添付資料　１．終了時評価ミニッツ　（英文評価報告書を含む）

MINUTES OF MEETING

BETWEEN

JAPAN INTERNATIONAL COOPERATION AGENCY

AND

AUTHORITIES CONCERNED

OF

THE GOVERNMENT OF LAO PEOPLE'S DEMOCRATIC REPUBLIC

ON

JAPANESE TECHNICAL COOPERATION

ON

THE PROJECT FOR CAPACITY DEVELOPMENT OF URBAN WATER SUPPPLY AUTHORITIES IN LAO PDR

The Evaluation Team (hereinafter referred to as "the Team"), organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Shuichi IKEDA, visited the Lao People's Democratic Republic from 27 April to 13 May 2006.

During its stay in the Lao People's Democratic Republic, (hereinafter referred as" the Lao PDR ") the Team had a series of discussions with the Lao authorities concerned, and jointly evaluated the present achievements of the Project for Capacity Development of Urban Water Supply Authorities in Lao PDR (hereinafter referred to as "the Project") and exchanged views on the project activities to fulfill the Record of Discussions signed on August 22 2003

As a result of discussions, both sides agreed to report to their respective Governments the matters referred to in the document attached hereto.

Vientiane, May 12 2006

Mr. Shuichi IKEDA
Team Leader, Japanese Terminal Evaluation Team,
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Dr. Somphone DETHOUDOM
Director General
Department of Housing and Urban Planning
Ministry of Communication,
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ATTACHED DOCUMENT

JOINT TERMINAL EVALUATION REPORT
ON
THE PROJECT
FOR
CAPACITY DEVELOPMENT OF URBAN WATER SUPPPLY AUTHORITIES
IN
THE LAO PDR

May 12 2006

ABBREVIATIONS

ADB	Asian Development Bank
AfD	Agence Francaise de Developpment
DHUP	Department of Housing and Urban Planning
GDP	Gross Domestic Product
HRD	Human Resource Development
JICA	Japan International Cooperation Agency
Lao PDR	Lao People's Democratic Republic
M&E	Monitoring and Evaluation
MCTPC	Ministry of Communication, Transport, Post and Construction
NPNL	Nam Papa Naknone Luang (State owned water supply enterprise, Vientiane Capital)
NRW	Non Revenue Water
NWTTI	National Waterworks Technology Training Institute (Thailand)
O&M	Operation and Maintenance
PCM	Project Cycle Management
PDM	Project Design Matrix
PNP	Provincial Nam Papa
ToT	Training of Trainers
UNDP	United Nations Development Programme
UWS	Urban Water Supply
WASA	Water Supply Authority

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1. INTRODUCTION

1-1 Purpose of Evaluation

The purposes of the Joint Final Evaluation on the Project are

(1) to verify the achievements of the Project compared to those planned (achievements of inputs, outputs and the Project purpose);

(2) to evaluate the Project based on the five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact and Sustainability); and

(3) to make recommendations and actions taken in the future.

1-2 Schedule of the Team

	Date	Stay at	Schedule
1	25-Apr	NRT→BKK	Tokyo-> (15:00) BKK (Mr. Hirakawa) Vientiane -> (17:30) BKK (Mr. Murayama)
2	26-Apr	BKK→VTE	Coutesy call and interview from NWTTI
			BKK (19:00, QV104) -> Vientiane
3	27-Apr	VTE	Meeting with JICA Laos ／Experts to WASA
			Coutesy call and interview from DHUP/WASA, MCTPC
4	28-Apr	VTE	Interview with Nampapa VTE/ Trainers/ Trainee
5	29-Apr	VTE	Drafting documents
6	30-Apr	PKZ	VTE -> PKZ
7	1-May	PKZ	Interview with Nampapa PKZ/ Trainers/ Trainee
8	2-May	PKZ	Interview with Nampapa Sekong/ Trainers/ Trainee
9	3-May	VTE	PKZ -> VTE Interview from JICA Volunteers / Experts to WASA
10	4-May	VTE	Interview with donors（ADB）
11	5-May	VTE	Interim meeting with WASA
12	6-May	VTE	Drafting documents Tokyo -> BKK (Mr. Hirano)
13	7-May	LPQ	BKK -> LPQ (Mr. Hirano) VTE -> LPQ (Mr. Hirakawa, Murayama)
14	8-May	LPQ	Interview with Nampapa LPQ/ Trainers/ Trainee
15	9-May	VTE	LPQ -> VTE Supplementary reserch, Discussion with M/M with WASA
16	10-May	VTE	Supplementary reserch, Discussion with M/M with WASA
17	11-May	VTE	Confirmation with WASA on M/M Interview with donors（AfD）
18	12-May	VTE	Sign on M/M, report to EOJ, JICA
19	13-May	VTE→BKK	VTE-> BKK (Mr. Hirano, Mr. Hirakawa)
20	14-May	→NRT	BKK -> Tokyo

1-3 Evaluators

The evaluation and the recommendations on the Project were done by the following members, which forms the Joint Evaluation Committee

1-3-1 Laotian Side

Dr. Somphone DETHOUDOM	Project Director	Director General, Department of Housing and Urban Planning, MCTPC
Mr. Noupheuak VIRABOUTH	Project Manager	Director, Water Supply Authority, Department of Housing and Urban Planning, MCTPC
Mr. Somlith SILAPHET	Deputy General Manager	NPNL
Mr. Khampheui VONGSAKHAMPHOY	Director	Waterwork Technology Training Center, NPNL
Mr. Viengthuay VANNARATH	Chief	Leakage Control Division, NPNL

1-3-2 Japanese Side

Mr. Shuichi IKEDA	Team Leader	Deputy Resident Representative,Laos Office JICA
Mr. Hiroshi MURAYAMA	Evaluation Planning	Senior Program Officer, ,Laos Office, JICA
Mr. Takaaki HIRAKAWA	Evaluation Analysis	Consultant on Participatory Planning/Evaluation,Social Development Department INTEM Consulting,Inc.
Mr. Junichi HIRANO	Evaluation Training	Staff, Water Resources Team Ⅰ ,Group Ⅲ(Water Resources and Disaster Management)Global Environment Department, JICA

1-4 Methodology of Evaluation

Generally, the Project is recommended to be evaluated based on the Project Design Matrix (hereinafter referred to as "PDM") of this Project. The PDM (ANNEX 1-2) is a summary table describing the outline of the Project, which agreed between the project team and WASA August 22 2003.

The evaluation was jointly conducted by the Japanese and Lao sides in terms of the Achievement of the Project as well as five evaluation criteria, which are (i)Relevance, (ii) Effectiveness, (iii) Efficiency, (iv)Impact, (v)Sustainability. The following references were used in order to evaluate the Project.

(1) The Record of Discussions(R/D) signed on August 22 2003.

(2) The Minutes of Meeting (M/M) signed on August 22 2003, respectively, and other document agreed upon or accepted in the implementation of the Project.

(3) The questionnaire distributed to the Japanese experts and Lao authorities and counterparts concerned.
(4) The Interview with the Japanese experts and Lao counterparts concerned.
(5) The Project Design Matrix(PDM)(ANNEX 1-2)

1-4-1 Evaluation Procedure

The Joint Evaluation Team developed the evaluation grid (ANNEX 1-5) which identified the specific evaluation points and the data collection methods. The Team utilized various methods such as reviewing several reports submitted by the project, conducting the questionnaire survey to the counterparts and participants of training. The team also interviewed persons related such as the project director, the project manager, trainers, assistant trainers, chief engineers. Additionally, PCM workshops were conducted in PNP Sekong and PNP Luang Prabang for confirming the project effectiveness which is aiming to raising comments from chief engineers, technicians and administrative staff.

The Team analyzed and evaluated achievements of the Project and the implementation process from the viewpoint of PDM (Project Design Matrix). Then, the team analyzed the data above based on the five evaluation criteria such as Relevance, Effectiveness, Efficiency, Impact and Sustainability. Finally, the Team made recommendations and raised lessons learned from evaluation results.

1-4-2 Points for the evaluation

Achievement level and Implementation Process of the Project

The achievement level in terms of Inputs, Activities, Outputs, and Project Purpose was assessed in comparison with the PDM(ANNEX 1-2). The implementation process of the Project was also confirmed from the various viewpoints.

The both sides agreed to arrange the verifiable indicator and means of verification of the PDM for the evaluation (hereinafter referred to as "PDMe") which is shown in ANNEX 1-3.

Evaluation Criteria

The following five evaluation criteria are applied to the project evaluation.

(1) Relevance: Relevance of the Project is considered from a viewpoint of the validity of the Project Purpose and Overall Goal in connection with the development policy of the Government of Lao PDR and the needs of beneficiaries of the Project.
(2) Effectiveness: Effectiveness is found from a point of whether the Project has actually benefited the target group and whether the project is effective. It also assesses whether

the Project Purpose is being achieved as expected and whether that is in the result of the project's Outputs.

(3) Efficiency: Efficiency verifies whether the project was efficient in terms of effective use of resources. The relationship between Inputs and Outputs is reviewed. In essence, Efficiency examines whether the input cost is appropriate for the degree of achievement on the Outputs and the Project Purpose and whether other means would have been more efficient than the current project.

(4) Impact: Impact examines the indirect effects and extended effects by the project in the long run. The analysis also includes the positive and negative impacts that were not expected when the project was planned.

(5) Sustainability: Sustainability of the Project was focused on institutional, financial and technical aspects by examining the current extent to what the achievement of the Project is sustained or expanded.

2. BACKGROUND AND SUMMARY OF THE PROJECT

2-1 Background

Since the coverage of the urban population who can access to the water supply in Lao PDR is only 48.9% in 2002, the safe and stable water supply is the important issue for improving the living condition and sanitation for citizens in urban areas. In order to accomplish the target to supply safe water to 80% of the urban population by the year 2020, which was mentioned in the National Development Plan, several donors including JICA, ADB and AfD assist to the development of water supply sector in Lao PDR.

However, the number as well as the technical level of staffs working for water supply authorities is not enough to perform proper operation and maintenance. In addition, according to the sector development plan of water supply, the number of PNPs including branches will increase from 21 to 123 and the number of the technical staff will also increase from 507 to 2,037 by the year 2020. Therefore, it is much concerned that the scarcity of the human resources will be an obstacle for sustainable urban water supply in the future.

Therefore, MCTPC requested JICA to implement a technical cooperation project for the capacity development for water supply authorities aiming to establish the training system for water supply including development of trainers and to train all the engineers and technicians in order to improve the service performance.

In August 2003, both sides agreed to the implement of the Project, and signed the Record of Discussion (R/D) between JICA and the Government of Lao PDR and started since September 2003.

2-2 Summary of the Project

The master plan was prepared in the Minutes of Meetings (M/M) signed on August 22 2003. The summary of the Project is shown below.

(1) Objective of the Project

1. Overall Goal

Capacity of Urban Water Supply Authorities is enhanced in sustainable ways

2. Project Purpose

Means of service performance of the staff of UWS authorities in Lao PDR are improved in the field of water pipe laying and maintenance, plant operation and maintenance, and water quality control.

(2) Output of the Project

1. Appropriate UWS training system is elaborated and Trainers are trained.
2. Training textbooks and materials are developed
3. UWS engineers are upgraded in each technology subjects
4. Manuals for routine work are developed
5. The routine work skills of UWS technicians are upgraded
6. Management skill of administrator and manager in Provincial Nam Papa (PNP) is upgraded

(3) Activities of the Project (Refer to the PDM: ANNEX1-2 for details)

3. Evaluation Results

3-1 Implementation Process

According to the Annex 3-2 the Project activities have been conducted favorably. The details of the implementation process are explained as below.

Progress of the Project until now:

It was the first time for WASA for planning and administration on the Training Program.

In the training of trainer and training for chief engineer in 2004, the counterpart participated in making the curriculum and played a role as the trainer. On the other hands, the Japanese expert mainly took the responsibility of the logistics for the preparation of the training based on discussion with WASA.

Therefore, the Project decided to involve WASA more to the training logistics from the training course in 2005. At the beginning, when WASA took initiative for preparation of the training, some troubles were observed in arrangement of the training such as informing training participants of the training schedule. Therefore, the Project tried to improve the communication between Lao-side and Japanese experts. In fact, WASA counterparts including the director and Japanese expert began to contact occasionally for arrangement of the training.

Because NPNL was designated as the training implementation authority, NPNL has to be a main agency for the training implementation after the Project. Therefore, WASA is required to transfer its experiences and know-how on the training arrangements to NPNL.

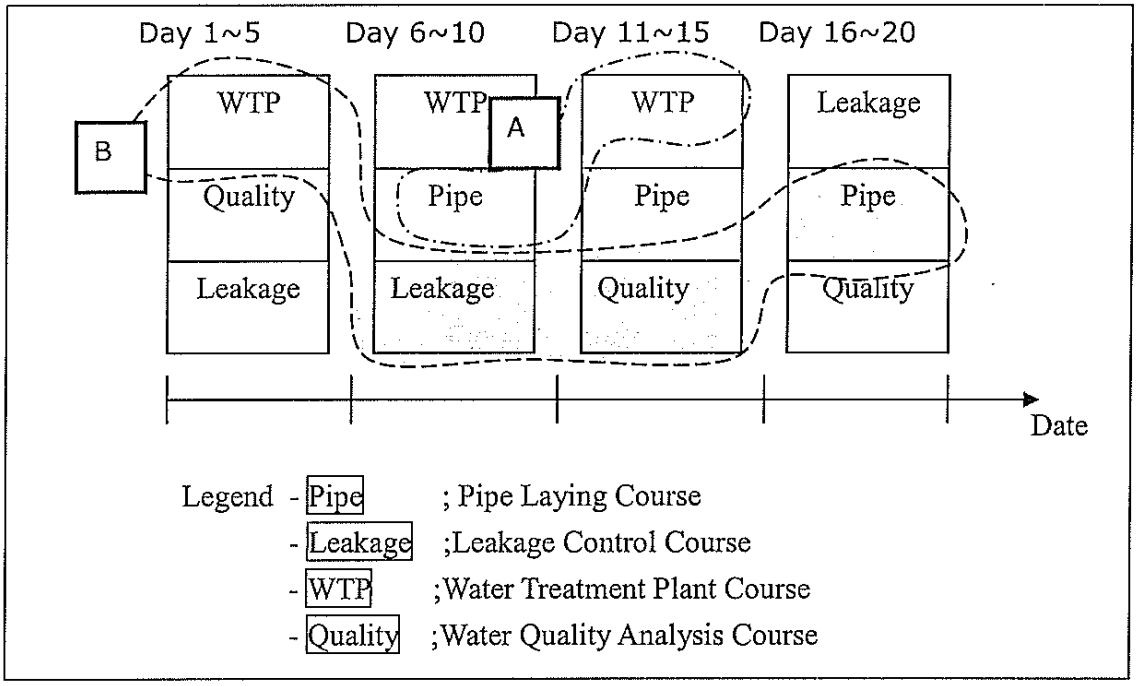
Problems / strong points in the method for technology transfer:

During the design of technician training course, PNPs requested the Project to arrange the curriculum so that the participants could take more than one technical subject during the training period. This idea was based on the fact that some technicians take multiple responsibilities in PNPs such as water treatment plant and water quality analysis at the same time. However, the Project had already decided to limit the number of seats for each training class because contents of the technician training put emphasis on practice in sites. In response to the request above, the Project designed the curriculum to give the same lectures on each technical subject for several times during the training period in order to fulfill the needs of the participants to attend various courses with limited seats. In this case, lectures on different subjects were held at the same time in different class rooms. The image of the taking course for several

subjects is shown in the figure below.

In fact, some participants took two or three subjects during the training period according to responsibilities in work or interests of participants. It means that such training design was favorably worked.

Figure: Image of taking several subjects during the technician training program[1]



However, there were some cases that the participants could not utilize the above mentioned training program fully because of limited time to enough only to take one technical subject. It was also observed mismatching between the qualification and participants such as an administrative staff joined in the technical training course. Therefore, more clear explanation on the training design and schedule was needed in order to maximize the effect of this training curriculum.

Communication / information sharing on the Project:

Since there are many organizations relating to water supply such as DHUP, WASA, NPNL and PNPs, the smooth communication and information sharing was quite important for successful training implementation. There were some cases for miscommunication among the related parties.

[1] In this case, the participant A took two courses of Pipe and WTP. Likewise, the participant B took all four courses.

However, WASA counterparts and Japanese experts have tried to improve the coordination among the parties. The frequency of the daily consultation between WASA director and Japanese experts increased to ensure the smooth preparation of the training.

In addition, prior to the technician training course, the coordination meeting was held inviting all directors of PNPs in order to receive comments for the training program.

Changes of the WASA staff:

The WASA staff has gradually acquired the skills and knowledge for the arrangements of the training course such as preparation of documents for the training programs, procedures for consultation and confirmation with PNP directors, etc., because the WASA becomes involved in the implementation of the training programs from the initial stage.

Changes of engineers and technicians in PNPs:

After the training program, engineers increased their confidence to do their daily work. Also, the contents of textbooks were useful to apply to their work. According to the interview survey to a chief engineer in PNP Champassack, textbooks have been utilized for his subordinates through on-the-job training program. In addition, draft manuals prepared in Laotian and English are effectively utilized for the technicians. The changes of engineers and technicians are as follows:

- engineers can share the new ideas with other engineers and technicians by using textbooks and manuals;
- Engineers are able to do on-the-job training by themselves;
- Maintenance work of equipment has been improved;
- Many assistant trainers selected from chief engineers have gradually changed their consciousness and upgraded their capacity;
- As most technicians did not have any opportunities to attend systematic training courses besides OJT in the past, the technicians training course provided the technicians with the comprehensive and theoretical knowledge for the first time; and
- Although only a few skillful staff had to perform many duties in the past, such many duties can be allocated to the trained engineers and technicians by the project.

3-2 Five Evaluation Criteria

3-2-1 Relevance

(a) Needs of the target group

- The needs of the WASA/DHUP

The long-term goal of the WASA/DHUP is to get access of 80% of the urban population to safe piped water by the year 2020. In addition, the number of the water supply staff is to increase to approximately 2,050. Many trainers, engineers, and technicians are trained with textbooks and manuals by this project, so it is expected that they will contribute toward instructing new PNP branch staff to perform the routine work. Thus, the project fulfills the needs of existing and new staff of NPNL and PNPs.

(b) Consistency between the Overall Goal and the National Development Policy in Lao PDR

- The Urban Water Sector Investment Plan (WSIP: 2005-2020)

The Government's goal is to provide 24-hour per day access to safe drinking water for 80 percent of the urban population by the year 2020. To meet this goal, the Lao government prepared the Urban Water Sector Investment Plan (WSIP) in 1999 which has guided development of the sector over the past five years. The Ministry of Communications Transport Posts and Construction (MCTPC) updated the WSIP (2005-2020) in February 2005. It has described the continued support to government's policies of: (i) equitable development for all regions of the country; and (ii) poverty reduction through economic growth. The WSIP (2005-2020) has three main thrusts as shown below:

(i) The Lao government continues to invest in the small district centers that do not have piped water supply systems, with a focus on poor districts, to achieve geographical equity in social infrastructure provision, support rural development and stimulate economic development in the small towns;

(ii) The Lao government invests in special small urban centers, such as border towns, towns located in growth corridors and emerging centers, to accelerate economic growth and generate budget revenues that can be used to address poverty in less dynamic areas; and

(iii) The Lao government continues to invest in the water supply systems of Vientiane, the four secondary centers[3], and the provincial centers to keep pace with increasing demands for urban services resulting from rapid urbanization which is taking place in these centers.

[3] Secondary Towns indicate Luang Prabang, Khammuane, Savannakhet, and Champassak.

As mentioned above, the content of the WSIP (2005-2020) under the National Urban Sector Strategy and Investment Plan for Lao PDR (2005-2020) is consistent with the direction of the project.

(c) Consistency with Japan's foreign aid policy

- Japan's foreign aid policy

In the priority issues of Japan's Medium-term Policy on ODA, enhancement of basic social services is described in line with the direction of this project as below.

> In order to improve the quality of life of the poor, Japan will actively assist in the enhancement of basic social services, such as education, health services, safe water supply, shelter, and electrification, while encouraging improvements in governance in the recipient country. ... (Omit) ... With a view to strengthening the delivery of basic social services, assistance will be provided to build the capacity of central and local governments. ... (Omit) ... Support will also be provided for training and development of educational materials in order to improve the quality of services.

Thus, the contents of the project are consistent with the section of the enhancement of basic social services in the priority issues.

- JICA's plan for country-specific program implementation

JICA has five priority areas for the Lao PDR. Fifth priority area of them is "infrastructure improvement and energy development" in which there is "development issue 4: sustainable supply of safe water" as described below.

> Recent developments in urban areas, including the diversification of industry and population growth, have brought about an increase in water consumption in the larger cities, which have resulted in severe water shortages in Vientiane, Savannakhet, and Pakse. The socioeconomic development plan of the government of the Lao PDR (GoL) aims at increasing the current urban water supply of 48.9% of the urban population to 80%. The Japanese government has provided grant capital assistance in order to support the GoL's efforts to succeed in both providing and expanding the capacity of a safe water supply in Vientiane and Savannakhet. In addition to several cooperation projects involving the construction of water supply facilities, JICA started a technical cooperation project for the capacity development of the urban water supply authorities in 2003, so as to strengthen the operation and management of authorities in the water supply sector.

Thus, sustainable supply of safe water is one of priority areas for JICA in the

Lao PDR, which is in line with the direction of the project.

(d) Appropriateness of the selection of the implementing agency

Although the WASA is now specified as a regulatory body, one of its mandates is to encourage all water suppliers to become more efficient both technically and financially. Also, the WASA is moved under the supervision of the DHUP.

The NPNL Water Technology Training Center (WTTC) possesses the capacity for technical and organizing skills on training programs, while all PNPs are wishing to become more technically competent and more viable financially to provide better service for customers and reduce gradually subsidiary burdens from the government for their operations.

Therefore, it can be said that the WASA in collaboration with the Water Supply Division (WSD) of the DHUP, NPNL/WTTC, and PNPs were appropriately selected as implementing agencies of this project.

3-2-2 Effectiveness

(a) Achievement of the Project Purpose

- Performance of the water supply engineers and technicians

According to the interview survey, the study team could recognize that performance of many engineers and technicians is improved. For example, senior staff in PNPs was able to transfer some of his assignment to the engineers and technicians because their capacity has been improved favorably.

(b) Relationship between the Outputs and the Project Purpose

- Capacity of the NPNL and PNP trainers

According to the NWTTI, presentation skills of Lao trainees are quite proper, and they get used to speaking out in front of the public because they have already experienced the training courses as trainers. Further, motivations and enthusiasm are quite remarkable. Most advantages of Lao trainees are Thai language which they can understand.

The NWTTI is able to provide various subjects for Lao trainees. Although the trainers at the NWTTI teach new technology with the state-of-the-art equipment to Lao trainees, Lao side does not possess such equipment. However, training programs for Lao trainees were designed not to spend much time for new equipment based on the current situation in Lao PDR.

Although assistant trainers were selected in the project, some of them were not fully capable to teach and needs to continue practice or supporting task as an assistant trainer.

- Utilization of the training textbooks (5 subjects) and materials

Since it was anticipated that it took a long time to prepare new textbooks from the beginning, the existing textbooks made by JICA projects in Thailand and Indonesia were obtained and referred to prepare new textbooks for this Project on the initiative of counterparts. Further, the NWTTI trainers who had ever been involved in JICA project for a long time were invited to give instruction in knowledge and information necessary for preparation of the new textbooks in Lao. In this sense, it was effective to take such measures to prepare the outline of the textbooks.

- Utilization of the manuals (4 subjects)

Draft manuals on four subjects were distributed to site technicians during the ICTP. According to the interview survey to a counterpart, manuals are quite effective since pictures and illustrations show readers how to apply to actual situations, such as connection of pipes, reading meters, etc. In terms of water quality analysis, manuals would be utilized effectively in Vientiane Capital, Champasack, and Luangpapang because these NPNL and PNPs are able to use practical instruments and chemical reagents when technicians do their routine work. However, most provinces do not own the instruments and the reagents for water analysis sufficiently, so the usage of manuals is limited at this moment. However, it might effectively be utilized if they consider to procure the equipment or to ask core training sites to borrow for a moment.

- Other contributing factors for the achievement of the project purpose

Since SV and JOCV members have directly worked together with the counterparts on the site, the long-term experts were able to grasp what was going on in their working place. Also, they have been involved in operation of the training courses and preparation for textbooks and manuals, which extremely contributes to the attainment to the project purpose.

AfD counterparts refer to the training textbooks when their training courses are held. Also, the on-going ADB project is establishing 14 new PNPs' branches, and PNPs will assign the personnel who was upgraded by the ICTP. In this way, the knowledge accumulated by the project is utilized by the donor agency so as to aim at achieving the project purpose.

3-2-3 Efficiency

(a) Relationship between the Outputs and the Activities

- Problems in terms of timing of project activities

Short-term experts for textbook and manual preparation were not able to be assigned in the long term, so the long-term expert in charge of water supply planning had to be intensely involved in revision of the textbooks and manuals. However, the revision task finished almost in accordance with the schedule plan.

(b) Relationship between the Activities and the Inputs

- Activities with an adequate quality of project inputs

As mentioned earlier, the existing textbooks made by JICA projects in Thailand and Indonesia were efficiently utilized for preparing the new textbooks for this project. In terms of the project expense, the textbooks were efficiently prepared by sharing knowledge accumulated by JICA projects implemented up to the present, in comparison with other similar types of projects.

- Human resources as project inputs

There are plenty of activities in comparison with the project duration and the number of Japanese experts.

As SV and JOCV members have joined in this project, it could be said that the fields of expertise were fulfilled with their participation. The involvement of SV members in the project certainly increases in efficiency. Although the project expenses were definitely kept below the expenses of the similar types of projects, the quality of the project is highly maintained.

- Utilization and maintenance of provided equipment

In general, the equipment is appropriately maintained and utilized by the counterparts and staff in the NPNL and PNPs as shown in Annex 2-5. Although PNP Champassack and PNP Luang Prabang do not frequently utilize some equipment which is employed courses and lectures, such as LCD projector, overhead projector, screen, TV monitor, etc. It is expected to increase the frequency of usage in by the progress of having future training courses in these training core sites.

- Counterpart training in Japan

According to the interview survey to a counterpart participating in the counterpart training in Japan, three counterparts whose expected subjects were different

from each other were simultaneously dispatched to Japan, and they had each lecture with their colleagues. In other words, such method contributed to the efficiency of counterpart training, but there is still a room to consider the expectations of each training participants.

- Budgetary situations of the WASA

The Japanese experts have negotiated with the director general of the WASA to cover parts of expenses for the ICTPs every time. Thus, Japanese side could share the expenses with the Lao side during the cooperation period. Also, this idea will lead to the project sustainability as well. The budgetary sheet of the WASA is shown in Annex 2-6.

3-2-4 Impact

(a) Prospects for the achievement of the Overall Goal

- Enhancement of management capacity of Urban Water Supply Authorities

There are prospects that management capacity of Urban Water Supply Authorities would be enhanced. The reasons are as follows:

(i) The NPNL and PNPs are encouraged to become more efficient;
(ii) Their staff have already received training courses, so they know how their capacity is enhanced by themselves;
(iii) For their routine works, they are able to use textbooks, manuals, and other materials provided during the training courses and workshops; and
(iv) The WASA will have the performance audit to all PNPs every year.

According to the interview survey in the PNP Sekong, the workload of senior staff, such as director and deputy directors, has been gradually reduced and shared with all concerned engineers and technicians to be responsible for the maintenance duty. This is because they have textbooks and manuals which are able to instruct and help them perform their task and requirements. It implies their management capacity has been gradually enhanced.

- Demarcation of other related donor agencies

On the other hand, the responsible official of the ADB grasps the outline of this project, and the ADB intends to entrust the training programs to JICA project. Further, the ADB/NORAD (Norwegian Agency for Cooperation Development) conducted the Training Need Assessment (TNA) in 2002, and this project reviewed the TNA in

activity 1.1 of the PDM. In this way, JICA has favorably collaborated with the ADB/NORAD in coordination with the WASA/DHUP because ADB project is also under the DHUP. Therefore, it can be said that there is a close cooperation between JICA and the ADB, in order to achieve the long-term goal.

- Data collection for the quality of supplied water

According to the Annual Water Sector Performance Report (2004) prepared by the WASA, data made available from nearly all PNPs indicates that some simple water quality sampling and testing is being performed at treatment plants and at various places in the distribution network. Tests performed include pH, turbidity, and residual chlorine. The WASA intends to develop guidelines for the testing and monitoring of water quality with the ultimate goal of compliance with the National Drinking Water Quality Standards which the Ministry of Health. PNPs continue to sample, test, and analyze their water to the best of their abilities. As an issue in future, the WASA has to support the PNPs which do not have equipment and reagent for examining water quality. One of options might be to conduct outreach activities in which a PNP send a sample to other PNP laboratory and receives analysis data.

- The campaign for saving water

The NPNL and all the PNPs conducted saving water campaign in order to stabilize the water pressure by regularly performing the following activities:

- Inform all concerned institutions and the public to participate in the saving water campaign;
- Issue posters for the campaign;
- Distribute T-shirts, etc.

(b) Other positive impacts beside the Overall Goal

- The training courses gave all the participants from the PNPs an opportunity to meet and discuss with each other as well as to exchange and share experiences and perceptions in their provinces.
- At the PNP Sekong, the number of complains from customers has been reduced comparing to the time when this project did not launch. Furthermore, the monthly water usage is recorded by each household in the water registration form developed by the PNP Sekong. The PNP delivers full responsibility to the public to record their monthly water usage, and the actual quantity of water

usage is confirmed by the technicians with their signature according to the Rule on Water Usage in Sekong. In the water registration form, the following items must be fulfilled by each household: Month; Previous Reading; This Month Reading; Water Consumption of the Month; Date; Signature of Owner; and Signature of PNP Staff. This method is not utilized across the country, but it might be appropriate means to record the amount of water usage by the consumers and to collect water tariff from them.

