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**STUDY TOUR WORKSHOP ON QUALITY CONTROL AND CERTIFICATION
MARKING FOR INDUSTRIAL PRODUCTS**

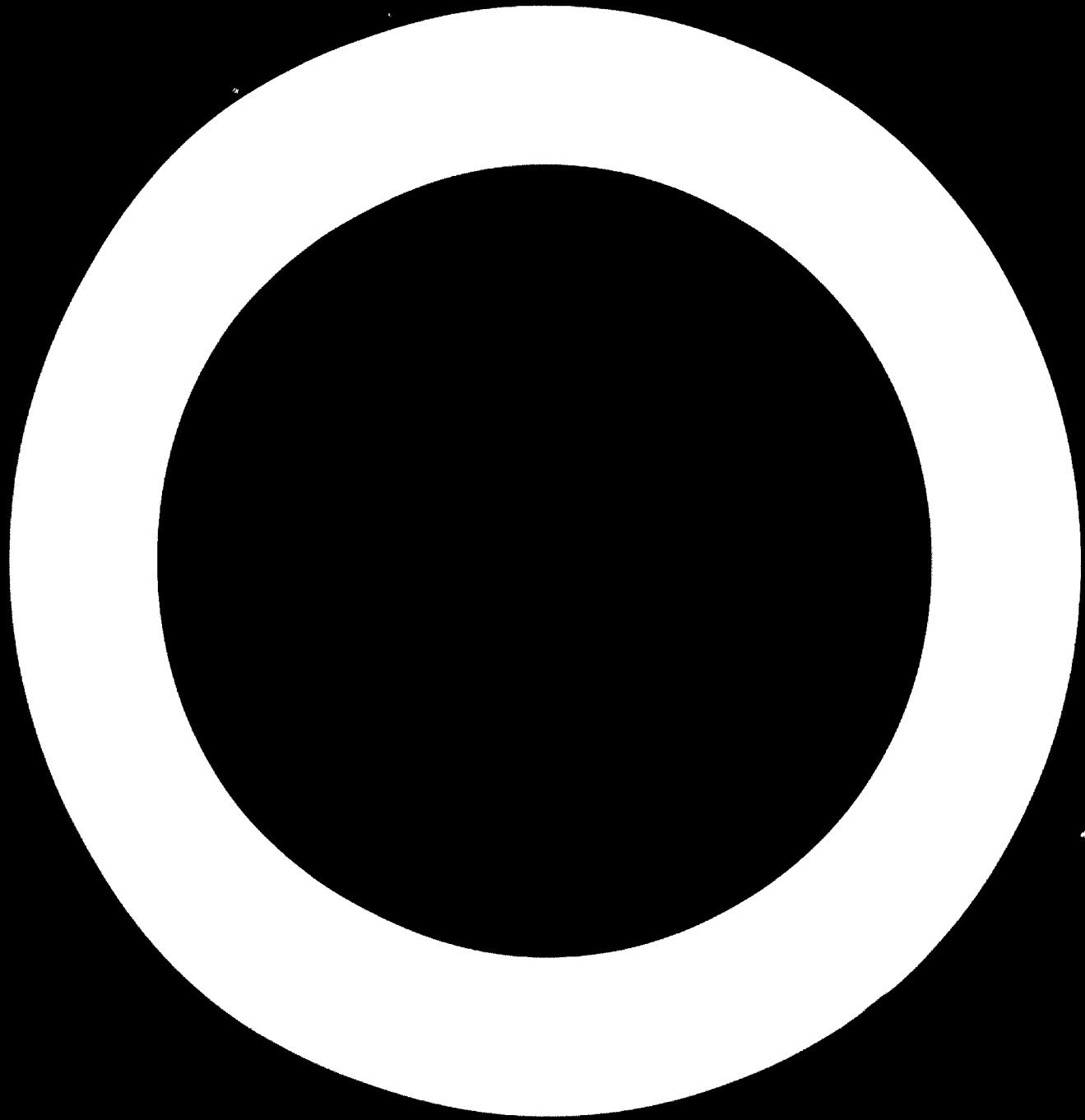
