

retain. The Purchaser shall give the Contractor every assistance in taking any measures required to protect the Contractor's right of property or such other rights as aforesaid."

C. Consequences of the transfer

139. Where the property in the plant is transferred to the purchaser while the contractor is still in possession of the plant the contractor has some responsibilities to protect the purchaser's property. Clause 35.2 of FIDIC-EMW provides:

"Where the property in Plant passes to the Employer prior to the delivery of such Plant the Contractor shall so far as is practicable and to the reasonable satisfaction of the Engineer set the Plant aside and mark the Plant as the property of the Employer . . . Such Plant shall be in the care and possession of the Contractor solely for the purposes of the Contract and shall not be within the ownership or disposition of the Contractor . . ."

140. Transfer of property does not imply approval of the materials by the purchaser. Under the FIDIC-EMW the purchaser retains the right under the contract to reject the materials. Clause 35.2 states:

" . . . any interim certificate issued by the Engineer shall be without prejudice on the exercise of any power of the Engineer contained in the Contract to reject Plant which is not in accordance with the Contract and upon any such rejection the property in the rejected Plant shall immediately revert to the Contractor."

[A/CN.9/WG.V/WP.4/Add.2*]

VI. TRANSFER OF TECHNOLOGY

A. Preliminary remarks

1. The phrase "transfer of technology" is used more and more frequently in international commercial contracts whether the parties be from developed or developing countries. It encompasses a great number of things from the right to use the goods sold to the training and assistance of the purchaser's personnel so that they can operate the works. The present chapter will limit itself to the study of the situation most commonly found in contracts for the construction of large industrial works where the contractor will transfer technology, not only in

providing the plant, the equipment and the machinery but also in transferring the know-how and methods of using them.

B. Object of the transfer of technology

1. Object of the obligation

2. Of the forms studied, only the UNIDO model contracts describe substantially the object of the contract in this respect. For instance, in article 2 of UNIDO-TKL the general object of the contract includes, *inter alia*, "the grant of licence and know-how and the provision of basic and detailed engineering". UNIDO-TKL gives some indication as to what is meant by these words:

Article 3.1.2: "Supply of know-how and basic engineering, including but not limited to:

- "Process flow diagrams
- "Material and energy balances
- "Equipment data and specifications
- "Piping and instrument diagrams and specifications
- "Plant layout
- "Electric, steam and other distribution systems
- "Effluent and emission specifications
- "Operational manuals
- "Maintenance manuals"

Article 3.1.3: "The detailed engineering for the Plant."

3. Article 4.5 of UNIDO-TKL also deals with this question:

"The CONTRACTOR shall provide or obtain (as the case may be) the know-how for various processes from the Process Licensors as follows:

- Ammonia Plant (name of Licensor(s))
- Urea Plant (name of Licensor(s))
- (Specify any other, e.g. water treatment)

and shall design the Plant in conformity with the basic engineering criteria of the Process Licensors. Documentation relative to all know-how and basic engineering provided by the CONTRACTOR or obtained from the Licensors shall be provided to the PURCHASER by the CONTRACTOR."

4. Since such know-how is invariably affected by new developments there is always a possibility that such developments might occur between the time of the negotiation and signing of the contract on the one hand and the time when the documents are to be made available to the purchaser on the other. Article 4.5 of UNIDO-TKL imposes on the contractor the obligation to provide the purchaser with:

* 21 April 1981.

"... the latest commercially proven know-how available to the Process Licensors at the time of making such documents available (such documentation to cover the state-of-the-art of the know-how at the time of the signing of the Contract, or if mutually agreed to, at a later date) and that the detailed engineering will be undertaken by the CONTRACTOR according to the latest design standards available and/or known to the CONTRACTOR at the time of design."

5. There would seem to be a slight discrepancy between article 4.5 and the last sentence of article 7.2 of the same contract which reads as follows:

"The CONTRACTOR also hereby undertakes to make available to the PURCHASER the latest know-how and techniques available to the Process Licensors at the signing of the Contract and to the CONTRACTOR at the time of design."

6. In their comments on article 4.5 of UNIDO-TKL an international group of contractors suggested that the contractor should be bound to supply only the technology he can have access to at the date of the signature of the contract.