- The ADB implements the waterworks project in small towns. As new staff employed at new branches of PNPs were included in the training courses of this project, the trainees might contribute to access to safe and clean water for the remote towns.

(c) Inhibiting and promoting factors for the achievement of the Overall Goal

- Program approach for the achievement of the overall goal

SV and JOCV members contribute toward upgrading the routine work in each division of urban water supply authorities which they belong to. Also, the project has favorably been able to prepare manuals and conduct training courses for site technicians in cooperation with SV and JOCV members.

Along the sector of water supply in Lao, the technical cooperation project focuses on the capacity development of urban water supply authorities, and the development study and the grant aid aimed at improvement of water supply facilities in Vientiane Capital, including soft components, i.e., capacity development for operation and maintenance of a new water treatment plant and for transferring construction methodologies during the construction phase. Further, in the Development Study by JICA, the plan for capacity development was specifically drawn up by referring to the actual training courses implemented by this project.

3-2-5 Sustainability

(a) Policy aid from Lao PDR

- Policy aid for continuation of the project

According to the Prime Ministerial Decree No.37/PM signed in September 1999, human resources development is emphasized as one of key issues as shown below.

Nam Papa Vientiane (NPNL) shall develop skill and provide training courses and workshops, and disseminate information and manuals on all training and capacity building it has received. NPNL shall also provide technical assistance to all Provincial Nam Papa State-owned Enterprises (PNPs) on project implementation.

PNPs shall adopt a policy of ongoing skill development for all areas and shall be responsible for the cost of trainees attending the courses and training fees. PNPs shall allocate an adequate budget for training purposes, and shall establish a dedicated account for such purpose. Training costs will be eligible as an expense item in the PNP budget as a tax-deductible item.

From the policy aspects, therefore, the training courses would be sustained by getting the policy support even after the cooperation has completed.

(b) Organizational capacity

- Operation and management capacity of the WASA and the PNPs

The WASA has covered some parts of expenses for the training in the Project as much as possible. Also, WASA has the experience of the management training courses gained by the Project, WASA is able to transfer its know-how on the training to NPNL or PNPs.

According to the interview survey to a chief engineer at the PNP Champasack, when three new staff joined at the PNP, on-the-job training was conducted for them on the initiative of the chief engineer. Also, on-the-job training for the staff from other provinces was conducted by PNP Champasack. In this sense, trainers and trainees joining in the training courses have definitely changed their awareness and attitude in a positive way.

At the PNP Luangprabang, staffs from PNPs in Sayaboury, Phongsaly, and other neighboring provinces participate in the training which focuses on pipe system, water treatment plant management, administrative and financial management, etc. The duration of the training is around one week, or depending on their availability.

- Remarks for the continuation of the training courses
  - According to the interview survey to the chief engineer at PNP Champasack, he sought to keep knowledge level after the termination of the project. If the training courses are not carried out, all the staff might forget what they have learned during the project period. Thus, he would have liked to conduct

training courses under his own initiative, and he will consult with his managers to make the training plan and to submit it to his managers for approval. In this way, engineers' consciousness is changing.

- It is indispensable to secure the budget for the training programs, to revise and fill up the textbooks and manuals regularly, and to conduct refresher courses for trainers and assistant trainers regularly, in order to continue training courses by themselves in the sustainable way.
- Through the interview survey at the PNP Luangprabang, an interviewee said that the design of the training courses should be considered. For example, the training on pumping should be divided into several modules to be able to learn the subject on the step-by-step basis. Before going to the advanced course, trainees are able to participate in the basic at the beginning.
- In the northern area, several PNPs face difficulties in sending their staff to attend the training courses because the number of the staff is so limited to let the staff to be absent for the training.

- Training courses in collaboration with NWTTI

The governor of the MWA would like to keep good relationship with the Lao side to share knowledge. In fact, the NWTTI has capacity to send their trainers to Lao and to receive Lao trainees at the NWTTI. However, if the Lao side plans to dispatch its staff to the NWTTI for the specific courses, it has to be considered how to bear expenses since the NWTTI has the principle of self-supporting accounting.

(c) Budgetary measures

- Financial situations in the WASA, the NPNL and the PNPs

Normally, the provincial governors approve the tariff, and it takes a long time for PNPs to get approval of new tariff. Thus, PNPs consult with the WASA to get recommendations and supports for their proposal. Moreover, in terms of collection of water tariff, each PNP sends bill to customers, but the proper collection is difficult at this moment because water fees have not been collected from some of large users. However, because many PNPs try to revise the water tariff along with the Prime Ministerial Decree No.37/PM, it would be anticipated to secure self-initiated financial resources for the training courses as well as for the operation and maintenance of the equipment and facilities in the near future. For example, the PNP Luangprabang generates its revenue over 2 billion kip annually, and around 1% of the revenue could be allocated for the purpose of the training courses.

In terms of water tariff collection in Luanprabang, the PNP has changed the means of tariff collection. It shared the full responsibility for collecting water tariff with the public. In order to become a collector of water tariff, the person must (i) provide its land certificate; (ii) be approved or certified by the village authorities; and (iii) sign the service contract with the PNP Luanprabang. They are able to get 700 kip per one bill for their services, letting the incentive to collection. In this way, if tariff collection is carried out smoothly, it would be anticipated that the financial performance PNP Luanprabang will be much improved.

The revenue in comparison with the water sales is shown in the table as below. From this table, it would be recognized that most PNPs principally rely on the water sales for their earnings, i.e., 70 to 90% of their revenues come from the water sales in 2004 besides Vientiane Capital and Phongsaly.

In the expenditure, budget for training courses are included in the item of "Office and Administration" at the NPNL and PNPs.

Table: Revenues and the water sales at the NPNL and the PNPs Unit: (x1,000) kip

Provinces	2003			2004		
	Total revenue	Water sales		Total revenue	Water sales	
Vientiane CC	21,132,740	16,213,303	76.7%	47,612,947	24,215,192	50.9%
Phongsaly	185,562	124,366	67.0%	177,655	102,944	57.9%
Luangnamtha	469,337	292,407	62.3%	433,004	315,060	72.8%
Oudomxay	850,292	659,329	77.5%	908,359	728,951	80.2%
Bokeo	563,320	455,915	80.9%	394,899	339,146	85.9%
Luangprabang	3,278,261	2,236,108	68.2%	2,952,710	2,293,606	77.7%
Huaphanh	542,398	447,094	82.4%	874,386	756,560	86.5%
Xayabury	723,861	593,799	82.0%	836985	669,342	80.0%
Xiengkhang	890,865	737,755	82.8%	1,071,574	843,312	78.7%
Vientiane Prov.	1,044,114	880,904	84.4%	1,365,806	1,168,607	85.6%
Borikhamxay	1,154,964	619,392	53.6%	804,521	688,261	85.5%
Khammuane	2,279,750	2,010,887	88.2%	2,376,385	2,070,380	87.1%
Savannakhet	2,922,527	2,543,521	87.0%	3,821,522	3,403,815	89.1%
Saravane	1,038,002	850,753	82.0%	1,438,148	1,092,196	75.9%
Sekong	770,337	482,519	62.6%	855,065	740,877	86.6%
Champasack	5,053,032	3,910,286	77.4%	6,190,609	5,659,228	91.4%
Attapeu	467,889	298,160	63.7%	377,907	312,920	82.8%

Source: WASA, "Annual Water Sector Performance Report, 2004"

(d) Utilization of the transferred technology

- Technology transferred within the implementing agencies

The trainees have been able to apply what they have learned through the training courses to their routine work as well as to instruct their colleagues if necessary. In the PNP Champasack, for instance, the engineers and technicians were to be able to share their skills and knowledge with staffs at other PNPs, such as Nam Papas in Salavan, Sekong, and Attapeu. The main subjects they have frequently discussed are electronic conductivity, water quality analysis, water pumps, etc.

4. Conclusion / Recommendations / Lesson Learned

4-1 Implementation of the Continuous Training by the PNPs

Through the field study, it revealed that PNP Champassak and PNP Luang Prabang are conducting the original training program by themselves based on the results of the training for chief engineer and technician.

In PNP Champassak, some chief engineers start to carry out the training for newcomer. Likewise in PNP Luang Prabang, They conducted practical training (Laying pipe, operation of the purification plant, administration and accounting)for the neighboring water supply authorities for Northern provinces such as PNP Phongsaly and PNP Xainyabouly.

This progress means that PNP Champassak and PNP Luang Prabang, which are positioned as the core training site for Southern and Northern provinces respectively, started to make the use of the training implementation system that was formed through the Project.

Setting up of training system and provision of some equipment to these two training core site make it possible to keep effort for development of themselves including neighboring water supply authorities, in addition to the fact that the PNP Champassak and PNP Luang Prabang have potential next to NPNL in terms of the technical skills.

The key of the success in PNP Luang Prabang resulted from the quality of the trainer and high capacity of training management. In fact, at the training for technician, they provided wholly support like arrangement of the training place and the material/ equipment of the training. They also informed officially the training objective to the north part of water supply authorities and requested the selection of the appropriate trainee before the training program began.

On the other hand, chief engineer in PNP Sekong conducted OJT for newcomer, in the other medium and small size authorities haven't great change from existing training system before the project.

Because of the lack of budget, human resources and equipment for the training, they have not reached to the idea to continue the training and also how to conduct the training. Therefore, for raising the basement of technology level at small provinces, it needs the continuous training by 3 base authorities, and also the existing consultation by NPNL providing the solution to individual problems and inquiries.

4-2 Institutional Aspects

In addition to the existing line control system such as director, deputy director

and staff within NPNL and PNPs, the project set the category such as trainer, chief engineer, assistant trainer and technician according to the technical level. This category is basically expected to be the same as the title of each training course.

On the other hand, as mentioned in section 4-2, there is a discrepancy in terms of technical level among PNPs. In fact, in 3 core training site, there are many staff at the level of chief engineer, but few in small PNPs. Also, especially for chief engineer, since the qualification and role were not expressed clearly, the project directly regarded the training participants to the chief engineer training as they were qualified to those categories and resulted in the large difference of technical level between chief engineer in 3 core training site and small PNPs. Moreover, it was observed many staff holds double posts such like chief engineer and trainer, or, chief engineer and assistant trainer, which shows that the qualification and the role of chief engineer were duplicated with both trainer and assistant trainer.

Therefore, it is recommended to reorganize the technical category of the UWS staff as shown in the table below in a manner setting clear qualification level and role fitting to actual assignment of UWS staff, which combines the role as a trainer with the technical qualification. WASA is expected to undertake this task, since WASA takes the role in maintaining business quality of UWS nationwide by means of technical standards. This reform for category of qualification will be a merit to both planning and implementation of further training program.

	Qualification Name	Qualification terms / Expected role (example)
1	Chief Engineer	- Draft the implementation plan within section - Supervise engineers and technicians within section - Be able to prepare and give lecture at training - Develop management skills and knowledge as manager through training
2	Engineer	- Undertake O&M at site in one's specialty field independently - Support chief engineer to draft implementation plan of the section - Give guidance/ coaching to technicians - Expected to obtain training skills as a trainer. Support chief engineer at training and give lecture under surpervision

		- Develop advanced skills and knowledge through training
3	Technician	- Undertake O&M at site under supervision of Chief engineer and engineer - Develop skills and knowledge through training

Table; Proposed category of qualification

4-3 Human Resources Development

The project challenged to conduct the in country training program targeting the PNPs nationwide for the first time. The training covered every rank of staff such as manager, chief engineer, administrative/ financial staff and technician as well. In fact, the project set the target to train all staff totally about 500 members during the project period utilizing trainer within the country. In terms of technical area, the training program also covered all areas including operation of the water treatment plant, pipe lying, leakage control, water quality analysis and master planning as well. In general, most of the person involved in the training evaluated this program as influenced positively to improve the capacity of UWS authorities.

Regarding to the improvement of trainer, because the trainers were mainly selected from NPNL, PNP Luang Prabang and PNP Campassak where the project assigned as the core site for the training, most of them have already had the adequate knowledge and skill before the training. They positively deepened their experience and realized the knowledge again. Therefore, it seems that above trainers and can contribute to the future training program as trainesr.

The training program is very beneficial for the chief engineer because Lao PDR's fundamental education such as engineering and mathematics is still developing. Some chief engineers were selected as the assistant trainer to support the implementation of the training at least one person each PNPs, but there are some staff still lacking of the knowledge and skill. So, it needs to provide training focusing chief engineers in medium and small size authorities. On the other hand, some selected chief engineers participating the training at NWTTI raised their consciousness, providing comments such as "I feel pride to be selected" and "I want to teach my colleagues in my authority."

Regarding to the technician training, most participants had no experience to learn the theory of water supply engineering. Therefore, the training contributed to understand the background and reason of the daily working. Their consciousness also seems to grow up through the results from questionnaire and workshop in this

evaluation. On the other hand, although the project set an output as improvement of the accuracy of reporting to WASA, the improvement is not observed clearly at this moment; accordingly it is required to keep monitoring and raising effort for the improvement of the accurate reporting.

4-4 Utilization of training materials

(1) Textbooks (5 subjects)

Textbooks were developed as training material for training course targeting chief engineer and sent to NPNL and every PNPs after the training after revision. The current frequency or scene of usage of textbooks varies among authorities. For example, textbook are just put on the director's desk at some provinces. On the other hand, it is also observed that chief engineers in Luang Prabang and Pakse refer to them when they have unknown or obscure topics. In addition, DHUP and WASA has already authorized the textbook as uniform training textbook for engineers.

In order to enhance the effective utilization of textbooks, following measures are recommended. First, since the textbook were authorized, it is necessary to continue the effort to disseminate the textbook informing NPNL and PNPs that it is a technical standard and business procedure for UWS in Lao PDR and utilize them to training for engineers.

Second, it is also important to periodically revise the content of textbook to reflect the change of the standard decided by DHUP/WASA and also to disseminate such modification efficiently to NPNL and PNPs. In order to accomplish such periodical change, it is proposed to create a system[1] to support and raise idea of modification by NPNL to WASA from the viewpoint of existing role of NPNL as supervising technical issue of PNPs.

Third, there were comments through interview survey that usage of textbooks is limited because of lack of English ability or understanding technical terms. However, it should be highlighted that the textbook was written in English and Lao page by page, it decreased the language barrier to the maximum extent. Also, it can be pointed out that the project produced the phrasebook for water supply words providing simple translation between Lao and English, so that it can be an additional material to textbooks to some extent.

[1] Setting up such like "Revision Committee of Textbooks" for example.

(2) Manuals (4 subjects)

Manuals were developed as training material for training course targeting technicians and they are now on printing and scheduled to be sent directly to all training participants. At the training, many participants raised the request to send revised manuals directly to every participant, showing high expectation to own manuals and utilize them for their daily work. It is expected to improve their O&M quality by referring to manuals and also writing down own memo for remembering supplementary knowledge.

In addition, it is recommended to localize the content of manuals because the procedure and method of O&M varies according to the type of facility and equipment between each PNPs. Similarly, from the viewpoint to improve the accuracy of reporting to UWS business to WASA, it is a good idea to attach forms of daily record based on the situation of each PNPs.

4-5 Coordination with projects by other donors

(1) AfD

AfD is now implementing the "Water Supply Training Center Project" from 2005-2009 aiming (1) construction of training center at Chinaimo WTP including small scale WTP for practice and (2) implement the training course at the Chinaimo training center. At the beginning of our project (simply describe as "the JICA Project" afterwards), it was expected to participate trainers developed in the JICA Project to the AfD Project. In fact, many trainers assigned by JICA's project delivered lecture at the AfD's training. Also, their training skills were refreshed by the AfD's training for trainer course.

Also, the textbook produced by the JICA's project has already been racked to the Chinaimo training center as a standard material, which implies for further usage of the textbook.

It is also expected to have a further consultation among NPNL, WASA, AfD and JICA in order to enhance the smooth coordination between two projects.

(2) ADB

ADB is now implementing the project for the construction of new water supply at small towns at Northern and Central provinces, including setting up of new branches of PNPs. It was expected to utilize the personnel trained by the JICA project to participate and undertake such tasks. Comparing the schedule of the ADB's project and the JICA Project, the JICA project goes ahead and consequently could not train the

new staff assigned to newly established PNPs directly during the project period.

However, according to the interview to Nampapa Luangprabang, it is verified that they will assign the personnel trained by the JICA project, which reveals the direct usage of the result the JICA Project substantially. Therefore, it is anticipated to utilize the training materials and personnel developed by the project including other provinces in order to contribute to the smooth implementation of the ADB's project.

List of Personnel Visited by the Committee

#	Organization	Name	Position
1	DHUP, MCTPC Water Supply Authority, MCTPC	Dr. Somphone DETHOUDOM Mr. Noupheuak VIRABOUTH Mr. Wataru TAKASHIMA Mr. Masahiro OKADA	Director General, DHUP Director JICA Expert (Water Supply Planning) JICA Expert (Project/ Programme Coodinator)
2	NPNL	Mr. Somlith SILAPHET Mr. Khampheui VONGSAKHAMPHOY Mr. Viengthuay VANNARATH Ms. Hiromi OKOSHI	Deputy General Manager Director, Waterwork Technology Training Center Chief, Leakage Control Division JICA Volunteer (Water Quality Analysis)
3	Nampapa Luangprabang	Mr. Soulth CHINDAMANY Deputy Directors/ Engineers/ Technicians	Director
4	Nampapa Champassack	Mr. Inthong PHANTHAVONG Deputy Directors/ Engineers	Director, Nampapa Champassack
5	Nampapa Sekong	Mr. Khamsing SOUTHAMMAKOSAN Engineers/ Technicians	Director, Nampapa Sekong
6	National Waterworks Technology Training Institute (NWTTI)	Mr. Verasak SUKAPONG Ms. Supaporn PRASKTNARATNSINT Ms. Suwara THAWITCHASRI Ms. Chonticha SAE-LIM Ms. Ratchaneekorn WANGKUAKUL	MWA Advisor Acting Director
7	ADB	Ms. Nopakane BOUAPHIM	Project Analysist
8	AfD	Mr. Jean-Claude PIRES Ms. Chanthapha NOUANETHONG	Chargé de mission

ANNEX 1-2

PROJECT DESIGN MATRIX (PDM)
CAPACITY DEVELOPMENT OF URBAN WATER SUPPLY AUTHORITIES IN LAO PDR

The first edition (2003.09.1)
Revision: 2005.09.13

Duration of Project: 3 years (September 01, 2003 – August 31, 2006)
Target: WASA(Water Supply Authority, MCTPC), NPV(Nam Papa Vientiane), PNP (Provincial Nam Papa)

NARRATIVE SUMMARY	VERIFILABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTION
Super Goal People in urban areas can access safe water stably.	80% of the urban population are supplied with safe piped water by the year 2020 (in 2000, 378400 people or 48.9% have access to piped water)	NSC Basic Statistics	Urban Water Supply and Sanitation Projects under the assistance of ADB and others.
Ow[illegible]al Capacity of Urban Water Supply Authorities is enhanced in sustainable ways	Quality of supplied water Stability of water pressure	Report of Water Quality Analysis Report on Water Pressure Survey	Trained engineers are engaged in the same jobs
Project Purpose Means of service performance of the staff of UWS authorities in Lao PDR are improved in the field of water pipe laying and maintenance, plant operation and maintenance, and water quality control.	Accuracy and efficiency of routine work Performance of water supply engineers and technicians Accuracy or reporting to WASA	Training Monitoring and Evaluation Report after the completion of training Summary reports by WASA	WASA, NPV and PNP staff are available for training.
Outputs 1. Appropriate UWS training system is elaborated and Trainers are trained.	1-1 Training curriculum and syllabus are developed 1-2 Lecturing ability of NPV trainers are improved (13 trainers) 1-3 Number of new PNP trainers are trained (18 trainers)	1-1 Course report of ICTP 1-2-1 List of trainers 1-2-2 Course report of ICTP 1-3-1 List of trainers 1-3-2 Course report of ICTP 1-3-3 Trainers' monitoring report by lecturers of NWTTI	
2. Training textbooks and materials are developed	2-1 Textbooks for training are developed (5 subjects) 2-2 Number of materials are developed	2-1 Textbooks on Pipe-Laying and Service Installation / Leakage Control / Water Quality Control / Water Purification / Water Supply Master Planning 2-2 List of materials (Printed materials, Experimental equipments, Slides, CD-ROM etc.)	
3. UWS engineers are upgraded in each technology subjects	3-1 115 engineers are trained 3-2 Trained engineers can deliver lectures at workshop in each PNP or at ICTP	3-1-1 List of trained engineers 3-1-2 Engineers' monitoring report by trainers 3-2-1 Number of trained engineers who delivered lectures at workshop / ICTP 3-2-2 Course report of workshop / ICTP	
4. Manuals for routine work are developed	4-1 Manuals for routine work are developed (4 subjects)	4-1 Manuals on Pipe Laying Work / Water Treatment Plant Operation and Maintenance Work / Water Quality Inspection Work / Leakage Detection Work	Revise the manuals for the actual conditions of each Nam Papa.
5. The routine work skills of UWS technicians are upgraded	5-1 360 technicians are trained 5-2 Proper Operation and Maintenance are performed	5-1-1 List of trained technicians 5-1-2 Course report of ICTP 5-1-3 Technicians' monitoring report by trainers 5-2-1 Collect the O & M records from each PNP 5-2-2 Technicians' monitoring report by trainers	

6. Management skill of administrator and manager in Provincial Nam Papa (PNP) is upgraded	6-1 40 PNP administrators (Director Level) are trained 6-2 120 PNP planning / administrative staff are trained 6-3 Water Supply Plan and Financial Plan of all PNP are elaborated	6-1-1 List of trained administrators 6-1-2 Course report of ICTP 6-2-1 List of trained planning / administrative staff 6-2-2 Course report of ICTP(s) 6-3-1 Number of making Water Supply Plan 6-3-2 Number of making Financial Plan	Utilising the textbooks and manuals by issuing act of Water Supply Authority.

Activities

1.1. Review the existing Training Need Assessment (TNA)
1.2. Prepare the training programmes in Thailand
1.3. Conduct the training programme on training management in Thailand
1.4. Make a plan of UWS training programme
1.5. Select eighteen (18) trainers from nation wide
1.6. Conduct the training programme on the plant and piping work for the trainers in Thailand
1.7. Dispatch trainees to Japan as a counterpart training programme
1.8. Prepare training curriculum for In-country Training Programme(ICTP)
1.9. Conduct the ICTP for trainers
1.10. Evaluate and review ICTP, improve the curriculum of ICTP for trainers
2.1. Organize a working group on training textbook
2.2. Review and improve existing textbooks prepared by Nam Papa Vientiane(NPV) trainers
2.3. Compile and print the textbook of each field
3.1. Prepare the ICTP for engineers in each field
3.2. Conduct the ICTP for 115 engineers from Water Supply Authority(WASA), NPV and PNP in Vientiane, Luangprabang and Pakse
3.3. Evaluate and review ICTP, improve the curriculum of ICTP for engineers
3.4. Select forty (40) assistant trainer from ICTP for engineers
3.5. Prepare the training programme on the plant and piping work for assistant trainers in Thailand
3.6. Conduct the training programme on the plant and piping work for assistant trainers in Thailand
4.1. Organize a working group on manuals for routine works
4.2. Collect technical information and prepare the materials
4.3. Make manuals for routine works in English and Lao
5.1. Prepare the ICTP for 360 technicians of PNP and their branches
5.2. Conduct the ICTP in central region by using manuals
5.3. Conduct the ICTP in southern region by using manuals
5.4. Conduct the ICTP in northern region by using manuals
5.5. Evaluate and review ICTP, improve the curriculum of ICTP for technicians
6.1. Prepare the ICTP for administrators and planning / administrative staff
6.2. Conduct the ICTP for 40 administrators and 120 planning / administrative staff from NPV and PNP
6.3. Conduct the training programme on Water Supply Management for planning / administrative staff in Thailand
6.4. Keep the records on routine operation in each PNP and summarize records into statistics in WASA
6.5. Formulate Water Supply and Financial Plan until 2020.

Inputs

Japanese side:

The contribution from Japan is estimated to Yen 150 million, comprising of.

1. Long-term Japanese Expert (2 person on Water Supply Planning and 1 person on Project coordinator)
2. Short-term Japanese Experts (6 persons, 2 persons for each year)
   - Lectures on water supply engineering at the In-country training courses
   - Lectures on waterworks management at the in-country training courses
3. Lectures from NWTTI in Thailand (2 persons, 1 person for each subject)
   - Technical transfer on training curriculum
   - Technical transfer on making the training textbooks
4. Senior Volunteers
   - Water treatment plant management
   - Water quality management
   - Non-revenue water management
5. In country training
6. Equipment, tools and materials
7. Training in Japan
8. Training at NWTTI Thailand
9. Trainers from NWTTI
10. Others

Lao side:

The contribution for the Government of Lao PDR is estimated to Kip 287 million comprising of:

1. Counterparts (C/P)
2. Project office and necessary facilities
3. Electricity and water for the office
4. Others

Project Design Matrix (Revised Edition)

PROJECT DESIGN MATRIX (PDMe)

CAPACITY DEVELOPMENT OF URBAN WATER SUPPLY AUTHORITIES IN LAO PDR

The first edition (2003.09.1)
Revision: 2006.04.20

Duration of Project: 3 years (September 01, 2003 – August 31, 2006)
Target: WASA(Water Supply Authority, MCTPC), NPV(Nam Papa Vientiane), PNP (Provincial Nam Papa)

NARRATIVE SUMMARY	VERIFILABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTION
Super Goal People in urban areas can access safe water stably.	80% of the urban population are supplied with safe piped water by the year 2020 (in 2000, 378400 people or 48.9% have access to piped water)	NSC Basic Statistics	Urban Water Supply and Sanitation Projects under the assistance of ADB and others.
Overall Goal Capacity of Urban Water Supply Authorities is enhanced in sustainable ways	Quality of supplied water	Records of water quality at the NPV and PNPs	Trained engineers are engaged in the same jobs
Project Purpose Means of service performance of the staff of UWS authorities in Lao PDR are improved in the field of water pipe laying and maintenance, plant operation and maintenance, and water quality control.	Average leakage volume per connection per day (liters) Total amount of water production per month at the water treatment plants	Records of leakage control at the NPV and PNPs Records of water production at the NPV and PNPs	WASA, NPV and PNP staff are available for training.
Outputs 1. Appropriate UWS training system is elaborated and Trainers are trained.	1-1. Lecturing ability of NPV trainers are improved. (13 trainers) 1-2. Number of new PNP trainers are trained (18 trainers) 1-3. Number of counterparts trained in Japan and Thailand	1-1-1 List of trainers 1-1-2 Course report of ICTP 1-2-1 List of trainers 1-2-2 Course report of ICTP 1-3-1 List of the C/P training 1-3-2 Course Report of NWTTI	
2. Training textbooks and materials are developed	2-1. Textbooks for training are developed. (5 subjects) 2-2. Several materials are developed.	2-1 Textbooks on Pipe-Laying and Service Installation / Leakage Control / Water Quality Examination / Water Purification / Water Supply Master Planning 2-2 List of products and Achievement	
3. UWS engineers are upgraded in each technology subjects	3-1. 115 engineers are trained. 3-2. Trained engineers can deliver lectures at workshop in each PNP or at ICTP	3-1-1 List of trained engineers 3-1-2 Course report of ICTP 3-1-3 Questionnaire survey 3-2-1 Course report of workshop / ICTP	
4. Manuals for routine work are developed	4-1. Manuals for routine work are developed. (4 subjects)	4-1 Manuals on Pipe Laying and service installation / Water Treatment Plant Operation and Maintenance / Water Quality Examination / Leakage control	Revise the manuals for the actual conditions of each Nam Papa.
5. The routine work skills of UWS technicians are upgraded	5-1. 360 technicians are trained. 5-2. Proper Operation and Maintenance are performed.	5-1-1 List of participants 5-2-1 Course report of ICTP 5-2 Questionnaire survey	
6. Management skill of administrator and manager in Provincial Nam Papa (PNP) is upgraded	6-1. Number of 40 PNP administrators (Director Level) is trained. 6-2. 120 PNP planning/ administrative staff are trained. 6-3. Water Supply Plan and Financial Plan of all PNP are elaborated.	6-1-1 List of participants 6-1-2 Course report of ICTP 6-2-1 List of participants 6-2-2 Course report of ICTP 6-3-1 Number of making Water Supply Plan 6-3-2 Number of making Financial Plan	Utilising the textbooks and manuals by issuing act of Water Supply Authority.

Project Design Matrix

Activities

1.1. Review the existing Training Need Assessment (TNA)
1.2. Prepare the training programmes in Thailand
1.3. Conduct the training programme on training management in Thailand
1.4. Make a plan of UWS training programme
1.5. Select eighteen (18) trainers from nation wide
1.6. Conduct the training programme on the plant and piping work for the trainers in Thailand
1.7. Dispatch trainees to Japan as a counterpart training programme
1.8. Prepare training curriculum for In-country Training Programme(ICTP)
1.9. Conduct the ICTP for trainers
1.10. Evaluate and review ICTP, improve the curriculum of ICTP for trainers
2.1. Organize a working group on training textbook
2.2. Review and improve existing textbooks prepared by Nam Papa Vientiane(NPV) trainers
2.3. Compile and print the textbook of each field
3.1. Prepare the ICTP for engineers in each field
3.2. Conduct the ICTP for 115 engineers from Water Supply Authority(WASA), NPV and PNP in Vientiane, Luangprabang and Pakse
3.3. Evaluate and review ICTP, improve the curriculum of ICTP for engineers
3.4. Select forty (40) assistant trainer from ICTP for engineers
3.5. Prepare the training programme on the plant and piping work for assistant trainers in Thailand
3.6. Conduct the training programme on the plant and piping work for assistant trainers in Thailand
4.1. Organize a working group on manuals for routine works
4.2. Collect technical information and prepare the materials
4.3. Make manuals for routine works in English and Lao
5.1. Prepare the ICTP for 360 technicians of PNP and their branches
5.2. Conduct the ICTP in central region by using manuals
5.3. Conduct the ICTP in southern region by using manuals
5.4. Conduct the ICTP in northern region by using manuals
5.5. Evaluate and review ICTP, improve the curriculum of ICTP for technicians
6.1. Prepare the ICTP for administrators and planning / administrative staff
6.2. Conduct the ICTP for 40 administrators and 120 planning / administrative staff from NPV and PNP
6.3. Conduct the training programme on Water Supply Management for planning / administrative staff in Thailand
6.4. Keep the records on routine operation in each PNP and summarize records into statistics in WASA
6.5. Formulate Water Supply and Financial Plan until 2020.

