

JOINT EVALUATION REPORT  
ON  
THE JAPANESE TECHNICAL COOPERATION  
FOR  
THE PRODUCTIVITY DEVELOPMENT PROJECT  
IN THE KINGDOM OF THAILAND

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)  
JAPAN

MINISTRY OF INDUSTRY(MOI)  
THE KINGDOM OF THAILAND

November 10, 1998

BANGKOK, THE KINGDOM OF THAILAND

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MUTUALLY ATTESTED AND SUBMITTED  
TO ALL CONCERNED

November 10, 1998

BANGKOK, THE KINGDOM OF THAILAND

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## I. INTRODUCTION

### 1. The Evaluation Teams

The Japanese Evaluation Team (hereinafter referred to as "the Japanese Team") organized by Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Dr. Takeshi Usami, visited the Kingdom of Thailand from October 25 to November 11, 1998 for the purpose of joint evaluation with the Thai Evaluation Team (hereinafter referred to as "the Thai Team") on the achievement of the Japanese technical cooperation for the Productivity Development Project in the Kingdom of Thailand (hereinafter referred to as "the Project") on the basis of the Record of Discussions signed on February 18, 1994 (hereinafter referred to as "R/D").

Both teams discussed and studied together the effectiveness, impact, efficiency, relevance and sustainability of the Project in accordance with the JICA Project Cycle Management (hereinafter referred to as "JPCM") method.

Through careful studies and discussions, both sides summarized their findings and observations as described in this document.

## 2. Schedule of Joint Evaluation

October 25, 1998	Arrival of consultant in Bangkok
October 26, 1998	Interviews with a company related to the Project Interviews with counterparts (hereinafter referred to as "C/P")
October 27, 1998	Interviews with Japanese experts Interviews with C/P
October 28, 1998	Arrival of members of the Japanese Team in Bangkok (Technical Transfer Program, Human Resource Development and Evaluation Management)
October 29, 1998	Meeting between the Japanese Team and the Japanese experts
October 30, 1998	Meeting between the Japanese Team and members of Thailand Productivity Institute (hereinafter referred to as "FTPI")
October 31, 1998	Documentation Joining of a member of the Japanese Team (Technical Cooperation Program)
November 1, 1998	Documentation Arrival of Leader of the Japanese Team in Bangkok
November 2, 1998	Meeting between the Japanese Team and JICA Bangkok Office Courtesy call on Department of Technical and Economic Cooperation (hereinafter referred to as "DTEC") and Ministry of Industry (hereinafter referred to as "MOI") by the Japanese Team
November 3, 1998	Joint meeting between the Japanese Team and the Thai Team
November 4, 1998	Joint meeting between the Japanese Team and the Thai Team Departure of a member of the Japanese Team (Technical Transfer Program) to Japan
November 5, 1998	Documentation
November 6, 1998	Discussion on draft of Evaluation Report
November 7, 1998	Documentation Departure of a member of the Japanese Team (Technical Cooperation Program) to Japan
November 8, 1998	Documentation
November 9, 1998	Finalization on draft of Evaluation Report
November 10, 1998	Signing of the Joint Evaluation Report and Minutes of Discussion

### 3. Members of Evaluation Teams

#### 3-1. Japanese Team

Takeshi Usami	Leader Special Technical Advisor to the President, JICA
Masayoshi Watanabe	Technical Cooperation Program Deputy Director, Technical Cooperation Division., Economic Cooperation Department., International Trade Policy Bureau, Ministry of International Trade and Industry
Ko Kasuga	Technical Transfer Program Executive Director, International Division, Japan Productivity Center for Socio-Economic Development
Mikiko Musha	Human Resource Development Project Officer, International Division, Japan Productivity Center for Socio-Economic Development
Susumu Katsumata	Evaluation Management Staff, First Technical Cooperation Division, Mining & Industrial Development Cooperation Department., JICA
Koichi Hyogo	Evaluation Analysis Economist, PADECO Co., Ltd.

#### 3-2. Thai Team

Thamnu Vasinonta	Leader Deputy Permanent Secretary, MOI
Kanokpan Chancharaswat	Chief of Bilateral Cooperation Section Foreign Relation Division, MOI
Supranee Liamcharoen	Chief of Monitoring and Evaluation Planning Division, DTEC
Prasit Tansuvan	Executive Director, FTPI
Manussawee Dhadasih	Director of Productivity Promotion Division, FTPI

## II. METHODOLOGY OF EVALUATION

### 1. Method of Evaluation

The evaluation study was conducted in accordance with the JPCM method.

- The Project Design Matrix (hereinafter referred to as "PDM") was agreed upon by both sides as a basis of the evaluation.
- Achievement of the Project was studied by collecting data of the Verifiable Indicators set in the PDM.
- The Project was evaluated on five aspects described below.

### 2. Aspects of Evaluation

The Project was studied and analyzed on the following five aspects:

- 1) Effectiveness: Evaluate the extent to which the purpose has been achieved or not, and whether the Project Purpose can be expected to happen on the basis of the outputs of the project.
- 2) Impact: Foreseeable or unforeseeable, and favorable or adverse effect of the project upon the target groups and persons possibly affected by the Project.
- 3) Efficiency: Evaluate how the results stand in relation to the efforts and resources, how economically the resources were converted to the outputs, and whether the same results could have been achieved by other better methods.
- 4) Relevance: Evaluate the degree to which the project can still be justified in relation to the national and regional priority levels given to the theme.
- 5) Sustainability: Evaluate the extent to which the positive effects as a result of the project will still continue after external assistance has been concluded.

### 3. Information for Evaluation

The Following sources of information were used in this study.

- 1) Documents agreed upon by both sides prior to and/or in the course of the Project implementation;  
R/D,  
Minutes of Discussions,  
Tentative Schedule of Implementation (hereinafter referred to as "TSI")  
Technical Cooperation Program (hereinafter referred to as "TCP") and  
others
- 2) The PDM (Annex 1)
- 3) Record of inputs from both sides and of activities of the Project
- 4) Statistics
- 5) Interviews and questionnaires given to C/P, Japanese experts, the government officials and the companies with OJT.



### III. BACKGROUND AND SUMMARY OF THE PROJECT

#### 1. Background of the Project

MOI of the Kingdom of Thailand decided to accelerate the nation's industrialization program.

In February 1994, JICA of Japan and MOI of Thailand signed R/D to implement a five-year technical cooperation program entitled the Productivity Development Project in the Kingdom of Thailand, from February 18, 1994 to February 17, 1999, aiming at building up the foundation of productivity development for Thai industry.

#### 2. Chronological Review of the Project

A Chronological Review of the Project is summarized in Annex 2.

#### 3. Objective of the Project

Objective of the Project stipulated in R/D was:

C/P will acquire techniques of Integrated Productivity Improvement at the National Productivity Organization.

The objective of the Project was analyzed and re-arranged into the Project Purpose as the detailed contents of narrative summary in the PDM, in order to monitor and evaluate the results of the Project properly.

The Project Purpose is :

Productivity development activities will be efficiently performed for Thai enterprises by the C/P of FTPI.

#### 4. Tentative Schedule of Implementation

The TSI is attached in Annex 3.

## 5. Technical Cooperation Program

The TCP is attached in Annex 4.

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## IV. RESULTS OF EVALUATION

### 1. Summary

#### Effectiveness

In spite of relatively short period for technology transfer to C/P of FTPI, the Project has been successful so far in the way that it has trained competent C/P on Consulting Skills for Productivity Development, Human Resource Development and Labor-Management Relations, and Productivity Promotion and Survey (each hereinafter referred to as "Consulting Skills", "HRD/LMR", and "Promotion /Survey"). Based on the well-organized schedule of training as well as the provision of enough machinery and equipment, the level of skill and knowledge of C/P has been steadily promoted. However, the Project Purpose would have been more effectively achieved if the training period for C/P of FTPI had not been shortened because of the change of the implementing agency.

#### Impact

By receiving both C/P classroom training and OJT under the Project, FTPI has been successful in increasing the number of services offered to private enterprises as the number of well-trained C/P increases. So far, member companies of FTPI have amounted up to 646.

FTPI has also been successful in diffusing the notion of productivity development to private enterprises by holding various activities, such as seminars for relevant people and the promotion of Productivity Week. As a result of this, FTPI is highly regarded as a center of productivity development in Thailand and allowed to participate in the process of formulating national productivity policy and strategies with National Economic and Social Development Board (hereinafter referred to as "NESDB").

#### Efficiency

As for timing of inputs, the dispatch of Japanese experts as well as C/P training in Japan and provision of machinery and equipment have been handled properly. The financial resources for local costs were also provided by Thai side without any delay. The scale of the Project has been basically appropriate in that planned inputs were efficiently converted to outputs.

### Relevance

In order to strengthen the international competitiveness of Thai enterprises, the government has begun to stimulate a policy of productivity development diffusion. As a center of productivity development, activities handled by FTPI under the Project have contributed gradually to promote the productivity development in private enterprises. For further enhancement of technology transfer under the Project, the substantial training period should be maintained.

### Sustainability

FTPI has been able to nurture competent C/P under the Project. Considering the current increase in demand for FTPI's activities, however, the present number of well-qualified C/P who can train their juniors is not sufficient especially in the field of Consulting Skills and HRD/LMR.

FTPI will be expected to become financially independent in 1999, just partially subsidized after that by the government. However, in view of the increase in demand to promote productivity development especially after the economic crisis in 1997, FTPI has requested extension of full government funding to the year 2004. On the other hand, self-income, based on the activities such as training and consulting services, is accumulating steadily.