2. The price

7. The price stated for the contract includes the cost of the technology the purchaser is acquiring. Neither the Sales Convention nor the ECE General Conditions nor the FIDIC Conditions make any specific reference to the price of the technology transferred. However, the UNIDO model contracts deal with this question in some detail.

8. The text of the provisions of the various UNIDO model contracts dealing with price differs depending on whether the contract is a turn-key lump-sum one, a cost reimbursable one or a semi-turn-key one. However, whatever may be the type of contract, it apportions the price and states that a certain amount of the total price relates to the granting of the licenses, know-how and supply of basic engineering. Article 20.2 of UNIDO-CRC also states which amounts apply to the Ammonia Plant, the Urea Plant, and to utilities.

9. Article 20.11 of UNIDO-CRC indicates in which manner this amount has to be paid:

"(25%) (amount) as an advance payment.

"(50%) (amount) on receipt by the PURCHASER of a copy of the know-how and basic engineering documents . . .

"(25%) (amount) on completion of the guarantee tests of the plant and issuance of the Provisional Acceptance certificate of the PURCHASER."

10. The UNIDO-CRC counter-proposal modifies greatly this apportionment. Article 20.12 provides for

the price to be payable 50%, 45%, and 5% upon the occurrence of the same events.

3. Further transfer of technology

11. Technological developments can intervene not only between the time of the signature of the contract and the time of the furnishing of the documents but also after the works are completed. It is in the interest of the purchaser that these developments be made available to him. Article 7.3.1 of UNIDO-TKL provides for "technological developments and improvements in operative techniques, preventive maintenance and safety measures applicable to the plant constructed pursuant to this contract and other relevant data and proprietary information to be made available to him, whether or not they become licensable by the process licensors". The purchaser will have nothing to pay for obtaining this additional information.

12. However, under article 7.3.2 of UNIDO-TKL, the purchaser will have to pay the reasonable costs involved if he wants the:

"rights to use proprietary processes developed or acquired by the CONTRACTOR including patented processes which could result in significant improvement(s) in the capacity, reliability and efficiency of the Plant, and quality of the products."

13. Depending on which UNIDO model contract is being examined, the period of time during which the obligations are imposed on the process licensors or the contractor varies: 10 years in UNIDO-TKL, 8 to 10 years in UNIDO-CRC, 5 years in the UNIDO-CRC counter-proposal. The length of this period of time should be negotiated by the parties in each specific case.

4. Retransfer of technology

14. Once the purchaser has taken over the plant and has started operating it, he may very well discover himself new methods or new techniques. What is his obligation towards the contractor or the process licensor in this respect? UNIDO-TKL does not impose on the purchaser any obligation towards the contractor as such; his obligation is only towards the process licensor whether he be the contractor or a third party to the contract. Under article 7.3.1:

"... The PURCHASER will also make available to the Process Licensor, free of charge, any improvements in operating techniques which the PURCHASER shall have made in the same period." (i.e. the 10 years mentioned in paragraph 13 above).

C. Ownership of the technology to be transferred

15. The contractor may not himself be the owner of all of the technology to be transferred. He will therefore

have to obtain it from a process licensor who may not be a party to the contract; article 7.1 of UNIDO-TKL contemplates such a situation:

"The CONTRACTOR hereby affirms that it has or has obtained the unqualified right(s) to grant, and hereby does grant to the PURCHASER irrevocable, non-exclusive, non-transferable, fully paid-up licence(s) for use in the operation of all the processes . . ."

16. Article 7.2 goes on further:

"The CONTRACTOR shall ensure (through specific arrangements, with proof provided to the PURCHASER) that the Process Licensors shall make available to the PURCHASER through the CONTRACTOR all basic process data (received by the CONTRACTOR from Process Licensors) relating to the Contract, and that all basic process documentation and all drawings prepared by the CONTRACTOR shall also be made available to the PURCHASER together with copies of all documents mentioned in Article 3."¹

17. And article 7.4 of UNIDO-TKL provides:

"The CONTRACTOR shall undertake to enter into specific arrangements with the Process Licensor(s) (with satisfactory proof provided to the PURCHASER) to ensure the continued availability to the PURCHASER of confidential information similar in scope and content to that provided pursuant to Article 7.3."

