR.

A detailed description of the licensed Plant and licensed Process has not been given in the illustrative Articles, but in annexures II, III, IV, V and XI. Article 2 only refers to these annexures.

- 2.1 The capacity contained in this Article is the design capacity and is the same as that contained in Article 1.20. It is not necessarily the same as the guaranteed capacity, which is the capacity specified under Article 3.5 (a).
- 2.2 The Agreement may refer to the registered name of the Process where one exists.
- 2.4 Generally the preliminary outline of the Site is made available at the time of the signature of the Agreement.
- 2.5 In the case of some feedstocks, such as natural gas, it may be better to specify the range of analyses on which the Plant will operate at the specified capacity and efficiency, as the characteristics of natural gas from a particular source could vary over a period of time or the natural gas sources used by the Plant could change.

Article 3. Obligations of the LICENSOR

The purpose of this Article is to list all the obligations of the LICENSOR. The Guidelines and illustrative Articles involve a lump-sum payment to the LICENSOR. It is, therefore, necessary that the obligations of the LICENSOR should be well defined.

3.1 Grant of patent rights and licence

The Article grants the patent rights and licence to the Process. The inclusion of the words "non-exclusive" reflects the situation prevailing in the fertilizer industry where there is usually more than one potential licensee of the Process. An "exclusive" licence, which would exclude the establishment of a competing Plant using the same Process by another licensee, would be more expensive and is unusual in the fertilizer industry.

The Article also provides for unrestricted freedom to sell the Product to any country in the world, but does not deal with other forms of restriction. In particular, restrictions on the following: the volume of production except when derived from expanding the capacity as defined in Articles 1.12 and 3.7; pricing of the Product(s); sources of supply of raw materials, chemicals, catalysts etc.; sources of spare parts; sources of technology for future expansion of the Plant or for new plants to be established by the LICENSEE. Such restrictions are discussed elsewhere. 5/

However, some LICENSORS may wish to specify the brands of catalysts to be used in the Performance Guarantee Test and this restriction may be accepted by the LICENSEE.

3.1.1 Article 3.1.1 should be read carefully. It does not imply that the LICENSOR does not have Know-How concerning the use of the equipment or the catalysts specified by him: he has the Know-How, and he gives it to the LICENSEE as part of the Process Engineering Design Package. However, the LICENSOR does not have the right to license the use of such equipment or catalysts, which comes from the suppliers of the machinery or catalysts, and is normally automatically available when the LICENSEE purchases the equipment or catalyst concerned.

3.2 Improvements in the Process

This Article states the principle that the obligations of both parties should be the same with regard to disclosing Improvements in the Process (see Article 4.2 for the corresponding obligation of the LICENSEE). The obligation to make Improvements available is generally limited to improvements in commercial use. Some LICENSORS may be willing to make available all Improvements in the Process on a reciprocal basis without payment but it is more usual to follow the arrangement suggested in Articles 3.2 (a) and 3.2 (b).

If agreed upon between the parties, the LICENSOR is obliged to make available all commercially proven Improvements, even during the period between the completion of the Process Engineering Design Package and the commissioning of the Plant. However, it is the right and responsibility of the parties to decide whether or not to use such Improvements at this late stage in the detailed engineering of the Plant. In making this decision, the LICENSEE should consider the possible costs and delays that would be incurred by the modifications and changes against the expected technical and economic advantages. It is advantageous that the LICENSEE should have discussions with the LICENSOR and the Contractor before taking a decision.

3.2 (a) Even after Start-up of the Plant, the LICENSOR is obliged to make available, free of charge, certain information for the duration of the Agreement, and this sub-Article specifies the type of information so made available.

3.2 (b) The definition of "significant" in this Article should be written into the Agreement and could be based on one or more criteria, such as the following:

- (a) () per cent increase in capacity;
- (b) () per cent increase in yield;
- (c) () per cent improvement in consumption of utilities;
- (d) Major improvements in the quality of the Product.

5/ World Intellectual Property Organization, Licensing Guide for Developing Countries, WIPO Publication No. 620 (Geneva, 1977), paras. 318-330. United Nations Industrial Development Organization Guidelines for Evaluation of Transfer of Technology Agreements, Development and Transfer of Technology Series No. 12 (ID/233).

The same observation applies to "payment of a reasonable fee". "Reasonable" should be defined in the Agreement; for example, the fee should be no higher than that charged to other licensees".

3.3 Supply of Technical Documentation and related services

It is in the interest of both parties that the LICENSEE should obtain as complete an understanding of the Process as possible. Therefore the LICENSOR should supply sufficient background documentation to the LICENSEE to enable him to become thoroughly acquainted with all the details of the Process.

The Process Engineering Design Package is normally meant for experienced contractors, therefore the Contractor should be appointed in agreement with the LICENSOR (Article 1.9). If the Contractor has less experience than the LICENSOR's usual contractors, this should be discussed at the negotiating stage of the Agreement so that the Contractor's engineering services can be strengthened, either with the LICENSOR's personnel or with personnel from another Contractor who have more experience of the LICENSOR's process.

- 3.3.1 This is a normal obligation of the LICENSOR and Article 3.6.1 imposes liquidated damages for late delivery of the documents.
- 3.3.2 This arrangement is important for both the LICENSEE and his Contractor. In some agreements it may be necessary to specify the obligations of the LICENSOR during such visits; for example: "During such visits the LICENSOR shall provide on request such technical data on the reference operating plants as may be required to confirm the technical specifications of the Process Engineering Design Package".
- 3.3.3 The words "subject to the approval of the LICENSOR" have been added in the illustrative Article because, in some cases, the LICENSOR may be reluctant to allow a Contractor to visit his reference plants. However, if the Contractor has been chosen with the LICENSOR's approval, there should be no difficulty about visiting the reference plants. In any case, this point should be clarified at the time of signing the Agreement.

The LICENSEE may find it useful to visit the reference plants, and a repeat visit could be necessary if his Plant did not meet its Performance Guarantees.

The duration and the scope of the visits envisaged under this Article would normally be specified in the Agreement.

- 3.3.4 This Article provides for greater involvement on the part of the LICENSOR in the detailed engineering than is normal in current licensing practice and will probably entail a higher fee. It also requires the LICENSOR to review for conformity with the Process Engineering Design Package, the design of those items and parts of Equipment that are critical to the Process. This could even be extended further to a review of the entire detailed engineering. In this case the LICENSEE could expect to obtain the maximum guarantees for the performance of the Plant, but the costs would be higher. However, some LICENSORS may not have the capacity to check the detailed engineering completely. If the appointed Contractor requires less assistance than provided for in annexure VI, the licence fee should be correspondingly reduced.

- 3.3.5 The words "review for conformity with the Process Engineering Design Package", by the LICENSOR, have been added because LICENSORS are unlikely to accept an open-ended obligation to review for conformity any parts of the detailed engineering design merely upon a request from the LICENSEE. The parts needing review for conformity with the Process Engineering Design Package should be agreed on beforehand.
- 3.3.6 The LICENSOR is requested to provide a list of suppliers of catalysts at the time of signing the Agreement and the LICENSEE should satisfy himself that the catalysts required would be continuously available.
- 3.3.7 This Article requires the LICENSOR to provide the necessary instructions, and to check them for completeness, from pre-commissioning of the Plant to completion of the Performance Guarantee Tests. It is important that the LICENSOR has the right to issue all instructions during the Performance Guarantee Tests, and it is equally important that the LICENSEE's personnel carries out these instructions as given. The LICENSOR must check that his instructions are properly executed, and if they are not he must immediately report to the LICENSEE. For this purpose the LICENSEE should appoint a senior officer at the Site (generally the plant manager) to see that the LICENSOR's instructions are carried out.

3.4 Additional services

A new Article could be added to include additional services that the LICENSEE might need, and which the LICENSOR might agree to provide. Some of the services suggested are the following:

(a) Assist the LICENSEE in managing the operation of the Plant for the first () months after the Performance Guarantee Tests have been successfully demonstrated;

(b) Assist the LICENSEE in establishing a laboratory where soil analyses can be made for farmers;

(c) Provide the LICENSEE with supplies of the Product from the LICENSOR's own plants to assist the LICENSEE in building up a market for the Product in (country) from the Effective Date of the Agreement up to the start of commercial production by the Plant;

(d) Depute a competent person to review the operation of the Plant and to advise the LICENSEE on ways of improving or overcoming deficiencies in the operation of the Plant.

However, it should be borne in mind that such services may not be available from specific LICENSORS. In any event, the additional services required should be made the subject of separate agreement(s) at the same time as the Agreement, in which case Article 3.4 would not be required.

3.5 Performance Guarantees of the Process

This is the most important Article in the Agreement and most of the negotiations between the LICENSOR and the LICENSEE will focus on its contents and the liabilities that it creates for the LICENSOR.

The problem of guarantees should be carefully examined. The guarantees and warranties involved in the successful operation of a fertilizer plant are:

- (a) Guarantees that the process will work;
- (b) Guarantees that the parameters of the process have been properly converted into basic engineering, consisting of the Process Engineering Design Package;
- (c) Guarantees that all the detailed engineering has been correctly undertaken;
- (d) Guarantees that the procurement of Equipment is in accordance with the Process Engineering Design Package and the detailed engineering;
- (e) Guarantees that the Process and the Equipment will perform during the Performance Guarantee Tests in accordance with the Process guarantees for capacity, consumption and quality;
- (f) Warranties that the Equipment will continue to operate thereafter.

In turnkey and semi-turnkey contracts all these guarantees are given by the Contractors. In a cost-reimbursable contract, the first five guarantees (a)-(e) above are given by the Contractor, and the last one (f) is given by the suppliers of the machinery. Thus in the model forms of contract 6/ the Contractor is responsible for a substantial part of the elements that make up the guarantees and warranties.

In a licensing agreement, the LICENSOR is only responsible for items (a) and (b) above, and provided that the detailed engineering and procurement of Equipment have been done properly and reviewed by him, he is responsible for the performance of the process (and not of the Equipment) under item (e) above.

Therefore a LICENSOR is responsible for only a part of the guarantees required and hence he could hesitate to give guarantees of the same nature as are given by a contractor in the three model forms of contract. 6/

In the model forms of contract, the concept of absolute and penaltiible guarantees has been introduced. Absolute guarantees are those guarantees that the contractor shall have to demonstrate and without any limitation of liability to rectify the Plant to meet them if necessary. These absolute guarantees cannot be satisfied on payment of liquidated damages (or penalties); they cover the capacity

6/ "UNIDO model form of turnkey lump-sum contract for the construction of a fertilizer plant including guidelines and technical annexures" (UNIDO/PC.25/Rev.2); "UNIDO model form of cost-reimbursable contract for the construction of a fertilizer plant including guidelines and technical annexures" (UNIDO/PC.26/Rev.2); "UNIDO model form of semi-turnkey contract for the construction of a fertilizer plant including guidelines and technical annexures" (UNIDO/PC.74/Rev.1).

of the Plant and the quality of Products and might include the quality of effluents and the consumption of raw materials and utilities.

Penalizable guarantees are those other guarantees that can be satisfied on payment of liquidated damages.

The inclusion of absolute guarantees in the licensing Agreement may be considered, but the LICENSOR would be reluctant to accept them in view of the fact that he is responsible for a small part of the engineering and also that the amount of his fees is small in relation to his potential liability. It should be recognized that such guarantees are unusual in licensing agreements although some cases are known to exist.

In the absence of absolute guarantees, the selection of commercially proven processes would become the LICENSEE's best guarantee that the Process works. In some licensing Agreements, a warranty is given by the LICENSOR that his reference plants at specified locations are working to capacity and with the actual consumption figures for raw materials, utilities and effluents as stated in the Agreement. Such a warranty could be added to Article 3.1.

In most processes, the catalyst used is an essential element of the know-how licensed (whether patented or not) and to this extent the LICENSOR's advice must be accepted at least for the Performance Guarantee Tests. These illustrative Articles do not include an obligation for the continual purchase of catalysts from a single source.

Articles 3.5 and 3.5.1 define the guaranteed parameters of the Process and the methods of determining whether these guarantees have been met. Such guarantees are normally in the interest of both parties and should only be omitted in exceptional cases, such as when additional technology is sold for incorporation into an already existing plant. The list of guaranteed parameters is an extensive check-list, not all of which will be available in all circumstances. Although the LICENSEE should strive to obtain the best guarantee possible, he should not assume that the LICENSOR offering the best guarantee has necessarily the best process. The LICENSEE should ensure that all the guaranteed parameters are covered either in the licensing Agreement or in the construction contract or in both. (See also the guidelines for Article 3.6.)

- 3.5 (a) When more than one grade of Product is to be manufactured, the capacity of the Plant to produce each grade should be specified, as well as the grade(s) themselves, and the tolerance and quality characteristics that are being guaranteed for each grade.
- 3.5 (b) The guarantees for the consumption of utilities depend upon the efficiency of the machines procured (e.g. steam turbines) and therefore sometimes the LICENSOR will not guarantee them.
- 3.5 (c) Some LICENSORS do not provide guarantees for effluents and emissions. However, in some locations these may be necessary. This should be discussed at the stage of negotiating the Agreement.

3.5 (d) The safety and environmental requirements specified should meet the laws and regulations in force in the LICENSEE's country, but should not be lower than international standards.

3.5.1 There have been cases in developing countries where guarantees have been successfully demonstrated in limited test periods, but the plants have not operated continuously thereafter. The Agreement therefore calls for the continuous operation of the Plant at near rated capacity (90 per cent) for 20 Days, followed immediately by a guarantee test run of 10 Days at 100 per cent of capacity. The test for the consumption of raw materials and utilities should be run during any consecutive 7-Day period within the 10-Day test period.

The above 30-Day two-part test period to demonstrate the Contractor's Performance Guarantees was arrived at after lengthy negotiations between the parties during discussions on the model forms of contract. 6/ In this period, the actual Process parameters guaranteed by the LICENSOR are demonstrated during 7 consecutive Days within the 10-Day test period. The rest of the test period is necessary to ensure that the Plant is capable of sustained operation and that the Contractor's guarantees are met.

Customarily, it was accepted that shorter test runs (72 to 120 hours) were sufficient for demonstrating the LICENSOR's Performance Guarantees. A number of licensors still consider a test run of 72 hours to be adequate to prove their Process and that longer test runs only increase costs without increasing the certainty of long-term trouble-free operation. However, a number of licensees felt that guarantees should be demonstrated over much longer test periods, and therefore a compromise of 7 Days has been suggested in the illustrative Article. The Performance Guarantee Test should be run only after the Plant has reached stable operating conditions at near rated capacity.

3.5.4 These Articles define the potential liabilities of the LICENSOR if the
and Performance Guarantees are not met owing to defects in the Process
3.5.8 and/or the Process Engineering Design Package. It should be
recognized that rather than accept large potential liabilities, the
LICENSOR may decide not to offer the licence to the LICENSEE. Hence,
the LICENSOR's liability has been limited to providing all the designs
and data and by Article 3.5.4.1 to making modifications only up to a
fixed maximum amount. This limitation in liability does not, however,
apply to the re-performance of his services within the scope of the
Contract (Articles 3.5.4.1 and 3.5.4.2).

If this limitation is unsatisfactory to the LICENSEE and he is unable to obtain a larger liability from the LICENSOR, (see guidelines for Article 3.5), then the LICENSEE could enter into one of the three types of model forms of contract 6/ with a reputable Contractor, where "Absolute Guarantees" could be requested. The LICENSOR then becomes a sub-contractor of the Contractor.

In the past, it was the practice for the LICENSOR to provide fresh drawings or to suggest changes in the Process Engineering Design Package in order to rectify the Plant to meet the Performance Guarantees. The provision of drawings alone to rectify the Plant is only satisfactory to the LICENSEE if the Contractor undertakes the subsequent work of rectification at his expense, provided he is required to do so in his construction contract. It is unlikely that a Contractor would take this responsibility in cases where the LICENSEE

has a licensing Agreement with the LICENSOR, and thus the LICENSEE would be left in the position of paying extra money to rectify the LICENSOR's mistakes. Hence the Agreement provides for more than just the supply of drawings to rectify the Plant.

The extent of the liabilities that the LICENSOR will accept should be negotiated, bearing in mind that large potential liabilities may increase the cost of the licence itself.

Whether the words "attributable to" in Article 3.5.4 will be sufficient to determine the exact scope of the liability will depend upon the law applicable to the Agreement. Most licensors will want to use wording that makes it clear that their liability only arises if they are at fault. In some circumstances it may be advisable to clarify the words "attributable to" by such words as "fault, negligence and omissions etc."

3.5.5 Some licensors might wish to include a statement that they are relieved of their obligation if the failure of the Plant to pass the first Performance Guarantee Test is not attributable to them. However, the Agreement does not allow them to be relieved of their obligation until a second Performance Guarantee Test has been made (Article 3.5.9). It is reasonable to expect that the LICENSOR will continue to help the LICENSEE, but at the LICENSEE's expense, until the second test on the modified Plant has been made.

3.5.6 This Article meets the situation where both parties cannot agree on who is at fault. The functions to be performed by each party are spelt out and if agreement cannot be reached, then resort is made to arbitration (Article 10.4) on who is to bear the costs.

After completion of the rectification of the defects according to Articles 3.5.4, 3.5.5, or when Article 3.5.6 applies, a second Mechanical Completion Certificate, if necessary, shall be prepared by the parties and a second Performance Guarantee Test made.

3.5.9 Text A differs from text B by the inclusion of the words "but achieves a performance above the minimum specified below". Text A requires the Plant to produce at a certain minimum capacity (95 per cent is suggested) and close to the guaranteed consumption of raw materials. Text B allows the LICENSOR to pay liquidated damages and to be relieved of his liabilities under this Article.

Where the break-even point of the Plant is high, there is a need to insist upon a minimum capacity and efficiency being attained.

3.5.10 This Article deals with the situation where the Performance Guarantees have not been met and the LICENSOR refuses or is unable to rectify the faults. The Article calls for the involvement of a third party to enable the Plant to meet its guarantees. However, there are two alternative texts. Text B requires that the third party shall only be called in when the LICENSOR is at fault and that the third party must sign a secrecy agreement. Text A allows for the calling in of a third party if the Plant cannot perform up to its guarantees in the time laid down in the Agreement, and also it asks for a waiver of a secrecy agreement, if no competent third party is available who will sign such an agreement.

- 3.5.11 It is a general rule that Agreements (or contracts), whether with the LICENSOR or the Contractor, provide for a cut-off date, after which the obligation to perform the Performance Guarantee Tests is deemed to have expired. The reason is that the unused Plant may deteriorate in such a way as to affect the possibility of meeting the guarantee. The LICENSEE should therefore be careful to ensure that the Plant is erected on time and any ancillary plants are ready in time.
- 3.5.12 Some licensors may be hesitant to make a binding contractual arrangement to provide personnel at an unknown future date. However, in their own interest they would normally do so, even if a contractual obligation did not exist, unless it became impossible to send such personnel. Nevertheless, it was felt necessary to include this illustrative Article in the Agreement.

