certain specific clauses of such contracts; and (*e*) to consider the desirability of a draft convention on international contracts for the supply and construction of large industrial works.[15]

40. At the same time, however, it was also suggested that any decision on the direction the work should take and the ultimate end product should be taken in stages on the basis of progress made in the course of preliminary work.[16] This was confirmed by the Commission at its thirteenth session.[17]

41. However, some general direction of work would have to be agreed. In this connexion, in view of the importance given by the Commission to the legal aspects of contracts for the supply and construction of large industrial works, the Working Group might wish to consider whether the preparation of a legal guide in order to assist parties in the negotiation of contracts might be adequate as a preliminary objective.

42. Certainly there are in existence several guides or guidelines such as those prepared by ECE and UNIDO.[18] The ECE Guide, however, addresses itself to enterprises in Europe. Moreover, this Guide is rather brief and general and does not discuss all the legal issues in depth. The various UNIDO documents, on the other hand, deal mainly with economic, technical, administrative and financial aspects of the installation of large industrial works.

43. It appears desirable to have a more comprehensive legal guide which, *inter alia,* identifies the legal issues to be kept in mind when negotiating and drafting contracts on industrial works, describes various approaches pointing out the advantages and disadvantages of each approach and suggests alternative solutions.

44. As work progresses, the contents for inclusion in such a guide may become clearer and a stage may be reached when a model clause approach would be feasible in the context of some clauses. The work may also reveal that a uniform law approach would be appropriate in the light of conflicting national rules as regards other legal issues involved (e.g. in a manner similar to the project currently undertaken by the Working Group on International Contract Practices on liquidated damages and penalty clauses). The examination may further reveal that the preparation of UNCITRAL definitions on some contract terms might be desirable because of the frequent use of legal shorthand in the drafting of contracts—confusion as to their meanings is likely to ensue particularly when parties to an international contract belong to a different legal system or where trade practices differ, (i.e. a similar consideration which prompted the International Chamber of Commerce to adopt INCOTERMS in order to eliminate such difficulties.[19]

45. The process of identifying the proper formula for end products on distinct legal issues and the implementation may very well progress in parallel with the preparation of guidelines. As the work develops, the scope of each area (e.g. types of contract to be covered) would also become clearer. In fact, such process in stages would be essential in order to attain a meaningful guide designed to contribute to the establishment of a new international economic order in a pragmatic manner. And, only after such processes, a more ambitious approach may become more feasible.[20]

46. Whatever the future decision may be, it appears indispensable first to analyse all relevant issues in depth on each concrete legal issue involved, taking into account the interest of both parties and the need for equitable and balanced solutions. Keeping these considerations in mind, this preliminary study has been prepared to assist the deliberations of the Working Group.[21]

Part two

[A/CN.9/WG.V/WP.4/Add.1*]

I. Drawings and descriptive documents

A. *Preliminary remarks*

1. Throughout the various phases of a contract for the construction of large industrial works, a number of documents are issued by the parties in order to determine the scope of the work to be performed, to follow up on its performance and to enable the purchaser to operate the plant. These documents may consist of catalogues,

[15] A/CN.9/191, paras. 52-55 (Yearbook . . . 1980, part two, V, B).
[16] *Ibid.*, para. 148.
[17] Report of the United Nations Commission on International Trade Law on the work of its thirteenth session (A/35/17), para. 141 (Yearbook . . . 1980, part one, II, A).
[18] A/CN.9/191, paras. 48 and 50 (Yearbook . . . 1980, part two, V, B).

* 26 May 1981.
[19] The ECE General Conditions do not contain a distinct provision on definitions. The FIDIC Conditions and the UNIDO model contract contain many definitions but they are often different from one another.
[20] Since contracts for supply and construction of large industrial works are frequently concluded on the basis of public tenders, it has been suggested that drafting of procurement regulations with contract conditions may be a useful and promising approach for UNCITRAL. As the work progresses to a mature stage, such an undertaking may also become a relatively easy task.
[21] Since a future decision would ultimately have to be taken by the Commission, the Working Group may also wish to note that a report of the Secretary-General (A/CN.9/203) (reproduced in this volume, part two, V, B), which will be before the fourteenth session of the Commission, has discussed, *inter alia,* future courses of action which are open for the Commission.

prospectuses, circulars, advertisements, illustrated matter, price lists, specifications, drawings, technical documents, programmes and manuals. The time at which the documents are provided by one party to the other and the rights and obligations resulting therefrom will depend on the type of documents.

2. The engineer usually plays a great role in contracts such as those under study. His role is even greater with respect to drawings and descriptive documents. In some cases, the purchaser will be relying entirely on his expertise in this field. Reference to the engineer acting in this capacity can be found mostly in the FIDIC Conditions of contract.

B. *Types of document and time for submission*

1. *Preliminary documents*

3. The ECE General Conditions contemplate the possibility of documents being submitted by one party to the other in the preliminary stages of the negotiation of the contract. These are usually catalogues, prospectuses, circulars, advertisements, illustrated matter or price lists. Clause 3.1 of both ECE 188A/574A states that "the weights, dimensions, capacities, prices, performance ratings and other data" included in these documents "constitute an approximate guide". These data will bind the parties only if they are "by reference expressly included in the Contract".

2. *Specifications and drawings*

4. In order to award the contract, the purchaser will call for tenders. His call for tenders under the FIDIC Conditions will include not only the general conditions of the contract but also the specifications (clause 1.1 of FIDIC-EMW and 1 (1) (*k*) of FIDIC-CEC) which often contain drawings (clause 1.1 (*p*) of FIDIC-EMW and 1 (1) (*l*) of FIDIC-CEC).

3. *Programme and time schedule*

5. If the specifications and the drawings set out the technical details of the works to be undertaken by the contractor, clause 12.1 of FIDIC-EMW provides that it is the "programme" which is submitted by the contractor that shows "the order of procedure" in which the works are to be carried out, "including the design, manufacture, delivery to Site, erection and commissioning thereof".

6. Clause 12.1 of FIDIC-EMW mentions further that the contractor will also indicate in the "programme":

> ". . . the times by which the Contractor requires the Employer to have obtained any import licences, consents, wayleaves and approvals necessary for the purpose of the Works."

7. Article 12.3 of UNIDO-TKL provides that the time schedule is to be included as an Annexure to the contract. For some of the documents enumerated the approval of the purchaser must be obtained.

8. Once the contract has been awarded, clause 5.1 (*a*) of FIDIC-EMW requires that the contractor provide "Drawings, samples, patterns and models as may be called for" in the specification or in the programme.

4. *Drawings to be provided by contractor*

9. Under the terms of clause 5.4 of FIDIC-EMW, the contractor must also

> ". . . provide Drawings showing the manner in which the Plant is to be affixed together with all information relating to the Works, required for preparing suitable foundations, for providing suitable access for the Plant and any necessary equipment to the point on Site where the Plant is to be erected and for making all necessary connections to the Plant (whether such connections are to be made by the Contractor under the Contract or not)".

10. A similar provision exists in the ECE General Conditions. Clause 12.1 of both ECE 188A/574A reads:

> "The Contractor shall in good time provide drawings showing the manner in which the Plant is to be affixed together with all information relating, unless otherwise agreed, only to the Works, required for preparing suitable foundations, for providing suitable access for the Plant and any necessary equipment to the point on the site where the Plant is to be erected and for making all necessary connexions to the Plant (whether such connexions are to be made by the Contractor under the Contract or not)".