Singapore, 20-24 May 1974

FINAL REPORT^{1/}

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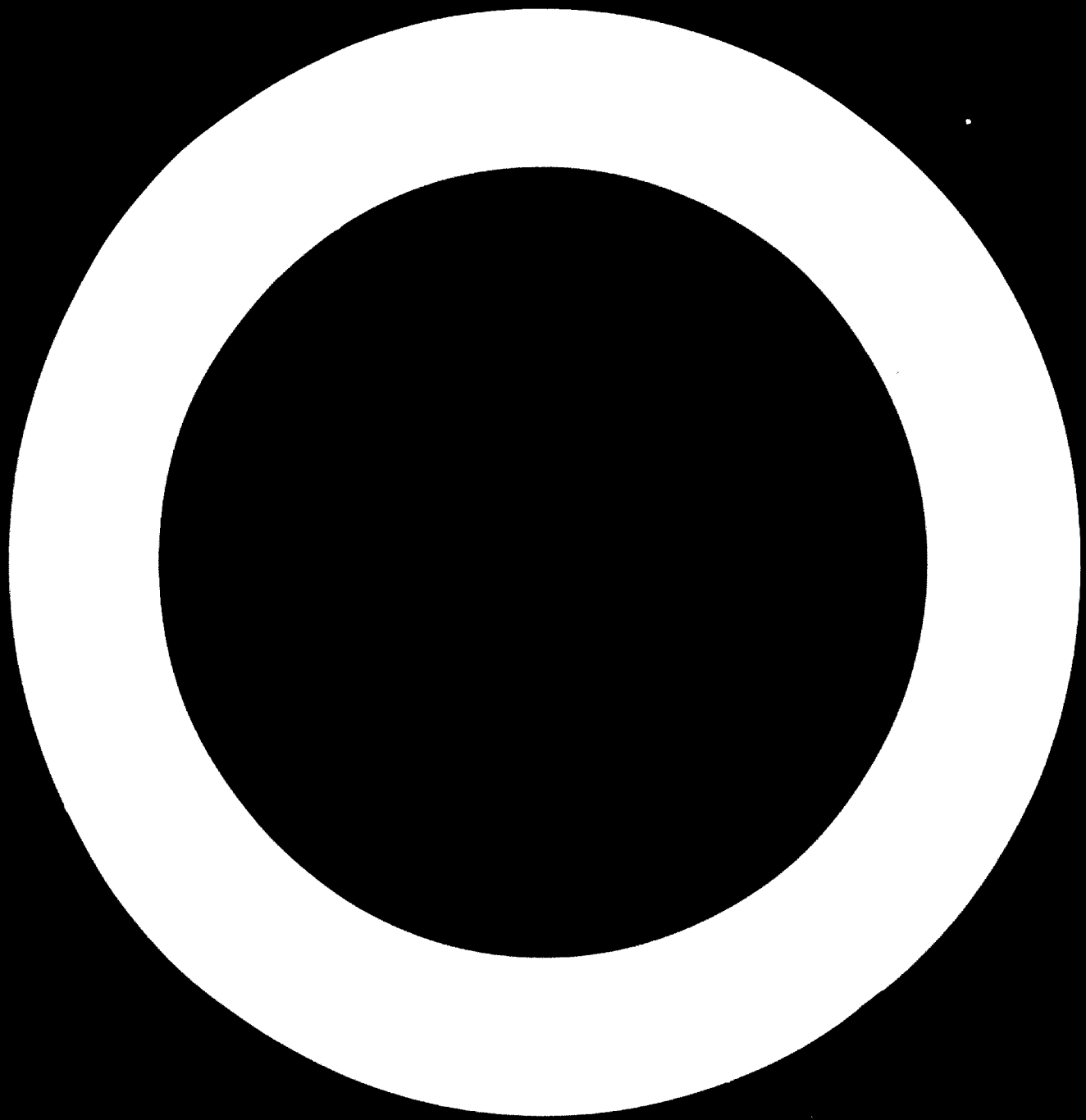
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I. INTRODUCTION

