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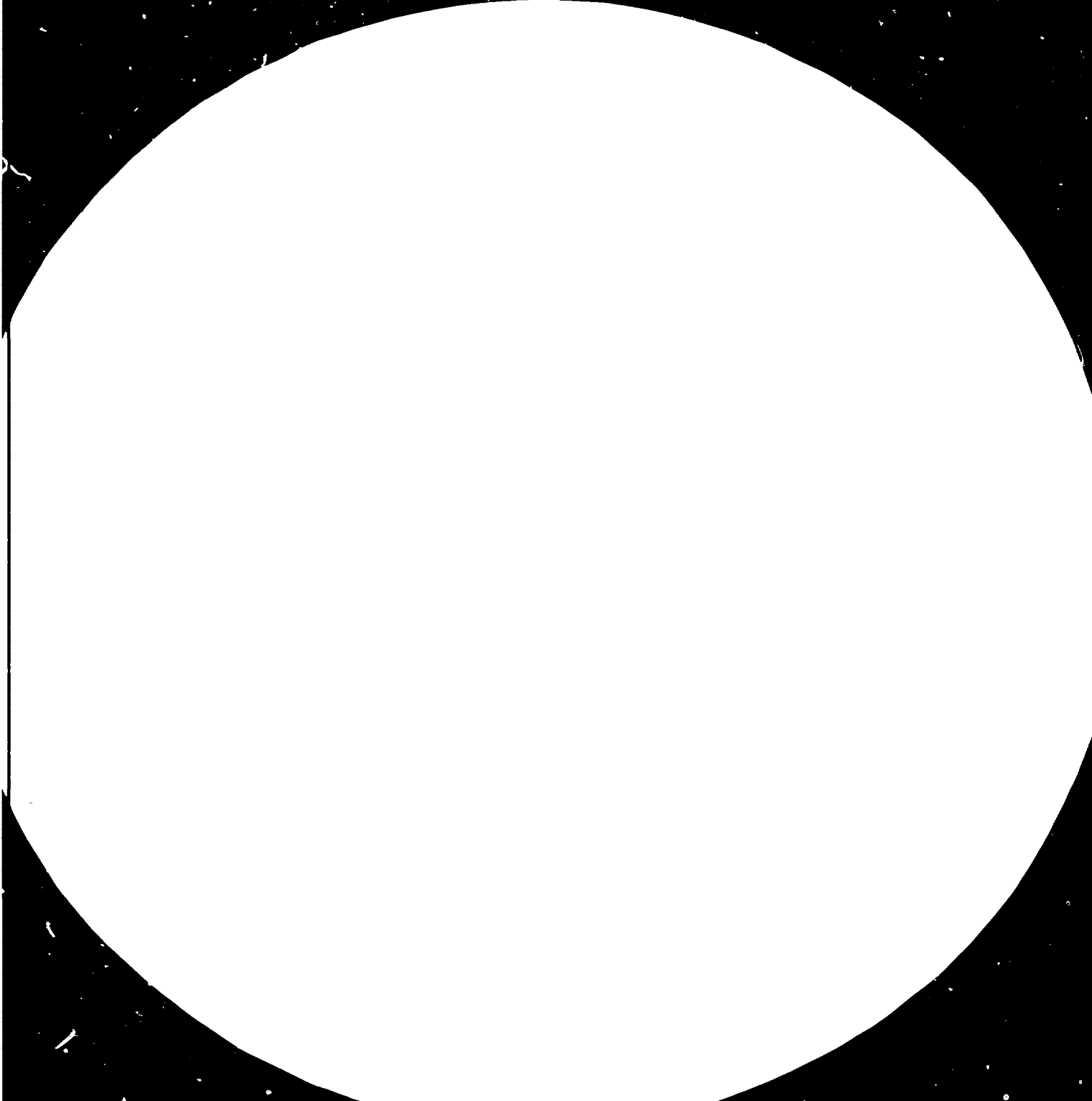
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Group Meeting on Standardization and
Quality Control in the Industrialization
Process of Developing Countries

Arandjelovac, Yugoslavia, 7 - 12 September 1981

DRAFT REPORT *

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I. INTRODUCTION

Background

1. The Lima Declaration and Plan of Action on Industrial Development placed particular emphasis on the elaboration of policies and programmes for the development of standardization and quality control. This declaration further recommended that developing countries should place emphasis on standardization and quality control as a component of national industrial policies. The role of standardization and quality control in the effective transfer of technology and the promotion of trade expansion, especially in promoting exports by developing countries, is so important that the need for establishment of national standardization and quality control institutions in all developing countries is evident.
2. A national standards body can play an important role by setting national standards and by organizing inspection and certification of products in order to assure the quality of goods produced for export. Through co-operation and collaboration with standards and certification institutes in other developing or developed countries, the national standards institutes of developing countries could ensure introduction of international standards.
3. In view of the importance of standardization and quality control and the significance of co-operation between developing countries in the exchange of experience in creating the necessary institutional machinery, a programme was initiated by the Administration for International Technical Co-operation of the Socialist Republic of Serbia and YUGOINSPEKT and was further agreed to by the Joint UNIDO/ISO Committee. This programme, in the form of a Group Meeting on Standardization and Quality Control in the Industrialization Process of the developing countries was held in Arandjelovac, Yugoslavia from 7 to 11 September 1981. Its basic objectives were to discuss the role of standardization and related activities in the developing countries and to determine possibilities for future co-operation among the developing/developed countries in the establishment of new institutions and the improvement of existing facilities within the lesser developed countries.

