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Meeting of Senior Officials and Heads of  
National Technology Registries or Similar  
Offices in Selected Developing Countries

Vienna, Austria, 6 - 10 March 1978

TECHNOLOGICAL CO-OPERATION BETWEEN DEVELOPING COUNTRIES  
INCLUDING EXCHANGE OF INFORMATION AND EXPERIENCES  
IN TECHNOLOGY AND KNOW-HOW AGREEMENTS \*

prepared by

the Secretariat of UNIDO

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TABLE OF CONTENTS

	<u>Page</u>
I. Introduction .....	2
II. Purpose of the meeting .....	5
III. Exchange of information and experience regarding technology transactions .....	8
IV. Related forms of technological co-operation .....	11
V. Institutional mechanism for international technological co-operation .....	12
VI. Supporting Services .....	14
ANNEX I: Schedule A .....	16
ANNEX II: Schedule B .....	17

## 1. INTRODUCTION

1. It is increasingly being recognized, in most developing countries that domestic technological progress and adequate growth of technological infrastructure and capability are essential prerequisites for rapid industrial development and that, at the same time, the current pattern and mechanisms for technological trade and development in these countries are proving very inadequate. The technological gap between industrialized and developing economies is continuing to grow rapidly, together with the dependence of the latter on technological processes, techniques and services from developed countries. At the same time, the linkage between technology inflow and foreign ownership and control and the limitations, restrictions and high costs of foreign technology and services has highlighted the essential need for a more comprehensive strategy, regarding such inflow and growth of domestic technological capacity.

2. The basic objective of such a strategy must be to achieve adequate domestic technological growth and self-reliance within a defined time horizon and to ensure that foreign technological inflow is consistent with such goal. Such an objective can only be achieved through effective technological co-operation which should provide an essential dimension of a new, inter-related system of global relationships together with a collective, international approach to the problems of technological underdevelopment in developing economies.

3. Available international sources and data indicated that the annual world's turnover in technology transactions was of the order of about 11 billion dollars in 1975. Since 1965, when this turnover was at the level of some 2.5 billion dollars, the volume of trade in global terms therefore has increased very significantly.

4. In the same period from 1965 through 1975, conservative estimates of the share of developing countries in this trade was around the figure of ca. 10 per cent, that is close to 1 billion in 1975. This share, which

has also been rather constant in the decade 1965-1975, is, however, expected to grow at an accelerated rate in the coming decade with rapidly increasing technological requirements in these countries.

5. If the same rate of growth holds in the present decade, the total volume of trade in technology should reach the level of 40 - 44 billion dollars by 1985. With increased industrialization, total payments for technology in the form of royalties, fees, etc. by developing countries may reach a figure of US\$ 6 billion by 1985, constituting 13-15 per cent of total trade in technology.

6. The present pattern of technology flow corresponds in principle to the different levels of industrialization and technological development in the world, with the USA being the single most important world supplier of technology covering almost 55 to 60 per cent of the world's supply. Other highly industrialized and technologically advanced countries follow, such as West Germany, Japan, France, United Kingdom, Switzerland and Italy. Almost 80 per cent of the world trade in technology takes place among the highly industrialized world, the remaining 20 per cent being split almost equally between developing countries en masse and the industrialized socialist countries of Europe and the USSR.

7. An analysis of sources of technology supply indicates the concentration of such flows through the mechanism of transnational corporations, both in the flow of technology to developing countries, where the share of TNCs is estimated at the level of 80 to 90 per cent, as also among industrialized countries though the share of TNCs in the latter is estimated at around 60 per cent.

8. The situation of developing countries in the process of technology transfer is characterized by an overwhelming dependence on foreign technology and rather limited indigenous technological capacities. Among developing countries, however, there is an emerging group of some fifteen countries who have already reached a considerable industrial level and indigenous technological base. By virtue of their relatively advanced industries, this group also imports the largest volume of technology from abroad.

