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First Working Group on Contracts and
Insurance for Fertilizer Plants

Vienna, 14-17 February 1975

REPORT

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Corrigendum

On page 9, paragraph 23, second line, for as well as those built read
as well as some of those built.

INTRODUCTION

1. The Second General Conference of UNIDO held at Lima, Peru, in March 1975 recommended that UNIDO should include among its activities a system of continuing consultations between developed and developing countries and among developing countries themselves. The objective of these consultations would be to assist the developing countries in achieving their industrialization goals, which include in particular the goal of producing at least 25 per cent of world industrial output by the year 2000.
2. The First Consultation Meeting on the Fertilizer Industry was convened in Vienna in January 1977. It was attended by over 250 participants from 60 countries, representing Governments, industry and labour.
3. The Meeting recognized that there were occasions when fertilizer plants and specific items of equipment had not functioned adequately and buyers had suffered high consequential losses. It was further noted that the protection given by penalty clauses in international contracts was inadequate protection against consequential losses. The Meeting also examined the proposal made by UNIDO to investigate the possibility of setting up a multilateral insurance scheme covering consequential losses. The Meeting supported the intentions underlying the scheme but realized that practical difficulties might arise in its implementation. The scheme warranted further consideration.
4. It was suggested that a Second Consultation Meeting should be held in 1978 and that the following should be one of the subjects to be given more intensive examination and investigation prior to the Meeting:

Contract procedures intended to ensure the successful construction and operation of fertilizer plants and the suggested multilateral insurance scheme intended to ensure the protection of the interests of all parties concerned by providing, in particular, adequate compensation for consequential losses.
5. The Working Group was convened to examine this subject and to contribute to the formulation of conclusions and recommendations that could be considered at the Second Consultation Meeting on the Fertilizer Industry, which UNIDO plans to convene at Innsbruck, Austria, from 6 to 10 November 1978.
6. The documents presented to the Meeting are listed in annex II. They included (a) the draft report of the Technical Seminar on Contracting Methods and

Insurance Schemes for Fertilizer and Chemical Process Industries, held at Lahore, Pakistan, 25 to 29 November 1977; and (b) a UNIDO secretariat paper which examined some practical implications of establishing a multilateral insurance scheme to cover consequential losses that arise due to the inadequate performance of fertilizer plants and of specific items of equipment.

I. ORGANIZATION OF THE MEETING

7. The First Working Group on Contracts and Insurance for Fertilizer Plants was convened in Vienna from 14 to 17 February 1978. The meeting was attended by 37 participants from 20 countries and observers from 5 organizations; they are listed in annex I.

8. The meeting was opened by A. Hacini, Acting Head of the Negotiations Section of UNIDO.

9. A. Shah Nawaz (Pakistan) and H. Meynen (Federal Republic of Germany) were elected Chairman and Co-Chairman of the meeting.

10. The following agenda was adopted:

- Identification of the risks that need to be covered by insurance
- How consequential losses might be measured for compensation by insurance
- The possibility of consequential losses being insured by commercial sources
- The possibility of Governments supporting an insurance scheme to cover consequential losses
- Draft contract clause to provide insurance cover for consequential losses arising from defects in design

II. CONCLUSIONS AND RECOMMENDATIONS

11. Defects in design, manufacture, construction or erection are only some of the causes of the inadequate levels of output achieved by some fertilizer plants.

12. All appropriate precautionary measures should be taken by the buyer of the fertilizer plant to avoid inadequate performance resulting from causes within the buyer's control. In particular, the following points were stressed:

(a) The project itself must be carefully drawn up, investigated and evaluated;

(b) The contract must be well drafted, if necessary with the help of legal and technical expertise, so that the interests of the buyer are adequately protected;

(c) The buyer should consider the use of appropriate consultancy/advisory services to prepare and evaluate bids and to check his interests during the design, manufacture and construction periods and guarantee tests;

(d) For inexperienced operators the management assistance of another operating company should be utilized both before and after commissioning tests;

(e) Appropriate arrangements should be made with owners of other operating plants to train a sufficient skilled labour force before plant start-up.