3.6 Liquidated damages

Liquidated damages are included in the illustrative Articles as a form of security of performance by the LICENSOR, because they are an amount of damages for shortfalls in the performance of the Plant or the LICENSOR's services that were agreed between the parties when the Agreement was signed.

- 3.6.1 This Article provides liquidated damages for delays in delivering the Process Engineering Design Package. Text B states that liquidated damages are only payable owing to "reasons attributable to the LICENSOR". Text A takes the view that as far as the Process Engineering Design Package is concerned, the entire work is that of the LICENSOR and he should ask for any information on the Site at the time of the signing of the Agreement. Text A would only be applicable if all Site and Basic Design Data were to be made available by a fixed date.
- 3.6.2 This Article provides liquidated damages for the non-fulfilment of the guaranteed performance of those Process parameters included in Article 3.5 as required by the Agreement.

The liquidated damages may be arranged as follows:

() To the extent that production falls short of () Tonnes within the Performance Guarantee Test period (the quality guaranteed), the LICENSOR shall pay to the LICENSEE a sum of (amount) per every one per cent of the deficiency;

() To the extent that the consumption of (feedstocks) exceeds (_____) of product (the consumption guaranteed), the LICENSOR shall pay to the LICENSEE a sum of (amount) per one per cent of the excess consumption.

In the case of liquidated damages under illustrative Article 3.6.2 (a), it is normal to have a clause where liquidated damages for one item can be set off against the improved performance of another one. For this purpose, the unit cost of the utilities should be specified in the Agreement.

3.7 Expanding the capacity of the Plant

The purpose of this Article is to establish, at the time of the signing of the Agreement, an understanding of the LICENSEE's rights to expand the Plant at a later date.

This Article would normally provide for the expansion of the fertilizer Plant or for the establishment of duplicate plants of the LICENSEE in the LICENSEE's country. The fees to be paid for plants in other countries could be relatively high and hence it is necessary to restrict the applicability of this Article to additional facilities set up in the LICENSEE's country or in other specified countries only.

In the event that the LICENSEE expands the Plant within an agreed number of years after execution of the Agreement, the fees to be paid are fixed by this Article.

This Article does not contain a contractual obligation for the LICENSOR to provide personnel to help in establishing or operating such additional facilities. This would be a matter for arrangement at the time that such personnel were required; the LICENSOR would supply the personnel on terms and conditions that would have to be agreed upon separately. In the event that the Plant was expanded, or the additional facilities were established using significant improvements made by the LICENSEE, the LICENSEE could ask for a reduction in the fees specified in Article 3.7.

In the guidelines for Article 1.12, it has been said that no fees shall be payable in any case if the expansion in capacity is solely the result of the LICENSEE's own skill in operating or improving the Plant.

- 3.7.1 If the Process Engineering Design Package includes some third-party technology, it may have to be treated separately both with regard to availability and costs.
- 3.7.3 There are two alternative texts. Text A implies that when an expansion takes place, all the fees including any fees for changes in the Process Engineering Design Package are included in the fees payable under Article 3.7. In text B, the payment under Article 3.7 is regarded as a fee, and Article 3.7.4 involves additional payments for the changes in the Process Engineering Design Package, if requested.
- 3.7.5 In text A, there are no restrictions on the LICENSEE expanding the Plant using a process other than that of the LICENSOR. However, in such cases the process engineering documents provided by the LICENSOR should not be made available to the new licensor or a new contractor without the LICENSOR's permission because of the secrecy provisions of Article 4.4.

In text B, it is felt that such expansions should be considered on a case-to-case basis in consultation with the LICENSOR.

3.8 Limitation of liability

The purpose of this Article is to limit the LICENSOR's overall liabilities under the Agreement. This Article requires careful negotiation. The extent to which the LICENSOR is willing to accept liabilities will depend on many factors including the competitive situation with regard to the technology available, the scope of services and the amount of fees that the LICENSOR receives for the licence. A LICENSOR with the most competitive technology is likely to insist on a low limit on his overall liabilities under the Agreement.

3.8.1 Alternative approaches to drafting a text limiting the LICENSOR's liability under the Agreement include the following:

(a) That the LICENSOR's total liability is limited except for the supply of process engineering to meet the Performance Guarantees and patent indemnity for which his liability is unlimited (text A). The amount for modifications to the Plant is separately limited (Article 3.5.4.1) but this amount is included within the overall limitation set by this Article;

(b) That the LICENSOR's total liability is limited to a given percentage of the total fees that the LICENSOR will receive from the LICENSEE (text B);

(c) That the LICENSOR accepts liability only under the Performance Guarantees and patent indemnity clauses and imposes a ceiling on his total liabilities under these clauses;

(d) That the LICENSOR accepts unlimited liabilities.

In the illustrative Article only the liability articles (a) or (b) above have been used.

3.9 This is a normal Article that absolves the LICENSOR from liabilities arising from consequential loss in all its forms.

3.10 There must be a cut-off date for the LICENSOR's obligations with regard to the performance of the Plant. Article 3.10 simply states that the issue of an Acceptance Certificate ends the obligations of the LICENSOR.

Article 4. Obligations of the LICENSEE

4.1 Provision of Basic Design Data for the Plant

4.1.1 The purpose of this Article is to state that the LICENSEE shall be responsible for the scope and accuracy of the Basic Design Data on which the LICENSOR bases his Process Engineering Design Package. Since incorrect Basic Design Data can be the cause of incorrect design of the Plant, it is essential that every effort should be made to provide correct data.

In the event that the LICENSEE has difficulty in collecting the necessary basic data, he should contact the LICENSOR or the Contractor or obtain the services of an independent organization to help him to obtain the required data. This could mean that the LICENSEE incurs extra expenses.

4.1.2 The First Basic Design Meeting is very important because all the Basic Design Data is confirmed at this meeting. Since most of the periods of time in the Agreement, within which the documents are to be supplied, begin from this meeting, a time limit is fixed for holding it, which is incorporated in the Agreement.

In cases where other fertilizer plants have been built or are under construction in the LICENSEE's country, the LICENSEE would already have access to much of the Basic Design Data. In such cases, the Basic Design Data should be confirmed and incorporated in annexure VI.

4.2 Improvements in the Process

This obligation of the LICENSEE is identical to that of the LICENSOR in Article 3.2. There will be a need to describe "significant improvements" as in Article 3.2 (b).

In order to promote the exchange of information, the LICENSOR will normally ask for rights to give the information that he has received from the LICENSEE on a reciprocal basis and bound by the same degree of confidentiality to his other licensees.

- 4.2.1 Normally the LICENSOR should have the right, on agreed terms and payable to the LICENSEE, to grant improvements, covered by Article 4.2, to his sub-licensees.

4.3 Appointment of the Contractor

The important role that a contractor plays in the construction of the Plant based on the LICENSOR's basic design package has already been discussed under the general guidelines for this Agreement.

- 4.3.1 The choice of an experienced and reliable Contractor is essential to the success of the Plant and in the interest of both parties. Usually, the LICENSOR will give a list of the Contractors that have previous experience of building plants using the Process and the LICENSEE can choose one of them. Where the LICENSEE would prefer to select a Contractor with previous work experience in his country, the LICENSOR should give due consideration to this preference. (See also the guidelines for annexure VI, which indicate the procedures for co-ordination between LICENSOR, LICENSEE and Contractor.)

- 4.3.2 Sometimes the draft of such a secrecy agreement between the Contractor and the LICENSOR forms an annexure to the Agreement.

4.4 Secrecy and confidentiality 7/

- 4.4.1 The purpose of this Article is to protect the LICENSOR's secret information, usually for the duration of the Agreement. The time limit on confidentiality is variable, depending on the Process, the competition, the technical and scientific value of the information and on other factors including legal limitations. There are two texts, both of which suggest a period of 10 years for maintaining the confidentiality agreement but the period should be negotiable. A 10 year period may be too long or too short.

Text B differs in that it obligates the LICENSEE to "impose" the same secrecy provisions upon his employees, sub-contractors etc. In text A, this obligation is covered by Article 4.4.2, which provides that such personnel are bound by the secrecy agreement signed by the LICENSEE.

- 4.4.2 In text A, the secrecy agreement with the Contractor is implemented by asking the Contractor and his sub-contractors to sign a secrecy agreement before commencing work.

7/ This subject is discussed in detail in Licensing Guide for Developing Countries (Geneva, World Intellectual Property Organization, 1977), paras. 238-283.

- 4.4.3 This Article is a standard definition of exceptions to the rule concerning Confidential Information.

The difference between text A and text B is that in text B the onus of proof is put on the LICENSEE and the conditions under which information can be disclosed are more restrictive. Text B also imposes a restriction on disclosure if the same information came from a third party under a secrecy provision, even if the information was not supplied by the LICENSOR to the third party.

- 4.4.4 Article 4.4.4 deals with the extent to and the manner in which information can be disclosed by the LICENSEE to the Contractor, vendors of Equipment, insurance companies etc.

By the use of the words "without prior approval", text A gives the LICENSEE greater freedom in disclosing information when calling for bids for Equipment. Text B omits these words because, in the view of some LICENSORS, they unnecessarily dilute the confidentiality imposed on the LICENSEE.

Text B also requires third parties to sign a secrecy agreement with the LICENSOR before the LICENSEE discloses any information to them, whereas text A only requires a standard secrecy agreement between the third parties and the LICENSEE who, in turn, is bound by his secrecy agreement with the LICENSOR. Even in the arrangement contemplated in text B, the LICENSOR will in most cases only require a direct secrecy agreement with third parties for special parts of the Know-How, which could be identified in the Agreement.

- 4.4.5 Article 4.4.5 regulates the disclosure of Confidential Information to a Government agency or a regulatory body. Text A, which recognizes the legal position prevailing in many developing countries, allows the LICENSEE to disclose such information when called upon to do so.

In the case of text B, a secrecy Agreement is required even from the Government authorities concerned before disclosure.

- 4.4.6 This Article covers the conditions of disclosure of information to a national research laboratory, and is of particular importance when certificates of fertilizer analyses are legally required.

- 4.5 Article 4 sets out the obligations of the LICENSEE and since, in a licensing agreement, their scope is clearly defined and limited in Article 3, the LICENSEE must be responsible for all the items of work not expressly assigned to the LICENSOR.

Article 5. Co-ordination of the work

- 5.1 Normally a LICENSEE will not require help from the LICENSOR for the maintenance of a Plant, and where help is required for the operation of the Plant after the Performance Guarantee Tests, it should be made the subject of a separate agreement. Therefore, the assistance of the LICENSOR is required only for the detailed engineering, Start-Up and commissioning of the Plant. During the Performance Guarantee Tests, the LICENSOR has broader functions, as he will be giving the instructions for the operation of the Plant.

5.2 Process design

LICENSEES in developing countries should insist on the right to send representatives to the LICENSOR's design office so that they have the opportunity to examine and to familiarize themselves with the Process. The LICENSOR's design office may be at the LICENSOR's own offices or even at an engineering company's office.

Since this is an important step in the transfer of technology, the LICENSEE should send a team of experts who are capable of absorbing the Process technology and understanding the basis on which the Equipment has been selected.

5.3 Detailed engineering

5.3.1 The obligation of the LICENSOR to assist in reviewing and approving the detailed engineering is important if the Contractor has not had previous experience of the same type of Plant.

5.3.2 The First Detailed Engineering Meeting ("kick-off" engineering meeting) is the most important date from the point of view of the engineering contract because at this meeting the Contractor is present; it is the first tripartite event.

This meeting should not be confused with the First Basic Design Meeting (Article 4.1) which is held only between the LICENSEE and the LICENSOR (see annexure VI for details of all meetings).

5.3.3 Article 5.3.3 (b) requires the LICENSOR's review and approval of the critical parts of the detailed engineering of the Process. This costs additional money but will make it easier for the LICENSOR to agree to the Performance Guarantees required by the LICENSEE in a developing country (Article 3.5). The more detailed the engineering review, the higher the cost; therefore only the essential aspects should be reviewed.

Since the review by the LICENSOR is likely to take some time, it is often undertaken after the meetings have taken place.

5.3.4 The Contractor should undertake the detailed engineering in accordance with the LICENSOR's Process Engineering Design Package, otherwise the LICENSOR would not be able to guarantee the performance of the Plant.

5.3.5 LICENSORS will normally expect the design to be frozen at the First Basic Design Meeting and could be reluctant to give the LICENSEE the right to demand automatic changes thereafter. If, however, the LICENSEE insists on carrying out such changes, this could dilute the LICENSOR's guarantees under the Agreement.

5.4 Procurement

Some licensees in developing countries may wish to include this Article. Usually the LICENSOR is not involved in procurement in licensing agreements between parties in developing countries. In any case, the LICENSOR may ask for additional payment from the LICENSEE for such services.

The LICENSOR should "pre-qualify" the suppliers of all critical Equipment and critical instrumentation by listing such suppliers under clause 3.9 of annexure VIII.

5.5 Construction of the Plant

Some licensees may wish to include this Article; however, the LICENSOR does not usually pre-qualify construction companies.

5.6 Start-Up

It is important for the LICENSEE to state that the LICENSOR will give the instructions for the Start-Up and Performance Guarantee Tests, as is done here; however, it is the responsibility of the LICENSEE to ensure that the instructions are carried out, and the LICENSOR should formally inform the LICENSEE if they are not being carried out. This has already been discussed under the guidelines for Article 3.3.7.

5.7 LICENSOR's personnel

5.7.1 This Article covers the qualifications and suitability of the personnel the LICENSOR proposes to engage for carrying out his obligations. Text A requires that the LICENSEE approve such appointments; text B does not require such approval. An alternative possibility would be to lay down the minimum qualifications for staff to be mutually agreed and, subject to these qualifications, the LICENSOR could send out his chosen staff.

5.7.2 Text A of Article 5.7.2 gives the LICENSEE the unilateral right to request the immediate repatriation of any of the LICENSOR's personnel found wanting. Text B provides only for consultation between the parties requiring the withdrawal of the LICENSOR's personnel. It may be acceptable to some licensees provided that repatriation is at the LICENSOR's expense, when his staff is at fault.

The reciprocal obligation regarding the repatriation of the LICENSEE's trainees is found in Article 6.7, where alternative texts are proposed.

Normally both the LICENSOR and the LICENSEE should respect the existing social rules and practices in each other's countries.

5.7.3 This Article defines the LICENSOR's maximum man-Day obligation in the LICENSEE's country under the Agreement and limits the demands on his technical personnel.

Article 6. Training of the personnel of the LICENSEE

This Article, which should be read in conjunction with annexure X, is critical to the successful transfer of technology to the LICENSEE and care should be taken in ensuring that the Article is drafted to cover all the LICENSEE's training requirements. The plant chosen for training should be as similar as possible to the Plant of the LICENSEE, and should be owned by the LICENSOR or one of his licensees.

6.1 This Article requires that the training programme mainly covers Plant operation, Plant maintenance, handling of materials, quality control and effluent treatment and safety measures for the Plant. Other specific aspects of Plant operation and management could be added if required.

It is important that the programme is designed and checked by the LICENSEE and the LICENSOR to enable the LICENSEE's personnel to learn the technology of the Process and the operation, maintenance and control of the Plant. This is the objective of the programme but results will depend on the suitability of the training outlined in annexure X and the capability and previous experience of the trainees. Hence, the LICENSEE is obliged to ensure that the trainees have adequate qualifications to benefit from the training they will receive. The training should be specific to the Process, Equipment and instrumentation according to the requirements of the Plant.

6.2 This Article sets out in broad terms the scope of the training and the rights of the LICENSEE's trainees to take detailed notes in a plant.

6.3 This Article provides for training for the periods specified in annexure X and the plants at which such training will be given.

The present licensing agreement provides for training of the LICENSEE's personnel only at plants using the LICENSOR's technology. Some LICENSEES may wish the training programme to be extended to include training by the LICENSOR's personnel at the Plant Site. In such cases, a separate sub-article could be added to Article 6.3.

6.4 This Article defines the language to be used in training and instruction manuals. In some cases, the LICENSEE may wish to translate the manuals into his own language, in order to provide training to his personnel, if the language of training is not his own.

6.7 This Article is reciprocal to Article 5.7.2 the comments to which also apply here.

Article 7. Patent infringement

The whole of text A of Article 7 needs to be read and compared with the whole of text B of Article 7. It is clear in both texts where an obligation on the part of either party is created and this clarity needs to be maintained in any text that the two parties may negotiate.

The LICENSEE should recognize that a dispute about patents might lead in the last resort to a compulsory closure of his Plant. Therefore, the LICENSEE should conduct a patent search in his own country with the co-operation of the LICENSOR, who should advise him of all possible headings under which the patent could appear.

7.1 The purpose of this Article is to indemnify the LICENSEE for the duration of the Agreement against the infringement of patents for the use of the Process and the sale of the Product in the country where the Plant is located and in the LICENSEE's principal export markets. The LICENSEE should seek a broad indemnification from the LICENSOR (text A) and only accept limitations when specific circumstances justify them. Various types of limitations are discussed elsewhere 8/ and one possible alternative is given in text B.

8/ World Intellectual Property Organization, Licensing Guide for Developing Countries, WIPO Publication No. 620 (Geneva, 1977).

Some LICENSORS claim that a limitation on liabilities is justified because they are unable to make a careful search of all third party patents that might be infringed by the LICENSEE in using the LICENSOR's Process in the LICENSEE's country. Furthermore the law of the LICENSEE's country and hence the LICENSOR's liability under patent infringement cannot be unlimited but should be shared or eliminated.

If the LICENSOR's liability is unlimited, as in text A, then the cost of the licence would be increased to cover the risk of paying the costs of patent infringement. However, if text B is used, the LICENSEE must find out the exact status of the Applicable Patents and whether any suits are pending against their validity at the Effective Date of the Agreement. A list of the Applicable Patents in the agreed countries should also be obtained by the LICENSEE. If the LICENSEE accepts limits on the LICENSOR's liability, as provided for in Article 7.2.3, text B, then a corresponding change should modify Article 3.8.1, text A, which provides for unlimited liability of the LICENSOR for patent infringement.

7.2 Defence of a patent suit

This Article describes how a patent suit should be defended if it is brought against the LICENSEE. Text A requires the LICENSOR to take charge of the defence and disposal of such suit, and demands the LICENSEE to assist the LICENSOR in the defence but without sustaining any expenses. Text B proposes that the LICENSOR shall conduct the defence at his own expense (Article 7.2.2), under his full control (Article 7.4) but with the assistance of the LICENSEE (Article 7.3). In text B, the LICENSOR's expenses shall be charged against his total liabilities under Article 8 (Article 7.2.3). Text B also requires that in case such alleged patent infringement is denied by a competent court, the LICENSEE shall reimburse the LICENSOR for all the expenses he has incurred in defending the suit (Article 7.2.4).

7.3 Possible alterations to the Plant to eliminate infringement

Text A requires the LICENSOR to make alterations to the Plant at his own expense to eliminate the alleged infringement, provided that such alterations do not prevent the Plant from meeting the Performance Guarantees included in Article 3.5.