Participants

4. Delegates from 16 developing countries participated in the meeting, as well as representatives from the ISO, Administration for International Technical Co-operation of Yugoslavia, YUGOINSPEKT, the Federal Standardization Institute of Yugoslavia, and other related institutions in Yugoslavia involved in standardization and quality control activities. The list of participants, experts and observers is attached as Annex I.

Opening of the Meeting

5. The delegates were welcomed on behalf of Administration for International Scientific and Technical Co-operation by Dr. Slobodan Ristić, Director, who expressed wishes for the success of the meeting and a pleasant stay in the community of Arandjelovac. In his address, Dr. Ristić pointed out that standardization is undoubtedly a vital component of economic and industrial development of every country, as well as a basic pre-requisite for entering the international market. He identified the fact that the developing countries, which face severe lack of professional staff and adequate institution bases, are not in a position to participate actively in the current trends within this field. This results in numerous obstacles for the development of national economies and a more equitable share in international exchange. Various constraints in this field should be removed with the assistance of the international community. This could be achieved by strengthening of the national infrastructures, expansion of mutual co-operation among developing countries and their more active participation in international trends within this field.

Dr. Ristić pointed out that in recent UN Conference on Technical Co-operation between Developing Countries, particular importance was attached to the mutual co-operation of developing countries in the establishment and strengthening of national institutions, as well as the promotion of mutual exchange of know-how at regional and inter-regional levels. These are all actions aimed at promoting the struggle for the implementation of national and collective self-reliance of developing countries. Activities such as standardization and quality control should play a significant role in this process.

In concluding, Dr. Ristić expressed that this group meeting is expected to bring about concrete recommendations for actions at national level and expansion of mutual co-operation among the developing countries. He stated that the Yugoslav institutions will acquaint the participants with their experiences and solutions and that it would be useful to learn more about the respective experiences of other developing countries. He pointed out the close and fruitful co-operation which exists between Yugoslavia and UNIDO, particularly in the area of expanding the mutual co-operation between developing countries. Dr. Ristić especially referred to UNIDO's contribution to the activities of the International Centre for Management of Public Enterprises in Ljubljana, and a specific meeting jointly organized on co-operation among developing countries in the development of consulting activities, etc.

6. Also addressing the meeting was Mr. Risto Dzunov, President of the Yugoslav Association for Quality Development and Member of Presidency of Federal Conference of SSRNY. Dr. Dzunov pointed out that it is evident that activities within the field of standardization, measures and quality control, represents a very important potential as a factor of improvement of social-economic development of non-aligned nations. He further stated that the development of science and technology contributes to the development of material technical bases within industry and also to the perfection of organization and methods of production. At today's level of scientific technical development, the solution of the problem of production quality becomes bigger and bigger. Production and services quality are the main means of realization of national economics, therefore, the problem of products quality will gain greater political importance.

Increase of competitive ability of products and services on the market and increase of export by the improvement of quality have to be the main task of social governmental organs and tradesmen. Dr. Dzunov also emphasized the importance of quality as a whole, since the developing countries come face to face with the quality problem of their products for export to developed countries, often within the possible technical barriers in trade and mainly due to insufficiently developed national systems of standardization and products of quality control. He therefore suggested that the developing

countries should pay special attention to standardization and quality control as integral parts of national policies on industrialization. The part of standardization and quality control in efficient technological transfer and increased trade expansion, especially in the improvement of exports in the least developed countries, is so important that the need for constitutions for the national standardization institutions is obvious.

National bodies for standards can take a significant part at setting the corresponding national standards, inspection organization and issue certificates for products in order to provide the quality of products produced for exports.

Dr. Dzunov expressed the necessity to work on the increase of the technical level of documentation on standardization in the least developed countries and the improvement of activities, such as specialization level and influence of documentation through mutual co-operation. Significant here is the fact that delays and expenses of introduction of standards and other technical documentations will be lowered considerably. In concluding, Dr. Dzunov expressed his wish that in the proposed work of this meeting, mutual exchange experiences will occur and the knowledge of all participants will serve in future practices for the quality development.

7. Mr. Bosko Miladinovic, President of the Community (Region) of Arandjelovac also welcomed the participants to the town. After giving a brief account on the history of the region, he declared the pleasure of his town to host the meeting and expressed his wishes for an enjoyable and successful stay by everyone.

8. The keynote address of the meeting was delivered by Dr. Robert Oteng, Director of the DEVCO Committee of the International Standards Organization, Geneva. In his address, Dr. Oteng indicated that systematic standardization was relatively young and all societies have felt need for standardization, systems of weights and measures in commerce and building, and for standardized numbers, characters and symbols for communication. The importance of standardizations is being recognized world-wide in that it encourages industrial development, facilitates trade and acts as a vector for the transfer of technology.