18. Nevertheless, however closely the process licensor may be involved in the contract he is not a party to it. Thus, there is no contractual relationship between him and the purchaser and therefore the purchaser has no contractual reason to communicate with him directly unless he is expressly authorized to do so by the contract. Such authorization is granted to the purchaser by the UNIDO-TKL in two cases:

Article 7.2.1: "In circumstances where the CONTRACTOR is unable or unwilling to make available to the PURCHASER the necessary process know-how and related information, the PURCHASER shall be free to approach the Process Licensor(s) directly."

Article 7.2.2: "The PURCHASER shall also have the right to establish direct contractual arrangements with the said Process Licensor in the event that the circumstances envisaged in Article 33 apply."²

D. Confidentiality

19. On account of the very nature of the technology and of the trade and industrial secrets which may be

involved and all the other information which should not be disclosed to third persons UNIDO-TKL imposes on the purchaser an obligation of confidentiality:

Article 7.8: "The PURCHASER agrees that he shall treat as confidential all process and technical information, proprietary know-how, patented processes, documents, data and drawings supplied by the CONTRACTOR (whether owned by the CONTRACTOR or otherwise) in accordance with this Contract, all of which is hereinafter referred to as 'confidential information'. The PURCHASER shall not without the prior approval of the CONTRACTOR divulge such confidential information available to a third party, other than required by law, and provided that when so required by law, the PURCHASER shall duly advise the CONTRACTOR."

20. The purchaser is entitled, under article 7.10 of UNIDO-TKL, to use the confidential information thus obtained for no other "purpose than for completing, operating, using, repairing, maintaining or modifying the plant(s)".

21. On the other hand, the purchaser may have given some similar information to the contractor. Article 7.10 of UNIDO-TKL imposes on the contractor a similar obligation:

"... Similarly, the CONTRACTOR will not use or divulge any technical data or confidential information and drawings or technical documents given by the PURCHASER, his representative or Technical Advisor, to the CONTRACTOR except for the purposes strictly connected with the Contract."

22. There are exceptions to this obligation to confidentiality. One type of exemption is provided for by article 7.9.1 and 7.9.2 of UNIDO-TKL which states that the obligation does not apply to confidential information:

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

"Which is already known to the PURCHASER, his representatives or Technical Advisor, before the agreement as to confidentiality was given . . ."

23. The other type of cases where the purchaser may be released from his obligation of confidentiality occurs when he has to give access to the plant to third parties for certain specific reasons, i.e. modifications of the plant(s) which in the purchaser's opinion would result in improved or better plant operation or when the plant requires to be expanded or modernized with the incorporation of contemporary technology. In such cases, the purchaser must first ask the contractor to do the required modification, expansion or modernization. It is only in the event the contractor is unable or unwilling to do so that (under article 7.5 of UNIDO-TKL):

¹ Article 3 deals with the over-all scope of work and division of responsibility.

² Article 33 deals with termination or cancellation of the contract.

"... the PURCHASER shall have the right to employ or retain any other person, firm or agency to undertake and complete such work above referred to, and in such an eventuality, the PURCHASER shall not be held to be in breach of the secrecy provisions of this Article."

24. The obligation of confidentiality is limited in time by the contract. Article 7.13 of UNIDO-TKL states as follows:

"Except when otherwise agreed, the PURCHASER's obligations . . . shall be valid for a period of eight (8) years from the Effective Date of the Contract."

25. In other contracts, it is for a different period. As for the UNIDO-CRC counter-proposal, no specific period is stated. This period can also be negotiated by the parties in each specific case. The parties can also take into account other criteria as for example, the remaining time of the patent.

26. The obligation of confidentiality survives the contract in the event it is cancelled or terminated during the period provided for. (See article 7.12 of UNIDO-TKL.) This would seem to be on account of the nature of this obligation and of the type of privileged information which has been acquired by the parties under the contract.

E. *Infringement*

27. In the same fashion the seller in a contract of sale is responsible towards the purchaser in the event a third party claims rights in the goods sold, the contractor has certain obligations in the event a third party brings a suit against the purchaser alleging a right or claim based on industrial or other intellectual property in the technology transferred.