Text B requests the LICENSEE not to reject "any reasonable offer" of the LICENSOR to modify the Process and/or the Plant in order to avoid infringement. In this text, the term "any reasonable offer" should be more clearly defined in relation to the Performance Guarantees.

7.4 Conditions for settlement of the suit

This Article ensures that neither the LICENSOR nor the LICENSEE will settle the suit unilaterally. Text A ensures a broad safeguard to both parties. Text B safeguards the LICENSEE under the rights granted in Article 3.

Article 8. Agreement price and terms of payment

8.1 The illustrative articles use a lump-sum method of payment for the services of the LICENSOR that are rendered outside the LICENSEE's country, including the granting of the licence. The costs of assigning the LICENSOR's personnel to the LICENSEE's country are to be paid on a per diem basis.

- 8.2 The words "rendered outside the LICENSEE's country" are for taxation purposes and could be altered for specific contracts. The taxation of payments, which is important when determining the total licence fee, is discussed in the guidelines for Article 10.3.
- 8.3 This Article provides that the lump-sum fees should be paid in three instalments, one of which, the advance payment, should be paid within (30) Days of the date of execution of the Agreement. This period may not be adequate as far as many developing countries are concerned, because of the time required for Government approvals. In such cases, the period should be altered.
- 8.4 The actual mode of payment in local currency could be decided on a case-to-case basis. It is advantageous for both parties that payments covering local expenses should be paid in local currency.
- 8.6 At the time payments are made, the exchange rate of a currency may differ greatly from what it was when the Agreement was signed. It is therefore important to state (a) the currency in which the obligation to pay is made, and (b) the currency in which payments are to be made. Usually the currency in which the obligation to pay is made will be the one used for the payments. If it is not, the exchange rate to be used at the time of each payment must be clearly specified in the Agreement.

The LICENSEE may wish to hedge against an appreciation in the value of the currency in which the obligation to pay has been made. There are many ways of doing this and the LICENSEE should seek the advice of a bank.

Article 9. Duration of the Agreement

9.1 Effective Date of the Agreement

The Agreement becomes valid when it is executed by both parties. The date when the Agreement becomes effective needs to be defined. The Agreement becomes effective when the LICENSEE's Government has approved the Agreement and the LICENSEE has made the advance payment. The prior approval of the LICENSOR's Government can also be included (Article 9.1.1 (b) if such approval is relevant; if it is not relevant, Article 9.1.1 (b) can be deleted). If the project is financed by a credit agency, the Agreement would also have to be approved by that agency before becoming effective and an additional sub-article 9.1.1 (e) added.

The approval of the Agreement by the LICENSEE's Government is an important condition because an increasing number of developing countries have introduced national laws governing the transfer of technology with which the Agreement must comply. In some developing countries, the right to obtain foreign exchange to make payments for the Licence is made conditional on such approval.

- 9.2 It is obvious that after the signing of the Agreement, an unlimited period of time cannot be given to make it effective. This Article limits this period by agreement.

9.3 Duration of the Agreement

The duration of the Agreement has been left to negotiation. Since 75 per cent of the payment is to be effected in the first year, it is generally in the interest of the LICENSEE to ensure that the full benefits of the Agreement accrue to him within the shortest possible time and the duration of the Agreement is reasonable.

In fixing the duration of the Agreement, the parties should take into account the following: (a) the legal term of the unexpired property rights of the LICENSOR; the fact that the protection conferred by patents usually lasts a maximum of 20 years; (b) any limitation on the terms that may be imposed by national law on the transfer of technology; and (c) the time period set for the performance of other obligations under the Agreement.

The Agreement establishes periods for the mutual obligations for maintaining confidentiality (Article 4.4) and for the exchange of information on Improvements (Articles 3.2 and 4.2). In the Agreement the periods have been set at 10 years, but the length of the obligation as regards confidentiality must take into account the type of information provided, the pace of development in the field of technology covered and the number of persons exposed to the information.

9.4 Expiry of the Agreement

9.4.1 In text B, the continuation of the rights under Articles 3.1 and 3.7 is subject to the LICENSEE carrying out his obligations, in text A it is not. The two texts could be reconciled if the obligations were spelt out, e.g. making payments etc.

9.4.2 The need for further obligations after the expiry of the Agreement, if any, clearly depends on the duration of the Agreement and the period of confidentiality under Article 4.4. The illustrative Article 9.4.2 has been drafted to cover a case where the period of confidentiality (Article 4.4) is longer than the period of the duration of the Agreement (Article 9.3).

9.5 Termination

As a general rule, neither party should anticipate a need to terminate the Agreement, particularly when payment is in the form of a lump sum. However, a legal provision has been made in this Article to cover unexpected situations.

9.5.1 This Article safeguards the LICENSOR in the event of the LICENSEE not fulfilling his obligations under the Agreement. Some LICENSORS may request an additional Article stating that if the Agreement is terminated owing to the fault of the LICENSEE, the LICENSEE's obligation as regards the secrecy agreement for the information already supplied should continue for the unexpired period, or for another limited period.

Some LICENSORS may request the return of technical documents or the termination of their use in case the LICENSEE has not substantially performed his obligations under the Agreement.

Some LICENSORS ask for the right to terminate or to re-negotiate the Agreement if the LICENSEE has terminated his business or if there is a substantial change in ownership of the LICENSEE and, in particular, if a competitor buys the ownership of the Plant. Whilst it might be appropriate to anticipate this type of event, not all LICENSEES would accept such an Article because it could frustrate the purpose of the Agreement after the lump-sum licence fee has already been paid.

- 9.5.2 This Article safeguards the LICENSEE in the event that the LICENSOR defaults in his obligations.

Article 10. General conditions

10.1 Bank guarantees

A bank guarantee is provided to secure the advance payment made by the LICENSEE and safeguards the LICENSEE in the event of the LICENSOR not fulfilling his obligations. Whether a bank guarantee is required will depend upon the circumstances. Text A of Article 10.1.1 provides for such a guarantee, text B does not (on the grounds that text A is unusual).

In some cases, the LICENSOR also delivers on receipt of payments for the Process Engineering Design Package (Article 8.3 (b)) a bank guarantee for an amount equal to his liability under the Agreement, as limited in Article 3.8, less the amount due to the LICENSOR under Article 8.3 (c); this bank guarantee remains in force until the Performance Guarantees of the Plant have been successfully demonstrated.

Where any bank guarantees are required, a LICENSOR may require that a letter of credit should be opened for the contract price. Hence a LICENSEE should consider all the advantages and disadvantages while deciding on text A or text B.

10.2 Insurance

It is normal practice for the insurance policies specified under Article 10.2.2 to be taken out by the LICENSOR (for his personnel and automobiles) and by the LICENSEE (for his personnel), particularly where local regulations require such insurance.

- 10.2.3 This Article has been included because such insurance cover was recommended by participants in the Third Consultation on the Fertilizer Industry. ^{9/} If the LICENSOR is willing, the LICENSEE should discuss with him whether he has such a corporate Professional indemnity policy and precisely what it covers. In some cases, the LICENSOR may be self-insured for the liabilities likely to arise from this Agreement.

Information is generally not available on whether such policies cover simple negligence or a wider range of errors on the part of the LICENSOR, and the LICENSOR may not be willing to disclose what his

^{9/} Report of the Third Consultation on the Fertilizer Industry, São Paulo, Brazil, 29 September-2 October 1980 (ID/260).

policy covers because it covers the entire business of his corporation rather than the services provided under the Agreement. Such policies are often only for loss of property or loss of life.

In view of these considerations, and the fact that corporate professional indemnity insurance is unusual, the Article has been marked "optional".

No provision has been made in this Article for insuring against the defective specification of materials of construction by the LICENSOR, except in so far as such defects may be covered by the professional indemnity insurance.

10.3 Taxes and levies

The implications of this Article should be carefully considered by the LICENSEE.

10.3.1 This is a general Article stating that the fees cover all taxes outside the LICENSEE's country.

10.3.2 This Article should cover income tax, other taxes, customs duties, imposts and levies imposed on the LICENSOR or on his employees in the LICENSEE's country to be agreed upon from case to case in conformity with the laws in the LICENSEE's country:

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

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

(c) Obligating the LICENSOR, in case of any of his taxes having been assumed by the LICENSEE, to co-operate with the LICENSEE to minimize such tax burdens and to reimburse the LICENSEE with any tax savings that the LICENSOR may have in his country resulting from tax payments effected by the LICENSEE, particularly as a result of double taxation agreements.

10.4 Settlement of disputes and arbitration

Despite the mutual confidence that the two parties have in each other at the Effective Date of the Agreement, differences of opinion can arise in the interpretation of its provisions. Article 10.4 provides for a procedure to refer such disputes to arbitration. However, an attempt at reconciliation is called for before formal arbitration is sought.

In this connection, the party claiming default must do so in writing at the earliest opportunity in order to establish his rights (Article 10.4.2). Article 10.4.3 provides for the use of the procedures of an agreed court of arbitration, such as the arbitration laws of a specified country, the rules of the United Nations Commission on International Trade Law or the rules of the International Chamber of Commerce.

The arbitration rules chosen should be specified either in the Agreement or in a separate annexure. Each alternative has been discussed elsewhere. 10/

As regards arbitration, it is important to clarify:

- (a) How the arbitrators are appointed;
- (b) The rules governing the arbitration;
- (c) The venue and language;
- (d) The governing law of the Agreement.

The governing law of the Agreement is described in Article 11.3. The venue and language of the arbitration are given in Article 10.4.7. It should be noted that the law of a developing country may state that a licensing Agreement will not be approved by the Government if it includes a clause making arbitration in another country or under another national law applicable. 11/

10.4.6 In some cases, the LICENSOR may require a secrecy agreement from the arbitrator(s).

10.5 Force majeure

Since the definition of force majeure could be different under different jurisdictions, certain causes of force majeure that could be encountered are enumerated in Article 10.5.1.

In some cases, strikes, lock-outs and concerted acts of workers and changes in the law and regulations of the Government in the LICENSEE's and LICENSOR's countries may be included as causes of force majeure. In that event, the following additional Article may be added after Article 10.5.2, particularly if strikes are included in the definition:

"The affected party shall be diligent in endeavouring to prevent or to remove the cause(s) of force majeure. Upon receipt of the notice of force majeure, the other party shall confer promptly with the affected party and agree upon a course of action to remove or to alleviate such cause(s), or shall seek alternative methods of achieving the same performance objectives under the Agreement."

10.5.3 If the conditions of force majeure continue uninterrupted for a long and
10.5.4 then the parties shall seek a solution through consultations
(Article 10.5.3) and, in case of lack of agreement, seek a solution through arbitration (Article 10.5.4) or terminate the Agreement.

10/ World Intellectual Property Organization, Licensing Guide for Developing Countries, WIPO Publication No. 620 (Geneva, 1977). UNIDO, Guidelines for Evaluation of Transfer of Technology Agreements, Development and Transfer of Technology Series No. 12 (ID/233).

11/ World Intellectual Property Organization, Licensing Guide for Developing Countries, WIPO Publication No. 620 (Geneva, 1977), para. 642.

Article 11. Miscellaneous provisions

11.1 Assignment

These guidelines and illustrative articles provide for a general requirement that the other party should approve in writing in advance any assignment of the Agreement to a third party. The LICENSEE is unlikely to withhold such approval if the LICENSOR wishes to change the legal entity of the family of enterprises of which he is a member. But the LICENSOR may object with good reason if the ownership of the LICENSEE is transferred to a new owner that is a competitor.

An additional Article may be added to Article 9.4 to make such a transfer of ownership to a competitor a cause for termination of the Agreement. Another approach would be to include in Article 11.1 a provision that the Agreement cannot be assigned by either party without the consent of the other in the event that there is a merger involving a company that owns the technology within the field of agreement.

11.2 General provisions

11.2.1 This is an important Article because some preliminary information may have been exchanged before the conclusion of the licensing Agreement itself.

11.3 Applicable laws and conformity with local statutes

In some countries, the governing law must be that of the country where the Plant is located; where there is a choice, the other possibilities are the law of the LICENSOR's country, the law of a neutral country etc.

A licensing Agreement has multiple facets, often involving contacts in more than one country. It is therefore essential to indicate which is to be the governing or applicable law. The law of some developing countries insists that their own national law governs the transaction.

11.3.2 This Article provides for the action to be taken in the event that laws in the LICENSEE's country are changed after the Effective Date of the Agreement.

11.4 Language

This Article and Article 11.2.4 govern the language to be used in the Agreement. It has been the practice to write contracts in an internationally recognized language that uses terms and expressions commonly used and understood among the contracting parties. In cases where the Agreement is written in two versions using different languages, the official version should be specified in this Article.

11.5 Standards and codes

Standards and codes must be decided either before or at the First Detailed Engineering Meeting at the latest. The standards and codes required for the Process Engineering Design Package should be decided at the time of the signature of the Agreement.

11.6 Notices

This Article should take account of the most reliable form of communication between the parties. It may be telex or the facsimile transmission of documents, which is more reliable than registered mail.

11.6.1 The period of Days allowed for serving the notice can be eliminated if telex or facsimile transmission is used and acknowledged.

11.7 Approvals

This Article describes normal practice in the industry.

11.8 National security

This Article has been included at the suggestion of some developing countries who have found this to be an important consideration. Parties who do not find so may delete this Article.

Annexures

The annexures are an important integral part of the Agreement, and where complementary to any Article should be read in conjunction with that Article.

Annexures I to IV need to be considered specifically for the process concerned and the fertilizer(s) to be manufactured. In the illustrative Articles, they have been drawn up for an ammonia plant using one process.

Annexure IV deals with the quality of the product to be manufactured. It should either be specific to the requirements of the market (e.g. finished fertilizer) or to the requirements of downstream plants (e.g. ammonia used to make urea).

Annexure V contains a preliminary layout of the Plant at the Site and should be revised and firmed-up at the First Basic Design Meeting as far as possible. The definition of battery limits is important as it gives definite limits to the engineering services of the LICENSOR. An illustrative example is given in annexure V.

Annexure VI contains the design basis for the Plant (clause 1.1 of the annexure) as well as the procedure for the transfer of technology to the contractor and the LICENSOR, and a list of the documents required. Detailed guidelines for the Annexure VI are given at its beginning.

Annexure VII consists of a time schedule for the LICENSOR's services and could be modified or altered when a Contractor is appointed, as the scope of the contract with the Contractor may necessitate such modifications.

Annexure VIII is an extremely important part of the Contract particularly where it relates to the Process Engineering Design Package (clause 3 et seq.). This could be modified and altered, if required, when a Contractor is appointed, for the reasons stated above.

Clause 3.3 of annexure VIII consists of contents of the operating manual, which, as far as the LICENSOR is concerned, deal with the process. This manual would need to be amplified by the Contractor to take into account the mechanical operation of the Plant, and should be re-checked by the LICENSOR (see note to clause 3.3).

Clause 3.9 is a list of the Equipment considered critical by the LICENSOR (and the LICENSEE) and the vendors of such Equipment are specified. If the critical Equipment is of a proprietary nature, it is sometimes (e.g. phosphoric acid reactors) supplied by a single manufacturer to the LICENSOR's detailed drawings. In such cases, the price of the Equipment should be established at the time of the Agreement, otherwise it may increase if orders are placed after the Agreement has been signed. In case such critical Equipment exists, it should be inspected by the LICENSOR for compliance with the drawings.

Annexure IX deals with the daily fees and normal facilities given to the LICENSOR's personnel at the Site. The number of personnel required will depend upon the resources of the LICENSEE and the contractor, and should be determined on a case-to-case basis.

Annexure X deals with the categories of personnel to be trained by the LICENSOR, and is in the nature of a check-list. The number of personnel could be altered, depending on the LICENSEE's experience and resources, and the plants where they are to be trained should be specified.

Annexure XI is an extremely important part of the Agreement and contains the guarantees that are offered by the LICENSOR for his Process. The example in this annexure is only applicable to an ammonia process. This annexure should be completed on a case to case basis, and should be as comprehensive as possible. Where more than one product is being manufactured (e.g. in the case of NPK fertilizers), guarantees for each product should be given separately.

Annexure XII contains the model form of bank guarantee for advance payment recommended by UNIDO. It is only applicable when text A of Article 10.1 of the Agreement is used.

If a bond for advance payment is accepted by the LICENSEE, the wording is generally modified by the bonding agency. The bond should be carefully examined and should avoid wording that could involve expensive litigation in enforcing the bond.

Annexure XIII is only an indicative list of the conditions of Mechanical Completion and readiness of the Plant for Start-up. It could change on a case-to-case basis. In any event, this is an important annexure and should be carefully reviewed as it forms an interface between the responsibilities of all three parties.

It should be emphasized that many of the illustrative Annexures are in the nature of check-lists and illustrative clauses for an agreement for an ammonia plant and should be read as such.

III. ILLUSTRATIVE ARTICLES OF A
LICENSING AND ENGINEERING SERVICES AGREEMENT

ARTICLE 1

Definition:

In this Agreement, the following expressions shall have the meanings assigned to them in this Article:

- 1.1 "Agreement" shall mean this Licensing and Engineering Services Agreement together with the Annexures entered into between the LICENSOR and the LICENSEE for the grant of the Licence to use the Process as hereinafter defined, together with all of the documents that have been made a part of the Agreement including such amendments and/or changes made to those documents by mutual written agreement between the parties.
- 1.2 "LICENSOR" shall mean the party named as such in this Agreement or his successors or permitted assigns.
- 1.3 "LICENSEE" shall mean the party named as such in this Agreement or his successors or permitted assigns.
- 1.4 "Applicable Patents" shall mean the patents and patent applications, according to which the Plant shall be designed, owned or controlled by the LICENSOR, as the case may be, the more important of which are given in annexure I.
- 1.5 "Approval" shall have the meaning ascribed to it in Article 11.7.
- 1.6 "Basic Design Data" shall mean the information provided by the LICENSEE as prescribed in clause 1.1 of annexure VI.
- 1.7 "Commercial Production" shall mean the continuous production of specification-grade Product at the rate of () for () Days.
- 1.8 "Confidential Information" shall mean the Confidential Information as defined in Article 4.4.
- 1.9 "Contractor" shall mean the engineering organization(s) appointed by the LICENSEE to undertake detailed engineering, procurement and erection of the Plant based on the Know-How.
- 1.10 "Days" shall mean calendar days.
- 1.11 "Effective Date" shall mean the date on which this Agreement shall come into effect in accordance with the provisions of Article 9.1.
- 1.12 "Expanding the Capacity" shall mean an increase in the capacity of the Plant, in excess of the design capacity, consequent on the installation of additional items of major equipment or the replacement of major items of equipment by equipment of a larger capacity, as described in Article 3.7.
- 1.13 "First Basic Design Meeting" shall mean the first technical meeting between the LICENSEE and the LICENSOR according to Articles 4.1 and 5.2 and annexure VI, clause 1.2.