Inputs

Japanese side:

The contribution from Japan is estimated to Yen 150 million, comprising of.

1. Long-term Japanese Expert (2 person on Water Supply Planning and 1 person on Project coordinator)
2. Short-term Japanese Experts (6 persons, 2 persons for each year)
   - Lectures on water supply engineering at the In-country training courses
   - Lectures on waterworks management at the in-country training courses
3. Lectures from NWTTI in Thailand (2 persons, 1 person for each subject)
   - Technical transfer on training curriculum
   - Technical transfer on making the training textbooks
4. Senior Volunteers
   - Water treatment plant management
   - Water quality management
   - Non-revenue water management
5. In country training
6. Equipment, tools and materials
7. Training in Japan
8. Training at NWTTI Thailand
9. Trainers from NWTTI
10. Others

Lao side:

The contribution for the Government of Lao PDR is estimated to Kip 287 million comprising of:

1. Counterparts (C/P)
2. Project office and necessary facilities
3. Electricity and water for the office
4. Others

Project Design Matrix

2/2

Implementation Process Grid

Evaluation Questions: Main Questions	Sub-questions	Data Needed	Data Sources	Data Collection Methods
Implementation Process				
Were the project activities conducted as planned?	Were there any problems in the project activities (32 activities)?	① (Annual) Plan of Operations ② Opinion of involved parties	① PO, APO ②-1 WASA general/deputy director general ②-2 NPV and PNP directors/deputy directors ②-3 Experts from Japan	① Literature Survey ②-1 Interview ②-2 Interview ②-3 Questionnaire
Were there no problems in the method for technology transfer?		Opinion of involved parties	① DHUP director general ② WASA general/deputy director general ③ NPV and PNP directors/deputy directors ④ UWS engineers and technicians in NPV and PNPs ⑤ Experts from Japan	① Interview ② Interview ③ Interview ④ Workshop ⑤ Questionnaire
Were there no problems in the project management system?	How about the monitoring and evaluation system? (Activity 1-10, 3-3, 5-5)	• Monitoring and evaluation mechanism • The method of modification on the project activities (the method of feedback)	① WASA general/deputy director general ② NPV and PNP directors/deputy directors ③ Experts from Japan	① Interview ② Interview ③ Questionnaire
	How about the communication mechanisms within the project?	Current situation of communication between WASA and NPV/PNPs	① WASA general/deputy director general ② NPV and PNP directors/deputy directors ③ Experts from Japan	① Interview ② Interview ③ Questionnaire
Do the counterparts and the related agencies share a recognition in the content of the project?		Opinion of involved parties	① WASA general/deputy director general ② NPV and PNP directors/deputy directors ③ UWS engineers and technicians in NPV and PNPs ④ Experts from Japan ⑤ AID staff ⑥ ADB staff	① Interview ② Interview ③ Workshop ④ Questionnaire ⑤ Interview ⑥ Interview
Was a suitable counterpart assigned?		Opinion of involved parties	① WASA general/deputy director general ② NPV and PNP directors/deputy directors ③ Experts from Japan	① Interview ② Interview ③ Questionnaire
What factors influenced the problems occuring in the project implementation process and the produced effect?		Opinion of involved parties	① WASA general/deputy director general ② NPV and PNP directors/deputy directors ③ Experts from Japan ④ JOCV	① Interview ② Interview ③ Questionnaire ④ Interview
Is the collaboration with other donors proceeding favorably?	How does this project collaborate with AID and ADB, in order to achieve the same goal shared by this project and AID/ADB?	Opinion of involved parties	① WASA general/deputy director general ② Experts from Japan ③ AID staff ④ ADB staff	① Interview ② Questionnaire ③ Interview ④ Interview

	Were there any changes of counterparts in terms of awareness and capacity development?	Were there any changes of WASA staff in terms of awareness and capacity development?	• Awareness • Ownership and enthusiasm • Improved points (capacity development, etc.) • Problems	① WASA director general/deputy director general ② WASA staff ③ Experts from Japan ④ SV and JOCV	① Interview ② Interview ③ Questionnaire ④ Interview
		Were there any changes of UWS engineers and technicians in NPV and PNPs in terms of awareness and capacity development?		① NPV and PNP directors/deputy directors ② UWS engineers and technicians in NPV and PNPs ③ Experts from Japan ④ SV and JOCV	① Questionnaire ② Workshop and Questionnaire ③ Questionnaire ④ Interview
		Were there any changes of planning/ administrative staff in NPV and PNPs in terms of awareness and capacity development?		① NPV and PNP directors/deputy directors ② Planning/administrative staff in NPV and PNPs ③ Experts from Japan ④ SV and JOCV	① Questionnaire ② Questionnaire ③ Questionnaire ④ Interview
		Were there any changes of NPV and PNP directors /deputy directors in terms of awareness and capacity development?		① Planning/administrative staff in NPV and PNPs ② UWS engineers and technicians in NPV and PNPs ③ Experts from Japan ④ SV and JOCV	① Questionnaire ② Workshop and questionnaire ③ Questionnaire ④ Interview
	Is the implementation process of the project activities appropriate?	If there are any problems on the implementation process, then what are the causes?	Opinion of involved parities	① DHUP director general ② WASA director general/deputy director general ③ NPV and PNP directors/deputy directors ④ Experts from Japan	① Interview ② Interview ③ Interview ④ Interview
		In order to avoid the problems, how did the project revise and modify the project activities?	Opinion of involved parities	① WASA director general/deputy director general ② NPV and PNP directors/deputy directors ③ Experts from Japan	① Interview ② Interview ③ Interview

Evaluation Grid

	Evaluation Questions: Main Questions	Evaluation Questions: Sub-questions	Data Needed	Data Sources	Data Collection Methods
Relevance	Was the project in line with the needs of the target group?	Are the needs of WASA, NPV, and PNP fulfilled?	Opinion of involved parities	① WASA director general/deputy director general ② NPV and PNP directors/deputy directors	① Interview ② Interview
	Is the Overall Goal consistent with the National Development Policy in Lao P.D.R.?	Is the content of the national development policy on water supply in MCTPC consistent with the direction of the project?	Contents of the development policy on water supply in Lao PDR	National Development Plan on Water Supply	Literature Survey
		Does the policy on water supply in WASA correspond with the project concepts?	Contents of the policy of WASA	WASA Performance Report	Literature Survey
	Is the project in line with Japan's foreign aid policy?	Does the project address the priority issues for aid and Japan's foreign aid policy?	Contents of Japanese aid on water resources	Priority Issues of Ministry of Foreign Affairs of Japan	Literature Survey
		Is the project consistent with JICA's plan for country-specific program implementation?	Contents of Japanese aid on water resources	JICA's plan for country-specific program implementation	Literature Survey
	Was the selection of the implementing agency appropriate?	Was the capacity of the WASA, NPV, and PNPs adequate enough to carry out the project?	Appropriateness of selection/ scale of the implementing agency (from the perspective of human resources, financial resources, technical level, etc.)	① NPV and PNP directors/deputy directors ② WASA director general/deputy director general ③ Experts from Japan	① Interview ② Interview ③ Questionnaire
Effectiveness	Is the project purpose achieved by the end of the project?	Were performance of the water supply engineers and technicians of UWS authorities in Lao PDR improved?	① Evaluation of UWS engineers and technicians from their chief/superior ② Self-evaluation and satisfaction of UWS engineers and technicians ③ Opinion of experts from Japan	① NPV and PNP directors/deputy directors ② UWS engineers and technicians in NPV and PNPs ③ Experts from Japan	① Questionnaire ② Workshop ③ Questionnaire
	Were the outputs sufficient to achieve the project purpose?	Have the NPV and PNP trainers been trained favorably? (Output 1)	① Evaluation of NPV and PNP trainers ② Self-evaluation and satisfaction of NPV and PNP trainers ③ Opinion of experts from Japan	①-1 NWTTI instructors in Thailand ①-2 UWS engineers/assistant trainers in NPV and PNPs ①-3 UWS technicians in NPV and PNPs ①-4 Planning/administrative staff in NPV and PNPs ②-1 NPV trainers ②-2 PNP trainers ③ Experts from Japan	①-1 Interview ①-2 Questionnaire ①-3 Training Questionnaire Survey or Questionnaire ①-4 Training Questionnaire Survey or Questionnaire ②-1 Workshop ②-2 Interview ③ Questionnaire
		Have the training textbooks (5 subjects) and materials been utilized effectively? (Output 2)	Opinion on contents of training textbooks and materials	① A member of the working group in charge of each subject ② UWS engineers in NPV and PNPs ③ NPV and PNP directors/deputy directors ④-1 NPV trainers ④-2 PNP trainers ⑤ Experts from Japan	① Interview ② Workshop and Questionnaire ③ Questionnaire ④-1 Workshop and Questionnaire ④-2 Interview and Questionnaire ⑤ Questionnaire

		Have the manuals (4 subjects) been utilized effectively? (Output 4)	Opinion on contents of manuals for routine work	① A member of the working group in charge of each subject ② UWS technicians in NPV and PNPs ③-1 NPV trainers ③-2 PNP trainers ④ Assistant trainers in NPV and PNPs ⑤ Experts from Japan	① Interview ② Workshop and Questionnaire ③-1 Workshop and Questionnaire ③-2 Interview and Questionnaire ④ Workshop and Questionnaire ⑤ Questionnaire
		Were the routine work skills of the water supply technicians upgraded? (Output 5)	Appropriateness of operation and maintenance	① NPV and PNP directors/deputy directors ② UWS engineers in NPV and PNPs ③ UWS technicians in NPV and PNPs	① Questionnaire ② Workshop and Questionnaire ③ Workshop and Questionnaire
		Were management skills of directors/deputy directors and planning/ administrative staff in NPV and PNPs upgraded? (Output 6)	① Evaluation of planning/ administrative staff in NPV and PNPs ② Evaluation of NPV and PNP directors/deputy directors ③ Self-evaluation and satisfaction of planning/ administrative staff in NPV and PNPs ④ Self-evaluation and satisfaction of NPV and PNP directors/deputy directors ⑤ Opinion of experts from Japan	①-1 NPV and PNP directors/deputy directors ①-2 UWS engineers and technicians in NPV and PNPs ①-3 WASA director general/deputy director general ②-1 WASA director general/deputy director general ②-2 Planning/administrative staff in NPV and PNPs ②-3 UWS engineers and technicians in NPV and PNPs ③ Planning/administrative staff in NPV and PNPs ④ NPV and PNP directors/deputy directors ⑤ Experts from Japan	①-1 Questionnaire ①-2 Workshop ①-3 Interview ②-1 Interview ②-2 Questionnaire ②-3 Workshop ③ Workshop ④ Interview ⑤ Questionnaire
		Are there any other contributing factors for the achievement of the project purpose bedside this project?	Opinion of involved parities	① DHUP director general ② WASA director general/deputy director general ③ NPV and PNP directors/deputy directors ④ Experts from Japan	① Interview ② Interview ③ Interview ④ Interview
	What are the inhibiting and promoting factors for the achievement of the project purpose, including the important assumptions?		Opinion of involved parities	① DHUP director general ② WASA director general/deputy director general ③ NPV and PNP directors/deputy directors ④ Experts from Japan	① Interview ② Interview ③ Interview ④ Interview
Efficiency	Were the activities sufficient to produce the outputs?	Were activities with an adequate quantity and quality performed?	Opinion of involved parities	① WASA director general/deputy director general ② NPV and PNP directors/deputy directors ③ Experts from Japan	① Interview ② Interview ③ Questionnaire
		Were there any problems in terms of timing of project activities, such as schedule of training program and manual preparation, etc.?	Opinion of involved parities	① WASA director general/deputy director general ② NPV and PNP directors/deputy directors ③ Experts from Japan	① Interview ② Interview ③ Questionnaire

	Was the input of an adequate quantity and quality performed at the right time to conduct the activities?	Were the number of experts dispatched, their fields of expertise, and the timing of the dispatch appropriate?	① Achievement of dispatch of Japanese experts ② Opinion of involved parities	① Records of Japanese experts ②-1 WASA director general/deputy director general ②-2 NPV and PNP directors/deputy directors ②-3 Experts from Japan	① Literature Survey ②-1 Interview ②-2 Interview ②-3 Questionnaire
		Were the types, quantity, utilization, and maintenance of provided equipment appropriate?	Utilization of equipment	Records of utilization and maintenance of equipment	Literature Survey
		Were the number of accepted trainees, the fields, the training contents, training period, and the timing of the trainee acceptance appropriate in the counterpart training programs in Japan and Thailand?	① Achievement of counterpart training programs ② Opinion of involved parities	① Records of counterpart trainings ②-1 Trainees participating in the training programs in Japan and Thailand ②-2 Saitama Municipal Waterworks Bureau	① Literature Survey ②-1 Interview ②-2 Interview
		Were the head count, placement, and skills of the counterparts appropriate?	Opinion of involved parities	① WASA director general/deputy director general ② NPV and PNP directors/deputy directors ③ Experts from Japan	① Interview ② Interview ③ Questionnaire
		Were the amounts of the project budget appropriate both from Lao and Japanese governments?	① Budgetary performance ② Opinion of involved parities	① Records of budget ②-1 WASA director general/deputy director general ②-2 NPV and PNP directors/deputy directors ②-3 Experts from Japan	① Literature Survey ②-1 Interview ②-2 Interview ②-3 Questionnaire
	Were there factors that inhibited the achievement of the outputs, including the important assumptions?		Opinion of involved parities	① WASA director general/deputy director general ② NPV and PNP directors/deputy directors ③ Experts from Japan	① Interview ② Interview ③ Interview
Impact	Are there prospects that the overall goal will be produced as an effect of the project? Can the effect be verified in the ex-post evaluation?	Are there prospects that management capacity of Urban Water Supply Authorities is enhanced in sustainable ways?	Opinion of involved parities	① WASA director general/deputy director general ② NPV and PNP directors/deputy directors ③ DHUP director general ④ Experts from Japan	① Interview ② Interview ③ Interview ④ Questionnaire
		Is there any demarcation with respect to other related training agencies, and are there synergy effects?	Opinion of involved parities	① AfD staff ② ADB staff ③ Experts from Japan ④ WASA director general/deputy director general ⑤ NPV and PNP directors/deputy directors ⑥ DHUP director general	① Interview ② Interview ③ Questionnaire ④ Interview ⑤ Interview ⑥ Interview
		After the termination of the project, has the data continuously been collected in order to confirm the quality of supplied water?	Opinion of involved parities	① WASA director general/deputy director general ② NPV and PNP directors/deputy directors ③ Experts from Japan	① Interview ② Interview ③ Interview
		Are there any plans to hold the campaign for saving water regularly for the purpose of stability of water pressure?	Opinion of involved parities	① WASA director general/deputy director general ② NPV and PNP directors/deputy directors ③ DHUP director general	① Interview ② Interview ③ Interview

	Are there prospects that the achievement of the overall goal will have an impact on the development plan of Lao P.D.R.?	Are there any effects to the National Development Plan on the water supply through this project?	Opinion of involved parities	① WASA director general/deputy director general ② DHUP director general ③ Experts from Japan	① Interview ② Interview ③ Questionnaire
	Were there any positive or negative impacts beside the overall goal?	Are there any influences on social and cultural aspects, such as gender, human rights, and poverty, and environmental aspect?	Opinion of involved parities	① WASA director general/deputy director general ② NPV and PNP directors/deputy directors ③ DHUP director general ④ Experts from Japan	① Interview ② Interview ③ Interview ④ Questionnaire
	Are there any factors inhibiting or promoting the achievement of the overall goal?	From the perspective of the program approach, what kind of collaboration and interaction has been taken in order to achieve the overall goal, "capacity enhancement of Urban Water Supply Authorities"?	① Content of advice from the experts of this project to Development Study and Grant Aid ② Contribution of Development Study and Grant Aid to this project ③ Effects and issues coming from systematic collaboration with other schemes ④ Contribution of SV and JOCV to this project ⑤ Involvement of SV and JOCV in the ICTP	① Consultant in charge ②-1 Consultant in charge ②-2 Experts from Japan ③-1 Consultant in charge ③-2 Experts from Japan ④-1 SV and JOCV ④-2 Experts from Japan ⑤-1 SV and JOCV ⑤-2 Experts from Japan	① Questionnaire ②-1 Questionnaire ②-2 Interview ③-1 Questionnaire ③-2 Interview ④-1 Interview ④-2 Interview ⑤-1 Interview ⑤-2 Interview
		Are WASA, NPV, and PNP staff available for training programs? (Important assumptions)	Opinion of involved parities	① WASA director general/deputy director general ② NPV and PNP directors/deputy directors ③ Experts from Japan	① Interview ② Interview ③ Interview
		Others	Opinion of involved parities	① WASA director general/deputy director general ② NPV and PNP directors/deputy directors ③ Experts from Japan	① Interview ② Interview ③ Interview
Sustainability	Will policy aid continue also after the cooperation is finished?		Policy/Plan on water supply by MCTPC and WASA	① Development Plan of MCTPC ② Water Supply Plan of WASA	① Literature Survey ② Literature Survey
	Does the organization have the capacity to continue the business even after the cooperation has ended?	Does the organization have the operation and management capacity?	Changes in awareness and capacity for the operation and management of training programs	① WASA director general/deputy director general ② NPV and PNP directors/deputy directors ③ Experts from Japan	① Interview ② Interview ③ Questionnaire
		Are there any remarks to continue project activities, i.e. training program, in sustainable way?	Opinion of involved parities	① WASA director general/deputy director general ② NPV and PNP directors/deputy directors ③ Experts from Japan	① Interview ② Interview ③ Questionnaire
		Is it possible to continue the training programs in collaboration with NWTTI after the termination of the project? What are the advantages?	Opinion of involved parities	① WASA director general/deputy director general ② NWTTI director/deputy director ③ Experts from Japan	① Interview ② Interview ③ Questionnaire
		Have human resources been assigned appropriately?	Personnel assignment of WASA, NPV, and PNPs (change in the personnel assignment of planning/ administrative staff, UWS engineers and technicians, etc.)	① Material of WASA ② Material of NPV and PNPs	① Literature Survey ② Literature Survey

		Does WASA communicate with NPV and PNPs smoothly?	Current situation of communication with NPV and PNPs	① WASA director general/deputy director general ② NPV and PNP directors/deputy directors ③ Experts from Japan	① Interview ② Interview ③ Questionnaire
	Is a sense of ownership towards the project at the implementing agencies sufficiently secured?		Opinion of involved parities	① WASA director general/deputy director general ② NPV and PNP directors/deputy directors ③ Experts from Japan	① Interview ② Interview ③ Questionnaire
	Are sufficient budget measures taken in order to secure the budget, including operating expenses?	Is the financial situation good in WASA, NPV and PNP? Are any activities sufficiently conducted in order to secure the budget? (Is the Financial Plan drawn up?)	① Budgetary performance of WASA, NPV, and PNPs ② Opinion of involved parities	① Budgetary sheets ②-1 WASA director general/deputy director general ②-2 NPV and PNP directors/deputy directors ②-3 Experts from Japan	① Literature Survey ②-1 Interview ②-2 Interview ②-3 Interview
		Are efforts for securing WASA-initiated/ PNP-initiated financial resources proceeding smoothly?	① Tendency in self-initiated financial resources ② Opinion of involved parities	①-1 Budgetary sheets aggregated by WASA ①-2 Material of NPV and PNPs ②-1 WASA director general/deputy director general ②-2 NPV and PNP directors/deputy directors ②-3 Experts from Japan	①-1 Literature Survey ①-2 Literature Survey ②-1 Interview ②-2 Interview ②-3 Interview
	Is the transferred technology established?	Will the technology transferred by the training programs spread within the implementing agency?	Opinion of involved parities	① WASA director general/deputy director general ② NPV and PNP directors/deputy directors ③ UWS engineers in NPV and PNPs ④ UWS technicians in NPV and PNPs ⑤ Experts from Japan	① Interview ② Interview ③ Workshop ④ Workshop ⑤ Questionnaire
		Is equipment appropriately maintained and managed? Also, is the budget necessary for the maintenance of the equipment secured?	① Current condition and operational status of equipment ② Budget for the maintenance of the equipment	① Checklist of equipment by WASA ② Budgetary sheets aggregated by WASA	① Literature Survey ② Literature Survey
	What are the inhibiting factors for the project sustainability?	Is there any possibility that a sustained effect is inhibited through a lack of consideration for women, the poor, the socially vulnerable, and the environmental aspects? Others	Opinion of involved parities	① WASA director general/deputy director general ② NPV and PNP directors/deputy directors ③ DHUP director general ④ Experts from Japan ⑤ AfD staff ⑥ ADB staff	① Interview ② Interview ③ Interview ④ Interview ⑤ Interview ⑥ Interview

Progress of Activities for each Output. (2003.9 – 2004.3)

Progress of activities			Problems in this term	Targets and activities in the next term
Activities	Planed	9 10 11 12 1 2 3		(Targets) Engineer of each PNP will be trained making use of proper textbook in both of English and Lao. As the result, training system in each PNP will be set up such as trainer, assistant trainer and textbook. (Activities plan) Proper textbook for engineers in each field, Water supply master planning / Pipe-laying and service installation / Water purification / Water quality control / Leakage control, will be compiled in both of English and Lao. ICTP for 115 engineers from nation wide will be conducted in three major cities, Vientiane, Luangprabang and Pakse, using textbook above. Selected twenty (20) engineers after the ICTP will be trained at NWTTI in Thailand. Assistant trainers will be allocated in PNP to organize training programme in cooperation with trainer, the first TOT member.
	Actual	9 10 11 12 1 2 3		
1.1 Review the existing Training Need Assessment (TNA)	P A			
1.2 Preparer the training programme in Thailand	P A			
1.3 Conduct the training programme on training management in Thailand	P A			
1.4 Make a plan of UWS training programme	P A			
1.5 Select twenty (20) trainers from nation wide	P A			
1.6 Conduct the training programme on the plant and piping work for the trainers in Thailand.	P A			
1.7 Dispatch a trainee to Japan as a counterpart training programme	P A			
1.8 Prepare training curriculum for In-country Training programme (ICTP)	P A			
1.9 Conduct the ICTP	P A			
1.10 Evaluate, review and improve the ICTP for trainers	P A			

Progress of Activities for each Output. (2004.4 – 2005.3)

Progress of Activities			Problems in this term	Target and Activities in next term
Activities	Actual	4 5 6 7 8 910 11 12 1 2 3		
	Plan	4 5 6 7 8 910 11 12 1 2 3		
1. Appropriate UMS training system is established and trainers are trained. 1.4. Make a plan of UWS training programme	Actual	FY2004	None	Utilize the training programme in ICTP for engineers.
	Plan	FY2003		
1.10. Evaluate, review and improve the ICTP for trainers	Actual		None	Utilize the result in ICTP for engineers.
	Plan			
2. Training textbooks and materials are developed. 2.1. Organize a working group on training textbook	Actual		None	Compile the information on the training textbooks
	Plan			
2.2. Review and improve existing textbooks prepared by Nam Papa Vientiane(NPV) trainers	Actual		None	Complete and print the textbooks
	Plan			
2.3. Compile and print the textbook of each field 1) Leakage Control 2) Water Purification 3) Water Supply Master Planning 4) Pipe-Laying and Service Installation 5) Water Quality Control-----*Not completed in this Fiscal Year*	Actual		It took quite a long time in proof-reading.	Complete and print the textbooks on 'Water Quality Control'. Utilizing these textbooks in ICTP for 360 technicians.
	Plan			
3. UMS engineers are upgraded in each technology subjects. 3.1. Prepare the ICTP for engineer in each field	Actual		None	None
	Plan			
3.2. Conduct the ICTP for 115 engineers from Water Supply	Actual		None	None

Authority(WASA), NPV and PNP in Vientiane, Luangprabang and Pakse	Plan			
3.3. Evaluate, review and improve the ICTP for engineers	Actual		None	Utilize the results in the ICTP for technicians
	Plan			
3.4. Select twenty (20) assistant trainer from ICTP for engineers	Actual		None	Selected additional 20 assistant trainers for the plant and piping work training in Thailand
	Plan			
3.5. Prepare the training programme on the plant and piping work for assistant trainers in Thailand	Actual		None	None
	Plan			
3.6. Conduct the training programme on the plant and piping work for assistant trainers in Thailand	Actual		None	None
	Plan			

Progress of Activities for each Output. (2005.4 – 2005.9)

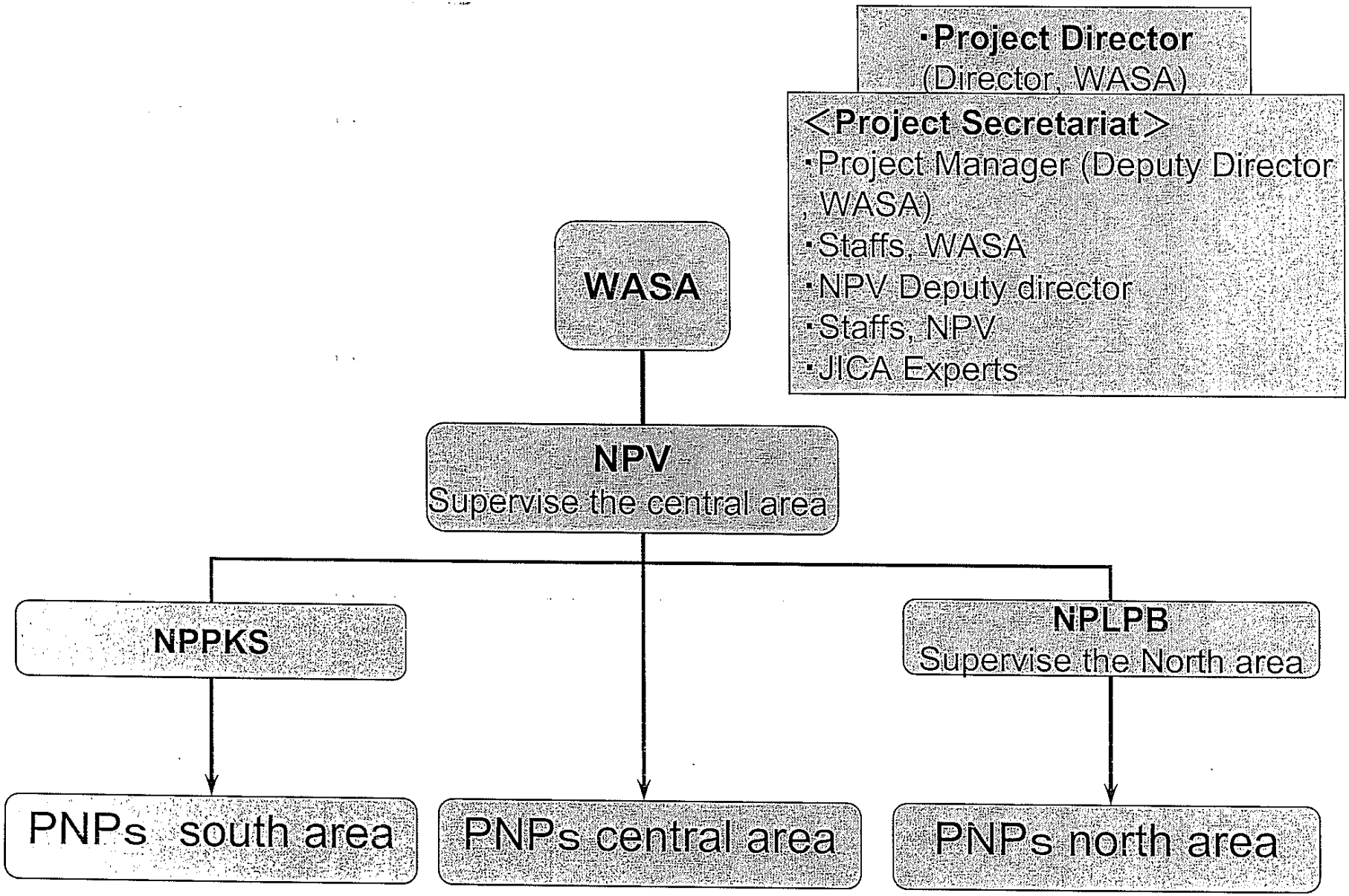
Progress of Activities			Problems in this term	Target and Activities in next term
Activities	Actual	4 5 6 7 8 9 10 11 12 1 2 3		
	Plan	4 5 6 7 8 9 10 11 12 1 2 3		
3. UWS engineers are upgraded in each technology subjects 3.5. Prepare the training programme on the plant and piping work for assistant trainers in Thailand	Actual		None	None
	Plan			
3.6. Conduct the training programme on the plant and piping work for assistant trainers in Thailand	Actual		None	Select assistant trainers for ICTP for technicians.
	Plan			
4. Manuals for routine work are developed 4.1. Organize a working group on manuals for routine works 1) Pipe Laying Work 2) Water Treatment Plant Operation and maintenance Work 3) Water Quality Inspection Work 4) Leakage Detection Work	Actual		None	Revise the draft version of manuals by each working group.
	Plan			
4.2. Collect technical information and prepare the manuals	Actual		None	Revise the draft version of manuals by each working group.
	Plan			
4.3. Make manuals for routine works in English and Lao 1) Manual on Water Treatment Plant Operation and Maintenance 2) Manual on Pipe-Laying and Service Installation 3) Manual on Water Quality Examination 4) Manual on Leakage Control	Actual		Experts were the key person to make manuals.	Utilizing manuals in ICTP for technicians and print the first version of manuals in English and Lao.
	Plan			

Progress of Activities for each Output. (2005.10 – 2006.3)

Progress of Activities			Problems in this term	Target and Activities in next term
Activities	Actual	4 5 6 7 8 910 11 12 1 2 3		
	Plan	4 5 6 7 8 910 11 12 1 2 3		
4. Manuals for routine work are developed 4.3. Make manuals for routine works in English and Lao 1) Manual on Water Treatment Plant Operation and Maintenance 2) Manual on Pipe-Laying and Service Installation 3) Manual on Water Quality Examination 4) Manual on Leakage Control	Actual		None	None
	Plan			
5. The routine work skills of UWS technicians are upgraded 5.1. Prepare the ICTP for 360 technicians of PNP and their branches	Actual		Number of trainees.	None
	Plan			
5.2. Conduct the ICTP in central region by using manuals	Actual		Some trainees, Assistant Lecturers and Lecturers could not attend planned schedule of training.	None
	Plan			
5.3. Conduct the ICTP in southern region by using manuals	Actual		None	None
	Plan			
5.4. Conduct the ICTP in northern region by using manuals	Actual		None	None
	Plan			
5.5. Evaluate and review ICTP, improve the curriculum of ICTP for Technicians.	Actual		Period of training was rather short, Some lecturers were insufficient for lecture, Limit of lecture room etc.	Need to device the training schedule, Need to give enough advance instruction to lecturers.
	Plan			
6. Management skill of administrator and manager in Provincial Nam Papa (PNP) is upgraded	Actual		None	Prepare the ICTP for 40 administrators timely and

6.1. Prepare the ICTP for administrators and planning / administrative straff	Plan			properly.
6.2. Conduct the ICTP for 40 administrators and 120 planning / administrative staff from NPV and PNP	Actual		None	Conduct the ICTP for 40 administrators successfully and select 20 trainees from 116 trainees for the training course at NWTTI
	Plan			

The Organization chart of the Project



List of Experts

1) Long-term Expert

Name	Assigned Field		Appointed Period	Coming from		Outline of activities	Counterpart or Target Personnel		
				Name	Section / Position		Name	Office	Position
Mr. Yasuhiro KAWASHIMA 川島　康弘	Project Administration and Management	Water Supply Planning	1/Sep./2003 - 31/Mar./2005	Saitama Municipal Waterworks Bureau, Saitama City	Water Supply Dvision / Senior Officer	Managing 3rd-Country Training course, In-Country Training course and to issue the Textbooks for Training.	Refer Counterpart List		
Mr. Wataru TAKASHIMA 高嶋　渉		Water Supply Planning	23/Jan./2005 - 31/Aug./2006	Kanagawa Water Supply Authority	Ayase Water Treatment Plant / Deputy Manager	Managing 3rd-Country Training course, In-Country Training course and to issue the Manuals for Training.			
Mr. Masahiro OKADA 岡田　昌浩		Project Coordinator	21/Feb./2005 - 31/Aug./2006	Hasegawa Corporation Co., Ltd.	Officer of Technical Cooperation Division	Managing 3rd-Country Training course, In-Country Training course, Project Operation and Budget.			