28. The Sales Convention contemplates that the goods sold may be subject to intellectual property rights and in article 42 imposes on the seller the obligation to:

"... deliver goods which are free from any right or claim of a third party based on industrial property or other intellectual property, of which at the time of the conclusion of the contract the seller knew or could not have been unaware . . ."

29. However, this obligation exists only when the right or claim arises under the law of the State where the goods are to be resold or otherwise used and only if the parties had this in mind when they contracted, or under the law of the State where the buyer has his place of business.

30. Furthermore, under paragraph 2 of the same article:

"The obligation of the seller . . . does not extend to cases where:

"(a) At the time of the conclusion of the contract the buyer knew or could not have been unaware of the right or claim; or

"(b) The right or claim results from the seller's compliance with technical drawings, designs, formulae or other such specifications furnished by the buyer."

31. In the event a claim is made against the buyer of the goods, he can, after giving notice to the seller, avail himself of the remedies provided for under articles 44 and 45 of the Sales Convention.

32. Of the FIDIC Conditions, only the FIDIC-EMW contains provisions pertaining to this eventuality. Clause 19.1 provides as follows:

"The Contractor shall fully indemnify the Employer against all claims and proceedings for or on account of infringement of any letters patent, registered design, copyright, trade mark or trade name or industrial property right protected at the date of the Contract in the Contractor's country or in the country in which the Plant is to be erected, arising by reason of the construction of the Works or by the use of any Plant supplied by the Contractor, but such indemnity shall cover any use of the Works otherwise than for the purpose indicated by or reasonably to be inferred from the Specification or any infringement which is due to the use of any Plant in association or combination with any other plant not supplied by the Contractor."

33. The ECE General Conditions contain no such provision.

34. In UNIDO-TKL the contractor undertakes to provide guaranties as to the purchaser's being able to go on using the know-how and the process transferred under the contract. In the event a claim is made against the purchaser, article 7.17 provides:

"The CONTRACTOR shall indemnify and hold harmless the PURCHASER in connection with any liabilities arising out of patent infringement and/or matters arising out of secrecy and/or proprietary information . . ."

35. In the event a claim is made against him or a suit instituted, article 7.14 of UNIDO-TKL requires the purchaser to give prompt notice of it to the contractor, in order that the contractor can defend such a suit or claim at his own expense. The purchaser will provide all reasonable assistance but will not be responsible for any expenses except in the event he wishes to be represented by a legal counsel of his own choice.

36. The settlement of such suit or claim may be of some consequence to either the purchaser or the con-

tractor. Article 7.16 of UNIDO-TKL contemplates such a situation:

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

37. In order to remedy the alleged infringement, and perhaps also to avoid further litigation, the contractor has the right, under article 7.15 of UNIDO-TKL:

". . . to acquire immunity from suit and to make or cause to be made alterations at its own cost to the Plant(s) to eliminate the alleged infringement provided such alteration does not prevent the Plant(s) from meeting its Performance Guarantees . . ."

VII. QUALITY

A. *Quality in works contracts*

38. Quality in works contracts means the capability of the works to perform a particular function in conformity with the terms of the contract. In large industrial works the obligation to produce work of good quality is a complex issue encompassing not only the structure, dimensions, shape and location of the works but also specific details of the technical processes and products.

39. Parties to a works contract are understandably keen to ensure that their contractual obligations are as certain and as predictable as possible. The tendency in works contracts is to describe precisely the extent and quality of the work to be performed either in the main contract or in the annexed technical documents, and to use this description as a basis and measure of the contractor's work. Express provisions are likely to be made with respect to the important matters of design, the selection of materials and workmanship. Aspects of quality which parties may stipulate in the contract include the following: the dimensions, structural measurements and calculations, shape of the work, location and lay-out of the work, the choice of certain materials in relation to the intended purpose, safety requirements, performance ratings, productive capacity, quality of products, consumption of raw materials and energy. In addition to the provisions of the contract under certain forms the engineer may give additional instructions relating to the quality of the work.

40. In the forms analysed, the liabilities of the contractor in relation to design, workmanship and materials are interlinked. There can be no good workmanship if

the materials are defective. Since these aspects of quality are very specific, the precise stipulations will have to be determined by the parties' agreement. Model contracts and General Conditions cannot be expected to provide for specific details in respect of construction work. There are, nevertheless, some issues that can be dealt with in forms.