- 1.14 "First Detailed Engineering Meeting" shall mean the first meeting between the LICENSEE, the Contractor and the LICENSOR following the appointment of the Contractor according to annexure VI, clause 2.
- 1.15 "Performance Guarantee Test(s)" shall mean the test operation of the Plant as specified in Article 3.5 to be undertaken for the purpose of demonstrating the Performance Guarantees.
- 1.16 "Improvements" shall mean any modification or refinement of the Process and/or Know-How, whether patented or not, which has been developed or acquired during the period covered by this Agreement by one of the parties hereto, or during the period fixed in the Agreement and which is capable of improving the technical and/or characteristics of the Process.
- 1.17 "Know-How" shall mean all the technical data, information drawings, designs and instructions relevant to the "Process" in the possession of the LICENSOR, in industrial use and operated in the LICENSOR's and/or his other LICENSEES' plant(s) at the Effective Date and which the LICENSOR is entitled to disclose, which is embodied in the Process Engineering Design Package and which is sufficient to enable an experienced Contractor to undertake the detailed engineering and construction of the Plant, and to enable the LICENSEE's personnel to operate the Plant on the basis of the Process.
- 1.18 "Mechanical Completion" shall mean the time when the physical construction of the Plant has been completed, all the necessary mechanical tests have been satisfactorily completed, the Mechanical Completion Certificate has been issued and the Plant is ready for Start-Up as defined in annexure XIII.
- 1.19 "Performance Guarantees" shall mean the guarantees of performance of the Plant as defined in Article 3.5 and annexure XI.
- 1.20 "Plant" shall mean the manufacturing facilities to be built by the LICENSEE at the Site in (country) according to the Process for the production of (Product) at a design capacity of () tonnes per annum based on (330) operating Days per annum.
- 1.21 "Process" shall mean (the latest) 12/ commercially proven process developed or acquired and owned by the LICENSOR at the Effective Date, which is the subject of this Agreement, and which is described in detail in annexure II.
- 1.22 "Process Engineering Design Package" shall contain the Know-How as defined above in Article 1.17 and described in more detail in annexure VIII.
- 1.23 "Product" shall mean the product(s) of the Plant according to the specifications set forth in annexure IV.
- 1.24 "Site" shall mean the land upon which the Plant is to be constructed as specified in annexure V.

12/ The words in brackets are to be removed if the Process purchased is not the latest to be developed or acquired by the LICENSOR.

- 1.25 "Start-Up" shall mean the date by which the operations of pre-commissioning and commissioning shall have been completed and the Plant commences the production of Product(s).
- 1.26 "Technical Advisor" shall mean any person or person(s) appointed by the LICENSEE for giving Approval under the Contract.
- 1.27 "Technical Documentation" shall mean the technical documents described in annexure VI and annexure VIII.
- 1.28 "Tonne(s)" refers (refer) to metric tonne(s).
- 1.29 "Equipment" shall mean all the equipment, machinery, apparatus, instruments, commissioning equipment and spares required to operate the Plant in accordance with the Agreement.

ARTICLE 2

Description of the Plant and the Process

- 2.1 The LICENSEE intends to establish a Plant at (name of town) in (country) to manufacture specification grades of (Product). The design capacity of the Plant shall be () Tonnes of Product per Day on stream and shall be designed to operate at least (330) Days per year.
- 2.2 The Plant shall use the _____ Process as described in annexure II and consist of the units described in annexure III.
- 2.3 The Plant shall be designed to produce the different grades of Product according to the specifications described in annexure IV.
- 2.4 The preliminary outline of the Site of the Plant is provided for in annexure V.
- 2.5 The feedstock has the specifications detailed in annexure XI.
- 2.6 The Process covers all the manufacturing facilities between the points where feedstocks, other raw materials and utilities enter the Plant and the points at which the Product and effluents leave the Plant. The battery limits of the Plant are specified in annexure V.

ARTICLE 3

Obligations of the LICENSOR

3.1 Grant of patent rights and licence

The LICENSOR warrants that he has the right to grant and hereby agrees to grant to the LICENSEE on the Effective Date a non-exclusive non-transferable licence and the right to use the Know-How and the Applicable Patents for the purpose of:

(a) Designing, constructing and operating the Plant for the manufacture of the Product(s) and to use the Process Design Engineering Package to purchase or to acquire any equipment, apparatus or any specialized equipment required for this purpose;

(b) Manufacturing the Product(s) in the Plant corresponding to the capacity defined in Article 2.1 and, without restriction from the LICENSOR, to use and sell the Product in (country) and in any other country or countries.

3.1.1 The grant of the licence and rights according to Article 3.1 shall not be interpreted to mean:

(a) An assignment of the LICENSOR's proprietary know-how and title to the Applicable Patents to the LICENSEE;

(b) The grant of rights under third-party patents or know-how pertaining to the manufacture, sale, or use of know-how pertaining to the manufacture, sale, or use of equipment, apparatus, or catalysts.

3.2 Improvements in the Process

The LICENSOR undertakes of his own initiative to make available to the LICENSEE all minor Improvements in the Process developed or acquired by the LICENSOR and of which he is entitled to dispose for the duration of the Agreement (or, if agreed, a specified period) and specifically:

(a) To make available, free of charge, all Improvements in operating techniques, preventive maintenance and safety measures, and Process developments not covered by (b) below applicable to the Plant including other relevant data and proprietary information which are made available free of charge by the LICENSOR to other licensees of the Process;

(b) To grant to the LICENSEE, on payment of a reasonable fee to be agreed upon and on agreed terms, the rights to use Process proprietary developments implemented or acquired by the LICENSOR, including patented developments, which could result in significant 13/ improvement(s) in the capacity, reliability and efficiency of the Plant and quality of the Products.

13/ The word "significant" should be clarified and negotiated on a case-to-case basis.

3.2.1 The LICENSOR shall inform the LICENSEE in writing or in any other appropriate way, such as meetings for the exchange of information among LICENSEES, of the availability of all Improvements in the Process when they are developed or acquired by the LICENSOR and applied in the LICENSOR's plant or plants of any other licensee who, in his respective licence agreement, has agreed that such improvements may be disclosed by the LICENSOR to the LICENSEE.

3.3 Supply of Technical Documentation and related services

The LICENSOR shall supply to the LICENSEE sufficient technical information and Know-How related to the Process to enable the LICENSEE to undertake, through his Contractor, the detailed engineering of the Plant, to construct the Plant, to commission the Plant from a process engineering point of view and to operate the Plant. The documentation to be supplied for this purpose shall include:

(a) The Process Engineering Design Package described in annexure VIII;

(b) The other technical information, data and drawings listed in annexure VI.

3.3.1 The LICENSOR shall ensure that all information required for the detailed engineering of the Plant by the LICENSEE through the Contractor is made available in accordance with the time schedule, place of delivery and number of copies required, as detailed in annexures VI and VIII. In the event that the documents supplied are incomplete and have to be completed, the date of delivery of the documents shall be the date on which such completions are supplied by the LICENSOR provided LICENSEE has provided the Basic Design data in time. If any explanation is required by the LICENSEE through the Contractor, such explanation shall not be unreasonably withheld by the LICENSOR.

3.3.2 The LICENSOR shall arrange for the personnel of the LICENSEE and, subject to the approval of the LICENSOR, for his Contractor to visit on agreed occasions the LICENSOR's plants operating at (locations) using the Process. These visits shall be scheduled so as not to interfere with the operation of the plants visited.

3.3.3 The LICENSOR shall supply any other information on the Process and Know-How that may be reasonably required by the LICENSEE through his Contractor for undertaking the detailed engineering, erection and operation of the Plant.

3.3.4 The LICENSOR shall deliver to the LICENSEE, as detailed in annexure VIII, the names of the vendors supplying all items of Equipment of a proprietary or critical nature that form an essential part of the Process that are listed in annexure VI and shall specify the instruments and supplies recommended.

3.3.5 The list of the major items of engineering services that may affect the Performance Guarantees of the Plant are detailed in annexure VI. These include all the items of detailed engineering which the LICENSOR wishes to approve and those which the LICENSEE requires the LICENSOR to review and approve. The LICENSOR shall review for conformity with the Process Engineering Design Package the detailed engineering design of all the items listed for such approval in annexure VI.

3.3.6 The LICENSOR shall indicate the suppliers of catalysts and other chemicals required for the Start-Up of the Plant, the demonstration of the Performance Guarantee Tests and the subsequent operation of the Plant.

3.3.7 The LICENSOR shall provide competent personnel to instruct and witness the commissioning and Start-Up of the Plant and the conducting of the Performance Guarantee Tests.

3.4 (See guidelines.)

3.5 Performance Guarantees of the Process

Subject to the conditions given below, the LICENSOR guarantees that the Plant shall meet the Performance Guarantees listed below during a continuous Performance Guarantee Test run:

(a) The Plant shall produce () Tonnes per Day of (Product) of specification grade in accordance with annexure IV;

(b) The consumption of raw materials and utilities shall be as given in annexure XI;

(c) The quality and quantity of effluents and emissions shall be in accordance with annexure XI;

(d) The application of the Process and the operation of the Plant shall meet the safety and environmental requirements as specified in the Basic Design Data furnished by the LICENSEE,

Provided that the following conditions are met:

(i) The Plant has been designed and constructed in strict accordance with the Process Engineering Design Package, the Know-How and Technical Documentation furnished by the LICENSOR, subject to any changes approved in writing by the LICENSOR;

(ii) The LICENSEE provides a constant and adequate supply of the raw materials and utilities as defined in annexure XI and employs a catalyst recommended by the LICENSOR;

(iii) The LICENSEE provides the number of trained personnel for the Plant as defined in Article 6 and annexure X;

(iv) The Plant is mechanically complete and ready for Start-Up as specified in annexure XIII and is free from mechanical defects;

(v) The Performance Guarantee Test is run for the periods specified in Article 3.5.1 and is operated according to the instructions of the LICENSOR and according to good engineering and normal operating practice.

3.5.1 A Performance Guarantee Test shall be performed within (3) months from the Mechanical Completion, and after the Plant has been operating

14/ This period would be as agreed between the Contractor and the LICENSEE.

at an average of (90) per cent of capacity for (20) Days, 14/ and the Performance Guarantee shall be demonstrated by means of a (10)-Day continuous operation test of the Plant during which:

(a) The Plant produces () Tonnes of Product;

(b) The Product, when separately collected in each (8)-hour shift and analysed in accordance with the procedures contained in annexure IV, meets the specifications provided in annexure IV during each shift;

(c) The effluents and emissions, when analysed at regular intervals in each (8)-hour shift, meet the specifications provided in annexure XI.

3.5.1.1 During the (10)-Day period, the following guarantees shall be demonstrated within a (7)-Day consecutive period: the consumption of raw materials and utilities, when averaged over the (7)-Day test period, shall meet the guarantees provided in annexure XI.

3.5.2 The LICENSOR shall prepare a Performance Guarantee Test report based upon the measurements carried out jointly by the LICENSEE and the LICENSOR's personnel during the Performance Guarantee Test(s) immediately after completion of the tests, and the report shall be countersigned by the LICENSEE. If the Plant's performance is satisfactory according to Article 3.5, the LICENSEE shall issue to the LICENSOR an acceptance certificate within (2) Days of completion of the report and, if unsatisfactory, shall state his reasons for withholding the certificate.

3.5.3 If the Plant does not meet the guarantees laid down in Article 3.5, the LICENSOR and the LICENSEE, assisted by the Contractor, shall meet to determine the reasons for this failure.

Text A

The LICENSOR shall, within () Days thereafter, advise the LICENSEE on whether changes in operating procedures, modification or replacement of Equipment or installation of additional Equipment or facilities are required to meet the Performance Guarantees.

Text B

If the failure is attributable to the LICENSOR, the LICENSOR shall without delay advise the LICENSEE on whether changes in operating procedures, modifications or replacement of Equipment or installation of additional Equipment or facilities are required to meet the Performance Guarantees.

3.5.4 If the Performance Guarantees are not met owing to defects in the Process and/or Process Engineering Design Package attributable to the LICENSOR, the LICENSOR shall, at his own expense, provide such drawings and/or data as are necessary to rectify the defects and thereby to achieve the Performance Guarantees. The LICENSOR and the LICENSEE shall determine a mutually agreeable schedule to incorporate such changes, modifications or additions to the Plant. The LICENSOR shall bear the cost of basic and detailed design procurement and inspection of the required Equipment necessary to

make such changes. The LICENSOR shall also bear the cost of replacement ex-Site of incorrectly or inadequately specified Equipment or materials.

3.5.4.1 The maximum aggregate liability to the LICENSOR in connection with the LICENSOR's Performance Guarantees under this Agreement shall not exceed (), except that such limit shall not apply to the re-performance of the services within his original scope of work under this Agreement.

3.5.4.2 If during detailed engineering erection, commissioning or operation of the Plant or the running of the Performance Guarantee Tests, a fault in the basic Process engineering services given by the LICENSOR under this Agreement is discovered, the LICENSOR shall advise the LICENSEE of the corrective action to be taken, and to repeat such of the services of his original scope of work as may be required, without additional cost to the LICENSEE.

Text A
(beginning only)

If the Performance Guarantees are not met owing to reasons attributable to the LICENSEE (including reasons attributable to the Contractor) ...

Text B
(beginning only)

If the Performance Guarantees are not met owing to reasons not attributable to the LICENSOR ...

- 3.5.5 The LICENSEE shall, through the Contractor, proceed to effect the rectifications which in the professional judgement of the LICENSEE, but with the advice and approval of the LICENSOR, are necessary to rectify the defects and thereby to achieve the Performance Guarantees. The LICENSEE shall bear the costs of design, purchase, delivery and installation of the required Equipment necessary to make such changes.
- 3.5.6 If the LICENSOR and the LICENSEE do not agree as to the party to whom the reasons for the failure of the Performance Guarantee Tests is to be attributed, the parties shall try to find a solution by mutual agreement. In the event that no agreement is reached, the provisions of Article 10.4 on arbitration shall apply.
- 3.5.7 The LICENSOR or the LICENSEE, as the case may be, shall in every case keep accurate records of the costs of rectifying any defect(s) in pursuance of this Article, and each party shall be entitled to receive copies of the relevant documents.
- 3.5.8 The LICENSEE shall not be required to make any payment to the LICENSOR for the extension of the services of the LICENSOR's personnel beyond the first unsuccessful Performance Guarantee Test run, to the extent that the Plant fails to demonstrate the Performance Guarantees for reasons attributable to the LICENSOR.

Text A

3.5.9 In the event that the Plant in the second Performance Guarantee Test is unable to demonstrate the Performance Guarantees for reasons attributable to the LICENSOR, but achieves a performance above the minimum specified below, the LICENSOR shall have the right to pay to the LICENSEE liquidated damages established in the manner set out in Article 3.6 below, and thereupon be relieved of his obligations in accordance with Article 3.6:

(a) (95) per cent of the production capacity equivalent to () Tonnes per Day;

(b) Consumption of feedstock exceeds the guaranteed level by () per cent;

(c) Consumption of catalysts, chemicals, steam and power exceeds the guaranteed level by () per cent.

Text A

3.5.10 In the event that the Performance Guarantees are not met and the liquidated damages under Article 3.5.9 do not apply and the LICENSOR refuses or is unable to suggest such rectifications to the Plant as to meet these conditions within () months, the LICENSEE shall have the right to rectify the Plant. For this purpose, the LICENSEE may approach any other party for advice and Know-How on the operation or modification of the Plant and the LICENSEE may carry out such modifications of the Plant as may be necessary in order to secure production of the Product in the quantity and of the specification and with the consumption of feedstock to the guaranteed levels specified in this Agreement. In doing so, the party concerned shall sign a confidentiality agreement with the LICENSEE co-extensive with the confidentiality agreement contained

Text B

3.5.9 In the event that the Plant is still unable in the second Performance Guarantee Test to demonstrate the Performance Guarantees for reasons attributable to the LICENSOR, the LICENSOR shall have the right to pay to the LICENSEE liquidated damages established in the manner set out in Article 3.6 below, and thereupon be relieved of his obligations in accordance with Article 3.6.

Text B

3.5.10 In the event that the Plant in the final Performance Test is unable to meet the Performance Guarantee Tests owing to a fault of the LICENSOR and the liquidated damages under Article 3.5.9 do not apply and the LICENSOR refuses or is unable to suggest such rectifications to the Plant as to meet these conditions within () months, the LICENSEE shall have the right to rectify the Plant. For this purpose, the LICENSEE may approach any other party for advice and Know-How on the operation or modification of the Plant as may be necessary in order to secure production of the Product in the quantity and of

in Article 4.4. If no competent party is available who shall sign the agreement, the LICENSOR shall waive the secrecy provisions of the confidentiality agreement. The LICENSOR shall be liable to pay for the full cost of the Know-How and drawings supplied by the new party, and up to the maximum liability provided for in Article 3.5.4.1 for modifications to the Equipment.

the specification and with the consumption of feedstock to the guaranteed levels specified in this Agreement. In doing so, the party concerned shall sign a confidentiality agreement with the LICENSEE co-extensive with the confidentiality agreement contained in Article 4.4. The LICENSOR shall be liable to pay for the cost of the Know-How and drawings supplied by the new party, and for modifications to the Equipment, all up to the maximum liability provided for in Article 3.5.4.1.

3.5.11 If, for reasons not attributable to the LICENSOR, the Performance Guarantees have not been demonstrated within () months of supply of the Process Engineering Design Package, or within () months from the Effective Date, whichever comes later, or after a Performance Guarantee Test having been unsuccessful, the LICENSEE refuses or neglects to effect the rectifications according to Article 3.5.5 within () months from the date of the unsuccessful Performance Guarantee Test, the obligations of the LICENSOR with regard to the Performance Guarantees of the Plant shall become void and the Performance Guarantees shall be deemed to have been fully met, and the acceptance certificate under Article 3.5.2 shall be issued.

3.5.12 If, for reasons not attributable to the LICENSOR, the first Performance Guarantee Test has not been made within the period stipulated in Article 3.5.11 above, the LICENSOR shall, at a time convenient to both parties, assist the LICENSEE in the Start-Up of the Plant at a later date. This will be subject to additional fees and travel expenses, which take account of the increased costs to the LICENSOR, being agreed between the LICENSEE and the LICENSOR.

3.6 Liquidated damages

The LICENSOR shall be subject to liquidated damages to be paid to the LICENSEE:

Text A

Text B

3.6.1 If the LICENSOR fails to deliver the Process Engineering Design

3.6.1 If the LICENSOR fails to deliver the Process

Package in accordance with
annexure VII
(amount)
for each week of delay.

Engineering Design
Package, for reasons
attributable to the
LICENSOR, in accordance
with annexure VII
(amount)
for each week of delay.

3.6.2 If, for reasons attributable to the LICENSOR, the Plant fails to demonstrate the Performance Guarantees set out in Article 3.5 in the last Performance Guarantee Test conducted (and subject to the provisions of Article 3.5.9) 15/ the LICENSOR shall pay to the LICENSEE liquidated damages.