2) Short-term Expert

Name	Field	Assigned Subject	Appointed Period	Coming from		Outline of activities	Counterpart or Target Personnel		
				Name	Section / Position		Name	Office	Position
Mr. Motomu ANDO 安藤　求	Designing/Laying/Maintenance of Piping Work	Designing/Laying/Maintenance of Piping Work in terms of Water Leakage	28/Jan. - 24/Mar./2004	Saitama Municipal Waterworks Bureau, Saitama City	Design Group, Engineering Department / Supervisor	Technical transfer related to this subject to the staff of NPNL, Technical transfer and guidance of lecturing methods to the Trainers belong to NPNL, Lecturing on "Piping Work" at the In-Country Training course.	Mr. Khampheui VONGSAKHAMPOUY	Waterwork Technology Training Center	Director
Mr. Masahiro SHIMOMURA 下村　政裕	Non-Revenue Water Management	Leakage Control	28/Jan. - 18/Feb./2004	Saitama Municipal Waterworks Bureau, Saitama City	Design Group, Engineering Department / Leader	Lecturing on the Non-Revenue Water Management at In-country training, Guiding the lecturing methods and transferring the techniques to the lecturers of NPNL, Transferring techniques to the staff of managing Non-Revenue Water in NPNL.			
Mr. Kenji AKIBA 秋葉　憲治	Water Qulity Management	Water Quality Control	09/Sep. - 05/Dec./2004	SAPPORO City Waterworks Bureau	Planning Section, Water service Dpt.	Technical transfer related to this subject to the staff of NPNL, Technical transfer and guidance of lecturing methods to the Trainers belong to NPNL, Lecturing on "Water Qulity Control" at the In-Country Training course, Water supply & public health, water quality monitoring in WTP, WQC in disinfection process, WQC in rapid sand filtration system, tap WQ monitoring, practice in Laboratory.	Ms. Khonsavanh KEOMANIVONG	Chinaimo Water Treatment Plant	Manager of Laboratory

Name	Field	Assigned Subject	Appointed Period	Coming from		Outline of activities	Counterpart or Target Personnel		
				Name	Section / Position		Name	Office	Position
Mr. Toru TAKAHASHI 高橋　徹	Leakage Control	Leakage Detaction	31/Jul. - 28/Oct./2005	Sanyu Consultants Inc.	Tokyo Office, International Department, Project Operation Division / Engineer	Instructing the counterpart and staff on the effective water leakage survey activity by using the related equipments and on the methods of regular water leakage survey by planning the operation schedule in the water supply area, Instructing the trainersthrough holding the workshop, Cooperating with a Senior volunteer in this field attached to the NPNL in revising manual and workshop operation.	Mr. Khampheui VONGSAKHAMPOUY / Mr. Viengthuay VANNARATH	Waterwork Technology Training Center / Leak Control Division, Nam Papa Nakhone Luang	Director of WTTC / Deputy Manager of LCD, NPNL
Mr. Wataru KANEKO 金子　亘	Water Flow and Water Pressure Control	Water Flow and Water Pressure Survey	31/Jul. - 27/Oct./2005	Saitama Municipal Waterworks Bureau, Saitama City	Pipe Maintenance and Management Division, Leakage Prevention Group / Officer	Instructing the counterpart and staff on the methods of majoring Water Flow and Water Pressure regularly in the water supply area by using the related equipments and on establishing the annual report system to WASA through Water Flow and Water Quality Management in the water supply area by instructing to analyze the above data and to make statistics materials, Instructing the trainers through holding the workshop.	Mr. Khampheui VONGSAKHAMPOUY	Waterworks Technology Training Center	Director of WTTC
Mr. Kenji FUNAHORA 舟洞　健二	Water Quality Management	Water Quality Control	01/Sep. - 28/Nov./2005	Tokyo Metropolitan Waterworks Bureau, Tokyo	Water Quality Center, Surveillance Section / Officer	Instructing the counterpart and staff on upgrading the quality of water laboratorial operation at the Water Quality Laboratory, Making manuals of water analysis through OJT or revising the ready-existing manual, Instructing the trainers through holding the workshop, Cooperating with a JOCV volunteer in the field of Water Quality Analysis attached to the laboratory in revising manual and workshop operation.	Ms. Khonsavanh KEOMANIVONG	Water Quality Control Section, Chinaimo Water Treatment Plant	Chief of WQCS, CWTP

List of Expert

3) Invitation of Lecturers

Name	Field	Assigned Subject	Appointed Period	Coming from		Outline of activities	Counterpart or Target Personnel		
				Name	Section / Position		Name	Office	Position
Mr. Masamichi HAYASHI 林　正道	Lecture	Waterworks Law in Japan	15 - 19/Nov./2004	Ministry of Health, Labor and Welfare of Japan	Health Service Bureau, Water Supply Division / Deputy Director	Lecturing on the importance of the Water Supply laws and its role to the people and waterworks in Japan.		Water Supply Authority / Nam Papa Nakhone Luang / Provincial Nam Papa	Counterparts of WASA / Trainers from NPNL / Directors and Planning Officers of PNPs
Mr. Osamu SUGAYA 菅谷　脩		Local Public Enterprise Law in Japan		Saitama Municipal Waterworks Bureau, Saitama City	Department of Operation / Director	Lecturing on the necessity and mean of Local Public Enterprise Law in Japan, and on the waterworks establishes other important laws in order to support the operation and management of waterworks.			
Mr. Masahiro SHIMOMURA 下村　政裕		Technical Challenge for Water Supply Management		Saitama Municipal Waterworks Bureau, Saitama City	Engineering Division / Manager	Lecturing on the Technical Challenge especially regarding water leakage control in Japan			
Mr. Viroon SIRINOPAKUL	Lecture and Guidance	Making Training Curriculum and Textbook	02 - 15/May/2004, 30/May - 12/Jun./2004	Metropolitan Waterworks Authority, Bangkok, Thailand	Waterworks Business Training Department, Instructor 6	Assisting in the creation of training curricula for the Trainer and Assistant Trainer, for the Chief Engineer and Engineer, for the Technicians, in each Provincial Nam Papa, Transferring the necessary knowledge and skills for the management and operation of the training programme to the staff of the existing training center, Reviewing the existing textbooks, Transferring the necessary knowledge for the production of textbooks in "Planning and Design", "Pipe-laying and Installation of the Connection", "Operation and Maintenance of Water Treatment Plant", "Water Quality management", "Non-revenue Management", Transferring the Necessary knowledge and skills to enable the creation of training materials in the above mantioned fields.		Water Supply Authority / Waterwork Technology Training Center / Nam Papa Nakhone Luang	Counterparts of WASA / Director of WTTC / Trainers from NPNL
Mr. Sancharoen VASASIRI				Metropolitan Waterworks Authority, Bangkok, Thailand	Waterworks Business Training Department, Program Officer, Instructor 6				

Mr. Sakda PAROSIYANON	Lecture	Management Training for Administration and Planning Officers	31/March/2006	Metropolitan Waterworks Authority, Bangkok, Thailand	Assistant Governer	Lectures on significance of 5S at Workplace, improving the way of working, improving the communication in the workplace and Managing the quality of work.		Nam Papa Nakhone Luang / Provinvial Nam Papa / Department of Housing and Urban Planning	Administrative and Planning Officers of NPNL, PNPs and DHUP

List of Counterpart Placement

Name	Field/Section	Place of office	Position	Working period	Expert in charge	Current position		Date of transferring
Dr. Somphone DETHOUDOME	Administration	WASA, MCTPC	Project Director			Director General	Water Supply Authority, Department of Housing and Urban Planning, MCTPC	Until 15/May/2003
		DHUP, MCTPC		01/Sep./2003-	Expert & Coordinator	Director General	Department of Housing and Urban Planning, MCTPC	From 16/May/2003
Mr. Noupheuak VIRABOUTH		WASA, MCTPC	Project Manager	01-03/Sep./2003		Deputy Director General	Water Supply Authority, Department of Housing and Urban Planning, MCTPC	Until 03/Sep./2003
				04/Sep./2003-		Director		From 04/Sep./2003
Mr. Somlith Silaphet		NPNL	Coordinator	13/Sep./2005-	Coordinator	Deputy General Manager (Technical)	Nampapa Nakhone Luang (Vientiane Capital Water Supply State Enterprise)	
Mr. Soutchay BOUAPHAIVANH		WASA, MCTPC		13/Sep./2005-		Senior Staff	Water Supply Authority, Department of Housing and Urban Planning, MCTPC	
	Pipe Laying Work, Leakage Detection Work		Counterpart	01/Sep./2003-	Expert			
Mr. Phouthong PHASAVATH		WASA, MCTPC		04/Mar./2005-		Engineer	Water Supply Authority, Department of Housing and Urban Planning, MCTPC	
Mr. Khampheui VONGSAKHAMPOUY		NPNL / WTTC		01/Sep./2003-		Director	Waterwork Technology Trainning Center, Nampapa Nakhone Luang (Vientiane Capital Water Supply State Enterprise)	
Mr. Viengthuay VANNARATH	Leakage Detection Work	NPNL		13/Sep./2005-		Deputy Manager	Leak Control Division, Nampapa Nakhone Luang (Vientiane Capital Water Supply State Enterprise)	
Mr. Souvannaseng XAYMONTRY	Water Treatment Plant Operation and Maintenance Work, Water Quality Inspection Work, Planning and Statistics	WASA, MCTPC		01/Sep./2003-		Senior Staff	Water Supply Authority, Department of Housing and Urban Planning, MCTPC	
Mr. Naimany SENGPHOUVONG	Water Treatment Plant Operation and Maintenance Work, Water Quality Inspection Work	NPNL		13/Sep./2005-		Deputy Manager	Chinaimo Water Treatment Plant, Nampapa Nakhone Luang (Vientiane Capital Water Supply State Enterprise)	
Ms. Khonsavanh KEOMANIVONG	Water Quality Inspection Work	NPNL		13/Sep./2005-		Manager	Water Quality Laboratory, Chinaimo Water Treatment Plant, Nampapa Nakhone Luang (Vientiane Capital Water Supply State Enterprise)	
Mr. Sisamone KONGMANY	Planning and Statistics	NPNL		01/Sep./2003-		Project Manager of AFD Project	Consultant for Water Supply and Sanitation Sector Project, Nampapa Nakhone Luang (Vientiane Capital Water Supply State Enterprise)	
Mr. Phiengkham SRISOURAT		NPNL		13/Sep./2005-		Manager	Corporate Planning Division, Nampapa Nakhone Luang (Vientiane Capital Water Supply State Enterprise)	
Ms. Kongsay OUNCHIT	----------	DHUP, MCTPC		01-03/Sep./2003		Senior Staff	Water Supply Division, Department of Housing and Urban Planning, MCTPC / Deputy Project Manager ofWSSSP	From 04/Sep./2003

REMARKS;

1) DHUP = Department of Housing and Urban Planning
2) MCTPC = Ministry of Communication, Transprot, Post and Construction
3) WASA = Water Supply Authority
4) NPNL = Nam Papa Nakhone Luang
5) WTTC = Waterworks Technology Training Center
6) WSSSP = Water Supply and Sanitation Sector Project

List of Counterpart Training in Japan

Name	Fiscal Year of Japan	Period	Cooperation Field	Training Course Title	Training		Position when they join the Training Course			Current Position		
					Places	Contents	Position Level	Position Name	Department	Position Name	Depaerment	Transfer Date
Mr. Noupheuak VIRABOUTH	2003	14th Sep. - 12th Oct. 2003	Water Supply	Water Supply Technical Administration	Japan Water Research Center, Saitama Municipal Water Bureau, Saitama Perf.Public Enterprise Bureau, Bureau of Waterwork, Tokyo Metropolitan Government and others	Laws, ordinances and organizations relating to water work in Japan. Overview of water management system in Japan. Water supply management system at perfecture level, water resource management and exploitation, water supply wide-ranging plan. Water supply production, transmission and bulk water supply. Water supply management system in Tokyo Metropolitan and in Saitama Municipality. Water supply didtribution system. Water Quality contol system. wter leakage control system. Water service installation system. Water work management (financial plan, facility expension and upgrading plan). Disaster prevention plan. Designing and estimation, pipe-laying & construction work (site). Repairs & maintenance work (mapping). Public relation.		Deputy Director General	WASA	Director	WASA	04/Sep./2003
Mr. Khampeui VONSAKHAMPOUY	2004	31st Jan. - 27th Feb. 2005		Water Supply Administrator	Saitama Municipal Water Bureau, Saitama Perf.Public Enterprise Bureau, Nagoya City Waterworks and Sewerage Bureau and others	Water Supply Technologies, Water Supply Purification, Water Supply Administration, Water Supply Management etc.		Director	WTTC (NPNL)	Same		
Mr. Souvannaseng XAYMONTRY							Senior staff	Water Supply Engineer	WASA	Same		
Mr. Viengthuay VANNARATH	2005	09th Jan. - 05th Feb. 2006		Operation and Maintenance of Water Supply Services	Saitama Municipal Water Bureau, Saitama Perf.Public Enterprise Bureau, Kanagawa Water Supply Authority, Nagoya City Waterworks and Sewerage Bureau and others	Operation and Maintenance of Water Supply Services, Water Supply Purification, Water Supply Administration etc.	Deputy Manager	Leak Control Division	NPNL	Same		
Mr. Phouthong PHASAVATH							Staff	Water Supply Engineer	WASA	Same		

Remarks;
1) WASA = Water Supply Authority
2) WTTC = Waterworks Technology Training Center
3) NPNL = Nam Papa Nakhone Luang (Vientiane Capital Water Supply State Enterprise)

Budget Implementation

Category	Items		JFY2003	JFY2004	JFY2005	*JFY2006*	Total
Project Operation	Implementing Activity		28,258.00	72,277.00 *Include the cost of inviting 2 Lecturers from NWTTI.	103,687.00	*27,900.00*	**US$232,122.00**
Training	In-Country Training Program		13,731.00	23,591.00	*Budget for Implementing Activity includes the Budget for ICTP.	*Budget for Implementing Activity includes the Budget for ICTP.	**US$37,322.00**
	Training at NWTTI		27,685.00	22,815.00	22,550.00	*11,700.00*	**US$84,750.00**
Equipment etc.	Renovation of Training Center	Nam Papa Champasak		5,284.00			**US$5,284.00**
		Nam Papa Luangprabang		10,637.00			**US$10,637.00**
	Purchasing equipments	Nam Papa Champasak		8,860.00			**US$8,860.00**
		Nam Papa Luangprabang		11,769.00			**US$11,769.00**
Seminer etc.	Video making, advertisements on newspapers & TV and Goods for Saving Water Campaign		29,932.00	30,272.00			**US$60,204.00**
Total			**US$99,606.00**	**US$185,505.00**	**US$126,237.00**	***US$39,600.00***	**US$450,948.00**

Remarks 1) Figures of Implementing Activity included the Travel Allowance to NWTTI.
Remarks 2) Figures of Training at NWTTI were directly paid to NWTTI by JICA Laos Office based on the Contracts.
Remarks 3) Figures of Equipment etc. were directly paid to the contacted companies by JICA Laos Office.
Remarks 4) Figures of Seminer etc. were directly paid to the contacted companies by JICA Laos Office.
Remarks 5) Cost for making Multimedia Contents using JICA-Net Scheme (Video CD / 2 Subjects) were not included the above figures.

調達地（Place of Purchase）
（本邦）（Japan）

4/25/2006
25/04/2006(DD/MM/YYYY)

調査用資機材等管理台帳（兼供用・処理台帳）
Equipment Administration for the Project

ラオス国水道事業体人材育成プロジェクト	Project for CAPACITY DEVELOPMENT OF URBAN WATER SUPPLY AUTHORITY IN LAO PDR	プロジェクト No. (Project No.)	0241112E0	予算科目 Budget Subject	□機材供与 ■携行機材費 □現地業務費
相手国受入機関 Counterpart Organization	Water Supply Authority, Ministry of Communication, Transportation, Post and Construction	機材管理担当部署/事務所 Department/Section/Office in Charge	ラオス事務所		
派遣/実施期間 Dispatching/Cooperation Period	01/09/2004 ～ 31/08/2006 DD/MM/YYYY～DD/MM/YYYY	専門家名 Expert Name	岡田昌浩 Masahiro OKADA		

取得/年月日 Date of Registration in JICA Office DD/MM/YYYY	資機材名 Description/ Name of Equipment/Goods	仕様・規格 Specification・Standard	数量 Quantity	金額 Total Price (Yen)	購入先 Provider	供用者 User	供用後処理 Condition after technical transfer: 譲渡 Transfer	返納 Return	その他 Others	決裁No.（年月日）Approval Document No./Date	譲渡・返納（年月日）Transfer・Return Date DD/MM/YYYY	機材の状況 Condition of Equipment A: Excellent B: Fair C:Poor D:Unable to Use	使用頻度 Frequency of Usage A: Every week B: Every other week C: Every month D: Less than every month	備考 Reference
29/01/2004	Notebook Personal Computer	TOSHIBA Dynabook / ES425CME / Intel2.5GHz	1	179,000	JICA HQ	Expert						B	A	Budget for Equipment Accompanied by Expert Dispatch
29/01/2004	Digital Camera	OLYMPUS X250	1	32,000		Expert						C	D	Budget for Equipment Accompanied by Expert Dispatch
23/09/2004	Water Pressure Measuring Device	FUJITECOM / DLS-H21, *w/Data Logger	1	204,750		Expert						A	D	Budget for Equipment Accompanied by Expert Dispatch
			1	204,750		NPNL	○			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
			2	409,500		NPNL				23 / September / 2004		A	A	Budget for Equipment Accompanied by Expert Dispatch
23/09/2004	Residual Chlorine Measurement Set	SHIBATA SCIENTIFIC TECHNOLOGY Ltd. / 8054-21	1	28,000		Chinaimo WTP				23 / September / 2004		B	A	Budget for Equipment Accompanied by Expert Dispatch
23/09/2004	Electro Conductivity Meter	ECT-600	1	133,000		NPNL				23 / September / 2004		A	A	Budget for Equipment Accompanied by Expert Dispatch
23/09/2004	Portable Dissolved Oxygen Meter	ODT-100M	1	193,000		NPNL				23 / September / 2004		A	A	Budget for Equipment Accompanied by Expert Dispatch
15/08/2005	Listening Stick	FUJITECOM / LS-1.5, 1.5m	2	46,300		NPNL	○			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
			2	46,300		WTTC / Pakse WTP	○			21 / September / 2005		A	B	Budget for Equipment Accompanied by Expert Dispatch
			2	46,300		WTTC / Luangprabang WTP	○			23 / September / 2005		A	B	Budget for Equipment Accompanied by Expert Dispatch
15/08/2005	Boring Bar	FUJITECOM / 1.5m	1	19,000		NPNL	○			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
			1	19,000		WTTC / Pakse WTP	○			21 / September / 2005		A	B	Budget for Equipment Accompanied by Expert Dispatch
			1	19,000		WTTC / Luangprabang WTP	○			23 / September / 2005		A	B	Budget for Equipment Accompanied by Expert Dispatch
15/08/2005	Road Cap	FUJITECOM / 22mm×50mm (1,000pcs/set)	1	42,000		NPNL	○			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
15/08/2005	Mud-Off Tool	FUJITECOM / 75mm	1	22,000		NPNL	○			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch

List of Equipment

15/08/2005	Manual-Operated Hydraulic Pipe Press	FUJITECOM / SK-50	1	115,800	JICA HQ	NPNL	O			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
15/08/2005	Water Pressure Measuring Device	FUJITECOM / DLS-H21, *w/Data Logger	1	294,730		WTTC / Pakse WTP	O			21 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
			1	294,730		WTTC / Luangprabang WTP	O			23 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
15/08/2005	Software for DLS-H21	FUJITECOM / DLS-W	1	126,300		WTTC / Pakse WTP	O			21 / September / 2005		A	C	Budget for Equipment Accompanied by Expert Dispatch
			1	126,300		WTTC / Luangprabang WTP	O			23 / September / 2005		A	C	Budget for Equipment Accompanied by Expert Dispatch
15/08/2005	Water Pressure Measuring Device for Hydrant Ask	FUJITECOM / WPN-01	1	11,250		NPNL	O			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
			1	11,250		WTTC / Pakse WTP	O			21 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
			1	11,250		WTTC / Luangprabang WTP	O			23 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
15/08/2005	Metal Pipe and Cable Locator	FUJITECOM / PL-960	1	842,000		NPNL	O			14 / September / 2005		A	B	Budget for Equipment Accompanied by Expert Dispatch
06/09/2005	Non-Metalic Pipe Locator	FUJITECOM / NPL-100	1	1,263,200		NPNL	O			14 / September / 2005		A	B	Budget for Equipment Accompanied by Expert Dispatch
06/09/2005	Digital Sound Detector	FUJITECOM / FSB-8D	1	82,100		NPNL	O			14 / September / 2005		A	B	Budget for Equipment Accompanied by Expert Dispatch
12/09/2005	Portable Microprocessor Turbidity Meter	HANNA instruments / HI93703-C	1	121,500		Water Quality Laboratory, Chinaimo WTP	O			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
12/09/2005	Standard Solutions	HANNA instruments / HI93703-0 (0 FTU)	3	7,560			O			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
12/09/2005	Standard Solutions	HANNA instruments / HI93703-10 (10 FTU)	3	11,250			O			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
12/09/2005	Electronic Balance with Transformer	SHIMADZU / EL300 W/AC (321-62200-03), (0.01g) Transformer (TOEI HENSEKI / TD-1, 220-240V⇒100V, 50/60Hz)	1	77,000			O			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
12/09/2005	DO Sensor	SHIBATA SCIENTIFIC TECHNOLOGY Ltd. / GU-L (8050-2101)	1	14,800			O			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
12/09/2005	Beakers	FLON INDUSTRY / F-1073-06, 50ml, White Colour	10	14,000			O			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
12/09/2005	Watchglass	Glass made, Φ6cm (10 pcs)	2	2,800			O			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
12/09/2005	Watchglass	Glass made, Φ12cm (10 pcs)	1	2,800			O			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
12/09/2005	Bottles	AS ONE / 5-5646-01, 100mL	10	37,500			O			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
12/09/2005	Test Tube	マルエム (MARUEMU) / S-25, 25mL (10pcs)	2	25,700			O			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
12/09/2005	Stirring Rod	FLON INDUSTRY / F-4020-02, Φ5mm×150mm	2	900			O			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
12/09/2005	Stirring Rod	FLON INDUSTRY / F-4020-03, Φ7mm×200mm	2	1,160			O			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
12/09/2005	Condensers	SHIBATA SCIENTIFIC TECHNOLOGY Ltd. / 300mm (0665-	3	36,780			O			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch

List of Equipment

12/09/2005	Flasks	SHIBATA SCIENTIFIC TECHNOLOGY Ltd. / 300mL	3	11,880			○			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
12/09/2005	Flasks	SHIBATA SCIENTIFIC TECHNOLOGY Ltd. / 100mL	5	11,750			○			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
12/09/2005	Colifoms Test Paper	Sun Chemical / C050037, 100pcs	1	5,920			○			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
12/09/2005	Petri Dishes	TOKYO SCHALE / Φ90mm, H20mm	10	4,200			○			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
12/09/2005	Buret Stand	Basement (Ceramic made), Pole and Holder (Steel made)	1	4,500			○			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
12/09/2005	Pipets	SHIBATA SCIENTIFIC TECHNOLOGY Ltd. / 10mL	5	4,000			○			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
12/09/2005	Pipets	SHIBATA SCIENTIFIC TECHNOLOGY Ltd. / 5mL	5	3,250	JICA HQ	Water Quality Laboratory, Chinaimo WTP	○			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
12/09/2005	Safty Pipeter	Rubber made, Black Colour	3	3,240			○			14 / September / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
12/09/2005	Protective Wear	Tsuchiya Hakui / LL Size, White Colour	1	4,380			○			14 / September / 2005		B	A	Budget for Equipment Accompanied by Expert Dispatch
18/10/2005	Hot Plate with Transformer	SHIBATA SCIENTIFIC TECHNOLOGY Ltd. / NP-6	1	108,000			○			18/ October / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
18/10/2005	Programmable Low Temperature Incubator	YAMATO SCIENTIFIC CO., LTD. / IN602	1	454,000			○			18/ October / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
18/10/2005	Water bath	YAMATO SCIENTIFIC CO., LTD. / BS-600	1	160,700			○			18/ October / 2005		A	A	Budget for Equipment Accompanied by Expert Dispatch
Total			5,952,380 Yen ⇒		52,938 US$									

(注) 1 在外事務所用及び在外事務所又は駐在員を置かない国においては本部事業部用（物品管理役、会計役、分任物品管理役用）
2 取得価額２万円相当以上の調査用資機材等について、現地調達分、本邦購送分、ｺﾝｻﾙﾀﾝﾄ契約購入分全ての物品を登録する。
3 調査団又は専門家、ボランティアなどの技術協力等ごとに別葉とする。 (Make Sheet per every Study/Technical cooperation of Expert/Volunteer etc one by one)
(規格Ａ４版：Ａ４Size)

3,845,680 YEN 34,039 US$

List of Equipment

調達地（Place of Purchase）
（現地）（Local）

ANNEX 2-5-2
4/25/2006
25/04/2006(DD/MM/YYYY)

調査用資機材等管理台帳（兼供用・処理台帳）
Equipment Administration for the Project

ラオス国水道事業体人材育成プロジェクト	Project for CAPACITY DEVELOPMENT OF URBAN WATER SUPPLY AUTHORITY IN LAO PDR	プロジェクト No. (Project No.)	0241112E0	予算科目 Budget Subject	□機材供与 ■携行機材費 ■現地業務費
相手国受入機関 Counterpart Organization	Water Supply Authority, Ministry of Communication, Transportation, Post and Construction	機材管理担当部署/事務所 Department/Section/Office in Charge	ラオス事務所		
派遣/実施期間 Dispatching/Cooperation Period	01/09/2004 ～ 31/08/2006 DD/MM/YYYY～DD/MM/YYYY	専門家名 Expert Name	岡田昌浩 Masahiro OKADA		

