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IN-PLANT GROUP TRAINING PROGRAMME IN THE FIELD OF QUALITY IMPROVEMENT OF INDUSTRIAL PRODUCTS

26 January - 1 March 1989

US/INT/88/209

JAPAN

Evaluation report*

Prepared by

Evaluation Staff
Office of the Director-General

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Vienna

* This document has not been edited.

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Acknowledgement

The evaluator is grateful to Mrs. Hiroko Yamada and Mr. Osamu Harada of AOTS, as well as the programme co-ordinator, Prof. Noriaki Kano, for their co-operation and support in carrying out his assignment.

List of abbreviations

AOTS	Association for Overseas Technical Scholarship
CWQC	Company-wide quality control
DSA	Daily subsistence allowance
HTO	Host training organization
IDF (UNIDF)	Industrial Development Fund of UNIDO
INT	Abbreviation for an interregional project
JUSE	Union of Japanese Scientists and Engineers
PER/GT	Project evaluation report (for group training projects)
PRC	Project Review Committee (UNIDO)
QA	Quality assurance
QC	Quality control
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization

SUMMARY

The training programme has successfully produced its planned results/outputs in terms of scope, depth and quality of knowledge and skills acquired by the participants.

The content, level and duration of training is well adapted to the needs of trainees. The group of 13 participants (10 sponsored by UNIDO, 3 by AOTS) - all of them directly from industry - was uniform in professional background and interests. The thorough selection process by UNIDO and AOTS contributed significantly to the success of training.

The participants' reaction to the programme and its benefits was very favourable. Their expectations were fully met and they felt confident about the applicability of new skills in their companies. The programme was considered complete and balanced, with the right mix of theoretical and practical work. The quality of instruction and guidance was assessed as excellent. In-plant exercises were particularly effective.

The programme was professionally and enthusiastically implemented. AOTS is a specialized and competent host training organization.

The report gives suggestions for follow-up to this year's programme in the form of a structured post-training questionnaire. A number of proposals for fine-tuning future programmes is given. Increased financing for future programmes is suggested as the optimal number of participants under present arrangements is around 20.

1. INTRODUCTION

1.1 Background

The project US/INT/88/209 - "In-plant group training programme in the field of quality improvement of industrial products, Japan" - is a training programme organized by UNIDO in co-operation with the Government of Japan for nationals from developing countries. The programme has a long tradition since it was first held in 1977 originating from the "In-plant group training programme on the development of export-oriented industries" (which started in 1975). From 1977 to 1981, it was organized every year, while from 1983 it has taken place every other year. This was actually the eighth course of the programme held in Japan, as in 1987 a follow-up and evaluation seminar for former participants was organized in Malaysia (again with a special purpose contribution of the Government of Japan). The number of participants in seven previous projects and two forerunner courses in export-oriented industries has reached a total of 101 (from 38 developing countries).

The problem addressed by the training programme is the lack of appropriate local skills and capabilities in most developing countries in quality control of industrial products, which leads to poor quality of products, waste and inability to compete in the export market. The programme is designed to upgrade the participants' knowledge and skills through intensive theoretical and practical training in quality improvement of industrial products manufactured for international and domestic markets.

The project US/INT/88/209 was financed by a special purpose contribution of the Government of Japan to the Industrial Development Fund (IDF) of UNIDO in the amount of US$191,150 (or US$216,000 including overheads). The training took place in Japan from 26 January to 1 March 1989.

1.2 Purpose of evaluation

Faced with a large number of proposals for group training projects of a repetitive type, the Project Review Committee of UNIDO requested the Evaluation Staff at the end of 1986 to focus more attention on a selected number of group training programmes and to suggest improved methods of evaluation and feed-back of lessons learned in order to increase the effectiveness of such projects. Since then, the PRC has selected a number of projects per year for a more thorough and independent evaluation by the Evaluation Staff.

Project US/INT/88/209 was selected for 1989, considering the importance of the topic as well as specific issues raised during the appraisal and approval process ("objectives of the project to be more clearly defined", "not enough specific indication as to the new dimension of the programme resulting from previous evaluation exercises" and "better definition in the project document of specific aspects of quality control envisaged").

In accordance with the above, an end-of-programme evaluation was performed by N. Catipovic of the Evaluation Staff. In the period 22 February - 2 March 1989, the evaluator undertook the following activities: (a) observation of in-plant training at Aiphone Co. in Nagoya/Toyoda; (b) observation of and discussion in participants' final case study presentations in Tokyo; (c) detailed interviews with participants (trainees) in Kyoto and Tokyo; (d) an evaluation discussion session where answers to an end-of-

programme questionnaire were analyzed; and (e) discussion with AOTS (host training organization) and course co-ordinator and instructors on plans for follow-up and possible improvements for future programmes. The detailed evaluation schedule is shown in Annex I. The observations, findings and recommendations are given in the text which follows.

2. PROJECT FORMULATION

The project document approved on 6 October 1988 has the following major design elements:

Immediate (project) objective

"To upgrade the participants' knowledge on the theories and practices of statistical quality control techniques which are necessary to enhance technical level of production and improve market acceptance, through a general understanding on the philosophy and methodology of the company-wide quality control system which has been developed by Japanese industry."

Project output

"Ten participants who possess managerial responsibility in an industry and are currently concerned with the problems of quality improvement will have upgraded their skills and knowledge on:

(a) Basic concepts and quality control techniques to enhance technical level of production and improve market acceptance;
(b) Quality problem solving procedures in plants;
(c) Human aspect of quality control, education and training, promotion of company-wide quality improvement activity.

Participants will be requested to prepare pre-training report and related data and reference materials related to quality problems in their workshop. These will be presented to the programme management to assist individual problem solving and produce the basis for individual case study preparations. Based on the report and collected data, participants will prepare a technical report, under close guidance of lecturers and instructors, indicating problem solving procedures of quality improvement in their plants."

The subjects of the training programme which form a further specification of project outputs were given as an annex in the project document and are attached here as Annex II.

While the planned outputs are specific enough, the immediate (project) objective could have been defined more clearly. The project document is very well complemented by a carefully prepared aide-mémoire which gives a more comprehensive definition of end-of-training indicators and elaborates on the applicability of the training results. There, the programme is designed for:

"(i) Providing the participants with a better understanding of the basic concepts of quality management in which quality is built in production processes and not only by inspection;
(ii) Upgrading the participant's knowledge on the theories and practices of the basic quality control techniques which are necessary to enhance technical level of production and improve market acceptance;
(iii) Providing them with the team guidance and consultation on the quality problems which each participant is encountering in one's own workshop, thereby enabling the participants to bring back a directly applicable training result which leads to the actual quality improvement of his/her products;

(iv) Introducing them to human aspects of quality activities, such as QC circle activity, education and training, etc.;

(v) Giving them a general understanding on the philosophy and methodology of the company-wide quality management systems which have been implemented for the purpose of improving overall performance of a company through product quality development and productivity enhancement in Japanese industries under the name of Total Quality Control."

Item (iii) actually gives a good further specification of the project objective.

The project document is rather superficial in its "Background and Justification" section with respect to describing the situation in developing countries and elaborating the need for and benefits of product quality control. This is somewhat compensated for in the aide-mémoire in the introductory text for "Conceptual Framework".

Both the project document and aide-mémoire are very specific in defining the required profile of participants:

> "Participants will be expected to have a university background, preferably oriented to engineering. They should be quality managers, production managers or managers of an industry with currently more than five years of supervisory experience in production concerned with the problems of quality improvement. Participants should be preferably between 30 and 45 years old."

As will be seen in later text, this clear definition of the target group facilitated the proper selection of participants.

The project document is clear in specifying what activities are necessary by UNIDO and AOTS and how the training will be conducted. The aide-mémoire goes somewhat further and elaborates on the conceptual framework of the programme - see Figure 1. It also gives detailed guidelines for the preparation of the nomination form and a pre-training report by each participant.