Developing countries embarking into this field at this stage are fortunate since they can fully integrate their activities in the overall national economic programme of development, thereby eliminating the need to dissipate resources to clear problems of the past; they can therefore concentrate more on guiding the technological development of the future. A well conceived standardization programme lays the foundation for the growth of domestic skills, for the ready assimilation of imported technology and for the promotion of quality.

It was illustrated that national standards bodies have a vital role to play in the orderly development of the national economy also protecting the nation against unscrupulous practices in trade. It is absolutely necessary that the national standards body should be involved in planning operations at the earliest possible moment. It should have sufficient legal authority to enable it to exercise a co-ordinating role in relation to other national institutions dealing with standardization and specifications. Lack of such consideration in the stages of a country's development could lead to difficulties later. Unlike the developed countries, who have necessary experience to assure compliance with their set specifications, standards bodies in the developing countries must fill the technical resource gap by providing services to national producers in the fields of metrology, calibration, quality control, inspection and certification. It is important that all these functions should be combined in a single body whenever possible. In a number of developing countries this combination has been found to be an effective means of raising the level of indigenous technology and improving quality.

With reference to international standards activities, it was proclaimed desirable for national standards organizations to ensure participation in international standardization at an early stage. It was declared equally important that national standards bodies make certain that needs are taken into account when international standards are prepared.

Successful negotiations among the worlds main trading nations have progressively decreased the level of customs tariffs; the present relatively low level of tariff protection throughout the world has brought into prominence a large number of other measures which can hamper trade. Among these so-called "non-tariff barriers to trade" (NTB's) are various national standards and related certifications and marking procedures which effect free movement of goods. The ISO is currently working towards the greater mutual acceptability of certification systems with a view to eliminating this aspect of NTB's. In view of the vital need of developing countries for increased export earnings, the standards bodies of these countries should participate fully in these efforts. Every international standard is available without restriction to the developing countries. Their use do not require any foreign exchange outflow. Furthermore, international standards assist the national standards bodies of developing countries in establishing programmes for the orderly selection, import, and adoption of foreign technologies.

Election of Officers

9. The meeting unanimously elected the following as officers:

- Dr. Jelena Vilus (Yugoslavia) - Chairman
- Mr. Bambang Hadiwardjic (Indonesia) - Vice-Chairman
- Mr. Damianos Agapalides (Greece) - Vice-Chairman
- Mr. Hamdy El Dosokey (Egypt) - Rapporteur
- Mr. Benedict Mwobahe (Tanzania) - Rapporteur

Organization of Work

10. The meeting recommended that the Item V "Co-operation between UNIDO and ISO in Promoting Co-operation among Standardization Organizations from Developing Countries and in Assisting these Organizations" should be presented on the morning of Wednesday 9 September, following Item II. This change was agreed to and the agenda adopted. The programme of work was based on presentation of summaries of technical papers already distributed for study, followed by discussions on each paper. Problems identified in the country papers submitted by the participants were also discussed.

Transmission of the Report of the Meeting

11. The meeting decided that pending finalization of the report, the draft report should be forwarded by UNIDO to the ISO, all participating institutions in Yugoslavia, all participants and the Governments of the countries represented.

II. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

12. This meeting identified the urgent need to strengthen standardization and metrology activities within the developing countries. It was revealed that, in the majority of cases, Governments did not recognize the importance of standardization and metrology in national industrial activities. As a result, relevant measures for strengthening these activities were not pursued. It is evident that the National Standards bodies should be involved by the governments, in advisory capacities in the formulation of industrial and commercial development programmes with a view to circumventing and solving problems arising in the industrial development process. The development of proper communications between the National Standards bodies and national planning agencies is therefore imperative.

13. Recognition for greater collaboration between the developing countries and the advantages of exchange of experience in the process of strengthening standardization infrastructures were manifested. It was made evident that training programmes and study tours organized by the national standards bodies in the developing countries would facilitate this exchange of experience as well as lay the foundations for the development and strengthening of systems of communications, and improve methods of disseminating materials between these organizations.

14. Developing countries which depend upon exchange of goods for their foreign exchange reserve earnings should endeavour to utilize more the advantages of standardization policies in establishing and enforcing the necessary terms and contracts required for export. This would repress the many problems which arise in external trade transactions.

15. Although national standards should be in line with regional and international standards as far as possible, it was recognized that the technology available within individual countries, and the specific market requirements should not be overlooked. It was concluded that where local requirements cannot be reconciled with the requirements of regional and international standards, different quality grades should be provided in order that small scale industries are allowed to manufacture for the less sophisticated section of the market.

B. Recommendations

16. In recognition of the prime importance of actions to further develop and strengthen standardization and metrology activities in developing countries, the following recommendations were made by this meeting:

1. The National Standards Bodies (NSB's) in the developing countries should establish good lines of communication with the national planning agencies and other relevant bodies in their country, in order to ensure that the standardization needs of their country are fully taken into account in long-term industrial planning and development.
2. The NSB's of developing countries should undertake promotional projects/ activities on all standardization aspects in order to emphasize to their Governments the importance of these functionalities within their national industrial development programme.
3. The NSB's in developing countries should make full use of existing possibilities for bilateral co-operation and should establish the necessary contacts with countries which may be able to offer relevant programmes of assistance.
4. The NSB's in developing countries, with the appropriate assistance from the relevant UN agencies and the ISO, as well as other national and international agencies, should endeavour to implement an "integrated approach" to standardization by combining standards writing, quality control, testing, certification and metrology into a unified programme of activities.