The total number of C/P trained under the Project has been increasing steadily. From the technical aspects, however, it is recommended that they should accumulate their experience to enrich their expertise for the future aspect.

### Future Prospects

As stated above, the Project has been successful so far in that it has nurtured competent C/P in FTPI. To help promote the productivity development in Thai industry under the circumstances of economic crisis, however, well-qualified C/P should be increased more in number.

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## 2. Achievement of the Plan

Detailed Contents of Narrative Summary	Objectively Verifiable Indicators	Means of Verification
<p><b>Overall Goal</b></p> <p>Productivity development activities will be diffused and penetrated into the enterprises in Thailand through FTPI as the national productivity organization.</p>	<ol style="list-style-type: none"> <li>1. The number of enterprises in Thailand that practice productivity development activities</li> <li>2. The number of enterprises that want to continue receiving FTPI's services after its consulting activities</li> <li>3. The evaluation of FTPI's productivity development activities by the client companies</li> <li>4. The number of consultants who have been independently trained by FTPI</li> <li>5. The in-company evaluation of facilitators' activities nurtured by FTPI</li> </ol>	<ol style="list-style-type: none"> <li>1. The number of OJT companies for On-site Management Guidance (OMG) / Consultation : approximately 100</li> <li>2. More than 10 companies</li> <li>3. The number of OJT companies that have visited the institute for clinics or consultations after the seminars conducted in FTPI or the Project: approximately 200</li> <li>4. The training is now offered by senior level consultants</li> <li>5. The facilitator system itself is appreciated by enterprises</li> </ol>
<p><b>Project Purpose</b></p> <p>Productivity development activities will be effectively performed for Thai enterprises by the C/P of FTPI.</p>	<ol style="list-style-type: none"> <li>1. Evaluation of C/P's productivity development activities in OJT companies</li> <li>2. The number of OJT companies and facilitators</li> </ol>	<ol style="list-style-type: none"> <li>1. In accordance with the videotapes and interviews of OJT companies which were produced by FTPI, the Project has been evaluated highly.</li> <li>2. The number of companies that conducted consultation (OJT) and facilitators who received guidance: <ul style="list-style-type: none"> <li>• Companies: 35</li> <li>• Facilitators: approximately 200</li> </ul> </li> </ol>
<p><b>Outputs</b></p> <p>0. Project operation unit will be enhanced.</p> <p>1. C/P in FTPI will acquire knowledge of Consulting Skills.</p> <p>2. C/P in FTPI will acquire knowledge of HRD / LMR to conduct productivity development.</p> <p>3. C/P in FTPI will acquire knowledge of Promotion / Survey techniques.</p> <p>4. The machinery and equipment necessary to implement AV activities will be installed and maintained properly.</p>	<p>0-1 Personnel number (FTPI/the Project)</p> <p>0-2 Budget</p> <p>0-3 Project management</p> <p>1-1 The number of C/P specialized in Consulting Skills:</p> <ul style="list-style-type: none"> <li>• Senior level consultant / Associate level consultant / Junior level consultant</li> </ul> <p>1-2 Evaluation of C/P's achievement with respect to knowledge and experience</p> <p>2-1 The number of C/P specialized in HRD/LMR:</p> <ul style="list-style-type: none"> <li>• Senior level consultant / Associate level consultant / Junior level consultant</li> </ul> <p>2-2 Evaluation of C/P's achievement with respect to knowledge and experience</p> <p>3-1 The number of C/P specialized in Promotion / Survey:</p> <ul style="list-style-type: none"> <li>• Professional staff / Assistant staff</li> </ul> <p>3-2 Evaluation of C/P's achievement with respect to knowledge and experience</p> <p>4-1 The amount of AV equipment procured and their operation and maintenance condition</p>	<p>0-1 114 for FTPI (As of April, 1998) 39 C/P for the Project (As of July, 1998)</p> <p>0-2 337 million baht (July/1995-September/1998: FTPI general operation cost report)</p> <p>0-3 79.78 million baht (Income in 1998: FTPI income report)</p> <p>1-1 Consulting Skills</p> <ul style="list-style-type: none"> <li>• Senior level consultant: 3</li> <li>• Associate level consultant: 6</li> <li>• Junior level consultant: 10</li> </ul> <p>2-1 HRD/LMR</p> <ul style="list-style-type: none"> <li>• Associate level consultant: 2</li> <li>• Junior level consultant: 2</li> </ul> <p>3-1 Promotion / Survey</p> <ul style="list-style-type: none"> <li>• Professional staff: 6</li> <li>• Assistant staff: 4</li> </ul> <p>AV staff</p> <ul style="list-style-type: none"> <li>• Professional producers: 2</li> <li>• Professional engineers: 3</li> <li>• Assistant producers: 1</li> </ul> <p>4-1 Refer to Annex 15 AV equipment has been handled well; maintenance check is done once in three month.</p>

Detailed Contents of Narrative Summary	Objectively Verifiable Indicators	Means of Verification
Activities	Inputs	
	Japanese side	Thai side
0-1 Allocate necessary personnel. 0-2 Make action plan. 0-3 Make budget plan and execute properly. 1-1 Formulate C/P training plan. 1-2 Provide C/P training curriculum. 1-3 Provide C/P training materials. 1-4 Provide C/P with lectures on Consulting Skills. 1-5 Conduct company visit study for C/P training on Consulting Skills. 1-6 Conduct OJT for C/P training on Consulting Skills. 1-7 Jointly develop training manuals to be used as guidelines for C/P. 1-8 Conduct seminars for relevant people. 1-9 Evaluate the results of the training. 2-1 Formulate C/P training plan. 2-2 Provide C/P training curriculum. 2-3 Provide C/P training materials. 2-4 Provide C/P with lectures on HRD/LMR. 2-5 Conduct company visit study for C/P training on HRD/LMR. 2-6 Conduct OJT for C/P training on HRD/LMR. 2-7 Jointly develop training manuals to be used as guidelines for C/P. 2-8 Conduct seminars for relevant people. 2-9 Evaluate the results of the training. 3-1 Formulate C/P training plan. 3-2 Provide C/P training curriculum. 3-3 Provide C/P training materials. 3-4 Provide C/P with lectures on Promotion & Survey. 3-5 Conduct company visit study for C/P training on Promotion & Survey. 3-6 Conduct OJT for C/P training on Promotion & Survey. 3-7 Jointly develop training manuals to be used as guidelines for C/P. 3-8 Conduct seminars for relevant people. 3-9 Evaluate the results of the training. 4-1 Implement the provision and installation of necessary machinery and equipment. 4-2 Make plan for maintenance and management of the machinery equipment. 4-3 Implement daily maintenance of the machinery and equipment.	1. Japanese Expert Dispatch Record (as of Feb. 1999) a) Long term experts: 8 • Chief Advisors • Coordinators • Consulting Skills, HRD/LMR and Promotion/Survey b) Short term experts: 35 • Consulting skills: 12 • Seminar lecturers: 4 • Machinery/equipment installation/operations guidance: 4 • Productivity survey: 1 • Productivity statistics: 3 • Productivity promotion: 3 • Value added analysis: 1 • Manager & supervisor training: 1 • Wage administration: 1 • Personnel management: 1 • Supervisor OJT: 1 • Middle management OJT: 1 • Facilitator OJT: 1 • HRD consulting: 1 2. Record of C/P Training in Japan • 1993 Productivity development visit study: 2 • 1994 Productivity development: 5 • 1995 Productivity development visit study: 2 • 1996 Productivity management in industry: 3 (Country-Focused Group Training Course) Productivity management in industry: 8 • 1997 Productivity management in industry: 3 (Country-Focused Group Training Course) Productivity management in industry: 8 • 1998 Productivity management in industry: 3 (Country-Focused Group Training Course) Productivity management in industry: 8 Total: 42 3. Materials and Equipment Provision Record 1994: ¥35,747,000 1995: ¥0 1996: ¥20,033,000 1997: ¥3,000,000 1998: ¥0	1. Allocation of C/P and office staff • C/P: 39 • Office staff: 14 (FTPI administration staff) 2. Location/placement of offices and office equipment 3. Provision of Machinery and Equipment • Expert's desks: 8 • Expert's chairs: 16 • Secretary's desks: 8 • Secretary's chairs: 4 • Desks for meeting rooms: 2 • Chairs for meeting rooms: 8 • Computer desks: 8 • Bookshelves: 8 • Suite for head/leader office: 1 • Steel cabinets: 5 4. Provision of other equipment such as spare parts and vehicles 5. Financial resources for the Project FTPI Budget (Financial resources for the Project are included in FTPI budget) 1995 48.72 million baht 1996 49.84 million baht 1997 101.43 million baht 1998 136.76 million baht 1999 151.23 million baht