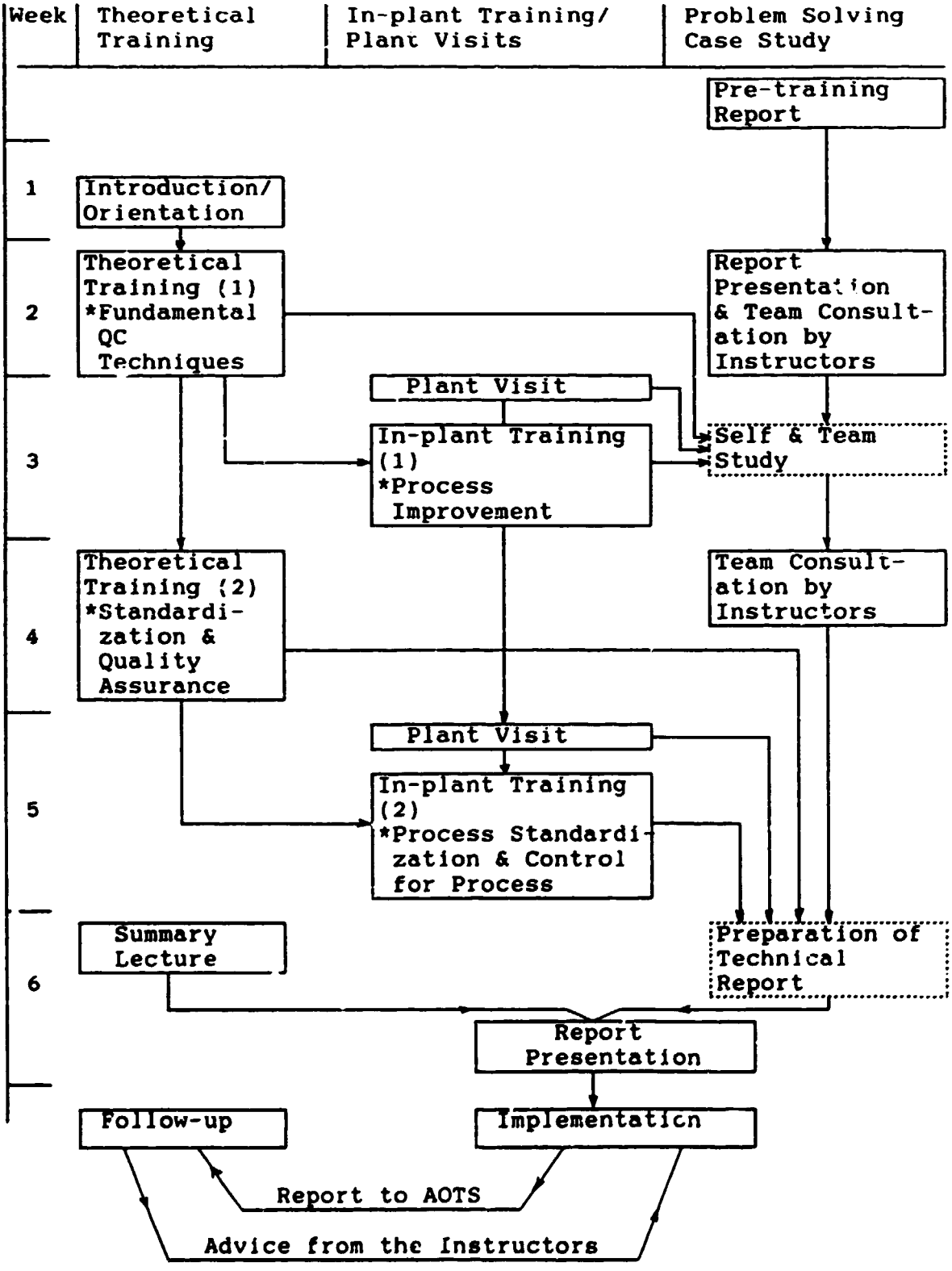
All in all, the project document - when considered together with the aide-mémoire - is satisfactory. However, for future programmes, the following fine-tuning in the project design is suggested:

- A more specific definition of the project objective, using a combination of several statements currently found in the project document and the aide-mémoire, should be given. For example:

  > "Quality improvement of products in industrial enterprises (in developing countries) whose staff - directly responsible for quality improvement - is involved in the training programme. This is to be achieved by the application of skills and knowledge acquired during the theoretical and in-plant

Figure 1

Conceptual framework of the programme



training, which includes practically oriented case studies and consultations dealing with process and product quality problems encountered in participants' enterprises."*

- The "Output" section in the project document should include the more detailed end-of-training indicators now listed in the aide-mémoire.

- The "Background and Justification" section in the project document should be elaborated to better explain the training needs in developing countries, potential benefits of product quality control, selection of countries to be invited, etc.

- A more detailed programme content of the type received by the participants at the beginning of the training (see Annex V, part A) should be included in the project document. If it is not possible to have a detailed schedule six to eight months in advance, the content of this year's programme could be given as an example. This would respond to the remarks of the UNIDO Project Review Committee that "specific aspects of quality control envisaged should be better defined" and that "on the basis of past programmes, it should be possible to indicate the number of training staff involved."

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* In a group training project the linkage between outputs and project objective is somewhat different that in a more traditional technical co-operation project. The successful production of project outputs creates one of the necessary conditions for the improvements expected through the application of new skills/knowledge. However, in order for the participants to apply these new skills in their organizations, certain other conditions have to materialize (receptiveness of management, adequacy/relevance of skills/knowledge obtained, etc.). In most cases the change expected at the project objective level can be achieved only after a certain period of time has elapsed since the completion of training itself and can be analyzed (evaluated) only then. The chances of successful achievement of project objective are increased through the identification of training needs, careful selection of countries, organizations and participants (which should be specified and explained in the "Background and Justification" section of the project document).

3. IMPLEMENTATION OF ACTIVITIES

A list of project activities and a work plan were included in the project document. They are reproduced in Table 1. The implementation of activities generally took place as planned.

The budget foreseen for the programme was US$216.000 (including 13% UNIDO overhead cost). Its breakdown is given in Table 2. In the course of project implementation, the total budget remained unchanged; however, two revisions took place. The first one (14 December 1988) involved the transfer of $4,150 from budget line 51-00 to budget line 34-00 and was motivated by increased training and administrative costs to the host training organization (due to a change in the exchange rate between yen and US$), as well as the possibility of making a proper selection of participants without a visit of the HTO representative to Vienna. Information on candidates was exchanged between UNIDO, on one side, and HTO and programme co-ordinator, Prof. N. Kano, on the other, by telefax. More importantly, the backstopping officer in UNIDO, Mr. T. Kumazawa, is a former staff member of the HTO familiar with earlier programmes and requirements and could be entrusted with the leading role in the participants selection process. The second minor budget revision (20 January 1989) involved the transfer of $1,500 from budget line 34-00 (savings in international travel for participants) to budget line 16-00, to cover the cost of the evaluation mission which was higher than originally foreseen. The final budget breakdown, therefore, became:

- BL 16-00		US$ 6,140
- BL 34-00		" 185,010
- overheads		" 24,850
	TOTAL	US$216,000

3.1 Project approval and aide-mémoire distribution

The project proposal was submitted by the Industrial Training Branch to the Project Review Committee Secretariat in August 1988. The project was approved by the PRC on 6 October 1988. The official request by UNIDO to the Japanese Embassy in Vienna was somewhat delayed (made on 16 November), and the official response and approval to finance the project came from Japan in the first half of December 1988.

The very informative and detailed aide-mémoire was distributed to organizations in selected countries through the UNDP offices concerned. The UNDP offices usually proceeded the information to counterpart ministries which were to decide on further distribution to organizations fitting the description in the aide-mémoire. It will be seen in section 3.2 (Selection of participants) that the aide-mémoire reached the targeted industrial enterprises and indivudals to a satisfactory extent. This is an important finding considering that the programme is intended for candidates directly from industry.

The aide-mémoire was sent to 35 selected countries. The list of countries to be invited was included in the project document and is given here as Annex III. The limitation in the number of countries included is based on past experience with the programme. Some least developed countries were not included because of the non-likelihood of importance of product quality control and the difficulty in finding candidates who would fit the required profile. Budgetary constraints also played a significant role: in order to maximize the number of participants and having under consideration the cost

Table 1

Project activities and work plan
(as listed in the project document)

A. Project activities and modalities of implementation

The training programme will have a total duration of five weeks and will be conducted in English. It will take place in Tokyo, Japan and is designed for 10 participants from selected developing countries.

1. The organization phase will cover:

- Preparation of aide-mémoire, invitation letter, note for participants (UNIDO) and time schedule of the programme in consultation with the HTO;
- Preparation of training materials and reserving training facilities (HTO);
- Invitation of countries to nominate candidates (UNIDO);
- Selection of participants at a joint selection panel composed of representative of the HTO and UNIDO;
- Preparation and sending out of acceptance documents and Note for Participants to selected participants (UNIDO);
- Travel and visa arrangements for participants (UNIDO).

2. The training programme will consist of four parts:

- 0.5 week of introductory sessions such as introduction of methodology of the programme, training schedule, lecture on industrial relations in Japan and individual report presentation etc.
- 2 weeks of theoretical training on fundamental concepts and techniques of quality control, quality design, quality planning, QC circle activity, etc., including class-room exercises and discussions and related plant visits;
- 2 weeks of in-plant training conducted in two selected manufacturing plants with four days in each plant to verify and strengthen the basic knowledge gained during the theoretical training sessions;
- 0.5 week devoted to the preparation of case study, reports, summary and assessment of the results of the training.

Participants will be divided, during the second week of the programme, into several groups for problem solving case study sessions. These sessions are the core part of the programme.

B. Project work plan

Mailing invitation letter and aide-mémoire	August 1988
Recruitment of participants	Aug.-Nov. 1988
Selection of participants	December 1988
Start of programme	26 January 1989
Close of programme	1 March 1989

Table 2

Budget breakdown (as given in the project document)

Budget line	Activity	Cost in US$
16-00	One staff member mission for end-programme evaluation (Vienna/Tokyo/Vienna)	3,800
	*Ad-hoc DSA for 7 days (incl. travel days) $120 x 7	840
	Sub-total	4,640
34-00	International travel for 10 participants (home/Tokyo/home), incl. 10 kg excess baggage for the return trip only $2,436 x 10	24,360
	*Ad-hoc daily stipened for 10 participants for 37 days: $90 x 37 (days) x 10 (persons)	33,300
	Training costs (lecturers, interpreters, etc.)	32,668
	Training materials (incl. translation costs, printing costs, etc.)	9,600
	Training facilities	6,400
	Local travel	9,616
	Administration cost	66,416
	Sub-total	182,360
51-00	Visit of one host authority representative to Vienna for the selection of participants and final programme discussions International travel and DSA (Tokyo/Vienna/ Tokyo) (air fare $3,385, DSA $143 x 5 (days))	4,000
	Miscellaneous	150
	Sub-total	4,150
	Total	191,150
	13% overhead	24,850
	GRAND TOTAL (including overhead costs)	216,000

* The HTO (AOTS) will provide the participants its accomodation at a discount price (5,000 Yen/day).

of travel to Japan, Asian countries predominated while only a number of countries from other continents were selected. It should be kept in mind that the contribution of the Government of Japan to this programme has been kept constant in US dollars throughout the 1980s, which has unfortunately led to a steady reduction in the number of participants (as well as a reduction in programme duration).