Background

Standards Institutes of developing countries in South-East Asia furnish various quality control, quality certification marking, and/or standards programmes to help their respective national industrialization goals. These institutes are at different levels of development and effectiveness, and it was recognized that an exchange of experiences in formulating and operating such programmes would be very beneficial to all concerned. Consequently, plans were developed for holding a study visit workshop at one of the institutions to serve as a case study for a practical study of the various important details of organization and operation, including successful experiences and approaches as well as unsuccessful ones. It was felt that both governmental and industrial representatives should attend, and several UNIDO experts with recent experience in the area.

The Singapore Institute of Standards and Industrial Research (SISIR) was asked to host the study visit in order to illustrate in sufficient detail their various programmes and methods of implementation, and serve as the means of focusing the paper presentations and discussions on the key role of such institutions in the national industrialization programmes. The maturity and effectiveness of SISIR's quality certification and marking programmes was recognized as well advanced and therefore could serve as an excellent practical model for analysis and study. Furthermore, SISIR was willing to share its experience in formulating and implementing the necessary technical organization and programmes for successful and viable quality certification marking schemes. Therefore, with such an outstanding and successful programme available for study, it was felt that a study workshop would be extremely useful.

Organization

In recognition of the above, UNIDO in co-operation with the Government of Singapore and the Singapore Institute of Standards and Industrial Research organized a Workshop on Quality Control and Certification Marking for Industrial Products. The Study-Tour-Workshop was held at the Regional English Language Centre, Singapore, from 20 to 25 May 1974.

The Workshop discussed the most important problems of organization and implementation of quality control and certification marking systems in the countries of the sub-region and thoroughly studied and considered the experience which the Singapore Institute of Standards and Industrial Research and the industries gained in this field of activities.

Discussions were based on papers prepared by international experts as well as by experts from Singapore.

Attendance

The Workshop was attended by:

- 24 participants from Hong Kong, Indonesia, Malaysia, Philippines, Republic of Viet-Nam, Singapore and Thailand.

- 3 international experts and 3 experts from Singapore
- 3 observers, one from Thailand and two from Singapore

The participants and observers included directors and officers from the national standards bodies, other government agencies and industries.

A list of the participants is given in Annex II.

Inauguration of the Workshop

The inaugural ceremony of the Workshop was attended, in addition to the delegates and observers, by Singapore Government officials, senior industrial executives and members of the diplomatic corps of the participating countries. The Workshop was opened with an address by Mr. A. Konstantinov, Industrial Development Officer, Industrial Institutions Section, UNIDO, in which he welcomed all participants and expressed hope that the Workshop would contribute to the development of quality control and certification activities in the countries of the region. He expressed gratitude to the Government of Singapore and to SISIR on behalf of UNIDO for hosting the Workshop. Mr. Konstantinov then sketched the history and purpose of UNIDO and emphasized the importance of standardization, quality control, metrology, certification marking and industrial research. He expressed hope that the Workshop would result in some practical conclusions and recommendations which participants could take home with them for application and which would be useful to UNIDO to identify the requirements and areas where assistance could be most rewarding.

The opening address of the Workshop was given by Mr. Ahmad Mattar, Parliamentary Secretary, Ministry of Education, Republic of Singapore.

Election of Officers

The following were elected Officers of the Workshop:

Chairman:	Lee Kum Tatt (Singapore)
Vice Chairman:	Chaiwai Sangruji (Thailand)
Rapporteurs:	Rohn Hopper (UNIDO)

II. DISCUSSIONS AND STUDY VISITS

Organization and Operation of Quality Control and Certification Marking Programmes in Developing Countries

The author referred to the now generally conceded viewpoint that technology is an effective technique for economic improvement and a better life. But how to achieve a technology which will fit the pattern of national economic conditions and differing environments ? Undoubtedly the development of quality control as a company and national policy was an essential feature of such development whatever the country, and that the 'software' portion of technology is a key factor in implementation of the policy and industrial growth.