13. If the above steps are taken, an experienced and reliable contractor is selected and a good contract is prepared, the risks inherent in establishing and operating a fertilizer plant will be minimized.

14. Protection against the risks can be provided further by the following measures that are already in common use:

(a) Performance bonds of 8 to 10 per cent and even up to 15 per cent are requested and given in present conditions. Since performance bonds of 25 per cent or more are used in the United States in construction, engineering and defence industry contracts, it was suggested that this level might also be considered for contracts to construct fertilizer plants in developing countries;

(b) A Contractor's All Risks insurance policy for the full value of the contract taken out jointly in the names of the contractors, suppliers, sub-contractors and buyers;

(c) An additional policy taken out by the buyer to cover consequential losses arising from the risks insured in the above policy.

15. After the successful commissioning of the plant, insurance is available from commercial sources to cover the breakdown of machinery and the consequen-

tial losses incurred by the buyer as a result of this event. In addition, most machinery and equipment are covered by the supplier's warranty for the first year of operation. As a result the buyer could, through his contract and commercial insurance, obtain considerable protection.

16. The buyer is less well protected, in present conditions, when there is a defect in the design, manufacture etc. of the plant equipment which becomes apparent either during construction, test runs or after the plant has been commissioned. Such causes are the subject of an exclusion in a Contractor's All Risks policy and most contractors, while obliged to remedy design and manufacturing etc. defects, specifically exclude in the contract their liability for consequential losses arising therefrom.

17. The meeting therefore recommended that consequential losses arising from design and manufacturing etc. defects should be provided for in a special insurance clause to be included in the model contracts for the construction of fertilizer plants being prepared by UNIDO and to be made available in draft form in the first week of September 1978. The wording of such a clause was discussed by the Working Group and the text agreed on is included in paragraph 18 below.

18. In addition to the standard insurance policies required under other articles in the Contract, the Buyer and Contractor shall, to the extent possible, by mutual arrangement obtain an Insurance cover in the name of the Buyer for consequential loss caused by defective design, material or workmanship and defective construction or erection within the control of the contractor or his subcontractors, suppliers or manufacturers. No liability shall, however, attach to the Buyer or to the Contractor purely by reason of payment of the premium for such a policy.

19. UNIDO, as recommended by a previous seminar, should prepare an analysis of causes of inadequate performance in fertilizer plants built in developing countries within the last 10 years, paying particular attention to the losses resulting from design and manufacturing etc. defects. This information should also be available by the first week of September 1978.

20. After the model contracts are available and data has been collected on operational records of fertilizer plants in developing countries, UNIDO should convene a small working group of insurance experts from developed and developing

countries and other interested parties to consider whether this extension of existing insurance cover could, in principle, be made available from commercial sources. The Working Group should meet in late September 1978 prior to the Consultation Meeting planned for November 1978.

21. The insurance experts should also advise UNIDO whether the world insurance market had the capacity to cover the large risks entailed in providing insurance against these risks. If the markets were not able to provide such cover, then it would be appropriate to invite the Second Consultation Meeting to consider whether Governments should be invited to provide the additional cover needed to launch the insurance scheme proposed above.

22. The Working Group believes that the inclusion of these recommendations, in particular that contained in paragraph 18 above, in contracts for the construction of fertilizer plants would, taken together with model contracts being developed by UNIDO and the other measures proposed in paragraph 12 above, help to ensure the successful construction and operation of fertilizer plants built in developing countries. These measures as an overall package, therefore, should be recommended for the consideration of the Second Consultation Meeting.

III. SUMMARY OF DISCUSSION

A. Risks to be covered by multilateral insurance

23. It was pointed out that some of the fertilizer plants built in developed countries as well as those built in developing countries had performed inadequately. It was therefore necessary to investigate thoroughly the causes of inadequate performance and consider which causes might be covered by a multilateral insurance scheme.

24. The meeting noted that when a plant performed inadequately as a result of defects in the process or equipment, the contractual obligations of the supplier in present-day practice were limited to rectifying the defect. The contract did not call for the supplier to provide compensation to the buyer to cover consequential losses.