The aide-mémoire was distributed on 8 August 1988 and the deadline for arrival of nomination forms to UNIDO was set for 20 November 1988. The participants in the in-plant training received information about the programme on the average 3 months before the beginning of the programme or one month before the deadline. This did not seem to represent a problem for the participants selected. However, it would be advisable that for future programmes the aide-mémoire be sent another month or two earlier because of the time-consuming procedure for the information to reach potential candidates (UNIDO --> UNDP offices --> counterpart ministries --> relevant enterprises).

3.2 Selection of participants

The selection of participants was performed by UNIDO in consultation with AOTS and the course co-ordinator in a consequent and professional manner, based on mutually agreed criteria and experience from previous programmes.

The selection process is best illustrated by the following information. By the deadline date, 77 nominations from 29 countries were received. Criteria followed in the selection of final ten candidates were those clearly specified in the project document as well as restrictions related to budgetary constraints indicated in section 3.1 (which favoured candidates from Asian countries). In addition, there were not to be two candidates from the same country. An attempt was made to select a reasonable number of women satisfying the above criteria. Five nominations from women candidates were received.

Of the 77 applicants, approximately 35% satisfied the strict criteria which favour managers directly from industry who are involved and experienced in problems of quality improvement. For this programme, a significantly higher number of applicants were from industry rather than from various ministries or other organizations indirectly involved with actual production activities. Based on the strictest application of criteria, at least 15 candidates could have been selected.

The list of participants, with information on age, educational background, organization (employer) and position (job description) is included as Annex IV. Due to budgetary constraints, UNIDO could select only 10 participants, among them two women. However, AOTS decided to finance 4 more trainees from their funds since the optimal number of participants for such an extensive programme is closer to 15-20. One AOTS-sponsored participant had to return to his country at the very beginning of the programme, brining the total number of participants to 13, as indicated in Annex IV. AOTS participants were selected on the basis of the same criteria as UNIDO candidates, except that the nomination procedure was done through AOTS alumini associations in several countries. AOTS-sponsored candidates were of the same quality as UNIDO-selected ones.

Of the 13 participants, 9 had an engineering degree (indicated as preferable in the project document) and 4 had chemistry degrees but were involved directly in production. All participants had supervisory experience in production and were involved with problems of quality improvement. The breakdown of participants by type of industry was as follows:

- chemical or process industry 6
- electro-mechanical industry 5
- copper mining 1
- consulting organization 1

In the training conducted in the 1970s and early 1980s, the emphasis was on participants from electro-mechanical (assembly type) industries, but the composition of participants is changing in recent years. This shows a rising interest in and increased possibilities of applying the integrated or total quality control approach in process industries as well. The participant from a consulting organization (Malaysia) was selected based on the suggestion of the programme co-ordinator who is familiar with quality control oriented activities of the organization.

Based on observations of instructors, results shown in in-plant training, problems dealt with in individual case studies and interviews by the evaluator, 40-50 per cent of the participants would fall into the category of people who are very directly involved and could influence quality control activities in their enterprises and are likely to apply (in a reasonably short period) a good deal of new skills and knowledge acquired. The remainder are in a position to use the new knowledge to a considerable degree but their positions and influence on the working environment make it unclear to which extent improvements in their process and product quality will be possible. This is a preliminary analysis which is to be confirmed by a subsequent assessment through follow-up (ex-post) questionnaires.

The involvement and motivation of participants in the programme can be assessed as very satisfactory. There was 100% attendance at all sessions. The participants' command of English was generally satisfactory (although the speaking command of two to three trainees was only passable, in spite of certificates, submitted with nominations, which indicated a higher level).

The above information confirms that the selection of participants was performed very thoroughly. Considering the criteria involved, the best possible selection based on nominations received was made.

The final selection of candidates was made in the second week of December 1988. The selected trainees were immediately informed and all except one (where there was a problem in the channel of communication) confirmed their participation very soon after receiving the notice. During the evaluation session, the participants indicated that they were informed of their selection on the average one month before the beginning of the programme, which they considered satisfactory. It is noteworthy to report that all participants arrived on time for the beginning of the programme, which is exceptional in UNIDO (as well as other) training activities because something can always go wrong in the communications or travel arrangements.

3.3. Organization of training

The training was organized and managed by the Association for Overseas Technical Scholarship (AOTS), one of the leading training institutions in Japan, specialized in technical co-operation with developing countries. AOTS has co-operated with UNIDO for 20 years in organizing and implementing

training programmes. The capacity of AOTS is illustrated by the figure of over 3,500 technical staff trained per year (1987 data), either through individual training with Japanese industry or collaborative or group training programmes.

The lecture and team problem-solving sessions of the programme were held at the spacious AOTS headquarters in Tokyo, an ideal complex for training with functional lecture and working group facilities and pleasant housing quarters in an international atmosphere. The above, as well as all the arrangements made with respect to plant visits and in-plant training, testify to the competence and professionality of AOTS in organizing training programmes. As will be seen from the reaction of participants, the arrival and departure, accomodation, food and social/cultural arrangements by AOTS worked out exceptionally well.

The actual training programme followed closely the programme foreseen in the project document and the aide-mémoire. The actual schedule followed (breakdown by topics), the list of instructors and the summary of plant visits and in-plant training are all given in Annex V.

The integrated training approach (quality control philosophy --> quality control tools --> practical in-plant applications; with time devoted to participants' case studies as well) received unanimous praise from all participants. It should be pointed out that the programme has been fine-tuned and improved over a good number of years. Among the instructors, most of whom have taken part in previous programmes, are many of the industry-recognized quality control leaders in Japan. Their reputation becomes obvious during the plant visits and in-plant training sessions; their consultancy advice is highly valued by the industrial enterprises and their ideas and suggestions are accepted in organizing the integrated quality control activities. One of the impressive aspects of the programme is the extent to which the quality control concepts elaborated during the lectures are applied in the industrial organizations visited.

The in-plant training was highly praised by the participants because of the very clear demonstration of the applicability of the concepts and tools learned. Again, both plants which organized in-plant training have participated in the programme before. The enthusiasm of plant staff and their devotion to participants during the in-plant training was very impressive. During the in-plant training at Aiphone Co. in Toyoda, the evaluator experienced the exceptional attention given to the participants, where the entire management devoted a good part of a full working week to the thirteen trainees.

The training materials for the programme consisted of the following:

(a) Publications on Japan and its industrial environment;

(b) Textbooks:
- "What is Total Quality Control - The Japanese Way", by K. Ishikawa, Prentice-Hall Inc., New Jersey (1985)
- "Statistical Methods for Quality Improvement", by H. Kume, AOTS, Tokyo (1985)
- "QC Circle Koryo - General Principles of the QC Circle", Union of Japanese Scientists and Engineers (JUSE), Tokyo (1980)
- "How to Operate QC Circle Activities", JUSE, Tokyo (1985);

(c) Detailed printed handouts of lecture presentations (see Annex V for topics);

(d) Materials for plant visits;

(e) Materials and exercises for in-plant training.

Items (a) and (b) were distributed at the beginning of the training, while all other materials were distributed prior to the corresponding sessions. The complete material at the end of the programme is a well-arranged collection of excellent quality (topic by topic) in the form of a thick binder which the participants can use very practically in their regular work.

4. EVALUATION OF WORKSHOP BY PARTICIPANTS

4.1 Organization of the evaluation session

The logic and levels of evaluation of a UNIDO group training project are illustrated graphically in Figure 2. The assessment at the reaction and learning levels has to rely heavily on the reaction and opinions of participants (and to a certain extent of instructors). That is why this level of evaluation is called self-evaluation. It deals mostly with implementation of activities and production of planned outputs in the form of new knowledge and skills acquired. The achievement of the immediate objective in the form of utilization of new knowledge and skills and improved quality of products can be analyzed only after a certain period has elapsed from the actual training. Assessment at this behavioural level or higher (functional level) can be made only by using ex-post questionnaires or conducting an in-depth evaluation (including the visiting of selected participants).

This end-of-programme evaluation is limited to the reaction and learning levels and relies primarily on responses of participants to a structured questionnaire. The questionnaire and a statistical summary of answers are given in Annex VI. The questions asked can be grouped into several categories: (a) pre-programme information; (b) expectations met by the programme, including relevance and applicability; (c) programme concept and organization; (d) management and administrative matters; (e) various remarks and suggestions.

The questionnaire was distributed to participants on 26 February and collected at the end of the day on 27 February. On 28 February (next-to-last day of the programme) the responses were discussed both during a summary session by the programme co-ordinator and an evaluation session (see schedule in Annex V). In the latter, after introductory remarks by the evaluator about the purpose of evaluation and UNIDO/AOTS plans on use of lessons learned from it, a two-hour review and discussion of participants' reactions was held. Questionnaire responses were obtained from all 13 participants (both UNIDO and AOTS sponsored).