He author discussed sound quality control programmes and various aspects of certification marking systems and emphasized the basic necessity of personal and national integrity in conducting certification marking and associated activities.

Discussions

The discussions centred around practical aspects of certification schemes and the advisability of a central certifying body or a number of autonomous departments each dealing with specific subjects. The general feeling was that, even where traditional growth had led to diversification of the certifying effort, a central controlling body was necessary. The author also stressed that an entirely independent national body as a checkpoint of these activities was desirable.

The Modern Concepts of Quality, Methodology and Techniques of Quality Control and Quality Inspection

The author laid stress on clear understanding of definitions of quality and pointed out that much confusion is caused by a misunderstanding of the basic fact that design quality is a factor which can involve extra costs and that manufactured quality should lead to lower costs. He went on to define quality control as "the statistical control of quality is the application of statistical principles and techniques in all stages of design, production, maintenance and service, directed towards the economic satisfaction of demand".

He pointed out that this applied on simple application as much as to highly sophisticated systems.

He went on to discuss the application of quality control in factories, reaching into all aspects of manufacturing - in information, goods inwards inspection, in manufacturing and in finishing and corrective action.

The paper dealt to a large extent with procedures for statistical sampling in certification processes and there were clear indications of the basic requirements in developing countries for an effective certification scheme.

Discussions

Questions formulated around certification and there was considerable discussion around the problems associated with voluntary or compulsory certification. The discussions brought to light the need to standardize on international specifications because of the dangers of certifying to standards unacceptable in the world markets.

Quality Control and Certification Marking - SISIR's Experience

The paper outlined the problems and motives which led to Singapore's rapid adoption of the principles of certification and quality control. SISIR had adopted a course which was generally different from the formation of other national standards bodies. National standards are prepared only to severely practical needs within the economic and environmental pattern; certification is flexible in that the Institute will standardize to reputable company and international standards in addition to SISIR standards. The Institute has built up considerable collaborative machinery with individual manufacturers, with the quality and reliability association, the trades union, and many other bodies, and enjoyed considerable support from the Government.

A notable feature of SISIR's activities are its promotional campaigns which are maintained from the Institute's own funds and often with the help of manufacturers.

Export inspection, industrial design, production and quality control advisory services are part of SISIR's broad base.

Discussions

Discussions centred around SISIR's different certifying requirements of "certified to" and "approved to" and there was lengthy explanation of the functions of the two licenses. It was stressed that ad hoc certification of products in order to fulfil export orders was no part of SISIR's activities and stressed that certification was to raise quality control.

Many other questions arose about the financing of training courses and SISIR's participation, under joint financing arrangements, in industrial training courses on quality control.

System of Quality Assurance in Rollei, Singapore

The author outlined the policy of his company in transferring the whole of the production of some Rollei products to Singapore and described the steps taken, including a massive training programme of over 400 employees in the Federal Republic of Germany. The policy, he stated, had been successful and many dealers throughout the world have full confidence in the "Made in Singapore" label.

He explained the methods adopted for transfer of technology from the Federal Republic of Germany to Singapore and the adoption of stringent quality control techniques on the German pattern.

Discussions

Most questions centred around the value of the certification mark to the Singapore products and the company's co-operation with SISIR.

Quality Control in Roxy Electric Industries

The author gave a background to his company's growth in the manufacture of television sets and radios and outlined the steps the company took in the quality control of incoming material, production processes, finished product control and continuous laboratory performance and durability tests.

He spent some time on describing the co-operation between SISIR and Roxy and some of the difficulties encountered in meeting the quality control requirements under the certification scheme. He stressed that all round improvements had been made as a result of this collaboration, including product design -

the reject and customer return products had diminished considerably, for example.

There had been in the factory an initial feeling that quality control instigations were a hindrance, but all employees had now recognized the inherent benefits.