5. The relevant UN agencies, especially UNIDO, together with ISO should further assist NSB's in developing countries to define their problems and requirements for aid under UN technical assistance programme.
6. The NBS's in developing countries should follow more closely and actively participate in the work of international technical committees dealing with questions of major importance for their exports.
7. The NBS's in developing countries with the assistance of UNIDO, whenever called for, should embark on technical co-operation activities between themselves in an effort to share similar experiences, solve common problems and thereby assist each other in strengthening their standardization activities.

C. Concluding Session

17. The meeting adopted the draft report and decided that it should be forwarded to the proposed meeting of Non-aligned Countries on Standardization and Quality Control scheduled to take place in Cuba at end-September 1981. In addition, the UNIDO secretariat was authorized to edit, reproduce and circulate the final report to the ISO, all participating institutions in Yugoslavia, and all participants and the Governments of the countries represented.

18. The Chairman of the meeting and the representatives of UNIDO thanked all concerned for their kind hospitality, the successful manner in which the meeting was conducted and the constructive results achieved by it.

III. SUMMARY OF DISCUSSIONS

A. Establishment of National Standards and Quality Control Institutions, Their Role in Promoting Transfer of Technology and Export Promotion

19. Five papers were presented on this topic, the first of which was "The Concept Problems of the Development of Standardization in the Socialist Federal Republic of Yugoslavia from the Developing Countries Aspects". Introducing this paper, Mr. Milan Krajinović, Director General of the Federal Standardization Institute, stated that at the very beginning, Yugoslavia, like any other developing country, knew nothing about standardization. However, the need for standardization principles within its then new venture of industrialization as an important component of its rebuilding process after the war, was recognized. Consequently in 1947, the then FPRY passed the Decree of Standardization which opened the process of the development of Yugoslav Standards. This paper further presented the development of the standardization process in Yugoslavia as well as outlined the foreseen benefits for developing countries.

20. The position of standards in the process of industrialization of Yugoslavia was also elaborated. It was emphasized that the experiences of the countries which are lucky to begin industrial development beforehand should not be literally copied, but be used as an experience transferred in a creative manner to one's own milieu as well as conditions. Such copying imperceptibly makes one become dependent on the economy of these developed nations.

21. Admittedly today no country has sufficient strength to elaborate all possible standards alone without reliance on the experience of other countries. This is one of the important reasons for which co-operation in the field of standardization very quickly and easily crosses national borders and acquires international character.

22. Mr. Krajinović also outlined the problems and solutions of the state and standardization, regulations and standardization. The multidisciplinary nature of standardization was related with the special reference to areas of consumer protection, protection of human life and health, and supporting services for defense capabilities of countries. It was suggested that developing countries should work out their own concept of standardization policy for presentation to their respective governments. This task already done by Yugoslavia was found to assist greatly and without this concept, it would be difficult to compare the entirety and select the priority problems which would primarily be treated by national standardization. The relation of Yugoslavia standardization towards international standardization was also reported.

23. Discussion on a number of points raised by the paper followed. On the point of level of assistance developing countries derive in formulating standards from the international standards ISO/IEC it was noted that the level of guidance from these international organizations leaves much to be desired owing to the approaches in formulation of standards at international level. At this level, it is maintained that for a product standard, performance specifications are more suitable than descriptive specifications because they permit a variety of approaches in design, in establishment of fitness for use of product etc. Though this is an excellent idea, its validity in developing countries calls for certain reservations since consideration of the performance criteria calls for simulation of conditions which often requires complicated and expensive equipment for testing and experience and judgement of test results. It was suggested that because of the expense and lack of technical capabilities descriptive product standards are more applicable to the developing countries. Also these are easily understood, testing for conformance simpler and consistency in the manufacture of the product easier to maintain.

24. Compulsory standards versus voluntary standards was also debated. It was stated that whatever the socio-economic background of the developing country, some of its national standards have to be compulsory in particular of aspects of safety and health are involved.

There may arise instances in which even when the safety and health of the people are not at stake, a standard in a developing country may have to be declared compulsory. In this regard, shortages of essential products may result owing to failure to achieve the standard level. In a sellers market, owing to the supply of goods being for less than the demand, a phenomenon which is known to be rampant in the developing countries is market forces to determine quality. As such, quality is not given adequate consideration by profit motivated manufacturers. In such instances, it becomes more obligation on the part of the authorities to protect the consumer by proclaiming the relevant standard compulsory. The influence of economic factors on the level of standardization was also debated. Often standardizers in developing countries are faced with the problem of having to accommodate both the demands of the export markets and those of the domestic markets. The requirement of these two markets are very often at variance with each other. The question arise should the high standard demanded by overseas purchases also be operated for domestic needs. Of course, there is a positive domestic gain in having one production line instead of two. It was noted that there is no single solution to this problem. Individual situations would have to be carefully judged, studied and generally a country should always avoid whenever possible, the existence of dual standards.