### 3. Details

#### 3.1 Effectiveness

	Effectiveness	Constraints
(1) Contribution of Outputs to the Project Purpose	<p>Output 0: The Project operation unit will be enhanced.</p> <p>The Thailand Management Development Productivity Center (TMDPC) of the Ministry of Industry of Thailand became an implementing agency when the Project started in February 1994. In October 1994, Thailand Productivity Institute (FTPI) was established as an autonomous body, representing the National Productivity Organization (NPO). FTPI took responsibility for the Project as an implementing agency to train new staff as C/P for technology transfer from July, 1995. FTPI was fully subsidized by the government for the first five years. After this period, the subsidy will be partially given especially for the productivity promotion purpose. This Project has aimed at in-house training and consulting for productivity development, providing knowledge on productivity and developing experienced C/P. Hereby, in spite of the short training period of three years and seven months, productivity development promotion was conducted at many enterprises resulting in substantial achievements. FTPI is now highly regarded by private enterprises and government bodies.</p>	<ul style="list-style-type: none"> <li>• Due to the change of the implementing agency, the duration of technology transfer to C/P is shortened.</li> <li>• The new C/P selected are relatively young, and therefore have insufficient working experience at enterprises.</li> </ul>
	<p>Output 1: C/P in FTPI will acquire knowledge of Consulting Skills.</p> <p>The current C/P's consulting level seems to be sufficient to contribute to productivity development at Thai enterprises which are generally weak in management. At present, there are three Senior level C/P who are eligible to independently conduct consultations. In addition, six Associate level C/P are able to perform effective consultations as a group. They have been promoting effective activities for productivity development within factories. Also, there are ten Junior level C/P, with the potential to become Senior level C/P. Therefore, even as the number of targeted enterprises increases, productivity development activities will continue to be conducted effectively by these future Senior level C/P.</p>	<ul style="list-style-type: none"> <li>• Almost all the new C/P, who were recruited in the early stage of FTPI, were not experienced in productivity development activities.</li> <li>• In Thailand, the majority of company owners are still concentrating on investment expansion such as high-tech machinery and new equipment, rather than considering the importance of productivity as tools to improve product quality and strengthen competitiveness.</li> <li>• Based on the concept that productivity will be improved only by introducing some sophisticated devices, company owners request methods to achieve results in a short period.</li> </ul>

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	Effectiveness	Constraints
	<p>Output 2: C/P in FTPI will acquire knowledge of HRD / LMR to conduct productivity development.</p> <p>There are two Associate level C/P and two Junior level C/P. C/P in this field have been educated about the basics of productivity for two years in the joint training program with C/P in the field of Consulting Skills. They were then trained in intensive HRD programs for one more year and a half. In general, they are able to provide lectures in seminars.</p>	<ul style="list-style-type: none"> <li>• Some C/P selected are relatively young, and therefore have insufficient working experience at enterprises.</li> <li>• In general, the consultants should be well-grounded in this field to be able to discuss related matters with company owners on an equal level. The social background is such that it is difficult for young C/P to convince management level.</li> </ul>
	<p>Output 3: C/P in FTPI will acquire Promotion / Survey techniques.</p> <p>C/P in AV field had experiences on AV production before joining FTPI, so the technology transfer of AV production and video material development had been carried out for the first two years of the program. There are five Professional level staff and one Assistant level staff.</p> <p>C/P in Promotion field have been educated about the basics of productivity since the beginning in the joint training program with C/P in the field of Consulting Skills. They were then trained in intensive promotion programs for two more years. C/P in Survey field were trained at first on the basics of productivity and methodology of statistics and surveys, followed by a two-year training in statistics and surveys. At present there are six Professional staff and four Assistant staff. They have acquired the necessary knowledge to conduct in-house Promotion / Survey.</p>	
	<p>Output 4: The machinery and equipment necessary to implement AV activities will be installed and properly maintained.</p> <p>In the guidance of productivity development promotion at enterprises, it is important to educate and train both company owners and employees.</p> <p>The provision of machinery and equipment is making a great contribution to the effectiveness of lectures and promotion activities. The machinery and equipment are maintained based on the register.</p>	



	Activity status	Constraints
(2) Contribution to Activities to Outputs	<p>Activity 0: Allocation of personnel and formulation of activity and budgetary plans</p> <p>After having recruited most of its employees directly from colleges / graduate schools, FTPI has allocated them among Consulting Skills, HRD / LMR, and Promotion / Survey in the Project to train them as C/P to become competent consultants and other professional staff in FTPI for the future. FTPI also covers its five-year expenses after the establishment by using government's subsidies.</p>	
	<p>Activity 1: As for the C/P training on Consulting Skills, the following activities are executed:</p> <ul style="list-style-type: none"> <li>• Formulate C/P training plan</li> <li>• Provide C/P training curriculum</li> <li>• Provide C/P training materials</li> <li>• Provide C/P with classroom training</li> <li>• Conduct company visit study</li> <li>• Conduct OJT in factory for C/P</li> <li>• Jointly develop training manuals</li> <li>• Conducting of seminars for relevant people</li> <li>• Evaluate the result of the training</li> </ul> <p>The above activities are relevant in that C/P of Senior / Associate level are raised steadily in the Project.</p> <p>Training manuals, which have been prepared by both Thai C/P and Japanese experts are almost available: they consist of basic part and intermediate part. Their future use and higher level manuals are expected.</p>	
	<p>Activity 2: As for the C/P training on HRD / LMR, the following activities are executed:</p> <ul style="list-style-type: none"> <li>• Formulate C/P training plan</li> <li>• Provide C/P training curriculum</li> <li>• Provide C/P training materials</li> <li>• Provide C/P with classroom training</li> <li>• Conduct company visit study</li> <li>• Conduct OJT in factory for C/P</li> <li>• Jointly develop training manuals</li> <li>• Conducting of seminars for relevant people</li> <li>• Evaluate the result of the training</li> </ul> <p>With respect to C/P training on the HRD/LMR field, C/P was initially provided with basic knowledge in Consulting Skills for two years. C/P have reached the Associate and Junior level, resulting in the project activity being basically relevant.</p>	

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	Activity status	Constraints
	<p>Activity 3: As for the C/P training on Promotion / Survey, the following activities are executed:</p> <ul style="list-style-type: none"> <li>• Formulate C/P training plan</li> <li>• Provide C/P training curriculum</li> <li>• Provide C/P training materials</li> <li>• Provide C/P with classroom training</li> <li>• Conduct company visit study</li> <li>• Conduct OJT in factory for C/P</li> <li>• Jointly develop training materials</li> <li>• Conduct seminars for relevant people</li> <li>• Evaluate the result of the training</li> </ul> <p>With respect to C/P training on Promotion/Survey, the technology transfer of AV production and video material development had been carried out for the first two years of the Project. Since new C/P in AV section hired by FTPI have some technical experience, they have developed AV materials for productivity development activities and promotion independently, having only been taught about some fundamental knowledge of productivity development.</p> <p>For another two years and a half, intensive training programs for Promotion/Survey were provided. Most of trained C/P reaches the professional level. Therefore, the Project activity had a relevant result.</p> <p>The seminars, considered as a very effective promotional means, were conducted to transfer productivity development concept to entrepreneurs, as well as to select model companies for C/P training.</p>	
	<p>Activity 4: As for the machinery and equipment, the following activities are executed:</p> <ul style="list-style-type: none"> <li>• Provision and installation of necessary machinery and equipment</li> <li>• Utilization of machinery and formulation of maintenance plan</li> <li>• Implementation of daily machinery maintenance</li> </ul> <p>The machinery and equipment provided are cameras, videos and editing system for making AV materials, as well as projectors and an audio dubbing system for lecture rooms.</p> <p>The Thai side took complete responsibility for the management and maintenance of the machinery and equipment, as soon as they arrived. There have been no problems with management and maintenance so far.</p> <p>The Japanese side has basically taken responsibility for the experts' hand-carried machinery and equipment. C/P can borrow and use this machinery and equipment when necessary. As a procedure, C/P must prepare an application form when borrowing equipment.</p> <p>All of the machinery and equipment are effectively used for productivity development training.</p>	

### 3.2 Impact

<p>(1) Direct Impact (Project Purpose Level)</p>	<p>TMDPC was the sole productivity guidance organization in Thailand until this Project commenced. Since their objective was mainly to introduce basic concepts for productivity, on-site consulting on productivity development was not sufficient. Consequently, The result was not effectively shown.</p> <p>On the other hand, C/P conducted on-site guidance for productivity development at factories in this Project, which resulted in a contribution to productivity development. By applying the skills they learnt in the classroom training, C/P have brought client companies substantial improvement in many productivity development figures, such as quality improvement, improvement of machine utilization, waste reduction, and development of supervisor's capability. As for examples of the outcome for the Project, the number of membership companies of FTPI soars up to 646; resulting from productivity promotional activity. C/P have already taken charge of 80 companies both as On-site Management Guidance (OMG) and OJT cases. The Project has also succeeded in enhancing approximately 200 facilitators at OJT companies.</p>
<p>(2) Indirect Impact (Overall Goal Level)</p>	<p>Productivity development activities handled by C/P of FTPI has been diffused in the following ways:</p> <ul style="list-style-type: none"> <li>• <u>The promotion in the Productivity Week</u> Every year FTPI <i>has held</i> the Productivity Week as a way of promotion. This year, the Week was held on July 30 to August 2. More than 3,000 attendants were in the seminars, and 10,000 attendants in the exhibition.</li> <li>• <u>5 S movement in the Prime Minister's office</u> With the assistance of FTPI, 5S activities were initially implemented in the Prime Minister's Office. Seeing the benefits of such activities, PM requested all ministries and government offices in each province to integrate 5S activities in their work for more effectiveness in rendering services.</li> <li>• <u>Joint promotion with NESDB</u> NESDB has decided to formulate the strategies to implement productivity development activities to help promote the economic growth. For that purpose, FTPI is expected to participate in the joint promotion with NESDB from January 1999.</li> <li>• <u>Training subject in vocational schools</u> Productivity development is now taught in vocational schools throughout the country as one of the compulsory subjects. It is a very effective way to spread the idea among people.</li> </ul>