11. Under clause 5.1 (6) of FIDIC-EMW, during the course of the works, the engineer may require the contractor to provide him with "Drawings of the general arrangement and details of the Works". The contractor is obliged to provide him with such drawings. The only case in which he can refuse to comply with the engineer's request is when the engineer requires him to supply copies of shop drawings.

12. Under clause 5.1 of FIDIC-EMW, the drawings and other documents thus submitted must be approved by the engineer. In the event the engineer fails to manifest his approval, there is a presumption that the documents are approved if 28 days have elapsed after their receipt. If the documents are not approved by the engineer, they are to be modified and re-submitted.

13. UNIDO-TKL spells out the delivery procedure of documentation. Articles 2.2.1 and 2.2.2 of Annexure XV of UNIDO-TKL provides as follows:

> "2.2.1 The documentation shall be delivered to the PURCHASER's representative in the CONTRAC-

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

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

5. *Documents to be provided at the end of the works*

14. At the end of the works, before they are taken over, other documents have to be provided by the contractor to the purchaser. Under clause 5.6 of FIDIC-EMW, these documents consist of:

". . . Operating and Maintenance Instructions together with Drawings (other than shop drawings) of the Works as completed . . ."

The reason for providing these drawings is to enable the purchaser to maintain, dismantle, reassemble and adjust all parts of the works.

15. Under clause 5.6 of FIDIC-EMW these documents are deemed to be of such importance that:

". . . unless otherwise agreed, the Works shall not be considered to be completed for the purposes of taking over under the terms of Clause 32 (Taking Over) until such instructions and Drawings have been supplied to the Employer."

16. Article 3.1.2 of UNIDO-TKL provides that the contractor is to furnish the purchaser with operational and maintenance manuals. Although article 3.2.6 of UNIDO-TKL provides that "The services relating to Management of Plant Operations, optional Management Assistance and optional Technical Advisory Services . . . shall be embodied in appropriate arrangements and agreements . . .", article 1 of Annexure XXI enumerates the various manuals which are to be provided by the contractor as part of his contract services, namely operating manual, maintenance manual, manual of safety procedures, manual of analytical procedures, manual for monitoring environmental aspects, manual for instrumentation maintenance, and special instructions for maintenance and calibration of on-line analysers.

17. Furthermore, under article 3 of Annexure XXI of UNIDO-TKL:

". . . the CONTRACTOR will provide the PURCHASER in original, all pamphlets, installation, operation and maintenance instructions etc., received from Equipment manufacturers and sub-Contractors of the CONTRACTOR and where required shall identify the equipment to which such instructions refer."

C. *Modification or variation*

18. Clause 5.2 of FIDIC-EMW states that once the drawings have been approved by the engineer, they are "not [to] be departed from except as provided in Clause 34 (Variations)".

19. It is understandable that, as the works progress, the parties and the engineer may find that the original drawings need to be varied or modified in order to conform to the quality standards imposed by the contract. (See part two, VII, *Quality*.)* Modifications or variations can also be required because of an error or an omission in the drawings.

20. Clause 12.3 of both ECE 188A/574A state that:

"Any expenses resulting from an error or omission in the drawings or information . . . which appears before taking over shall be borne by the Contractor . . ."

21. The FIDIC-EMW Conditions contain a similar provision; clause 5.5 states that:

". . . any expenses resulting from an error or omission in or from delay in delivery of the Drawings and information . . . shall be borne by the Contractor."

22. However, clause 6.1 of FIDIC-EMW provides for an exception to this liability of the contractor as follows:

"The Contractor shall be responsible for any discrepancies, errors or omissions in the Drawings and information supplied by him, whether they have been approved by the Engineer or not, provided that such discrepancies, errors or omissions are not due to incorrect Drawings or inaccurate information furnished to the Contractor in writing by the Employer or the Engineer."

23. Under article 6.3 of FIDIC-EMW, the purchaser is responsible for the "Drawings and information supplied by the Employer or by the Engineer in writing and for the details of special work specified by either of them". Accordingly, article 6.3 of FIDIC-EMW goes on as follows:

"The Employer shall pay to the Contractor for alterations of the work necessitated by reason of incorrect Drawings or information so supplied to the Contractor a sum ascertained and determined in like manner to the valuation of variations under Clause 34 (Variations)."

* A/CN.9/WG.V/WP.4/Add.2 (reproduced below).

24. The situation with the UNIDO-TKL model differs. In spite of being a turn-key contract, under article 15.1 of UNIDO-TKL the purchaser has full powers ". . . to direct the CONTRACTOR to alter, amend, omit, change, modify, add to or otherwise vary any of the Works . . ."

25. This direction must be given in writing. Once he has been thus directed, the contractor ". . . shall carry out such work and be bound by the same conditions, so far as applicable, as though the said variations were stated in the Contract and Specifications."

26. Paragraph 2 of article 15 of UNIDO-TKL makes reference to the "PURCHASER/Engineer". This would seem to indicate that the purchaser may retain the services of an engineer or that an engineer is closely involved with the project and that his decision or his instructions are considered as being those of the purchaser.

27. Under article 15.3 of UNIDO-TKL, if the changes requested by the purchaser are solely due to "defects, omissions or errors in the Plant(s) or Work(s)", resulting from "any discrepancies or mistakes in design, process, engineering, instructions, specifications, inspections, procurement, fabrication and supply, civil engineering, erection, and errors and/or omissions (as the case may be)", the contractor will have to bear their costs.

28. On the other hand, article 15.2 of UNIDO-TKL provides that if the changes requested by the purchaser do not result from such defects, omissions or errors, the difference in cost is to be added to or deducted from the contract price, the engineer intervening in the assessment of the difference. In the event that no agreement is reached by the parties, reference is made to the provisions of the contract concerning settlement of disputes and arbitration.

29. Under article 15.4 of UNIDO-TKL, variations can also be initiated by the contractor if he "is of the opinion that such variation is necessary to correct any defect in the Works which has occurred or which would otherwise occur . . ."

30. In such an event, the contractor is not allowed any extra costs under article 15.5 of UNIDO-TKL ". . . even if such changes or variations are as a result of changes in detailed project schedule created by change in material deliveries, and/or incidental to time changes related to mechanical completion, or due to changes in piping layout or design performed by the CONTRACTOR as a result of detailed engineering."

31. The procedure to be followed to vary or modify the drawings varies from one type of contract to another. Needless to say, in contracts where an engineer is closely involved, he will have a great role to play in these matters.

32. Under the FIDIC Conditions the procedure to be followed to modify the drawings varies slightly from one set of conditions to the other. However, as a rule, it can be said that nothing can be modified or varied without the written permission of the engineer.

33. Under clause 34.1 of FIDIC-EMW, the engineer must give the contractor reasonable notice of the variations to be undertaken, so that the contractor can make the necessary arrangements. The same article provides that once the contractor has been advised of the variations to be made, he "shall carry out such variations and be bound by the same conditions, so far as applicable . . ."