B. *Stipulation of quality*

41. In most of the forms under study we find provisions stating only generally the manner of execution of the work. The clauses require that materials and workmanship are to be in conformity with the parties' agreement in so far as the agreement can be gathered from the contract. Clause 36.(1) of FIDIC-CEC provides:

"All materials and workmanship shall be of the respective kinds described in the Contract and in accordance with the Engineer's instructions . . ."

42. "Contract" is defined in clause 1.(1) of FIDIC-CEC to include, *inter alia*, conditions of contract, specification, drawings and priced bills of quantity.

43. Under FIDIC-EMW, the engineer's instructions and directions are in lieu of specifications in the contract. Clause 23 provides:

"All Plant to be supplied and all work to be done under the Contract shall be manufactured and executed in the manner set out in the Specification or, where not so set out, to the satisfaction of the Engineer, and all the Works on Site shall be carried out in accordance with such reasonable directions as the Engineer may give."

44. The UNIDO model contracts deal separately with the contractor's obligations with respect to workmanship and material on the one hand, and performance of the plant on the other. Important aspects of quality relating to design, workmanship, materials and performance of the plant are guaranteed (for further details see part two, XV, *Guaranties*).*

45. The ECE General Conditions do not contain specific provisions on the requirements relating to the quality of workmanship, design or materials. The policy of these conditions is that matters respecting the quality of the work will have to be left to the parties' agreement.

1. *Workmanship and material*

46. Under UNIDO-CRC, the contractor has the responsibility to ensure that the plant and materials are new and in conformity with the specifications. Article 25.1 states:

"The CONTRACTOR shall be responsible for ensuring through the Purchase Orders issued to

* A/CN.9/WG.V/WP.4/Add.6 (reproduced below).

Vendors and by inspection that the quality of the materials and workmanship of the Plant and Equipment for the Works and . . . all plant, equipment, materials, apparatus, articles, instruments, and all other goods required to be procured by the CONTRACTOR under this Contract shall be new and of the most suitable grade for the purposes intended, to the Contract and design specifications, the standards and regulations . . . and (whenever applicable) the domestic standards and regulations of the PURCHASER's country."

47. Under the ECE General Conditions the contractor also guarantees the quality of the plant during a stipulated period of time. The specific obligations of the contractor during this period are, however, not stated; it is envisaged that these will be set out in the contract. Clause 23.1 of both ECE 188A/574A states:

"Subject as hereinafter set out, the Contractor undertakes to remedy any defect resulting from faulty design, materials or workmanship."

2. *Performance of the plant*

48. Under the UNIDO model contracts, whether the plant has been purchased in accordance with the contractor's recommendations or supplied by the contractor, it must be capable of meeting the performance standards. Article 26.2 of UNIDO-TKL, for example, states:

"The plant supplied by the CONTRACTOR shall be capable of meeting the full requirements of normal operation, capacity, quality of Products, consumption of raw materials and utilities . . ."

49. The UNIDO model contracts contain very detailed description of requirements relating to quality. Such requirements, however, are too specific to be dealt with in General Conditions or model contracts and should be left to be determined by the parties in the contract.

50. The Sales Convention also emphasises the duty of the seller to deliver goods that are suitable for the intended or described purpose. Article 35 states:

"(1) The seller must deliver goods which are of the quantity, quality and description required by the contract . . .

"(2) Except where the parties have agreed otherwise, the goods do not conform with the contract unless they:

"(a) Are fit for the purposes for which goods of the same description would ordinarily be used;

"(b) Are fit for any particular purpose expressly or impliedly made known to the seller at the time of the conclusion of the contract, except where the circumstances show that the buyer did not rely, or that it was

unreasonable for him to rely, on the seller's skill and judgment . . ."

C. *Execution of the project*

1. *Inadequacy of specifications*

51. As it has been pointed out earlier, in large industrial works, it would be in the interest of both parties to describe clearly either in the main contract or supplementary documents all the aspects of quality which the plant has to meet. Nevertheless, however detailed the description may be, it is often impossible in a works contract to foresee and make provision for all details.