取得/年月日 Date of Registration in JICA Office DD/MM/YYYY	資機材名 Description/ Name of Equipment/Goods	仕様・規格 Specification・Standard	数量 Quantity	金額 Total Price (US$)	購入先 Provider	供用者 User	供用後処理 Condition after technical transfer: 譲渡 Transfer	返納 Return	その他 Others	決裁No.（年月日）Approval Document No./Date	譲渡・返納（年月日）Transfer・Return Date DD/MM/YYYY	機材の状況 Condition of Equipment A: Excellent B: Fair C:Poor D:Unable to Use	使用頻度 Frequency of Usage A: Every week B: Every other week C: Every month D: Less than every month	備考 Reference
17/11/2003	Office Desk	LEECO / BD-127	1	154.00	VIENG NINHOM FURNITURE	Expert						A	A	Budget for Implementing Activitiy
18/11/2003	Cabinet for keeping documents	LEECO / 304, Slide doors (Glass type)	1	67.00	PANUVAT FURNITURES	Expert						A	A	Budget for Implementing Activitiy
	Office Chair	P-126	1	25.00										
09/02/2004	UPS	ALANTA / 1000VA	1	150.00	SAHAPHAN OA COMPANY	Expert						C	A	Budget for Implementing Activitiy
09/02/2004	USB Flash Memory	Pen Drive / 128MB	1	54.00	VSLP GROUP IT COM	WASA			Broken	October, 2004		D	---	Budget for Training (In-Country Training Program)
			1	54.00		Chinaimo WTP	○			09 / February / 2004		A	A	
			1	54.00		Expert			Broken	August, 2005		D	---	
			1	54.00		WTTC / Chinaimo WTP	○			09 / February / 2004		A	A	
12/02/2004	USB Flash Memory	GREEN HOUSE / GH-UFD64SP, 64MB	1	35.00	MY-COM Personal Computer Shop	Expert			Broken	September,2004		D	---	Budget for Implementing Activitiy
27/02/2004	Pump etc	Pump (SHOWTOO/GV-680), Pump(PABOOL/3"), Hose(3")	3	371.00	RAENCHAI LOHAKIJ	WTTC / Chinaimo WTP	○			27 / February / 2004		A	D	Budget for Training (In-Country Training Program)
27/02/2004	Cabinet for keeping teaching materials	LEECO / Slide doors (Steel type)	2	310.00	PANUVAT FURNITURES	WASA	○			27 / February / 2004		A	A	Budget for Training (In-Country Training Program)
01/03/2004	Mobile Phone	NOKIA / 8250	1	135.00	MONEY PLUS	Expert						C	D	Budget for Implementing Activitiy
09/03/2004	Booster cable	For Office Car	1	6.00	ONE SHOP	Expert						A	D	Budget for Implementing Activitiy
10/03/2004	Maintenance Kit	For Office Car / Locking Pliers, Vice, Adjustable	1	116.00	RIYANSAI SHOP	Expert						A	D	Budget for Implementing Activitiy
11/03/2004	Water Quality Analysis Apparatus	32 Beakers, 10 flasks, 2 Pipettes, 3 Hydrometers	47	658.00	EUROP CONTINENTS LAO	W.Q.L., Chinaimo WTP	○			11 / March / 2004		A	A	Budget for Implementing Activitiy
18/03/2004	Over Head Projector	3M Austin, TX78726-900	1	220.00	Pornchai Stationery Company	WASA	○			18 / March / 2004		A	D	Budget for Implementing Activitiy
24/03/2004	Cabinet for keeping documents	LEECO / Slide doors (Glass type)	2	330.00	PANUVAT FURNITURES	WASA	○			24 / March / 2004		A	A	Budget for Implementing Activitiy
31/03/2004	Copy Machine	Canon / Image RUNNER IR1600+ADF-J1,FINISHER-L1	1	3,150.00	SAHAPHAN OA COMPANY	WTTC / Chinaimo WTP	○			31 / March / 2004		A	A	Budget for Equipment Accompanied by Expert Dispatch
31/03/2004	Facsimile	Panasonic / KX-FP152X	1	166.00	SAHAPHAN OA COMPANY	WTTC / Chinaimo WTP	○			31 / March / 2004		C	A	Budget for Equipment Accompanied by Expert Dispatch
31/03/2004	Digital Camera	CANON IXUS V3	1	579.00	SAHAPHAN OA COMPANY	WTTC / Chinaimo WTP	○			31 / March / 2004		A	C	Budget for Equipment Accompanied by Expert Dispatch
31/03/2004	Vibrator	MIKASA / MT63W	1	1,795.00	RAENCHAI LOHAKIJ	WTTC / Chinaimo WTP	○			31 / March / 2004		A	D	Budget for Equipment Accompanied by Expert Dispatch

List of Equipment

31/03/2004	REX Pipe Treading Machine	N100A	1	3,655.00	ENCHAI LOHAKIJ	WTTC/ Chinaimo WTP	O			31 / March / 2004		A	D	Budget for Equipment Accompanied by Expert Dispatch
15/06/2004	Binding Machine	Uni Mate / Smart Bind	1	145.00	Pornchai Stationery Company	Expert						A	D	Budget for Implementing Activitiy
20/07/2004	Office Chair	LAC / 504P	1	117.00	PANUVAT FURNITURES	Expert						A	A	Budget for Implementing Activitiy
20/07/2004	Additional DDR-Ram for Desktop PC	DDR-Ram 256MB	1	100.00	Top Com Office Automations	Expert			Broken	August, 2005		D	---	Budget for Implementing Activitiy
03/09/2004	Desktop Personal Computer	VSS Model / Intel2.8GHz, 17"Monitor, Keyboard	1	850.00	Top Com Office Automations	WASA	O			03 / September / 2004		A	A	Budget for Implementing Activitiy
30/09/2004	Printer	Canon / image CLASS MPC-190S	1	200.00	Sirisonboon OA Center	WTTC/ Pakse WTP	O			30 / September / 2004		A	D	Budget for Implementing Activitiy
04/10/2004	USB Flash Memory	KING MAX / 128MB	1	45.00	Top Com Office Automations	Expert			Broken	September, 2005		D	---	Budget for Training (In-Country Training Program)
			2	90.00		WASA	O			04 / October / 2004		A	A	
26/10/2004	USB-Serial (RS232) Converter	Plug and Play: HE800A, for Data Logger DLS-H21	1	36.50	VSLP GROUP IT COM	NPNL	O			26 / October / 2004		A	D	Budget for Training (In-Country Training Program)
			1	36.50		Expert						A	D	
05/11/2004	Flasks	BDH612-5055 (50ml) x 2, BDH612-5056 (100ml) x 2	4	156.00	EUROP CONTINENTS LAO	W.Q.L., Chinaimo WTP	O			05 / November / 2004		A	A	Budget for Training (In-Country Training Program)
	Pipette Filters	Color:Red/BDH612-1990 x 1, Color:Green/BDH612-2007 x 1	2	34.00										
17/11/2004	Portable Cut-Offs	MAKITA / 2414B	1	400.00	Mittaphap Construction	WTTC/ Chinaimo WTP	O			17 / November / 2004		A	A	Budget for Training (In-Country Training Program)
		MAKITA / 4320	1	200.00										
24/11/2004	USB Flash Memory	KINGSTON / KUSB-128FE, 128MB	1	45.00	Top Com Office Automations	Chinaimo WTP	O			24 / November / 2004		A	A	Budget for Training (In-Country Training Program)
			1	45.00		WASA			Broken	February, 2006		D	---	
			2	90.00			O			24 / November / 2004		A	A	
	Cordless Mouse	Win TECH / RFSWOP-54, Receiver (RX-8PU)	4	200.00		WTTC/ Chinaimo WTP	O			24 / November / 2004		A	A	
24/11/2004	Anti Virus Software	Noton Antivirus	1	100.00	Top Com Office Automations	Expert						A	A	Budget for Implementing Activitiy
25/11/2004	Battery Charger for Digital Camera	Panasonic / Ni-Cd Battery Charger + 4 SUM3 Ni-MH Rechargable Batteries	1	59.00	Top Com Office Automations	WTTC/ Chinaimo WTP	O			25 / November / 2004		A	A	Budget for Implementing Activitiy
26/11/2004	USB Flash Memory	KINGSTON / KUSB-128FE, 128MB	2	90.00	Top Com Office Automations	WTTC/ Chinaimo WTP	O			26 / November / 2004		A	A	Budget for Training (In-Country Training Program)
			1	45.00		Expert			Broken	November, 2005		D	---	
			1	45.00		WASA			Broken	February, 2006		D	---	
04/01/2005	Sefe Box	LEECO / SSTL9014514, Fire Resistant	1	140.00	PANUVAT FURNITURES	Expert						A	A	Budget for Implementing Activitiy
16/03/2005	Office Chair	GHO-03A37, Fabrick (Two-tone color)	1	138.00	Laovieng Furniture	Expert						A	A	Budget for Implementing Activitiy
16/03/2005	Stand Light	PHILIPS / ALFA	2	33.00	DONGPALAN ELECTRIC	Expert						A	A	Budget for Implementing Activitiy
30/03/2005	Paper Shredding Machine	HSM Pressen GmbH+Co. / HSM386.2	1	1,842.00	SAHAPHAN OA COMPANY	Expert						A	A	Budget for Implementing Activitiy
31/03/2005	UPS	ATLANTA / 1200VA	1	140.00	SAHAPHAN OA COMPANY	Expert						A	A	Budget for Implementing Activitiy
31/03/2005	Automatic Voltage Stabilizer	NiOA / 2000NM@	1	96.00	SAHAPHAN OA COMPANY	Expert						A	A	Budget for Implementing Activitiy
31/03/2005	Printer Culculator	Canon / P3420-DC	1	78.00	SAHAPHAN OA COMPANY	Expert						A	A	Budget for Implementing Activitiy
05/08/2005	Scanner / Copy / Printer	Canon PIXMA ALL-IN-ONE MP110	1	158.00	SAHAPHAN OA COMPANY	Expert						A	A	Budget for Implementing Activitiy

List of Equipment

23/08/2005	Additional SD-RAM for Desktop PC	EXMORY / 256MB, 133	1	45.00	L COM Co., LTD.	Expert						C	D	Budget for Implementing Activitiy
26/09/2005	FAX / Scaner / Copy / Printer	Canon PIXMA ALL-IN-ONE MP780,	1	412.00	SAHAPHAN OA COMPANY	Expert						A	A	Budget for Implementing Activitiy
11/11/2005	Test Tube with Cap	Tokyo Garasu Kikai Co., Ltd. (TGK) / 121-03-61-03, 100ml, Φ23mm, H370mm	10	245.00	O.C.S LAOS CO., LTD.	W.Q.L., Chinaimo WTP				11 / November / 2005		A	A	Budget for Implementing Activitiy
			10	245.00		WTTC / Pakse WTP				12 / December / 2005		A	A	
			10	245.00		WTTC / Luangprabang				09 / January / 2006		A	A	
11/11/2005	Rack for Test Tube	AS ONE / GG-0989-12, Sanwa Kaken (SS25-10H), 1x10, 27mm x 27mm	1	42.20	O.C.S LAOS CO., LTD.	W.Q.L., Chinaimo WTP				11 / November / 2005		A	A	Budget for Implementing Activitiy
			1	42.20		WTTC / Pakse WTP				12 / December / 2005		A	A	
			1	42.20		WTTC / Luangprabang				09 / January / 2006		A	A	
11/11/2005	Residual Chlorine DPD Standard Set	SHIBATA SCIENTIFIC TECHNOLOGY Ltd. / 8054-500,	1	137.30	O.C.S LAOS CO., LTD.	W.Q.L., Chinaimo WTP				11 / November / 2005		A	A	Budget for Implementing Activitiy
			1	137.30		WTTC / Pakse WTP				12 / December / 2005		A	A	
			1	137.30		WTTC / Luangprabang				09 / January / 2006		A	A	
11/11/2005	C.I.Acid Red 265	Kanto Kagaku Co., Ltd. / 01808-53, 5g	1	33.60	O.C.S LAOS CO., LTD.	W.Q.L., Chinaimo WTP				11 / November / 2005		A	A	Budget for Implementing Activitiy
16/11/2005	Comparator Kit	LOVIBOND-GERMANY / Model 2000	1	275.00	SIN-ROOUNGROJ-SUPPLY CO., LTD.	W.Q.L., Chinaimo WTP				16 / November / 2005		A	A	Budget for Implementing Activitiy
16/11/2005	Cell for Comparator Kit	LOVIBOND-GERMANY / 13.5mm	2	50.00	SIN-ROOUNGROJ-SUPPLY CO., LTD.	W.Q.L., Chinaimo WTP				16 / November / 2005		A	A	Budget for Implementing Activitiy
16/11/2005	Disks for Comparator Kit	LOVIBOND-GERMANY / Code 2/1H (Bromothymol Blue, #221110), Code 2/1J (Phenol Red, #221130)	2	430.00	SIN-ROOUNGROJ-SUPPLY CO., LTD.	W.Q.L., Chinaimo WTP				16 / November / 2005		A	A	Budget for Implementing Activitiy
16/11/2005	Dropping Bottle	Brown glass made / 120ml	4	4.00	SIN-ROOUNGROJ-SUPPLY CO., LTD.	W.Q.L., Chinaimo WTP				16 / November / 2005		A	A	Budget for Implementing Activitiy
			4	4.00		WTTC / Pakse WTP				12 / December / 2005		A	A	
			4	4.00		WTTC / Luangprabang				09 / January / 2006		A	A	
16/11/2005	Spatula	Stainless steel made / Micro, 22cm	1	5.00	SIN-ROOUNGROJ-SUPPLY CO., LTD.	W.Q.L., Chinaimo WTP				16 / November / 2005		A	A	Budget for Implementing Activitiy
			1	5.00		WTTC / Pakse WTP				12 / December / 2005		A	A	
			1	5.00		WTTC / Luangprabang				09 / January / 2006		A	A	
16/11/2005	Reagent Bottle	BORO 3.3 / 100ml, Wide mouth	10	50.00	SIN-ROOUNGROJ-SUPPLY CO., LTD.	W.Q.L., Chinaimo WTP				16 / November / 2005		A	A	Budget for Implementing Activitiy
16/11/2005	Test Tube	Glass made / 16x150mm	40	40.00	SIN-ROOUNGROJ-SUPPLY CO., LTD.	W.Q.L., Chinaimo WTP				16 / November / 2005		A	A	Budget for Implementing Activitiy
			30	30.00		WTTC / Pakse WTP				12 / December / 2005		A	A	
			30	30.00		WTTC / Luangprabang				09 / January / 2006		A	A	
16/11/2005	Rack for Test Tube	Stainless steel made / 5x10 channel	1	15.00	SIN-ROOUNGROJ-SUPPLY CO., LTD.	W.Q.L., Chinaimo WTP				16 / November / 2005		A	A	Budget for Implementing Activitiy
			1	15.00		WTTC / Pakse WTP				12 / December / 2005		A	A	
			1	15.00		WTTC / Luangprabang				09 / January / 2006		A	A	

List of Equipment

16/11/2005	Potassium Hexachloroplatinat	1g x 1 bottle	1	120.00	SIN-ROOUNGROJ-SUPPLY CO., LTD.	W.Q.L., Chinaimo WTP				16 / November / 2005		A	A	Budget for Implementing Activitiy
16/11/2005	N.N-Diethyl, P, Phenylenediamine Sulfate	FLUKA / 25g x 1 bottle	1	193.00	SIN-ROOUNGROJ-SUPPLY CO., LTD.	W.Q.L., Chinaimo WTP				16 / November / 2005		A	A	Budget for Implementing Activitiy
16/11/2005	Sodium Sulphate Anhydrous AR	102645W / 1kg x 1 bottle	1	50.00	SIN-ROOUNGROJ-SUPPLY CO., LTD.	W.Q.L., Chinaimo WTP				16 / November / 2005		A	A	Budget for Implementing Activitiy
16/11/2005	Potassium Dihydrogenorthophosphate	102034B / 500g x 1 bottle	1	48.00	SIN-ROOUNGROJ-SUPPLY CO., LTD.	W.Q.L., Chinaimo WTP				16 / November / 2005		A	A	Budget for Implementing Activitiy
26/01/2006	N.N-Diethyl, P, Phenylenediamine Sulfate AR	104692X / 25g x 1 bottle	2	154.00	SIN-ROOUNGROJ-SUPPLY CO., LTD.	W.Q.L., Chinaimo WTP				26 / January / 2006		A	A	Budget for Implementing Activitiy
02/03/2006	USB 2.0 Flash Drive	Apacer / HANDY STENO HN212, 512MB	2	100.00	SAHAPHAN OA COMPANY	Expert						A	A	Budget for Implementing Activitiy
21/03/2006	Uninterruptible Power Supply	4 Tech / 4T-600, 600VA	1	65.00	SAHAPHAN OA COMPANY	Expert						A	A	Budget for Implementing Activitiy
22/03/2006	Desktop Personal Computer	Acer Aspire E500 / 3.06GHz, 1,024MB DDR II-RAM, HDD250GB, with Acer 17" LCD Monitor, Creative Inspire Speaker Set etc.	1	1,650.00	SAHAPHAN OA COMPANY	Expert						A	A	Budget for Implementing Activitiy
22/03/2006	Copy Machine S/No.K915714018	RICOH Aficio 3035& DF-82 ARDF	1	5,700.00	A.C.E. EQUIPMENT	Expert						A	A	Budget for Implementing Activitiy
23/03/2006	Portable Printer	Canon i80 / Bubble Jet Printer	1	300.00	SAHAPHAN OA COMPANY	Expert						A	C	Budget for Implementing Activitiy
27/03/2006	Notebook Personal Computer	Acer TravelMate 3242NWXMi / 1.66GHz, 512MB DDR II-533, HDD60GB, CD-RW/DVD Super Multi Double Layer, 14.1"WXGA TFT Monitor	1	1,400.00	SAHAPHAN OA COMPANY	Expert						A	A	Budget for Implementing Activitiy
27/03/2006	USB 2.0 Flash Drive	Apacer / HANDY STENO HN212, 512MB	2	100.00	SAHAPHAN OA COMPANY	Expert						A	A	Budget for Implementing Activitiy
29/03/2006	Digital Camera	SONY / Cyber-shot DSC-S600, 32MB internal memory	1	215.00	MODERN. COLORLAB.	Expert						A	B	Budget for Implementing Activitiy
29/03/2006	Battery Charger & 4 Ni-MH Batteries	SONY / Power Charger BCG-34HLD4	1	25.00	MODERN. COLORLAB.	Expert						A	B	Budget for Implementing Activitiy
30/03/2006	Memory Stick for Digital Camera	SONY / MEMORY STICK PRO DUO 512MB	1	70.00	Tau Hong 1 Shop	Expert						A	B	Budget for Implementing Activitiy
31/03/2006	Paper Cutter &Trimmer	CARL Manufacturing / DC-230(A3), Rolling Slicer Type	1	144.00	Pornchai Stationery Company	Expert						A	A	Budget for Implementing Activitiy
31/03/2006	Stapler	MAX STAPLER / HD-12N/17	1	81.00		Expert						A	A	Budget for Implementing Activitiy
31/03/2006	Strong Paper Panch	OPEN / PU808, 2 hole type	1	81.00		Expert						A	A	Budget for Implementing Activitiy
Total				31,129.10 US$ ⇒ 3,503,572 Yen										

（注） 1 在外事務所用及び在外事務所又は駐在員を置かない国においては本部事業部用（物品管理役、会計役、分任物品管理役用）
2 取得価額２万円相当以上の調査用資機材等について、現地調達分、本邦購送分、ｺﾝｻﾙﾀﾝﾄ契約購入分全ての物品を登録する。
3 調査団又は専門家、ボランティアなどの技術協力等ごとに別葉とする。 (Make Sheet per every Study/Technical cooperation of Expert/Volunteer etc one by one)
（規格Ａ４版：Ａ４Size）

List of Equipment

調達地（Place of Purchase）
（現地）（Local）

7/5/2005
05/07/2005(DD/MM/YYYY)

調査用資機材等管理台帳（兼供用・処理台帳）
Equipment Administration for the Project

ラオス国水道事業体人材育成プロジェクト	Project for CAPACITY DEVELOPMENT OF URBAN WATER SUPPLY AUTHORITY IN LAO PDR	ﾌﾟﾛｼﾞｪｸﾄ No. (Project No.)	0241112E0	予算科目 Budget Subject	■機材供与 □携行機材費 □現地業務費
相手国受入機関 Counterpart Organization	Water Supply Authority, Ministry of Communication, Transportation, Post and Construction	機材管理担当部署/事務所 Department/Section/Office in Charge	ラオス事務所		
派遣/実施期間 Dispatching/Cooperation Period	01/09/2004 ～ 31/08/2006 DD/MM/YYYY～DD/MM/YYYY	専門家名 Expert Name	岡田昌浩 Masahiro OKADA		

取得/年月日 Date of Registration in JICA Office DD/MM/YYYY	資機材名 Description/ Name of Equipment/Goods	仕様・規格 Specification・Standard	数量 Quantity	金額 Total Price (US$)	購入先 Provider	供用者 User	供用後処理 Condition after technical transfer: 譲渡 Transfer	返納 Return	その他 Others	決裁No.（年月日）Approval Document No./Date	譲渡（年月日）Transfer Date DD/MM/YYYY	機材の状況 Condition of Equipment A: Excellent B: Fair C:Poor D:Unable to Use	使用頻度 Frequency of Usage A: Every week B: Every other week C: Every month D: Less than every month	備考 Reference
26/10/2004	Desktop Personal Computer	AGE of DIGITAL Model / Intel2.8GHz, 40GB, 17"Monitor, Keyboard	1	850.00	Top Com Office Automations	Waterworks Technology Training Center / Nam Papa Luangprabang	○			09/09/2004	25/10/2004	C	A	Budget for Equipment
26/10/2004	UPS	SAAITHAI / 650VA	1	65.00			○					C	A	
26/10/2004	Laser Printer	Canon / LASER SHOT LBP-1120	1	450.00			○					A	A	
26/10/2004	Notebook Personal Computer	TOSHIBA / Sattellite A60-S330, Intel2.8GHz, 40GB	1	1,459.00			○					B	A	
26/10/2004	Conference Control System	Speaker: ALO PA-12 (3000W), Wireless Microphone: SONY JF-880 (2 pieces) + YAMAHA DM-35S (New 2002 Series with Stand), Amplifier:KKG A-9005, Control Equalizer: SONY (2	1	599.00			○					A	C	
26/10/2004	LCD Projector	TOSHIBA / TDP-S20	1	2,250.00			○					A	C	
26/10/2004	Over Head Projector	3M / 1620 AHCF, 3M Austin, TX78726-9000	1	369.00			○					A	C	
26/10/2004	Screen	VERTEX / 040963924, Size:70"×70"	1	209.00			○					B	C	
26/10/2004	Copy Machine	RICOH / FT4621	1	2,448.00			○					B	A	
26/10/2004	Air-Conditioner	MITSUBISHI / 35000 BTU	2	1,251.00			○					B	A	
26/10/2004	Writing Board	1.2m×2.4m	1	35.00			○					B	A	
26/10/2004	Tables (For Trainees)	Wood made / 3 chairs for 1 table	15	990.00			○					A	A	
26/10/2004	Chairs (For Trainees)	Wood made / 3 chairs for 1 table	45	675.00			○					A	A	
26/10/2004	Chair (For Trainer)	Wood made	1	119.00			○					A	A	
Total			11,769.00 US$ ⇒ ####### Yen											

（注）1　在外事務所用及び在外事務所又は駐在員を置かない国においては本部事業部用（物品管理役、会計役、分任物品管理役用）
2　取得価額２万円相当以上の調査用資機材等について、現地調達分、本邦購送分、ｺﾝｻﾙﾀﾝﾄ契約購入分全ての物品を登録する。
3　調査団又は専門家、ボランティアなどの技術協力等ごとに別葉とする。（Make Sheet per every Study/Technical cooperation of Expert/Volunteer etc one by one）
（規格Ａ４版：Ａ４Size）

List of Equipment

調達地 (Place of Purchase)
(現地) (Local)

7/5/2005
05/07/2005(DD/MM/YYYY)

調査用資機材等管理台帳 (兼供用・処理台帳)
Equipment Administration for the Project

ラオス国水道事業体人材育成プロジェクト	Project for CAPACITY DEVELOPMENT OF URBAN WATER SUPPLY AUTHORITY IN LAO PDR	プロジェクト No. (Project No.)	0241112E0	予算科目 Budget Subject	■機材供与 □携行機材費 □現地業務費
相手国受入機関 Counterpart Organization	Water Supply Authority, Ministry of Communication, Transportation, Post and Construction	機材管理担当部署/事務所 Department/Section/Office in Charge	ラオス事務所		
派遣/実施期間 Dispatching/Cooperation Period	01/09/2004 ～ 31/08/2006 DD/MM/YYYY～DD/MM/YYYY	専門家名 Expert Name	岡田昌浩 Masahiro OKADA		

取得/年月日 Date of Registration in JICA Office DD/MM/YYYY	資機材名 Description/ Name of Equipment/Goods	仕様・規格 Specification・Standard	数量 Quantity	金額 Total Price (US$)	購入先 Provider	供用者 User	供用後処理 Condition after technical transfer: 譲渡 Transfer	返納 Return	その他 Others	決裁No. (年月日) Approval Document No./Date	譲渡 (年月日) Transfer Date DD/MM/YYYY	機材の状況 Condition of Equipment A: Excellent B: Fair C:Poor D:Unable to Use	使用頻度 Frequency of Usage A: Every week B: Every other week C: Every month D: Less than every month	備考 Reference
26/10/2004	Desktop Personal Computer	VSS Model / Intel2.4GHz, 40GB, 15"Monitor,	1	536.00	Top Com Office Automations	Waterworks Technology Training Center / Pakse WTP	○			09/09/2004	25/10/2004	A	D	Budget for Equipment
26/10/2004	Telephone & Facsimile	Panasonic / KX-FT901CX	1	119.00			○				05/07/2005	A	A	
26/10/2004	Copy Machine	RICOH / 4621FT	1	2,419.00			○				25/10/2004	A	A	
26/10/2004	LCD Projector	TOSHIBA / LDP-S20	1	3,295.00			○					A	D	
26/10/2004	Over Head Projector	3M / 1600	1	215.00			○					A	D	
26/10/2004	TV Monitor	LG / CT29K30V, 29"	1	435.00			○					A	D	
26/10/2004	Wireless Microphone	SONY / JF-880(2 Mics), with 1 Receiver Deck	1	70.00			○					A	D	
26/10/2004	Microphone	YAMAHA / DM-35S, NEN2002 Series	2	24.00			○					A	D	
26/10/2004	Amplifier	KKG / AV-328A	1	57.00			○					A	D	
26/10/2004	Equalizer	NAKOYA / EX-493, 30 Channels	1	35.00			○					A	D	
26/10/2004	Screen	VERTEX / 1.8m×1.8m	1	241.00			○					B	D	
26/10/2004	Speakers	CTS / PM10, 1500W	2	50.00			○					A	D	
26/10/2004	Whiteboard	OVK / 80"×120"	2	72.00			○					A	D	
26/10/2004	Table & Chairs (For Trainees)	Wood made / 1 Set (1Table+2Chairs)	25	725.00			○					A	D	
26/10/2004	Desk & Chairs (For Trainers)	Smart Form Office Furniture / 1 Set (1Desk: Steel made with Drawers + 1Chair: Black Vinil Leather	1	235.00			○					A	D	
26/10/2004	Refrigerator	HITACHI / 7Q	1	151.00			○					A	A	
26/10/2004	Water Cooler	SANYO / Y4734, No. R15027	1	87.00			○					A	A	
26/10/2004	Conference Table & Chairs	Wood made / 1Set (1Table+5Chairs)	1	94.00			○					A	D	
Total			8,860.00 US$ ⇒ 993,000 Yen											

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2 取得価額2万円相当以上の調査用資機材等について、現地調達分、本邦購送分、コンサルタント契約購入分全ての物品を登録する。
3 調査団又は専門家、ボランティアなどの技術協力等ごとに別葉とする。 (Make Sheet per every Study/Technical cooperation of Expert/Volunteer etc one by one)
(規格A4版：A4 Size)

List of Equipment

Project Implementation Cost by the Lao side

Denomination is shown by USD

Fiscal Year	**2003/Oct-2004/Sep**		
	Approved Budget	Actual expense	Balance
	2,000	1,378	622
	2004/Oct-2005/Sep		
	Approved Budget	Actual expense	Balance
	3,000	2,785	215
	2005/Oct-2006/Sep		
	Approved Budget	Actual expense	Balance
	3,000	2,901	99

Total Period	Approved Budget	Actual expense	Balance
	8,000	7,064	936

Remarks 1) the Price is caluculated 10000 Kip(local currency) as 1 USD

List of Product and Achievement

Field	Activity	Results	Person in-charge	Assistant	Accomplishment time	Remarks
Whole Project	Project design	PDM was completed through the problem analysis by PCM Method.	Mixai Techno Engineering & Consulting Co., Ltd.	JICA Laos Office, JICA Expert, WASA, Director of NPNL	8th Apr., 2003	
	Seminar	Seminar on "Water Conservation" through JICA-Net was executed. (About 60 participants attended)	Project and JICA Laos Office, JICA HQ	WASA, NPNL, PNPs	6th Feb., 2004	
	Saving Water Campain	The First Campain was conducted.	Project and JICA Laos Office	WASA, NPNL	18th - 24th Mar., 2004	In Vientiane CC
		The Second Campain was conducted.	Project and JICA Laos Office	WASA, NPNL, PNPs	Mar. - Apr., 2005	In Vientiane CC and 16 Provinces
	Printing Materials for Saving Water Campain	Produced 5 video materials for advertising of Saving Water Campain Y2004.	Project and JICA Laos Office	WASA, NPNL, PNPs	Mar. 2004	
		Printed 5,000 sheets of Poster (A2 Size) for advertising of Saving Water Campain Y2004.			Mar., 2004	
		Printed 58,700/60,000 sheets of Sticker (10cm Size) for advertising of Saving Water Campain Y2004/2005.			Mar., 2004/2005	
		Made 2,000/2,000 pieces of Calendar (45x62 Size) for advertising of Saving Water Campain Y2004/2005.			Mar., 2004/2005	
		Made 500/1,000 sheets of Flags, 11/36 sheets of Banners for advertising of Saving Water Campain Y2004/2005.			Mar., 2004/2005	
		Made 20,000/60,000 pieces of Notebook for advertising of Saving Water Campain Y2004/2005.			Mar., 2004/2005	
		Made 1,000/3,000 Pieces of T-Shirt for advertising of Saving Water Campain Y2004/2005.			Mar., 2004/2005	
Plan of Operation	Training at NWTTI	4 Officers (PS of MCTPC, DG of DHUP, and DG of Personnel Dept. of MCTPC and GM of NPV) were trained thorogh the training course on "Training Management 1" at NWTTI in Thailand.	Mr. Kawashima	Lecturers of NWTTI (MWA)	13th - 18th Oct., 2003	Activity 1.1./1.2./1.3.
		4 Officers (Director of WASA, PM & DPM of WSSSP/WASA and DM of NPV) were trained thorogh the training course on "Training Management 2" at NWTTI in Thailand.			27th Oct. - 1st Nov., 2003	
	Training at NWTTI	9 PNP Trainers and 1 NPV Trainer were traind through the training course on "Plant Work" at NWTTI in Thailand.	Mr. Kawashima	Lecturers of NWTTI (MWA)	10th Nov. - 4th Dec., 2003	Output 1-2/1-3, Activity 1.4./1.5./ 1.6.
		9 PNP Trainers and 1 NPV Trainer were traind through the training courses on "Piping Work" at NWTTI in Thailand.				
	In-Country Training Program	18 PNP Trainers, 11 NPV Trainers and others were traind through the In-Country Training courses on "Course 1 / Opening Week" for 16 PNP Trainers, 3 NPV Trainers and others on "Course 2 / Piping work" for 16 PNP Trainers, 5 NPV Trainers and others, on "Course 3 / Plant work" for 18 PNP Trainers, 7 NPV Trainers and others, on "Course 4 / Accounting and Financial Management" for 16 PNP staff and others.	Project Director, Mr. Kawashima	Short-term Experts, Kubota Construction, 10 NPV Trainers, C/Ps	3rd - 27th Feb., 2004 (3rd - 6th Feb., 2004) (9th - 13th Feb., 2004) (16th - 20th Feb., 2004) (23dr - 27th Feb., 2004)	Output 1-2/1-3, Activity 1.8./1.9./1.10
	Making Materials for Activities	"Trainers List" was made.	Mr. Kawashima	C/Ps and Staff of Project Office	Mar., 2004	Output 2-2, Activity 4.2.
	In-Country Training Program	Counterparts and Lecturers were trained through the 2 times of training course on "Making Training Curriculum and Textbooks" by the Lecturers from NWTTI, and they made the Curriculam of ICTP and draft of Textbooks.	Mr. Kawashima	Experts of NWTTI	2nd - 15th May 30th May - 12th Jun., 2004	Output 1-1/2-1, Activity 1.4./2.2.
	Making Materials for Activities	"Water Supply Technical Terms (English - Japanese - Lao) Version 1" was made.	Mr. Kawashima	C/Ps	Jun., 2004	Output 2-2, Activity 4.2.
		"Water Supply Technical Terms (English - Lao) Version 1" was made.				
	Setting up Training Room	Pakxe Training Center was set up in Water Treatment Plant of Nam papa Champhasack.	Mr. Kawashima	C/Ps and Trainers	Sep., 2004	Activity 3.1.
		Luangprabang Training Center was set up in Nam Papa Luangprabang.			Oct., 2004	
	In-Country Training Program	108 Engineers were traind through the In-Country Training courses on "Piping work" and "Plant work" in Pakse (32 Engineers), in Luangprabang (36 Engineers), in Vientiane Municipality (40 Engineers).	Mr. Kawashima, Short-term Expert and Trainers	JICA Expert, C/Ps and Trainers	27th Sep. - 12th Nov., (27th Sep. - 8th Oct., (11th - 22nd Oct., 2004) (1st - 12th Nov., 2004)	Output 3-1, Activity 3.1./3.2./3.3.
		6 PNP Trainers, 1 NPV Trainer, 11 PNP Directors and others were trained through the In-Country Training course on "Waterworks Administration" in Vientiane.	Project Director, Project Manager, JICA Expert and C/Ps	Invited lecturers from Japan, Mr. hayashi, Mr. Sugaya and Mr. Shimamura	15th - 19th Nov., 2004	Output 6-1/6-2, Activity 6.1./6.2.
	Training at NWTTI	10 Assistant Trainers were traind in "Plant Work" training courses at NWTTI in Thailand.	Mr. Kawashima	Lecturers of NWTTI (MWA)	5th Jan. - 2nd Feb., 2005	Output 3-2, Activity 3.4./3.5./3.6.
		10 Assistant Trainers were traind in "Piping Work" training courses at NWTTI in Thailand.				
	Making Materials for Activities	JICA-Net "A practical example of the operation and maintenance of a water treatment plant in Japan" Training Text CD-R was made.	JICA-Net	Saitama City, Saitama Prefecture, PADECO	End of Mar., 2005	Output 2-2, Activity 4.2.
		JICA-Net "A practical example of design, laying and maintenance of water pipeline in Japan" Training Text CD-R was made.				