A number of developing countries, whose industrialization has reached a significant level, have introduced policies and administrative measures aimed at regulating the inflow of technology on the one hand, and at encouraging and facilitating indigenous technological development on the other. The increased role of governments in regulating the flow of foreign technology has been largely initiated in order to secure equitable terms of technology transfer, and channelize the flow of suitable and appropriate technology to priority fields in various countries. With greater awareness of the implications of foreign technology inflow and the terms and conditions under which such inflow takes place at enterprise level, developing countries with significant levels of industrial growth have largely taken the lead and initiative in regulating and screening such inflow. According to UNIDO estimates, at present some 30 developing countries exercise a considerable degree of governmental regulation in the field of technology transfer.

9. Governmental regulatory activity relating to the flow of technology has generally taken the form of specific administrative measures - often within the framework of specific legislation - requiring review and approval of technology-supply arrangements by specialized offices of the government. These regulatory institutions comprise national Technology Registries or national Offices for Technology Transfer or Foreign Investment Boards and like institutions. Broadly, the functions of these Technology Registries and like institutions consist of evaluating, reviewing and approving specific enterprise-level proposals for foreign technology. At the same time, through the exercise of such reviewing functions, these regulatory agencies become repositories of considerable information and valuable data regarding technology contracts and arrangements in various sectors. Such information and data is, however, only utilized at present for purposes of comparison and varying degrees of co-ordination at the national level in these countries.

10. In the UN General Assembly, the Lima Declaration and Plan of Action, and more recently the Round Table Meeting of Ministers of Industry held in New Delhi in January 1977, the need for co-operation and collaboration among developing countries was emphasized under the auspices of the UNIDO Industrial and Technological Information Bank (INTIB). The Meeting of Ministers agreed that such co-operative arrangements should specifically include examination of contracts and agreements already concluded, to provide guidance to others so as to avoid mistakes and problems relating to the experience of particular technologies by one or other of the developing countries.

## II. PURPOSE OF THE MEETING

11. The purpose of the present high-level Meeting of Heads of National Technology Registries and Similar Institutions in Selected Developing Countries is principally to discuss, review and reach broad agreement as to the principles and operational details of measures of technological co-operation between developing countries and particularly for the effective utilization and exchange of information and experience on technology agreements, with or without accompanying foreign investment, between such institutions and at regional and international level. It is also proposed to discuss the role and experience of national Technology Registries and similar institutions, both at the policy level and as an executive arm of the government in implementing national technological policies. The forthcoming intergovernmental meeting on Government Regulatory Functions in Technology Transfer to be held in Vienna from 29 May to 2 June 1978, to which a selected group of developing countries have been invited, will deal with more specific and detailed issues relating to specific regulatory functions exercised in these countries.



12. With the growing role of governments in developing countries in the regulation of technology transfer, operational national registries and similar institutions have collected a large volume of significant information in respect of technology contractual arrangements, implications and experiences. Such information relating to various industrial sectors is available in Algeria, Argentina, Brazil, Egypt, Ghana, India, Iraq, Republic of Korea, Malaysia, Mexico, Peru, Philippines, Portugal, Spain and Venezuela. Though such information is being increasingly utilized by national regulatory institutions in these countries, there is little or no exchange of this valuable information and data between these countries.

13. It is important to stress that the information sought to be shared is of commercial nature and does not relate to confidential proprietary know-how covered by industrial property rights and trade secrets. Such information has been previously published on a regular basis by certain countries, including Japan for several years. Exchange of information is already taking place between certain industrial development finance institutions. In view of increased availability of technological processes and alternatives in various sectors, it is not anticipated that exchange of commercial information and experience will detract from the flow of technology to these countries.

14. While several developing countries have set up regulatory institutions for technology inflow, the effective role of such institutions would be greatly enhanced by adequate flow of information related to actual experience of one or other technology and the contractual arrangements under which such technologies may have been acquired in other developing countries. Such flow of information would necessitate a collective approach to the sharing of information and experience between developing countries participating in such a programme which would be the starting point for more effective technological co-operation leading to collective self-reliance and collective bargaining by developing countries in acquisition of foreign technology. It is consequently intended, in this meeting, to discuss

both the broader issues of technological co-operation and to evolve a concrete programme to facilitate the utilization and exchange of information and experience on technology and know-how agreements, between a number of developing countries.