The summary of major reactions is given in sections 4.2 to 4.6. In addition to views expressed in the questionnaire response and during the discussion session, some additional remarks by participants in individual interviews with the evaluator are also included.

4.2 Pre-programme information

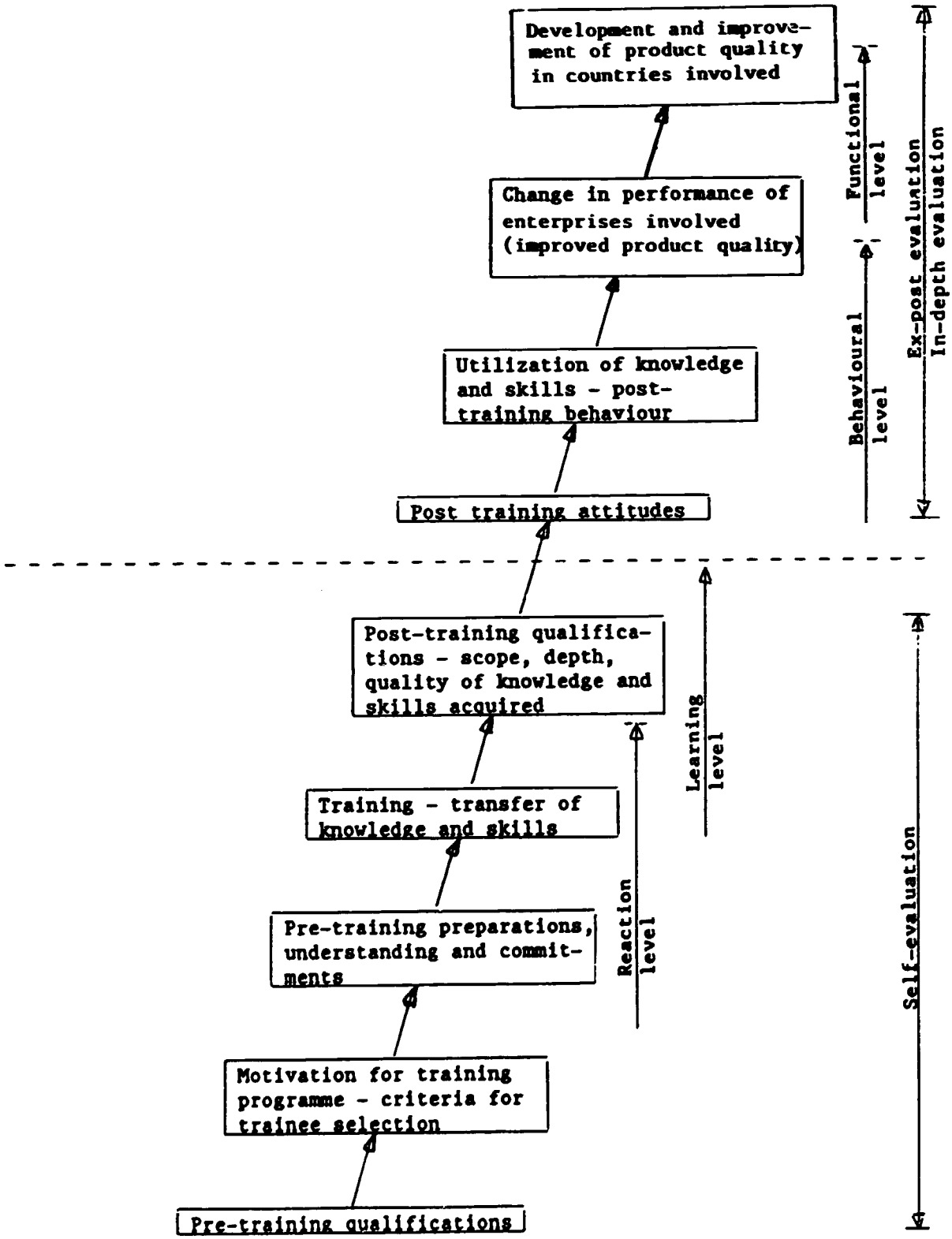
On the whole, participants were satisfied with the quality and timing of pre-programme information. They obtained a clear idea about the programme objectives, content and level, as well as the purpose and importance of the pre-training report.

In the discussion, several participants pointed out that it would be useful to receive a more detailed content of the programme (of the type received after arrival in Japan) as part of the pre-programme information. This would enable them to prepare in advance for some more specific topics.

A matter of considerable discussion with the course co-ordinator, Prof. N. Kano, was the guidance received for the pre-training report. Although the aide-mémoire for this year's programme included more detailed guidelines for the preparation of the pre-training report than in the past (including a listing of themes chosen by former participants), the data submitted and

Table 3

"Logic" and levels of evaluation of a UNIDO training project



brought by the participants were in many cases insufficient. The problem-solving case studies then had to be done with simulated data or with data subsequently obtained from the participants' plants by cable. The evaluator made a suggestion, welcomed by the programme co-ordinator and participants, that in the guidelines for the next programme two examples of data used in past programmes be included for illustrative purposes. The examples would show what kind of data were intitially submitted and which data were actually needed for a proper analysis of the problem-solving case study.

4.3 Expectations met by the programme

The responses dealing with this topic include answers to questions 3-4 and 17-20 of the questionnaire - see Annex VI. The participants' reactions to the programme and its benefits were very favourable.

They unanimously indicated that the training met their expectations fully and that the programme was to a great extent beneficial for their professional work, i.e that the contents of the programme were to a great extent relevant to conditions in their companies. The trainees were confident that they will have an opportunity to apply the newly acquired knowledge on their jobs, although they were well aware of possible difficulties and resistance to new ideas in their working environments. They were also optimistic about the outlook for transfer of the acquired knowledge to others in their companies, either through on-the-job advice or special training activities.

4.4 Programme concept and organization

The responses dealing with this subject include answers to questions 5-16 of the questionnaire. The participants were unanimous in assessing the general level of the programme as adequate. Similarly, the course co-ordinator and the instructors considered that the selection of participants and their background and experience were fully adequate for the level of training.

The duration of the programme was considered by the majority of participants (8 out of 13) as adequate, while a number thought that it was somewhat short. However, even the latter group thought that only an additional one-half week or possibly a week need to be added (for a slight expansion of the one-week block of lectures starting with "Standardization and Implementation of Quality Management", using more examples or exercises, or for longer in-plant training). In discussions with the evaluator, the participants were unanimous in indicating that the workload during the programme was satisfactory and generally as expected.

The group of trainees was very homogenous with respect to age, professional background and interests; this optimal composition contributed significantly to a pleasant and constructive atmosphere during the programme.

On the whole, the participants considered that all relevant subjects were well covered in the programme. Depending on their specialties and interests, they listed a good number of subjects as being most beneficial to them. Most thought that presentation on quality control techniques and statistical methods and in-plant training sessions were the highlights of the programme. In response to the question what subjects could be more covered in the training, only a few minor possible additions were mentioned.

The quality of presentation and instruction (or guidance) in the programme was very positively assessed by the participants, as can be seen from the summary of answers to question 11 (Annex VI). The majority of

assessments were in the category "excellent". Particularly well received were presentations on "Basic concepts of quality control" by Prof. Kano (11 "excellent", 2 "good") and "Techniques of quality control" (3-4) by Prof. Takahashi (8 "excellent", 5 "good"), as well as the in-plant training at Aiphone Co. in Toyoda on process standardization (10 "excellent", 3 "good"). It is interesting that nine of the thirteen participants considered instruction and guidance during the problem-solving case study as "excellent". This subject is further elaborated in section 5.3.

A large number considered the method of instruction and the mix of lectures (theoretical work), in-plant training (practical work), plant visits (observation) and problem-solving case study as ideal.

It should be pointed out that the participants were impressed by the homogeneity of the group of instructors: in spite of their large number (14), they came from the same school of quality control and "spoke the same language" as far as the uniformity and continuity of lectures are concerned. The same can be said for the staff involved in plant visits and in-plant training.

The participants considered that there was sufficient time for professional exchange of views with the programme and plant staff, as well as among the participants themselves. Most were of the opinion that they benefitted considerably from these exchanges. All praised the extraordinary dedication of both programme staff and staff involved in in-plant training. The assessments in these categories were noticeably more positive than those of participants in the 1985 programme.

The training material distributed to the participants was of excellent quality.

4.5 Management and administrative matters

Responses to question 16 in the questionnaire are full of praise for the course management, training facilities, accommodation and meals, as well as other organizational aspects of the programme. AOTS's competence and expereince in organizing training programmes was confirmed by the participants. UNIDO was praised for pre-training arrangements and smooth inplementation of travel both to and from Japan.

4.6 Remarks and suggestions

Several participants suggested that plant visits should be arranged in such a way that each participant is enabled to visit a plant in his specialized field. While this suggestion was appreciated by the course co-ordinator (and certain arrangments were already attempted by AOTS during this programme), it was pointed out that such arrangements are difficult when the final selection of participants is make only approx. one month prior to the training. However, attempts in this direction will be made in future programmes.

Many of the participants were interested in follow-up to the programme and welcomed UNIDO/AOTS plans to obtain additional reactions from participants after approx. 7-8 months. This subject is further discussed in section 5.3.

5. ADDITIONAL OBSERVATIONS

The comments which follow are based on the evaluator's observations and meetings during the eight-day involvement with the programme.