34. Article 15.6 of UNIDO-TKL provides that in the event that the modifications are initiated by the contractor, the purchaser must approve them. However, in view of the nature of the contract, the article provides further that:

> "The PURCHASER shall not refuse to approve any variation which is necessary to correct any defect in the Works which has occurred or which would otherwise occur if the CONTRACTOR's proposal is not accepted, or if any modifications or rectifications are required . . . In all other cases, the PURCHASER may give or refuse his approval as he thinks fit and his decision shall be final."

35. It may happen that modifications or variations which are required by the purchaser are of such a nature as to prevent the contractor "from fulfilling any of his obligations under the contract". In such a case, article 15.8 of UNIDO-TKL provides that the contractor:

> ". . . shall notify the PURCHASER thereto in writing and the PURCHASER shall decide forthwith whether or not the same shall be carried out. If the PURCHASER re-confirms in writing his intention to carry out the variations, then the said obligations of the CONTRACTOR shall be modified to such an extent as may be justified . . ."

36. Under article 15.12 of UNIDO-TKL, once the purchaser has approved the modifications, they are to be embodied in a change order to be signed by the parties or their authorized representatives, and:

> ". . . such Change Orders shall be deemed to form part of the Contract and subject to all of the terms and conditions therein, unless otherwise excepted."

37. Article 15.10 of UNIDO-TKL provides that in the event of a dispute as to whether the variations are within the contractual obligations of the contractor it shall be decided by a neutral party. The same article also provides that if the purchaser considers that the services to be rendered as a result of such variations are exorbitant, the quantum of payment shall also be decided by the neutral party. And, pending his decision, the contractor has to proceed without delay to effect the changes.

D. *Ownership of the documents*

38. On account of the nature of some of the information contained in the drawings and documents submitted by one party to the other, some of the forms under study contain provisions dealing with the ownership of the documents.

39. Clauses 3.2 and 3.3 of both ECE 188A/574A provide that the "drawings or technical documents intended for use in the construction or erection of the Works or of part thereof" and submitted by one party to the other (purchaser to contractor or vice versa) remain "the exclusive property" of the party who furnished them.

40. This restriction has the effect of imposing on the party receiving the documents an obligation as to confidentiality. This is why clauses 3.2 and 3.3 of both ECE 188A/574A state that he cannot copy, reproduce, transmit or communicate them to a third party without the other party's consent.

41. In the case of the documents provided by the contractor to the purchaser, an exception is provided for by article 3.2 of both ECE 188A/574A which states:

"the said plans and documents shall be the property of the Purchaser:

"(*a*) If it is expressly so agreed, or

"(*b*) If they are referable to a separate preliminary development contract on which no actual construction was to be performed and in which the property of the Contractor in the said plans and documents was not reserved."

42. As for the documents to be provided by the contractor at the commencement of the guaranty period, clause 3.4 of both ECE 188A/574A provides that they become the property of the purchaser without any restriction. However, the contractor may stipulate that they should remain confidential.

43. The other forms under study do not contain any such provisions. However, it goes without saying that the documents dealing with matters related to transfer of technology partake of the obligation as to confidentiality imposed to the parties in this respect. (See part two, VI, *Transfer of Technology*.)*

II. Supply

A. *General remarks*

44. The items which the contractor has to supply in order to commence erection of the works are varied and numerous and include machinery, materials, erection equipment, labour, utilities and temporary and ancillary works. In this chapter we will examine only the parties' obligations for the supply, transportation and storage of the machinery and materials; the materials may be intended for incorporation into the permanent works or they may be required for purposes of construction only. (For a discussion of the supply of erection equipment and labour, see III, *Erection of Works, infra*.)

45. The type of contractual provisions relating to the supply of the machinery and the necessary materials will depend to a large extent on the type of contract and the actual content of the work to be performed under the contract. A full turn-key contract normally covers the supply by the contractor of the design for the plant, the machinery, technical documentation and the necessary materials.

B. *Parties' obligations*

1. *Obligation to supply*

46. In a works contract, the contractor's obligation to erect and complete the described work implies an undertaking on his part to do any work and supply materials which are necessary to complete the work in accordance with the contract. Under FIDIC-CEC, this special obligation of the contractor is expressly stated. Clause 8 (1) states:

"The Contractor shall, subject to the provisions of the Contract, and with due care and diligence . . . provide all labour, including the supervision thereof, materials, Constructional Plant and all other things, whether of a temporary or permanent nature, required in and for such execution and maintenance, so far as the necessity for providing the same is specified in or is reasonably to be inferred from the Contract."

47. Under FIDIC-EMW, only the contractor's obligation to supply labour and contractor's equipment is stated. The responsibility for the supply of the machinery and the necessary materials is left to the parties' agreement. Clause 7.1 provides:

"The Contractor shall, subject to the provisions of the Contract . . . provide all labour, including the supervision thereof, and Contractor's Equipment, necessary therefor and for carrying out his obligations . . . so far as the necessity for providing the same is specified in or is reasonably to be inferred from the Contract."

48. Under the UNIDO model contracts the contractor is also responsible for the supply of machinery and materials. It is always in the interests of the purchaser to have the machinery and materials described and, if necessary, approved by the purchaser; to this end under the UNIDO models the contractor is required to

* A/CN.9/WG.V/WP.4/Add.2 (reproduced below).

provide the purchaser with an itemized list of the machinery and materials to be supplied under the contract. Article 4.9 of UNIDO-TKL states:

"The CONTRACTOR shall be responsible for the supply of the complete plant and equipment . . . The list of the Plant and Equipment as well as other Materials . . . shall represent the complete Plant . . ."

49. The contractor's obligation is, however, not limited to the supply of specified items; he is required to supply also materials which are required for the work. Article 4.9 of UNIDO-TKL states:

". . . Any additional item(s) required but not specified . . . shall be supplied by the CONTRACTOR. Notwithstanding anything to the contrary expressed in the Contract, the CONTRACTOR shall supply a complete Turn-key Plant . . . together with all the specified off-sites and utilities . . ."

50. Under UNIDO-CRC the contractor procures the materials on the purchaser's account. The extent of his obligations is, however, the same. Article 4.12 provides:

"The CONTRACTOR will procure all plant and equipment, material and spare parts on behalf of the PURCHASER . . . Notwithstanding the fact that the ultimate purchase is to be made on the PURCHASER's account, the CONTRACTOR shall be obligated to ensure that all procurement is accomplished so as to enable the Plant to meet the objectives expressed in Article 2, subject to the PURCHASER carrying out his obligations. The procurement shall be carried out by the CONTRACTOR in such manner that the Plant is capable of meeting the Performance Guarantees . . . The CONTRACTOR shall also assist the PURCHASER to obtain remedial action from Vendors (where such is necessary) and the CONTRACTOR's services for any required procurement and/or inspection shall be discharged free of additional costs to the PURCHASER . . ."

51. UNIDO-STC is explicit on the contractor's responsibility to supply necessary materials that are not described in the contract. Article 4.8 states:

". . . however if any equipment not specified in this Contract is required to complete the Plant . . . these shall form part of the CONTRACTOR's supply pursuant to this Contract and shall be supplied FOB without additional cost or expense to the PURCHASER within the agreed lump sum price . . ."