25. Reference was also made to problems of overseas collaborators. Overseas collaborating organizations bring with them the practices and standards with which they are accustomed. Also, they bring all the equipment and materials conforming to their national standards or other standards of their country of origin. The problem then arises that the developing country after acquiring assistance from different nations, are faced with a variety of standards and specifications. This results in a major problem for the national Bureau of Standards.

26. Industries with overseas collaborators find it difficult to accept the national standards formulated with the national interest as their prime motive. However, developing countries cannot afford multiplicity of standards for establishment of indigenous industry, and meanwhile, take into consideration the requirement for raw materials, spare parts, etc. No simple solution to this problem was identified, however, it was suggested that a deliberate national policy requiring all technical collaborations conform to national standards where they exist, and in the absence of national standards, there should be the inclusion of a clause in the agreement of such technical collaborations requiring collaborators to co-operate in future formulation of such national standards.

27. The second paper presented outlined the "System of Standardization in the Socialist Federal Republic of Yugoslavia. In introducing this paper, Mrs. Koraljka Rabrenović, Section Head in the Federal Standardization Institute, explained what standardization implies in Yugoslavia. Standardization in Yugoslavia lies within the competence of the Federal law. The bearer of all activities within standardization at the level of the Federation is the Yugoslav Institution for Standardization, an organization under federal management. The federal functionary who runs the institute is authorized to pass all the regulations in the field of standardization which are approved at the level of the Federation, whereas inspection of the application of these regulations is carried out by the inspection services of the Socialist Republics and Autonomous Provinces. The Yugoslav Standards Institution is responsible for regulating and supervising authorization in the field of obligatory certification and homologation, as well as of certain authorizations following the international agreements which are binding for the SFRY. The Yugoslav Institution for Standardization is also responsible for international co-operation in the field of standardization as well as co-operation of Yugoslav with international government and non-government organizations for standardization. Specific characteristics of Yugoslav standards were also outlined and the aims of the systems were given as to secure technical and constructive safety in production; safety and protection of lives and health, the human environment; realization and protection of the interests of National Defence; and realization and protection of significant economic interest of social communities as a whole.

28. It was stated that the Yugoslav system of standardization approaches the optimum, considering that it covers in an organized way, all the elements of integral standardization except metrology. This system was however connected and co-ordinated with metrology by means of the Social Agreement on Standardization and quality.

29. During the discussions which followed, the question of flexibility with regard to implementation of standards was raised. It was pointed out that in some instances, when circumstances demand, a manufacturer may be allowed to deviate from a standard provided that it does not contravene certain basic requirements. In formulating national standards, local conditions and interest should be observed. However, if the product standardized is for export, the requirement of the export market must also be taken into consideration.

30. Introducing a paper on "The System of Assurance of Quality of Product and Services on the Market of the Socialist Republic of Yugoslavia", Mr. Zoran Milivojević, Section Head in the Federal Standardization Institute, elucidated the concept and aims of quality assurance in Yugoslavia. Mr. Milivojević emphasized that quality assurance and conformity of products with established quality characteristics is one of the basic obligations of manufacture and trade organizations of associated labour. He specified that competent inspection bodies should be utilized to determine whether the obligations have been fulfilled during production and marketing. The Yugoslav system for directing quality and the sub-system of performing market control was considered. The implications of obligatory certifications was iterated. Obligatory certifications can be prescribed in order to secure technical and structural safety in production and construction, safety and protection of lives and health, etc. The general procedures used by the Federal Institute for Standardization in implementation of this was outlined. The use of the JUS mark was explained.

31. On the topic of obligation concerning the quality control of the products and services in marketing, the speaker made plain the fact that organizations are bound to provide the products to be marketed with adequate documents and data if prescribed by the Standardization Act and its Regulations. Industrial products with a long term of exploitation should be marketed only if provided with a guarantee sheet, technical directions and a list of authorized servicing workshops. Industrial products intended for immediate consumption should be accompanied by the terms necessary for elimination of failures or shortcomings within the terms of the guarantee.

32. The speaker concluded that the system of assurance of product quality on the market of the SFRY is still in the developmental phase. The sub-system of regulative acts and production possesses the longest tradition. The sub-system of quality assurance in Yugoslavia is still to be elaborated. Obligatory certification of the product has already been defined and all regulations on the matter have been passed to date. The JUS quality mark is in the phase of preparation and as far as competitive tests are concerned, several basic standards have been published.

33. During the discussions following, it was pointed out by some participants that small-scale manufacturers find it difficult to comply to standards because of the lack of resources e.g. testing equipment, trained personnel, etc. It was noted that this situation was peculiar to certain developing countries particularly in Africa, where small-scale manufacturers are encouraged. It was suggested that the standards authorities in these countries should try to formulate policies to accommodate the needs of these manufacturers.

34. The subject of product liability was also raised. It was generally accepted that the main responsibility lies with the manufacturer or the inspecting or certifying authorities. In some other cases, however, other parties like transporters, retail sellers may share the responsibility according to the terms of contract. It was recommended that all parties concerned should always establish clear contractual terms detailing all obligations.

