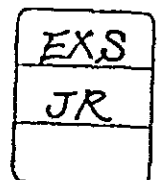
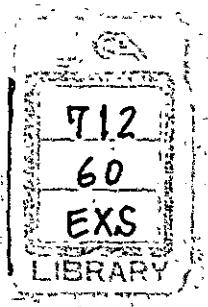


# Report on Quality Control and Industrial Standardization in Venezuela

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September 1980

Japan International Cooperation Agency  
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## CONTENTS

1. <u>On-Site Guidance</u> .....	1
1.1 <u>Guidance at factories</u> .....	1
1.2 <u>Seminar</u> .....	10
2. <u>Evaluation and Advice as to COVENIN</u> .....	10
3. <u>On Our Cooperation in the Future - Proposals for JICA/ COVENIN</u> .....	15
3.1 <u>Dispatch of experts</u> .....	15
Appendix: Organize QC Research Group .....	19

## PREFACE

We stayed in Venezuela from the 10th to 23rd August in 1980 and were engaged in the cooperation with COVENIN in the field of Quality Control and Industrial Standardization with the sponcership of Japanese International Cooperation Agency (JICA), and the cooperation of the Department of Standard, Ministry of International Trade & Industry (MITI), and the Embassy of Japan in Venezuela.

Our purposes of this cooperation were:

- 1) Grasp the situation of Quality Control and Industrial Standardization in Venezuela.
- 2) Introduce the basic concepts and techniques of Quality Control and Industrial Standardization with which Japan has developed product quality these 30 years.
- 3) Study the feasibility of further cooperation program between the two countries in the field of Quality Control and Industrial Standardization and then propose the recommendation to both JICA and COVENIN.

For the above purposes, during the stay, we conducted plant consultation, forum, seminar, course and discussion. In spite of the short period for the purposes, we believe that we have successfully achieved our roles owing to the very good arrangement and wonderful cooperation of COVENIN staff and the strong support of the Japanese Embassy in Venezuela. We express our sincere acknowledgements for those who cooperated and supported us to achieve our roles.

This is the report of our activities in Venezuela. We would be very much pleased if it would be useful for the both countries, Japan and Venezuela, to start the further cooperation and then Venezuelan industries will be successful to get good reputation for their product quality from the world market

in near future.

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September 1980

## 1. On-Site Guidance

### 1.1 Guidance at factories

Valencia visited by us is located 160 km to the west of Caracas. It lies on the western corner of Lake Valencia and is in an industrial area about 500 meters above sea level. The State to which Valencia belongs has a population of 1,200,000, while 800,000 out of it concentrate in the city of Valencia, where there is the Valencia Industrial Club that has 168 member companies.

#### 1.1.1 CABEL Company

##### 1) Outline

The company was established 22 years ago and is technically tied up with GK Company in Torino of Italy. It is a comprehensive manufacturer of electric wires such as communications cables, aluminum wires, high-tension cables, etc., and is exporting its products to oil drilling companies along the shore of the Gulf of Mexico. Telephone companies are also good customers for the company and high value added products are included in its repertoire of manufacture. The company's annual production is 20,000 metric tons and it has another factory near Lake Maracaibo. The company is the largest manufacturer of electric wires in Venezuela with 600 employees and a motto "A Grand Family of CABEL". The annual labor turnover rate in this company is 8.7 %.

##### The average wage of the employees:

75 Bb per day (approximately ₡4,000 per day)  
75 Bb per day x 30 days = 2,250 Bb per month  
(approximately ₡120,000 per month)

- Notes: (i) Note that the salary is not a sum of (daily wage x the number of work-days), but (daily wage x 30 days).  
(ii) Some Christmas bonuses are given to those without lost time.  
(iii) Increase in pay is related with the profit ratio of the company.  
(iv) It is said that the labour turnover rate has decreased for the year because of economic stagnation.

