# Explanation Projects

1. **Rehabilitation the National meteorological and hydrological stations network.**
   Consists to improve the observations by providing, replacing maintenance the basic meteorological or hydrological instruments, appropriated facilities (telecommunication system, others...) and on job training.

2. **Expansion the national meteorological and hydrological stations network.**
   Mean to install or construct the new station comprising the observation park, the new basic instruments and facilities (telecommunication system, office building, providing the technical staff etc... )

3. **Expert of hydrology** means the hydrologist with a lot of technical experiences on the hydrology who has a capacity to assist the D.M.H regarding the hydrological development programmes or projects as well as the technology transfer.

4. **Expert of meteorology** means the meteorologist with a lot of technical experiences on the meteorology including the meteorological telecommunication Meteorological Radar or Satellite, instruments, climatology and forecast.

5. **Training in country** mean to train the provincial staff on the meteorology and hydrology at the DMH training Center, Vientiane for the first level (observers) and middle level (technician). The course duration for both levels is about two years with 25 participants per promotion and per level.

6. **The Project of 15 stations** (Refer to pp.AP4-10 ff. on the Master Plan Study VolumeIII)
   Contracts on construction of hydrology stations consisting of 11-slope gauge and 15-rain gauge stations have been mutually agreed in October 2000 between JICA Lao Office and the Contractors. Hydrologist of the JICA Study Team has provided and given the following technical assistance in the each stage such as plan, design and supervision of construction of hydrological stations, supervision of installation of hydrological instruments, communication equipment and so on.
   (a) Technical review on the 15 hydrological station sites proposed by JICA expert of DMH,
   (b) Modification of site selection based on the field survey,
   (c) Preparation of additional materials for contract documents on construction works of hydrological stations and installation works of hydrological instrument, communication equipment and other goods,
   (d) Preparation of necessary materials for supervision of construction works,
   (e) Preparation of technical instructions, suggestions and recommendation on the construction work and the installation works,
   (f) Transfer of technical knowledge on construction and management of hydrological stations to the counter personnel and DMH staff concerned.

**7. Training overseas** mean to send the staff for middle level and high level education for longterm or short training on specific subjects and specialization (example: weather forecasting, Hydrometeorological, telecommunication, hydro-meteorological equipment, weather radar, meteo Satellite, data analysis and processing or water and flood management etc ...) . The fellowships depend on the donors (Japan, India, WMO, UNESCO etc...) year by year.

**8. The weather Radar system and Radar Project.**

A Doppler weather radar system is the only equipment to enable DMH to observe rainfall & atmospheric turbulence distribution, intensity and movement and also provide precipitation information for large geographic areas on real time basis. A Doppler weather radar system which is one of meteorological radar systems can detect occurrence, movement & intensity of rainfall (qualitatively within a radius of 400 km), atmospheric turbulence (wind sheer and downburst).

Advantages of Doppler weather radar system.

- DMH has monitor all of the rainfall occurring in the catchment area of river then make proper flood/flash flood forecasting, because flood/flash flood forecasting is calculated based on total amount of rainfall in the whole catchment area. In other word, if DMH fails to monitor rainfall in the remote area (mostly mountainous areas), accuracy of the forecasting becomes very low, lead time of the forecasting very short, and then people living in the area miss opportunities to take measures against flood/flash flood. No other meteorological observation equipment than a Doppler weather radar system gives DMH rainfall intensity at any points (even in remote area) at once. Neither conventional weather observation system nor satellite receiving system give such rainfall data in every point of the catchment area.

- It is very difficult to operate and maintain a lot of observation equipment installed in many places. Staff can not check all the equipment at one time and it takes time to reach the site and solve problems. On the other hand, it is much easier to operate and maintain a Doppler weather radar system because the radar system will be located in DMH Head Office and the staff will be able to check the working conditions at any time. This is another advantage of a Doppler weather radar system.

The combination of the weather data from a Doppler weather radar system and cloud image data from a satellite imagery receiving system will gives detailed rainfall cloud movement which will cause torrential rain and detect amount of such heavy rain in the country. This situation will upgrade accuracy of weather forecasts and gives the people and agencies concerned with disaster management more lead to take actions at each preparedness, emergency and recovery phase.

**(Safe operation of Capital City)**

Sustainable and suitable development of the country, it is necessary to protect the capital city and the International Airport, the main entrance of the country, from the natural disasters which carry the highest potential for loss of life & property and great number of damages to agriculture, manufacturing industries, aviation, etc. For safety operation of civil aviation, reduction & prevention of natural and

expediting the national socio-economy, it is indispensable to improve observing, forecasting & disseminating activities and facilities if DMH.