35. "Organizational and Legal Regulations of Inspection of Goods on Services in Yugoslavia Domestic and Foreign Trade Regulations" was presented by Dr. Slavko Carić, and Dr. Jelena Vilus, Professors of the Faculty of Law, Novi Sad. This presentation expressed the fact that economic development of each country is to a great extent connected with quality of production and services. Quality of goods and services are under special care in every society, including Yugoslavia, and can be achieved only through effective inspection. This can be efficiently carried out through formulation of inspection goods contract under which all obligations are established. The contract of inspection of goods is regulated in Yugoslavia by the Law on Obligation Relations (1978) and the Law of Sale of Goods and Services abroad (1977).

36. This paper also outlined the importance of general conditions relating to the inspection of goods. All inspection organizations do not have their own general conditions. Uncertainty is therefore created in this area due to ill defined rights and obligations of the parties. In cases of dispute under these circumstances decisions are often reached by compromise.

37. The legal aspects relating to duties of inspectors based on the inspection goods contract; the rights of the inspection organization in the inspection of goods contract; liabilities of the inspection organization under this contract; and conclusion of this type of contract were also specified.

38. During the discussions following this paper, it was agreed that contract should be utilized in all event of trade. Purchase contracts should be carefully worded with the assistance of lawyers in order to avoid complications during execution. Situations of disputes in the absence of such contracts were also narrated. It was the general opinion that in absence of a contract the manufacturer should not be wholly responsible for all product liability since mass production with 0% defects is impossible to achieve.

39. The final paper to be presented within this item "The Importance of Metrology in Industrial Development from the Aspect of the Developed Countries" was introduced by Mr. Nikolaj Bevk, Assistant Director General of the Federal Institute for Measures and Noble Metals. In his delivery, Mr. Bevk enunciated that it has been verified that a country cannot prosper economically nor enlarge its industrial capacity if it does not possess a sufficiently developed metrology system. Countries are obligated to provide through legislation the development of metrology services in order to fulfill its development in science and industry and protect its citizens in the sense of accurate measuring in every day life. National laws on metrology should facilitate the development of scientific and technical knowledge and progress in the national economy by encouraging the standardization of units and standards of measurement as well as the modernization of the measurement of measuring equipment and improvement of their accuracy.

40. It was recommended that countries should adopt the "International System of Units (SI)", which were accepted by the General Conference of Weights and Measures and recommended by the International Organization of Legal Metrology. It was recommended as favourable to put the Law on Metrology into effect through the national metrology service which, together with other duties, is responsible for the improvement of metrology in the country. The main aim of the national metrology service is to provide unity and reliability of measurement in the whole country. Developing countries just embarking on industrialization should fully consider the limits of tasks of metrology services laboratories, beginning from the classical basic fields of metrology to the tasks which claim needs and possibilities of a country relating to import and export.

41. The influence of metrology on the development of industry was also considered. It was expressed that recently metrology had moved from the sphere of consumer transactions to the sphere of production and its co-ordination. This qualitative change which is still going on gives a different character to the role of metrology.

42. Metrology, with its direct effect exerts influence on production and co-ordination by technological processes and helps to reduce the percentage of bad products and semi-finished products as a whole. With a good control system of measuring equipments used in the technological process in an organization for which accurate and verified working standards are the basis a better quality and a better economic effects can be achieved. It is true that investments into the measuring equipment, space, personal and periodical verifications are great, but these investments return rapidly through the reduced percentage of waste, better quality of products and by the higher price of the products on the market. For reasons of economy it is necessary for developing countries to make use of all the existing personnel, equipment and space in the country for the improvement of metrology and to give the role of co-ordinator to the national metrology service. It is necessary that the developing countries take a greater part in co-operating in the field of metrology in the internationally aiming at exchange of experience, international aid, etc.

43. During the discussions which followed, questions arose on the advantages and disadvantages having the metrology departments within developing countries in separate units as opposed to under the umbrella of the national "Standards Organizations". It was pointed out that the ISO fully recognizes the problems facing developing countries in the area of implementation of metrology activities, especially in the area of production of goods. It was recommended by the ISO that due to lack of necessary economic and technical capabilities, it would be more beneficial for developing countries to encompass their metrology units within their standards organizations. However, it was stated that separate laws governing these two activities should exist.

44. The need for primary standards at the national level was raised. It was suggested to be necessary for each country to keep primary standards; what is important however is to have some standards depending on the need, but whose accuracy is traceable to the international standards at BIPM.

B. International Standards and the Necessity for Developing Countries to Participate Effectively in International Standardization

45. This paper was introduced by Dr. Robert Oteng, Director of DEVCO Committee ISO. Dr. Oteng pointed out that international standards are the ultimate example of the ascendancy of convenience and productivity over exclusivity. They represent the extent to which participating nations will give their time and eventual sanction. They may represent their interest - and through that interest includes the notion of users, producers, scientists, teachers, administrators, etc., it has to be recognized that the overall interest served is that of economy in which all these entities operate. Dr. Oteng elaborated on the structure of the ISO system and pointed out that up till now developing countries participation in ISO work has been minimal, and can only be described as user participation. He acknowledged active total participation cannot be attained overnight; however, their ability to help produce standards should grow side by side with the need for them to use international standards which have been prepared through long painstaking efforts. Their participation can take one of two forms: as users or participation in the actual formulation of the standards by attending meetings arranged for the purpose. In suggesting the latter, sight is not to be lost of the limitations on resources within most developing countries which do not make for the attainment of these most desired situation.