### 3.3 Efficiency

<p><b>(1) Timing of Inputs</b></p> <p><u>Japanese side</u></p> <ul style="list-style-type: none"> <li>• Dispatch of experts</li> <li>• Provision of machinery and equipment</li> </ul> <p><u>Thai side</u></p> <ul style="list-style-type: none"> <li>• Preparation of land, facilities and machinery / equipment</li> <li>• Placement of counterparts</li> <li>• Financial resources for local costs</li> <li>• Others</li> </ul>	<p><u>Japanese side</u></p> <ul style="list-style-type: none"> <li>• The timing for dispatching experts was appropriate.</li> <li>• The timing for provision of machinery and equipment was appropriate.</li> </ul> <p><u>Thai side</u></p> <ul style="list-style-type: none"> <li>• Preparation of offices, facilities, and machinery / equipment was conducted without any delay.</li> <li>• The delay in recruiting C/P (Head) for HRD field was caused by the difficulties in finding experienced staff corresponding to the request.</li> <li>• Financial resources for local costs were provided without any difficulty, resulting in smooth project implementation.</li> </ul>
<p><b>(2) Relation between Inputs and Outputs</b></p> <p><u>Japanese side</u></p> <ul style="list-style-type: none"> <li>• Dispatch of experts</li> <li>• C/P training in Japan</li> <li>• Provision of machinery and equipment</li> </ul> <p><u>Thai side</u></p> <ul style="list-style-type: none"> <li>• Preparation of land, facilities and machinery/equipment</li> <li>• Allocation of C/P</li> <li>• Financial resources for local costs</li> <li>• Others</li> </ul>	<p><u>Japanese side</u></p> <ul style="list-style-type: none"> <li>• With respect to the dispatch of Japanese experts, the number of short-term experts to be dispatched increased according to the number of C/P. This was effective in achieving the project output.</li> <li>• In consideration of C/P training in Japan, 42 C/P were trained in Japan, which exceeded greatly the original number. This contributed to the success of the Project.</li> <li>• AV production equipment and audio dubbing systems have been effectively utilized in C/P training.</li> <li>• Under the supporting system organized by a contract with JICA, Japan Productivity Center for Socio-Economic Development (JPC-SED) has made a great contribution to the Project with support activities such as recruitment of Japanese experts, planning of the C/P training in Japan and monitoring of the Project.</li> </ul> <p><u>Thai side</u></p> <ul style="list-style-type: none"> <li>• Provision of offices, facilities and machinery / equipment was mostly conducted properly as scheduled, resulting in a good training environment for C/P.</li> <li>• The financial burden of local costs has been determined to be at an appropriate level.</li> </ul>
<p><b>(3) Linkage with Other Cooperation Project</b></p>	<p>The dispatch of short-term experts from the Asian Productivity Organization (APO) was effective, resulting in smooth implementation of the Project to meet the increasing needs of C/P training.</p>

### 3.4 Relevance

<p>(1) <b>Relevance with Overall Goal</b></p> <ul style="list-style-type: none"> <li>• Relevance with beneficiary's needs</li> <li>• Relevance with development policy</li> </ul>	<ul style="list-style-type: none"> <li>• In order to strengthen the international competitiveness of Thai enterprises, the government has been promoting a policy to accelerate a national industrialization plan through productivity development. It is necessary for companies to understand the significance of productivity development. In addition, productivity development activities need to be conducted throughout the country. Therefore, the Overall Goal was relevant, and have exactly met the government policy above.</li> <li>• FTPI is the sole national organization which may accelerate the industrialization policy throughout the country through productivity development.</li> </ul>
<p>(2) <b>Relevance with Project Purpose</b></p> <ul style="list-style-type: none"> <li>• Relevance with Overall Goal</li> <li>• Relevance with organizational needs of implementation agency</li> </ul>	<ul style="list-style-type: none"> <li>• The Project Purpose has been consistent with the Overall Goal.</li> <li>• In order to strengthen the international competitiveness of small and medium-sized enterprises in the 13 industrial sectors in Thailand, the Industrial Restructuring Plan (IRP) was initiated. One of the major goals of IRP is to improve productivity development and production process. FTPI takes major roles in this plan. Therefore, the organizational needs of FTPI is relevant to the Project Purpose.</li> </ul>
<p>(3) <b>Rationale of Project Planning</b></p>	<p>To promote productivity development, it is advisable for enterprises to further well-balanced activities regarding Consulting Skills, HRD / LMR, Promotion/Survey. Considering the fact that the Project has enabled C/P who had relatively little experience in the activities at first, to become well-qualified to fill the model companies' requests, the overall design of the Project has functioned properly.</p>
<p>(4) <b>Factors Affected</b></p>	<p>Although the cooperation period was initially set at five years, due to the change of the implementing agency, the technology transfer to the current C/P takes substantially three years and seven months, which was unforeseeable to the Japanese side.</p>

### 3.5 Sustainability

(1) Institutional Aspects	<p>With the implementation of IRP, the Thai enterprises will request more number of training and consulting services of FTPI. FTPI is successful at this moment to recruit many competent C/P and staff, and their turn over ratio is quite low. However, considering the rapid increase in the need of consultants and other professional staff in FTPI, the number of well-trained C/P at this moment is not sufficient.</p>																		
(2) Financial Aspects	<ul style="list-style-type: none"><li>FTPI was established under the condition that the government would finance 100% of the operation costs for five years starting from October 1994. After this period, the institute would finance the majority of operation costs by itself. With the economic and financial crisis that began in July 1997, the government realized the importance of promoting productivity development to resume economic growth. Thus, in view of the need to increase more consultants and other professional staff from 120 in 1999 to 250 in 2004, FTPI has requested the Cabinet through Ministry of Industry for extension of full government funding to the year 2004.</li><li>Forecast of budget (expenditure) and income of FTPI toward 2003 are shown as follows:</li></ul> <p style="text-align: center;"><b>Income and Budget(Expenditure) of FTPI</b></p> <p style="text-align: right;">Unit : Million Baht</p> <table><tr><th>Thai Fiscal Year</th><th>1999</th><th>2000</th><th>2001</th><th>2002</th><th>2003</th></tr><tr><td>Self-income</td><td>132.00</td><td>130.02</td><td>176.35</td><td>208.06</td><td>245.70</td></tr><tr><td>Budget (Expenditure)</td><td>151.20</td><td>196.30</td><td>240.27</td><td>296.05</td><td>365.49</td></tr></table> <p>FTPI's fund, which is equivalent to the accumulation of its annual income, will be increased yearly. Considering the expected increase in the number of consultants and other professional staff during this period, the above figure is trustworthy.</p>	Thai Fiscal Year	1999	2000	2001	2002	2003	Self-income	132.00	130.02	176.35	208.06	245.70	Budget (Expenditure)	151.20	196.30	240.27	296.05	365.49
Thai Fiscal Year	1999	2000	2001	2002	2003														
Self-income	132.00	130.02	176.35	208.06	245.70														
Budget (Expenditure)	151.20	196.30	240.27	296.05	365.49														
(3) Technical Aspects	<ul style="list-style-type: none"><li>There are three Senior level C/P who are eligible to oversee the whole factory, and there are six Associate level, and ten Junior level C/P who are eligible to provide limited guidance and lectures in seminars for productivity development in manufacturing lines in the field of Consulting Skills and HRD / LMR. Since the demand for FTPI's service is expected to increase, the number of Senior level C/P should also be increased. To promote Associate and Junior level C/P to the position, however, FTPI have to allow them to enhance their skills with more experience.</li><li>It is recommended that Japanese experts in the Project be replaced by Senior / Associate C/P step by step. For that purpose, manuals prepared in the Project should be utilized fully for the lectures held by C/P.</li><li>In the Promotion / Survey field C/P are technically sustainable.</li><li>Facilities, machinery and equipment are well-maintained. They contribute to develop training materials and to train C/P very much.</li></ul>																		

## V. CONCLUSION

The objectives of five-year Project are regarded as accomplished since C/P are sufficiently trained both in terms of numbers and in their quality, in spite of the fact that there was a shift on part of the implementing agency which has resulted in shortened period of technology transfer to C/P of FTPI from the original period of five (5) years to three (3) years and seven (7) months.

The Asian economic crisis since July 1997 had prompted Thai government to explore further enhancement of productivity across the country. Consequently, FTPI is expected to play an important role of productivity development in IRP as one of the coordinating and implementing organizations. In order for FTPI to promote IRP effectively and meet Thai industry's demand for productivity development, more numbers of qualified C/P have to be trained in the field of Consulting Skills and HRD/LMR. To give support to FTPI activities, it is advised that the Follow-up Program\* for the Project be conducted for additional two (2) years in succession to the existing five-year Project.

- \* The Follow-up Program of Japanese technical cooperation (hereinafter referred to as "F/U") means extension of cooperation in the specific field of technology transfer.

## VI. RECOMMENDATION

### 1. Short term recommendation

The importance of productivity development activities has regained its recognition among Thai people after the economic downturn since 1997, and the productivity concept is given a very high priority in IRP which was launched in October 1998. The Project is highly regarded among those concerned as the successful case of technology transfer under Japanese technical cooperation program for productivity development, and the outputs of the Project are expected to help promote IRP. As Thai Government's own program, IRP is now going to be implemented to provide foundations for further enhancement of productivity of the nation.