52. Under the ECE General Conditions, there are provisions for shared responsibility with respect to the provision of plant, materials and other facilities connected with the work. The contractor is responsible for the supply of the plant, materials and the constructional equipment. The purchaser assumes responsibility for most of the pre-construction work including the supply of services and utilities necessary for the implementation of the contract. Clause 6.1 of both ECE 188A/574A provides:

"The price shall be on the understanding that the following conditions are fulfilled, except so far as the Purchaser has informed the Contractor to the contrary:

". . .

"(*c*) Such equipment, consumable stores, water and power as are specified in the Contract shall be available to the Contractor on the site in good time, and, unless otherwise agreed, free of charge to the Contractor;

"(*d*) The Purchaser shall provide the Contractor (free of charge, unless otherwise agreed) with closed or guarded premises on or near the site as a protection against theft and deterioration of the Plant to be erected, of the tools and equipment required therefor, and of the clothing of the Contractor's employees . . ."

2. *Obligation to transport materials*

53. In a turn-key lump-sum contract, the contractor's responsibility is not divided up in terms of the various activities. The contractor is responsible for the supply and transport of the materials and the contract price under a turn-key contract includes the cost of transporting the machinery and the materials. In other types of contract transportation costs may be separately charged. Some of the forms analysed are not explicit on the parties' responsibility for transporting the machinery and materials. Sometimes the responsibility is stated only by implication.

54. Under FIDIC-CEC and FIDIC-EMW, the contractor is obliged to make his own arrangements for the transport of the plant and materials at his own cost since under clause 70.(1) of FIDIC-CEC and clause 52.1 of FIDIC-EMW transport costs are included in the contract price.

55. Under UNIDO-TKL and UNIDO-STC, responsibility for the transportation of the equipment is expressly stipulated. Article 4.13 of UNIDO-TKL states:

"The CONTRACTOR shall be responsible for the transportation of equipment from the port of despatch FOB to the receipt CIF entry port in the PURCHASER's country and onward despatch to the Site."

56. Under UNIDO-CRC the contractor is not directly responsible for the transportation of the plant and materials. He is, however, obliged to assist the purchaser in ensuring that the manufacturers expedite the supply and transport of the necessary equipment. Article 4.14 states:

"The CONTRACTOR shall . . . be obligated to require the proper carrying out by the Vendors of all packaging and the expediting of necessary transportation FOB to the point of despatch."

57. Under the ECE General Conditions, it is contemplated that the purchaser may be responsible for the preparatory work and the transport of the materials and equipment. Clause 12.2 of both ECE 188A/574A states:

"The preparatory work shall be executed by the Purchaser in accordance with the drawings and information provided by the Contractor . . . It shall be completed in good time and the foundations shall be capable of taking the Plant at the proper time. Where the Purchaser is responsible for transporting the Plant, it shall be on the Site in good time."

3. *Obligation to take care of machinery and materials during transportation*

58. The contractor's responsibility for transporting the machinery and materials subsumes the obligation to pack and mark the materials to ensure their safety during normal transportation. As indicated in paragraph 53 under a turn-key contract the cost of packing will be included in the contract price. Article 4 of both ECE 188A/574A states:

"Unless otherwise specified:

". . .

"(*b*) Prices quoted in tenders and in the Contract shall include the cost of packing or protection required under normal transport conditions to prevent damage to or deterioration of the Plant before it reaches its destination as stated in the Contract."

59. UNIDO-TKL has very elaborate provisions stating the contractor's obligations for the marking, packing and despatch of the materials. Article 12.2.1 states:

"All goods shall be marked and the invoices prepared in accordance with the instructions of the PURCHASER . . ."

60. Transportation of the machinery may require observance of local rules in the purchaser's country. Under the UNIDO-TKL, the purchaser is required to assist the contractor in obtaining the necessary permits. Article 12.2.7 states:

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

4. *Obligation to provide for storage of materials at site*

61. The extent of the contractor's obligation for the safe storage of the materials will again depend on the type of contract. In a turn-key contract care and adequate storage of the machinery and materials of the contractor will be the responsibility of the contractor.

62. Under UNIDO-TKL the adequate storage of the machinery is the responsibility of the contractor. Article 12.4 states:

"The CONTRACTOR shall be obliged to arrange for and have ready adequate warehouse facilities at the Site to receive packages. In the event that permanent facilities are not ready or available, the CONTRACTOR shall provide sufficiently adequate temporary facilities at his cost in good time at the Site, to the satisfaction of the PURCHASER. Notwithstanding the requirement for the marking of packages . . . the instructions of the Engineer as regards storage shall be adhered to in the event that additional storage protection is required."

63. The ECE General Conditions anticipate that the purchaser may be responsible for the storage of the materials. Article 6.1 of both ECE 188A/574A states:

"The price shall be on the understanding that the following conditions are fulfilled, except so far as the Purchaser has informed the Contractor to the contrary:

". . .

"(*e*) The Contractor shall not be required to . . . take any . . . measures to enable the Plant to be brought from the point where it has been unloaded to the point on the site where it is to be erected, unless the Contractor has agreed to deliver the Plant to the last mentioned point.

"Any departure from the conditions mentioned in this paragraph shall attract an extra charge."

C. *Time for delivery*

64. The time for delivery will depend on the nature of each work. In some of the forms under study we find general provisions requiring the contractor to make "timely" or "expeditious" delivery.

65. Article 14 of UNIDO-TKL, for example, states:

"14.15 The CONTRACTOR shall ensure that the despatch and delivery of plant and equipment are expeditiously implemented and efficiently co-ordinated . . . in complete accordance with the terms, conditions and procedures for delivery in this Contract and/or also as may be contained in any Purchase Orders to Vendors.

"14.16 The CONTRACTOR shall take all necessary measures to ensure that all export licences (if necessary) and shipping documentation are arranged and issued in a timely manner."

III. Erection

A. *Introduction*

66. The nature and extent of the obligations and responsibilities of the parties to erect a plant, machinery or other equipment depend largely on two factors: first, on the types of works contract, e.g. whether it is a turn-key or semi-turn-key contract; secondly, on the kinds of plant to be erected. The construction of a steel rolling mill is very different from that of a fertilizer plant.

67. The nature of the various forms under study must be borne in mind when considering the question of erection (see part one, *Introduction*).* Only the main obligations and responsibilities of the contractor, the engineer and the purchaser in regard to erection are discussed here.

B. *Obligations and responsibilities of contractor, engineer and purchaser*

1. *Erection of plant*

(a) *Turn-key lump-sum contract: UNIDO-TKL*

68. To illustrate the main differences in the obligations and responsibilities of the contractor and the purchaser in regard to the erection of a plant in a turn-key lump-sum contract and in a semi-turn-key contract, the UNIDO-TKL and the UNIDO-STC model contracts will be considered.

69. In the UNIDO turn-key lump-sum contract for the construction of a fertilizer plant (UNIDO-TKL), the contractor undertakes to erect all plant and equipment within the contractual terms (article 3.2.5). This in effect includes the overall work required for the establishment of the plant until its successful operation according to the specifications laid down in the contract (article 3.1). This responsibility is contained in a number of provisions. For example, article 4.9 reads:

"The CONTRACTOR shall be responsible for the supply of the complete plant and equipment in accordance with Article 12 and as expressed elsewhere in this Contract . . . the CONTRACTOR shall supply a complete Turn-Key Plant for the production of (1,000) tons per day ammonia and (1,725) tons per day urea, . . ."