5.1 Programme duration and content

In spite of the fact that the programme duration was shortened by two weeks as compared to the 1985 programme (which had more lectures on fundamental concepts and techniques and an additional week of in-plant training), both the participants and the instructors considered the duration and content of the programme as adequate. It could be said that financial constraints imposed on the programme (see section 5.4) have not affected its high quality. Two factors contributed to this: (a) an improved level of participants whose interest in and awareness of quality control, as well as knowledge of basic statistical techniques, has risen over the years; and (b) efforts by programme co-ordinators to fine-tune the progamme based on previous experiences (these efforts are noticeable throughout the 12-year history of the programme).

5.2 Problem-solving case study

The problem-solving case study, which the participants work on with instructors and in teams, is a special feature in the concept of the training programme. The case study means that the participants are dealing with problems from their own plants, susceptible to improvement by quality control methods being taught, which makes this programme more application oriented than most other in-plant group training programmes.

The evaluator attended presentations of the final case study reports and could gain insight into some of the important characteristics. It has to be kept in mind, as clearly pointed out by the programme co-ordinator, Prof. Kano, that it is not realistic to expect that instructors will solve the participant's problem; rather, during joint work the problem can be narrowed down and some application of new tools and techniques suggested for its solution. The actual solution can be arrived at only by the participants themselves some time after return to their plants (provided work on the problem is continued). During the final report presentation, a good portion of the reports tended to be statistical-technique-application oriented, while the problem-solving orientation should follow at a later stage.

The problem-solving case study work was organized in teams as indicated in Annex VII. There were basically two participants in the team advised by one instructor. In most cases, there were only two longer sessions (2 hours each) between the team and the instructor prior to the final presentation and discussion. There was additional team work by the participants themselves. Although the participants were full of praise for the guidance in the problem-solving case study (as indicated in section 4.4), most considered that additional one or two evening sessions with instructors would have contributed even more. The instructors fully agreed with the participants' suggestions and showed willingness to increase the number of sessions in the next programme.

5.3 Follow-up to the programme

The project document foresaw a post-programme follow-up in the form of a questionnaire or report which the participants would submit to programme management six months after their return home in order to assess the knowledge gained from the programme, changes in their conception of quality management and their approach to problem-solving situations. While such follow-up was foreseen in previous programmes, it was not done through structured questionnaires and, according to AOTS, only 30-40% of the participants would contact the programme management through letters after some time had elapsed from the training.

It was, therefore, decided that a structured follow-up questionnaire or report be used for this year's programme. It is attached as Annex VIII and incorporates elements that were highlighted during the 1987 Follow-up and Evaluation Seminar for Former Participants, held in Malaysia. The questionnaire/report addresses the impact of training, achievements vs. expectations in terms of applicability of knowledge gained, specific quality control activities undertaken, statistical techniques being utilized and - particularly - the status of the problem-solving case study.

It was decided in discussions with the programme co-ordinator that the best timing for contacting the participants would be seven months after the training, i.e. in September/October 1989. The questionnaires will be sent directly to the participants and collected/analyzed by UNIDO (jointly Evaluation Staff/Training Branch), and then forwarded to the programme co-ordinator through AOTS. In cases where required, the instructors involved as problem-solving study advisors would analyze the report on the status of the case study and give their suggestions on what remains to be done. This analysis would then be fed back to the participants through AOTS and UNIDO. Small savings in the project budget (budget line 34-00) could be used for instructors' additional fees. The whole feed-back process is to be completed before the end of 1989.

5.4 Future programmes

Discussions at the Ministry of International Trade and Industry in Tokyo focussed on the financial constraints encountered by the programme in recent years. The contribution of the Government of Japan to the programme (in the form of a special purpose contribution to IDF) has remained constant in US dollars throughout the 1980s. With respect to the 1985 programme, this meant a shorter duration and fewer participants in 1989.

The major evaluation findings (summarized in section 6.1) were presented to the Ministry representatives. It appears that the programme is one of the highest-quality in-plant group training programmes offered through UNIDO. It is unfortunate that such a programme is facing restrictions in both the number of countries to be invited and number of participants, particularly at a time when the interest in and relevance of quality improvement of industrial products in developing countries is rising significantly (as reflected in the rising quality of participants). With the current programme content, level and method of instruction (all improved over the years and considered very appropriate by both participants and instructors), the optimal number of participants is around 20. This optimal group could be fully serviced by the existing number of instructors and in-plant training arrangements. The cost of training would therefore not be proportional to the number of participants.

A proposal was made to the Ministry of International Trade and Industry jointly by AOTS and UNIDO to increase the budget for the next programme to at least US$300,000, which would enable 16-18 trainees from a wider range of countries to participate. This proposal was favourably received because of the very positive findings for the current programme.

In discussions with the programme co-ordinator and instructors, it was suggested that after three regular programmes (separated by two years each), an advanced programme for the most successful participants would be appropriate. It would deal with the more sophisticated methods of process and product quality control. The timing for such a course will be ripe considering the rising interest and higher professional level of participants.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

1. The training programme, held from 26 January to 1 March 1989, can be considered very successful since the group training results/outputs in terms of scope, depth and quality of knowledge and skills acquired by the participants (total of 13), as well as their end-of-training attitudes, are at least as planned in the project document and the aide-mémoire. Solid groundwork has been completed for subsequent application of new skills in the participants' enterprises. The overall positive conclusion is reached based on: (a) observation of in-plant training at Aiphone Co. in Nagoya/Toyoda; (b) observation of and discussion in participants' final case study presentations in Tokyo; (c) detailed interviews with trainees in Kyoto and Tokyo; (d) an evaluation discussion session where answers to an end-programme questionnaire were analyzed; and (e) discussion with AOTS and course co-ordinator and instructors on plans for follow-up and possible improvements for future programmes.

2. The selection of participants by UNIDO, in consultation with AOTS and the course co-ordinator, was performed in a thorough and professional manner, with strict application of criteria which favour managers from industry (mostly with an engineering background) who are involved and experienced in problems of quality improvement. In spite of financial constraints which restricted the number of countries invited to apply (with Asian countries being favoured), a capable, motivated and homogenous group of 13 trainees was assembled (10 UNIDO-sponsored, 3 AOTS-sponsored), among them two women. This optimal composition contributed to a pleasant and constructive atmosphere during the programme.

3. The professionality and efficiency of ACTS in organizing and managing the training, in combination with timely UNIDO backstopping, contributed significantly to the programme's success. All preparatory, organizational and training activities were implemented as planned.

4. The programme content, substantive level and duration (somewhat shorter than in the past), as well as the workload on participants, are all adequate, particularly considering the improved level and background (experience) of participants. The integrated training approach (quality control philosophy --> quality control tools --> practical in-plant applicatons; with time devoted to participants' case studies) received praise from all trainees. The programme has a twelve-year tradition, and fine-tunings have regularly been made with respect to previous years. Among the instructors are some of the most distinguished, industry-recognized quality control experts in Japan.

5. The participants' reaction to the training programme and its benefits was very favourable. Their expectations were fully met and they felt confident about the applicability of new knowledge and skills in their companies. The training programme was considered complete and balanced. The quality of instruction and guidance was assessed as excellent. Most of the trainees considered the method of instruction and the mix of lectures, in-plant training and case study work as ideal. In-plant training was praised for the very clear demonstration of the applicability of concepts and tools learned. The dedication of both programme and plant staff was highly appreciated. Training materials received were of excellent quality.

7. It was decided that the follow-up to this year's programme will be conducted through a structured post-programme questionnaire/report which addresses the applicability of knowledge acquired, initiation of specific quality control activities, utilization of statistical techniques and - particularly - the status of the problem-solving case study.

8. Considering that the programme is one of the highest quality in-plant group training programmes offered through UNIDO, it is unfortunate that financial constraints limit the number of countries considered and the number of selected participants, particularly at a time when the interest in and relevance of quality improvement of industrial products in developing countries is rising significantly (as reflected in the rising quality of applicants). With the current programme concept and organization, the optimal number of participants is around 20.

6.2 Recommendations

1. The follow-up (post-programme) questionnaire should be sent to participants in September 1989 and collected/analyzed by UNIDO and programme management. In cases where required, the instructors involved as problem-solving study advisors should analyze the status of the case study and give their suggestions on what remains to be done. The analysis should then be fed back to participants through AOTS and UNIDO. Small savings in the project budget (budget line 34-00) could be used for instructors' additional fees. The whole feed-back process is to be completed by the end of 1989.

2. The Ministry of International Trade and Industry should seriously consider increasing the budget for the next programme to at least US$300,000, i.e. by at least 35-40%, which would enable a minimum of 16-18 trainees from a wider range of countries to attend. The cost of training is not proportional to the number of participants since an optimal group of 20 trainees can be fully serviced through existing arrangements.

3. If future programmes were organized and managed in the same professional manner as this one, their success would be assured. However, to further increase their acceptance and effectiveness, the following fine-tuning is recommended:

(a) Programme design could be made clearer by

- giving a more specific definition of the programme objective, which highlights the application-oriented concept of training;
- including in the outputs of the project document the detailed end-of-training indicators now listed in the aide-mémoire;
- specifying a more detailed programme content of the type now received by participants at the beginning of their training.