15. It is considered that, in view of the rapidly increasing flow of technology into developing countries on the one hand, and considerable experience of national registries and similar institutions on the other, it is both necessary and practicable to evolve a programme of co-operation and collaboration in respect of technological information and contracting.

16. It is considered that national registries and similar institutions are particularly suited to play a significant part in the implementation of such a programme and the present meeting is intended to initiate action for such collaboration, both at national and international levels. It is specifically proposed that the national registries and similar institutions in certain developing countries should constitute a Club of Regulatory Institutions for the purpose of technological co-operation and exchange of information and experience on a reciprocal basis and within an agreed framework, with UNIDO providing necessary clearing-house and other facilities for such a programme. An appropriate mechanism would need to be established for flow, analysis and dissemination of information on the basis of reciprocity and to bring about similar collaboration in other related fields such as exchange of visits, joint training programmes and the like. Such co-operation may be operated on a bilateral or multilateral basis with UNIDO providing such facilities as may be necessary and also assisting, through technical expertise, in the preparation of appropriate formats for the exchange of information, collection and retrieval of data, analysis of information and other aspects of co-operation.

III. EXCHANGE OF INFORMATION AND EXPERIENCE  
REGARDING TECHNOLOGY TRANSACTIONS

17. It is considered that an essential beginning in overall technological co-operation between developing countries participating in such a programme should be in respect of exchange of commercial information and experience of transactions involving the inflow of foreign technology. The sharing of such information would not only provide considerable additional knowledge and details regarding similar transactions in other developing countries, but would enable participating countries in this programme to evaluate more effectively the experience with various technologies and foreign licensors in different sectors. Such information would also greatly assist in the determination of appropriate criteria and guidelines in individual regulatory institutions for techno-economic evaluation of foreign technology proposals in various sectors and would also serve to highlight alternative sources of technology in various fields on the basis of actual experience of application of such techniques and processes in the participating countries. The contractual terms and conditions, on which information would be shared between the participating countries, would also greatly assist in determining appropriate norms to be applied in individual cases when such proposals are screened by national regulatory agencies. The continuous flow and up-dating of such information would greatly strengthen the bargaining and negotiating positions of regulatory institutions in their dealing with foreign licensors.

18. The nature of information which could be shared with great advantage among participating countries can broadly be categorized as follows:

- (a) Information on available alternative sources of technology;
- (b) Information on terms and conditions of acquisition of specific technologies;
- (c) Information on terms and conditions of supplies of raw materials and intermediates;

- (d) Information on sectoral trends in terms of applicable royalty rates, technological developments, etc.;
- (e) Information on corporate ownership and structures of various suppliers of technology, etc.

19. The sharing of information on existing and new arrangements entered into for the acquisition of foreign technology would itself focus direct attention on alternative sources of technology in different sectors. As for specific information to be shared, this can be broadly considered under the following categories:

- (a) Prices of know-how, engineering, technical services, etc.;
- (b) Applicable royalty rates;
- (c) Methods of calculation of running and fixed payments;
- (d) Prices and terms of delivery of raw material, components and intermediate products;
- (e) Scope of sales and manufacturing rights;
- (f) Limitations of volume of productions/sales;
- (g) Duration of agreements;
- (h) Parties to agreements;
- (i) Analysis of information based on sectoral investigation as well as received from monitoring selected transactions.

In order to provide a uniform format for consolidation and comparison, information is proposed to be collected in the forms as enclosed at Annexes A and B. These were circulated earlier with the Aide-Mémoire for this meeting. Annex A deals with general information on technology agreements and should not present undue difficulty in compilation by the participating countries. Annex B, however, goes into greater detail in respect of specific agreements and the data will require to be collected from the original agreements in each case. It is suggested that the material required in Annexes A and B should be collected for half-year periods ending 30 June and 31 December each year. The first set of data may be furnished in respect of contracts entered into during the period 1975-1977 and may be finalized in the prescribed format by 30 June 1978.

It will also be necessary, however, to compile similar information for a longer period, perhaps from 1965 onwards in respect of agreements valid on 31 March 1978. Such information could be collected over a reasonable period of time which may be agreed upon in the meeting.