Discussions

Again, discussions centred around the marketing effect of using the mark and particular technical difficulties in applying quality control processes in the factory, especially where it concerned unskilled labour. The workshop gained a distinct impression that an effective quality control system was now completely accepted and effective in marketing strategies.

Mass Media Information and the Development of Quality Consciousness among Producers

Mr. R. Hopper introduced his paper by stressing that public relations and information services were ineffective without regard to a totally integrated programme with the technical activity of standards making and certification procedures.

The need for clearly defining the audiences to be reached by mass media were stated and also the necessity of establishing priorities in order to canalize limited staff and finances. The methods used by Television, Press and Radio and other communications media were stated in some detail from the benefit of small standards bodies and some suggestions were given for the practical use of these tools in developing countries. Some experiences in Thailand, where such methods had resulted in considerable publicity, were described.

Mr. Hopper strongly emphasized the role institutions had to play in publicly supporting companies which had obtained the mark and gave examples of how this could be done without infringing the impartiality of authoritative bodies.

Discussions

Discussions centred around the practical application of mass media techniques and there were many questions on the approach to, on the one hand, manufacturers and on the other, to consumers. There was general appreciation of the need to specify audiences and prepare material specifically for those audiences, from the bold and simple to the highly technical presentation.

Introduction to the Problems and Trade Barriers Inherent
in Unilateral Certification Marking Schemes

The author stated the generally accepted principle that trade barriers erected by restrictive national certification schemes were both undesirable and, in the long run, self destructive. He outlined the considerable activity now going on in Europe under the aegis of CEN and CENELEC and stressed the complexity and costs of such undertakings.

His salient proposal was that, regardless of differing test methods, standards and certification procedures, action at this stage on the part of the participating countries should be, by comparison, a much less complex operation. But that within a decade or so the growth of certification licenses and solidification of procedures would need considerable effort and expense to clear away barriers.

He made it clear that the first step was to examine the statutory requirements and remove any inherent restrictive procedures from these.

Discussions

Statements from the various countries represented showed that the conditions varied. Most statutory obligations under certification marking schemes were not restrictive but there was ambiguity in some which could be misinterpreted to provide protection. The consensus of opinion was that it was desirable that certification procedures should not act as commercial barriers, but some difficulties lay in trading conditions within the countries and in the need for absolute confidence in foreign marks.

Study Visit to the Singapore Institute of
Standards and Industrial Research

On May 22, 1974 the participants of the UNIDO Workshop on Quality Control and Certification Marking for Industrial Products conducted a study visit to the Singapore Institute of Standards and Industrial Research (SISIR) to observe its facilities and learn its operation in the implementation of standardization, quality control and certification marking activities.

The group was met and cordially welcomed by the SISIR staff upon arrival in its premises. At a glance the group was greeted by a complex of big buildings which houses SISIR's Administration, testing and laboratory facilities and pilot plants. Unfortunately, for lack of time the participants were not able to see the whole SISIR complex, except the industrial design section and the instrumentation section.

Mr. Yeow Chee Tiong, Deputy Director, after expressing the regrets of Dr. Lee Kum Tatt, Chairman of SISIR, for not being able to be with the participants and personally brief them, briefed the participants on SISIR's organizational set-up, objectives, functions and programmes.

After the briefing, a quick round of observation of the industrial design section and the instrumentation section was made. The group was impressed by the various devices and instruments used in conducting test and analysis of industrial products particularly, those designed by the institute.

It is worthwhile to mention, that SISIR's effectiveness in its efforts to implement its programme of activities in standardization, quality control and certification marking schemes, may be ascribed to the dynamic leadership of its incumbent Chairman, the technical capabilities of its staff, its facilities and more important, the full attention and support being extended by the Singapore Government.

SISIR, as a Standards Institution, may be considered to serve as a model to similar institutions in other developing countries.

Visit to Roxy Electric Industries Pte. Ltd.