## 2) Organization

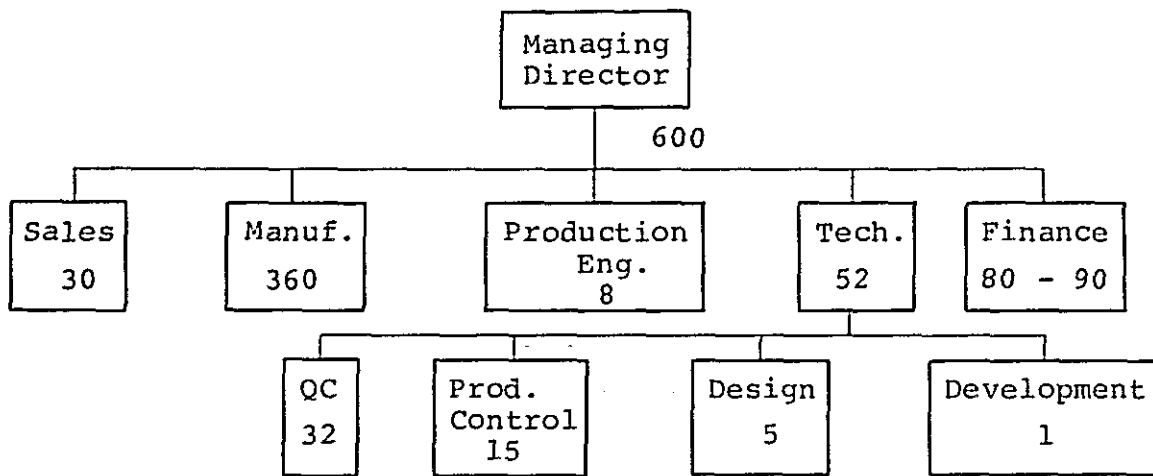


Fig. 1.1 Organization Chart of Valencia Factory of CABEL Company.

Note: Numerals indicate the number of employees.

## 3) On-the-spot observations

- (i) It seems that inspection for acceptance has been carrying out properly. As far as the lots examined by us are concerned, green cards were attached to those lots which passed



inspection and red ones to rejected lots.

(ii) Quite uncommon to factories in developing countries, the job site was kept clean.

(iii) The machine availability is low because of the bad maintenance of equipment. In a certain process for stranding wires, 26 units among 66 units were in operation; that is, as far as judged from this data the working ratio was 40%.

(iv) Their attitudes toward duty service were not lazy nor diligent.

4) Guidance for the improvement of quality

Explanation was made in reference to the process for stranding copper wires, showing the case, as an example, with the reduction in the variation of the resistance value.

(i) A graphic chart as shown in Fig. 1.2 was found being kept in the QC Div., which we appreciated very much. To our question concerning how the data which showed the value exceeded the limit of the standard were analyzed, and what kinds of countermeasures had been taken for the fact, the answer was that such data were only reported to Manufacturing Div.

(ii) After the data were received by Manufacturing Div., they were dealt with in such a way that supervisors/foremen, while using them, adjusted the process as they thought fit on the basis of their experience and the sixth sense, it seemed.