46. As with any map, personal experience in the territory is certain to provide the best way of understanding the features of the landscape and so ISO is continually aware of the importance to developing countries, not just for knowing about standards and specifying them, but also of actual taking part in their development. ISO is constantly bringing to the notice of developing countries the fact that many more experienced national member bodies of ISO run training schemes for these technicians who will provide the coherent channel for input from developing countries into international standards. More significantly, ISO has its own development programme owned by DEVCO, the Council Committee which determines policy in relation to developing country members of ISO. The terms of reference of DEVCO and its provisional long range programme were elaborated.

47 Concerning the participation of developing countries in the ISO secretariat function, it was illustrated that at present developing countries are taking on only a small share of the technical secretariat work of ISO, and there is a dire need in the economic interest of developing countries that this situation should improve.

C. Co-operation Between UNIDO and ISO in Promoting Co-operation Among Standardization Organizations from Developing Countries and in Assisting these Organizations

48. Introducing this subject, Dr. Oteng, Director of DEVCO ISO and a member of the Joint ISO/UNIDO Committee stated that it is extremely important that any training or development process promoted by ISO have the support of an organization which has a specialized knowledge of fundamental development problems. This support has been found in UNIDO with the signing of an agreement of understanding in 1979 by the Executive Director of UNIDO and the Secretary General of ISO. This agreement of understanding outlined certain guidelines that would govern co-operation between and co-ordination of their activities where these are mutually supportive. The setting up of joint UNIDO/ISO Committee was mentioned, whose major function is to decide upon joint action based on the work programmes of both organizations.

49. With relations to DEVCO activities, it was affirmed that UNIDO had also expressed keen interest in providing financial support for the participation by ISO developing country members in ISO/TC/SC meetings; and study tours by senior officers of the NSB's. Additionally, UNIDO is invited to attend sessions of the ISO General Assembly and the relevant ISO Council Committees and to participate in the work if such meetings are of interest to them (UNIDO). Conversely, ISO is invited to attend sessions of the UNIDO General Conference, Industrial Development Board sessions and UNIDO consultation meetings organized on sectorial or regional basis. In this spirit, UNIDO and ISO keep each other informed about work of mutual interest and exchange of routine publications.

50. The UNIDO secretariat, at this point, further elaborated on the working of the Joint UNIDO/ISO Committee. This project group meeting was identified as one of the many projects discussed and approved by this joint committee. The participants were further enlightened on the assistance to developing countries by UNIDO in areas of training of local staff and establishment and strengthening of national standards bodies and related institutions, thus enabling them to become more capable of instituting relevant strategies and policies; in the adoption of international standards and the development of national and regional standards. In so doing these institutions were able to implement their activities through programmes of certification, marking, metrology and quality control. The participants were advised that should a need arise for assistance from UNIDO, they should apply for such through the UNIDO Offices located in their countries.

51. In the discussions following, it was noted that in developing countries, there is a lack of appreciation by government officials of the need for standardization activities. In this regard, it was requested that international organizations assist in the generation of standards consciousness through meeting and addressing top government officials and industrial planners in these countries. The counsel of international organizations very often has a much greater impact than that of nationals. However, it still rests with the national standards body to demonstrate to their government officials the economic benefits of standardization by being an effective force in the national economy.

D. The Role of Government and Industrial Development Agencies of Developing Countries in Establishing and Promoting National Standards and Quality Institutes

52. Within the broad scope of this topic a paper entitled "The Part of Specialized - Social Organization of Quality Control in Economic Development of SFRY" was presented by Mr. Milisav Nikoletić, Associate in the Institute of Economic Industry, Belgrade. In introducing his paper, Mr. Nikoletić pointed out that the internal knowledge transfer was specific in Yugoslavia and a considerable contribution to the development of economy was given to activities in internal knowledge transfer. Forms of internal knowledge transfer from the field of quality control were through organization of seminars lasting several days in the enterprise which effected the complex advancement of quality assurance system; the organization of one-day experience exchange in concrete enterprise, and publication of export works in existing journals and other periodicals containing the experience of the application of the quality control methods and techniques.

53. Successful internal transfer of knowledge and skill interested a considerable number of experts from enterprises, who very gladly accepted the idea of national social-professional organization, primarily called the "Yugoslav Committee for Quality". Another national organization "Yugoslav Association of Organization of Quality Advancement" was also started. This organization has grown and developed from its foundation through the work contents and organizational structure, initiating the construction of SFRY.

54. Mr. Nikoletić also elucidated on the introduction of "Quality Year". He further stated that national actions of quality year have proved the existence and necessity of development of quality function in a social sense. This, at the same time with the learning of quality function at the enterprise level, there is the quality function on the level of one's national economy or social community, being composed of economic activities component on one side, and a component of social activities of quality assurance on the other side. The component of quality function economic activities on the level of society therefore refers to activities which are daily effected in enterprises.