(a) To the extent that the consumption of catalysts, chemicals, steam and power per 1,000 kg of Product produced is in excess of the guaranteed quantities, the LICENSOR shall pay to the LICENSEE liquidated damages as follows: 16/

- (i) For every () excess consumption of (catalysts), a sum of (amount) per ();
- (ii) For every () excess consumption of (chemicals), a sum of (amount) per ();
- (iii) For every () excess consumption of steam, a sum of (amount) per ();
- (iv) For every () excess consumption of power, a sum of (amount) per ().

3.6.2.1 The LICENSEE, when the LICENSOR agrees that liquidated damages are due, may deduct the amount of such liquidated damages from any payments due to the LICENSOR.

3.6.2.2 The payment of such liquidated damages shall relieve the LICENSOR only from those specific obligations for which the liquidated damages have been paid.

3.7 Expanding the capacity of the Plant

In the event that the LICENSEE desires to expand the capacity of the Plant or to erect one or more additional Plant(s) for his own use in (country), and has requested the LICENSOR to specify a licence fee applicable to such expansion or additional Plant(s), the LICENSOR agrees that for such expansions or additional Plant(s) concerning which the LICENSEE executes engineering or construction contracts within () years of the execution date of this Agreement, the LICENSOR shall charge the LICENSEE a licence

15/ The words in brackets are to be used only if text A of Article 3.5.9 is used, otherwise they can be deleted.

16/ For additional clauses regarding production capacity and consumption of feedstocks, see guidelines for Article 3.6.2.

fee of (amount). This licence fee shall be applicable to an additional plant utilizing the Process and of the same design capacity as the Plant, and prorate to the additional design capacity attributable to an expansion of the capacity of the Plant.

3.7.1 The provisions of Article 3.7 shall not be deemed to imply that the third-party technology in the Process Engineering Design Package shall be available for licensing at the time of the expansion of the Plant or the erection of an additional plant and, if such third-party technology is available at the time a licence is needed, the rate in Article 3.7 shall be adjusted to reflect cost variations in the licence fee for the third-party technology.

3.7.2 The licence fee specified in Article 3.7 does not include fees for the use of the LICENSOR's Improvements under Article 3.2(b).

Text A

Text B

3.7.3 In the event that any additional process design work other than that contained in the original Process Engineering Design Package is necessary in connection with an expansion or additional plant covered by Article 3.7, that work shall be carried out by the LICENSOR without any additional fee to that payable under Article 3.7.

3.7.3 In the event of another use of the Process Engineering Design Package for another plant using the Process at the same design capacity, or for any expansion of the Plant, a fee of (amount) shall be paid by the LICENSEE to the LICENSOR for the same design capacity. In the event that any additional process engineering design work other than that contained in the Process Engineering Design Package is required in connection with an expansion or another plant using the Process, that work shall be carried out by the LICENSOR for an additional fee and under a separate agreement.

3.7.4 Terms of payment shall be as mutually agreed upon between the LICENSEE and the LICENSOR. 17/

Text A

Text B

3.7.5 There shall be no restrictions on the LICENSEE expanding the Plant by using a process other than that covered by the

3.7.5 In case of expansion of the Plant by using a process other than that covered by the present Agreement and

17/ The terms of payment are to be agreed upon at the time of negotiating the Agreement.

present Agreement, and employing any other licensor for this purpose.

employing any other LICENSOR for this purpose, no obligation of confidentiality shall be breached.

3.8 Limitation of liability

Text A

3.8.1 The LICENSOR's total liabilities under this Agreement shall be limited to () per cent of the lump-sum fee mentioned in Article 8, with the following exceptions:

(a) Liabilities for patent infringement (Article 7, text A);

(b) Liabilities for defaults in the Process Know-How and Process Engineering Design Package.

Text B

3.8.1 The LICENSOR's total liabilities under this Agreement shall be limited to () per cent of the lump-sum fee mentioned in Article 8.

- 3.9 The LICENSOR shall not be liable for loss of anticipated profits or for any consequential loss or damage arising from any cause. The acceptance certificate under Article 3.5.2 shall be deemed to be issued as soon as either the liquidated damages under Article 3.6 have been paid by the LICENSOR or the liability limits under Article 3.8 have been reached (subject to the provisions of Articles 3.5.9 and 3.8.1(a) and (b)). 18/
- 3.10 The issue of the acceptance certificate by the LICENSEE shall terminate the LICENSOR's obligations and liabilities regarding the performance of the Plant.

18/ The words in brackets are to be used only if text A of Articles 3.5.9 and 3.8.1 is used, otherwise they can be deleted.

ARTICLE 4

Obligations of the LICENSEE

4.1 Provision of Basic Design Data for the Plant

4.1.1 The LICENSEE shall provide and be responsible for the accuracy of the Basic Design Data, in accordance with clause 1.1 of annexure VI, on which the design of the Plant is to be based. The Basic Design Data shall be transmitted to the LICENSOR and discussed at the First Basic Design Meeting, in accordance with clause 1.2 of annexure VI.

4.1.2 The First Basic Design Meeting shall be held within () Days of the receipt of the Basic Design Data in accordance with clause 1.4 of annexure VI.

4.2 Improvements in the Process

4.2.1 The LICENSEE undertakes on his own initiative to make available to the LICENSOR all Improvements in the Process developed or acquired by the LICENSEE, and of which he is entitled to dispose for the duration of the Agreement (or, if agreed, a specified period) and specifically:

(a) To make available free of charge to the LICENSOR all developments and Improvements in operating techniques, preventive maintenance and safety measures and Process development not covered by (b) below, and applicable to the Plant;

(b) To grant to the LICENSOR, on payment of a reasonable fee and on agreed terms, the rights to use proprietary Process developments implemented by the LICENSEE, including patented Process developments, which could result in significant improvement(s) in the capacity, reliability and efficiency of the Plant and the quality of the Products.

4.2.2 The LICENSEE shall inform the LICENSOR in writing of the availability of all Improvements as they are developed and applied by the LICENSEE in the Plant, or in any plant falling within the provisions of Article 3.7.

4.3 Appointment of the Contractor

4.3.1 The LICENSEE and the LICENSOR shall mutually agree on the appointment of the Contractor to undertake the detailed engineering and construction of the Plant.

4.3.2 The Contractor shall be obliged to sign a secrecy agreement before the receipt of any Confidential Information.

4.4 Secrecy and confidentiality

Text A

4.4.1 The LICENSEE shall treat all Process and technical information, proprietary Know-How,

Text B

4.4.1 The LICENSEE shall keep any item of the Know-How, the Process Engineering Design

patented processes, documents, data and drawings supplied by the LICENSOR as Confidential Information and shall not divulge such Confidential Information to a third party except when required by law, when the LICENSEE shall inform the LICENSOR in advance. These obligations shall begin with the first supply or disclosure of the Confidential Information and shall cease (10) years after the date of disclosure and for the Improvements (10) years after the date of their receipt. The LICENSEE shall not utilize the Confidential Information for any purpose other than for completing, operating, repairing, maintaining or modifying the Plant.

Package, the Applicable Patents, the Improvements, the Basic Design Data, specifications and Technical Documentation supplied to him by the LICENSOR strictly confidential and shall not divulge the same to third parties. The LICENSEE shall not use such Confidential Information for any purpose other than for the design, construction, erection, maintenance, operation, repair or modification of the Plant. The LICENSEE undertakes to take all steps and measures to ensure that these obligations will be strictly met and shall impose corresponding obligations on his employees, the Contractor and the sub-contractors entrusted with the work related to the design, construction or repair of the Plant. These obligations shall begin with the first supply or disclosure of the Confidential Information and shall cease (10) years after the date of Start-Up and for the Improvements (10) years after the date of their receipt.

Text A

Text B

4.4.2 The employees of the LICENSEE, the Contractor and their sub-contractors entrusted with the work relating to the Plant shall be bound by the same obligations of confidentiality as the LICENSEE.

4.4.2 Not used.

Text A

Text B

4.4.3 Information received from the LICENSOR shall not be deemed to be Confidential Information when:

4.4.3 The obligations according to Article 4.4 shall not apply, however, to any item of Confidential Information for which the LICENSEE can prove that:

(a) It enters the public domain by publication or otherwise;

(b) It was in the possession of the LICENSEE at the signing of the Agreement;

(a) It was in the possession of the LICENSEE prior to its receipt, without binder of secrecy;

(c) It is made available to the LICENSEE independently by a third party.

(b) It is or has become part of the public domain by publication or otherwise through no fault of the LICENSEE;

(c) It was made available to the LICENSEE without any binder of secrecy from a third party having a bona fide right to disclose the same to the LICENSEE.

Text A

Text B

4.4.4 The LICENSEE shall be authorized, without prior approval of the LICENSOR, to disclose such parts of the Confidential Information received from the LICENSOR to the Contractor and suppliers of Equipment and/or subcontractors and/or insurance companies when such information is absolutely necessary to call for bids or to purchase Equipment and/or for the insurance of the Equipment and/or the Plant. The LICENSEE shall make recipients of Confidential Information sign appropriate secrecy agreements.

4.4.4 The LICENSEE shall be authorized to disclose, to the extent necessary, such parts of the Confidential Information received from the LICENSOR to the Contractor and suppliers of Equipment and/or subcontractors, and/or insurance companies in (country) when such information is necessary to prepare bids or to purchase Equipment and/or the Plant, provided that the LICENSOR has previously concluded secrecy agreements with such parties, the stipulations of which substantially correspond to Article 4.4.

Text A

Text B

4.4.5 The LICENSEE shall be authorized to communicate to any Government agency or regulatory body such parts of the Confidential Information as may be required by the applicable law relating to the approval or registration of this Agreement, or a grant of licence(s) for the import of Equipment or any other matter pertinent to the setting-up of the Plant.

4.4.5 The LICENSEE shall be authorized, in the same manner as in Article 4.4.4, to communicate the required Confidential Information to any Government agency as may be required by the applicable law relating to the approval or registration of this Agreement, or a grant of licence(s) for the import of Equipment or any other matter pertinent to the setting-up of the Plant.

4.4.6 Subject to the LICENSOR's written approval in advance, the LICENSEE shall be authorized to disclose to a Government research laboratory contracted by the LICENSEE, part of the Confidential Information received from the LICENSOR, and to the recipients of such information being bound by the same obligations of Confidentiality as the LICENSEE. This approval shall not be unreasonably withheld.

4.5 Except for items expressly designated in this Agreement as being within the LICENSOR's scope of work, the LICENSEE shall provide or have provided all work, services, and equipment necessary for the design, construction, operation and maintenance of the Plant.

ARTICLE 5

Co-ordination of the work

- 5.1 The LICENSOR shall assist the LICENSEE and the Contractor in the technology transfer during the preparation of the Process Engineering Design Package and assist them in undertaking the detailed engineering, Start-Up and commissioning of the Plant as specified in the Agreement. The details of the arrangements for co-ordination of the work to be undertaken by the LICENSOR, the LICENSEE and the Contractor are specified below and in annexure VI and the time schedule in annexure VII.
- 5.2 Upon completion of each part of the Process Engineering Design Package, and at times to be mutually agreed upon, the LICENSOR shall accept in his design office representatives of the LICENSEE in accordance with the dates, number of Days and number of persons defined in annexures VI and VII. The Contractor, if already selected, shall assist at the meetings. For the duration of these meetings, the LICENSOR shall provide office accommodation, technical and secretarial assistance.
- 5.3 Detailed engineering
- 5.3.1 The LICENSEE, in his contract with the Contractor, shall make arrangements for co-ordinating the work he undertakes with the LICENSOR. The arrangements shall include but not be limited to the arrangements listed in this Article 5 and annexures VI and VII.
- 5.3.2 The LICENSEE shall convene within () Days of the Effective Date of the Agreement at (place) in (country) the First Detailed Engineering Meeting with the LICENSOR and the Contractor to discuss and agree on the matters listed in Article 5 and annexures VI and VII.
- 5.3.3 In order to assist the LICENSEE and the Contractor in the detailed engineering of the Plant, the LICENSOR shall take part in the design meetings to be held between the LICENSEE and the Contractor. The place, date, duration, number and qualification of the participants and the scope of each meeting shall be agreed upon at the First Detailed Engineering Meeting. At these meetings the LICENSOR shall:
- (a) Give advice and supply information on the Process according to Article 3.3.3;
 - (b) Review all the Process-related detailed engineering designs and drawings that are specified in Article 3.3.5 and annexure VI as requiring the LICENSOR's review and approval. The meetings shall be held either at the Contractor's or the LICENSEE's office. The secretarial assistance shall be given by the host organization.
- 5.3.4 The LICENSEE (directly or through his Contractor) shall prepare the detailed engineering of the Plant strictly in accordance with the Process Engineering Design Package.
- 5.3.5 The LICENSEE shall notify the LICENSOR of any changes he wishes to make in the Process Engineering Design Package. If, in the opinion of the LICENSOR, such changes could prevent the LICENSOR from fulfilling any of his obligations under the Agreement, he shall

notify the LICENSEE in writing of the modifications to his obligations that would result and the cost of such changes, if any, and the LICENSEE shall communicate to the LICENSOR within () Days, whether or not the changes shall be carried out. If the LICENSEE reconfirms in writing his intention to carry out the changes, then the obligations of the LICENSOR shall be modified to such extent as the LICENSOR specifies, and the LICENSEE shall pay to the LICENSOR the cost of changes, in the Process Engineering Design Package, if any.

5.4 Procurement

5.4.1 The LICENSOR shall assist the LICENSEE and the Contractor in the procurement of the critical items of equipment listed in annexure VI and, where agreed upon between the parties, take part in the tests and acceptance procedures at the manufacturing plants. The schedule and method of the LICENSOR's participation in the work shall be agreed upon at the detailed engineering meetings.

5.5 Construction of the Plant

The LICENSOR shall assist the LICENSEE in the erection of the Plant as far as process aspects and the basic process engineering aspects are concerned. For this purpose the LICENSOR shall:

(a) At the LICENSEE's request, give advice on questions concerning erection;

(b) Inspect the Plant prior to Mechanical Completion at times to be agreed upon and report to the LICENSEE any evident defects which would affect the safe and efficient operation of the Plant and/or the demonstration of the Performance Guarantees.

5.6 Start-Up

The LICENSOR shall, as far as process aspects and the basic process engineering aspects are concerned, give instructions relating to the Process and to the operation of the Equipment arising from his Process Engineering Design Package, and shall assist in the Start-Up and commissioning of the Plant and shall direct the Performance Guarantee Tests. The LICENSEE and/or the Contractor shall be responsible for the mechanical operation of the Equipment, and for providing operating staff, raw materials, utilities and other conditions necessary for the Start-Up, commissioning and Performance Guarantee Tests.

5.7 LICENSOR's personnel

Text A

5.7.1 The LICENSOR shall communicate to the LICENSEE the background and experience of the persons proposed for all assignments in the LICENSEE's country. No person shall be deputed without the LICENSEE's approval, which shall not be withheld or refused unreasonably and without consultation with the LICENSOR.

Text B

5.7.1 The LICENSOR shall communicate to the LICENSEE the background and experience of the persons proposed for all such assignments.

Text A

5.7.2 The LICENSEE shall have the right at any time to require the immediate repatriation of any of the LICENSOR's personnel found to be negligent or lacking in competence or guilty of misconduct. In such cases the LICENSOR shall immediately satisfy himself of the validity of the claim and shall provide a replacement in not less than () Days. The costs of repatriation and of providing a replacement shall be borne by the LICENSOR.

5.7.3 The LICENSOR's obligations to depute personnel to the country of the Plant under the Agreement shall be limited to () man-Days except where required to complete the Performance Guarantees successfully.

Text B

5.7.2 The LICENSOR and the LICENSEE shall consult each other on questions regarding the withdrawal or replacement of any of the LICENSOR's personnel deputed by the LICENSOR to the LICENSEE.

ARTICLE 6

Training of the personnel of the LICENSEE

- 6.1 The LICENSOR shall arrange for the training of the LICENSEE's personnel in (name of plants) using the Process. The training shall cover but not be limited to Plant operation, Plant maintenance, materials handling, quality control, Plant safety and effluent and emission treatment. The LICENSOR shall ensure that the training programme shall cover the Process technology, the operation, maintenance and control of the Plant. The LICENSEE shall ensure in this connection that the personnel to be trained have the qualifications provided for in annexure X.
- 6.2 The LICENSOR shall ensure that the personnel designated by the LICENSEE shall be given adequate opportunity to study and acquaint themselves with the Process, safety precautions, operation, quality control of the Product, laboratory procedures and maintenance of the plant, and to discuss plant and laboratory practices and operations with the plant personnel. The LICENSEE's personnel shall be permitted to make notes and sketches of the plant using the Process, and to secure pertinent information.
- 6.3 The LICENSOR shall provide training for the LICENSEE's personnel for the periods described in annexure X.
- 6.4 The training programme shall be carried out in _____ language, and wherever necessary the interpreters for this purpose shall be provided by (). The LICENSOR undertakes to supply training manuals and data in the _____ language.
- 6.5 All living and travel costs for the LICENSEE's personnel shall be borne by the LICENSEE.
- 6.6 The personnel of the LICENSEE, during the time they are present at the plant of another party, shall be subject to all rules and regulations prevailing on the premises but shall not be considered as employees of the other party.

Text A

Text B

- 6.7 The LICENSOR shall have the right at any time to require the immediate repatriation of any of the LICENSEE's personnel found to be negligent, lacking in competence or guilty of misconduct. In such cases, the LICENSEE shall immediately satisfy himself of the validity of the claim and shall provide a replacement in () Days. The cost of repatriation and of providing a replacement shall be borne by the LICENSEE.
- 6.7 The LICENSOR and the LICENSEE shall consult each other on questions regarding the withdrawal or replacement of any of the LICENSEE's personnel delegated by the LICENSEE to the LICENSOR for training.

ARTICLE 7

Patent infringement 19/

Text A

Text B

7.1 The LICENSOR shall indemnify and hold harmless the LICENSEE, in the event that any claim is made or any suit or other action is brought against the LICENSEE alleging infringement of one or more of the patents of third parties covering the Process and the Equipment specified by the LICENSOR, published until the Effective Date, by reason of the LICENSEE's practice of the Process and the Know-How in the Plant or of the sale in the agreed countries of the Product produced in the Plant, provided the LICENSEE so notifies the LICENSOR promptly.

7.1 The LICENSOR represents and warrants that he has the right to grant to the LICENSEE the rights granted under Article 3 of this Agreement, but makes no representation or warranty as to the existence or validity of any Applicable Patent in respect thereto.

7.1.1 The LICENSOR shall also indemnify and hold harmless the LICENSEE from any infringement of a patent on an item of equipment or apparatus of a design specified by the LICENSOR as required for the practice of the Process.

7.1.2 Indemnify shall mean that the LICENSOR shall reimburse in full to the LICENSEE any royalties, licence fee or damages paid to a third party as a result of a ruling of a competent court of law that the LICENSEE's practice of the Process and/or Know-How infringes the patent rights of the third party.