After a brief introduction to the development of the company, the visitors were conducted around the assembly lines of radio and television sets. The participants had the opportunity to observe the quality control at work in the plant as they stopped at each of the control stations along the assembly lines as well as at the section in charge of quality control for the final product. The plant quality assurance programme has earned Roxy the Certification Mark from SISIR for their 20" and 24" television sets.

Roxy is a company employing about 500 workers of whom 37 are in charge of quality control. Besides radios and television sets, Roxy products also include electronic calculating machines. Approximately 90% of Roxy products go to markets in Europe. Apparently the company has been a success and additional floors to the existing building are being constructed.

Study Visit to Rollei, Singapore

Under the kind arrangement of SISIR, we visited Rollei Singapore, Chai Chee Plant, a leading German camera manufacturer in the Federal Republic of Germany, who successfully transferred the whole production plant for a certain range of models to Singapore three years ago.

The Managing Director, Dr. Eder outlined their painstaking effort in making this project possible and the very large expenditure - particularly in training over 400 Singaporeans in the Federal Republic of Germany.

Rollei, employing some 5,000 workers and hundreds of precision automatic machines, producing sophisticated cameras that consist of numerous delicate parts, is a large undertaking, fully co-operating with SISIR. Delegates were impressed by its systematic control of manufacturing processes which involved precision pressing, forming, turning, moulding, diecasting, plating, finishing and many other processes. Every part and assembly step is checked for accuracy before it goes to the next operation, not to mention 100% inspection of the final product.

The assembly of lenses is carried out in a confined and dust-proof room and the quality control personnel and assembly workers are in uniforms of different colour for identification between producers and inspectors. The maintenance of quality control of a high order has meant that Rollei has been able to instil confidence in Singapore production throughout the world.

A significant part of the tour was the trouble taken by Rollei to involve all workers in quality control through the medium of posters, incentive schemes and the like.

III. RECOMMENDATIONS

The Workshop made the following recommendations:

That Institutions

- should pay special attention to the development of technical facilities and capabilities essential to the implementation of standardization, certification and quality control activities;
- should accept more conscious responsibility of sharing experiences, particularly in the area of training and placement in countries of the sub-region;
- should emphasize training of personnel and greater involvement with industrial training as a logical support for standardization and quality control; it is suggested that institutions should make training material available to other countries in the sub-region;
- should show closer attention to the need for a stronger promotional and information service as an integral arm of achieving more rapid implementation of standardization, certification and quality control;
- should operate to a policy of alignment with, and adoption of, ISO and IEC standards, wherever possible; furthermore, that general international procedural agreements, particularly on certification procedures, should act as guiding principles.
- should record the necessity of collaborating with unions, consumers, quality and reliability and manufacturing groups and associates as a means of achieving wider education in the benefits of quality control and certification.

That Governments

- should acknowledge standardization, certification and quality control as essential elements in a country's economic development

- and accordingly establish high priority in its support, particularly in the allocation of UNDP Country Programme Funds; and that this support should include adequate budgetary allowance for continued growth;
- should recognize that the development of certification and quality control is closely related to services such as industrial design and research, statistical analysis, productivity advice and similar departmental activities; and, where such services do not exist, to initiate them;
- should show strong preference in government purchasing for standardized and quality certified products;
- should establish a national policy and strategy for the promotion of industrial quality control and quality consciousness as an essential part of economic growth;
- should include on the agenda of ASEAN meetings programmes concerned with the development of standards and certification among its member countries.

That International Agencies

- ISO and IEC should expeditiously consider applications for membership from any member country of the sub-region on the basis of membership requirements under their constitutions;
- recognition be given by UNDP/UNIDO of the value of workshop studies of this type and initiate similar meetings on a regular basis;
- ECAFE establish a permanent secretariat in order to devote more attention and assistance to standardization and certification activities in the sub-region;
- UNDP/UNIDO and bilateral aid agencies should show greater flexibility in the application of their aid programmes by:
 - (a) allocating more contingency funds to allow for interregional discussions, conferences, training and other unforeseen demands relating to standardization, certification and quality control;