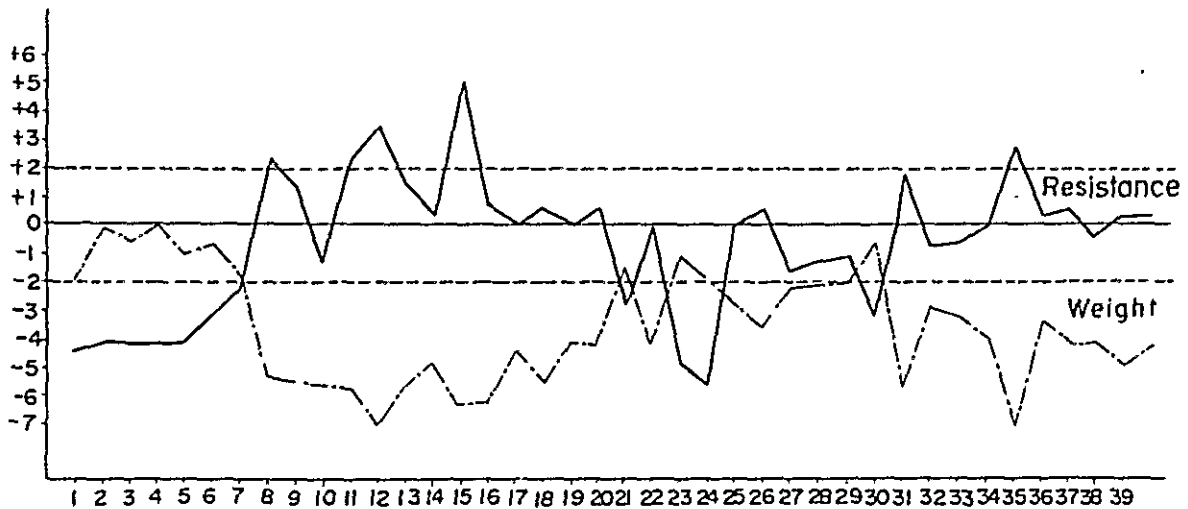


Fig. 1. 2

(iii) To our question as to what could be seen from the graph in Fig. 1.2, they could point out the correlation between resistance and weight. We showed them that, in addition to their answer, we could see that the variation of resistance was not due to an accidental change for a short period of time, but a systematic change for a long period of time was possible.

(iv) Next, to our question as to how such information should be utilized after the systematic change for a long time became known, they appeared to be quite at a loss what to do. Then, we instructed them to relate the information with search for the main factor. In other words, the main factor of such a change was one changing not daily but over a long period of time. Therefore, we pointed out to them that the break down of equipment or errors on the part of workers could hardly be considered as the main factor.

- (v) Then we recommended them for making a Cause & Effect Diagram (CED), explaining how to make it. They need to understand the idea of "the factors of the factor".
  - (vi) Necessity on which special emphasis was put included that of verifying the main factors selected from CED based on the data, and that of linking the data in the QC Div. with those in Manufacturing Div.
- 5) Comments in general
- (i) Low availability of production equipment. Necessity for the improvement of the quality of maintenance. For this purpose, data on the low availability should be collected and analyzed.
  - (ii) The factory is unexpectedly clean. Workers should be led to understand the relation between a clean factory site and product quality, and be explained why the factory needs to be clean.
  - (iii) Relation between the QC Div. and Manufacturing Div. is not unfriendly but cooperative. However, data obtained by both the divisions are not linked each other, which means that inter-office data linkage is required.
  - (iv) Necessity of acquiring problem solving techniques by QC approach.

1.1.2 Ford Motor De Venezuela Company

1) Outline

Production of passenger cars (the company imports 45 % of parts in terms of an amount of money for knock down cars). Daily production capacity is 300 cars. However, the daily production has been reduced to 245 cars due to quality troubles as well as the governmental restrictions on large-sized cars.

Number of employees:

Blue collared : 3,000 (hourly wages)  
 White collared: 1,000 (salary) (including 130 engineers)

There are now 6 Americans. Although more than 6 of them stationed at the factory, the number is decreasing because of the localization policy of Ford Motor Company. The number of home-manufactured part suppliers is 100 companies, covering 35 % of the market.