Text A

Text B

7.2 The LICENSEE shall give the LICENSOR prompt notice, in writing, of any claim or suit (referred to in Article 7.1) of which he has knowledge. The LICENSOR shall have sole charge

7.2 In the event of receipt of a warning letter by and/or institution of any suit against the LICENSEE during the term of this Agreement alleging infringement of any (country) patent of

19/ Article 7 needs to be read as a whole either under text A or text B.

and direction of the defence and disposal of such suit of action, and the LICENSEE shall render all reasonable assistance but shall not be obligated to sustain any expenses. The LICENSEE shall have the right to be represented by a legal counsel experienced in technology contracts of his own choice at his own expense.

a party (which is not a Government of (country) undertaking) in (country) by reason of the practice of the Process in the Plant, the LICENSOR agrees, at the request of the LICENSEE in writing, made immediately after or institution thereof:

- 7.2.1 To discuss with the LICENSEE such alleged infringement and the steps to be taken to defend or avoid such suit, including the possibility to make, at the expense of the LICENSOR, suitable changes or modifications in the Process and/or in the Equipment of the Plant, as the case may be.
- 7.2.2 To undertake and diligently conduct, at the LICENSOR's expense, defence of such suit.
- 7.2.3 To hold the LICENSEE harmless against any judgement or award of damages which may result therefrom, provided, however, that the LICENSOR's total liability under Articles 7.2.2 and 7.2.3 combined shall not exceed () per cent of the lump-sum payment made by the LICENSEE to the LICENSOR under Article 8 of this Agreement up to the date when such judgement becomes final, and that the LICENSOR shall have the right to expend as much of the total amount as he deems necessary for the purpose of defence, even though the amount left to indemnify the LICENSEE against the judgement or award is thereby reduced.
- 7.2.4 It is agreed that the liability of the LICENSOR under Articles 7.2.1 to 7.2.3 above shall apply

only in so far as and to the extent that the operation alleged to infringe such third-party patent is based on the Process as operated by the LICENSEE, in full accordance with the Know-How and the operating manual, and/or the Plant as constructed in full accordance with the Know-How, and as far as such third-party patent has been in force and published on the Effective Date. In the event and after such alleged infringement has been denied by a final decision of a court having jurisdiction thereof, the LICENSEE shall reimburse the LICENSOR for all expenditures the LICENSOR has incurred in the conduct of the defence of the respective suit according to Article 7.2.2 above.

Text A

7.3 The LICENSOR 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 3.5 within a time schedule to be agreed with the LICENSEE.

Text A

7.4 Neither the LICENSOR nor the LICENSEE 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

Text B

7.3 The LICENSEE shall render all reasonable assistance to the LICENSOR in connection with any suit to be defended by the LICENSOR hereunder, and shall not reject any reasonable offer to modify the Process and/or the Plant in order to avoid infringement. Furthermore, the LICENSEE shall have the right to be represented in such suit by advisory counsel of his own choice and at his own expense.

Text B

7.4 The LICENSOR shall have full control of the defence of any such suit, but shall not be free to settle the same without the consent of the LICENSEE, if by the settlement the

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.

LICENSEE would be obliged to make any payments or if the settlement would cause impairment of the ability of the LICENSEE to make use of the rights granted under Article 3.

ARTICLE 8

Agreement price and terms of payment

8.1 The LICENSEE shall pay to the LICENSOR as consideration for the execution of this Agreement, and the performance of the LICENSOR's obligations described in Articles 3, 5 and 6 and elsewhere in the Agreement, but excluding the additional services provided for in Articles 3.5.12, 3.7 and 5.3.5 20/ a lump sum of:

(amount) (currency)

together with payments to be made at the rates specified in annexure IX, for the assignment of the LICENSOR's personnel to the LICENSEE's country.

8.2 The lump-sum fee shall be for service, rendered outside the LICENSEE's country but shall include visits to be made to the LICENSEE's country except for assignment of the LICENSEE's personnel, in accordance with the Agreement and made up as follows:

(a) For the grant of the licence and Know-How:

(amount) (currency);

(b) For the supply of the Process Engineering Design Package, and related technical information and service covered under the lump-sum payment, and as described in Articles 3 and 5:

(amount) (currency);

(c) For provision of training and training facilities as described in Article 6:

(amount) (currency).

8.3 The lump-sum fee shall be paid in three instalments as follows:

(a) (25) per cent as an advance payment to be paid within (30) Days from the date of execution of the Agreement;

(b) (50) per cent on receipt of the Process Engineering Design Package;

(c) (25) per cent on satisfactory demonstration by the Plant of the Performance Guarantees as confirmed by the acceptance certificate issued, or when the Performance Guarantees shall be deemed to have been met in accordance with Article 3.5.11.

8.3.1 The payments under 8.3 (b) and (c) shall be paid by the LICENSEE within (30) Days of the LICENSEE being advised by the LICENSOR that they are due.

20/ If any services are provided under Article 3.4, Article 3.4 should be added to the Articles mentioned in Article 8.1.

- 8.4 For the assignment of the LICENSOR's personnel to work away from home office, payments will be made within (10) Days in accordance with annexure IX against the LICENSOR's monthly invoice, certified at the Site within (7) Days of receipt. Payments due in local currency shall be made directly to the LICENSOR's personnel and in advance.
- 8.5 The LICENSEE shall pay to the LICENSOR () per cent interest per (completed week) on any delay in his payment obligations.
- 8.6 Payments other than those due in local currency shall be made in (currency) to the account of the LICENSOR at (bank named by the LICENSOR).

ARTICLE 9

Duration of the Agreement

9.1 Effective Date

9.1.1 The Effective Date of the Agreement shall be the date upon which the last of the following requirements has been fulfilled: 21/

(a) Approval of the Agreement by the Government of (country) where the Plant is to be located, such approval, if required, to be obtained by the LICENSEE;

(b) Approval of the Government of (country) where the LICENSOR resides and has his principal place of business, such approval, if required, to be obtained by the LICENSOR;

(c) The remittance of the advance payment by the LICENSEE as provided under Article 8.3 (a) secured by the bank guarantee provided by the LICENSOR, if so agreed, (in accordance with Article 10.1);

(d) Formal execution of the Contract by the duly authorized officers of the LICENSOR and the LICENSEE in accordance with the applicable law.

9.1.2 The Effective Date shall be confirmed in writing by both parties.

9.2 In case the conditions of Article 9.1.1 are not fulfilled within () Days following the date of signature of the Contract, the Contract shall be reconsidered and modified by mutual agreement.

9.3 Duration of the Agreement

The Duration of the Agreement shall be for a period of () years from the Effective Date.

9.4 Expiry of the Agreement

Text A

9.4.1 The rights and licences granted by the LICENSOR to the LICENSEE under Articles 3.1 and 3.7 of this Agreement shall survive the expiry of the terms of this Agreement.

Text B

9.4.1 The rights and licences granted by the LICENSOR to the LICENSEE under Articles 3.1 and 3.7 of this Agreement shall survive the expiry of this Agreement, if the LICENSEE has complied with all his obligations.

†

9.4.2 The LICENSOR and the LICENSEE shall have no further obligations on expiry of the Agreement, except as specified in Article 4.4.

21/ See also the guidelines for this Article. The requirements vary and need to be carefully listed here on a case-to-case basis.

9.5 Termination

The Agreement may be terminated in the following circumstances:

- 9.5.1 The LICENSOR may terminate this Agreement and the right and licence granted to the LICENSEE by written notice to the LICENSEE, if the LICENSEE has failed to complete his obligations in the time specified in the Agreement and a written notice has been given to him, provided that such default has continued unremedied for more than () months, and one month has elapsed since the written notice for termination was served by the LICENSOR.
- 9.5.2 The LICENSEE may terminate this Agreement by written notice to the LICENSOR, if the LICENSOR has failed to complete his obligations in the time specified in the Agreement and a written notice was given to him and provided that such default has continued unremedied for more than () months, and that one month has elapsed since the written notice of termination was served by the LICENSEE.

ARTICLE 10

General conditions

10.1 Bank guarantees

Text A

Text B

10.1.1 The LICENSOR shall deliver to the LICENSEE on receipt of the advance payment under Article 8.3 (a), a bank guarantee in favour of the LICENSEE in the form provided in annexure XII, guaranteed by (name of bank) and confirmed in (LICENSEE's country), to ensure the advance payments made under this Agreement. The bank guarantee shall be released completely upon delivery of the Process Engineering Design Package.

10.1.1 Not used.

10.2 Insurance

10.2.1 The LICENSOR and the LICENSEE shall effect or maintain insurance in respect of their own property and personnel respectively; such insurance shall in particular cover any claim that may be made on behalf of their employees alleging injury or death arising as a result of, or in connection with, the performance of this Agreement.

10.2.2 The LICENSOR or the LICENSEE, as the case may be, shall be responsible for maintaining the following insurance policies for their personnel:

(a) Third-party liability insurance for th. staff of the LICENSOR deputed to the Site, or the staff of the LICENSEE deputed to the LICENSOR's offices or to plants of third parties;

(b) Insurance liability for automobiles or other transport of the LICENSOR or LICENSEE at the Site.

10.2.2.1 The LICENSEE shall take out a "Construction all risks" (CAR) or an "Erection all risks" (EAR) policy in the name of the LICENSEE but with an endorsement making the LICENSOR and his personnel at the Site as co-insured.

10.2.3 (Optional.) The LICENSOR shall ensure that his services provided under this Agreement are covered by his corporate professional indemnity insurance policy as regards his liability for errors and omissions, negligence, mistakes in design etc., arising from the LICENSOR's work.

10.2.4 The LICENSOR when required by the LICENSEE, and vice versa, shall submit to the other party adequate proof that the insurance(s) for which he is responsible are in force.

10.3 Taxes and levies

10.3.1 Except as otherwise specified in this Agreement, each and every price cited in or contemplated by this Agreement as described in Article 8, includes and covers all taxes, rates, charges and assessments of any kind whatsoever (whether federal, state or municipal, and whether or not they are in the nature of excise taxes/duties, customs tariffs, sales taxes, land taxes, licence fees or otherwise) outside the LICENSEE's country pertinent to the LICENSOR's services provided with respect to the Plant pursuant to this Agreement, and/or to the performance of the LICENSOR's work.

10.3.2 (see guidelines for this Article).

10.4 Settlement of disputes and arbitration

10.4.1 In the event of any dispute, difference or contention in the interpretation or meaning of any of the Articles of this Agreement or reasonable inference therefrom, both parties shall promptly make endeavour to resolve the dispute or differences by mutual discussions and agreement. Should the dispute or differences continue to remain unresolved, both parties to the Agreement shall proceed to arbitration as provided for herein.

10.4.2 Subject to the provisions of this Article 10.4, either the LICENSEE or the LICENSOR may demand arbitration with respect to any claim, dispute or other matter that has arisen between the parties.

10.4.2.1 However, no demand for arbitration for any such claim, dispute or other matter shall be made until the later of (a) the date on which either of the parties has indicated his final position on such claim, dispute or matter; or (b) the (20th) Day after one party has presented his grievance in written form to the other and no written reply has been received within (20) Days of such presentation of grievance.

10.4.2.2 No demand for arbitration shall be made after the () Day following the date on which either of the parties has rendered his written final decision in respect of the claim, dispute or other matter as to which arbitration is sought. The LICENSEE or the LICENSOR, 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.

10.4.3 All claims, disputes and other matters arising out of, or relating to, this Agreement or the breach thereof which cannot be resolved by the parties, shall be decided by arbitration in accordance with the rules of procedure of (an agreed court of arbitration). 22/ This agreement so to arbitrate shall be

22/ The court of arbitration should be named here.

enforced under the prevailing law. The award rendered by the arbitrator shall be final, and judgements may be entered upon it in any court having jurisdiction thereof.

- 10.4.4 Notice of the demand for arbitration shall be filed in writing with the other party to the Agreement in accordance with Article 10.4.3. The demand for arbitration shall be made within the period specified in Article 10.4.2, 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 if it would be barred by the applicable statute of limitations.
- 10.4.5 The LICENSOR and the LICENSEE shall continue to carry out their obligations under the Agreement and maintain the progress schedule during any arbitration proceedings, unless otherwise agreed by the parties in writing.
- 10.4.6 In the event of arbitration, the LICENSOR and the LICENSEE agree that the arbitrator(s) shall have unrestricted access to the Plant (notwithstanding the secrecy provisions of Article 4.4), for the purpose of the said arbitration.
- 10.4.7 Arbitration shall be at (town) and all proceedings shall be in the _____ language. The governing law shall be in accordance with Article 11.3.

10.5 Force majeure

- 10.5.1 In this Agreement, force majeure shall be deemed to be any cause beyond the reasonable control of the LICENSOR or the LICENSEE that prevents, impedes or delays the due performance of the Agreement 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 means of transportation or communication (occurring concurrently).
Any accident, fire or explosion.

- 10.5.2 If either party is prevented from or delayed in the performance of any of its obligations under this Agreement 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.

- 10.5.3 If by virtue of Article 10.5.2 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 Agreement.
- 10.5.4 If the consultations referred to in the preceding Article 10.5.3 have not resulted in mutual agreement (or have not taken place), the parties shall thereupon agree to amend the terms of this Agreement and shall determine the course of further action. If the parties are unable to reach an agreement to amend the terms of this Agreement by virtue of the prevailing and continuous force majeure, then the parties may resort to arbitration pursuant to Article 10.4 or terminate the Agreement.

ARTICLE 11

Miscellaneous provisions

11.1 Assignment

This Agreement shall inure to the benefit of, and be binding upon, the parties hereto and each of their executors, administrators, curators, successors and assigns, subject to the provision that this Agreement may not be assigned by the one party without the written consent of the other party.

11.2 General provisions

The express covenants and agreements herein contained and any amendments made in writing by the LICENSEE and the LICENSOR are and shall be the only covenants and agreements upon which any rights against the LICENSEE or the LICENSOR are to be found:

11.2.1 This Agreement supersedes all communications, negotiations and agreements, either written or oral, relating to the work and made prior to the Effective Date of this Agreement.

11.2.2 The provisions of the Articles of this Agreement 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.

11.2.3 Article headings appearing herein are included for convenience only and shall not be deemed to be part of this Agreement.

11.2.4 The governing language of the Agreement shall be _____, and the definitions in such language shall be final in the use and interpretation of the terms of the Agreement.

11.3 Applicable laws and conformity with local statutes

Text A

Text B

11.3.1 The laws applicable to the Agreement shall be the laws of (country to be agreed), in conformity with the laws of the country where the Plant is located.

11.3.1 The laws applicable to the Agreement shall be the laws of (country to be agreed).

11.3.2 The LICENSOR, his staff, and representatives shall observe all codes, laws and regulations in force in the country of the LICENSEE and in the region where the Plant is located, made known to the LICENSOR by the LICENSEE. In the event that any code, law or regulations enacted after the Effective Date of the Agreement, and transmitted by the LICENSEE to the LICENSOR, are proven (to the satisfaction of the LICENSOR) to have an adverse effect on the LICENSOR's obligations, scope of work, prices and/or time schedule under this Agreement, the LICENSOR shall either:

(a) Assist the LICENSEE to obtain appropriate exemption(s) from the relevant authorities on the LICENSEE's behalf; or

(b) Negotiate with the LICENSEE for commensurate change(s) in the scope of the work to be performed under the Agreement, together with such changes in price as are anticipated. The LICENSOR shall satisfactorily explain to the LICENSEE the basis of the actual increase in price.

11.3.3 Nothing herein shall in any manner affect the validity of the Agreement or derogate from the specified obligations of the LICENSOR and his liabilities under the Agreement and law.

11.4 Language

11.4.1 All correspondence, information, literature, data, manuals etc. required under the Agreement shall be supplied in the _____ language.

11.4.2 All personnel sent by the LICENSOR to the Site and all personnel sent by the LICENSEE for training shall be conversant with the _____ language.

11.5 Standards and codes

The standards and codes of (country) shall be used in the design and specifications of the Plant, unless otherwise communicated before or at the First Detailed Engineering Meeting. The LICENSEE shall inform the LICENSOR of any statutory standards and codes applicable to the Plant at this meeting, or earlier.

11.6 Notices

Any notice or other communication to be made by the LICENSOR to the LICENSEE shall be effective when mailed by registered post with acknowledgement due. Any notice or other communication to be made by the LICENSEE to the LICENSOR shall be effective when mailed by registered post with acknowledgement due.

11.6.1 When any such notice is sent by registered mail, it shall be deemed to have been duly served following the expiration of (14) Days following the date of posting. In proving that notice was served 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, and a telex or telegram was sent advising of the dispatch of the notice.

11.6.2 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.

11.7 Approval

"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.

11.7.1 Any and all Approval(s) which amend, modify or vary the Agreement and/or involve an increase in payment(s) shall be forwarded in like manner as the procedure specified for the notices under Article 11.6.

11.8 National security

If any document or information given or disclosed to the LICENSOR is deemed by the LICENSEE to affect national security, the LICENSOR shall take all reasonable measures directed by the LICENSEE to ensure the maintenance of the security.

ANNEXURE I

List of patents granted and pending that are applicable to the
Process on the date of signature of the Agreement

<u>Patent no.</u> (Country)	<u>Date of application or registration</u>	<u>Date of expiry</u>	<u>Description</u>
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ANNEXURE II

Description of the Process of the LICENSOR

This should contain a full description of the Process with a flow-sheet, and normally would be five to seven pages long. It should state all the working pressures and temperatures and contain details of the steam cycle (in an ammonia plant) and, if possible, a piping and instrumentation diagram.

The description should be as detailed as possible without disclosing Confidential Information.

ANNEXURE III

Description of the licensed Plant a/

1. The licensed Plant referred to in Article 1.20 means a commercial Plant designed with a capacity to produce 1,000 Tonnes per Day of ammonia with a stream factor of 330 Days per year using natural gas, with the range of analyses contained in annexure XI, as a feedstock.
2. The Plant shall consist of the following process units:
 - 2.1 Natural gas station
 - 2.2 Natural gas desulphurization
 - 2.3 Ammonia Plant with carbon dioxide recovery
 - 2.4 Liquid ammonia storage
 - 2.5 Ammonia dispatch and loading
 - 2.6 Steam system
 - 2.7 Waste treatment
3. The above Plant shall be conceptually engineered in sufficient detail as given in annexure VIII to enable the Contractor to carry out all the detailed engineering. This engineering shall include Equipment and instrument specifications.
4. The basic engineering shall include the requirements and conditions of all the utilities (steam, power, process water, cooling water, instrument air, compressed air etc.), which shall be clearly indicated both in quantity and with regard to the points where they are required to enable the Contractor to carry out the detailed engineering. Where required, one line diagrams shall be provided.
5. All the Process steps between the inlet points of the raw materials, services and chemicals and the outlet point of Products as defined in Annexure V necessary to implement the Process and fulfill the Guarantees shall be included. (Exclusions, if any, should be clearly defined.)

a/ This annexure is illustrative of one for an ammonia plant.