52. When a dispute arises concerning the contractor's obligations, there are two questions that have to be faced: whether the contractor's obligation to complete the works free of defects should over-ride the specifications contained in the contract, and whether necessary and ancillary work omitted from the contract fall within the contractor's general obligations to complete the works.

53. The contractor is deemed to have satisfied himself as to the adequacy of his tender to perform the described work. Under the FIDIC-CEC and FIDIC-EMW Conditions the contractor is obliged to fill the gaps in the specifications so that the works will be in accordance with the contract. Clause 11 of FIDIC-CEC states:

"The Contractor shall . . . be deemed . . . to have satisfied himself, so far as is practicable, before submitting his Tender, as to the . . . extent and nature of work and materials necessary for the completion of the Works . . . and, in general shall be deemed to have obtained all necessary information . . . which may influence or affect his Tender."

2. *Errors in the specifications*

54. Insufficient or wrong description of the work in the specification can lead to errors in the project which may affect the quality of the work. Among the questions that arise here is whether the contractor will be obliged to modify the work, and if he does so, whether he will be entitled to extra payment.

55. The various forms analysed take different positions. In some forms the position will turn to a considerable extent on which party prepared the design or furnished the information that formed the work plan. Clause 17 of FIDIC-CEC provides:

"The Contractor shall be responsible for the true and proper setting-out of the Works in relation to original points, lines and levels of reference given by the Engineer in writing and for the correctness, subject as above mentioned, of the position, levels, dimen-

sions and alignment of all parts of the Works and for the provision of all necessary instruments, appliances and labour in connection therewith. If, at any time during the progress of the Works, any error shall appear or arise in the position, levels, dimensions or alignment of any part of the Works, the Contractor, on being required so to do by the Engineer or the Engineer's Representative, shall, at his own cost, rectify such error to the satisfaction of the Engineer or the Engineer's Representative, unless such error is based on incorrect data supplied in writing by the Engineer or Engineer's Representative, in which case the expense of rectifying the same shall be borne by the Employer . . ."

56. The relevant provision of FIDIC-EMW (clause 7.2) is similar except that it gives the contractor additional protection. The contractor is also exempt from liability if the error is based on incorrect data supplied by another contractor.

3. Standards

57. Parties may stipulate standards that shall be utilized in the construction, or they may have this matter to be determined by the current professional standards. In some cases standards may be determined by the mandatory national law.

58. Under both UNIDO-CRC and UNIDO-TKL, the contractor is not restricted to the standards or codes specified in the contract. He is obliged to utilize standards superior to those contained in the specifications. Article 25.4 of UNIDO-CRC provides:

"The standards and codes to be used for the Plant(s) are given in Annexure II. The CONTRACTOR shall utilize these standards (or where applicable mandatory national standards) and/or superior standards if known to CONTRACTOR . . . for the design and procurement of all plant and equipment. Wherever standards or codes are not explicitly stated in the Contract, internationally recognized standards or codes or those which have been previously used by the CONTRACTOR in a working Ammonia/Urea Plant may be used, subject to the PURCHASER being given prior notice."

59. In the event of dispute concerning the quality of standards, article 25.5 of UNIDO-CRC provides:

"In the case of a dispute arising on any matter concerning the acceptability or qualitative level of standards or Code(s) the onus shall be on the CONTRACTOR to prove to the PURCHASER the superiority or better competence of those standard(s) or code(s) recommended (or adopted) by the CONTRACTOR pursuant to this Contract."

60. As indicated above (see paragraphs 41 and 43, *supra*) under the FIDIC-CEC and FIDIC-EMW Con-

ditions the engineer may give additional instructions concerning the standards to be utilized in the work.

61. Under the ECE General Conditions requirements relating to standards are left to be determined by the parties in the contract.

D. Finality of contract terms

1. Need for variation

62. Sometimes, during erection the contractor may find that adherence to the contract specifications will not produce a plant capable of performing the intended purpose. The question is whether the contractor's obligation to comply with the plans and specifications should over-ride his obligation to construct a plant that is capable of performing the intended purposes.

63. In general the answer will depend to a considerable extent on the type of construction contract. In a turn-key contract the contractor undertakes to construct a plant with specified qualitative standards and capable of performing a particular function. The contractor will be responsible for the modification of the works at his own cost to meet performance guaranties.