25. It was therefore agreed that the main purpose of any multilateral insurance scheme that might be established would be to cover consequential losses caused by defective design, material or manufacture and defective construction or erection within the control of the contractors, subcontractors, suppliers or manufacturers.

26. Participants from developing countries pointed out that they were concerned about plants which went seriously wrong in the sense that the level of output achieved was below that specified for the plant, or that the operation of the plant was constantly interrupted by breakdown, or worst of all, that the plant did not work at all.

27. It was agreed that delay in the completion of the plant was also a risk that should be covered. Several participants had the experience that completion of their plants had been delayed. In one case, the owner of the plant had obliged the supplier to arrange for supplies of fertilizer from other sources to replace those which he was prevented from supplying by late completion. Such protection of the owner's reputation as a supplier of the market needed to be considered as well as the financial compensation for loss of production or increased cost of working.

28. Another risk considered was the failure of the supplier to complete construction of the plant as specified in the contract because of bankruptcy or other commercial reasons. It was pointed out that performance bonds were a suitable means of covering this risk and that the amount of the performance bond should be sufficient to enable the provider of the bond or the owner of

the plant to arrange for another contractor/supplier to complete the project. It was suggested that the amount of the performance bond required for this purpose would normally not need to exceed 25 per cent of the contract value.^{1/} ^{2/}

29. It was agreed that any insurance scheme that might be arranged should cover two very distinct periods: (a) the period up to the guarantee test and acceptance of the plant by the owner during which the contractor was liable under the contract for most of the risks listed above; and (b) the period after the plant had passed its guarantee test and been accepted by the owner during which it was the owner's responsibility, in most cases, to cover the risks quoted above.

30. It was agreed that inadequate plant performance caused by factors within the control of the owner of the plant should be excluded from the insurance scheme recommended in paragraph 18 above. Examples of such causes would be interruption of power or water supplies and insufficient sales to warrant high rates of production.

^{1/} The meeting noted that performance bonds of 3 to 10 per cent and even up to 15 per cent were requested and given in present conditions and that performance bonds of 25 per cent or more were used in construction, engineering and defence industry contracts in the United States.

^{2/} The following statement by the World Bank on this subject was communicated to UNIDO prior to the meeting:

"The Bank's guidelines for procurement applicable to most contracts it finances require its borrowers to obtain security to ensure performance of contractual undertakings by contractors and suppliers in the event of default or failure to perform by them. Present requirements stipulate that the bidder should have the choice of selecting either a performance bond or a bank guarantee for this purpose. The reason the selection option is left to the bidder and not to the borrower is because of different business conditions in various countries. Thus while qualified North American contractors can usually obtain performance bonds with little difficulty, European contractors are usually unable to obtain this type of security and the reverse is normally true with respect to bank guarantees. The Bank's requirements were designed to avoid giving an unfair competitive advantage to certain contractors through mandatory stipulations concerning the form of security, and the solution adopted was to leave the choice of security with the bidder. There is no general rule as to the amount of security, merely that it be appropriate to the contract in question, but since the bidder can select the type of security, the decision was made that the amount of coverage should not be out of proportion to the type of security selected. As bank guarantees normally require a 10 to 15 per cent coverage, performance bonds need not cover more than 20 to 30 per cent of the contract value. It was also felt that the chances of failure increase as work progresses so that the greatest risk of failure is at the final stage of performance for which a 20 to 30 per cent value range would normally be sufficient. Where very large industrial projects are concerned the value of security required by the Bank's rule could, however, be much lower in order to attract sufficient competition."

B. How consequential losses might be measured for compensation by insurance

31. The meeting was advised that commercial insurers did provide cover for consequential losses arising from delays in completion of the plant and loss of production after commissioning, provided they resulted from a specific insured event such as fire, explosion or machinery breakdown.

32. In these existing insurance policies, consequential losses were calculated in a way agreed to with the insured. Normally, one of two basic approaches was used: (a) loss of profits, calculated to reflect the financial losses that would result for the insured; or (b) increased cost of working, calculated on the basis of the cost of replacing lost production by alternative supplies.

33. It was agreed that the cover should be provided on the basis of a clear definition of consequential losses that would normally be agreed on prior to commencement of the construction of the plant. This would be particularly important in the case of calculating consequential losses that arose from delays in the completion of the plant.