FTPI is now expected to take crucial as well as greater role in IRP in connection with the productivity development but its performance is much dependent on the successful human resource development. Although targeted numbers of C/P were successfully attained under the Project, demand for well-trained C/P are expected to increase even more. Under such circumstances, it is important to implement F/U to supplement Thai's own sustainability. However, full and careful consideration to establish a system, which will enable well-coordinated implementation process of F/U and IRP, is needed.

In order to cope with increasing demand for productivity, it is important that while proceeding with the technology transfer under F/U in efficient manner, results achieved are fed into IRP at an earliest timing to ensure steady implementation of IRP. This is, in other words, to confirm and share the views between the nations that the very existence of F/U is indeed enforcing the progress of IRP. It is agreed that well-structured system should be created to ensure smooth transfer of productivity technology.

In order to enhance further synergy, it is important to establish a steering committee, organized by FTPI and advised by Japanese experts to manage F/U. The committee will monitor periodically the progress of F/U, and review the Plan of Operations and each C/P Development Program, if necessary. Proposals and requests made by the experts regarding F/U through the committee should be made it known to every C/P.



## 2. Long term recommendations

- (1) Due to the fact that FTPI will be financially independent resulting in most of the operation costs being funded by its own financial resources, a long term vision to achieve profits in each division (Training, Consulting, Promotion, and Research/Information) should be formulated for future operation.
- (2) FTPI should collaborate with other institutes, which are expected to be established, to help promote IRP.
- (3) With the technology transfer in this Project, FTPI is expected to accumulate and modify the knowledge and skill in the way that are accessible for neighboring countries.

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## VII. LESSONS LEARNED

- (1) In Thailand, the importance of productivity was recognized only by a limited group of people until recently. And the concept had not been much practiced at factories as established practices. However, faced with a harsh economic environment, many enterprises are now finding it difficult even to survive unless they tackle productivity issues. Under such circumstances, people have started to recognize the importance of productivity development activities as an effective tool to remain in the market.

To implement the project of this kind in the future, we should bear in mind difficulties of technology transfer since the target groups don't always appreciate the importance of this productivity issue clearly. In order to make desired project design, it is important to conduct more comprehensive preliminary study and/or supplementary study prior to the start up of the cooperation period. And once the project started, it is necessary, therefore, to arrange a series of monitoring, operation, and evaluation of the project by applying PDM for effective implementation of the project.

- (2) At the beginning stage of the Project, shift of the implementing agency was expected and it was known that C/P would have to be transferred to the new organization. However, in reality, almost all of C/P didn't join FTPI, and as a result, FTPI had to recruit new C/P. It is necessary to recognize the importance of C/P as an important asset for a productivity organization, as well as to readjust the timing of the cooperation to fully reflect ongoing situation.

## VII. ANNEX

The data used for the evaluation are attached hereto as annexes.

## LIST OF ANNEXES

- Annex 1      Project Design Matrix (PDM) for Evaluation
- Annex 2      Chronological Review of the Project
- Annex 3      Tentative Schedule of Implementation
- Annex 4      Technical Cooperation Program
- Annex 5      Organization Chart of FTPI
- Annex 6      Achievement of Counterpart Development Program
- Annex 7      Information of Technology Transfer
- Annex 8      Achievement of Technology Transfer
- Annex 9      Major Project Activities from February 94 to February 99
- Annex 10     List of Training Manuals Developed in the Project
- Annex 11     List of Facilitator Developed by the Activities of the Project
- Annex 12     List of the Dispatched Japanese Experts
- Annex 13     Japanese Study Team Dispatched by JICA
- Annex 14     List of the Thai Counterpart Personnel Trained in Japan
- Annex 15     Machinery and Equipment Provided by the Japanese Side
- Annex 16     Expenses by the Japanese Side
- Annex 17     List of Thai Counterpart Personnel and Record of C/P Training
- Annex 18     Machinery and Equipment Provided by the Thai Side
- Annex 19     Expenses by the Thai Side

# Project Design Matrix (PDM) for Evaluation

Annex 1

Narrative Summary	Detailed Contents of Narrative Summary	Verifiable Indicator	Means of Verification	Important Assumptions
<p><b>Overall Goal</b></p> <p>Productivity development activities will be diffused and penetrated into the enterprises in Thailand.</p>	<p><b>Overall Goal</b></p> <p>Productivity development activities will be diffused and penetrated into the enterprises in Thailand through FTPI as the national productivity organization.</p>	<ol style="list-style-type: none"> <li>1. The number of enterprises in Thailand that practice productivity development activities</li> <li>2. The number of enterprises that want to continue receiving FTPI's services after its consulting activities</li> <li>3. The evaluation of FTPI's productivity development activities by the client companies</li> <li>4. The number of consultants who have been independently trained by FTPI</li> <li>5. The in-company evaluation of facilitators' activities nurtured by FTPI</li> </ol>	<ol style="list-style-type: none"> <li>1. Interviews with Japanese experts</li> <li>Statistics of Ministry of Industry</li> <li>2. Interviews with Japanese experts</li> <li>3. Interviews with OJT companies</li> <li>Questionnaires to OJT companies</li> <li>4. Interviews with Japanese experts</li> <li>Statistics of FTPI</li> <li>5. Interviews with OJT companies</li> <li>Questionnaires to OJT companies</li> </ol>	<p>a. Related economic policy on productivity development is stable.</p>
<p><b>Project Purpose</b></p> <p>Counterparts (C/P) will acquire the techniques of integrated productivity improvement at the National Productivity Center.</p>	<p><b>Project Purpose</b></p> <p>Productivity development activities will be effectively performed for Thai enterprises by the C/P of FTPI.</p>	<ol style="list-style-type: none"> <li>1. Evaluation of C/P's productivity development activities in OJT companies</li> <li>2. The number of OJT companies and facilitators</li> </ol>	<ol style="list-style-type: none"> <li>1. Interviews with OJT companies</li> <li>Videotapes of OJT companies which were produced by FTPI</li> <li>Questionnaires to OJT companies</li> <li>2. Reports made by C/P</li> <li>Questionnaires to OJT companies</li> </ol>	<p>a. Enterprises in Thailand become prospective customers for the productivity development activities of FTPI.</p> <p>b. Enterprises in Thailand acknowledge FTPI as the national organization of productivity development.</p> <p>c. Relations among productivity related organizations (universities, enterprises, consultants) will be established.</p>
<p><b>Outputs</b></p> <p>a) C/P for productivity development activities will be trained.</p> <p>b) Leaders for productivity development activities will be trained through training C/P.</p>	<p><b>Outputs</b></p> <p>0. Project operation unit will be enhanced.</p> <p>1. C/P in FTPI will acquire knowledge of Consulting Skills.</p> <p>2. C/P in FTPI will acquire knowledge of HRD / LMR to conduct productivity development.</p> <p>3. C/P in FTPI will acquire knowledge of Promotion / Survey techniques.</p> <p>4. The machinery and equipment necessary to implement AV activities will be installed and maintained properly.</p>	<p>0-1 Personnel number(FTPI/the Project)</p> <p>0-2 Budget</p> <p>0-3 Project management</p> <p>1-1 The number of C/P specialized in Consulting Skills:</p> <p>Senior level consultant / Associate level consultant / Junior level consultant</p> <p>1-2 Evaluation of C/P's achievement with respect to knowledge and experience</p> <p>2-1 The number of C/P specialized in HRD/LMR:</p> <p>Senior level consultant / Associate level consultant / Junior level consultant</p> <p>2-2 Evaluation of C/P's achievement with respect to knowledge and experience</p> <p>3-1 The number of C/P specialized in Promotion / Survey:</p> <p>Professional staff / Assistant staff</p> <p>3-2 Evaluation of C/P's achievement with respect to knowledge and experience</p> <p>4-1 The amount of AV equipment procured and their operation and maintenance condition</p>	<p>0-1 FTPI personnel list</p> <p>0-2 FTPI financial report</p> <p>0-3 Project Report / List of clients</p> <p>1-1 Interviews with Japanese experts</p> <p>FTPI / Project record</p> <p>1-2 Interviews with Japanese experts</p> <p>Evaluation of C/P achievements in classroom training and OJT</p> <p>Questionnaires to OJT companies</p> <p>(Means of Verification for 2 and 3. are the same as 1 above)</p> <p>4-1 Equipment list</p>	<p>a. Enterprises in Thailand acknowledge the importance of productivity development.</p> <p>b. The importance of raising productivity (Quality, Cost, Delivery, Safety and Management) is acknowledged by enterprises.</p>