2) Organization

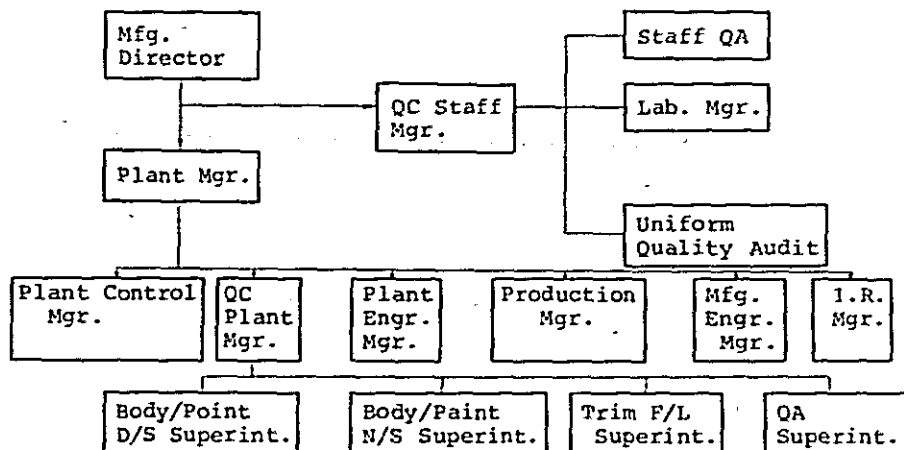


Fig. 1.3 Organization Chart of Ford Company

- (i) Role of the staff QA : To visit part manufacturers to check the parts.
- (ii) Lab. Mgr. : To test raw materials
- (iii) Uniform Quality Audit: To take a few samples from the production line every day and examine them thoroughly so as to seek the uniformity of quality.
- (iv) The number of on-the-job checkup men is 200.  
(7 % of the total workers)

3) On-the-spot observation

- (i) A number of troubles over quality occurred in succession until last year, and the factory manager was consequently replaced with the present one.
- (ii) We were told that, although two foremen had been in authority over 15 workers one time, a team of three foremen was in charge of 7 workers one time, a team of three foremen was in charge of 7 workers then in order to make OJT complete.
- (iii) Since the layout of the production site is fairly complicated, there is much room for improvement, for instance, in the field of parts supply.
- (iv) Newcomers are left in the care of two trainers so that they can receive OJT. There is no collective training system provided for them.
- (v) The separation rate was high until last year, but low for this year.

- (vi) There is a conspicuous difference in garb between the blue collared and white collared.
- (vii) Although the company sets itself to find out and repair trouble, trouble recurrence preventive activities in that company are not so positive.

#### 4) Guidance

Guidance was given for the reduction of in-process troubles

- (i) A look at the transition of monthly data concerning the occurrence of troubles revealed no step taken to improve such an existing situation for the last six months, so we asked them for more detailed data.
- (ii) To our questions on receiving totalized data by trouble phenomena on a monthly level, a variety of explanations were given to us. However, the explanations were after all not any more than morale-oriented trouble reduction activities.
- (iii) As a result, we made a two dimensional table covering two elements; namely, one for the processes they were responsible for and another for the symptoms of troubles, since it seemed useless to collect data classified only by symptoms. After all, what was emphasized was that reduction in trouble required a combination of the scientific methodology based on data, for instance, including the addition of suggestions about working standards, and the mental methodology for the elevation of morale.

- (iv) Although work standards were shown to us, the standards appeared not soiled, consequently not utilized in the workshop, except they had been only prepared by the Technical Div. Therefore, we made it very emphatic to the company that there was no stability of quality to be established unless the work standards were put to practical use.
- (v) We also pointed out to the company that such activities as QC circle ones were required for reducing troubles in each process of manufacturing.
- (vi) It seemed that the factory manager and other staff members took interest in our process trouble solving method connected with QC circle activities on the basis of the two-dimensional table consisting of trouble symptoms and processes they were responsible for.

5) Comments in general

- (i) The attitudes of the factory manager and other staff members toward the industrial relation were really splendid. A combination of their attitudes with scientific methods is necessary.
- (ii) However, it is not desirable if the white collared works in the garb of the white collared. We recommended to the company that those white collared should wear the same working clothes as those which workers did.
- (iii) We also put emphasis on the absence of preventive activities from trouble recurrence.