* A/CN.9/WG.V/WP.4 (reproduced above).

70. The responsibilities of the contractor for the erection of the plant and equipment under article 12.7 include:

"12.7.1.1: Erection of all equipment in place.

"12.7.1.2: Erection of all steel structures, walkways, gangways, stairs, platforms, etc.

"12.7.1.3: Assembly and welding of all piping, fittings, etc. both above and below the ground.

"12.7.1.4: Assembly and erection of instrumentation, panel control boards and all interconnecting wiring, piping and equipment.

"12.7.1.5: Installation of all electrical equipment, and connection of all cables, starters and all other equipment.

"12.7.1.6: Installing of all utility equipment, and connecting such equipment.

"12.7.1.7: Insulation of all equipment where required (including supply of insulation).

"12.7.1.8: Painting of all equipment (including supply of paint).

"12.7.1.9: Installation of all workshop, laboratory and office equipment, including air conditioning equipment and telephone facilities.

"12.7.1.10: Installation and erection of all waste treatment and sewerage facilities.

"12.7.1.11: Installation of all safety and warning devices.

"12.7.1.12: All or any other erection work that may be required to complete the Plant, other than the exclusions contained in . . .

"12.7.1.12.1: The erection of the plant and equipment shall conform with the details . . ."

71. The contractor must ensure that all supply, construction and erection is undertaken so as to enable the plant to meet its objectives set out in the contract (article 4.10).

(b) *Semi-turn-key contract: UNIDO-STC*

72. Being a semi-turn-key contract, the establishment of the plant may not reside in the contractor, for the purchaser is given the option to appoint another party to erect the plant. Article 3.2.18 reads:

"*The Plant shall be erected* (article 3.1.15) by the CONTRACTOR *or by such other party appointed by the* PURCHASER (provided that such other party is not a competitor of the CONTRACTOR), under the technical direction and supervision of the CONTRACTOR's personnel."

73. Thus the contractor's role in the erection of the plant would be only that of a supervisor, should the purchaser appoint another person to erect the plant. The

main supervisory responsibilities of the contractor under article 13.5.1 include:

"The CONTRACTOR shall be responsible for giving technical direction and *supervising* the erection of all the plant and equipment . . . Without limiting the generality of the foregoing, these *supervisory services* shall cover, (but shall not be limited to):

"13.5.1.1: Erection of all equipment in place.

"13.5.1.2: Erection of all steel structures, walkways, gangways, stairs, platforms, etc.

"13.5.1.3: Assembly and welding of all piping, fittings, etc. both above and below the ground.

"13.5.1.4: Assembly and erection of instrumentation, panel control boards and all interconnecting wiring, piping and equipment.

"13.5.1.5: Installation of all electrical equipment, and connection of all cables, starters and all other equipment.

"13.5.1.6: Installing of all utility equipment, and connecting such equipment.

"13.5.1.7: Insulation of all equipment where required (including supply of insulation).

"13.5.1.8: Painting of all equipment (including supply of paint)."

74. Other aspects of supervision relate to the installation of certain equipment and facilities necessary for the erection of the plant.

2. *Materials for erection of plant*

75. The materials for the erection of the plant, sometimes referred to as the "contractor's equipment", must be distinguished from the "equipment" that is to be erected. The distinction between the two is made in the UNIDO-model contracts and in the FIDIC-EMW Conditions. "CONTRACTOR's equipment" is defined, for example, in UNIDO-TKL as ". . . any equipment, sheds, materials, tools, stores or things brought on Site by or on behalf of the CONTRACTOR for the execution of the Contract, but not for permanent incorporation in the Plant" (article 1.11). On the other hand, "equipment" is defined as "all of the equipment, machinery, materials . . . required to be incorporated permanently into the Plant(s) (with the exclusion of materials for civil works) in order for the Plant to be built in accordance with the Contract" (article 1.17).

76. Under article 4.9 of the UNIDO-TKL model contract, the contractor must establish a "more complete list of equipment and materials to be procured" within four months from the effective date of the contract for the approval of the purchaser.

77. It is generally the responsibility of the contractor, at least in a turn-key contract, to provide all erection materials and contractor's equipment. Article 4.22 of the UNIDO-TKL model contract states that the contractor is to provide "all erection equipment and materials for the erection and installation of the Plant". And article 12.7.2 expressly mentions some of this equipment:

"The CONTRACTOR shall supply all materials needed for the erection and installation of the Works, all tools, tackles, cranes and other erection equipment required, and shall provide all instruments required for the proper erection and testing of the Works."

78. Under the UNIDO-STC model contract, the contractor is also required, within four months after the effective date of the contract, to provide a list of erection equipment and materials to the purchaser. The materials are to be supplied by the contractor (article 1.10).

79. Similarly, in the FIDIC-EMW Conditions the contractor must provide, at his own expense, all "contractor's equipment", haulage and power necessary to execute and complete the works (clause 14.1).

80. However, if the purchaser has certain equipment on his site, the contractor may use these but he has to pay a reasonable sum for its use. The FIDIC-EMW Conditions contemplate such a situation:

Clause 14.4: "The Employer shall at the request of the Contractor and for the execution of the Works operate any suitable lifting equipment belonging to the Employer that may be available on the Site and of which details are given in Part II of these Conditions and the Contractor shall pay a reasonable sum therefor. The Employer shall during such operation retain control of and be responsible for the safe working of the lifting equipment but shall not be responsible for any negligence of the Contractor."

3. *Preparatory work*

81. It is beyond the scope of this chapter to deal with the construction of various infrastructure such as the construction of road or rail within the battery limits of the plant. But certain preparatory work immediately connected with erection should be mentioned.

82. Thus, for example, in the FIDIC-EMW Conditions, the contractor must submit to the engineer for his approval a programme showing the order of procedure in which he proposes to carry out the works including the design, manufacture, delivery to site, erection and commissioning thereof. The programme must also indicate the times by which the contractor requires the purchaser to have obtained any import licences, consents, wayleaves and approvals necessary for the purpose of the works (clause 12.1).

83. The ECE 188A/574A General Conditions provide an example of the position in a semi-turn-key contract where the purchaser has to execute the preparatory work in accordance with the drawings and

information provided by the contractor. Clause 12.2 of both the ECE General Conditions provides that the preparatory work must be completed in good time and the foundations must be capable of taking the plant at the proper time. And, where the purchaser is responsible for transporting the plant, it must be on the site in good time.

4. *Supervision of work*

(a) *UNIDO-TKL*

84. The expression "supervision" includes "direction and responsibility for the activities or matters or work or procedures being the subject of supervision and management . . . of all the Works until Provisional Acceptance" (article 13.8).

85. The contractor is charged with the responsibility for the supervision of all work at site until provisional acceptance of the works (article 13.1). He must provide an adequate number of suitability qualified and experienced personnel. The supervisory services under Article 13 include:

"13.1.1: Supervision and management of transportation equipment.

"13.1.2: Supervision and management of construction and erection equipment.

"13.1.3: Supervision and management of the civil works.

"13.1.4: Supervision and management of erection.

"13.1.5: Supervision and management of stores and warehouse management.

"13.1.6: Supervision and management of all tests.