20. In view of the need to consolidate, analyze and disseminate such information among participating countries, it is suggested that the information in Annexes A and B be furnished to UNIDO which will analyze and transmit such information on a confidential basis to national registries or similar institutions in other developing countries participating in this programme of exchange.

21. While the coverage of information in Annexes A and B should extend to all production sectors involving acquisition of foreign technology in these countries, analysis of such information for the purposes of dissemination to other participating countries may be phased suitably to concentrate on sectors of particular interest to several countries. These could, inter alia, include manufacture of (a) iron and steel; (b) fertilizers and petrochemicals; (c) agro-based industries; (d) agricultural implements; (e) drugs and pharmaceuticals and such other sectors as are considered necessary.

22. In order to facilitate the dissemination of the information collected and the analysis of such information, it would be necessary to ensure that such information be submitted in appropriate sector categories. It would be necessary, in this context, to agree upon a uniform classification system which could be based either on the international trade classification of various sectors or any other classification system.

23. It needs to be reiterated that the above information is only of a commercial nature and does not relate to proprietary know-how covered by industrial property rights or trade secrets. There should, therefore, be no objection on the part of licensor or licensee enterprises in the exchange of such information between governmental institutions for whom such exchange would be of great value and advantage.

#### IV. RELATED FORMS OF TECHNOLOGICAL CO-OPERATION

24. Apart from the exchange of information and experience as outlined above, it is also necessary to consider other interrelated aspects of technological co-operation between regulatory institutions of participating countries. Because of similarity in the scope of activities and functions, these institutions could effectively collaborate in a number of policy and operational fields. These can broadly be considered within the framework of a joint and collective approach to technology acquisition by the participating developing countries.

25. Collective action and bargaining can take various forms and can relate to one or several aspects such as (i) collective action on contractual provisions in technology agreements; (ii) exchange of information regarding technology contracts in specific fields between different countries; (iii) joint selection of appropriate know-how in various sectors; (iv) collective bargaining for licensing of particular technology and know-how in several countries and for several projects; (v) collective action in respect of patent and trade mark legislation; (vi) development of a technology pool in developing countries and others. \*/

26. Another specific form of co-operation would be joint and co-operative programmes on exchange of experience and training for selected industrial sectors both for staff of national registries and similar offices as well as for business communities of co-operating developing countries.

27. It is also necessary to evolve programmes for joint review and monitoring of sectoral experience in foreign technology in participating countries, as a part of the overall exchange of information scheme. Such monitoring could be related to the following aspects:

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\*/ Collective Bargaining for Acquisition of Technology by K.D.N. Singh - paper presented at UNIDO/LES Conference, New York, 20-22 September 1976.

- (a) Monitoring of implementation of projects based on approved and registered technology agreements;
- (b) Analysis of implemented projects with the view of up-dating the scope of alternative sources of technologies;
- (c) Continuous sector-based analysis of approved agreements with the view to establish long-term trends in relation to prices, royalty rates, profit margins, etc.;
- (d) Development of guidelines for the promotion and regulation of imported technology;
- (e) Identification of technological gaps and establishment of systems of technology for bridging those gaps;
- (f) Development and elaboration of directives for technology policies at the national level;
- (g) Development of evaluation and approval guidelines for technology agreements;
- (h) Enlarging the scope of use and utilization of information and expertise available at national technology registries and similar offices among governments and industrial communities both for technological development and improvement of negotiating possibilities and capacities.

#### V. INSTITUTIONAL MECHANISM FOR INTERNATIONAL TECHNOLOGICAL CO-OPERATION

28. It is also necessary, in order to ensure that technology supply to developing countries takes place on equitable terms acceptable to these countries, that an institutional mechanism should be set up, through which a sizeable volume of technology transactions may be channelled on terms and conditions considered suitable and appropriate. The principal aim of such a mechanism, which could be set up under the auspices of UNIDO, would be to assist and facilitate the flow of industrial technology to and from developing countries on equitable terms.