## 1.2 Seminar

- (i) Lecture meeting in Valencia in the evening
- (ii) Seminar for top management in Caracas (one day)
- (iii) Course for managers and staff members in Caracas (3 days)

Texts used are as follows:

Texts :                   Material 3.1   The Philosophy of QC  
                          Material 3.2   The Fundamental Technique  
  for Problem Solving  
                          Material 3.3   Industrial Standardization  
  in Japan.

Slides:           (1) The Seven Tools for Problem Solving  
                  (2) Basic Concepts for Quality Management  
                  (3) JIS - Pride in Reliability and Technology

All of the meeting mentioned above were reported in many newspapers. The number of participants was way above our expectation. Questions were addressed positively in general.

## 2. Evaluation and Advice as to COVENIN

### (1) Good points:

- (i) Their attitudes are very positive and full of vital energies. In addition, with respect to the operating method, opinions are frankly being exchanged between ranks without distinction of official standing.
- (ii) The filing system is full and sound.



- (iii) Displays have been well combined with the Job Instructions.
- (iv) Checklist of the authorized factory of COVENIN STD 1000.
- (v) Relation between tax and assessment (though we didn't have enough time to ask questions about it).
- (vi) Opening of very active technical committees.
- (vii) Unlike Japan where incoherent laws and regulations such as JIS, JAS, Product Safety Act, Regulations for the Control of Electrical Articles are in force, they are administratively integrated in COVENIN.
- (viii) It is highly rated that educational training courses sponsored by FONDONORMA are faithfully being carried out. However, the operation of PDCA will be essential so that the separation of the courses from problem-solving on the shop may not occur.

(2) Questions

- (i) The ratio of products passing the NORVEN mark is as low as 20 %.
- (ii) Relation between the NORVEN mark and compulsory standard products.
- (iii) The follow-ups for compulsory standard products are made twice a year. On the other hand, 6 times for those with the NORVEN mark.

- (iv) Relation between Dept. of Evaluation and Dept. of Certification in COVENIN.
- (v) Existence of the CERTIVEN mark.

(3) Proposals

- (i) A commendation system for any companies which have promoted quality control further and obtained successful results.
- (ii) Exercise leadership by organizing QCRG (QC Research Group) (See Appendix).
- (iii) Increase the number of consultants within FONDONORMA.
- (iv) Educate the consumers of products with the NORVEN mark.
- (v) None of textbooks from those who have participated in overseas training courses are found in the library. Make it their duty to submit such textbooks to the library.
- (vi) As the result of visiting two companies and through the discussions we had at seminars, the following problems are raised:
  - a) They have not proper techniques for solving quality problems, even though they wish to do something of their own volition.
  - b) Insufficient educational training for field workers.
  - c) Insufficient cooperation between the Production Dept. and QC Dept.
  - d) Data are not fully utilized.

e) Insufficient utilization of work standards.

In connection with the above-mentioned problems, examine how to solve them within the courses carried out by FONDONORMA.

(vii) Setting up of the regional offices.

(viii) Try to utilize the quality data in the factory which have been filed in COVENIN.

(ix) Study quality labelling systems.

a) Among 54 standards specified as compulsory ones of COVENIN, the following two standards have been assigned a duty for displaying quality; in other words, although enterprises have been entrusted how to select the composition and use of products, they are bound to display their contents on a label attached to products COVENIN No. 627-74 "Simbolos para el cuidado de Prendas de Vestir" (Mark for clothing) COVENIN No. 628-74 "Guide para el Etiquetado de Prendas de Vestir" (Guideline for display label for clothing).

b) As systems in general for assigning a duty to each manufacturer to attach a label regarding quality to the products, there are two of them that can be considered; namely, the quality labelling system according to which the manufacturer is bound to attach to its products "A display of quality contents of a good", and the other compulsory standard system (which is linked with the certification mark system) according to which the manufacturer ought to attach "A display that quality of a good meets the national standard".