Narrative Summary	Detailed Contents of Narrative Summary	Inputs		Important Assumptions
		Japanese side	Thai side	
<b>Activities</b> a)-1 Formulate plans for C/P training a)-2 Provide assistance with preparing training materials. a)-3 Provide technical assistance with training curriculums. a)-4 Educate prospective C/P a)-5 Obtain necessary equipment. b)-1 Formulate survey plans for companies. b)-2 Collect OJT companies. b)-3 Select OJT companies. b)-4 Conduct research on productivity development activities in companies. b)-5 Analyze results of research. b)-6 Prepare materials for productivity development activities. b)-7 Prepare curriculums for productivity development activities. b)-8 Formulate development plans for productivity development. b)-9 Conduct productivity development activities. b)-10 Formulate plans for consultant training courses. b)-11 Provide assistance to trained consultants in rendering consulting service. b)-12 Obtain necessary equipment.	<b>Activities</b> 0-1 Allocate necessary personnel. 0-2 Make action plan. 0-3 Make budget plan and execute properly. 1-1 Formulate C/P training plan. 1-2 Provide C/P training curriculum. 1-3 Provide C/P training materials. 1-4 Provide C/P with lectures on Consulting Skills. 1-5 Conduct company visit study for C/P training on Consulting Skills. 1-6 Conduct OJT for C/P training on Consulting Skills. 1-7 Jointly develop training manuals to be used as guidelines for C/P. 1-8 Conduct seminars for relevant people. 1-9 Evaluate the results of the training. 2-1 Formulate C/P training plan. 2-2 Provide C/P training curriculum. 2-3 Provide C/P training materials. 2-4 Provide C/P with lectures on HRD/LMR. 2-5 Conduct company visit study for C/P training on HRD/LMR. 2-6 Conduct OJT for C/P training on HRD/LMR. 2-7 Jointly develop training manuals to be used as guidelines for C/P. 2-8 Conduct seminars for relevant people. 2-9 Evaluate the results of the training. 3-1 Formulate C/P training plan. 3-2 Provide C/P training curriculum. 3-3 Provide C/P training materials. 3-4 Provide C/P with lectures on Promotion / Survey. 3-5 Conduct company visit study for C/P training on Promotion / Survey. 3-6 Conduct OJT for C/P training on Promotion / Survey. 3-7 Jointly develop training manuals to be used as guidelines for C/P. 3-8 Conduct seminars for relevant people. 3-9 Evaluate the results of the training. 4-1 Implement the provision and installation of necessary machinery and equipment. 4-2 Make plan for maintenance and management of the machinery equipment. 4-3 Implement daily maintenance of the machinery and equipment.	1. Dispatch of Japanese Experts a) Long term experts • Chief Advisors • Coordinators • Consulting Skills • HRD / LMR • Promotion / Survey b) Short term experts 2. Acceptance of C/P in Japan 3. Provision of Machinery and Equipment	1. Allocation of C/P and office staff 2. Location/placement of offices and office equipment 3. Provision of Machinery and Equipment 4. Provision of other equipment such as spare parts and vehicles 5. Financial resources for the Project	a. Trained C/P stay in FTPI permanently. b. Top management of OJT companies accept the consultation activities of the C/P.  <b>Pre-conditions</b> a. The financial support of the Thai government continues during the cooperation period.

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## Chronological Review of the Project

Year	Month/Date	Item
1991	July	The Thai government submitted a request for a project-type technical cooperation to the government of Japan
1993	March 1 - 9 August 11 - 24	Dispatch of the Preliminary Survey Team Dispatch of the Experts Survey Team
1994	February 10 - 19 February 18 May 25  May 31 June 15 June 30 October  November 23 - December 2	Dispatch of the Implementation Survey Team Sign of R/D/Start of the Term of the Cooperation Dispatch of Japanese Long-Term Experts (Consulting Skills, Coordinator) Dispatch of Japanese Long-Term Expert (HRD/LMR) Dispatch of Japanese Long-Term Expert (Promotion/Survey) Dispatch of Japanese Long-Term Expert (Chief Advisor) Establishment of the National Productivity Center (NPC) was officially approved by the cabinet Dispatch of the Consultation Team
1995	January 18 - 19 January 25 June 10  July 1 November 20 - 28	The First Top Management Seminar was held at Bangkok The Second Top Management Seminar was held at Korat The first batch of Machinery and Equipment arrived from Japan FTPI was officially established Dispatch of the Advisory Team
1996	January 29 March 25 March 28  October 28 - November 5	Rearrangement work of FTPI office was completed The Third Top Management Seminar was held at Bangkok The Fourth Top Management Seminar was held at Chiang Mai Dispatch of the Consultation Team
1997	February 14  March 28  June 12 - 14 October 30 - November 7	The second batch of Machinery and Equipment (purchased from local agent) arrived The third batch of Machinery and Equipment arrived from Japan FTPI Official Opening Ceremony was held Dispatch of the Consultation Team
1998	January 20	The Fifth Top Management Seminar was held at Bangkok
1999	January	The Sixth Top Management Seminar will be held at Bangkok

## Tentative Schedule of Implementation

Japanese Fiscal Year (April-March)	1992		1993				1994				1995				1996				1997				1998				1999			
	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
<u>Japanese side</u>																														
I. Dispatch of Survey Team																														
(1) Preliminary		—																												
(2) Experts Survey				—																										
(3) Implementation						—																								
(4) Consultation								—																						
(5) Advisory												—																		
(6) Consultation														—																
(7) Consultation															—															
(8) Evaluation																		—												
II. Dispatch of Experts																														
1) Long-term Experts																														
(1) Chief Advisor																														
(2) Coordinator																														
(3) HRD & LMR																														
(4) Productivity Promotion & Survey																														
(5) Consulting Skills for Productivity Development																														
2) Short-term Experts																														
III. Training of Counterpart Personnel in Japan																														
IV. Provision of Machinery and Equipment																														
<u>Thai Side</u>																														
I. Building, Facilities and Space																														
II. Machinery and Equipment																														
III. Budgetary Allocation																														
IV. Allocation of Counterpart Personnel and Staff																														

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# Implementation of the Annual Work Plan February 1994 to March 1995

SUBJECTS	CONTENTS	'94 Fe	Ma	Ap	My	Ju	JI	Au	Se	Oc	No	De	'95 Ja	Fe	Ma
<u>Japanese side</u>															
I. Dispatch of Study Team	- Consultation Team														
II. Dispatch of Experts															
1) Long-term Experts	(1) Chief Advisor														
	(2) Project Coordinator														
	(3) HRD & LMR														
	(4) Productivity Promotion & Survey														
	(5) Consulting Skills for Productivity Development														
2) Short-term Experts	(1) Consulting Skills														
	(2) Seminar Lecturer														
	(3) Seminar Lecturer														
	(4) Seminar Lecturer														
	(5) Seminar Lecturer														
III. Training of Counterpart Personnel in Japan	<u>Individual Training Course</u>														
	(1) Productivity Development														
	(2) Productivity Development														
	(3) Productivity Movement														
	(4) Productivity Movement														
	(5) Productivity Movement														
	(6) Productivity Movement														
	(7) Productivity Movement														
IV. Provision of Machinery & Equipment															
<u>Thai side</u>															
I. Operation & Management	(1) TMDPC														
	(2) FTPI														
II. Allocation of Operational Costs	(1) TMDPC														
	(2) FTPI														
III. Staff Assignment	(1) TMDPC														
	(2) FTPI														

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# Implementation of the Annual Work Plan April 1994 to March 1995

SUBJECTS	CONTENTS	'94													'95		
		Fe	Ma	Ap	My	Ju	Jul	Au	Se	Oc	No	De	Ja	Fe	Ma		
Thai side																	
IV. Submission of Application Forms	1. A-1 Form for Experts	—											—				
	2. A-2, 3 Form for C/P Training	—															—
	3. A-4 Form for Machinery & Equipment	—															

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# **Implementation of the Annual Work Plan April 1995 to March 1996**

SUBJECTS	CONTENTS	'95 Ap	My	Ju	JI	Au	Se	Oc	No	De	'96 Ja	Fe	Ma
Japanese side	I. Dispatch of Study Team												
	- Technical Guidance Team									-			
	II. Dispatch of Experts												
	1) Long-term Experts												
	(1) Chief Advisor												
	(2) Project Coordinator												
	(3) HRD & LMR												
	(4) Productivity Promotion & Survey												
	(5) Consulting Skills for Productivity Development												
	2) Short-term Experts												
	(1) Installation of Equipment												
	(2) Installation of Equipment												
	(3) Productivity Promotion & Survey												
	(4) Installation and Operation of Equipment												
	(5) Consulting Skills-2												
III. Training of Counterpart Personnel in Japan	<u>Individual Training Course</u>												
	(1) Productivity Movement												
	(2) Productivity Movement												
	(3) Productivity Movement												
	(4) Productivity Movement												
	(5) Productivity Movement												
	(6) Productivity Movement (Observation)												
	(7) Productivity Movement (Observation)												
	(1) Arrival of AV and Training Equipment												
	(2) Installation and Operation of Equipment												
IV. Provision of Machinery & Equipment													
Thai side	I. Operation & Management												
	(1) TMDPC												
	(2) Establishment of FTPI												
	II. Allocation of Operational Costs												
	(1) TMDPC												
	(2) Establishment of FTPI												

## Implementation of the Annual Work Plan April 1995 to March 1996

SUBJECTS	CONTENTS	'95 Ap	My	Ju	Jul	Au	Se	Oc	No	De	'96 Ja	Fe	Ma
Thai side													
III. Staff Assignment	(1) TMDPC (2) FTPI recruited 12 Consulting C/P 1 Executive Director 1 Director (Promotion and Survey) 3 Promotion C/P 4 AV C/P												
IV. Submission of Application Forms	1. A-1 Form for Experts 2. A-2, 3 Form for C/P Training 3. A-4 Form for Machinery & Equipment					-	-	-					

# Implementation of the Annual Work Plan April 1996 to March 1997

SUBJECTS	CONTENTS	'96											'97		
		Ap	My	Ju	JI	Au	Se	Oc	No	De	Ja	Fe	Ma		
<u>Japanese side</u> I. Dispatch of Study Team  II. Dispatch of Experts 1) Long-term Experts         2) Short-term Experts   															