ANNEXURE IV

Specification 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 Ammonia Plant:	Depending upon the pressure of regeneration (0.05 per cent kgf/cm ²)

3. The characteristics marked "(G)" are those for which the Performance Guarantees for quality of Products shall apply.

4. 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 5).

a/ The product specifications for fertilizers vary from product to product and may vary from country to country; these are suggested typical figures for ammonia only.

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

ANNEXURE V

Preliminary outline of the Site and layout of the Plant:
definition of the battery limits

1. Location of the Plant

The Plant is to be located at (or near) (name of town) in (country). The Site for the Plant is indicated on the Site map, which shows the dimensions of the Site and is attached as drawing no. (_____).

2. Layout of the Plant

The preliminary layout of the Plant shall be designed by the LICENSOR within the battery limits defined below, taking into account the condition of the Site, defined in clause 1.1 above, as well as the Basic Design Data.

3. Definition of the battery limits

Guidelines. The battery limits of the area of plant design should be clearly stated and indicated on the preliminary plot plan with approximate data on the elevation of the connection points above and below the ground. All points of connection (inputs and outputs) shall be clearly defined. For this purpose the best method is to draw a battery limits stream flow-sheet where all streams entering the Plant and leaving it should be defined by all their parameters: quantity, composition, pressure, temperature, maximum and minimum average. The storage capacities needed or proposed for each stream entering or leaving the Plant should be specified together with the agreed location inside or outside the battery limits.

An example of a suitable text a/ is given below.

Inputs Natural gas shall be supplied by the gas distribution company at a single point on the boundary of the Plant (unit inlet or battery limit), at a pressure of (_____) kgf/cm².

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 cooling and process water are part of the design.

Steam and power supplies shall be connected to the respective points as indicated on the plot plan (separately for different parameters).

Electric power of MVA maximum capacity at a voltage of (_____) V, and frequency of (_____) HZ, at (_____) points (indicated on the plot plan).

a/ The division of design responsibilities between the Contractor and the LICENSOR will vary from case to case and should be clearly demarcated and the text drawn up accordingly.

Steam pressures shall be: (details of steam pressures and quantities to be given).

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

Outputs Filling and loading facilities are included in the battery limits. Outputs are: (-) railway wagons and (-) road trucks per Day.

Effluents shall be disposed of to (_____).

Within the above battery limits, the entire Plant contained in annexures I and II shall be designed by the LICENSOR. generally understood that if not specifically mentioned the connection points of inlet and outlet pipes shall be one metre outside the battery limits or 250 millimetres above ground-floor level, flanged or unflanged, with the cut-off valves included in the scope of design.

ANNEXURE VI

**Scope and content of engineering services
and co-ordination of work**

General guidelines for annexure VI

In the case considered in this Agreement, the LICENSEE first concludes a Licensing Agreement, then he prepares a tender specification based on the Process Engineering Design Package, which is used to invite prospective contractors to bid for the delivery of the Plant. In this case, the Contractor is selected several months after the delivery of the Process Engineering Design Package. The whole Process engineering is worked out by the LICENSOR with the co-operation and approval of the LICENSEE provided at the Basic Design Meetings. In this way the LICENSEE's responsibility in accepting the design proposed by the LICENSOR is greater. After the Contractor has been appointed, the First Detailed Engineering Meeting is the first occasion for the Contractor, the LICENSEE and the LICENSOR to meet and agree on the details of future common work with the scope fixed in clauses 2 (a) and 2 (b) below.

It is, however, possible for the LICENSEE to appoint his Contractor any time before the delivery of the Process Engineering Design Package. This solution reduces the tasks and responsibilities of the LICENSEE, but prevents him from taking full advantage of drawing up a precise tender specification before inviting bids from contractors for the construction of the Plant. In this case, clause 1.6 of this annexure is of particular importance.

In most developing countries, however, contractors for fertilizer plants are appointed at the same time as the LICENSOR for the process selected. The evaluation is done on the basis of the process. In fact, the LICENSOR and the Contractor could be selected together and an economic evaluation of different processes made on this basis. Subsequently separate contracts can be entered into with the Contractor and the LICENSOR.

The LICENSEE will usually find it difficult to extend the LICENSOR's obligations beyond those fixed in the Agreement at the time of the First Detailed Engineering Meeting. So it is most appropriate to agree in the Agreement itself on the LICENSOR's obligations, to identify the scope, content and field of the LICENSOR's participation, and to set an upper limit to the man-Days involved either for the entire work or preferably for every kind of work required. So at the First Detailed Engineering Design Meeting, the parties will have only to agree on the precise details and the time schedule of the work within the limits set by the Agreement.

Check-list for individual clauses and illustrative clauses

1. The LICENSOR shall execute the Process Engineering Design Package with the content and the delivery dates defined in annexures VII. The co-operation of the parties shall be assured by the basic design meetings held according to Article 5 and mutual delivery of Technical Documentation as follows:
 - 1.1 Within () Days from the Effective Date, the LICENSEE shall deliver the Basic Design Data for the Plant containing:

- (a) Information on the Site including geographical details, connection of the Site by rail and road to nearby major towns and ports, shipping and transport possibilities and limitations; a/
- (b) Meteorological information; a/
- (c) Soil conditions including soil-bearing data and geological aspects, e.g. susceptibility to earthquakes etc.; a/
- (d) Information on utilities. a/ This shall cover:
 - (i) The sources of steam, supply, pressure level, superheat, temperature, condensate system characteristics;
 - (ii) Availability and reliability of power, levels of voltage etc.;
 - (iii) System of cooling proposed, air/water, recirculating/once through (and other cooling water properties);
 - (iv) Fuel characteristics;
 - (v) Systems for instrument air, process air, inert gas, refrigeration, process water etc.;
- (e) Design codes and standards to be adopted and special considerations from the viewpoint of the fabrication of Equipment in a particular country or countries;
- (f) Local codes, laws or regulations on toxic or explosive hydrocarbons affecting the provision and layout of safety systems etc.;
- (g) Design information, flexibility requirements and design margins for Equipment: b/
 - (i) Design criteria for and type of rotary equipment, namely pumps and compressors, preferred from the point of view of policies regarding standardization and spares;
 - (ii) Considerations regarding the design of heat exchangers, e.g. type of pitch, tube length etc.;

a/ This data is often available at the time of the signing of the Agreement, and if so, it should be included. An example is given in the "UNIDO model form of cost-reimbursable contract for the construction of a fertilizer plant including guidelines and technical annexures" (UNIDO/PC.26/Rev.2), annexure II, clauses 2, 3 (b) and 7 and annexure IV, clauses 1-2 and 4-11.

b/ This information should come after discussions with the Contractor and a separate date for its delivery agreed.

- (iii) Considerations regarding internals of columns and vessels e.g. type of trays;
- (iv) Fired heaters, e.g. from the point of view of energy conservation;
- (v) Types and sizes of instruments to be used;
- (vi) Piping design requirements and practices to be followed;

(h) Safety systems, including pressure relief system, the flare system and other systems to ensure compatibility with the requirements of the LICENSEE; b/

(i) Coding system for the Equipment; b/

(j) Capacity of each section for the purposes of the design, process design margins etc.;

(k) Source of the raw materials and auxiliary chemicals, condition of delivery at the battery limits, specifications, level of impurities etc.;

(l) Storage requirements;

(m) Ecological considerations, namely, legal prescriptions for solid, liquid and gaseous waste streams from the Plant and possible methods of disposing of them;

(n) Local codes, laws, prescriptions and rules to be taken into account in the Process Engineering Design Package, including limitations on the size of Equipment that can be moved to the Site; c/

- 1.2 Within () Days from the Effective Date, the First Basic Design Meeting shall be held (Article 4.1.2) to discuss the Basic Design Data and to agree on them as the basis for the LICENSOR's design work.
- 1.3 Within the time specified in annexure VII, the LICENSOR shall deliver to the LICENSEE the first part of the Process Engineering Design Package covering clauses 3.1, 3.2.5 and 3.2.6 of annexure VIII. d/
- 1.4 Within () Days from the Effective Date, the second basic design meeting shall be held to discuss and to agree on documents delivered under clause 1.3 above. d/ This agreement shall form the basis of the LICENSOR's subsequent design work.

c/ UNIDO model form of cost-reimbursable contract for the construction of a fertilizer plant including guidelines and technical annexures" (UNIDO/PC.26/Rev.2), annexure II, clause 6.

d/ These clauses (1.3 and 1.4) are optional and not always required. If clause 1.3 is removed, an appropriate change should be made in annexure VII.

- 1.5 Within the time specified in annexure VII, the LICENSOR shall deliver the complete Process Engineering Design Package.
- 1.6 Within () Days from the Effective Date, the third basic design meeting shall take place. e/ The LICENSEE and, if possible, the Contractor shall make their observations and remarks on the documentation delivered and, if appropriate, require the necessary alterations, modifications and/or additions. The LICENSOR having satisfactorily completed this work, the Process Engineering Design Package shall be accepted by the LICENSEE.
2. If the Contractor has already been appointed before the third basic design meeting (clause 1.6 above), this Meeting shall also be the First Detailed Engineering Meeting (Article 5.3.2 of the Agreement). If this is not the case, within () Days from the appointment of the Contractor, but not later than () Days after the receipt by the LICENSEE of the Process Engineering Design Package, the First Detailed Engineering Meeting shall be convened by the LICENSEE according to Article 5.3.2 and shall:
- (a) Review the Process Engineering Design Package and agree on all starting dates, conditions and provisions, which shall form the basis of the Contractor's work;
 - (b) Agree on the scope and time schedule of the co-operation between the Contractor and the LICENSEE during the design work and the scope, content and extent of the LICENSOR's participation;
 - (c) Agree on the provisional scope, schedule and content of the LICENSOR's participation in the procurement of Equipment (Article 5.4), and construction of the Plant (Article 5.5). The actual dates and durations are subject to review according to the progress of the work.
3. The LICENSOR's responsibilities for the review of the detailed engineering, as defined in Articles 3.3.5 and Article 5.3.3 (b) shall be from the point of view of process engineering only and may include the review of the following design documents f/ for conformity with the Process Engineering Design Package:

3.1 Project engineering documents

Final project engineering diagrams;
Layout arrangement of Plant and elevation;
Engineering flow diagram, including piping and instrumentation diagrams;
General specifications for major items of Equipment and list of major items of engineering Equipment;
Line designation tables;
Requisitions for major items of Equipment.

e/ The number of meetings is only indicative.

f/ This is a check-list only.

3.2 Design engineering and drafting documents

Specifications for pressure vessels;
Specifications for storage tanks;
Specifications for shell and tube exchangers;
Specifications for underground drainage, sewers;
Specifications for fireproofing;
Location of buildings and specifications for protected areas;
Piping design guide;
Specifications for instrumentation: installation and piping;
Specifications for the design and installation of electrical equipment;
Mechanical design of reactors and vessels;
Drawings of the arrangement of internals for shell and tube exchangers;
Drawings of the piping arrangements for specified areas;
Drawings and/or wiring diagrams of the critical shut-down system;
Piping around critical items, e.g. reactor.

3.3 Fabrication drawings of specified/critical Equipment prepared by the manufacturers.

4. Critical items for the ammonia plant including utilities

(Critical items change from time to time. Items for one agreement were:

4.1 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 turbines;*
- (g) Synthesis gas compressor, with turbine.

4.2 Utilities

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

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

This list shall be considered as informative only and shall be finalized at the First Detailed Engineering Meeting.

ANNEXURE VII

Time schedule of the engineering services

1. Delivery of documents

<u>Number</u>	<u>Documentation</u>	<u>Prepared by</u>	<u>Delivery date (Day) from receipt of Basic Design Data under Article 4.1</u>
	Basic Design Data	LICENSEE	
	Process Engineering Design Package (Part I in accordance with clause 1.3 of annexure VI) <u>a/</u>	LICENSOR	
	Process Engineering Design Package (complete)	LICENSOR	

2. Basic design meetings b/

<u>Number</u>	<u>Held at</u>	<u>Date</u>	<u>Duration</u>	<u>Number of participants</u>	
				<u>LICENSEE</u>	<u>Contractor</u>
	LICENSOR's office	(____)	(5) Days	(____)	(2)
	LICENSOR's office	(____)	(5) Days	(____)	(2)
	LICENSOR's office	(____)	(5) Days	(____)	(2)

3. Detailed meetings

To be agreed upon at the First Basic Design Meeting.

<u>Number</u>	<u>Scope</u>	<u>Place</u>	<u>Duration</u>	<u>LICENSOR's participants (qualifications and number)</u>
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Maximum total man-Days expected for the LICENSOR's personnel:

4. LICENSOR's participation in procurement

<u>Number</u>	<u>Equipment item</u>	<u>Manufacturer</u>	<u>Expected supervision date</u>	<u>Duration</u>
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Maximum man-Days:

a/ This could be detailed further to cover other documents specified in annexure VIII and should be reconsidered and amplified after the Contractor has been appointed.

b/ This section is only an example.

ANNEXURE VIII

Scope and content of the Process Engineering Design Package

1. The content of the Process Engineering Design Package can vary from licensor to licensor and can also be influenced by the experience the selected contractor has had of constructing the LICENSOR's plants.

2. The contents of a standard Process Engineering Design Package are given below. It should be emphasized that they are in the nature of a check-list for fertilizer plants, not all of the contents of which would be applicable for a particular plant or process. If a contractor is available at an early stage of the project, the contents of the design package should be subject to the Contractor's requirements. The prime purpose of a licensing agreement is a transfer of technology and, therefore, the contents of the Process Engineering Design Package should also meet the requirements of the LICENSEE. For this reason, the example given below is fairly exhaustive.

3. Contents of the Process Engineering Design Package (a check-list)

3.1 Basis of design and process description

This section of the package shall contain information under the following headings:

3.1.1 Basis of design for all cases.

3.1.2 Feed and Product specifications and properties.

3.1.3 Battery limit conditions.

3.1.4 Description of flow; this includes normal operations, Start-Up, shut-down and alternative operations.

3.1.5 Design features of Process.

3.1.6 Physical and chemical properties for streams whose properties have not been defined in clause 3.1.2 above, and which are considered essential to the process, e.g. reactor effluent streams, will be listed separately. The properties of hazardous materials used within the Plant will be listed in this section.

3.1.7 Summary of estimated utilities, including electrical power, steam, condensate, boiler feed water, fuel, cooling water, Process water and air etc. This will be an estimate of the quantities to be used by individual units.

3.1.8 Estimated consumption of catalysts and chemicals. Initial catalyst charge and subsequent consumption of catalysts and chemicals will be tabulated for each unit.

3.1.9 List of effluent streams. Liquid and gaseous effluents requiring further treatment before disposal will be tabulated. This listing would be limited to streams produced from the Process only and would not include furnace effluents.

3.1.10 Process flow-sheets.

These diagrams will contain the following information:

All process Equipment shown diagrammatically, marked with an Equipment number;

Operating temperature and pressure of Equipment;

Main process lines (shown marked with a stream number where applicable to the mass balance) including direction of flow;

Main process controls;

All lines, essential for understanding the mass balance around each piece of Equipment, will be shown (and only those);

All figures will be given in the defined units of measurement;

Heat and material balance, and pressure balance

For each stream number on the Process flow-sheet, the following information shall be given where required for a complete understanding of the heat and material balance, and pressure conditions.

Total hourly flow rate (mass/volume)
Hourly molar flow rate for each major component;
Molecular weight;
Pressure;
Temperature;
Density.

3.1.11 Materials of construction flow-sheet. A materials of construction flow-sheet will be included to provide the information described in the exhibit. a/

3.2 Process and engineering design specifications

The information contained in this section will be presented under the following headings, which are explained in more detail.

3.2.1 Equipment list

This will include at least the following items:

Identification letter and number of Equipment;

Description of Equipment.

a/ Sample exhibit to be added; it is recommended that such exhibits should be provided by the LICENSOR and checked by the LICENSEE and the Contractor.

3.2.2 Equipment data sheets and specifications

3.2.2.1 Vessels

A standard process sketch will be provided showing:

Maximum operating temperatures and pressures;

Mechanical design temperature and pressure;

Materials of construction and corrosion allowance;

Diameter and height or length;

Number, type and spacing of trays for towers;

Number, size, rating and location of nozzles (the location of the nozzles will only apply to the special height requirements of the nozzles);

High and low liquid levels;

Insulation requirements;

Details of special internals, such as pans, distributors, mist eliminators, supports etc.;

Type of catalyst, size of bed, bulk density and design.

Where applicable, tray process information will be provided. (See "Exhibit: Tray process specification sheet".) a/

Specific design and fabrication requirements will be detailed, e.g. regular temperature/pressure cycles will be specified.

3.2.2.2 Heat exchangers and air coolers

Specification sheets will be provided giving all the Process and mechanical design data required. (See "Exhibit: Shell and tube exchanger process specification sheet" and "Exhibit: Air-cooled exchanger process specification sheet" for data requirements.) a/

Further specific design information that would be provided if necessary to establish the design includes:

Limiting transfer rates where applicable;

Limiting viscosities and pour points;

Vaporization and condensation curves;

Restrictions on combining air fin services;

Alternative specifications for individual services;

Specific design and fabrication requirements.

In general, all necessary data to prepare ratings will be provided; however, complete ratings will not be provided.

Where kettle-type exchangers are to be used, the specification shall include a sketch or specific information giving the following information:

- Vapour space;
- Surge volume required;
- Nozzles;
- Instrumentation etc.

Generally only the materials of construction will be given in the "Construction" section of the specification sheets.

3.2.2.3 Fired heaters

Specification sheets will be provided giving all the process and mechanical design data that is required (See "Exhibit: Fired Heater Process Specification" for data requirements.) a/

Further specific design information that will be provided includes:

- Vaporization curves;
- Limiting fluid peak temperatures;
- Limiting transfer rates or velocities;
- Type of heaters and coil arrangement;
- Control specifications;
- Firing equipment;
- Whether steam-air decoking is required;
- Specific design and fabrication requirements;
- Whether the oil temperature and pressure profile is required from the vendor;
- Type of terminal fittings;
- Fuel type and conditions;
- Recommended suppliers.

3.2.2.4 Pumps

Specification sheets will be provided giving all the process and mechanical design data required.

Data will be included for alternative duties.

Further specific design information that may be provided includes:

- Corrosion allowance;
- Alternative specifications, if necessary, for individual services;
- Sealing requirements;
- Flushing requirements;
- Specific design and fabrication requirements;
- Recommended suppliers.

3.2.2.5 Compressors

Specification sheets will be provided giving all the process and mechanical design data that is required.

(All design cases will be included.)

Further specific design information that will be provided includes:

- Materials of construction;
- Corrosion allowance;
- Special mechanical features required;
- Control requirements;
- Specific design and fabrication requirements;
- Recommended suppliers.