The former imposes duty upon the manufacturer

to display data as to its product quality, for instance, "This Shirt Consists of 35% Cotton and 65% Polyester", etc. This system aims at integrating displaying items of versatile merchandise which cannot be classified uniformly by national standards so as to prevent consumers' mis-understanding by making manufacturers indicate proper displays and, at the same time, to help consumers use it rightfully at the point of purchase. In Japan, the Household Goods Quality Labelling Law is in force, and the law controls 89 items of textile goods, processed plastic products, electrical equipment and appliances, and sundry goods. In other words, data for identifying the quality are offered to consumers under this law, and the judgement on whether a certain product is good or bad is entrusted to the consumer. This system is not fitted for the merchandise which has versatile functions.

On the other hand, the latter provides quality specifications with national standards, while imposing on manufacturers the duty of conforming to the law and of displaying that they are observing it.

- c) If considering the compulsory standard system of COVENIN from the viewpoint of what has been mentioned in (b) in general, it is mixed with those which should be dealt with in the quality display system. In addition, the display system like this is considered to be appropriate if it is applied to not only textile goods but also household goods in general. Therefore, we recommend them to fully study the quality labelling system and investigate its introduction.

3. On Our Cooperation in the Future - Proposals for JICA/COVENIN

- (i) Existence of strong need for quality control in Venezuelan industries.
- (ii) However, premature quality control techniques.
- (iii) Structure of COVENIN for accepting the techniques.  
In consideration of three points mentioned above, we are convinced that, as our conclusion, Japanese Government should continue its cooperation with Venezuelan Government in the field of quality control and industrial standardization.

With respect to the contents of cooperation, we consider it suitable to promote the following three methods.

3.1 Dispatch of experts

Long-term (one year) : One person  
Short-term (2-3 weeks) : Small number of persons

(Role of the long-term expert)

The first step to be taken is to make quality control successful at a factory in Venezuela, in any field of industry, regardless of its production scale, with an approach to QC on the theme of "Reduction in Fraction Defective", etc. in order to build up a case of success.

The main duty of the long-term expert is to fix several factories and visit them about once in every month with engineers of COVENIN or FONDONORMA, and

- a) to check how much the assignment given in the previous month has been completed;
- b) to offer suggestions concerning how to promote it, and give the next assignment every time on the basis

of mutual agreement between the expert and the factory concerned.

- c) to give instructions required for improving activities, for instance, on QC methods and how to think of them.

The enumerated above shows the contents of consultation. Through these consultations, the techniques of consultation is transferred to the engineers of COVENIN and FONDONORMA. Speaking from our experiences of the plant consultation in this mission, the people who accompanied our group seemed not to fully understand this point because they did not make any notes in the consultation we were holding. In connection with this fact, it is advised that the role of those engineers who are to accompany us should be made plain to them beforehand. If necessary, they are to be tested in order to know how far they have understood the results of the consultation obtained afterward.

The secondary role of the long-term expert consists of the guidance for aiding the effective implementation of the national standard system, the certification system, etc. First of all, the duty of the expert is to study how to analyze the data collected from various factories to COVENIN and put them to practical use together with staff members of COVENIN in order to make the systems mentioned above function effectively.

The third role of the long-term expert is to promote seminars, training courses, symposiums, etc. under the sponsorship of COVENIN/FONDONORMA, using successful cases explained in the paragraph above in which the first role of the expert has been defined.

With respect to this matter, it is to be executed in the latter half of his term considering its contents.

In addition to the main role which consists of the three points enumerated above, it will be necessary for him to

put forward the consulting work in cooperation with COVENIN as occasions demand.