(for more details see the last paragraph of section 2);

(b) Project approval, aide-mémoire distribution and final selection of participants should be completed one or two months earlier to account for the time-consuming procedure by which the information reaches potential candidates and to enable programme management to arrange for plant visits which fit closely the participants' specialized fields;

(c) If AOTS sponsors participants separately from UNIDO, the selection should still be made jointly from the wider list of applicants. Aide-mémoire distribution and notice of selection can be channeled through AOTS alumni associations, as was the case in this year's programme;

(d) Work on the problem-solving case study (a special feature of the programme making it more application oriented than most others) should be extended by two additional sessions between participant teams and instructors. Better data for case studies could be obtained if guidelines for pre-training reports contained two examples of data needed in past programmes, for illustrative purposes (see section 4.2 for more details).

4. After three regular programmes, separated by two years each, an advanced programme for the most successful participants - dealing with more sophisticated methods of process and product quality control - would be timely. It is justified by the rising interest and higher professional level of participants, as demonstrated by this year's programme.

Annex I

EVALUATION SCHEDULE

22 February	-	Meeting and discussion with AOTS staff (Mr. N. Yamamoto, Director General, Mrs. H. Yamada, Mr. O. Harada)
23 and 24 February	-	Observation of in-plant training at Aiphone Co. in Nagoya/Toyoda
	-	Interviews with participants (trainees)
25 February	-	Discussion with participants in Kyoto
26 February	-	Distribution of evaluation questionnaires at AOTS headquarters in Tokyo
27 February	-	Further interviews with participants and collection/analysis of evaluation questionnaires
28 February	-	Participation in summary lecture by programme co-ordinator Prof. N. Kano
	-	Evaluation discussion session with participants
	-	Further discussion with AOTS staff (Mrs. H. Yamada, Mr. O. Harada), joint completion of PER/GT
1 March	-	Dicussion with programme co-ordinator Prof. N. Kano
	-	Meeting and discussion at the Ministry of International Trade and Industry (Mr. H. Takahara, Director, and Mr. E. Takeuchi, Technical Co-operation Division, Economic Co-operation Department)
	-	Discussion with programme co-ordinator and instructors (Prof. Y. Ando, Prof. K. Ayano, Prof. Y. Iizuka, Prof. M. Miyakawa, Prof. T. Takahashi, Mr. S. Tsujita)
	-	Observation of and discussion in participants' final case study presentations
	-	Closing ceremony

Annex II

CONTENT OF THE TRAINING PROGRAMME AS GIVEN IN THE PROJECT DOCUMENT

Week	Date	Programme	Subjects and Contents
1	Jan.26 (Thu.) | Jan.28 (Sat.)	Introduction and Orientation	Opening Ceremony, Characteristics of Japanese Management, Company-wide Quality Control, Tokyo City Tour
2	Jan.30 (Mon.) | Feb. 4 (Sat.)	Theoretical Training (1)	Basic Concept of QC, Fundamental QC Techniques, Pre-training Report Presentation
3	Feb. 6 (Mon.)		Fundamental QC Techniques
	Feb. 7 (Tue.) | Feb.10 (Fri.)	In-plant Group Training (1)	Theme: Process Improvement for Quality
4	Feb.13 (Mon.) | Feb.18 (Sat.)	Theoretical Training (2)	Standardization and Implementation of Quality Management, Quality Assurance in Production with Vendor-Vendee Relations, Quality Assurance in New Product Development, QC Circle Activity, Problem Solving Case Study
5	Feb.20 (Mon.)		Plant Visit Outside Tokyo Area
	Feb.21 (Tue.) | Feb.24 (Fri.)	In-plant Group Training (2)	Theme: Process Standardization and Control for Process
6	Feb.27 (Mon.) | Mar. 1 (Wed.)	Summary	Preparation of the Technical Report, End-programme Evaluation, Summary Lecture, Technical Report Presentation, Closing Ceremony, Farewell Party

Annex III

LIST OF COUNTRIES INVITED

Afghanistan
Bangladesh
Brazil
Burma
Chile
China
Colombia
Democratic Yemen
Ecuador
Egypt
Zambia
Ghana
India
Indonesia
Iran
Iraq
Jamaica
Jordan
Kenya
Kuwait
Malaysia
Zimbabwe
Mexico
Mozambique
Nigeria
Pakistan
Peru
Philippines
Saudi Arabia
Sri Lanka
Syria
Tanzania
Thailand
Venezuela

Annex IV

LIST OF PARTICIPANTS

Name	Country	Age	Educational background	Name of organization (employer)	Type of industry	Position/job description
1. Mr. Shen Guang Zhong	China	44	Chemist	Beijing Organic Chemical Plant	Chemical	Vice-Director
2. Mr. Juan Salvador Gimenes Mon	Chile	45	Chemical engineer	CODELCO, Div. el Teniente, Millan N 1040, Rancagua	Copper-mining	Quality Manager
3. Mr. Nur Arifin	Indonesia	34	Metallurgical engineer	PT Krakatau Steel, Jl. Industri, Cilegon	Metal-processing	Asst. Production Superintendent
4. Mr. Narsimulu Nagarigari	India	42	Mechanical engineer	Electronics Corporation of India Ltd., Hyderabad 500018	Electronics	Technical Manager
5. Ms. Paraween Mohamad Ameen Ali	Iraq	30	Chemist	Alta'mim Cement Plant	Cement	QC Manager
6. Mr. Azizan Ariffin	Malaysia	31	Polymer science degree	National Productivity Center, P.O. Box 64, Jl.Sultan 46904, Petaling Jaya, Selangor	Consulting organization	Training & Investigation Officer
7. Mr. Corsame Ponciano Felipe	Philippines	30	Chem. eng. + management science degree	Sprague Philippines Inc., Km 16 South Superhighway Paranaque, Metro Manila	Electronics	QA & Reliability Manager
8. Ms. M.P. Samarakoon	Sri Lanka	31	Materials engineer	Lanka Refractories Ltd., Meepe, Padukka	Ceramic	Research & QC Officer
9. Mr. Theerawut Sirikraiwat	Thailand	32	Production engineer	Goodyear Thailand Ltd., Km 36 Phaholyotin Rd., Pathumtani	Rubber processing	Manager, Quality System Auditing& Product Evaluation
10. Mr. Nathaniel W. Tinofireyi	Zimbabwe	37	Chemist	Hunyani Pulp & Paper Division, P. Bag 964, Norton	Pulp + paper	Quality Controller

	Name	Country	Age	Educational background	Name of organization (employer)	Type of industry	Position/job description
11.	Mr. Dukul Chandra Barua*	Bangladesh	39	Chemical engineer	Glaxo Bangladesh Ltd., P.O. Box 53, Fouzderhat Industrial Area, Chittagong	Pharmaceutical	QC Officer
12.	Mr. Zhu Zeng Yuan*	China	40	Mechanical engineer	The Third Electrical Casting Works Shanghai, No.174 Hai Lun Road, Shanghai	Electro-mechanical	Director
13.	Mr. Sergio Martinez Magaña*	Mexico	34	Metallurgical engineer	Champion S.A., Km 13.5 Carr. Mex-Laredo San Pedro Xalostoc, Estado de Mexico	Electrical equipment	QA Manager

* AOTS-selected and sponsored candidates.

Annex V

PROGRAMME CONTENT AND SCHEDULE, LIST OF INSTRUCTORS AND SUMMARY OF PLANT VISITS AND IN-PLANT TRAINING

A. Programme content and schedule

Wk	Date	Morning	Afternoon
1	Jan. 26 Thu.	Opening Ceremony Orientation 10:00-12:00	Industrial Relations in Japan /Rikkyo Prof. Takezawa Univ. 14:00-17:00
	27 Fri.	CWQC Prof. Kano/ Science University of Tokyo 9:00-12:00	Plant Visit (1) Nippon Kokan K.K. Lv. 12:45
	28 Sat.	Tokyo City Tour Lv. 9:30	
	29 Sun.		
2	30 Mon.	Basic Concept of Quality Control Prof. Kano/ Science University of Tokyo 9:30-16:30	
	31 Tue.	Techniques of Quality Control (1) (2) Prof. Ayano/ Tokai University 9:30-16:30	
	Feb. 1 Wed.	Pre-Report Presentation & Problem Solving Pf.Kano,Pf.Iizuka Pf.Ayano,Pf.Ojima, Pf.Takahashi, Pf.Miyakawa/*1, Mr. Ando, Mr. Tsujita/*2	Welcome Party
	2 Thu.	Techniques of Quality Control (3) (4) Prof. Takahashi/Bunka Women's University 9:30-16:30	
	3 Fri.	Techniques of Quality Control (5) (6) Prof. Nakajo/ University of Tokyo 9:30-16:30	
	4 Sat.	Techniques of Quality Control (7) (8) Mr. Ando/ Union of Japanese Scientists & Engineers 9:30-16:30	Problem Solving Team E 17:00-
	5 Sun.	Free	
3	6 Mon.	Plant Visit (2) Nippon Zeon Co., Ltd. Lv. 11:45	
	7 Tue.	In-plant Group Training(1) "Process Improvement for Quality" Komatsu Ltd. Oyama Plant Lv. 7:45	
	8 Wed.	Lv. 7:45	
	9 Thu.	Lv. 7:45	
	10 Fri.	Coordinator: Mr. Ando Lv. 7:45	
	11 Sat.	Free	
	12 Sun.	Free	