55. In the discussions following this lecture, the role of motivation in attaining quality control in industry was recognized. It was noted that because of differences in social background and habits, the methods of motivating workers differed. Therefore only after careful consideration should the appropriate approach be selected.

E. Ways and Means of Co-operation Among Standardization and Quality Control Organizations of Developing Countries

56. Encompassing this theme, Mr. Djuka Licisa, Section Head of the Federal Standardization Institute, introduced a paper entitled "The Subject and Possible Organized Forms of Co-operation on the Question of Standardization Between the Developing Countries". In presenting the subject, it was identified that the co-operation on the harmonization systems represents one of the prerequisites of successful trade exchange among the developing countries, as is also the case of other countries. At the same time, co-operation is indispensable in finding out by joint efforts, solutions which will secure rapid industrialization by which heterogeneous technical and technological systems will be avoided. Co-operation is also necessary for the elaboration of the concept of co-ordinated influence on the work of international organizations for standardization, to enable passing of international standards in which the interest of developing countries be present equally with the interest of other developed countries.

57. Mr. Lisica further iterated the need for co-operation for the promotion of neutral trade between developing countries and elaborated on the present situation of co-operation between the developing countries. He specifically noted that many countries were members of regional organizations of standardization. He further pointed out the recognition given to this co-operation effort at the Ministers' Conference of Non-Aligned Nations, held in New Delhi in February 1981.

58. Possibilities of using the experience of developing countries was also explained. This transfer of knowledge is mainly through the use of courses and seminars. Other possible ways are through the use of bilateral co-operation of neighbouring countries. Practical forms of exchange, apart from documentation exchange, are visits of experts acquainted with the actual work of one country with another, joint seminars, discussions, etc. However, if the present results of co-operation between developing countries are analyzed, particularly from the view point of participants in the activities of international organizations for standardization and influence on the work of these organizations, it is obvious efforts should be made to seek even more effective ways of eliminating obstacles which slow down and make this co-operation difficult. It is hoped that the way of eliminating these obstacles will be thought in a better liaison among the activities at national and international levels, directed by economic and governmental bodies with the view to rapid industrializations of developing countries and activities in the field of standardization.

59. Discussions on the country papers presented followed. It was identified that some of the common problems facing the standard organizations were the shortage of trained personnel in the fields of standardization, quality control and inadequate testing capabilities. It was proposed that training courses and seminars are for all levels necessary as a long-term solution for increasing the number of trained personnel. In the specific area of laboratory testing and equipment, it was indicated that a large amount of funds were normally required for the development of laboratory facilities including building, equipment and training of locals in the methods of testing to specifications. This service is essential for operation for certification and other marks and also to assist standard engineers in backing up their opinions in the drafting of national standards. The use of accredited laboratories within the countries serve as a solution to this problem, however, in the absence of these, it would be necessary for the respective countries to seek financial aid through bilateral agreements or from international organizations.

60. Following this were round-table discussions between the UNIDO Secretariat and the participants. During these discussions the participants were enlightened of the general procedures of UNIDO in arranging bilateral co-operation in the form of twinning agreements between institutions. The participants were issued with required documentation for such agreements and advised to discuss among themselves the respective functions and activities of their organizations in an effort to determine where such training agreements would be beneficial. The participants were also further enlightened by the UNIDO Secretariat on the components of technical assistance available to them. Countries with pending pipeline projects were requested to take the necessary follow-up action.

F. Internal Standardization in Industry

61. The participants visited the automotive factory of Crvena Zastava Kragujevac. During this visit the above-mentioned paper was presented.

Introducing this paper was Vladimir Pletkosić, Chief for Central Bureau for Standardization in the factory. Mr. Pletkosić stated that internal standardization must not be a secondary function in the factory, but one of the leading functions of industrial development. Internal standards must reach each post of the relevant job, and their distribution should not be limited only to levels of offices and workshops. Internal standards must make attainable every new more economic solution within the factory, since the specific bank of knowledge and time saving for solutions of the same or similar problems is realized in this way.

62. The task of internal standardization were illustrated and its aims elaborated. It was explained that in its use acknowledgement of governmental standards and other governmental regulations must be considered. Conversely internal standardization aspects should be actively included in the establishment of governmental standards which are of extreme importance to the factory. Particularly important is the establishment of internal standards for areas in which there are no governmental standards.

This is usually achieved through the use of international standards, standards of other countries, associations and factories or its own knowledge in certain fields. The organization of internal standardization and its influence on basic business fields was also outlined.

63. A second paper entitled "The System of Total Assurance of Quality in the Working Organization and in the Basic Organization of Associated Labour" was presented by Stanija Stanković also of Crvena Zastava. The lecturer stated that in order to provide a high quality level of products and services are necessary to encompass all working spheres beginning with investigation of markets and going over to design technology of product; determination of control system; and methods for following up the behaviour of product in use. The organization of quality function was illustrated as a system for solving the complex quality automobile problems, and a series of suggestions for the mutual solution for problems in the organization were given in an effort to show how rights and responsibilities are distributed and how process of co-ordination and the research can be performed. Quality activities at the various levels (for example: raw materials, spare parts, product quality, etc.) was explained. Special attention was also given to personnel training and operating systems of activities. Quality inspection, evaluation and verification were discussed.

Annex I

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