34. It was pointed out that developing countries might wish to base the cover agreed to on the assumption that the plant would have operated at, say, 80 per cent rather than 100 per cent of capacity. Alternatively, some owners might only request that compensation of consequential loss cover the fixed costs of operating the plant including interest charges and an allowance for depreciation of the plant. In the last analysis, the amount of the premium might influence the level of capacity at which the owner might wish to have his plant covered.

35. As regards the period to be covered, it was recognized that insurance covered the first 24 months of operation of the plant after completion of the guarantee test. If further insurance was required after that period, another policy would be taken out. It was agreed that the maximum period for which compensation would be provided, due to delay in completion of the plant, would be 24 months; such a period would allow for any dispute between the owner and contractor to be settled through litigation or arbitration.

36. On the basis of the above considerations, it was suggested that the maximum claim for consequential losses to which insurers might be exposed would be in the order of \$US 30 million to \$US 50 million for an ammonia/urea complex costing \$US 200 million, and that it would be proportionately higher for larger complexes.

C. The possibility of consequential losses being insured by commercial sources

37. It is common practice to cover the period of construction of a fertiliser plant by a Contractor's All Risks (CAR) or Erection All Risks policy. This policy should be arranged in the joint names of the contractors, suppliers, subcontractors and buyers for the full value of the contract. The risks covered would be fire, earthquake and other specific hazards which might interrupt progress in completing the project.

38. As an extension to the Contractor's All Risks policy, a policy could be taken out to cover consequential losses caused by the insured risks. This so-called "Loss of Advanced Profits" policy could be taken out in the name of the buyer/owner of the plant since he would be the one to suffer loss as a result of delay in completion.

39. The meeting recognized that the specific risks covered by the above policies excluded faults in design of the plant, delays in the delivery of equipment, and breakdown of specific items of equipment during test runs prior to completion of the commissioning test. It would therefore be necessary for the proposed new form of insurance to cover these risks and the consequential losses that might arise from delayed completion of the plant as a result of these events.

40. It was further agreed that it was this period, up to the time of the commissioning test, that was critical. Delays in the completion of the plant were not in the interest of the supplier or of the buyer.

41. It was pointed out that if the contract included a penalty for late completion, the contractor could insure to some extent against his liability to pay such penalties when they resulted from late delivery of equipment. In this connection, it was pointed out that completion was often delayed by factors within the control of the buyer or of the authorities in the country where the plant was located. These causes should also be excluded from insurance cover.

42. As regards the period after passing the commissioning test, it was pointed out that machinery breakdown insurance was available from commercial sources. Consequential losses arising from such breakdown could also be covered.

43. The main area of risk that was not covered was defects in design that only became apparent sometime after the guarantee test had been completed.

For example, a case was quoted in which the utilities were designed at such capacity that the plant could not sustain operation at more than 80 per cent of capacity. This resulted in a continuing loss which the owner had to suffer for the life of the plant. As regards the capacity of the world insurance markets to provide some insurance, it was pointed out that at present this was limited. The type of engineering insurance did not offer a broad spread of risk. Furthermore, there was not enough information available to assess the risks which had to be covered. Therefore, commercial insurers were unlikely to provide the additional cover required at the present time.

44. In order to develop information on which the risk could be assessed, UNIDO should quickly implement the recommendation of a previous seminar that a study be made to assess the performance of fertilizer plants built in developing countries within the last 10 years. A questionnaire which might be used for this purpose was drafted and is attached as annex III.

D. The possibility of Governments supporting an insurance scheme to cover consequential losses

45. Representatives of the export credit insurance organizations of a few countries were present at the meeting. They were invited to consider whether the Governments of suppliers' countries could insure the performance of fertilizer plants in a new scheme that would have some similarity to the scheme under which export credits were insured.

46. It was pointed out that the main interest of the supplier country was to support sales of plant and equipment for the establishment of fertilizer plants. Therefore, some justification for the Government of the supplier's country to guarantee the technical performance of the plants supplied existed. Developing countries sought this guarantee because of the inadequate performance of some plants in the past. The representatives of export credit insurance organizations pointed out that they were given narrow terms of reference and the new type of insurance proposed fell outside their field of activity.