*1 Prof. Miyakawa/ Tokyo Institute of Technology

Wk	Date	Morning	Afternoon	Evening
4	13 Mon.	Standardization and Implementation of Quality Management Prof. Kume/ University of Tokyo 9:30-16:30		Problem Solving by Team
	14 Tue.	QC Circle Activity Mr. Lillrank/ The Boston Consulting Group K.K. 9:30-16:30		Team A Team B Team E
	15 Wed.	Quality Assurance in New Product Development Prof. Iizuka/ University of Tokyo 9:30-16:30		Team C Team D
	16 Thu.	Quality Management Mr. Yamaoka, President,JUKI Corp. 10:00-12:00	Arrangement of Air Ticket	Team F
	17 Fri.	Quality Assurance in Production with Vendor-Vendee Relation Mr. Shimoyamada / *3 9:30-15:00		
	18 Sat.	Explanation of 5th week's schedule		
	19 Sun.	Free		
5	20 Mon.	Move to Nagoya Lv.TKC at 8:00	Plant Visit (3) Toyoda Gosei Co., Ltd. Stay at CKC	
	21 Tue.	In-plant Group Training (2) "Process Standardization and Control for Process" Aiphone Co., Ltd.		
	22 Wed.			
	23 Thu.			
	24 Fri.	Coordinator: Prof. Takahashi		
	25 Sat.	Kyoto City Tour		
	26 Sun.	Free		
6	27 Mon.	Preparation for Final Report Presentation		
	28 Tue.	Summary Lecture 9:30-12:00 Prof. Kano	Evaluation Meeting 13:30-16:00 Mr. Catipovic	
	Mar. 1 Wed.	Final Report Presentation /Pf.Kano Pf.Iizuka,Mr.Ando,Pf.Ayano,Pf.Ojima Pf.Takahashi,Mr.Tsujita,Pf.Miyakawa		Closing Ceremony

*2 Mr. Tsujita/ Deputy General Manager, Quality Control Dept.,Japan Electronic Control Systems Co., Ltd.

*3 Mr. Shimoyamada/ Executive Managing Director, Komatsu Career-Creating Ltd.

B. Programme instructors

Programme Co-ordinator

Prof. Kaoru ISHIKAWA (fell ill, did not appear)
President, Musashi Institute of Technology

Prof. Noriaki KANO
Professor, Department of Management Science, Science University of Tokyo

Lecturers (in order of assignment)

Prof. Shin-ichi TAKEZAWA
Professor, Faculty of Social Relations, Rikkyo University

Prof. Katsutoshi AYANO
Associate Professor, School of Political Science and Economics, Tokai University

Mr. Shigeru TSUJITA
Deputy General Manager, Quality Control Department, Japan Electronic Control Systems Co. Ltd.

Prof. Yoshikazu OJIMA
Lecturer, Department of Management Science, Science University of Tokyo

Prof. Masami MIYAKAWA
Research Assistant, Department of Industrial Engineering and Management, Tokyo Institute of Technology

Prof. Takenori TAKAHASHI
Associate Professor, School of Home Economics, Bunka Women's University

Prof. Takeshi NAKAJO
Research Assistant, Department of Reaction Chemistry, University of Tokyo

Mr. Yukihiro ANDO
QC Instructor, Union of Japanese Scientists and Engineers

Prof. Hitoshi KUME
Professor, Department of Reaction Chemistry, University of Tokyo

Mr. Paul M. LILLRANK
Researcher, The Boston Consulting Group K.K.

Prof. Yoshinori IIZUKA
Associate Professor, Department of Reaction Chemistry, University of Tokyo

Mr. Takeo YAMAOKA
President, JUKI Corporation

Mr. Kaoru SHIMOYAMADA
Executive Management Director, Komatsu Career-Creating Ltd.

C. Plant visits and in-plant training

Plant visits

The programme provided for the following plant visits inside and outside Tokyo for observation of various quality improvement activities (main products).

(i) NKK (Nippon Kokan K.K.) Keihin Works
1-1, Minamiwatarida, Kawasaki-ku, Kawasaki, Kanagawa (Steel Pipes)
Capital: 159,431 million yen
Employees: 24,515

(ii) Nippon Zeon Co., Ltd., Kawasaki Plant
1-2-1, Yakou, Kawasaki-ku, Kawasaki-shi, Kanagawa (Synthetic Rubber for Motor Vehicle Tyres)
Capital: 16,795 million yen
Employees: 2,844

(iii) Toyoda Gosei Co., Ltd.
1, Nagahata, Ochiai, Harushimura, Nishi-kasugai-gun, Aichi
(Automobile-Use Rubber and Plastic Products)
Capital: 10,697 million yen
Employees: 5,371

In-plant training

The two weeks of in-plant training were conducted in the following manufacturing plants with four days in each plant to verify and strengthen the basic knowledge gained during the theoretical training sessions.

(i) Komatsu, Ltd., Oyama Plant
400, Yokokura-shinden, Oyama-shi, Tochigi
(Bulldozers, cranes, diesel engines)
Capital: 47,934 million yen
Employees: 47,959 (Oyama Plant: 1,670)

(ii) Aiphone Co., Ltd., Toyoda Plant
37-10, Shikida, Shinohara-cho, Toyoda-shi, Aichi
(Residential entry security systems)
Capital: 678 million yen
Employees: 600

In-plant training in these companies covered the following topics:

(i) Exercises on the application of specific QC techniques to tackle selected technical subjects, such as process improvement, standardization and quality assurance.

(ii) Detailed explanation and discussion on the company-wide quality improvement activities, quality assurance system and QC circle activities.

(iii) General observation of production activity and man-machine interface of the plant.

(iv) Discussion and exchange of experiences with managers, engineers, supervisors and workers of the company.

Annex VI

SUMMARY OF EVALUATION QUESTIONNAIRE RESPONSES

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

VIENNA INTERNATIONAL CENTRE
P.O. BOX 300, A-1400 VIENNA, AUSTRIA
TELEPHONE: 26 310 TELEGRAPHIC ADDRESS: UNIDO VIENNA TELEX: 135612

IN-PLANT GROUP TRAINING PROGRAMME

IN THE FIELD OF

QUALITY IMPROVEMENT OF INDUSTRIAL PRODUCTS

JAPAN

26 January - 1 March 1989

EVALUATION

INTRODUCTION

At the end of the training programme we would like to sum up the experience gained during the past weeks in order to improve or adjust the design and implementation of future programmes. The basis for this is the evaluation of various aspects of the programme by participants. We would therefore be grateful if you could answer the following questions from your individual point of view.

Questions are to be answered by marking the appropriate box. It is up to you to give your name at the end of the questionnaire or to return it anonymously.

* * * *

I. PRE-PROGRAMME INFORMATION

T O T A L: 13 participants

1. What is your opinion of the introductory information received in your home country about

	sufficient	not sufficient
- programme objectives	/13/	/ /
- programme content	/13/	/ /
- programme level	/13/	/ /
- guidance for pre-training report	/ 8/	/ 5/

What, if any, other information do you feel should have been included?

4 suggestions:
- participants to be instructed to study certain subjects relevant to course in advance
- more detailed content
- method of data collection and use during programme (2)

2. How many weeks before the beginning of the programme did you receive the following information?

- information about the programme	ave. 11.6 weeks	for UNIDO participants* (range 6-21 weeks)
- being accepted for the programme	ave. 4.4 weeks	for all participants (range 3-6 weeks)

II. PROGRAMME CONCEPT AND ORGANIZATION

3. Has the training programme met your expectations?

- more than expected	/ 2/
- as expected	/11/
- less than expected	/ /

4. Has the programme been beneficial for your professional work, i.e. did it correspond to your professional needs?

- to a very great extent	/ 1/
- to a great extent	/ 8/
- to a sufficient extent	/ 4/
- to a small extent	/ /
- to a very small extent	/ /

* AOTS participants - 9 weeks

5. What is your opinion about the general level of the programme?

- much too high	/ /
- too high	/ /
- adequate	/13/
- too low	/ /

Please comment:

6. Was the duration of the programme

- too long	/ /	
- adequate	/ 8/	(1 answer: "a bit too short")
- too short	/ 5/	

If too long or too short, please explain why and suggest appropriate duration.

Suggestions made include:
- Longer in-plant training (2 weeks in each plant)
- Lectures in 4th week should be longer, with 7 new management tools explained
- More in-plant practical work
- Slightly longer duration to cover design of experiments

7. Please give your opinion about the composition of the group of participants (homogeneity as to age, professional background and interests, cultural background, etc.). Did you personally feel integrated in the group and, if not, why?

Unanimously positive opinion regarding homogeneity, age, professional background, integration.

8. Which subjects or parts of the programme do you consider most beneficial? (Please state reason. For example: new subject, my specialty, relevant to my work, interesting approach, etc.)