"13.1.7: Supervision and management of pre-commissioning and start-up operations.

"13.1.8: Supervision and management of the entire Works until Provisonal Acceptance."

86. After the plant has started-up the contractor has to supervise the operation until the guarantee tests are satisfactorily completed.

(b) *UNIDO-STC*

87. The provision on supervision in UNIDO-STC contemplates a situation where the purchaser appoints another party to erect the plant (see paragraphs 72 and 73 *supra*). The contractor's role is then confined mainly to that of a project supervisor. The purchaser himself may undertake the erection. Article 13.1.1 speaks of "supervision of the equipment manufactured by or on behalf of the PURCHASER which is to be undertaken by the contractor. Other aspects of supervision laid down in article 13 include:

"13.1.2: Supervision of erection and installation of erection equipment.

"13.1.3: Supervision of stores and warehouse.

"13.1.4: Supervision of pre-commissioning tests and start-up operations.

"13.1.5: Supervision and demonstration of performance guarantee tests."

88. It is noted that, unlike UNIDO-TKL, the supervision does not include management. (See paragraph 85 *supra*.)

89. As noted in paragraph 73 *supra*, if the purchaser appoints another to erect the plant, the supervision by the contractor will extend to all aspects of erection set out in article 13.5.1.

90. Where the contractor's role is limited to that of supervision, he is responsible for the following matters during erection:

"*Article 13.6*

"The CONTRACTOR shall be responsible *inter alia* during the erection for the following:

"13.6.1: For correctness and competency of the instructions given by him or his Chief Engineer.

"13.6.2: For securing that the units be erected and connected, if necessary, according to requirements of the technical documents drafted by the CONTRACTOR or further instructions regarding modifications, corrections and other kinds of alterations as the case may be.

"13.6.3: For technically checking the erection works, to reveal erection faults, if any. The CONTRACTOR shall issue suitable and workmanlike instructions to remove such defects.

"13.6.4: For checking compliance with the instructions issued by him. If any deficiencies are found, the Chief Engineer shall enter the deficiencies during the execution in the erection journal of the relevant unit and suggest remedies."

(c) *FIDIC-EMW*

91. In the FIDIC-EMW Conditions, the contractor is under an obligation to employ competent representatives to supervise or superintend the carrying out of the works. Clause 13.1 provides:

"The Contractor shall employ one or more competent representatives whose name or names shall have previously been communicated in writing to the Engineer by the Contractor, to superintend the carrying out of the Works on the Site. The said representative, or if more than one shall be employed, then one of such representatives, shall be present on the Site during all working hours, and any orders or instructions which the Engineer may give to the said representative of the Contractor shall be deemed to have been given to the Contractor."

92. Clause 13.2 reads:

"The Engineer shall be at liberty by notice in writing to the Contractor to object to any representative or person employed by the Contractor in the execution of or otherwise about the Works who shall, in the opinion of the Engineer, misconduct himself or be incompetent or negligent, and the Contractor shall remove such person from the Works."

5. *Access to works*

93. Access to the works by the contractor, the engineer and the purchaser is very important as it enables them to execute, supervise and/or manage the erection properly. Hence provisions for access are contained in all works contracts.

(a) *Contractor's obligation*

94. The contractor must permit the engineer to have access to the works at all times during the tenure of the contract. (See UNIDO-TKL article 13.6 and UNIDO-STC article 13.11.)

95. The contractor must afford every facility for access to any place where work is being undertaken and must give every assistance in obtaining the right for such access in connexion with the execution of the work under the contract (UNIDO-TKL article 13.9 and UNIDO-STC article 13.11).

96. Similarly, the contractor in FIDIC-EMW must permit reasonable access to the works to the employees of the purchaser. Clause 14.5 reads:

"The Contractor shall, in accordance with the requirements of the Engineer, afford all reasonable opportunities for carrying out their work to any other contractors employed by the Employer and their workmen and the workmen of the Employer and of any other duly constituted authorities who may be employed in the execution on or near the Site of any work not included in the Contract or of any contract which the Employer may enter into in connection with or ancillary to the Works."

(b) *Purchaser's obligation*

97. The purchaser has to afford the contractor access to the works and site. Thus, for example, article 13.10 of the UNIDO-TKL provides that "the PURCHASER shall afford every facility and assistance in . . . the right of access to . . . Site, workshops or persons within (PURCHASER's country) as is required in connexion with [the] Contract."

98. Article 13.11 of the UNIDO-TKL further provides that the contractor and his authorized personnel shall have free access to the site of the works, storage yards, fabrication sheds, utilities and laboratories set up or intended for use for setting up the works under the contract. The contractor shall have exclusive access to the areas of the site where he is working.

99. In the UNIDO model contracts (e.g. TKL and STC), the purchaser must provide the necessary assistance in obtaining permission from his Government for visits/stay and travel of the contractor or his authorized personnel (UNIDO-TKL article 13.11; UNIDO-STC article 13.13).

100. After provisional acceptance the purchaser must allow the contractor to visit the works in operation for a period of three (3) years for the purpose of examining its operation, etc. However, the purchaser may exclude the nationals of certain countries from visiting the plant and/or the site (UNIDO-TKL article 13.12; UNIDO-STC article 13.14).

101. In FIDIC-EMW, where the contractor is employed to execute the works for the purchaser, the following obligations are imposed on the purchaser regarding access:

Access to and possession of the site

Clause 20.1: "Subject to Sub-Clause 4 of this Clause access to and possession of the Site shall be afforded to the Contractor by the Employer in reasonable time and, except in so far as the Contract may provide to the contrary, the Employer shall provide a road or railway suitable for the transport of all Plant and Contractor's Equipment necessary for the execution of the Works from an adequate public thoroughfare or railway available to the Contractor to the point on the Site where it is to be delivered or used."

Foundations

Clause 20.2: "If a building structure foundation or approach is by the Contract to be provided by the Employer such building structure foundation or approach shall be in a condition suitable for the efficient transport, reception, installation and maintenance of the Works."

Authority for access

Clause 20.3: "In the execution of the Works no persons other than the Contractor, sub-Contractors and his and their employees shall be allowed on the Site except by the written permission of the Engineer but facilities to inspect the Works at all times shall be afforded to the Engineer and his representatives and other authorities, officials, or representatives of the Employer."

Access not exclusive

Clause 20.4: "The access to and possession of the Site referred to in Sub-Clause 1 hereof shall not be exclusive to the Contractor but only such as shall enable him to execute the Works."

102. Clause 18 of both ECE 188A/574A provides that until the works are taken over and during any works resulting from the operation of the guaranty, the contractor has the right at any time during the hours of work on the site to inspect the works at his own expense. In proceeding to the site, the inspectors must observe the regulations as to movement in force at the purchaser's premises.

(c) *Access by third parties*

103. Where in the opinion of the engineer (acting on behalf of the purchaser) it is necessary that third parties, e.g. additional contractors, have access to the work the contractor must allow such access. However, such third parties must not be direct competitors of the contractor (UNIDO-TKL article 13.[14].1).

104. Where the contractor has incurred expenses in complying with the above article 13.14.1 in respect of such third parties, the purchaser must pay to the contractor the cost of any services provided by the contractor (UNIDO-TKL article 13.14.2).