47. It was suggested, however, that Governments or international organizations might be willing to assist the establishment of such an insurance scheme if commercial insurers were prepared to take the responsibility for assessing the risk involved and for implementing the scheme. If, for example, it was found that commercial insurers could only undertake to cover one third or one half of the risk, it might be that Governments or public organizations could be approached to cover the remaining part.

E. Draft contract clause to provide insurance cover for consequential losses arising from defects in design

47. At present, the contract between the supplier and buyer of a fertilizer plant normally specifically excludes the supplier from liability for consequential losses arising from a defective design or defects in equipment. Representatives of contractors indicated the difficulties which they would encounter if there was to be any departure from this practice in the future. These difficulties were appreciated by the Working Group.

49. The risks which consequential loss insurance might cover were considered. It was pointed out that ideally insurance would cover all consequential loss from a cause within the control of the contractors, subcontractors, suppliers, manufacturers or of the vendors' countries. In practice, such cover would not be available. An acceptable degree of cover, which should be looked for, was consequential loss caused by defective design, material or workmanship and defective construction or erection within the control of the contractors, subcontractors, suppliers or manufacturers.

50. The clause to provide insurance cover for such consequential losses suggested for inclusion in the model contract for the construction of fertilizer plants that UNIDO was preparing was therefore drafted as follows:

In addition to the standard insurance policies required under other articles in the Contract, the Buyer and Contractor shall, to the extent possible, by mutual arrangement obtain an Insurance cover in the name of the Buyer for consequential loss caused by defective design, material or workmanship and defective construction or erection within the control of the contractor or his subcontractors, suppliers or manufacturers. No liability shall, however, attach to the Buyer or the Contractor purely by reason of payment of the premium for such policy.

51. The meeting noted that the first draft of the model contracts being prepared by UNIDO should be ready by the first week of September 1978. When they were ready, they could be considered by all interested parties together with the analysis that was being prepared by UNIDO of the causes of inadequate performance in fertilizer plants built in developing countries.

52. It was further suggested that a small group of representatives of insurance interests from developing and developed countries and other interested parties should meet to consider this matter in late September 1978, specifically to advise the Second Consultation Meeting whether the world insurance market was likely to be able to underwrite the risks identified and whether Government support would be required.

Annex I

LIST OF PARTICIPANTS

Country participants

<u>Country</u>	<u>Name</u>	<u>Organization, address</u>
Argentina	Luio R. BALLESTER	Subsecretario Desarrollo Industrial Secretaria Desarrollo Industrial Avenida Julio A. Roca 651 Buenos Aires
Austria	Manfred A. REITER	Dufschmidgasse 14 A-4020 Linz
Bangladesh	Rafiquddin AHMAD	Chairman Bangladesh Chemical Industries Corporation Ministry of Industries Government of Bangladesh Shilpa Bhavan, Motijheel C.A. Dacca
Belgium	Ronald BAUDONQ	Fondé de pouvoir Office National du Deroire 40, square de Meus B-1040 Brussels
	Fernand SCHOBENS	Conseiller juridique Coppé Kunst S.A. 251, avenue Louise B-1150 Brussels
Colombia	Octavio GALLON	Gerente de Inversiones Instituto de Fomento Industrial 10º piso Avianca Bogotá, D.E.
Egypt	Mahmood Abdel-Raof SHOUKRY	Chairman Abu-Qir Fertilizer and Chemical Industry Company 48 Horria Street Alexandria
Germany, Federal Republic of	Hans MEYER	General Counsel UHDE GmbH 10-12 Daggingsstrasse D-4600 Dortmund
	Günter STOLLENBURG	Director Hermes Kreditversicherungs AG Hallestrasse 1 D-2000 Hamburg 13