29. The functions of such a mechanism could be to:

- (a) Assist in identifying technological needs of developing countries, particularly in the specific technical needs in identified priority sectors of production and manufacture;
- (b) Assist enterprises, institutions and other bodies in developing countries in identifying technological alternatives, evaluating such alternatives and negotiating for the acquisition of selected technology on equitable terms and conditions;
- (c) Acquire licensing rights for technological processes, production techniques, trade secrets and know-how, both patented and unpatented for selected production branches and products, for the purpose of transferring such technology to developing country enterprises, other than wholly owned or majority owned foreign subsidiaries and affiliates on appropriate terms and conditions; and
- (d) Assist developing country enterprises in initial financing of the cost of acquisition of technology for selected production branches and products, either wholly or partially.

In this context, the Fourth African Ministers of Industry Conference held in Kaduna Nigeria, 22-26 November 1977, specifically recommended the need to seek new innovative and efficient mechanisms. UNIDO will accordingly further develop the concept of an international mechanism outlined above.



## VI. SUPPORTING SERVICES

30. In order to provide an appropriate framework for continuous review and analysis of both the working of regulatory institutions in the participating countries and the detailed experience and information relating to various sectors and projects, it would be necessary to ensure the provision of related supporting services in respect of the following:

- (a) Mobilization of co-operation among national registries and similar institutions and the functioning of an international clearing-house facility for this purpose;
- (b) Review of data collection and analysis of various contractual provisions relating to different sectors and the consideration of revised guidelines in technology acquisition for particular branches of production;
- (c) Assistance to individual national registries and similar institutions in the analysis of sectoral trends and objectives and in respect of individual proposals where this may be considered necessary by the participating countries concerned;
- (d) Analysis of technology agreements in different sectors and dissemination of the results of such analysis to participating countries;
- (e) Organization of regular exchange of visits of personnel of national technology registries and similar institutions to institutions in other participating countries;
- (f) Organization of joint training programmes for staff of national technology registries and regulatory institutions;
- (g) Provision of technological advisory services for selected programmes and projects desired by particular countries;

- (h) Assistance in the preparation of joint and collective negotiations for the acquisition of foreign technology for similar projects in groups of participating countries;
- (i) Developing an integrated package of assistance linking acquisition of technology with feasibility studies, investments and technical operations and management.

It is intended that the above objectives will be implemented through a programme of close co-operation and collaboration between UNIDO, inter alia, through its INTIB, and the developing countries participating in this programme .

SCHEDULE A

Country .....

(1) Sector and type of technology or services	(2) Description of product	(3) Name of foreign licensor + country	(4) Name of national licensee. Indicate extent of foreign holdings, if any */	(5) Duration of contract	(6) Remuneration payable to licensor (a) for pro- duction on logical services, process techno-includin- logy. Type of management, training and foreign personnel specified **/	(7) Annual likely production of licensee enterprise as a result of technology agreement ***/	(8) Departure if any from national guide- lines

\* / Should indicate both foreign equity holding prior to technology agreement and foreign holding consequential on technology agreement.

\*\* / Lump-sum payments and royalties should be separately indicated. The basis for royalty computation should also be specified e.g. "net sales value".

\*\*\* / Annual production estimates may be given for a period when technology is fully utilized e.g. 2 or 3 years after commencement of production.

\*\*\*\* / These can relate to various contractual provisions such as export restrictions and "tie-in" clauses for supply of industrial materials or components by licensor and the like.