6. *Labour and working conditions*

105. The question of labour and "working conditions" depends on the types of works contract, the kinds of plant to be erected and the price. For example, in a turn-key lump-sum contract the contractor is responsible for erection of a plant up to the point when the key is ready to be turned. The contract price for the plant includes the execution of the contract, the performance of the contractor's services and the completion of works. Hence, the contractor himself is generally responsible for the labour and all aspects in connexion with it, and there is no necessity of having detailed provisions pertaining to labour.

106. Bearing in mind that the ECE 188A/574A General Conditions are geared to semi-turn-key contracts, it is to be noted that in clause 14.1 of both the General Conditions "if the Contractor so requires in good time the Purchaser shall make available to the Contractor free of charge such skilled and unskilled labour as is provided for in the contract and such further reasonable amount of unskilled labour as may be found to be necessary even if not provided for in the Contract."

107. Working conditions bear upon the question of price. For example, clause 6.1 of both ECE 188A/574A provides:

"The price shall be on the undertanding that the following conditions are fulfilled, except so far as the Purchaser has informed the Contractor to the contrary:

"(*a*) The works shall not be carried out in unhealthy or dangerous surroundings;

"(*b*) The Contractor's employees shall be able to obtain suitable and convenient board and lodging in the neighbourhood of the site and shall have access to adequate medical services;

"(*c*) Such equipment, consumable stores, water and power as are specified in the Contract shall be available to the Contractor on the site in good time, and, unless otherwise agreed, free of charge to the Contractor;

"(*d*) The Purchaser shall provide the Contractor (free of charge, unless otherwise agreed) with closed or guarded premises on or near the site as a protection against theft and deterioration of the Plant to be erected, of the tools and equipment required therefor, and of the clothing of the Contractor's employees;

"(*e*) The Contractor shall not be required to undertake any works of construction or demolition or to take any other unusual measures to enable the Plant to be brought from the point where it has been unloaded to the point on the site where it is to be erected, unless the Contractor has agreed to deliver the Plant to the last mentioned point.

"Any departure from the conditions mentioned in this paragraph shall attract an extra charge."

And, clause 6.2 provides that:

"If the circumstances resulting from such departure are such that it would be unreasonable to require the Contractor to proceed with the Works, the Contractor may, without prejudice to his rights under the Contract, refuse to do so."

108. Other aspects of labour dealt with in both the ECE General Conditions are:

Overtime

Clause 16.1: "Any overtime and the conditions thereof shall, within the limits of the laws and regulations of the Contractor's country and of the country where erection is carried out, be as agreed between the parties."

Work outside the contract

Clause 17.1: "The Purchaser shall not be entitled to use the Contractor's employees on any work unconnected with the subject-matter of the Contract without the previous consent of the Contractor. Where the Contractor so consents, he shall not be under any liability in respect of such work, and the Purchaser shall be responsible for the safety of the Contractor's employees while employed on such work."

Safety regulations

Clause 15.1: "The Purchaser shall notify the Contractor in full of the safety regulations which the Purchaser imposes on his own employees and the Contractor shall secure the observance by his employees of such safety regulations.

"15.2: If breaches of these regulations come to the notice of the Purchaser, he must inform the Contractor in writing forthwith, and may forbid persons guilty of such breaches entry to the site.

"15.3: The Contractor shall inform the Purchaser in full of any special dangers which the execution of the Works may entail."

109. In the FIDIC-EMW Conditions it is expressly provided that the contractor has to make his own arrangements for the engagement of all labour, local or otherwise, and to pay for their expenses such as transport and housing. Provision is also made in regard to the supply of utilities to the contractor's employees. Other provisions deal with the responsibility of the contractor for his sub-contractors, agents and employees in respect of certain matters such as the sale or importation of alcoholic liquor or drugs, sale of arms and ammunition, and disorderly conduct (see clause 22). Even in the absence of express provisions in a contract, most of these matters would be governed by the law of the place where the works are carried out.

7. *Miscellaneous*

110. The ECE 188A/574A General Conditions attempt to list certain items which are to be separately charged when erection is either on a "time basis" or when it is a "lump-sum erection".

Clause 7. "Erection on a Time Basis and Lump-sum Erection

"7.1 When erection is carried out on a time basis the following items shall be separately charged:

"(*a*) All travelling expenses incurred by the Contractor in respect of his employees and the transport of their equipment and personal effects (within reasonable limits) in accordance with the specified method and class of travel where these are specified in the Contract;

"(*b*) The living expenses, including any appropriate allowances, of the Contractor's employees for each day's absence from their homes, including non-working days and holidays;

"(*c*) The time worked, which shall be calculated by reference to the number of hours certified as worked in the time sheets signed by the Purchaser. Overtime and work on Sundays, holidays and at night will be charged at the special rates mentioned in the Contract. Save as otherwise provided, the hourly rates cover the wear and tear and depreciation of the Contractor's tools and light equipment;

"(*d*) Time necessarily spent on:

(i) Preparation and formalities incidental to the outward and homeward journeys;

(ii) The outward and homeward journeys;

(iii) Daily travel morning and evening between lodgings and the site if it exceeds half an hour and there are no suitable lodgings closer to the site;

(iv) Waiting when work is prevented by circumstances for which the Contractor is not responsible under the Contract . . ."

111. The question of the removal of the contractor's equipment and loss or damage to the equipment can be dealt with on a general basis. For example, the FIDIC-EMW Conditions deal with these two matters.

112. Clause 36.1 of FIDIC-EMW deals with the former question:

"All Contractor's Equipment provided by the Contractor shall, when brought on to the Site, be deemed to be exclusively intended for the execution of the Works and the Contractor shall not remove the same or any part thereof, except for the purpose of moving it from one part of the Site to another, without the consent in writing of the Engineer, which shall not be unreasonably withheld."

113. Clause 36.2 deals with the latter question:

"The Contractor shall be liable for loss of or damage to any of the Contractor's Equipment which may happen otherwise than through the default of the Employer."

IV. Passing of risk

A. *Preliminary remarks*

114. The main focus of this chapter is to examine the various forms to determine the time when the risk passes to the purchaser. Usually a distinction is made between the passing of risk in the machinery and materials on the one hand, and the passing of risk in the completed works on the other.

115. The assumption of risk by the contractor means that in the event of accidental loss, damage or destruction of the works the contractor is bound to repair or replace them at his cost. The assumption of risk by the purchaser means that in the event of accidental loss or damage the purchaser must nevertheless perform his obligations under the contract. There are, however, exceptions. Risks which are unforeseen and unexpected are considered to be outside the contemplation of both parties and are, therefore, treated differently. The consequences of these risks on the parties' obligations are discussed in part two, XIII, *Exoneration.**

* A/CN.9/WG.V/WP.4/Add.5 (reproduced below).

116. The forms under study do not contain any specific provision on the consequences of the passing of risk. The Sales Convention has a provision on this question, which is applicable to a works contract as well. Article 66 states:

"Loss of or damage to the goods after the risk has passed to the buyer does not discharge him from his obligation to pay the price, unless the loss or damage is due to an act or omission of the seller."

B. *Time of the passing of risk*

1. *Machinery and materials*

117. The ECE 188A/574A General Conditions deal only with the passing of risk in the machinery and materials. Under both ECE 188A/574A the time of passing of risk will depend on the types of sale.