<u>Country</u>	<u>Name</u>	<u>Organization, address</u>
Germany, Federal Republic of	Adolf F. ORTH	Production Manager Hoechst AG Postfach 300320 D-6230 Frankfurt/Main 80
Hungary	Istvan TATAR	Commercial Director Chemokomplex P.O. Box 141 Nepkoeztarsasag utja 60 H-1389 Budapest 62
India	S.K. MUGHERJEE	Director Fertilizer Corporation of India Madhuban 55, Nehru Place 110024 New Delhi
Indonesia	Hasan KASIM	President Director P.T. Pupuk Sriwidjaja (PUSRI) 104 Letn. Jend. S. Parman P.O. Box 2371 Jakarta
	Harry WONKAREN	Chief Bureau of Foreign Relations P.T. Pupuk Sriwidjaja (PUSRI) 104 Letn. Jend. S. Parman P.O. Box 2371 Jakarta
Iran	Ataollah GHAFARI	General Manager Legal Division and Contracts National Petrochemical Company P.O. Box 2895 Teheran
Iraq	Mohammed AL-SHUKRI	Director of Fertilizer Industries State Organization of Industrial Design and Construction Ministry of Industry and Minerals Government of Iraq Baghdad
Italy	Horst Maria FLECKENTHALLER	Manager of Sales and Contract Department Snamprogetti S. Donato Milanese Milan
	Ettore ANEUNNI	Production Manager in Manfredonia ANIC S. Donato Milanese Milan
	Marco CANTELE	Attaché commercial Ambassade d'Italie à Vienne Rennweg 27 A-1030 Vienna, Austria
	Enrico STACUL	Contract Manager Snamprogetti S. Donato Milanese, Milan

<u>Country</u>	<u>Name</u>	<u>Organization, address</u>
Netherlands	Lesndert PRONK	General Counsel UKF Postbus 45 Maliabaan 81 Utrecht
	Boudewijn de MEIJER	Account Executive Hu'dig Langeveldt Postbus 357 Gr. Bickerstraat 74 Amsterdam
	Regisr C.M. ONORUS	Head Bureau of International Affairs Department Export Credit Insurance and Investment Guarantees Ministry of Finance Korte Voorhout 7 Den Haag
	Justinus E.H. CLIFFORD KOOQ Van BREUGEL	Jurist Nederlandsche Creditverzek- erings Maatschappij N.V. Keizersgracht 258 Amsterdam
Nigeria	Edward N. EKE	Principal Assistant Secretary Federal Ministry of Industries Federal Secretariat, Ikoyi PMB 12614 Lagos
Pakistan	Ahmad SHAH-NAMAZ	Chairman National Design and Industrial Services Corporation Ltd (NDISO) Hotel Ambassador Building Lahore
Romania	Nicolae POPOVICI	Directeur technique Institut des projets technolo- giques pour l'industrie chimique (Iprochim) 19-21 N. Eminescu 71144 Bucarest 1
United Kingdom	Berek G. FRASER	Director Willis Faber (Construction) LTD 10 Trinity Square London EC 3 and at Lloyds, London
Venezuela	Sergio SAEB	Jefe de Programaci6n y Suministros Petroquimica de Venezuela S.A. Apartado 2066 Caracas
	Francisco VELAZ- VALENTY	Alternate Permanent Represen- tative to UNIDO Embassy of Venezuela in Vienna Marokkanergasse 22/4 A-1030 Vienna, Austria

Regional and international organizations

<u>Organisation</u>	<u>Name</u>	<u>Address</u>
Asociación de Desarrollo de Industria de Fertilizantes en América Latina (ADIFAL)	Eduardo GUTIERREZ-SALGADO	Technical Secretary of ADIFAL Florescia 57, 9 ^o piso México 6 D.F., México
European Economic Community (EEC)	Mendel GOLDSTEIN	Administrateur Direction générale du Développement 200, rue de la Loi B-1049 Brussels, Belgium
FAO/Fertilizer Industry Advisory Committee (FIAC)	Denis J. HALLIDAY	Liaison Officer FAO/FIAC Liaison Office (AOL) Via delle Terme di Caracalla Rome, Italy
The International Super-Phosphate Manufacturers Association (ISMA)	Adolf F. ORTH	Hoechst AG Postfach 800320 D-6230 Frankfurt/Main 80 Federal Republic of Germany
Centre d'etude de l'arote (CEA)	Marc M. BESSO	Head Licensing LONZA AG Münchensteinerstrasse 38 CH-4002 Basel, Switzerland