Field	Activity	Results	Person in-charge	Assistant	Accomplishment time	Remarks
Plan of Operation	Making Materials for Activities	Textbook on "Water Supply Master Planning" (First Edition) was made.	Mr. Kawashima	C/Ps and Staff of Project Office	30th Mar., 2005	Output 2-1, Activity 2.1./2.2./2.3.
		Textbook on "Pipe-Laying and Service Installation" (First Edition) was made.				
		Textbook on "Leakage Control" (First Edition) was made.				
		Textbook on "Water Purification" (First Edition) was made.				
		Textbook on "Water Quality Control" (First Edition) was made.			20th May, 2005	
	Training at NWTTI	Another 10 Assistant Trainers were traind in "Plant Work" training courses at NWTTI in Thailand.	JICA Experts	Lecturers of NWTTI (MWA)	1st - 30th Jun., 2005	Output 3-2, Activity 3.4./3.5./3.6.
		Another 10 Assistant Trainers were traind in "Piping Work" training courses at NWTTI in Thailand.				
	Seminar	Seminar on English Draft Version of Operation Manuals for Directors of PNV and PNPs.	JICA Experts and C/Ps	3 Short-term Experts, JICA Senior Volunteers, JOCV Volunteer	29th Sep., 2005	Output 4-1, Activity 4.1./4.2.
		Technical Seminar on Water Quality Examination, Pipe-Laying & Service Installation and Leakage Cotrol for Directors of PNV and PNPs.	3 Short-term Experts	JICA Expert, C/Ps		
		Seminar on using Lao Draft Version of Operation Manuals for selected 24 Assistant Trainers, Lecturers of ICTP for Technicians.	JICA Experts and C/Ps	3 Short-term Experts, JICA Senior volunteer and JOCV Volunteer	20th - 21st Oct., 2005	Output 3-2/5-1, Activity 5.1./5.2./5.3./5.4./5.5.
	In-Country Training Program	268 Technicians were trained through the In-Country Training courses on "Water Treatment Plant Operation and Maintenance", "Water Quality Inspection", "Pipe-Laying and Service Installation" and "Leakage Control" in Vientiane Municipality (103 trainees), in Pakse (72 trainees), in Luangprabang (93 trainees).	Project Director, Project Manager, JICA Experts and C/Ps, JICA Senior volunteer, JOCV Volunteer	Selected 24 Assistant Lecturers	14th Nov., 2005 - 26th Jan., 2006 (14th Nov., - 7th Dec., (12th - 27th Dec., 2005) (9th - 26th Jan., 2006)	Output 3-2/5-1, Activity 5.1./5.2./5.3./5.4./5.5.
	Seminar	Evaluation Seminar on Lao Draft Version of Operation Manuals and ICTP for Technicians.	JICA Experts and C/Ps, JICA Senior volunteer, JOCV Volunteer	Selected 24 Assistant Lecturers	27th Feb., 2006	Output 4-1, Activity 4.2./4.3.
	In-Country Training Program	116 Management and Planning Officers were trained through the In-Country Training courses.	Project Director, Project Manager, JICA Experts and C/Ps	1 Lecturer from TCTI, 1 lecturer from MWA (Bangkok) and C/Ps	28th - 31st March, 2006	Output 6-2, Activity 6.1./6.2.
	Making Materials for Activities	Manual on "Water Treatment Plant Operation and Maintenance" (First Edition) was developed and made.	Project Manager, Mr. Takashima, Mr. Naimany	C/Ps and JICA Senior Volunteer	April 2005 - March 2006	Output 4-1, Activity 4.1./4.2./4.3.
		Manual on "Water Quality Examination" (First Edition) was developed and made.	Project Manager, Mr. Takashima, Short-term Expert, Ms. Khonsavanh	C/Ps and JOCV Volunteer		
		Manual on "Pipe-Laying and Service Installation" (First Edition) was developed and made.	Project Manager, Mr. Takashima, Short-term Expert, Mr. Khampheui	C/Ps and JICA Senior Volunteer		
		Manual on "Leakage Control" (First Edition) was developed and made.	Project Manager, Mr. Takashima, Short-term Expert, Mr. Viengthuay	C/Ps and JICA Senior Volunteer		

List of Product and Achievement

Training of Trainers (Piping Work) Course 4
Duration : 4 weeks (Nov 10 - Dec 4, 2003)
No. of Participant : 10

ANNEX 3-2-1

TIME	09.00 - 12.00	13.00 - 16.00
Day 1 Mon 10 Nov	- Openning Ceremony - Course Introduction and Orientation	1. Background Knowledge for a Trainer
Day 2 Tue 11 Nov	2. Planning and Managing Training Program	3. Planning and Managing Training Program(Cont.)
Day 3 Wed 12 Nov	4. Training Strategies & Classroom Teaching Methods	5. Design, Development & Production of Training Materials
Day 4 Thur 13 Nov	6. Evaluating the Effectiveness of a Training Program	7. Practice
Day 5 Fri 14 Nov	Practice (Cont.)	
Day 6 Sat 11 Oct	Visit the Grand Palace	Visit Vimanmek Mansion
Sun 16 Nov	Free day	
Day 7 Mon 17 Nov	1. Introduction of MWA (Water Supply of MWA)	2. Making an Operating Plan
Day 8 Tue 18 Nov	3. Visit Bangkhen Water Treatment Plant	4. Visit Mahasawat Water Treatment Plant
Day 9 Wed 19 Nov	5. Water Distribution and Transmission	6. Visit Water Distribution and Transmission Control Center
Day 10 - 11 20 - 21 Nov	7. Visit East Water Co.Ltd. Overnight in the Province	
Sat 22 Nov	Free day	
Sun 23 Nov	Free day	
Day 12 Mon 24 Nov	8. Pipe Selection	9. Pipe Installation & Connection
Day 13 Tue 25 Nov	10. Visit Thai Pipe Company (Pipe Factory)	
Day 14 Wed 26 Nov	11. Water Loss Reduction Management of MWA	12. GIS (Mapping System)
Day 15 Thur 27 Nov	13. Water Meter	14. District Metering Area
Day 16 Fri 28 Nov	15. Introduction to Leakage Survey Equipment	16. Practice at NWTTI Leakage Survey Training Yard
Sat 29	Free day	
Sun 30	Free day	
Day 17 Mon 1 Dec	17. Prevention from Corrosion	18. Maintenance of Distribution Pipe
Day 18 Tue 2 Dec	19. Site Visit for Pipe Installation & Connection	
Day 19 Wed 3 Dec	20. Visit Chidasook Company (Water Meter Factory)	
Day 20 Thur 4 Dec.	Evaluation and Discussion	Closing Ceremony

ANNEX 3-2-2

Schedule of JICA's In-Country Training Program for Training of Trainer (TOT), Feb 3rd -27th 2004, Vientiane

COURSE 1: Opening week at MCTPC meeting room

02 Feb. (Mon)	Transfer to Vientiane			
03 Feb. (Tue) [MCTPC]	8:45 -10:00 10:30 -12:00	Opening Ceremony • Speech by MCTPC, JICA Introduction by Dr. Somphone DETHOUDOM • JICA's Technical Cooperation Project • Course introduction and orientation		40 persons: TOT – 20 persons (Training of Trainers) WSSSP – 5 persons MCTPC, NPVC
	13:15 -16:00	Opening Discourse • Non-Revenue Water Management	Mr. Shimomura, JICA Ex. Mr. Sisamone	
04 Feb. (Wed) [MCTPC]	8:45 -16:00	Administration Management 1. Organization-Objectives-Delegation, Job Guidelines 2. Planning-Implementation-Follow up 3. Financial Management	Dr. Somphone Director General of DHUP	
05 Feb. (Thu) [MCTPC]	8:45 -16:00	4. Materials Management 5. Manpower Management 6. Communication-Information-Decision Making		
06 Feb. (Fri) [Japan Center in Dongdok]	8:45 11:30	Seminar on Control of Water Supply Amount making use of JICA-Net System - Learning from the Practice of Fukuoka City • Lecture1: Strategies for Water Leakage Prevention • Lecture2: Strategies for Water Saving		50 persons (MCTPC, NPVC, TOT, etc)
	11:45 -13:00	Lunch break served by JICA-Net		
	13:15 -16:00	Water Saving Campaign by JICA and NPV • NPVC challenges for WC/WDM • Concept of Water Saving Campaign • Advertisement action and Promotion action	NPVC's Committee	

Schedule of JICA's In-Country Training Program
for
Training of Trainer (TOT), Feb 3rd -27th 2004, Vientiane

COURSE 2: Piping Work for Training of Trainers at Chinaimo Training Center (CTC)				
09 Feb. (Mon)	8:45 -12:00	Water Supply Plan • Technology of planning • Planning apply for water supply	Mr. Khambay	30 persons: TOT – 20 persons WSSSP – 5 persons MCTPC, NPVC
	13:15 -16:00	Water Supply Plan of PNP in Southern Region • Concept of Water Supply Plan • How to make the Water Supply Plan • Practice	Mr. Kawashima, JICA Ex. Mr. Soutchay	
10 Feb. (Tue)	8:45 -12:00	Designing/Laying/Maintenance of Piping work • Designing and Pipe laying in terms of water leak detection • To organize of drawing for maintenance	Mr. Andoh, JICA Ex. Mr. Sisamone	
	13:15 -16:00	Piping work • Means of piping work • Demonstration • Practice	Kubota Construction	
11 Feb. (Wed)	8:45 -12:00	Main pipe Laying • Pipe laying management • Record of pipe laying	Mr. Phouxay	
	13:15 -16:00	House connection and Repair • House connection • Pipe repair	Mr. Khampheui	
12 Feb. (Thu)	8:45 -16:00	Leak Detection • Reduction of NRW in Vientiane • Leak detection	Mr. Viengthuay Mr. Shimomura	
13 Feb. (Fri)	8:45 -16:00	*Lecture by 10 members of TOT* *(Lecture 30 min/group + Evaluation 20 min/group)*	10 TOT members	

Schedule of JICA's In-Country Training Program
for
Training of Trainer (TOT), Feb 3rd -27th 2004, Vientiane

COURSE 3: Plant Work for Training of Trainers at Chinaimo Training Center (CTC)				
16 Feb. (Mon)	8:45 -16:00	Planning and Designing of Water Supply Facilities • Filters • Flocculation-Settling-Flotation • Water Treatment Processes	Mr. Saisamone	30 persons: TOT – 20 persons WSSSP – 5 persons MCTPC, NPVC
17 Feb. (Tue)	8:45 -16:00	Management of Water Treatment Plant • Water Product System • Steps of Production	Mr. Bouakeo Mr. Chomsavanh	
18 Feb. (Wed)	8:45 -16:00	Pump Operation and Maintenance • Motor • Control Panel • Pump	Mr. Naimany	
19 Feb. (Thu)	8:45 -16:00	Water Analysis • Jar Test • PH • Total alkalinity • Residual Chlorine (Cl2)	Mr. Khampinh Ms. Khonsavanh	
20 Feb. (Fri)	8:45 -16:00	*Lecture by 10 members of TOT* *(Lecture 30 min/person + Evaluation 20 min/person)*	10 TOT menbers	

ANNEX 3-2-2

Schedule of JICA's In-Country Training Program
for
Training of Trainer (TOT), Feb 3rd -27th 2004, Vientiane

COURSE 4: Accounting and Financial Management at MCTPC meeting room				
23 Feb. (Mon)	8:45 -16:00	Accounting Principal Bookkeeping	Mr. Bounngu Mrs. Pheugseng	30 persons: WSSSP – 10 persons MCTPC, NPVC, PNP
24 Feb. (Tue)	8:45 -16:00	Reporting of Account		
25 Feb. (Wed)	8:45 -16:00	Financial Management		
26 Feb. (Thu)	8:45 -16:00	Financial Planning		
27 Feb. (Fri)	8:45 -14:30	Financial Analysis		
	15:00	Closing ceremony • Closing remarks by MCTPC, JICA Reception		

ANNEX 3-2-3

Tentative Schedule of JICA's In-Country Training Program
for Water Supply Engineer, Sep 27th – Oct 8th 2004 in Pakse

Course 1-1 : Piping work in Pakse			Lecturer	Participants
27 Sep. (Mon)	AM	Opening Ceremony • Speech by MCTPC, JICA • Orientation	Dr. Somphone Representative of JICA Mr. Noupheuak	16 participants - Champasack - Khammuane - Savannakhet - Saravane - Sekong - Attapeu
	PM	Water supply master plan (part 1) • Procedure of water supply master plan • Service area and population forecasting • Water demand forecasting	Mr. Soutchay Mr. KAWASHIMA	
28 Sep. (Tue)	AM	Setting of water pressure gage (Data logger system)	Mr. Soutchay Mr. KAWASHIMA	
	PM	Pipe-laying and Service Installation (1/3) • Pipe laying	Mr. Kampheui	
29 Sep. (Wed)	AM	Pipe-laying and Service Installation (2/3) • Service Installation	Mr. Kampheui	
	PM	Pipe-laying and Service Installation (3/3) • Practice in the site	Mr. Kampheui Mr. Thoungsouk	
30 Sep. (Thu)	AM	Leakage control (1/2) • Lecture	Mr. Viengthuay	
	PM	Leakage control (2/2) • Practice of Water Leakage Detector	Mr. Viengthuay	
01 Oct. (Fri)	AM	Data analysis of Data logger water pressure gage	Mr. Viengthuay	
	PM	Closing and Evaluation		

Course 1-2 : Plant work in Pakse			Lecturer	Participants
04 Oct. (Mon)	AM	Course orientation	Mr. Soutchay	16 participants - Champasack - Savannakhet - Khammuane - Saravane - Sekong - Attapeu
	PM	Water supply master plan (part 2) • Water resource • Basic design of water source facilities • Basic design of water treatment plant • Basic design of water distribution facilities	Mr. Saisamone	
05 Oct. (Tue)	AM	Water purification (1/4)	Mr. Naimany Mr. Pandola	
	PM	Water purification (2/4)		
06 Oct. (Wed)	AM	Water purification (3/4)	Mr. Naimany Mr. Pandola	
	PM	Water purification (4/4)		
07 Oct. (Thu)	AM	Water quality control (1/3)	Mr. Khampinh Mr. Akiba	
	PM	Water quality control (2/3)		
08 Oct. (Fri)	AM	Water quality control (3/3)	Mr. Khampinh Mr. Akiba	
	PM	Closing Ceremony • Speech by MCTPC, JICA	Dr. Somphone Representative of JICA	

Tentative Schedule of JICA's In-Country Training Program for Water Supply Engineer, Oct 11th – Oct 22nd 2004 in Luangprabang

Course 2-1 : Piping work in Luangprabang			Lecturer	Participants
11 Oct. (Mon)	AM	Opening Ceremony • Speech by MCTPC, JICA • Orientation	Dr. Somphone Representative of JICA Mr. Noupheuak	16 participants - Luangprabang - Oudomxay - Luangnamtha - Bokeo - Xayaboury - Huaphanh
	PM	Water supply master plan (part 1) • Procedure of water supply master plan • Service area and population forecasting • Water demand forecasting	Mr. Soutchay Mr. KAWASHIMA	
12 Oct. (Tue)	AM	Setting of water pressure gage (Data logger system)	Mr. Soutchay Mr. KAWASHIMA	
	PM	Pipe-laying and Service Installation (1/3) • Pipe laying	Mr. Kampheui	
13 Oct. (Wed)	AM	Pipe-laying and Service Installation (2/3) • Service Installation	Mr. Kampheui	
	PM	Pipe-laying and Service Installation (3/3) • Practice in the site	Mr. Kampheui Mr. _____	
14 Oct. (Thu)	AM	Leakage control (1/2) • Lecture	Mr. Viengthuay	
	PM	Leakage control (2/2) • Practice of Water Leakage Detector	Mr. Viengthuay	
15 Oct. (Fri)	AM	Data analysis of Data logger water pressure gage	Mr. Viengthuay	
	PM	Closing and Evaluation		

Course 2-2 : Plant work in Luangprabang			Lecturer	Participants
18 Oct. (Mon)	AM	Course orientation	Mr. Soutchay	16 participants - Luangprabang - Oudomxay - Luangnamtha - Bokeo - Xayaboury - Huaphanh
	PM	Water supply master plan (part 2) • Water resource • Basic design of water source facilities • Basic design of water treatment plant • Basic design of water distribution facilities	Mr. Saisamone	
19 Oct. (Tue)	AM	Water purification (1/4)	Mr. Naimany Mr. _____	
	PM	Water purification (2/4)		
20 Oct. (Wed)	AM	Water purification (3/4)	Mr. Naimany Mr. _____	
	PM	Water purification (4/4)		
21 Oct. (Thu)	AM	Water quality control (1/3)	Mr. Khampinh Mr. Akiba	
	PM	Water quality control (2/3)		
22 Oct. (Fri)	AM	Water quality control (3/3)	Mr. Khampinh Mr. Akiba	
	PM	Closing Ceremony • Speech by MCTPC, JICA	Dr. Somphone Representative of JICA	

Tentative Schedule of JICA's In-Country Training Program for Water Supply Engineer, Nov 01st – Nov 19th 2004 in Vientiane

Course 3-1 : Piping work in Vientiane			Lecturer	Participants
01 Nov. (Mon)	AM	Opening Ceremony • Speech by MCTPC, JICA • Orientation	Dr. Somphone Representative of JICA Mr. Noupheuak	20 participants - DHUP - WASA - NL Vientiane - Vientiane Prov. - Xiengkhuang - Bolikhamxay - Xaysomboun
	PM	Water supply master plan (part 1) • Procedure of water supply master plan • Service area and population forecasting • Water demand forecasting	Mr. Soutchay Mr. KAWASHIMA	
02 Nov. (Tue)	AM	Setting of water pressure gage (Data logger system)	Mr. Soutchay Mr. KAWASHIMA	
	PM	Pipe-laying and Service Installation (1/3) • Pipe laying	Mr. Kampheui	
03 Nov. (Wed)	AM	Pipe-laying and Service Installation (2/3) • Service Installation	Mr. Kampheui	
	PM	Pipe-laying and Service Installation (3/3) • Practice in the site	Mr. Kampheui Mr. _____	
04 Nov. (Thu)	AM	Leakage control (1/2) • Lecture	Mr. Viengthuay	
	PM	Leakage control (2/2) • Practice of Water Leakage Detector	Mr. Viengthuay	
05 Nov. (Fri)	AM	Data analysis of Data logger water pressure gage	Mr. Viengthuay	
	PM	Closing and Evaluation	Dr. Somphone	

Course 3-2 : Plant work in Vientiane			Lecturer	Participants
08 Nov. (Mon)	AM	Course orientation	Mr. Soutchay	20 participants - DHUP - WASA - NL Vientiane - Vientiane Prov. - Xiengkhuang - Bolikhamxay - Xaysomboun
	PM	Water supply master plan (part 2) • Water resource • Basic design of water source facilities • Basic design of water treatment plant • Basic design of water distribution facilities	Mr. Saisamone	
09 Nov. (Tue)	AM	Water purification (1/4)	Mr. Naimany Mr. _____	
	PM	Water purification (2/4)		
10 Nov. (Wed)	AM	Water purification (3/4)	Mr. Naimany Mr. _____	
	PM	Water purification (4/4)		
11 Nov. (Thu)	AM	Water quality control (1/3)	Mr. Khampinh Mr. Akiba	
	PM	Water quality control (2/3)		
12 Nov. (Fri)	AM	Water quality control (3/3)	Mr. Khampinh Mr. Akiba	
	PM	Closing and evaluation	Dr. Somphone	

Course 3-3 : Administration course in Vientiane			Lecturer	Participants
15 Nov. (Mon) 19 Nov. (Fri)		Opening and orientation Not identified • Water Saving Campaign • Water Law in Japan • Local public enterprise Law for Water supply • Finance plan for Water supply authority Closing Ceremony • Remarks by MCTPC and JICA	Lecturers from Japan	40 participants - DHUP - WASA - PNP

NATIONAL WATERWORKS TECHNOLOGY TRAINING INSTITUTE

Training Course on

Plant Works for Lao PDR

Training of Trainers

CTC Bangkok Thailand, 5 Jan-2 Feb, 2005

Course Schedule

Date/Time	Topics	Lecturer/Speaker
Wed 5 Jan 05		
08.30-09.00	**Registration**	
09.00-09.30	**Opening Ceremony** • Welcome Remark • Opening Address	
09.30-10.00	*Coffee Break / Group Photo*	
10.00-10.30	**Course Orientation** • Introduce Lecturers and NWTTI Staffs • Introduce Participants • Introduce CTC Facilities • Overview of Course Content and Schedule	
10.30-12.00	**Adult Learning Principles**	
12.00-13.00	*Lunch*	
13.00-14.30	**Training Process and It's Significance**	
14.30-14.45	*Coffee Break*	
14.45-16.00	**Cont.**	
Thu 6 Jan 05		
09.00-10.30	**Training Need Assessment**	
10.30-10.45	*Coffee Break*	
10.45-12.00	**Cont.**	
12.00-13.00	*Lunch*	
13.00-14.30	**Training Curriculum Development**	
14.30-14.45	*Coffee Break*	
14.45-16.00	**Cont.**	
Fri 7 Jan 05		
09.00-10.30	**Planning and Managing Training Program**	
10.30-10.45	*Coffee Break*	
10.45-12.00	**Cont.**	
12.00-13.00	*Lunch*	
13.00-14.30	**Evaluating Effectiveness of Training**	
14.30-14.45	*Coffee Break*	
14.45-16.00	**Cont.**	
Sat 8 Jan 05	**City Tour** • The Emerald Buddha Temple • The Grand Palace	
Sun 9 Jan 05	**Free Day**	

Date/Time	Topics	Lecturer/Speaker
Mon 10 Jan 05		
09.00-10.30	**Lesson Plan and Writing Learning Objectives**	
10.30-10.45	*Coffee Break*	
10.45-12.00	**Cont.**	
12.00-13.00	*Lunch*	
13.00-14.30	**Lesson Plan Development Workshop 1**	
14.30-14.45	*Coffee Break*	
14.45-16.00	**Cont.**	
Tue 11 Jan 05		
09.00-10.30	**Effective Training Methods**	
10.30-10.45	*Coffee Break*	
10.45-12.00	**Cont.**	
12.00-13.00	*Lunch*	
13.00-14.30	**Facilitating Training and Facilitation Skills**	
14.30-14.45	*Coffee Break*	
14.45-16.00	**Cont.**	
Wed 12 Jan 05		
09.00-10.30	**Lesson Plan Development Workshop 2**	
10.30-10.45	*Coffee Break*	
10.45-12.00	**Cont.**	
12.00-13.00	*Lunch*	
13.00-14.30	**Lesson Plan Development Workshop 3**	
14.30-14.45	*Coffee Break*	
14.45-16.00	**Cont.**	
Thu 13 Jan 05		
09.00-10.30	**Training Delivery Practice**	
10.30-10.45	*Coffee Break*	
10.45-12.00	**Cont.**	
12.00-13.00	*Lunch*	
13.00-14.30	**Training Delivery Practice**	
14.30-14.45	*Coffee Break*	
14.45-16.00	**Cont.**	
Fri 14 Jan05		
09.00-10.30	**Overview of MWA** • Location, Water Resource, Treatment Process, Distribution System, Service Area, Customer services and bill Collection	
10.30-10.45	*Coffee Break*	
10.45-16.00	**<u>Field Visit 1</u> Bang lane Intake Pump Station** • Intake Facilities, Operation and Maintenance **<u>Field Visit 2</u> Karnjanaburi Intake** • Raw Water Intake and Transmission System **Overnight in Karnjanaburi Province**	
Sat 15 Jan 05	**Cultural Tour & Return To Bangkok**	
Sun 16 Jan 05	**Free Day**	

Date/Time	Topics	Lecturer/Speaker
Mon 17 Jan 05 09.00-10.30 10.30-10.45 10.45-12.00 12.00-13.00 13.00-14.30 14.30-14.45 14.45-16.00	**City Plan** *Coffee Break* **Water Consumption Survey** **Demand Forecasting** *Lunch* **Water Quality Planning** *Coffee Break* **Cont.**	
Tue 18 Jan 05 09.00-16.00	**Water Treatment Process** • Raw Water • Chemical Storage and Feeding • Coagulation • Sedimentation • Sludge • Filtration	
Wed19 Jan 05 09.00-12.00 13.00-16.00	**Water Quality Control** • Pre-Chlorination • Coagulants • Alkalinity and pH • Chemical Usage • Disinfecting • Post-Chlorination • Laboratory	
Thu 20 Jan 05 09.00-12.00 13.00-16.00	**Water Quality Control (Cont.)** **<u>Field Visit 3</u> Sam lae Intake Pump Station** • Intake Facilities, Raw Water Quality Monitoring	
Fri 21 Jan 05 09.00-16.00	**<u>Field Visit 4</u> Eastern Water Resources Development and Management Public Co.Ltd.** • Organization and Responsibility • Water Quality Control and Management • Plants Operation and Maintenance • Water Distribution Control Center • Customer Services and Bill Collection **Overnight in Pattaya City, Chonburi Province.**	
Sat 22 Jan 05	**Cultural Tour & Return To Bangkok**	
Sun 23 Jan 05	**Free Day**	

Date/Time	Topics	Lecturer/Speaker
Mon 24 Jan 05 09.00-16.00	**Planning and Design of Water Treatment Plant** • Service Area • Water Demand Estimation • Location of Plant • Intake Facilities and Intake Pump	
Tue 25 Jan 05 09.00-16.00	**Planning and Design of WTP. (Cont.)** • Sedimentation • Filtration • Clear Water Storage • Distribution Pump	
Wed26 Jan 05 09.00-12.00 13.00-16.00	**Planning and Design of WTP. (Cont.)** • Electrical Facilities • Motor and Diesel Engine **Pump Maintenance** • Inspection And Maintenance Period • Preventive Maintenance of Pump • Trouble-Shooting	
Thu 27 Jan 05 09.00-16.00	**<u>Field Visit 5</u> Bangkhen Water Treatment Plant** • Water Treatment System • Plant Management • Plant Operation and Maintenance • Water Quality Control and Management • Water Quality Laboratory	
Fri 28 Jan05 09.00-12.00 13.00-16.00	**Instrument Laboratory** • Introduction of Instrumentation • Installation Technique • Experiment : Flow, Pressure and Level Meter **Pump Operation and Control (Practice)** • Manual Operation: Valve Control, Speed Control • Automatic Operation: Motor Speed Control • Parallel Pumps Operation • Compact Controller: Flow, Pressure and Level • Data Collection and Calculation	
Sat 29 Jan 05	**Filed Visit & Cultural Tour**	
Sun 30 Jan 05	**Free Day**	