SCHEDULE B

(1) Sector of production <sup>*</sup>	(2) Description of product (5)	(3) Name of licensor and country	(4) Name of licensee	(5) Extent of foreign holdings in licensee enterprise and holdings of licensor	(6) Purposes of licence agreement **	(7) Remuneration payable to licensor under agreement  (a) for prod. or process + technology  (b) for technical services, incl. management, training and foreign personnel
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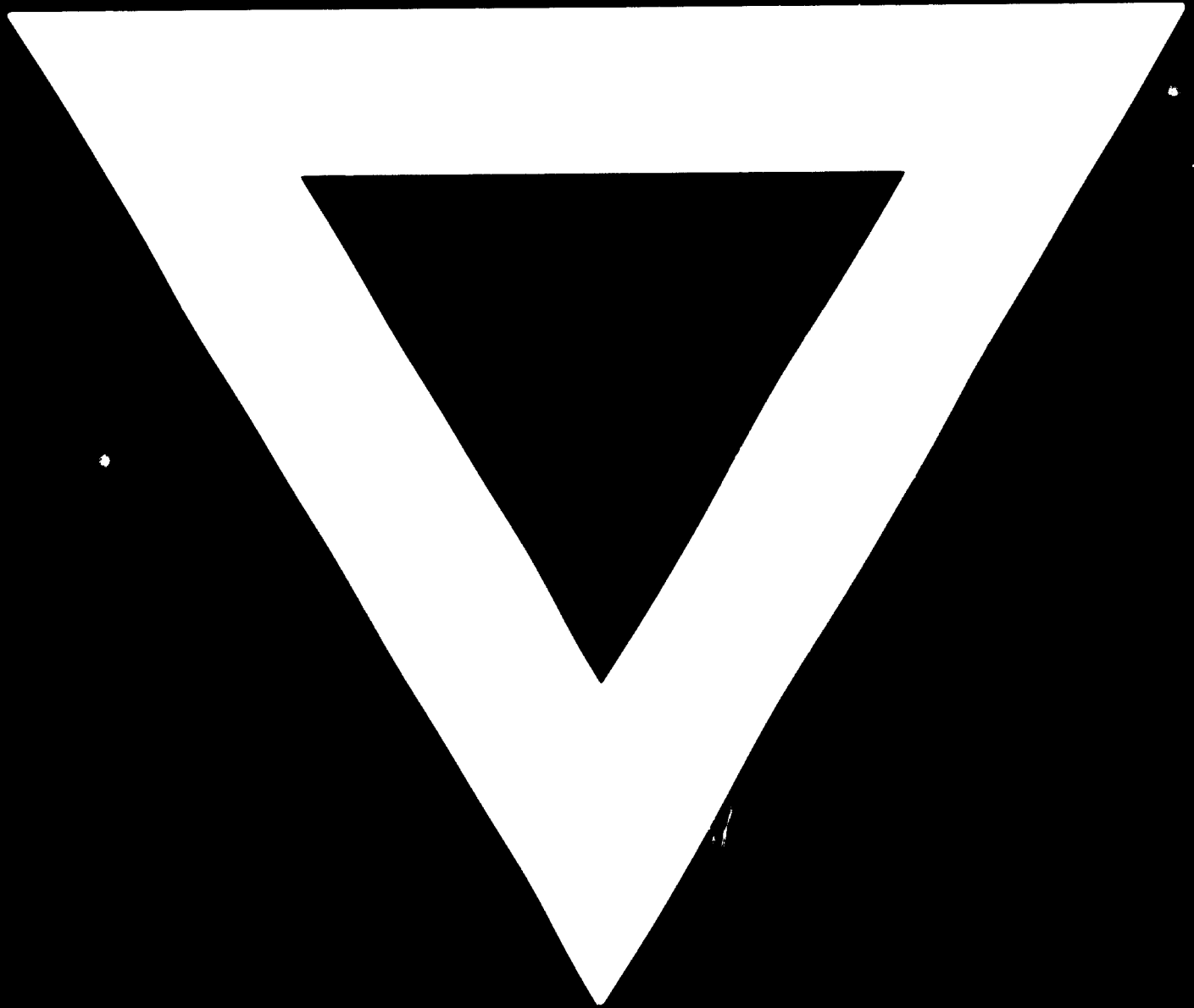
\* / This should indicate the broad sector or production such as engineering goods, chemicals, agro-industries, etc.  
 \*\* / Should indicate whether licence is composite for technology, know-how and services or specifically for patents or trademarks or management services, etc.

SCHEDULE B (continued)

(8) Total payments made to licensor up to December 1977 (a) for prod. (b) for or process technical technology services	(9) Annual production of licensee by 1977	(10) Total employment of licensee enterprise by December 1977	(11) Annual export level, if any, by 1977	(12) General evaluation regarding working of agreement
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