Consultants

<u>Country</u>	<u>Name</u>	<u>Organization, address</u>
United Kingdom	M.E. RIVERS	Director Reinsurance and Multinational Insurance, Division Hogg Robinson and Gardner Mountain International Ltd Lloyds Chambers 9-13 Crutched Friars London EC3N 2JS
United States of America	D. SUBRAMANIAM	Barrister-at-Law International Technology Contracts and Commercial Arbitration 89 Queen Court Hilldale New Jersey 07642

Annex II

LIST OF DOCUMENTS PRESENTED TO THE MEETING

- ID/WO.269/1 Some practical implications of establishing a multilateral insurance scheme to cover consequential losses that arise due to the inadequate performance of fertiliser plants and specific items of equipment
UNIDO Secretariat
- ID/WO.259/8 Summary of four papers prepared for UNIDO on contracts and insurance for fertiliser plants
- ID/WO.259/4 Legal aspects of contracts for the successful construction, operation and maintenance of large fertiliser and chemical processing plants
D. Subramaniam
- ID/WO.259/5 Insurance cover available from commercial sources relating to the construction and initial operation of fertiliser plants
Hogg Robinson and Gardner Mountain Reinsurance Limited
- ID/WO.259/21 Evaluation of risks in tender preparation
T.M. Evans
- ID/WO.259/24 Some observations on contract conditions for projects in developing countries
A. Brown
- ID/WO.259/26/Rev.1 Draft report of the meeting: Technical Seminar on Contracting Methods and Insurance Schemes for Fertiliser and Chemical Process Industries, Lahore, Pakistan, 25-29 November 1977

Conference room papers

- CRP/1 Contracts for fertiliser plants that are equitable for both parties
- CRP/2 Statement on World Bank's practice referring to performance bonds for UNIDO
- CRP/3 Memorandum by Centre d'Etudes de l'Azote on the successful construction and operation of fertiliser plants
- CRP/4 List of participants
- CRP/5 List of documents

Annex III

UNIDO QUESTIONNAIRE ON CONSEQUENTIAL LOSSES ARISING FROM POOR PERFORMANCE OF FERTILIZER PLANTS BUILT IN DEVELOPING COUNTRIES BETWEEN 1968 AND 1977

Part A. Basic information on the plant

1. Name of company:
2. Location of plant:
3. Date of start of constructions:
4. Date of completion of constructions:
5. Structure of ownership of plants:
6. Process used for major manufacturing units:
7. Capacity specified in contracts:
8. The length of time for guarantee and test runs:
9. Methods used for estimating operating rate in test runs:
10. Contract values:
11. Type of contract (turnkey, reimbursible etc.):
12. Output achieved as percentage of rated capacity (330 days)

First 6 months after guarantee test	_____
Second 6 months after guarantee test	_____
Third 6 months after guarantee test	_____
Fourth 6 months after guarantee test	_____
13. Were there penalties in the contract for non-performance?
If so, were they collected?
14. Whether the plant failure resulted in insurance claims:
If so, with what result?
15. Whether the plant failure resulted in litigation:
If so, with what result?

Part B. Causes for shortfall in production connected with contractor's performance

16. Failure of specific items of equipment:

Items:

Name of manufacturer/vendor:

Reason for failure:

Was equipment replaced by manufacturer/vendor?

Time taken to repair failure:

Output tonnage lost:

17. Defects in design of the plant:

Defects:

Name of contractor:

Impact of design defect on technical capacity of plant:

What did contractor do to rectify defect?