3.2.2.6 Miscellaneous equipment

This includes all mechanical handling equipment; package units, such as inert gas generators and driers; specialities, such as scrubbers, cycle timers and vacuum equipment; and miscellaneous items, such as filters, strainers and process steam traps. Complete duty specification sheets will be provided that will include all process and mechanical design data as required for the Equipment. Such specifications may include design and fabrication requirements. Where specialized equipment is required, suppliers should be recommended.

3.2.2.7 Relief valves

Specification sheets will be provided giving all the Process design data that is required for specifying the valves.

Certain emergency risks as identified in an exhibit may require review by the Contractor responsible for the detailed engineering after the selection of the equipment. The relief header will normally be designed by the engineering contractor.

3.2.2.8 Instruments

Specification sheets will be provided giving all the Process Design data that is required. Data for any special instruments required for Start-Up, shut-down and safety will be included.

Further specific design information that will be provided for all major instruments includes:

- Materials of construction;

- Vaporization across valves, sealing, purging or flushing requirements, including any special Process design considerations, i.e. pour point;

Alternative operating conditions (specifically for minimum and maximum flow to ensure proper control and readability of all instruments);

Details of specific mechanical design and fabrication requirements.

Detailed data on minor instruments, e.g. pressure gauges, level gauges etc. will not be included.

3.2.3 Relief valve loading listing

A summary will be provided of the loads from each relief valve for each emergency condition under which the relief valve opens, e.g. fire, power failure, steam failure (and other utility failures), blocked-in condition etc.

3.2.4 Process line summary list

A summary will be provided for all Process lines. However, it will be the responsibility of the engineering Contractor to check the hydraulics of the unit.

3.2.5 Preliminary engineering flow-sheets including piping and instrumentation diagrams

This will be a complete first issue of the engineering flow-sheet and will include:

All Process Equipment;

Line sizes and material specifications for all lines;

Maximum operating temperatures, insulation tracing and jacketing requirements of lines (heat conservation, personnel protection, process stabilization or "not insulated" only);

All valves and check valves;

Significant details of Equipment;

Tower and vertical drum tangent line elevations;

Horizontal drum minimum elevations and slope;

Relative elevations of all Equipment and piping where gravity or two-phase flow takes place, e.g. reboilers, condensers, seal pots;

Direction of flow-on lines;

Required line slope, relative location of Equipment or special conditions, such as required vertical loop dimensions, gravity lines with or without pockets etc.;

Vents and drains in addition to the engineering standards required for the Process;

Steam, hot water or solvent tracing of lines and instruments;

Gas, liquid purging or flushing of control valves, instruments or relief valves;

All Start-Up, bypass, shut-down and emergency lines and lines for alternate operations;

All instruments required for proper operation of the Plant (indicating any special types required);

Instrument numbers;

Any special instructions, e.g. dead leg distances on slurry lines;

Special requirements (analysers, sample connections);

Suggested colour codes.

3.2.6 Preliminary plot plan and preliminary layout of Equipment

This will be a suggested plot plan based on the LICENSOR's knowledge of normal and emergency operation and safety and maintenance requirements. It will include a preliminary layout of the Equipment and elevation diagrams.

3.2.7 Drainage and effluent disposal

This will cover the suggested layout and materials of construction.

3.2.8 Basic data for piping

Fluids handled;

Operating pressure and temperature;

Design pressure and temperature;

Phase used: liquid, vapour or both;

Specific gravity and viscosity;

Construction materials;

Insulation required;

Kind of test that is necessary for the pipe (pneumatic or hydrostatic). If a special test is required, it should be described;

List of the main lines.

3.2.9 Auxiliary services

Steam (all the pressure levels), cooling water, process water, inert gases, Plant and instrument air, chemicals etc. consumed by each item of Equipment and a summary.

3.2.10 Catalysts, chemicals

Specific characteristics, name, size, quantity;

Recommended or preferred suppliers (state reasons).

3.2.11 Vent system

Equipment required, fluid, flow, temperature and pressure;
Special requirements;
Suggested piping arrangement where required;
Pipe and equipment materials must refer to the ASTM code.

3.2.12 Safety requirements

Equipment required;
Monitors, eyewashers, location of showers and sprinklers;
Special requirements.

3.2.13 Building specifications

Suggested layout of the Plant buildings, control room, electrical switch room and other buildings;
Indicative sizes of the respective buildings;
Type of construction in each case;
Type of protection for protected areas.

3.3 Basic data for the operating manual b/

The operating guide will include an outline of Start-Up, shut-down and alternative operations. It will also indicate emergency procedures covering utility failures and major operating upsets. Its scope will be sufficient for the engineering Contractor to prepare a comprehensive operating manual. In addition, this section will describe special safety features incorporated in the design of the unit. Data will include:

Start-Up procedures;
Normal operation procedure;
Normal shut-down procedure;
Emergency shut-down procedure;
Reduced drawings of heaters, vessels, towers and reactors;
Data sheets of mechanical equipment.

with the following details:

3.3.1 Description of the Process

(a) A brief discussion of the Process flow to provide adequate background information to the personnel operating the Plant;

(b) Process specifications and a Process flow-chart. Quality of feedstocks, composition of various streams, designed yields and quality of products, intermediates and by-products.

b/ The operating manual will usually be prepared by the LICENSOR and revised and amplified by the Contractor, after which it will be checked by the LICENSOR. Sometimes the LICENSEE's senior trainees at the LICENSOR's plants help to prepare the operating manual, particularly if translation is required.

3.3.2 Process operating conditions

A simplified discussion of cause and effect, giving examples where possible, and of operating variables with consequent changes in yields, purities etc.

3.3.3 Details of operating procedures

(a) Preliminary operations: preparation and inspection of Equipment before Start-Up, run-in procedure for pumps, compressors etc.;

(b) Start-Up procedures;

(c) Normal operation;

(d) Shut-down procedure;

(e) Special operations: catalyst regeneration, switching of cyclic systems, steam-air decoking etc.;

(f) Emergency procedures: expected emergencies and procedures recommended to ensure the maximum safety of personnel and equipment;

(g) Detailed flow charts and Process Equipment.

3.3.4 Control systems

Control systems employed and details on any special provisions and their bearing on operations.

3.3.5 Summary of Equipment

Details on Equipment according to category and the agreed coding system.

3.3.6 Summary of utilities

The summary should be prepared on the basis of the utility levels agreed to for the Plant and the utility requirements, including guaranteed and expected figures for both the Plant and its auxiliary/off-site facilities.

Peak requirements of utilities.

3.3.7 Operating records

The suggested format for the proper maintenance of operating records through:

(a) Daily log sheet;

(b) Management control, exception reports;

(c) Product test record for quality control at various stages in the Plant.

3.3.8 Personnel required for operations and maintenance

Suggested organization for the operation and maintenance of the Plant listing:

- (a) Supervisory staff, their duties and responsibilities;
- (b) Operating staff, their duties, responsibilities and operating positions.

3.3.9 Safety of Plant and personnel

Rules and regulations governing conduct in the operating area with special precautions to be followed. The first aid facilities to be provided shall be established, e.g. eye baths, emergency showers etc. The proper use of special safety equipment will be described.

3.4 Basic data for maintenance manual

Particular emphasis: preventive maintenance;
Maintenance instructions for each item of Equipment, including specific types of lubricant/grease required; c/
Periodicity of major shut-down for regular overhead/maintenance.

3.5 Manual on analytical methods

Describes in detail all the methods of analysis for all raw materials, Process stream products, by-products, catalysts and chemicals required for the efficient operation of the Plant.

3.6 Catalysts and chemicals

List of catalysts and chemicals required for the initial operation of the Plant and for one year's production, indicating specifications, quantities, recommended sources of procurement and packaging and storage and handling instructions.

3.7 General design information

The information contained in this section will essentially be akin to the data supplied by the LICENSEE as outlined in clause 3.1 of this annexure. However, as some data may be supplied by the LICENSOR, the total design information is reproduced for the benefit of the engineering Contractor.

This data will include but will not necessarily be limited to:

Outlet steam conditions for Equipment feeding steam into Plant headers;

Inlet steam conditions for Equipment using steam from Plant headers;

c/ This may be restricted to critical items: the Contractor will in any case check this and provide data for all the Equipment in a maintenance manual to be prepared by him.

Battery limit conditions for boiler and steam generator feedwater;

Battery limit conditions for condensate return system;

Voltage and frequency for electrical power;

Analyses of available water streams;

Fuel data;

Other available utility data:

Climatic data;

Site information;

Equipment design information;

Relief and blowdown procedures.

3.8 LICENSOR's standard drawings

The standard drawings will be referenced in the process and engineering design specifications and represent design details and practices that are part of the mechanical specifications.

3.9 Names of vendors of critical Equipment

<u>Number</u>	<u>Equipment</u>	<u>Possible vendors</u>	<u>References</u>
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3.10 Mechanical specifications

The mechanical specifications will represent the LICENSOR's or the LICENSEE's current standard practice for the design and installation of the Equipment in a particular process unit.

ANNEXURE IX

Qualifications and experience of persons to be assigned
by the LICENSOR and conditions of service

1. Terms and conditions of service

- 1.1 The LICENSOR shall assign such qualified and competent personnel as are necessary for the proper and final implementation of the Agreement. Such personnel should be fit for working in a (tropical) climate.
- 1.2 At the First Detailed Engineering Meeting, the parties shall further agree upon the details concerning the expected initial number of each category of the LICENSOR's personnel and the duration of their assignments.

2. List of personnel to be assigned by the LICENSOR

- 2.1 The LICENSOR shall assign the following personnel for the period noted against each person/category of persons.

<u>Category</u>	<u>Expected number</u>	<u>Total expected man-Days</u>
—	—	—
—	—	—

- 2.2 The periods of stay mentioned above are only indicative and the parties shall agree on definite figures at the detailed engineering meetings.

3. Charges for the personnel to be assigned by the LICENSOR

- 3.1 (a) The charges for the LICENSOR's assigned personnel for each Day of absence from home office shall be as follows (example only):

<u>Personnel</u>	<u>Rates per Day a/</u>	<u>Currency</u>
Start-Up team leader		
Specialist engineers		

(Other personnel may be specified);

- (b) (It is recommended that there should be no escalation clause. However, in some cases an escalation clause may be required, in which case it should be based on an index specified in this clause. The index should be an officially published index of the agencies of the LICENSOR's Government.)

a/ The above charges are for eight-hours per Day, six Days per week daytime work.

3.2 Overtime charges

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

Up to () hours/week	() per cent of normal rates
Above () hours/week	() per cent of normal rates
For weekly and public holidays	() per cent of normal rates
For night shift	() per cent of normal rates

3.3 In addition to what is specified under clauses 3.1 and 3.2 of this annexure, the following allowances, services and facilities shall be paid by the LICENSEE to the LICENSOR's personnel deputed to work under the Agreement:

3.3.1 Local allowance

The LICENSEE shall pay to each of the assigned personnel engaged on the work a living allowance at the rate of (amount in local currency) for each Day of presence on assignment in the LICENSEE's country. No additional payment shall be made in local currency for overtime or night shifts.

3.3.2 Travel

Economy-class return air fare for each assignment for each assigned personnel from the home office to the Site by (air carrier) or an IATA carrier at the discretion of the LICENSEE.

Transport within (LICENSEE's country) by aeroplane (economy class) or rail (_____-class) on the rail route specified for the assigned personnel on their arrival at and departure from the Site and for travel on official business.

3.3.3 The LICENSEE shall also provide free of cost to the LICENSOR's assigned personnel the following:

3.3.3.1 Furnished residential accommodation, as well as water, electricity and gas for domestic use.

3.3.3.2 Furnished office accommodation, as well as secretarial assistance and facilities for official communications, including telephone and telex services.

3.3.3.3 Medical assistance to the extent available at the LICENSEE's own or nominated medical centre(s).

ANNEXURE X

Qualifications and experience of persons to be trained by the LICENSOR a/

<u>Designation</u>	<u>Category b/</u>	<u>Qualifications</u>	<u>Experience</u>	<u>Period of training (months)</u>
A. Managerial personnel				
-	Plant manager		-	-
-	Production manager		-	-
B. Group of engineers				
(four)	Process engineers	Degree in chemical engineering	Not less than ___ years' experience in projects, plant operations, technical services or trouble-shooting	-
(one)	Chemists for Process laboratory	Degree or diploma in chemistry	Not less than ___ years' experience in the laboratory or research laboratory of a chemical plant	-
(two)	Mechanical engineers	Degree in mechanical engineering	Not less than ___ years' experience in project engineering, construction, preventive plant maintenance, corrosion control or a workshop	-

a/ An example only.

b/ A list of plants specifying plant(s) in which each of the personnel is to be trained should be provided.

<u>Designation</u>	<u>Category</u>	<u>Qualifications</u>	<u>Experience</u>	<u>Period of training (months)</u>
(one)	Electrical engineers	Graduate electrical engineers	Not less than ___ years' experience in electrical installation covering different types of motors, and power distribution and in procedures for preventive maintenance for all types of electrical equipment	-
C. Foremen				
(two)	Instrument foreman	Diploma in instrument/ electrical engineering	Not less than ___ years' experience in maintenance of instruments	-

ANNEXURE XI

Performance Guarantee figures for the consumption of raw materials and utilities and for the quantity and composition of effluents

1. Raw material specifications

The raw material (natural gas) specifications on which the Performance Guarantees are based 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>Current analyses percentage by volume</u>	<u>Range of analyser on which Plant shall operate</u>
Methane	%	} If available, the proportions of the iso and normal forms should be given as percentages
Ethane	%	
Propane	%	
Butane	%	
Pentane	%	
Hexane	%	
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. Performance Guarantees for the consumption of raw materials and utilities (indicative)

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

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

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

Units per tonne
of ammonia

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

2.2 The consumption of natural gas is based upon the following characteristics, contained in clause 1 of this annexure (within the limits specified): e/

2.3 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 3.5.

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

2.4 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 LICENSOR.

2.4.1 If either the LICENSEE or the LICENSOR 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 5.3.

c/ Natural gas consumption includes requirements, such as feedstock and direct fuel.

d/ Electric power consumption excludes lighting, instrumentation and air-conditioning.

e/ If there are wide variations in the natural gas analyses, the consumption of natural gas could be variable; in which case, the words in brackets could be removed, or alternative consumptions for different analyses given here.

2.5 All consumption of steam, cooling water and power are subject to review after detailed design by the Contractor.

3. Quality and quantity of effluents

The quantity of effluents f/ from the Plant shall not exceed the following under normal operating conditions:

From the Ammonia Plant

Flow rate

Quality

() Tonnes/h

Waste water at (42 °C)

containing: () ppm of waste products)

Note: In some cases, in compliance with local standards, the waste water may require further treatment within the battery limits of the Plant.

Cooling tower system

(a) Losses (evaporation)

() m³/h

(b) Blow down and mist loss

() m³/h

(c) (i) Ammonia content in blow down

() ppm NH₃

(ii) Other characteristics of the blow down

()

The effluents shall be delivered at agreed designated points within the battery limits of the Plant.

f/ The quality of effluents and gaseous emissions should conform to national standards.

ANNEXURE XII

Form of bank guarantee

Bank guarantee for advance payment under Article 10.1 a/

This guarantee No. (___) made this day (_____) between (_____) a Company incorporated and having its Registered Office at (_____) hereinafter called BANK, b/ 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 LICENSEE 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 10.1 of the Agreement dated (_____) (hereinafter called Agreement), between the LICENSEE and (_____) a Company incorporated in (_____) (hereinafter called LICENSOR which expression shall, unless repugnant to the context or contrary to the meaning thereof, include its successors and assigns) for the supply of a (fertilizer) Plant, as envisaged in the Agreement it is stipulated that the sum of (_____) shall be paid by (_____) as an advance payment against a Bank Guarantee of equal amount to be issued by the BANK.
2. WHEREAS in fulfilment of the said Agreement and against receipt of the said advance by (name of LICENSOR), the LICENSOR 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 LICENSEE any amount up to a total sum of (_____).
4. The BANK shall effect payment under this letter of guarantee immediately upon the LICENSEE's written request stating that the LICENSOR 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 LICENSOR.
6. This letter of guarantee shall be initially valid for a period of (_____) months from the Effective Date and shall be extended by suitable periods in accordance with the Agreement (but not more than (six) 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 Agreement, the validity of the present guarantee shall be extended for a period to be mutually agreed upon.

a/ Applicable only if text A of Article 10.1 is used.

b/ This could be a bonding company, in which case the guarantee would be in the form of a bond.

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 LICENSEE and the LICENSEE at his discretion, and without any further consent from the BANK and the LICENSEE's right against the BANK may, compound with or give time or other indulgence to or make any other arrangement with the LICENSOR and nothing done or omitted to be done by the LICENSEE in pursuance of any authority contained in this guarantee shall affect or discharge the liability of the BANK.

(bank)

ANNEXURE XIII

Mechanical Completion and "Ready for Start-Up"

The Performance Guarantee tests shall be run only after the Mechanical Completion Certificate has been issued and the "Ready for Start-Up" condition of the Plant has been demonstrated.

1. Mechanical Completion

Mechanical Completion shall mean that the licensed Plant has reached a stage when adequate checking has shown that:

(a) All columns, vessels, pumps, heat exchangers, piping and other mechanical equipment have been installed, cleaned and flushed out in full conformity with the flow schemes, construction drawings, project specifications and manufacturers' recommendations;

(b) All instruments, control valves, differential pressure devices, interlocks, programmers and other instrumentation are correctly installed and functioning and that all preliminary adjustments have been made;

(c) All electrical supplies have been installed and protected as prescribed; the motors have the correct voltage supply, the correct speed, horsepower and direction of rotation and are free with the associated equipment to turn without obstruction;

(d) All relief devices, relief valves and bursting discs are correctly installed for the safe functioning of the licensed Plant;

(e) All effluent handling facilities, flares and incinerators are ready to accept effluent/wastes;

(f) All ventilation systems and other systems for the protection of the operators and the environment are available and functioning;

(g) All safety, fire-fighting and first aid facilities are adequately available.

2. "Ready for Start-Up"

"Ready for Start-Up" shall mean that the licensed Plant has reached a stage when all conditions relating to Mechanical Completion have been accomplished and that:

(a) All legally required tests have been carried out and licences and governmental authorizations have been granted;

(b) Sufficiently trained operators and maintenance personnel familiar with the Plant and the (_____) Process (including competent interpreters) are available, and the laboratory is ready to provide full analytical services;

(c) All utilities and services are available in the quantities required under the conditions prescribed;

(d) All pressure and vacuum drop testing has been satisfactorily completed, and all instruments correctly protected during testing and correctly returned to service thereafter;

(e) All preliminary Process operations have been carried out and all Equipment has been cleaned, dried and returned to a state of readiness to accept Process materials;

(f) All mechanical Equipment has been adequately tested under load and properly lubricated;

(g) All necessary feedstock, chemicals, catalysts are in storage or available in sufficient quantities to permit Start-Up and subsequent continuous operation;

(h) The Plant has been sufficiently cleaned up to permit the safe movement of operators.