# **Implementation of the Annual Work Plan April 1996 to March 1997**

SUBJECTS	CONTENTS	'96 Ap	My	Ju	Jul	Au	Se	Oc	No	De	'97 Ja	Fe	Ma
<u>Thai side</u>													
I. Operation & Management	(1) FTPI												
II. Allocation of Operational Costs	(1) FTPI												
III. Staff Assignment	(1) FTPI recruited												
	1 Director (Consulting Skills)								-				
	5 Consulting C/P	-	-		-								
	3 Promotion & Survey			-	-								
	1 AV C/P											-	
IV. Submission of Application Forms	1. A-1 Form for Experts	-						-					
	2. A-2, 3 Form for C/P Training					-							
	3. A-4 Form for Machinery & Equipment	-											

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# Implementation of the Annual Work Plan April 1997 to March 1998

SUBJECTS	CONTENTS	'97 Ap	My	Ju	JI	Au	Se	Oc	No	De	'98 Ja	Fe	Ma
Japanese side													
I. Dispatch of Evaluation Team	- Technical Guidance Team												
II. Dispatch of Experts													
1) Long-term Experts	(1) Chief Advisor												
	(2) Project Coordinator												
	(3) HRD & LMR												
	(4) Productivity Promotion & Survey												
	(5) Consulting Skills for Productivity Development												
	(4) Productivity Statistics												
2) Short-term Experts	(6) Consulting Skill-4 (Small Industry, Casting)												
	(1) Consulting Skill-6 (Production Management)												
	(2) Consulting Skill-7 (Factory Management)												
	(3) Consulting Skill-8 (S.I. -1 Casting)												
	(4) Consulting Skill-9 (S.I. -2 Fabrication)												
	(5) Personnel Management												
	(6) Supervisory/Middle Management Development												
	(7) Wage Administration												
	(8) Productivity Promotion												
	(9) Productivity Statistics												
	(10) Installation and Operation of Equipment												
III. Training of Counterpart Personnel in Japan	<u>Individual Training Course</u>												
	(1) Productivity Management in Industry												
	(2) Productivity Management in Industry												
	(3) Productivity Management in Industry												
	<u>Country Focused Training Course</u>												
	(4) Productivity Improvement in Industry												
	(5) Productivity Improvement in Industry												
	(6) Productivity Improvement in Industry												
	(7) Productivity Improvement in Industry												
	(8) Productivity Improvement in Industry												
	(9) Productivity Improvement in Industry												
	(10) Productivity Improvement in Industry												
	(11) Productivity Improvement in Industry												

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# Implementation of the Annual Work Plan April 1997 to March 1998

SUBJECTS	CONTENTS	'97 Ap	My	Ju	JI	Au	Se	Oc	No	De	'98 Ja	Fe	Ma
IV. Provision of Machinery & Equipment	(1) Training Equipment (2 LCD Projector)								-				
<u>Thaiside</u>													
I. Operation & Management	(1) FTPI												
II. Allocation of Operational Costs	(1) FTPI												
III. Staff Assignment	(1) FTPI recruited 7 Consulting Skills C/P 4 Promotion & Survey 1 AV C/P	-- -- -- --		--									
IV. Submission of Application Forms	1. A-1 Form for Experts 2. A-2, 3 Form for C/P Training 3. A-4 Form for Machinery & Equipment	-	-		-	-					-		

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# Implementation of the Annual Work Plan April 1998 to March 1999

SUBJECTS	CONTENTS	98 Ap	My	Ju	JI	Au	Se	Oc	No	De	'99 Ja	Fe
IV. Provision of Machinery & Equipment												
<u>Thai side</u>	(8) Productivity Improvement in Industry											
I. Operation & Management	(9) Productivity Improvement in Industry											
	(10) Productivity Improvement in Industry											
II. Allocation of Operational Costs	(11) Productivity Improvement in Industry											
III. Staff Assignmen	(1) FTPI											
IV. Submission of Application Forms	(1) FTPI											
	(1) FTPI recruited											
	1. A-1 Form for Experts	-		-								
	2. A-2, 3 Form for CP Training											
	3. A-4 Form for Machinery & Equipment											

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**TECHNICAL COOPERATION PROGRAM**  
FIVE YEAR PLAN FOR CONSULTING SKILLS

**Annex 4 -1**

Japanese Fiscal Year (April-March)	1994				1995				1996				1997				1998			
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
☆ Training of Director, Consulting																				
1. C/P Training																				
1) Classroom training Practical Approach, Practical Systemes, and Practical Tools for In-company Productivity Movement																				
a) Basic skills																				
b) Practical skills																				
c) Integrated skills																				
2) Case study writing and development of manual (guideline) for training and consultation																				
3) On-site training [In-plant practice, Company visit study]																				
2. C/P and Facilitator Training (On-site) On-site Management Guidance OJT, Consultation OJT (trial and full scale), In-house Training																				
Company A																				
" B																				
" C																				
" D																				
" E																				
•																				
•																				
(each company has its own schedule)																				
3. C/P and Facilitator Training (Off-site)																				
1) Top Management Seminar																				
2) Network development																				
4. Short Term Experts (Shopfloor Mgt., Production Systems, Factory Mgt., Supporting Industries - Productivity Tools)																				
5. C/P Training in Japan																				

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**TECHNICAL COOPERATION PROGRAM**  
**Implementation for Consulting Skills (1994 ~ 1995)**

SUBJECTS	CONTENTS	'94 Fe	Ma	Ap	My	Ju	Jul	Aug	Se	Oc	No	De	'95 Ja	Fe	Ma
☆ Training of Director, Consulting															
1. C/P Training (In-office & On-site) 1) Classroom Training	(1) Basic skills (2) Practical skills (3) Integrated skills												TMDPC		
2. C/P and Facilitator Training (On-site) 1) On-site Management Guidance	(1) Airports Authority of Thailand (BKK, Phuket) (2) PTT (Petroleum Authority of Thailand) (BKK) (3) PTT (Petroleum Authority of Thailand) (BKK) (4) Jong Stit Co., Ltd. (BKK)														
3. C/P and Facilitator Training (Off-site) 1) Top Management Seminar															
4. Short-term Experts	(1) Consulting Skills (2) Seminar Lecturer (3) Seminar Lecturer (4) Seminar Lecturer (5) Seminar Lecturer														
5. C/P Training in Japan	Individual Training Course (1) Productivity Development (Observation) 1994.Mar.28 - Apr.4 (2) Productivity Development (Observation) 1994.Mar.28 - Apr.4 (3) Productivity Movement 1995.Mar.27 - Apr.28 (4) Productivity Movement 1995.Mar.27 - Apr.28 (5) Productivity Movement 1995.Mar.27 - Apr.28 (6) Productivity Movement 1995.Mar.27 - Apr.28 (7) Productivity Movement 1995.Mar.27 - Apr.28														

# **TECHNICAL COOPERATION PROGRAM** **Implementation for Consulting Skills (1995 ~ 1996)**

SUBJECTS	CONTENTS	95 Ap	My	Ju	JI	Au	Se	Oc	No	De	'96 Ja	Fe	Ma
☆ Training of Director, Consulting													
1. C/P Training 1) Classroom training	C1. Introductory Course C2. Productivity Consultant-Basic Course C7. Productivity Concept C8. Training and Development C9. OJT Instructor C10. Basic Supervisory												
2) Case Study Writing and Development Manual													
3) On-site Training	<u>Company Visit Study</u> (1) Cannon Hi-Tech (Thailand) Ltd. (2) Siam Yamaha Co., Ltd. (3) Yamaha Engine Co., Ltd. (4) Thai Arrow Products Co., Ltd. (5) Toshiba Consumer Products (Thailand) Co., Ltd.	-	-	-									
2. C/P and Facilitator Training (On-site)	<u>On-site Management Guidance OJT</u> (1) PTT (Petroleum Authority of Thailand) (BKK) (2) First Industry Product Co., Ltd. (Korat) (3) Kings Yont Ltd. (Korat)												
	<u>Consultation OJT-1 (Productivity Movement Trial, 6 months)</u> (1) Harmony Electronics Co., Ltd. (2) Kijthaworn Industry Co., Ltd. (3) People's Garment Public Co., Ltd. (4) Sriithai Mibtach Molds Co., Ltd. (5) Stainless Steel Home Equipment Manufacturing Co., Ltd. (6) KTM Steel Co., Ltd. (7) Learnthong Industry Co., Ltd.												
3. C/P Facilitator Training (Off-site)													
1) Top Management Seminar													
2) Network Development													-

**TECHNICAL COOPERATION PROGRAM**  
**Implementation for Consulting Skills (1995 ~ 1996)**

SUBJECTS	CONTENTS	'95 Ap	My	Ju	JI	Au	Se	Oc	No	De	'96 Ja	Fe	Ma
4. Short Term Experts	1) Consulting Skills-2												
5. C/P Training in Japan	<u>Individual Training Course</u> 1) Productivity Movement 1995.Mar.27 - Apr.28 2) Productivity Movement 1995.Mar.27 - Apr.28 3) Productivity Movement 1995.Mar.27 - Apr.28 4) Productivity Movement 1995.Mar.27 - Apr.28 5) Productivity Movement 1995.Mar.27 - Apr.28 6) Productivity Movement (Observation) 1995.Nov.5 - Nov.11 7) Productivity Movement (Observation) 1995.Nov.5 - Nov.11												

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# **TECHNICAL COOPERATION PROGRAM** **Implementation for Consulting Skills (1996 ~ 1997)**