Time taken to repair defect:

Output tonnage lost:

18. Other causes for shortfall in production:

Repetitive causes:

Other causes:

Part C. Statistical analysis of loss of output in first few years of operation

	<u>Example^{a/}</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>
Plant capacity	360				
Plant output	284				
Balance	<u>76</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

Reasons for shortfall:

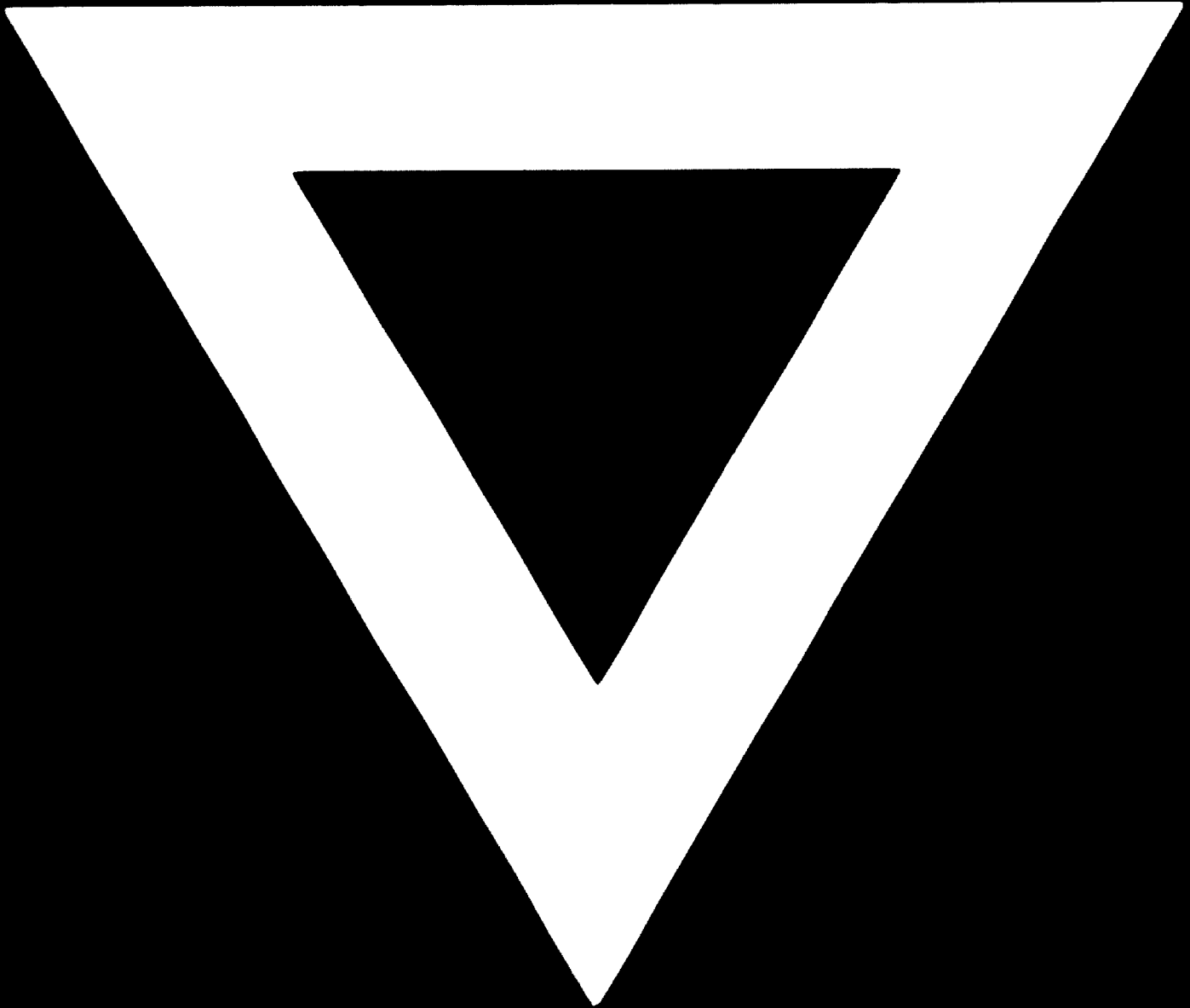
Annual shut-down	30
Design defect	-
Breakdown - mechanical	-
- electrical	-
Raw material quality	-
Interruption in raw material supplies	-
Faulty operation	
No power	30
No spare parts	16
No market offtake	-
Other causes ^{b/}	-
	<u>76</u>

^{a/} Figures have been inserted only as an example of the way this form should be completed.

^{b/} Explain what the other causes were.



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