**(Natural Disaster Prevention & Mitigation)**
Most of people in Lao are vulnerable in natural disasters such as floods, flash flood, landslide, long-last rains, drought, etc. With supports of UN organization (UNDP, WFP), other agencies concerned has analyzed vulnerability of Laos and found the "vulnerable" area are spread out throughout the country. "Vulnerable" mean that severe natural phenomena unable the people to live in their places any more (lose their lives or leave their living place to another). Therefore, agencies concerned with disaster management has to make proper and timely decisions before, during and after natural disaster to mitigate as much loss and damage in the vulnerable areas as they can. However, due to lack of timely and accurate weather information, it is very difficult for Laos to deal with disaster management properly. Natural disasters in Laos are all directly connected to rainfall in areas where natural disasters affect people or in areas of upper streams of rivers away from such affected area. DMH is responsible to make accurate (more than 80% is preferable) flood/flash flood forecasts with sufficient lead time (several days in case of small river, one week in case of big rivers). In order to achieve such a responsibility, DMH has to monitor all of the rainfall occurring in the catchment area of a river, because flood/flash flood forecasting is calculated based on rainfall at upstream in catchment area.

A Doppler weather radar system detects location of storms and rainfall and gives data of rainfall amount. Also, a Doppler weather radar system, using Doppler principle, detect wind speeds and directions inside and outside of storm/clouds so that DMH can predict movement of storm/cloud then forecast rainfall amount in particular area in advance. Since a Doppler weather radar system gives data on rainfall amount in number, we can predict amount and period of river floods. Therefore, with a Doppler weather radar system, DMH will predict location, amount and period of such river floods in details and with sufficient lead time up to one week so as give people and agencies concerned enough time to take proper measures for natural disaster prevention & mitigation.

**(Aeronautical Purpose)**
Fortunately, the number of passengers and air cargoes at Wattay International Airport has been increasing in accordance with the social and economic development of Laos. However, aircraft accidents caused by severe weather have occurred for a few years and obviously this situation have made negative effects against international and domestic demands for aviation in Laos.
The present capability of weather monitoring and forecasting for aviation in DMH can not be improved due to lack of appropriate instruments for monitoring and forecasting severe weather phenomena causing aircraft accidents.

**9.** Hydrological yearbook publication consists the hydrometerological data collection and processing over the country year by year by publicating.

**10.** International and Regional Cooperation:
- The cooperation with WMO consist. The World Meteorological Organization is an intergovernmental organization which is the UN system. The primary purposes of W.M.O are to coordinate the activities of its

members in the generation and exchange of information on weather, water and climate according to internationally agreed standard; research at national, international and global levels; and the training of professionals to internationally recognized levels; and to facilitate the development of services that improve the well being and safety of communities, nations and the whole of human kind. D.M.H has received the assistance from WMO the providing the basic equipments and fellowships training cause through the W.M.O programes.

- Mekong River Commission (MRC) is a regional organization consisting Cambodia, Laos, Thailand and Vietnam as members. The mission is it promote, coordinate, manage and develop water and related resources in sustainable way by collaborating with the local and international organization in studying, formulating policy, strategic plan and implementing programmes/project. Some MRC programmes related to D.M.H are: Water Utilization Programme (WUP), basin Development Programme (BDP), environment Programme (EP), Water Resources & Hydrology Programme, Navigation Programme and flood management Programme. D.M.H has received some equipments for data collection and short training.

# List of Stations to be rehabilitated and extended

Phase1

| No | Province | Rehabilitation | | | New construction gauging | | | Remark |
|---|---|---|---|---|---|---|---|---|
| | | Raingauge | Staff gauge | Gauging Station | Raingauge | Staff Gauge | Gauging Station | |
| 1 | Vientiane | 18 | 8 | 7 | 2 | 0 | 1 | |
| 2 | Borikhamxai | 11 | 4 | 5 | 3 | 0 | 1 | |
| 3 | Khammuan | 10 | 3 | 7 | 2 | 3 | 1 | |
| 4 | Savanakhet | 13 | 3 | 9 | 2 | 4 | 4 | |
| 5 | Saravane | 5 | 3 | 4 | 5 | 3 | 2 | |
| 6 | Champachack | 12 | 2 | 3 | 3 | 1 | 1 | |
| 7 | Attapeu | 4 | 2 | 3 | 4 | 5 | 2 | |
| Total | | **73** | **25** | **38** | **21** | **16** | **12** | |