SUBJECTS	CONTENTS	'96 Ap	My	Ju	JI	Au	Se	Oc	No	De	'97 Ja	Fe	Ma
☆ Training of Director, Consulting													
1. C/P Training													
1) Classroom training	C1. Introductory Course C2. Productivity Consultant-Basic Course C3. Basic Management Consultant Development Course C11. Intermediate Financial Management												
2) Case Study Writing and Development Manual													
3) On-site Training	Company Visit Study (1) Stainless Steel Home Equipment Manufacturing Co., Ltd. (2) Thai CRT Co., Ltd. (3) Siam Tinplate Co., Ltd. (4) Siam Toyota Manufacturing Co., Ltd. (5) Sony Semiconductor (Thailand) Co., Ltd. (6) Thai Radiator Manufacturing Co., Ltd. (7) Wichien Dynamic Industry Co., Ltd. (8) National Thai Co., Ltd. (9) Siam Nissan Co., Ltd. (10) Siam Tinplate Co., Ltd. (11) Siam Toyota Manufacturing Co., Ltd. (12) Strong Pack Co., Ltd. (13) Wichien Dynamic Co., Ltd.	—	—						— — — — —			— —	
2. C/P and Facilitator Training (On-site)	On-site Management Guidance OJT (1) Doi Kham Ford Products (Chiang-Mai) (2) Essex Co., Ltd. (Chiang-Mai) (3) Paradorn Bricks Co. (Chiang-Mai) (4) San Kampaeng Kilm Co. (Chiang-Mai) (5) DTC Industries Public Co., Ltd. (BKK) (6) Interplast Corp. Co., Ltd. (BKK) (7) Plastic Containers Co., Ltd. (BKK) (8) Premier Product Co., Ltd. (BKK) (9) STA Group Public Co., Ltd. (BKK, Hatyai) (10) Telecom Asia Corp Public Co., Ltd. (BKK) (11) Wichien Dynamic Co., Ltd. (BKK)  Consultation OJT-1 (1) Harmony Electronics Co., Ltd. (2) Kijthaworn Industry Co., Ltd.												

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**TECHNICAL COOPERATION PROGRAM**  
**Implementation for Consulting Skills (1996 ~ 1997)**

SUBJECTS	CONTENTS	'96											'97		
		Ap	My	Ju	JI	Au	Se	Oc	No	De	Ja	Fe	Ma		
	(3) People's Garment Public Co., Ltd. (4) Srithai Mibtach Molds Co., Ltd. (5) Stainless Steel Home Equipment Manufacturing Co., Ltd. (6) KTM Steel Co., Ltd. (7) Learnthong Industry Co., Ltd.(1) Strong Pack Co., Ltd. (8) Strong Pack Co., Ltd. (9) Somboon Precesion Products Co., Ltd.														
3. C/P Facilitator Training (Off-site) 1) Top Management Seminar 2) Network Development															
4. Short Term Experts	(1) Consulting Skills-5 (Quality Management) (2) Consulting Skilis-3 (Production Management) (3) Consulting Skill-4 (Casting)														
5. C/P Training in Japan	<u>Individual Training Course</u> (1) Productivity Improvement Practices in Industries 1997.Jan.21 - Feb. 8 (2) Productivity Improvement Practices in Industries 1997.Jan.21 - Feb. 8 (3) Productivity Improvement Practices in Industries 1997.Jan.21 - Feb. 8  <u>Country Focused Training Course (Cost Sharing Base)</u> (1) Productivity Management in Industry 1996.Sep.22 - Nov. 2 (2) Productivity Management in Industry 1996.Sep.22 - Nov. 2 (3) Productivity Management in Industry 1996.Sep.22 - Nov. 2 (4) Productivity Management in Industry 1996.Sep.22 - Nov. 2 (5) Productivity Management in Industry 1996.Sep.22 - Nov. 2 (6) Productivity Management in Industry 1996.Sep.22 - Nov. 2														



**TECHNICAL COOPERATION PROGRAM**  
**Implementation for Consulting Skills (1997 ~ 1998)**

SUBJECTS	CONTENTS	'97 Ap	My	Ju	Jul	Aug	Se	Oc	No	De	'98 Ja	Fe	Ma
☆ Training of Director, Consulting													
1. C/P Training													
1) Classroom training	C1. Introductory Course C2'. ConsultingSkills-Basic C3. Basic Management Consultant Development Course C4. Intensive "Kaizen" Work shop C5. Consulting Skills-Intermediate Course		—		—			—	—	—		—	
2) Case Study Writting and Development Manual		—			—	—	—	—	—	—			
3) On-site Training	<u>Company visit study</u> (1) 3M (Thailand) Co., Ltd. (2) Siam Toyota Manufacturing Co., Ltd. (3) Isuzu Motor (Thailand) Co., Ltd.			—			—	—					
2. C/P and Facilitator Training (On-site)													
	<u>On-site Management Guidance OJT</u> (1) Somboon Malleable Co., Ltd. (BKK) (2) Siam Fitting Co., Ltd. (BKK) (3) NL Production Co., Ltd. (BKK) (4) B.T. Engineering Co., Ltd. (BKK) (5) Siam Zexel Co., Ltd. (BKK) (6) Thai Radiator Manufacturing Co., Ltd. (BKK) (7) Bangkok Spring (BKK) (IPQI) (8) KV Electronics (BKK) (IPQI) (9) Asahi Somboon Aluminium Co., Ltd.	—	—	—					—	—			
	<u>Consultation OJT-1</u> (1) Union Plastic Public Co., Ltd.										—	—	
	<u>Consultation OJT-2</u> (Full-scale Productivity Improvement, 1 year) (1) Mala Chemical Industries Co., Ltd. (2) Somboon Precesion Products Co., Ltd. (3) Quality Lab Co., Ltd.							—	—	—	—	—	
	<u>Consultation OJT-3</u> (Productivity Improvement/HRD, 3-6 months) (1) Daichi Alloy (Thailand) Ltd. (2) KV-Electronics Assembly Co., Ltd.											—	—

**TECHNICAL COOPERATION PROGRAM**  
**Implementation for Consulting Skills (1997 ~ 1998)**

SUBJECTS	CONTENTS	'97 Ap	My	Ju	Jul	Aug	Se	Oc	No	De	'98 Ja	Fe	Ma
3. C/P Facilitator Training (Off-site) 1) Top Management Seminar 2) Network Development											—		
4. Short Term Experts	(1) Consulting Skills-6 (Production Management) (2) Consulting Skills-7 (Factory Management) (3) Consulting Skills-8 (Casting) (4) Consulting Skills-9 (Fabrication)												
5. C/P Training in Japan	<u>Individual Training Course</u> (1) Productivity Management in Industry 1997.Sep.15 - Sep. 27  <u>Country Focused Course (Cost Sharing Base)</u> (1) Productivity Management in Industry 1997.Sep.9 - Oct.18 (2) Productivity Management in Industry 1997.Sep.9 - Oct.18 (3) Productivity Management in Industry 1997.Sep.9 - Oct.18												

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**TECHNICAL COOPERATION PROGRAM**  
**Implementation for Consulting Skills (1998 ~ 1999)**

SUBJECTS	CONTENTS	'98											'99	
		Ap	My	Ju	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb		
2. C/P and Facilitator Training (On-site)	(16) Osotspa Co., Ltd. (17) Coating Paper Industries Co., Ltd. (18) Union Plastic (Production 2) (19) Tanning Organization (20) Rochaburi Weaving (21) TMR International (22) Rung Fah Electric													
	<u>Consultation QJT-1</u> (1) Union Plastic Public Co., Ltd.													
	<u>Consultation QJT-2</u> (Full-scale Productivity Improvement, 1 year) (1) Mala Chemical Industries Co., Ltd. (2) Somboon Precision Products Co., Ltd.													
	<u>Consultation QJT-3</u> (Productivity Improvement/HRD, 3-6 months) (1) Daichi Alloy (Thailand) Ltd. (2) KV-Electronics Assembly Co., Ltd. (3) Practical 5S' Companies (4) Strong Pack Public Co., Ltd. (5) Union Plastic Public Co., Ltd. (6) KT Thai Local Products Co., Ltd. (7) Southern Parawood Co., Ltd. (8) Jintana Apparel (9) Union Plastic (Production 2) (10) Bangkok Screen Co., Ltd. (11) Tanning Organization (12) Rochaburi Weaving (13) TMR International													
3. C/P Facilitator Training (Off-site) 1) Top Management Seminar 2) Network Development														

**TECHNICAL COOPERATION PROGRAM**  
**Implementation for Consulting Skills (1998 ~ 1999)**

SUBJECTS	CONTENTS	'98											'99	
		Ap	My	Ju	Jul	Au	Se	Oc	No	De	Ja	Fe		
4. Short Term Experts	(1) Consulting Skills-11 (Full-scale Consultation OJT) (2) Consulting Skills-12 (Basic TPM) (3) Consulting Skill-13 (Cost Management and Strategy)													
5. C/P Training in Japan	<u>Individual Training Course</u> (1) Productivity Management in Industry 1998.Jun.30 - Jul.25 (2) Productivity Management in Industry 1998.Jun.30 - Jul.25 (3) Productivity Management in Industry 1998.Jun.30 - Jul.25  <u>Country Focused Training Course (Cost Sharing Base)</u> (1) Productivity Management in Industry 1998.Jun.30 - Jul.25 (2) Productivity Management in Industry 1998.Jun.30 - Jul.25 (3) Productivity Management in Industry 1998.Jun.30 - Jul.25 (4) Productivity Management in Industry 1998.Jun.30 - Jul.25 (5) Productivity Management in Industry 1998.Jun.30 - Jul.25 (6) Productivity Management in Industry 1998.Jun.30 - Jul.25													

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