- (b) conducting surveys, case studies and other means of exchanging information and sharing experiences of the countries of the sub-region;
 - (c) giving greater flexibility in the provision of fellowships and equipment;
 - (d) providing the means for producing such items as quality control manuals on a sub-regional basis;
 - (e) investigating the possibilities of improving the procedures involved in the recruitment of experts.
- UNDP/UNIDO support should be initiated with the following objectives:
- (a) to review certification statutory and procedural requirements towards reciprocal recognition of authoritative foreign marks;
 - (b) to effect harmonization of test methods in the region;
 - (c) to begin the process of harmonization of standards.

Annex I

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION (UNIDO)

Regional Workshop on
"Quality Control and Certification Marking for Industrial Products"

Date : 20 - 24 May 1974

Venue: Conference Room
Regional English Language Centre

A G E N D A

MONDAY 20 May 1974

- 9.00 - 9.30 - Registration, Administration and Financial Matters
- 9.45 - 10.00 - Opening of the Workshop by Mr. Ahmad Mattar,
Parliamentary Secretary (Ministry of Education)
- 10.00 - 10.30 - Reception
- 10.30 - 11.00 - Election of Officers
Adoption of the Agenda and Work Programme
Organization of the Work
- 11.00 - 13.00 - "Organization and Operation of Quality Control
and Certification Marking Programmes in
Developing Countries"
Paper by Prof. D. S. Ermer, UNIDO Expert
- Discussion
- 14.30 - 17.00 - "The Modern Concepts of Quality, Methodology
and Techniques of Quality Control and Quality
Inspection"
Paper by Mr. K. S. Stephens, UNIDO Expert
- Discussion

TUESDAY 21 May 1974

- 9.00 - 13.00 - "Quality Control and Certification Marking
- SISIR's Experience"
- "System of Quality Assurance in Rollei Singapore"
Paper by Dr. G. Werner, Rollei Singapore Pte.Ltd.
- "Quality Control in Roxy Electric Industries"
Paper by Mr. H. T. Chua, Roxy Electric Industries Pte.Ltd.

- Discussion
- 14.45 - 17.00 - Study visit to Roxy Electric Industries Pte. Ltd.

WEDNESDAY 22 May 1974

- 8.45 - 10.10 - Study visit to the Singapore Institute of Standards and Industrial Research (SISIR)
- 10.45 - 13.00 - Visit to Rollei Singapore Pte.Ltd.
(Lunch will be served after factory visit)
- 15.00 - 17.00 - "Mass Media Information and Development of
' Quality Consciousness ' among Producers and
Consumers "
Paper by Mr. R.A.Hopper, UNIDO Expert
- Discussion

THURSDAY 23 May 1974

- 9.00 - 12.00 - "Introduction to the Problems and Trade Barriers
Inherent in Unilateral Certification Marking
Schemes"
Paper by Mr.R.A.Hopper, UNIDO Expert
- Discussion
- 14.00 - 17.00 - Group Discussion

FRIDAY 24 May 1974

- 9.00 - 13.00 - Formulation and Discussion of Recommendations
- Adoption of Report and Recommendations
- Closing Session.