64. Clause 24 of FIDIC-EMW contains express provisions for ancillary work necessitated by unforeseen technical conditions:

"If during the execution of the Works the Contractor shall encounter physical conditions, other than climatic conditions, on the Site, or artificial obstructions, which conditions or obstructions could, in his opinion, not have been reasonably foreseen by an experienced contractor, the Contractor shall forthwith give written notice thereof to the Engineer's Representative and if, in the opinion of the Engineer, such conditions or artificial obstructions could not have been reasonably foreseen by an experienced contractor, then the Engineer shall certify and the Employer shall pay the additional cost to which the Contractor shall have been put by reason of such conditions, including the proper and reasonable cost:

"(a) Of complying with any instruction which the Engineer may issue to the Contractor in connection therewith, and

"(b) Of any proper and reasonable measures approved by the Engineer which the Contractor may take in the absence of specific instructions from the Engineer

"as a result of such conditions or obstructions being encountered."

65. UNIDO-CRC makes provision for the purchaser and contractor to agree on any necessary modification

and its implication prior to the modification and re-execution of the work. Article 15.4 provides:

"The CONTRACTOR may at any time during his performance of the Contract submit to the PURCHASER for his approval written proposal(s) for a variation of the Works."

66. The UNIDO-CRC counter-proposal suggests that the clause should only stipulate a variety of circumstances in which the contractor should be entitled to claim for additional cost. According to article 15.7 the circumstances include:

"Any encounter of physical condition or artificial obstruction which has not been stipulated in the Annexures."

67. In addition the counter-proposal enumerates circumstances which can be considered to be cases of *force majeure*.

68. Under the ECE General Conditions only the consequences of changes necessitated by local administrative regulations are provided (for further details, see part two, XVIII, *Applicable law**).

2. Right to variations

69. Under FIDIC-CEC and FIDIC-EMW, the engineer has a right to issue written orders to vary the quality and quantity of the works. Clause 34.1 of FIDIC-EMW provides:

"... The Engineer shall have full power, subject to the proviso hereinafter contained, from time to time during the execution of the Contract by notice in writing to direct the Contractor to alter, amend, omit, add to or otherwise vary any of the Works. The Contractor shall carry out such variations and be bound by the same conditions, so far as applicable, as though the said variations were stated in the Specification. Provided that no such variation shall, except with the consent in writing of the Contractor and the Employer, be such as will, with any variations already directed to be made, involve a net addition to or deduction from the Contract Sum (less Provisional Sums) of more than 15 per cent thereof. In any case in which the Contractor has received any direction from the Engineer which either then or later will, in the opinion of the Contractor, involve an addition to or deduction from the Contract Sum the Contractor shall as soon as reasonably possible and where practicable, before proceeding therewith, advise the Engineer in writing to that effect. The amount to be added to or deducted from the Contract Sum shall be ascertained

and determined in accordance with the rates specified in the schedules of prices, so far as the same may be applicable, and where rates are not contained in the said schedules or are not applicable such amount shall be such sum as is reasonable in the circumstances. Due account shall be taken of any partial execution of the Works which is rendered useless by any such variation."

70. Similarly, Clause 51 of FIDIC-CEC provides:

"(1) The Engineer shall make any variation of the form, quality or quantity of the Works or any part thereof that may, in his opinion, be necessary and for that purpose, or if for any other reason it shall, in his opinion be desirable, he shall have power to order the Contractor to do and the Contractor shall do any of the following:

"(a) Increase or decrease the quantity of any work included in the Contract,

"(b) Omit any such work,

"(c) Change the character or quality or kind of any such work,

"(d) Change the levels, lines, position and dimensions of any part of the Works, and

"(e) Execute additional work of any kind necessary for the completion of the Works

"and no such variation shall in any way vitiate or invalidate the Contract, but the value, if any, of all such variations shall be taken into account in ascertaining the amount of the Contract Price."

71. A special problem arises if the variation is so extensive as to alter the scope of the original work above a certain percentage. Under the FIDIC-EMW the contractor's written consent to the variation is required if the additional work should exceed 15% of the contract price. (Clause 34.5.)