Phase2

| No | Province | Rehabilitation | | New construction gauging | | Remark |
|---|---|---|---|---|---|---|
| | | Main Meteo stations | Secondary St. | Main Meteo stations | Secondary St. | |
| 1 | Luangnamtha | **0** | **1** | **0** | **1** | |
| 2 | Xiengkhuang | **1** | **1** | **0** | **1** | |
| 3 | Oudomxai | 1 | 1 | 0 | 0 | |
| 4 | LuangPrabang | 1 | 1 | 0 | 0 | |
| 5 | Vientiane | 1 | 3 | 0 | 1 | |
| 6 | Borikhamxai | 1 | 1 | 0 | 0 | |
| 7 | Khammuane | 1 | 1 | 0 | 1 | |
| 8 | Savannakhet | 1 | 2 | 0 | 0 | |
| 9 | Sayaboury | 1 | 1 | 0 | 0 | |
| 10 | Saravane | 1 | 2 | 0 | 1 | |
| 11 | Champachack | 1 | 3 | 0 | 0 | |
| 12 | Attapeu | 1 | 0 | 0 | 1 | |
| Total | | **11** | **17** | **0** | **6** | |

# Explanation for the List of Stations to be Rehabilitated and New Constructed

## 1. Meaning of key words .

- Rain Gauge = a post where carrying out only measurement of rainfall by manually reading or by automatic rainfall recorder or logger.
- Staff gauge = a hydrological station where carrying out only measurement of water level
- Gauging Station = a hydrological station where carrying out measurements of water level, water flow ( discharge) , rainfall, sediment and other parameters

- Main Meteorological Stations = Land surface Meteorological Station where weather observations are carrying out hourly and three hourly, then observed data are encoded into meteorological bulletins/messages and are exchanged regionally and internationally hourly and three hourly, conforming to norms and regulations of WMO as well as ICAO.

- Secondary Meteorological Stations = Land surface stations where weather Observations and recordings are carrying out three hourly, then the report of observed/recorded data are made monthly, exchanged nationally as well as regionally and internationally for the purposes of agricultural sectors as well as other infrastructure planning and implementation.

## 2. Detailed of hydro-meteorological observatory network.

### 2.1 Number of existing stations in nationwide:

- Main meteorological stations = 21
- Secondary meteorological stations = 29
- Rain Gauges = 107
- Staff Gauges = 60
- Gauging stations = 67

### 2.2 A five year vision of DMH to rehabilitate existing stations and to construct some new stations.

DMH has proposed, during a period of 5 years, to rehabilitate existing stations and construct new station in the areas of the 7 plains namely: Vientiane, Borikhamxay, Khammouane, Savannakhet, Saravanh, Champasack and Attapeu.

The rehabilitation and expansion of hydro-meteorological stations will also be implemented in other targeted provinces to comply with the government's commitments for the national development strategy.

Proposed schedule of implementation as follow:

### 2.2.1 Current existing stations

| | Rain gauges | Staff gauges | Gauging stations | Main meteo stations | Secondary Meteo stations |
|---|---|---|---|---|---|
| PhongSaly | 3 | | | 1 | 0 |
| LuangNamtha | 3 | | | 1 | 2 |
| Houaphanh | 1 | | | 2 | 0 |
| Xiengkhouang | 7 | | | 1 | 1 |
| Oudomsai | 5 | | | 1 | 1 |
| LuangPrabang | 10 | | | 1 | 1 |
| Saiyaboury | 3 | | | 1 | 4 |
| Bokeo | 0 | | | 1 | 1 |
| Xai Somboune | 1 | | | 0 | 1 |
| Vientiane | 18 | 8 | 7 | 2 | 6 |
| Borikhamxai | 11 | 4 | 5 | 2 | 0 |
| Khammouane | 10 | 3 | 7 | 1 | 2 |
| Savannakhet | 13 | 3 | 9 | 2 | 2 |
| Saravanh | 5 | 3 | 4 | 1 | 3 |
| Champasack | 11 | 2 | 3 | 2 | 4 |
| Sekong | 2 | | | 1 | 1 |
| Attapeu | 4 | 2 | 3 | 1 | 0 |
| Total | 107 | 25 | 38 | 21 | 29 |

### 2.2.2 Rehabilitation schedule

| | Rain gauges | Staff gauges | Gauging stations | Main meteo stations | Secondary Meteo stations | Year of Implementation |
|---|---|---|---|---|---|---|
| LuangNamtha | | | | 0 | 1 | |
| Xiengkhoang | | | | 1 | 1 | |
| Oudomsai | | | | 1 | | Year 5 |
| LuangPrabang | | | | 1 | 1 | |
| Saiyaboury | | | | 1 | 1 | |
| Vientiane | 18 | 8 | 7 | 1 | 3 | Year 1 to |
| Borikhamxai | 11 | 4 | 5 | 1 | 1 | Year 2 |
| Khammouane | 10 | 3 | 7 | 1 | 1 | Year 2 |
| Savannakhet | 13 | 3 | 9 | 1 | 2 | To year 3 |
| Saravanh | 5 | 3 | 4 | 1 | 2 | Year 3 |
| Champasack | 12 | 2 | 3 | 1 | 3 | To year 4 |
| Attapeu | 4 | 2 | 3 | 1 | 0 | |
| Total | 73 | 25 | 38 | 11 | 17 | |