Date/Time	Topics	Lectures
Mon 31 Jan 05 09.00-16.00	**Planning and Design of Water Distribution System** • Water Distribution Method • Water Storage Tank • Distribution Pipe System: Branching, Loop and Combination System. • Selection of Water Pipes	
Tue 1 Feb 05 09.00-12.00 13.00-16.00	**Field Visit 5 Thai Pipes Industry Co.Ltd.** • Productions • Quality Control **Field Visit 7 Mahasawat Water Treatment Plant** • Organization and Management • Maintenance Planning and Schedule • Plants Operation and Maintenance • Maintenance of Electrical Facilities	
Wed 2 Feb 05 09.00-10.30 10.30-10.45 10.45-12.00 12.00-13.00 13.00-14.30 14.30-14.45 15.00-16.00	**Tests** *Coffee Break* **Answer to Questionnaire** *Lunch* **Discussion and Course Evaluation** *Coffee Break* **Closing Ceremony** • Certificate Distribution • Concluding Remarks • Concluding Address	

NATIONAL WATERWORKS TECHNOLOGY TRAINING INSTITUTE

Training Course on

Pipe Works for Lao PDR

Training of Trainers

CTC Bangkok Thailand, 5 Jan-2 Feb, 2005

Course Schedule

Date/Time	Topics	Lecturer/Speaker
Wed 5 Jan 05 08.30-09.00 09.00-09.30 09.30-10.00 10.00-10.30 10.30-12.00 12.00-13.00 13.00-14.30 14.30-14.45 14.45-16.00	**Registration** **Opening Ceremony** • Welcome Remark • Opening Address *Coffee Break / Group Photo* **Course Orientation** • Introduce Lecturers and NWTTI Staffs • Introduce Participants • Introduce CTC Facilities • Overview of Course Content and Schedule **Adult Learning Principles** *Lunch* **Training Process and It's Significance** *Coffee Break* **Cont.**	
Thu 6 Jan 05 09.00-10.30 10.30-10.45 10.45-12.00 12.00-13.00 13.00-14.30 14.30-14.45 14.45-16.00	**Training Need Assessment** *Coffee Break* **Cont.** *Lunch* **Training Curriculum Development** *Coffee Break* **Cont.**	
Fri 7 Jan 05 09.00-10.30 10.30-10.45 10.45-12.00 12.00-13.00 13.00-14.30 14.30-14.45 14.45-16.00	**Planning and Managing Training Program** *Coffee Break* **Cont.** *Lunch* **Evaluating Effectiveness of Training** *Coffee Break* **Cont.**	
Sat 8 Jan 05	**City Tour** • The Emerald Buddha Temple • The Grand Palace	
Sun 9 Jan 05	**Free Day**	

Date/Time	Topics	Lecturer/Speaker
Mon 10 Jan 05 09.00-10.30 10.30-10.45 10.45-12.00 12.00-13.00 13.00-14.30 14.30-14.45 14.45-16.00	 **Lesson Plan and Writing Learning Objectives** *Coffee Break* **Cont.** *Lunch* **Lesson Plan Development Workshop 1** *Coffee Break* **Cont.**	
Tue 11 Jan 05 09.00-10.30 10.30-10.45 10.45-12.00 12.00-13.00 13.00-14.30 14.30-14.45 14.45-16.00	 **Effective Training Methods** *Coffee Break* **Cont.** *Lunch* **Facilitating Training and Facilitation Skills** *Coffee Break* **Cont.**	
Wed 12 Jan 05 09.00-10.30 10.30-10.45 10.45-12.00 12.00-13.00 13.00-14.30 14.30-14.45 14.45-16.00	 **Lesson Plan Development Workshop 2** *Coffee Break* **Cont.** *Lunch* **Lesson Plan Development Workshop 3** *Coffee Break* **Cont.**	
Thu 13 Jan 05 09.00-10.30 10.30-10.45 10.45-12.00 12.00-13.00 13.00-14.30 14.30-14.45 14.45-16.00	 **Training Delivery Practice** *Coffee Break* **Cont.** *Lunch* **Training Delivery Practice** *Coffee Break* **Cont.**	
Fri 14 Jan05 09.00-10.30 10.30-10.45 10.45-16.00	 **Overview of MWA** • Location, Water Resource, Treatment Process, Distribution System, Service Area, Customer services and bill Collection *Coffee Break* **<u>Field Visit 1</u> Bang lane Intake Pump Station** • Intake Facilities, Operation and Maintenance **<u>Field Visit 2</u> Karnjanaburi Intake** • Raw Water Intake and Transmission System **Overnight in Karnjanaburi Province**	
Sat 15 Jan 05	**Cultural Tour & Return To Bangkok**	
Sun 16 Jan 05	**Free Day**	

Date/Time	Topics	Lecturer/Speaker
Mon 17 Jan 05 09.00-16.00	 **Planning and Design of Piping System** • Pipeline in Water Supply Facilities • Function, Materials and Characteristics of Pipe • Type of Pipeline • Distribution Structural of Facilities • Piping and Joining:	
Tue 18 Jan 05 09.00-16.00	 **Planning and Design of Piping System** • Selection of Route • Field Investigation and Survey • Selection of Kind and Size of Pipe • Criteria of Underground Piping • Prevention of Inequality Subsidence • Type and Layout of Pipe Appurtenants Equip. • Preparation of Pipeline Drawing	
Wed19 Jan 05 09.00-16.00	 **Construction and Supervision** • Preparation for Execution • Responsibility of Inspector • Earth Works • Concrete Construction • Supervision of Construction • Cleaning of Pipe and Opening Work of Water Supply	
Thu 20 Jan 05 09.00-12.00 13.00-16.00	 Branching Technique **<u>Field Visit 3</u> Sam lae Intake Pump Station** • Intake Facilities, Raw Water Quality Monitoring	
Fri 21 Jan 05 09.00-16.00	 **<u>Field Visit 4</u> Eastern Water Resources Development and Management Public Co.Ltd.** • Organization and Management • Water Supply Planning and Design Criteria • Water Quality Control and Monition • Plants Operation and Maintenance • Water Distribution Control Center • Customer Services and Bill Collection **Overnight in Pattaya City, Chonburi Province.**	
Sat 22 Jan 05	**Cultural Tour & Return To Bangkok**	
Sun 23 Jan 05	**Free Day**	

Date/Time	Topics	Lecturer/Speaker
Mon 24 Jan 05		
09.00-12.00 12.00-13.00 13.00-16.00	**Serviceline Installation Technique** *Lunch* **Field Visit 5** . Water Meter and Appliances	
Tue 25 Jan 05		
09.00-12.00 13.00-16.00	**Pipeline Maintenance** • Distribution System Map **Field Visit 6 Special Construction Method** • Laying Pipe Pushing Technique	
Wed26 Jan 05		
09.00-12.00 13.00-16.00	**Pipeline Maintenance** • Maintenance Technique of Appurtenant Equipment and Pipe • Corrosion and Reconditioning of Pipe	
Thu 27 Jan 05		
09.00-16.00	**Field Visit 7 Bangkhen Water Treatment Plant** • Water Treatment System • Plant Management • Plant Operation and Maintenance • Water Quality Control and Management • Water Quality Laboratory	
Fri 28 Jan05		
09.00-12.00 13.00-16.00	**Leakage Prevention Program** **Fundamental Investigation** **Leakage Prevention Work** **Evaluation of Leakage Prevention**	
Sat 29 Jan 05	**Field Visit & Cultural Tour**	
Sun 30 Jan 05	**Free Day**	

Date/Time	Topics	Lectures
Mon 31 Jan 05		
09.00-16.00	**Water Leakage Survey and Detection (Practice)** • Detection • Repair Work	
Tue 1 Feb 05		
09.00-12.00 13.00-16.00	**Field Visit 7 Thai Pipes Industry Co.Ltd.** • Productions • Quality Control **Field Visit 8 Mahasawat Water Treatment Plant** • Organization and Management • Maintenance Planning and Schedule • Plants Operation and Maintenance • Maintenance of Electrical Facilities	
Wed 2 Feb 05		
09.00-10.30 10.30-10.45 10.45-12.00 12.00-13.00 13.00-14.30 14.30-14.45 15.00-16.00	**Tests** *Coffee Break* **Answer to Questionnaire** *Lunch* **Discussion and Course Evaluation** *Coffee Break* **Closing Ceremony** • Certificate Distribution • Concluding Remarks • Concluding Address	

NATIONAL WATERWORKS TECHNOLOGY TRAINING INSTITUTE
METROPOLITAN WATERWORKS AUTHORITY

Training Course on

Piping Work

For Assistant Trainers of Lao Waterworks

CTC Bangkok Thailand, 1-30June,2005

Course Schedule

Date/Time	Topics	Lecturer/Speaker	Place
Wed 1 Jun 05			
08.30-09.00	**Registration**	Program Officers	**Seminar Rm. 1204
09.00-09.30	**Opening Ceremony** • *Welcome Remark* • *Opening Address*	Deputy Governor	
09.30-10.00	*Group Photo / Coffee Break*		
10.00-11.00	**Overview of Training Course** • *Introduce Participants* • *Introduce NWTTI Central Training Center* • *Overview of Course Schedule* • **Pre-test**	Program Officers	
11.00-12.00	**Overview of Water Supply Utilities** • *Water Supply Utilities in Thailand* • *History and Responsibility of MWA*	Mr.Termsak C. /MWA	Ditto
13.00-16.00	**Water Quality Planning** • *Water Resource and Environment* • *Water Quality Control, etc.*	Mr.Termsak C. /MWA	Ditto
Thu 2 Jun 05			
09.00-12.00	**Water Supply Project** • *Project Planning and Appraisal* • *Project Management and Control* • *Project Monitoring and Evaluation*	Mr.Kamon P./MWA	**Seminar Rm. 1204
13.00-16.00	**Water Treatment Plant Development** • *Overviwe of WTP Developement Project* • *Planning and Procedure of Development* • *Conclusions and Suggestions*	Mr.Veerachat W. /MWA	Ditto
Fri 3 Jun 05			
09.00-12.00	<u>Study Visit 1</u> **Bangkhen Water Treatment Plant** • *Water Treatment Process* • *Automation* • *WTP Facilities Maintenance* • *Visit to WTP facilities*	Mr.Boontiam I./MWA	**Bangkhen WTP
13.00-16.00	<u>Study Visit 2</u> **Raw Water Pump Station (Sam Lae)** • *Water Intake Facilities* • *Operation and Maintenance*	Mr.Thavorn P./MWA	**Paturntani Prov.
Sat 4 Jun 05	**Free Day**		
Sun 5 Jun 05	**Free Day**		

Date/Time	Topics	Lecturer/Speaker	Place
Mon 6Jun 05 09.00-16.00	**Planning and Design of Pipeline System** • *Pipeline in Water Supply Facilities* • *Materials and Characteristics of Pipe* • *Type of Pipe and Pipe Selection* • *Outline of Pipe System Design* • *Case study and Discussion*	Mr.Withai A./MWA	*Lecture Rm. 1202
Tue 7 Jun 05 09.00-12.00	**Construction and Supervision of Pipe Laying** • *Contract Document and Responsibility* • *Preparation and Cooperation* • *Responsibility of Supervisor* • *Construction Inspection and Report*	Mr.Manus C./MWA	*Lecture Rm. 1202
13.00-16.00	**Geographic Information System (GIS)** • *Introduction to GIS* • *GIS for Water Supply System* • *Data Processing Management*	Mr.Withai A./MWA	*Lecture Rm. 1202
Wed 8Jun 05			
09.00-12.00	**Non-Revenue Water Loss Management** • *Reduction of Non-Revenue Water Loss* • *Component of Non-Revenue Water Loss*	Mr.Vikrom S./MWA	*Lecture Rm. 1202
13.00-16.00	**District Metering Area Management** • *Water Pressure Logging Equipment* • *Cross Connection* • *Data Loggers* • *Zero Pressure Test* • *Pipeline Maintenance*	Mr.Wisoot W./MWA	Ditto
Thu 9 Jun 05			
09.00-10.00	**Water Leakage Detection** • *Introduction to Leakage Survey Equipment* • *Leakage Control Work* • *Classification and Function of Equipment*	Mr.Viroon S./MWA Mr.Sukit A./MWA Mr.Suphichet T./MWA Mr.Kirati P./MWA	*Lecture Rm. 1202
10.00-12.00 13.00-16.00	**Leakage Survey and Detection (Practice)** • *Using Leakage Detection Equipment: Sound bar, Geophone, Leak detector etc.*	Ditto	*Leakage Training Yard
Fri 10 Jun05			
09.00-12.00	<u>Study Visit 3</u> **Construction and Supervision of Water Transmission System** • *Overview of Water Transmission System* • *Tunnel Construction and Supervision* • *Visit to Tunnel (Site Work)*	Mr.Pinit C. /MWA	**Samudprakarn Prov.
13.00-16.00	<u>Study Visit 4</u> **Raw Water Pump Station (Bang-Lane)** • *Water Quantity Control* • *Water Quality Monitoring*	Mr.Pairoj C. /MWA	**Nakornpratom Prov.
	Raw Water Resource (Mae-Klong Dam) • *Raw Water Transmission* • *Water Quantity Control*	Ditto	**Karnchanaburi Prov.
	Stay Overnight at Karnchanaburi Province		Ditto
Sat 11Jun 05	**Return to Bangkok**		
Sun12Jun 05	**Free Day**		

Date/Time	Topics	Lecturer/Speaker	Place
Mon 13 Jun 05			
09.00-12.00	**Training Need Assessment**	Dr. Wiboon B./AIT	**30 Yrs. Bldg.
13.00-16.00	**Training Curriculum Development**	-Ditto-	
Tue 14 Jun 05			
09.00-12.00	**Planning and Managing Training Program**	Dr. Wiboon B./AIT	**30 Yrs. Bldg.
13.00-16.00	**Evaluating Effectiveness of Training**	-Ditto-	
Wed15 Jun 05			
09.00-12.00	**Lesson Plan and Writing Learning Objectives**	Mr.Voravate C./AIT	**30 Yrs. Bldg.
13.00-16.00	**Lesson Plan Development Workshop 1 (Practice)**	-Ditto-	
Thu 16 Jun 05			
09.00-12.00	**Effective Training Methods**	Mr.Voravate C./AIT	**30 Yrs. Bldg.
13.00-16.00	**Facilitating Training and Facilitation Skills**	-Ditto-	
Fri 17 Jun05			
09.00-12.00	**Lesson Plan Development Workshop 2 (Practice)**	Mr.Voravate C./AIT	**30 Yrs. Bldg.
13.00-16.00	**Lesson Plan Development Workshop 3 (Practice)**	Dr. Wiboon B./AIT	
Sat 18 Jun 05	**Free Day**		
Sun 19 Jun 05	**Free Day**		

Date/Time	Topics	Lecturer/Speaker	Place
Mon 20 Jun 05			
09.00-12.00	**Design Criteria of Water Treatment Plant** • *Introduction of Design Criteria* • *Appropriate Study and Survey* • *Construction Planning and Design*	Mr.Paiboon K. /Civil Department	**Seminar Rm. 1204
13.00-16.00	**Water Meter (Practice)** • *Types and Characteristic* • *Connection and Installation* • *Inspection and Maintenance*	Pairoj S. /JDS Group	Ditto
Tue 21 Jun 05			
09.00-12.00	<u>Study Visit 5</u> **Thai Pipes Industry Co.Ltd.** • *Characteristic of PVC Pipe* • *Production and Quality Control* • **PVC Pipes Connection (Practice)**	Mr.Saengchai T. / Thai Pipes Industry Co.Ltd.	** Thai Pipes Industry Co.Ltd.
13.00-16.00	<u>Study Visit 6</u> **Construction and Supervision of Water Treatment Plant** • *Overview of Mahasawat WTP (ph I- III)* • *Contract Document and Responsibility* • *Construction Inspection and Report* • *Visit to Site Work*	Mr.Pairoj D. /MWA	**Mahasawat WTP
Wed 22 Jun 05			
09.00-12.00	**Selection of Pumps and Accessories** • *Classification of Pump* • *Pump Selection* • *Variable Speed Motor and Control* • *Valves and Pipes and etc.*	Dr. Wiboon B./AIT	**Seminar Rm. 1204
13.00-16.00	**Water Distribution and Pumping System** • *Water Supply System* • *Flow and Pressure Control* • *Booster Pump* • *Control Valves and etc.*	Ditto	Ditto
Thu 23 Jun 05			
09.00-12.00	**Water Resource and Demand Side Management** • *General Background* • *Purpose and Application in Water Supply* • *Implementation and Assessment*	Pairoj S. /East Water	**Seminar Rm. 1204
13.00-16.00	**Pump Maintenance (Practice)** • *Maintenance Schedule* • *Inspection of Pump and Accessories* • *Vibration and Pump Alignment* • *Pump Test*	Mr.Charun I. /MWA	**Pump Rm.
Fri 24 Jun 05			
09.00-16.00	<u>Study Visit 7</u> **East Water Co.Ltd. (Si-Chang Island)** • *Water Treatment Process* • *Plant Operation and Maintenance* • *Water Distribution and Piping System* • *Customer Services and Bill Collection*	East Water Staffs	**Chonburi Prov.
	Stay Overnight at Pattaya town	Program Officers	Ditto
Sat 25 Jun 05	**Return to Bangkok**		
Sun 26 Jun 05	**Free Day**		

Date/Time	Topics	Lecturer/Speaker	Place
Mon 27 Jun 05			
09.00-12.00	<u>Study Visit 8</u> **Construction and Supervision of Distribution Pipeline** • *Scope of Work* • *Pipe Jacking Method and Inspection* • *Visit to Site Work*	Mr.Komkrit T./MWA	*Minburi Dist.
13.00-16.00	<u>Study Visit 9</u> **Nontaburi Branch office** • *Branch office's Responsibilities* • *Non-Revenue Water Loss Management* • *District Metering Area*	Mr.Anupong P./MWA	*Nontaburi Prov.
Tue 28 Jun 05			
09.00-10.00	**Instrumentation System** • *Introduction of Instrumentation* • *Instrumentation Equipment* • *Instrumentation of Various Facilities*	Mr.Noi N./MWA	**Seminar Rm. 1204
10.00-12.00 13.00-16.00	**Instrumentation Laboratory (Practice)** • *Flow, Pressure and Level Measurement* • *Indication/Recording Equipment* • *Control Devices* • *Signal Converters*	Mr.Noi N./MWA Mr.Sukorn A. /MWA Mr.Sancharoen V./MWA	**Instrument Rm.
Wed 29 Jun 05			
09.00-12.00	<u>Study Visit 10</u> **TOYOTA MOTOR THAILAND** • *Safety and Factory Environment* • *Production and Quality Control*	TOYOTA Staffs	**Praphadaneg Dist.
13.00-16.00	**Introduction of Pump Training Room** • *Electrical Mechanical Facilities* • *Instrument Facilities*	Mr.Sancharoen V./MWA Mr.Noi N./MWA	**Seminar Rm. 1204
Thu 30 Jun 05			
09.00-12.00	**Pump Experiment (Practice)** • *Pump Speed Control* • *Feed Back Control: Flow, Pressure etc.* • *Pump Performance Test* • *Single Pump and Parallel Pumps*	Mr.Charun I. /MWA Mr.Noi N./MWA Mr.Sancharoen V./MWA	**Pump Rm.
13.00-14.00	**Training Course Evaluation**	Program Offices	**Seminar Rm. 1204
14.00-15.00	**Post Test**		
15.00-16.00	**Closing/Certificate Ceremony**	Dep.Gov. of MWA.	**30 Yrs. Bldg.
17.30	**Happy Farewell**	Participants, Program Officers and Guests	CTC NWTTI

Time Allocation
Training Course : Piping Work

For Assistant Trainers of Lao Waterworks
CTC Bangkok Thailand, 1-30 June 2005

<u>Training Days</u> **22 days**
<u>Training Hours</u> **132 hrs**

Item	Description	Training Hour
1	Opening Ceremony	1
2	Overview of Training Course and Pre-test	1
3	Lecture	64
4	Practice	30
5	Study Visit	33
6	Course Evaluation	1
7	Post-test	1
8	Closing Ceremony	1
	Total	**132**

NATIONAL WATERWORKS TECHNOLOGY TRAINING INSTITUTE
METROPOLITAN WATERWORKS AUTHORITY

Training Course on

Plant Work

For Assistant Trainers of Lao Waterworks

CTC Bangkok Thailand, 1-30 June, 2005

Course Schedule

Date/Time	Topics	Lecturer/Speaker	Place
Wed 1 Jun 05			
08.30-09.00	**Registration**	Program Officers	**Seminar Rm. 1204
09.00-09.30	**Opening Ceremony** • *Welcome Remark* • *Opening Address*	Deputy Governor	
09.30-10.00	*Group Photo / Coffee Break*		
10.00-11.00	**Overview of Training Course** • *Introduce Participants* • *Introduce NWTTI Central Training Center* • *Overview of Course Schedule* • **Pre-test**	Program Officers	
11.00-12.00	**Overview of Water Supply Utilities** • *Water Supply Utilities in Thailand* • *History and Responsibility of MWA*	Mr.Termsak C. /MWA	Ditto
13.00-16.00	**Water Quality Planning** • *Water Resource and Environment* • *Water Quality Control, etc.*	Mr.Termsak C. /MWA	Ditto
Thu 2 Jun 05			
09.00-12.00	**Water Supply Project** • *Project Planning and Appraisal* • *Project Management and Control* • *Project Monitoring and Evaluation*	Mr.Kamon P./MWA	**Seminar Rm. 1204
13.00-16.00	**Water Treatment Plant Development** • *Overviwe of WTP Developement Project* • *Planning and Procedure of Development* • *Conclusions and Suggestions*	Mr.Veerachat W. /MWA	Ditto
Fri 3 Jun 05			
09.00-12.00	<u>Study Visit 1</u> **Bangkhen Water Treatment Plant** • *Water Treatment Process* • *Automation* • *WTP Facilities Maintenance* • *Visit to WTP facilities*	Mr.Boontiam I./MWA	**Bangkhen WTP
13.00-16.00	<u>Study Visit 2</u> **Raw Water Pump Station (Sam Lae)** • *Water Intake Facilities* • *Operation and Maintenance*	Mr.Thavorn P./MWA	**Patumtani Prov.
Sat 4 Jun 05	**Free Day**		
Sun 5 Jun 05	**Free Day**		

Date/Time	Topics	Lecturer/Speaker	Place
Mon 6 Jun 05			
09.00-12.00	**Water Purification Process** • *Chemical Used* • *Coagulation* • *Flocculation & Sedimentation* • *Filtration*	Mr. Pornsak S./MWA	*Lecture RM. 1203
13.00-16.00	**Disinfections & Alternative Disinfectant** • *Chlorination & Super Chlorination* • *Chorine Dioxide* • *Ozone*	Mr.Tawatchai L./MWA	*Lecture RM. 1203
Tue 7 Jun 05			
09.00-12.00	**Special Water Treatment** **Hardness Removal** • *Softener (Cat-ion Exchange Resin)* • *Lime-Soda*	Mr. Pornsak S./MWA	*Lecture RM. 1203
13.00-16.00	**Iron & Managnese Removal (Practice)** • *Oxidation, Filtration* • *Contact Oxidation* • *Sequestering*	Mr.Tawatchai L./MWA Mr.Somsak G./MWA Mr.Wutthipol L./MWA Mr.Pornsak S./MWA	* Laboratory
Wed 8 Jun 05			
09.00-16.00	**Water Quality Analysis (Practice)** • *PH, Temperature, Turbidity* • *Conductivity, Chlorine* • *Hardness Alkalinity, Chloride*	Mr.Tawatchai L./MWA Mr.Somsak G./MWA Mr.Wutthipol L./MWA Mr.Hemaphat C./MWA	* Laboratory
Thu 9 Jun 05			
09.00-12.00	**Comparative Study on Coagulant by Jar Test (Practice)**	Mr.Somsak G./MWA Mr.Tawatchai L./MWA Mr. Pornsak S./MWA	* Laboratory
13.00-16.00	**Experiment on Mn Removal (Practice)**	Mr.Wutthipol L./MWA	
Fri 10 Jun05			
09.00-12.00	<u>Study Visit 3</u> **Construction and Supervision of Water Transmission System** • *Overview of Water Transmission System* • *Tunnel Construction and Supervision* • *Visit to Tunnel (Site Work)*	Mr.Pinit C. /MWA	**Samudprakarn Prov.
13.00-16.00	<u>Study Visit 4</u> **Raw Water Pump Station (Bang-Lane)** • *Water Quantity Control* • *Water Quality Monitoring* **Raw Water Resource (Mae-Klong Dam)** • *Raw Water Transmission* • *Water Quantity Control* **Stay Overnight at Karnchanaburi Province**	Mr.Pairoj C. /MWA Ditto	**Nakornpratom Prov. **Karnchanaburi Prov. Ditto
Sat 11 Jun 05	**Return to Bangkok**		
Sun 12 Jun 05	**Free Day**		

Date/Time	Topics	Lecturer/Speaker	Place
Mon 13 Jun 05			
09.00-12.00	Training Need Assessment	Dr. Wiboon B./AIT	**30 Yrs. Bldg.
13.00-16.00	Training Curriculum Development	-Ditto-	
Tue 14 Jun 05			
09.00-12.00	Planning and Managing Training Program	Dr. Wiboon B./AIT	**30 Yrs. Bldg.
13.00-16.00	Evaluating Effectiveness of Training	-Ditto-	
Wed15 Jun 05			
09.00-12.00	Lesson Plan and Writing Learning Objectives	Mr.Voravate C./AIT	**30 Yrs. Bldg.
13.00-16.00	Lesson Plan Development Workshop 1 (Practice)	-Ditto-	
Thu 16 Jun 05			
09.00-12.00	Effective Training Methods	Mr.Voravate C./AIT	**30 Yrs. Bldg.
13.00-16.00	Facilitating Training and Facilitation Skills	-Ditto-	
Fri 17 Jun05			
09.00-12.00	Lesson Plan Development Workshop 2 (Practice)	Mr.Voravate C./AIT	**30 Yrs. Bldg.
13.00-16.00	Lesson Plan Development Workshop 3 (Practice)	Dr. Wiboon B./AIT	
Sat 18 Jun 05	Free Day		
Sun 19 Jun 05	Free Day		

Date/Time	Topics	Lecturer/Speaker	Place
Mon 20 Jun 05			
09.00-12.00	**Design Criteria of Water Treatment Plant** • *Introduction of Design Criteria* • *Appropriate Study and Survey* • *Construction Planning and Design*	Mr.Paiboon K. /Civil Department	**Seminar Rm. 1204
13.00-16.00	**Water Meter** • *Types and Characteristic* • *Connection and Installation* • *Inspection and Maintenance* • **(Practice)**	Pairoj S. /JDS Group	Ditto
Tue 21 Jun 05			
09.00-12.00	<u>Study Visit 5</u> **Thai Pipes Industry Co.Ltd.** • *Characteristic of PVC Pipe* • *Production and Quality Control* • **PVC Pipes Connection (Practice)**	Mr.Saengchai T. / Thai Pipes Industry Co.Ltd.	** Thai Pipes Industry Co.Ltd.
13.00-16.00	<u>Study Visit 6</u> **Construction and Supervision of Water Treatment Plant** • *Overview of Mahasawat WTP (ph I- III)* • *Contract Document and Responsibility* • *Construction Inspection and Report* • *Visit to Site Work*	Mr.Pairoj D. /MWA	**Mahasawat WTP
Wed 22 Jun 05			
09.00-12.00	**Selection of Pumps and Accessories** • *Classification of Pump* • *Pump Selection* • *Variable Speed Motor and Control* • *Valves and Pipes and etc.*	Dr. Wiboon B./AIT	**Seminar Rm. 1204
13.00-16.00	**Water Distribution and Pumping System** • *Water Supply System* • *Flow and Pressure Control* • *Booster Pump* • *Control Valves and etc.*	Ditto	Ditto
Thu 23 Jun 05			
09.00-12.00	**Water Resource and Demand Side Management** • *General Background* • *Purpose and Application in Water Supply* • *Implementation and Assessment*	Pairoj S. /East Water	**Seminar Rm. 1204
13.00-16.00	**Pump Maintenance (Practice)** • *Maintenance Schedule* • *Inspection of Pump and Accessories* • *Vibration and Pump Alignment* • *Pump Test*	Mr.Charun I. /MWA	**Pump Rm.
Fri 24 Jun 05			
09.00-16.00	<u>Study Visit 7</u> **East Water Co.Ltd. (Si-Chang Island)** • *Water Treatment Process* • *Plant Operation and Maintenance* • *Water Distribution and Piping System* • *Customer Services and Bill Collection*	East Water Staffs	**Chonburi Prov.
	<u>Stay Overnight at Pattaya town</u>	Program Officers	Ditto
Sat 25 Jun 05	Return to Bangkok		
Sun 26 Jun 05	Free Day		

Date/Time	Topics	Lecturer/Speaker	Place
Mon 27 Jun 05			
09.00-12.00	**Maintenance of Electrical Equipment** • *Maintenance Planning and Schedule* • *Motors and Control Panel* • *Protective Device* • *Battery and Charger* • (Practice)	Mr. Visut N./MWA	*Seminar Rm. 1204
13.00-16.00	**Automation and Process Control** • *General* • *System Plan and Design* • *Hardware and Software* • *Application System* • (Practice)	Mr.Anupong K./ITALTHAI	Ditto
Tue 28 Jun 05			
09.00-10.00	**Instrumentation System** • *Introduction of Instrumentation* • *Instrumentation Equipment* • *Instrumentation of Various Facilities*	Mr.Noi N./MWA	**Seminar Rm. 1204
10.00-12.00 13.00-16.00	**Instrumentation Laboratory (Practice)** • *Flow, Pressure and Level Measurement* • *Indication/Recording Equipment* • *Control Devices* • *Signal Converters*	Mr.Noi N./MWA Mr.Sukorn A. /MWA Mr.Sancharoen V./MWA	**Instrument Rm.
Wed 29 Jun 05			
09.00-12.00	<u>Study Visit 8</u> **TOYOTA MOTOR THAILAND** • *Safety and Factory Environment* • *Production and Quality Control*	TOYOTA Staffs	**Praphadaneg Dist.
13.00-16.00	**Introduction of Pump Training Room** • *Electrical Mechanical Facilities* • *Instrument Facilities*	Mr.Sancharoen V./MWA Mr.Noi N./MWA	**Seminar Rm. 1204
Thu 30 Jun 05			
09.00-12.00	**Pump Experiment (Practice)** • *Pump Speed Control* • *Feed Back Control: Flow, Pressure etc.* • *Pump Performance Test* • *Single Pump and Parallel Pumps*	Mr.Charun I. /MWA Mr.Noi N./MWA Mr.Sancharoen V./MWA	**Pump Rm.
13.00-14.00	**Training Course Evaluation**	Program Offices	**Seminar Rm. 1204
14.00-15.00	**Post Test**		
15.00-16.00	**Closing/Certificate Ceremony**	Dep.Gov. of MWA.	**30 Yrs. Bldg.
17.30	**Happy Farewell**	Participants, Program Officers and Guests	CTC NWTTI

Time Allocation
Training Course : Plant Work

For Assistant Trainers of Lao Waterworks
CTC Bangkok Thailand, 1-30 June 2005

<u>Training Days</u> **22 days**
<u>Training Hours</u> **132 hrs**

Item	Description	Training Hour
1	Opening Ceremony	1
2	Overview of Training Course and Pre-test	1
3	Lecture	58.5
4	Practice	41.5
5	Study Visit	27
6	Course Evaluation	1
7	Post-test	1
8	Closing Ceremony	1
	Total	**132**

添付資料 1：結果グリッド

Narrative Summary	Objectively Verifiable Indicators	Results
Overall Goal Capacity of Urban Water Supply Authorities is enhanced in sustainable ways.	Quality of supplied water	Trend in (a) turbidity and (b) pH from 2003 to 2005

(a) The average of turbidity at Nam Papas in Lao PDR

Unit: NTU

	2003	2004	2005
Vientiane CC	0.00	0.33	0.45
Luangnamtha	0.23	0.74	0.73
Bokeo	1.17	0.84	0.58*
Borikhamxay	4.70	6.50	5.10
Khammuane	0.75	0.77	0.51
Savannakhet	3.14	3.21	4.26
Champasack	2.11	3.69	2.43

Source: Operational research by Lao MDC Co., Ltd. in the terminal evaluation study
Note (*): The data is the average of turbidity for 11 months in 2005.