72. All UNIDO model contracts provide a procedure for determining whether a particular work falls within the contractor's obligations. Article 15 of UNIDO-CRC provides:

"15.1 Whenever the PURCHASER shall make a request to the CONTRACTOR for change in design, or where services are required to be performed by the CONTRACTOR which in the opinion of the CONTRACTOR are in addition to the services which the CONTRACTOR is obligated to perform under this Contract, or which in the CONTRACTOR's opinion require additional payment by the PURCHASER, the CONTRACTOR shall promptly advise the PURCHASER of the cost of such further services.

"15.2 If the PURCHASER agrees that the services required of the CONTRACTOR are in addition to the

* A/CN.9/WG.V/WP.4/Add.7 (reproduced below).

CONTRACTOR's obligation under this Contract, the PURCHASER shall, (subject to negotiations as to the cost and extent of such services and effect on the time schedule, if any) agree to pay for such services in accordance with payment terms and time schedules to be mutually agreed.

"15.3 In the event that the PURCHASER and the CONTRACTOR are unable to agree on whether such required services are within the contractual obligations of the CONTRACTOR, or if the PURCHASER considers that the payment demanded for such required services by the CONTRACTOR is exorbitant, the Technical Advisor shall have the right to decide on the quantum of payment, if any, which may be payable by the PURCHASER to the CONTRACTOR. In such an eventuality the CONTRACTOR shall proceed without delay to carry out the design changes, and/or provide the services which are the subject of the dispute, pending the decision of the Technical Advisor. The decision of the Technical Advisor shall be without prejudice to the rights of the CONTRACTOR to submit the dispute to Arbitration."

73. The procedure under UNIDO-TKL and UNIDO-STC is similar.

74. The counter-proposal has a different approach. It stipulates the circumstances in which the contractor will be entitled to extra payment for the additional work. Article 15 provides *inter alia*:

"The CONTRACTOR shall be entitled to claim for additional cost and/or time delays and/or guarantees when a modification, change or variation occurs in the event of any of the following:

"15.1 Any modification, addition or deletion to the contract documents . . . unless the PURCHASER specifically demonstrates that it does not affect the CONTRACTOR's services.

"15.2 Any written request by the PURCHASER which causes a modification to any drawing, specification and document, purchase order or to the CONTRACTOR services or to the work, unless the elements already accomplished were not originally accomplished in accordance with the contract.

"15.3 Any additional engineering studies requested in writing by the PURCHASER, including those which are not followed by execution.

"...

"15.8 Any modification in the CONTRACTOR's services and/or the work proposed by one of the Parties accepted by the other Party, and ratified by both Parties."

[A/CN.9/WG.V/WP.4/Add.3*]

VIII. INSPECTION AND TESTS

A. General remarks

1. The conformity of the plant with the requirements of the contract is of utmost importance for the purchaser and also in the interest of the contractor. To ensure this conformity works contracts usually contain provisions concerning inspection and examination in the course of production as well as tests before and after completion of the works.

2. The relevant part of article 38 of the Sales Convention stipulates:

"(1) The buyer must examine the goods, or cause them to be examined, within as short a period as is practicable in the circumstances.

"(2) If the contract involves carriage of the goods, examination may be deferred until after the goods have arrived at their destination."

3. In works contracts, especially one for large industrial works, the position is not as simple as that under the Sales Convention. Here it is in the interest of both parties to examine the works in the course of their production. For the contractor early examination means the possibility of curing the defects, if any, in the factory itself rather than on site. The defects would be easier to remedy and less expenses would be incurred. For the purchaser early rectification of defects means avoidance of subsequent delays and difficulties.

4. Works contracts, therefore, often contain provisions concerning the extent of inspection during production of machines and equipment, place and time of inspection, procedure for inspection, obligations and rights of purchaser, duties of contractor, costs of inspection, certification, and legal effect of inspection.

5. Regarding performance tests works contracts usually contain provisions concerning pre-conditions for performance tests, date of performance tests, procedure to be followed, participants, obligations of purchaser in preparation of tests, effects of tests, procedure in case of non-performed or non-successful tests, and protocol.

B. Inspection during production

1. Rights and obligations

6. The general conditions and model forms under study adopt different approaches to the question of

* 17 March 1981.