(Role of a team of short-term experts)

(1) Object

- (i) The short-term experts will add intermediate evaluation to the work set forward by the long-term expert and COVENIN, and carry out coordinations on the way according to which the cooperation should be.
- (ii) Apart from the guidance for case studies for solving problems that the long-term expert is to give, the short-term experts undertake the task of giving guidance and advice in the fields of managing promoting organizations, operating methods, and QC linked with them on the basis of suggestions from the long-term expert.
- (iii) The short-term experts will give guidance and advice concerning various problems for the execution of industrial standards.
- (iv) Depending on the judgement of the long-term expert who considers it necessary that guidance connected with a particular technique should be given in a certain field, the short-term experts will give guidance and advice for the QC in that particular field.

(2) Formation of a team of short-term experts

Team leader: Well experienced expert in the field of quality control.

- . Expert(s) in industrial standards:

The expert(s) will give guidance and advice for the NORVEN mark, compulsory standards, and the authorization of laboratories.

- . Experts in quality control in a particular field:

In the event that the long-term expert considers it necessary to give guidance for quality control by connecting it with a special technique in a particular field, a few experts in this category will join the team as its members.



Appendix: Organize QC Research Group

COVENIN IS Strongly Recommended to Organize QC Research Group (QCRG)

1) Organization

- a) The group consists of COVENIN staff, University professors, company QC managers and engineers and so on.
- b) The chairman of QCRG is favorably selected among University professors with good sense of Quality Control.

However, statistical or mathematical professors had better avoid to be selected as chief.

- c) When QCRG is started, the number of its members is suggested not to be large in order to prevent QCRG from falling in formalism.

Several companies are enough before QCRG succeeds in solving the problems in factories. As the effect appears, the size of QCRG is desired to be gradually expanded.

- d) In future, it will be possible for QCRG to be developed into Venezuelan Society for Quality (VSO).

2) Activities

- a) At the introductory stage it hold a one day research meeting every month at COVENIN or at a factory of the members in turn. The participants discuss on how to solve their workshop problems based on the real data.

- b) In future, several sub-committees will be organized inside of QCRG. These sub-committees will be useful for the members to develop their practical capability on Quality Control. There may be two ways for establishing sub-committees. One is based on the functions of Quality Control such as:

The Sub-Committee on Quality Assurance, on In-Process Control, on Sampling & Measurement, on Utilization of Simple QC Techniques, on Sampling Inspection, on Design of Experimental and so on.

The other one is based on the kinds of industries such as:

The Sub-Committee for Automotive Industry, for Petroleum Refinery, for Electric Household Appliances, for Mechanical Industries, for Food Industries and so on.

- c) The publication of various QC textbooks in Spanish is also one of the QCRG's important activities. They can be used in training courses held in FONDONORMA.
- d) QCRG is expected to cooperate with DONDONORMA for planning and conducting several courses for industrial engineers, managers, foreman and so on.

3) The reasons why QCRG is recommended

- a) It should be noticed that Japanese success in Quality Revolution has been to remarkable extent due to the activities of the QCRG which was organized inside of JUSE in 1949 and was participated in by volunteers, such as University professors, governmental engineers and company engineers. The volunteers had strong willingness for the improvement of product quality in

Japanese industries. Quality is not achieved only by University professors, nor only by governmental engineers, nor only by company engineers. The close cooperation and mutual development among the willing persons from the above three fields is inevitably required to achieve this purpose.

- b) The merit of COVENIN staff is that they have more opportunities to participate in the seminars in foreign countries as well as to visit various kinds of factories in Venezuela and then to deepen and widen their knowleges on QC. But their weak point is that they have little practical experiences on how to build quality in process although they have the concept that quality should be built in process.

On the other hand, the situation of managers and engineers in industries is supplementary to COVENIN staff. This is, they have enough experiences to produce commodities but they have less opportunities to get up-to-dated ideas for systematizing their quality control procedures.

In order to fill their gap, the cooperation of the both sides are undoubtedly important.

This way gives more impetus for COVENIN experts to study QC more practically and more industriously. That is, in the cooperation, they are beginning to notice more strongly what insufficient capability they have, how much more they should study and so on.

JICA