Annex II

LIST OF PARTICIPANTS

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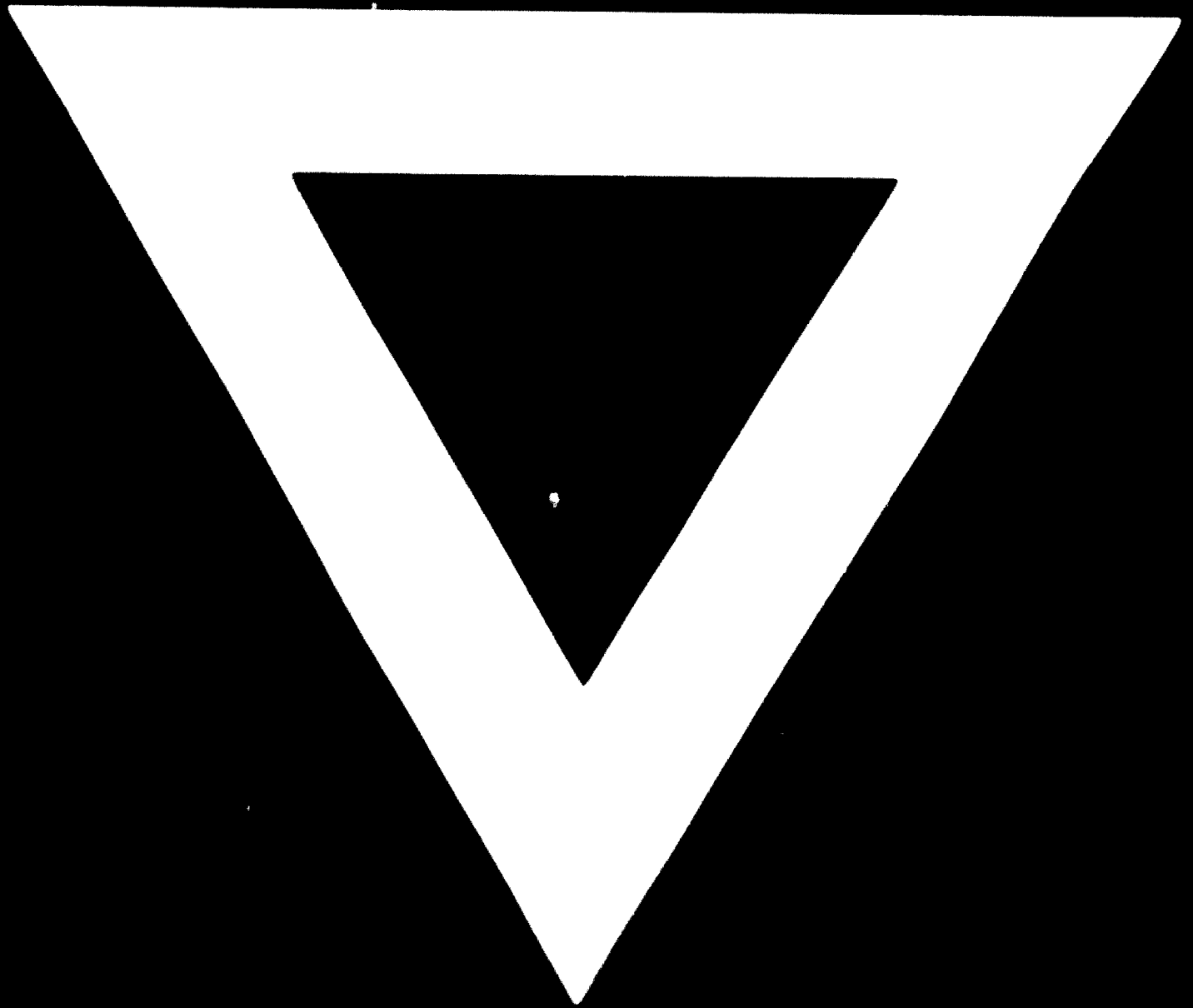
Annex III

LIST OF DOCUMENTS

<u>Discussion Papers</u>	<u>Reference No.</u>
Organization and Operation of Quality Control and Certification Marking Programmes in Developing Countries - D. S. Ermer	ID/WG.180/1
The Modern Concepts of Quality, Methodology and Techniques of Quality Control Inspection - K. S. Stephens	ID/WG.180/2
Mass Media Information and the Development of Standards and Quality Consciousness among producers and consumers - R. A. Kopper	ID/WG.180/3
Statement of the Problems and Trade Barriers Inherent in Unilateral Certification Marking Schemes - R. A. Hopper	ID/WG.180/4
<u>Information Papers</u>	
Provisional Agenda	ID/WG.180/5
Provisional Annotated Agenda	ID/WG.180/6
Provisional Work Programme	ID/WG.180/7
Note for Participants	ID/WG.180/8



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