(b) The average of pH at Nam Papas in Lao PDR

	2003	2004	2005
Vientiane CC	7.64	7.61	7.51
Luangnamtha	7.17	7.06	7.25
Oudomxay	7.01	7.10	7.03*
Xayabury	8.00	8.02	8.02
Vientiane Prov.	7.68	7.53	7.70
Savannakhet	7.17	7.48	7.39
Saravane	7.24	7.37	7.54
Sekong	7.51	7.43	7.27
Champasack	6.72	6.53	6.44

Source: Operational research by Lao MDC Co., Ltd. in the terminal evaluation study
Note (*): The data is the average of pH from January to September in 2005.

Project Purpose

Means of service performance of the staff of UWS authorities in Lao PDR are improved in the field of water pipe laying and maintenance, plant operation and maintenance, and water quality control.

1. Leakage volume per connection per day (liters)

1. Leakage volume per connection per day from 2003 to 2005 Unit: liters

	2003	2004	2005
Vientiane CC	735.7	731.2	655.2
Phongsaly	109.0	64.7	47.0
Luangnamtha	166.6	141.4	189.1
Oudomxay	399.0	187.7	125.6
Bokeo	185.5	285.3	237.0
Luangprabang	368.2	341.7	348.9
Huaphanh	127.8	92.8	104.4
Xayabury	106.7	105.1	137.1
Xiengkhang	280.5	332.8	224.1
Vientiane Prov.	168.4	158.5	161.4
Borikhamxay	332.1	113.4	141.5
Khammuane	337.4	261.2	284.2
Savannakhet	273.6	267.9	305.9
Saravane	162.4	136.5	201.3
Sekong	232.1	196.1	351.4
Champasack	474.7	306.5	343.7
Attapeu	216.0	302.3	156.1

Source: WASA, WASA Annual Report 2004, etc.

2. Total amount of water production per year at the water treatment plants (m^3)

2. Total amount of water production per year at the water treatment plants from 2003 to 2005 Unit: m^3

	2003	2004	2005
Vientiane CC	43,786,885	43,506,313	43,582,199
Phongsaly	55,600	48,132	165,168
Luangnamtha	429,779	456,437	492,194
Oudomxay	1,146,090	853,067	1,089,836
Luangprabang	4,392,434	4,479,915	4,909,515
Huaphanh	441,401	455,354	498,744
Xayabury	424,311	464,122	545,213
Xiengkhang	807,758	908,304	862,054
Vientiane Prov.	1,098,677	1,143,064	1,203,912
Borikhamxay	614,579	671,913	725,953
Khammuane	1,789,911	1,826,665	2,221,164
Savannakhet	5,507,139	5,561,974	6,649,627

		Saravane 812,906 785,393 960,492 Sekong 578,142 533,164 628,560 Champasack 5,164,912 4,286,062 4,475,445 Attapeu 491,938 516,288 460,538 Bokeo 544,851 554,235 694,761 Borikhamxay 641,579 671,913 725,953 Source: WASA, data provided by WASA Note (*): The data is the total amount of water production at the water treatment plants for 8 months in 2003.
	3. Frequency of water-quality tests per month on average of each year	3. The average of frequency of water-quality tests per month from 2003 to 2005 2003 2004 2005 Luangnamtha 29.8 29.9 29.8 Oudomxay 61.3 53.3 53.3 Luangprabang 30.5 30.5 30.4 Xiengkhang 30.4 30.5 30.4 Vientiane Prov. 12.2 15.2 12.7 Sekong 28.2 30.4 30.5 Champasack 30.4 29.3 30.2 Source: Operational research by Lao MDC Co., Ltd. in the terminal evaluation study
Outputs 1. Appropriate UWS training system is elaborated and Trainers are trained.	1-1. Lecturing ability of NPV trainers are improved. (13 trainers)	1-1. Number of NPV trainers trained in the training programs 2003: Japan / NWTTI No. of NPV trainers participating in the training programs: 0 / 2 There are 13 existing trainers at NPV, and two of them were not capable enough to teach in the training courses. Thus, the project selected two NPV trainers and sent them to the NWTTI for the intensive training course.
	1-2. Number of new PNP trainers are trained (18 trainers)	1-2. Number of new PNP trainers trained in training program 2003: NWTTI / ICTP No. of new PNP trainers: 18 / 18

	1-3. Number of counterparts trained in Japan and Thailand	1-3. Number of counterparts trained through the training courses in Japan and Thailand

	2003		2004		2005	
	Japan	NWTTI	Japan	NWTTI	Japan	NWTTI
No. of counterparts trained through the training courses	1	4	2	-	2	2

2. Training textbooks and materials are developed.	2-1. Textbooks for training are developed. (5 subjects)	2-1. Distribution of textbooks (5 subjects) to each Nam Papa

Organization	Place of Allocation	Quantity				
		WSMP	PLSI	WP	WQC	LC
DHUP		2	2	2	2	2
WASA		3	3	3	3	3
Project Office + JICA		4	4	4	4	4
NPNL	GENERAL MANAGER	1	1	1	1	1
	DEPUTY GENERAL MANAGER(Tec.)	1	1	1	1	1
	WTTC	10	10	10	10	10
	Engineering Division	2	2	-	-	2
	Leakage control	-	4	-	-	4
	Chinaimo WTP (Naimany)	2	-	2	2	-
	Kaolieo WTP (Chanhsouk)	2	-	2	2	-
	Thadua WTP	-	-	2	2	-
	Thangone WTP	-	-	2	2	-
PNP LUANGPRABANG	GENERAL MANAGER (Solith)	1	1	1	1	1
	DEPUTY G.M. (Somsanith)	1	1	1	1	1
	DEPUTY G.M. (Chanhthone)	1	1	1	1	1
	TRAINNING ROOM	5	5	5	5	5
	NAMBARK BRANCH	1	1	1	1	1
PNP CHAMPASACK	GENERAL MANAGER	1	1	1	1	1
	Head of pipe section (Thongsouk)	1	1	1	1	1
	Planning technical (Khemphet)	1	1	1	1	1
	TRAINNING ROOM	5	5	5	5	5
PNP PHONGSALY	GENERAL MANAGER (Soukaseum)	1	1	1	1	1
	EACH DIVISION	1	1	1	1	1
	BOUNEUA BRANCH	1	1	1	1	1
	KHUA BRANCH	1	1	1	1	1

		PNP LUANGNAMTHA	GENERAL MANAGER (Saysamone)	1	1	1	1	1	
			EACH DIVISION	1	1	1	1	1	
		PNP BOKEO	GENERAL MANAGER (Saiyon)	1	1	1	1	1	
			EACH DIVISION	1	1	1	1	1	
			TONPHEUNG BRANCH	1	1	1	1	1	
		PNP OUDOMXAY	GENERAL MANAGER	1	1	1	1	1	
			DEPUTY G.M. (Khamphou)	1	1	1	1	1	
			EACH DIVISION	1	1	1	1	1	
		PNP XAYABURY	GENERAL MANAGER	1	1	1	1	1	
			DEPUTY G.M. (Soukanh)	1	1	1	1	1	
			EACH DIVISION	1	1	1	1	1	
		PNP HUAPHAN	GENERAL MANAGER (Bounmy)	1	1	1	1	1	
			EACH DIVISION	1	1	1	1	1	
		PNP XIENGKHUANG	GENERAL MANAGER (Phoukham)	1	1	1	1	1	
			DPUTY G.M. (Linthong)	1	1	1	1	1	
			EACH DIVISION	1	1	1	1	1	
		PNP XAYSOMBOUN	GENERAL MANAGER	1	1	1	1	1	
			EACH DIVISION	1	1	1	1	1	
		PNP VIENTIANE	GENERAL MANAGER (Bounleuth)	1	1	1	1	1	
			DEPUTY G.M. (Thavisouk)	1	1	1	1	1	
			EACH DIVISION	1	1	1	1	1	
			VANGVIENG BRANCH)	1	1	1	1	1	
			BANKERN BRANCH	1	1	1	1	1	
		PNP BOLIKHAMXAY	GENERAL MANAGER (Kaythong)	1	1	1	1	1	
			DEPUTY G.M. (Vilaykone)	1	1	1	1	1	
			EACH DIVISION	1	1	1	1	1	
		PNP KHAMMUAN	GENERAL MANAGER (Khanngeun)	1	1	1	1	1	
			DEPUTY G.M. (Phouthong)	1	1	1	1	1	
			EACH DIVISION	1	1	1	1	1	
			MAHAXAY BRANCH	1	1	1	1	1	
			NONBOK BRANCH	1	1	1	1	1	
		PNP SAVANNAKHET	GENERAL MANAGER (Phandola)	1	1	1	1	1	
			DEPUTY G.M. (Sytane)	1	1	1	1	1	
			EACH DIVISION	1	1	1	1	1	
			OUTHOUMPHONE BRANCH	1	1	1	1	1	
			CHAMPHONE BRANCH	1	1	1	1	1	

PNP SARAVANH	GENERAL MANAGER (Khammany)	1	1	1	1	1
	DEPUTY G.M. (Sene)	1	1	1	1	1
	EACH DIVISION	1	1	1	1	1
	LONGAM BRANCH	1	1	1	1	1
	KHONGSADONE BRANCH	1	1	1	1	1
PNP SEKONG	GENERAL MANAGER (Khamsing)	1	1	1	1	1
	DEPUTY G.M. (Bounleua)	1	1	1	1	1
	EACH DIVISION	1	1	1	1	1
PNP ATTAPUE	GENERAL MANAGER (Sengkham)	1	1	1	1	1
	DEPUTY G.M. (Viengkham)	1	1	1	1	1
	EACH DIVISION	1	1	1	1	1
Stock for new branches	will be completred 2005-2006	10	10	10	10	10
TOTAL		**105**	**105**	**107**	**107**	**105**

Note:
WSMP: Water supply master planning PLSI: Pipe-laying and service installation WP: Water purification
WQC: Water quality control LC: Leakage control

2-2. Several materials are developed.

2-2. Type of materials for training programs

March 2004
- Trainers List

June 2004
- Water Supply Technical Terms (English-Japanese-Lao): Version 1
- Water Supply Technical Terms (English-Lao): Version 1

March 2005
- JICA-Net "A practical example of the operation and maintenance of a water treatment plant in Japan (CD-R)"
- JICA-Net "A practical example of design, laying and maintenance of water pipeline in Japan (CD-R)"

3. UWS engineers are upgraded in each technology subjects.	3-1. 115 engineers are trained.	3-1 (a). Number of UWS engineers participating in the training programs

	2004		2005	
	NWTTI	ICTP	NWTTI	ICTP
No. of UWS engineers participating in the training programs	20	108	20	-

Although 115 engineers were supposed to participate in the ICTP in the first place, 108 engineers were trained through the ICTP at the end. Afterwards, 40 out of 108 engineers went to the NWTTI to join in the training course; 20 engineers in 2004 and 20 engineers in 2005.

3-1 (b). Performance of water supply engineers

PNP/NPV directors (13) evaluated chief engineers on a scale from "5: Excellent" to "1: Poor" with the five-grade system[1] according to the following checklist.

	①	②	③	④	⑤	⑥	⑦	⑧	⑨
Average rating of chief engineers by 13 PNP/NPV directors	3.23	3.23	3.54	3.38	3.00	3.38	3.23	3.46	3.46

① : Engineers definitely understand the procedures of the routine work.
② : Engineers perform their work in due course according to the textbooks and manuals.
③ : Engineers make their efforts to perform their duty properly.
④ : Engineers strive for accuracy in their work.
⑤ : Engineers spontaneously utilize the textbooks and manuals for their work.
⑥ : Engineers tidy up their workplace constantly.
⑦ : Engineers write the results of their work in record books regularly.
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3-2. Trained engineers can deliver lectures at workshop in each PNP or at ICTP

3-2. Number of trained engineers (assistant trainers) who gave lectures to technicians at ICTP

	2005
Number of assistant trainers who gave lectures to technicians	53

Assistant trainers who had been trained at the NWTTI in January and June 2005 gave lectures to technicians through the ICTP in November 2005. Nine of 53 assistant trainers assisted the trainers.

[1] Five-grade system is categorized into "5: Excellent", "4: Very good", "3: Good", "2: Fair", and "1: Poor".

4. Manuals for routine work are developed.	4-1. Manuals for routine work are developed. (4 subjects)	4-1. Manuals on four subjects have already been developed and made in the form of the first edition, and they will be distributed to each PNP after the manuals are authorized by the MCTPC. Type of manuals for routine work (table below)
5. The routine work skills of UWS technicians are upgraded.	5-1. 360 technicians are trained. 5-2. Proper Operation and Maintenance are performed.	5-1. Number of UWS technicians participating in the ICTP (table below) Before launching the project, the number of technicians was decided as 360 across the country. However, the actual number of technicians participating in the ICTP in 2005 was only 268. According to the director of WASA, there was a drastic change in structure of NPNL in 2003. Specifically, the number of permanent technical staff in NPNL was reduced from 392 to 203 in 2003, whereas the total number of part-time staff, including technical staff, increased from 22 to 84 in the same period. As the training courses were mainly conducted for the permanent staff, the sudden decrease in the number of permanent technical staff in NPNL affected the number of technicians in the Lao PDR who were supposed to join in the ICTP as planned. 5-2. Proper Operation and Maintenance are performed. PNP/NPV directors (13) and chief engineers (52) evaluated site technicians on a scale from "5: Excellent" to "1: Poor" with the five-grade system according to the following checklist. In addition, site technicians (70) evaluated themselves in the same way. (table below) ① : Technicians definitely understand the procedures of the routine work. ② : Technicians perform their work in due course according to the textbooks and manuals.

Type of manuals for routine work

	2005
Type of manuals for routine work	4 manuals

5-1. Number of UWS technicians participating in the ICTP

	2005			
	Central	Southern	Northern	Total
No. of UWS technicians participating in the ICTP	103	72	93	268

	①	②	③	④	⑤	⑥	⑦	⑧	⑨
Average rating of site technicians by 13 PNP/NPV directors	3.31	3.31	3.54	3.46	3.15	3.23	3.38	3.54	3.31
Average rating of site technicians by 52 chief engineers	3.40	3.47	3.51	3.47	3.33	3.42	3.29	3.55	3.33
Average rating of site technicians by themselves (70)	3.54	3.60	3.71	3.81	3.54	3.66	3.71	3.84	3.86

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6-3. Number of Water Supply Plan (WSP) and Financial Plan (FP) of all PNP
In order to prepare the WSP and the FP, the training courses are conducted in the Lao PDR and Thailand, so they will be drawn up by each PNP after the training courses. Therefore, they are to be prepared in July and August as planned.</td>
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添付資料　２．実績グリッド

実績グリッド

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<tr><th>Narrative Summary</th><th>Objectively Verifiable Indicators</th><th>Results</th></tr>
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<td>Overall Goal
Capacity of Urban Water Supply Authorities is enhanced in sustainable ways.</td>
<td>Quality of supplied water</td>
<td>Trend in (a) turbidity and (b) pH from 2003 to 2005
(a) The average of turbidity at Nam Papas in Lao PDR Unit: NTU
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<tr><td>Vientiane CC</td><td>0.00</td><td>0.33</td><td>0.45</td></tr>
<tr><td>Luangnamtha</td><td>0.23</td><td>0.74</td><td>0.73</td></tr>
<tr><td>Bokeo</td><td>1.17</td><td>0.84</td><td>0.58*</td></tr>
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</table>
Source: Operational research by Lao MDC Co., Ltd. in the terminal evaluation study
Note (*): The data is the average of turbidity for 11 months in 2005.

(b) The average of pH at Nam Papas in Lao PDR
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Project Purpose

Means of service performance of the staff of UWS authorities in Lao PDR are improved in the field of water pipe laying and maintenance, plant operation and maintenance, and water quality control.

1. Leakage volume per connection per day (liters)

1. Leakage volume per connection per day from 2003 to 2005 Unit: liters

	2003	2004	2005
Vientiane CC	735.7	731.2	655.2
Phongsaly	109.0	64.7	47.0
Luangnamtha	166.6	141.4	189.1
Oudomxay	399.0	187.7	125.6
Bokeo	185.5	285.3	237.0
Luangprabang	368.2	341.7	348.9
Huaphanh	127.8	92.8	104.4
Xayabury	106.7	105.1	137.1
Xiengkhang	280.5	332.8	224.1
Vientiane Prov.	168.4	158.5	161.4
Borikhamxay	332.1	113.4	141.5
Khammuane	337.4	261.2	284.2
Savannakhet	273.6	267.9	305.9
Saravane	162.4	136.5	201.3
Sekong	232.1	196.1	351.4
Champasack	474.7	306.5	343.7
Attapeu	216.0	302.3	156.1

Source: WASA, WASA Annual Report 2004, etc.

2. Total amount of water production per year at the water treatment plants (m^3)

2. Total amount of water production per year at the water treatment plants from 2003 to 2005 Unit: m^3

	2003	2004	2005
Vientiane CC	43,786,885	43,506,313	43,582,199
Phongsaly	55,600	48,132	165,168
Luangnamtha	429,779	456,437	492,194
Oudomxay	1,146,090	853,067	1,089,836
Luangprabang	4,392,434	4,479,915	4,909,515
Huaphanh	441,401	455,354	498,744

		Xayabury 424,311 464,122 545,213 Xiengkhang 807,758 908,304 862,054 Vientiane Prov. 1,098,677 1,143,064 1,203,912 Borikhamxay 614,579 671,913 725,953 Khammuane 1,789,911 1,826,665 2,221,164 Savannakhet 5,507,139 5,561,974 6,649,627 Saravane 812,906 785,393 960,492 Sekong 578,142 533,164 628,560 Champasack 5,164,912 4,286,062 4,475,445 Attapeu 491,938 516,288 460,538 Bokeo 544,851 554,235 694,761 Borikhamxay 641,579 671,913 725,953 Source: WASA, data provided by WASA Note (*): The data is the total amount of water production at the water treatment plants for 8 months in 2003.
	3. Frequency of water-quality tests per month on average of each year	3. The average of frequency of water-quality tests per month from 2003 to 2005 2003: Luangnamtha 29.8; Oudomxay 61.3; Luangprabang 30.5; Xiengkhang 30.4; Vientiane Prov. 12.2; Sekong 28.2; Champasack 30.4 2004: Luangnamtha 29.9; Oudomxay 53.3; Luangprabang 30.5; Xiengkhang 30.5; Vientiane Prov. 15.2; Sekong 30.4; Champasack 29.3 2005: Luangnamtha 29.8; Oudomxay 53.3; Luangprabang 30.4; Xiengkhang 30.4; Vientiane Prov. 12.7; Sekong 30.5; Champasack 30.2 Source: Operational research by Lao MDC Co., Ltd. in the terminal evaluation study
Outputs 1. Appropriate UWS training system is elaborated and Trainers are trained.	1-1. Lecturing ability of NPV trainers are improved. (13 trainers)	1-1. Number of NPV trainers trained in the training programs 2003: Japan 0; NWTTI 2 No. of NPV trainers participating in the training

programs		

There are 13 existing trainers at NPV, and two of them were not capable enough to teach in the training courses. Thus, the project selected two NPV trainers and sent them to the NWTTI for the intensive training course.

1-2. Number of new PNP trainers are trained (18 trainers)

1-2. Number of new PNP trainers trained in training program

	2003	
	NWTTI	ICTP
No. of new PNP trainers	18	18

1-3. Number of counterparts trained in Japan and Thailand

1-3. Number of counterparts trained through the training courses in Japan and Thailand

	2003		2004		2005	
	Japan	NWTTI	Japan	NWTTI	Japan	NWTTI
No. of counterparts trained through the training courses	1	4	2	-	2	2

2. Training textbooks and materials are developed.

2-1. Textbooks for training are developed. (5 subjects)

2-1. Distribution of textbooks (5 subjects) to each Nam Papa

Organization	Place of Allocation	Quantity				
		WSMP	PLSI	WP	WQC	LC
DHUP		2	2	2	2	2
WASA		3	3	3	3	3
Project Office + JICA		4	4	4	4	4
NPNL	GENERAL MANAGER	1	1	1	1	1
	DEPUTY GENERAL MANAGER(Tec.)	1	1	1	1	1
	WTTC	10	10	10	10	10
	Engineering Division	2	2	-	-	2
	Leakage control	-	4	-	-	4
	Chinaimo WTP (Naimany)	2	-	2	2	-
	Kaolieo WTP (Chanhsouk)	2	-	2	2	-
	Thadua WTP	-	-	2	2	-
	Thangone WTP	-	-	2	2	-

		PNP LUANGPRABANG	GENERAL MANAGER (Solith)	1	1	1	1	1
			DEPUTY G.M. (Somsanith)	1	1	1	1	1
			DEPUTY G.M. (Chanhthone)	1	1	1	1	1
			TRAINNING ROOM	5	5	5	5	5
			NAMBARK BRANCH	1	1	1	1	1
		PNP CHAMPASACK	GENERAL MANAGER	1	1	1	1	1
			Head of pipe section (Thongsouk)	1	1	1	1	1
			Planning technical (Khemphet)	1	1	1	1	1
			TRAINNING ROOM	5	5	5	5	5
		PNP PHONGSALY	GENERAL MANAGER (Soukaseum)	1	1	1	1	1
			EACH DIVISION	1	1	1	1	1
			BOUNEUA BRANCH	1	1	1	1	1
			KHUA BRANCH	1	1	1	1	1
		PNP LUANGNAMTHA	GENERAL MANAGER (Saysamone)	1	1	1	1	1
			EACH DIVISION	1	1	1	1	1
		PNP BOKEO	GENERAL MANAGER (Saiyon)	1	1	1	1	1
			EACH DIVISION	1	1	1	1	1
			TONPHEUNG BRANCH	1	1	1	1	1
		PNP OUDOMXAY	GENERAL MANAGER	1	1	1	1	1
			DEPUTY G.M. (Khamphou)	1	1	1	1	1
			EACH DIVISION	1	1	1	1	1
		PNP XAYABURY	GENERAL MANAGER	1	1	1	1	1
			DEPUTY G.M. (Soukanh)	1	1	1	1	1
			EACH DIVISION	1	1	1	1	1
		PNP HUAPHAN	GENERAL MANAGER (Bounmy)	1	1	1	1	1
			EACH DIVISION	1	1	1	1	1
		PNP XIENGKHUANG	GENERAL MANAGER (Phoukham)	1	1	1	1	1
			DPUTY G.M. (Linthong)	1	1	1	1	1
			EACH DIVISION	1	1	1	1	1
		PNP XAYSOMBOUN	GENERAL MANAGER	1	1	1	1	1
			EACH DIVISION	1	1	1	1	1

		PNP VIENTIANE	GENERAL MANAGER (Bounleuth)	1	1	1	1	1
			DEPUTY G.M. (Thavisouk)	1	1	1	1	1
			EACH DIVISION	1	1	1	1	1
			VANGVIENG BRANCH)	1	1	1	1	1
			BANKERN BRANCH	1	1	1	1	1
		PNP BOLIKHAMXAY	GENERAL MANAGER (Kaythong)	1	1	1	1	1
			DEPUTY G.M. (Vilaykone)	1	1	1	1	1
			EACH DIVISION	1	1	1	1	1
		PNP KHAMMUAN	GENERAL MANAGER (Khanngeun)	1	1	1	1	1
			DEPUTY G.M. (Phouthong)	1	1	1	1	1
			EACH DIVISION	1	1	1	1	1
			MAHAXAY BRANCH	1	1	1	1	1
			NONBOK BRANCH	1	1	1	1	1
		PNP SAVANNAKHET	GENERAL MANAGER (Phandola)	1	1	1	1	1
			DEPUTY G.M. (Sytane)	1	1	1	1	1
			EACH DIVISION	1	1	1	1	1
			OUTHOUMPHONE BRANCH	1	1	1	1	1
			CHAMPHONE BRANCH	1	1	1	1	1
		PNP SARAVANH	GENERAL MANAGER (Khammany)	1	1	1	1	1
			DEPUTY G.M. (Sene)	1	1	1	1	1
			EACH DIVISION	1	1	1	1	1
			LONGAM BRANCH	1	1	1	1	1
			KHONGSADONE BRANCH	1	1	1	1	1
		PNP SEKONG	GENERAL MANAGER (Khamsing)	1	1	1	1	1
			DEPUTY G.M. (Bounleua)	1	1	1	1	1
			EACH DIVISION	1	1	1	1	1
		PNP ATTAPUE	GENERAL MANAGER (Sengkham)	1	1	1	1	1
			DEPUTY G.M. (Viengkham)	1	1	1	1	1
			EACH DIVISION	1	1	1	1	1
		Stock for new branches	will be completred 2005-2006	10	10	10	10	10

TOTAL		**105**	**105**	**107**	**107**	**105**	

Note: WSMP: Water supply master planning PLSI: Pipe-laying and service installation
WP: Water purification WQC: Water quality control LC: Leakage control

2-2. Several materials are developed.

2-2. Type of materials for training programs

March 2004
- Trainers List

June 2004
- Water Supply Technical Terms (English-Japanese-Lao): Version 1
- Water Supply Technical Terms (English-Lao): Version 1

March 2005
- JICA-Net "A practical example of the operation and maintenance of a water treatment plant in Japan (CD-R)"
- JICA-Net "A practical example of design, laying and maintenance of water pipeline in Japan (CD-R)"

3. UWS engineers are upgraded in each technology subjects.

3-1. 115 engineers are trained.

3-1 (a). Number of UWS engineers participating in the training programs

	2004		2005	
	NWTTI	ICTP	NWTTI	ICTP
No. of UWS engineers participating in the training programs	20	108	20	-

Although 115 engineers were supposed to participate in the ICTP in the first place, 108 engineers were trained through the ICTP at the end. Afterwards, 40 out of 108 engineers went to the NWTTI to join in the training course; 20 engineers in 2004 and 20 engineers in 2005.

3-1 (b). Performance of water supply engineers

PNP/NPV directors (13) evaluated chief engineers on a scale from "5: Excellent" to "1: Poor" with the five-grade system[12] according to the following checklist.

	①	②	③	④	⑤	⑥	⑦	⑧	⑨
Average rating of chief engineers by 13	3.23	3.23	3.54	3.38	3.00	3.38	3.23	3.46	3.46

PNP/NPV directors										

① : Engineers definitely understand the procedures of the routine work.
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4-1. Manuals on four subjects have already been developed and made in the form of the first edition, and they will be distributed to each PNP after the manuals are authorized by the MCTPC.

Type of manuals for routine work

	2005
Type of manuals for routine work	4 manuals

5. The routine work skills of UWS technicians are upgraded.

5-1. 360 technicians are trained.

5-1. Number of UWS technicians participating in the ICTP

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Before launching the project, the number of technicians was decided as 360 across the country. However, the actual number of technicians participating in the ICTP in 2005 was only 268. According to the director of WASA, there was a drastic change in structure of NPNL in 2003. Specifically, the number of permanent technical staff in NPNL was reduced from 392 to 203 in 2003, whereas the total number of part-time staff, including technical staff, increased from 22 to 84 in the same period. As the training courses were mainly conducted for the permanent staff, the sudden decrease in the number of permanent technical staff in NPNL affected the number of technicians in the Lao PDR who were supposed to join in the ICTP as planned.

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