118. ECE 574A provides for three situations:

(*a*) Where the contract gives no indication of the form of sale. Clause 9.1 states:

"Where no indication is given in the Contract of the form of sale, the Plant shall be deemed to be sold 'ex works'."

In this situation under clause 9.2 (*a*):

". . . the risk shall pass from the Contractor to the Purchaser when the Plant has been placed at the disposal of the Purchaser . . ."

(*b*) On certain specified forms of sale, clause 9.2 provides:

"(*b*) On a sale FOB or CIF, the risk shall pass from the Contractor to the Purchaser when the Plant has effectively passed the ship's rail at the agreed port of shipment.

"(*c*) On a sale 'free at frontier', the risk shall pass from the Contractor to the Purchaser when the Customs formalities have been concluded at the frontier of the country from which the Plant is exported."

(*c*) On other forms of sale clause 9.3 provides:

"On any other form of sale, the time when the risk passes shall be determined in accordance with the agreement of the parties."

119. ECE 188A, clause 9 makes reference to the International Rules for the Interpretation of Trade Terms (Incoterms) of the International Chamber of Commerce in force at the date of the formation of the Contract.

2. *Completed works*

120. Most of the forms under study do not deal with the passing of risk in the completed works. Only clause 32.1 of FIDIC-EMW contains the following provision:

"As soon as the Works have been completed . . . and have passed the Tests on Completion, the Engineer shall issue a . . . 'Taking-Over Certificate' . . . whereupon . . . risk of loss or damage to the Works . . . shall . . . pass to the Employer . . ."

121. Some forms do not contain provisions on passing of risk but provide for the care of the works. Clause 20 (1) of FIDIC-CEC states:

"From the commencement of the Works until the date stated in the Certificate of Completion for the whole of the Works . . . the Contractor shall take full responsibility for the care thereof . . ."

122. Certificates of completion may be issued in stages as each section of the works is completed. FIDIC-CEC provides that care of the contractor ceases in respect of that part for which a completion certificate is issued. Clause 20 of FIDIC-CEC provides:

". . . Provided that if the Engineer shall issue a Certificate of Completion in respect of any part of the Permanent Works the Contractor shall cease to be liable for the care of that part of the Permanent Works from the date stated in the Certificate of Completion in respect of that part and the responsibility for the care of that part shall pass to the Employer . . ."

123. Similar provisions are contained in clause 15.1 of FIDIC-EMW.

124. The Sales Convention contains several provisions concerning the time of the passing of risk. In general, according to article 67, "the risk passes to the buyer when the goods are handed over to the first carrier for transmission to the buyer . . ."

125. For cases not within the general provisions, article 69 of the Sales Convention provides:

". . . the risk passes to the buyer when he takes over the goods or, if he does not do so in due time, from the time when the goods are placed at his disposal and he commits a breach of contract by failing to take delivery."

C. *Obligations of the contractor*

126. Until the risk passes to the purchaser the contractor is obliged to repair or replace the works at his own cost in the event of accidental loss or damage to the works.

127. Some of the forms under study expressly state this obligation of the contractor. Clause 20 of FIDIC-CEC provides:

". . . In case any damage, loss or injury shall happen to the Works, or to any part thereof, from any cause whatsoever, save and except the excepted risks as

defined in sub-clause (2) of this Clause, while the Contractor shall be responsible for the care thereof the Contractor shall, at his own cost, repair and make good the same, so that at completion the Permanent Works shall be in good order and condition and in conformity in every respect with the requirements of the Contract and the Engineer's instructions . . ."

128. The wording of the relevant provisions under FIDIC-EMW is slightly different but the practical effect is the same. Clause 15.1 states:

". . . in case any damage or loss shall happen to any Portion of the Works not taken over as aforesaid, from any cause whatsoever (save and except the excepted risks as defined in paragraph (*b*) of this Sub-Clause) the same shall be made good by and at the sole cost of the Contractor and to the satisfaction of the Engineer . . ."

129. The passing of risk will not affect the contractor's obligation for any damage caused by him after taking over. Clause 15.1 of FIDIC-EMW states:

". . . The Contractor shall also be liable . . . for any loss of or damage to the Works occasioned by him or by any Sub-Contractor in the course of any operations carried out by him or by his Sub-Contractors for the purpose of completing any outstanding work or complying with his obligations . . ."

The FIDIC-CEC Conditions contain a similar provision.

V. Transfer of property

A. *Preliminary remarks*

130. This chapter describes approaches undertaken by the forms under study as regards the transfer of property in the plant or in the completed works.

131. According to the provisions of some of the forms under study property is transferred to the purchaser on one of the following occasions: when the plant is appropriated to the contract; when the plant is delivered pursuant to the contract; when the contractor becomes entitled to require that the contract price of the plant be included in an interim certificate.

B. *Various approaches to the transfer of property*

132. According to the FIDIC-EMW Conditions, transfer of property in the plant will take place when one of the stipulated events first occurs. Clause 35.1 provides:

"Plant supplied or to be supplied pursuant to the Contract shall become the property of the Employer at whichever is the earlier of the following times:

"(*a*) When Plant is appropriated to the Contract;

"(*b*) When by virtue of Clause 26 (Delivery) or Clause 27 (Suspension of Works) the Contractor becomes entitled to require that the Contract Price of Plant be included in an interim certificate; or

"(*c*) When Plant is delivered pursuant to the Contract."

133. It may be noted that under clause 1.1 (1) of FIDIC-EMW "Plant" means "machinery, apparatus, materials, articles and things of all kinds to be provided under the Contract other than Contractor's Equipment".

134. FIDIC-EMW further provides for the transfer of property in the works in connexion with the taking over. Clause 32.1 states:

"As soon as the Works have been completed . . . and have passed the Tests on Completion, the Engineer shall issue a . . . 'Taking-Over Certificate' . . . and the Employer shall be deemed to have taken over the Works . . . whereupon title to . . . the Works . . . shall . . . pass to the Employer . . ."

135. The FIDIC-CEC Conditions do not contain provisions for the transfer of property in the plant. These Conditions, however, recognize that the purchaser has an interest in ensuring the availability to the purchaser of the plant and materials needed for the works. Accordingly article 53.(1) prohibits the contractor from removing the materials once they are brought on to the construction site. It provides:

"All . . . materials provided by the Contractor shall, when brought on to the Site, be deemed to be exclusively intended for the execution of the Works and the Contractor shall not remove the same or any part thereof, except for the purpose of moving it from one part of the Site to another, without the consent, in writing, of the Engineer . . ."

136. There is a similar provision in clause 36.1 of FIDIC-EMW restricting the removal of the contractor's equipment.

137. The UNIDO model contracts do not contain provisions for the transfer of property.

138. The ECE General Conditions do not deal with the transfer of property as such, but contain a provision on retention of title in case of non-payment by the purchaser. Clause 11.3 of both ECE 188A/574A states:

"If delivery has been made before payment of the whole sum payable under Contract, Plant delivered shall, to the extent permitted by the law of the country where the Plant is situated after delivery, remain the property of the Contractor until such payment has been effected. If such law does not permit the Contractor to retain the property in the Plant, the Contractor shall be entitled to the benefit of such other rights in respect thereof as such law permits him to

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.