Subject	Reason
- QC techniques/statist.methods(7)	- relevant to job, can be applied
- In-plant training (4)	- relevant to job, practical learning
- TQC concept (3)	- relevant to job
- Standardiz.+implement.of qual.man.(3)	- relevant to job
- Management philosophy+concepts (2)	- " " "
- Management tools (2)	- basis for improvement in my work
- QC circles (2)	- relevant to my work
- new product dev.+ QA in production (1)	- interesting approach, relevant to job

9. Which subjects or parts of the programme do you consider least beneficial? (Please state why. For example: too elementary, inadequate instruction, irrelevant to my work, ineffective approach, etc.)
only three responses:

Subject	Reason
- QA in production with vendor-vendee relation	ineffective approach
- Plant visit	only introductory level
- QA in new product developoment	difficult to apply to my products

10. Were there, in your opinion, any relevant subjects which were not adequately covered in the programe?

- yes /7/
- no /6/

If yes, please explain:

Only minor possible additions mentioned:

- Failure effect analysis
- Process capability index
- 7 new management tools (2)
- Design of experiments
- Advanced techniques for problem solving
- Computer applications

11. How do you assess the quality of presentation and instruction (or guidance) in the following parts of the programme:

	excellent	good	reasonable	to be improved
- Basic concept of quality control	/11/	/2/	/ /	/ /
- Techniques of quality control				
(1-2)	/6/	/5/	/2/	/ /
(3-4)	/8/	/5/	/ /	/ /
(5-6)	/6/	/7/	/ /	/ /
(7-8)	/7/	/6/	/ /	/ /
- In-plant (1): Process improvement for quality	/8/	/4/	/1/	/ /
- Standardization and implementation of quality management	/6/	/5/	/2/	/ /
- Quality control circle activity	/7/	/4/	/1/	/ /
- Quality assurance in new product development	/3/	/10/	/ /	/ /
- Quality management	/4/	/7/	/2/	/ /
- Quality assurance in production with vendor-vendee relation	/4/	/7/	/1/	/1/
- In-plant (2): Process standardization and control for process	/10/	/3/	/ /	/ /
- Problem solving case study by team consultation	/9/	/3/	/1/	/ /

Please elaborate (where necessary):

- In-plant (1): good exercise, but instead of whole problem-solving procedure which was presented, problems could have been given to participants to solve (like in in-plant (2));

- More exercise/case studies could have been included with lectures.

12. What changes would you prefer in the method of instruction?

	no change	more	less
- lectures (theoretical work)	11	2	
- in-plant training (practical work)	8	5	
- plant visits (observation)	11	2	
- problem-solving case study (practical work)	11	2	

Please give your comments and suggestions regarding the above:

- Lectures could include more case studies on QC management
- In-plant training: more time needed to master techniques learned or apply what was learned theoretically
- Plant visits: it would be useful to visit plants relevant to individual participant's field
- Case study: more time needed

13. What is your opinion of the training material:

- excellent	9
- good	4
- reasonable	
- could be improved	

Particular suggestions regarding the training material:

- Material could be given to participants before training (2)
- Add material on design of experiments for future reference
- JUKI material incomplete in English

14. Did you have sufficient time for professional exchanges of views with

	programme staff	fellow participants	plant staff
- yes	12	13	8
- no	1		5

15. How much did you benefit from these exchanges of views with

	programme staff	fellow participants	plant staff
- a great deal	6	3	2
- quite a lot	5	5	4
- somewhat	1	4	5
- a little	1	1	2
- not at all			

Additional comments:

- Extraordinary dedication of programme staff and plant staff to participants

16. Miscellaneous: How do you assess the following

	excellent	good	reasonable	to be improved
- course management	/7/	/5/	/1/	/ /
- secretarial service	/8/	/4/	/1/	/ /
- classroom facilities	/12/	/1/	/ /	/ /
- in-plant training facilities	/8/	/4/	/1/	/ /
- audio-visual aids	/7/	/6/	/ /	/ /
- accommodatiion	/7/	/5/	/1/	/ /
- meals	/4/	/8/	/1/	/ /
- plant visits	/8/	/3/	/1/	/ /
- social and cultural events	/8/	/2/	/3/	/ /
- travel arrangements	/7/	/4/	/1/	/ /

Additional comments:

- Nippon KK plant visit was somewhat below other activities in effectiveness

III. RELEVANCE AND APPLICABILITY

17. Did you find the contents of the programme relevant to conditions in your company?

- to a very great extent	/3/
- to a great extent	/7/
- to a sufficient extent	/3/
- to a small extent	/ /
- to a very small extent	/ /

Please state why:

- New concepts to be adapted/applied
- Company has to increase exports/QC essential
- Excellent tools for performance improvement
- TQC not implemented in my company, only QCC
- After learning, problem solving methods can now be applied in company
- Many quality problems need to be solved in my company etc.

18. Do you think you will have an opportunity to apply your newly acquired knowledge and experience in your present job?

- to a very great extent	/3/
- to a great extent	/7/
- to a sufficient extent	/3/
- to a small extent	/ /
- to a very small extent	/ /

What difficulties, if any, do you expect to meet?

- Acceptance of new ideas by management (2)
- Basic mentality of employment environment
- Initial resistance to data collection (which means more work)
- Company policy

19. Will you be in a position to transfer your acquired knowledge to others in your company (or home country in general)?

- to a very great extent	/2/
- to a great extent	/9/
- to a sufficient extent	/2/
- to a small extent	/ /
- to a very small extent	/ /

20. How will this transfer be done?

- Practical on-the-job advice to colleagues and subordinates	/11/
- Distribution of materials obtained during the programme	/10/
- Specific training activities inside present employment	/10/
- Specific training activities outside present employment	/5/

What difficulties, if any, do you expect to meet?

- Acceptance and application by others
- Adaptation of TQC philosophy to our culture - special training activities
- Time for training activities, translation of materials into native language
- Resistance in early part of implementation
- Belief in my company that QC is for Japanese only

IV. GENERAL

21. Other remarks and suggestions on aspects not adequately covered above (for example: measures to improve future programmes, additional activities you would have appreciated, possible follow-up to the programme, etc.)

Follow-up:

- Exchange of experience and suggestions to participant needed
- Meeting after 1-2 years
- Check on effectiveness of follow-up with each participant
- Organize course 1-2 years later to assess effectiveness

Schedule/content:

- Keep as it is - integrated (philosophy, tools/lectures, practical applications)
- More practical examples and exercises to be included with lectures
- Include design of experiments (at least orientationally)
- 2 lectures in Japanese with translation are time consuming - time could be used for more exercises (16 and 17 February)
- Computerization systems to be included
- More material on various stages of development of QC (Japan now in developed phase)

Plant visits:

- It would be ideal if each participant could visit 1 or 2 plants in his field

Other:

- Provide participants with video recordings on QC story, TQC, 7 tools to help training activities in own plants upon return

Name (optional)
(12 names given, 1 without name)

THANK YOU VERY MUCH FOR YOUR EVALUATION OF THE PROGRAMME!

Annex VII

ORGANIZATION OF PROBLEM-SOLVING CASE STUDY WORK

Group A	Instructor	First Meeting 1 Feb. 15:00- Room	Second Meeting 4th week Evening Date & Time	Room
Team A Mr. Shen Guan Zhong (China) Mr. Zhu Zhen Yuan (China)	Prof. Ayano	35	14 Feb. 17:00-	34
Team B Ms. Parween M. Ameen Ali (Iraq) Mr. Azizan Ariffin (Malaysia) Mr. Theerawut Sirikraiwat (Thailand)	Prof. Iizuka Mr. Ando	31	14 Feb. 17:00-	35
Team C Mr. Narsimulu Nagarigari (India) Mr. Ponciano F. N. Corsame (Philippines)	Prof. Miyakawa	34	15 Feb. 17:30-	34
GROUP B				
Team D Mr. N. W. Tinofireyi (Zimbabwe) Mr. D. Chandra Barua (Bangladesh)	Prof. Takahashi	33	15 Feb. 18:00-	35
Team E Mr. Nur Arfin (Indonesia) Mr. Sergio Martinez M. (Mexico)	Mr. Tsujita	36	4 Feb.17:00- 14 Feb.17:00-	34 36
Team F Mr. Juan S. Gimenes M. (Chile) Ms. P.W.S.M.P. Samarakoon (Sri Lanka)	Prof. Ojima	37	16 Feb. 18:00-	35

Annex VIII

FOLLOW-UP (POST-PROGRAMME) QUESTIONNAIRE

1. Seven months after training in Japan, please give your opinion about the relevance of the training programme to conditions in your company.

2. Describe the impact of training inside your company in terms of

   - advice to colleagues;
   - convincing of management;
   - in-house training (on-the-job, lectures, dissemination of materials);
   - introduction of new techniques in daily work;
   - other.

3. Describe the impact of training outside your company, e.g.

   - seminars;
   - exchange of views (through associations or similar).

4. In terms of what you intended to do at the end of the training programme, how would you evaluate your accomplishments:

   - small or insignificant;
   - considerable;
   - significant.

   Please describe in detail.
   (If 'small or insignificant', please indicate most important reason.)

5. Describe QC activities undertaken in your company after training.

- QC education;
- QC circle initiation;
- improvement of QA system;
- promotion or improvement of standard of operation;
- other.

6. Which statistical QC techniques have you utilized since training?

- Cause and effect diagram;
- Pareto diagram;
- Scatter diagram;
- Control chart;
- Other.

Please describe.

7. Please describe the status of your case study problem analyzed during training. What achievements have you made since (better data collected, main cause of problem identified, specific action undertaken to sustain quality improvement)? What suggestions and conclusions indicated in your final report were implemented?
(PLEASE ATTACH A SHORT SUMMARY REPORT ON CASE STUDY SOLUTION.)

8. Please indicate what other QC problems have you analyzed since returning. What achievements or improvements have you made?

9. What problems or resistance have you encountered in your company related to QC improvements you have made since returning from training? What is the likelihood of the situation changing (resistance diminishing) in the future? What actions do you propose to undertake?

10. Please indicate your interest in (or estimated benefit from) an advanced course in QC techniques in the near future.

11. Any other comments or suggestions?

Date: . . . . . Name: . . . . . .

Signature: . . . . . .

Address (including telephone and telex number):