## 2.2.3 New Construction Schedule

| | Rain gauges | Staff gauges | Gauging stations | Main meteo stations | Secondary Meteo stations | Year of Implementation |
|---|---|---|---|---|---|---|
| LuangNamtha | | | | 0 | 1 | |
| Xiengkhoang | | | | 0 | 1 | |
| Oudomsai | | | | 0 | 0 | Year 5 |
| LuangPrabang | | | | 0 | 0 | |
| Saiyaboury | | | | 0 | 0 | |
| Vientiane | 2 | 0 | 1 | 0 | 1 | Year 1 to |
| Borikhamxai | 3 | 0 | 1 | 0 | 0 | Year 2 |
| Khammouane | 2 | 3 | 1 | 0 | 1 | Year 2 |
| Savannakhet | 2 | 4 | 4 | 0 | 0 | To year 3 |
| Saravanh | 5 | 3 | 2 | 0 | 1 | Year 3 |
| Champasack | 3 | 1 | 1 | 0 | 0 | To year 4 |
| Attapeu | 4 | 5 | 2 | 0 | 1 | |
| Total | 21 | 16 | 12 | 0 | 6 | |

**The 15-Stations**

| Province | No. | Station name | River name | Establishment year | Kind of the Station | Others |
|---|---|---|---|---|---|---|
| Vientiane Mun | | B.Hai(Pakngum) | Nam Ngum | 2001 | Slope and rain | |
| Vientiane | | B.Viengthong | Nam Lik | 2000 | Slope gauge | |
| Xaisomboun | | B.Naluang | Nam Ngum | 2000 | Slope and rain | |
| Sayaboury | | Namon | | 2001 | Rain gauge | |
| Xiangkhouang | | B.Phieng Luang | Nam Ngum | 2000 | Slope gauge | |
| | | Namneun | Nam Neun | 2001 | Rain gauge | |
| LouangPhrabang | | B.Hat Pha Oth | Nam Xuang | 2001 | Slope gauge | |
| | | B.Sopchek | Nam Xuang | 2001 | Rain gauge | |
| OudomXai | | Pak Beng | Mekong | 2001 | Slope and rain | |
| LouangNamtha | | Xiengkok | Nam Ma(Mekong) | 2001 | Slope and rain | |
| | | B.Hongluay | Nam Tha | 2001 | Slope and rain | |
| Houaphan | | M.Et | Nam Ma,Nam Et | 2001 | Rain gauge | |
| Borikhamxay | | B.Pakxan | Mekong | 2000 | Slope gauge | |
| | | M.heung | Nam Xan | 2001 | Rain gauge | |
| | | Phonesy | Nam Cading | 2001 | Rain gauge | |
| Khammouan | | Thakhek | Mekong | 2001 | Slope gauge | |
| | | Pakhineboun | Xe Bangfai | 2001 | Rain gauge | |
| Savannakhet | | Tangway | | 2001 | Rain gauge | |
| Xekong | | Chula | Xe Kong | 2001 | Rain gauge | |
| Attapu | | Kengxay | | 2001 | Rain gauge | |
| | | Attapu | Xe Kong | 2001 | Slope gauge | |

Slope gauge: 11 stations
Rain gauge: 15 stations

## 1. 調査団構成

本調査団の構成は下表に示すとおりである。

| | |
|---|---|
| ① 渋澤　孝雄<br>総括<br>国際協力事業団無償資金協力部<br>業務第４課<br>課長代理 | ① Mr.Takao SHIBUSAWA<br>Leader<br>Fourth Project Management Division<br>Grant Aid Management Department,<br>JICA |
| ② 久下　勝也<br>計画管理<br>国際協力事業団無償資金協力部<br>業務第４課 | ② Mr.Katsuya KUGE<br>Project Coordinator<br>Fourth Project Management Division<br>Grant Aid Management Department,<br>JICA |
| ③ 大澤　岩男<br>気象観測・監視網システム計画<br>／航空気象機材計画<br>㈱日本空港コンサルタンツ | ③ Mr.Iwao OSAWA<br>Disastrous Weather Monitoring System Planning<br>／Equipment Planning for Aviation Weather Mnitoring<br>JAPAN AIRPORT CONSULTANTS |

2. 調査日程

| No | day | date | Schedule | | Stay |
|---|---|---|---|---|---|
| | | | Official | Consultant | |
| | | | ①② | ③ | |
| 1 | 3.1 | Sat | | Narita-Bangkok (JL717,10:55-15:50) | ③Bangkok |
| 2 | 3.2 | Sun | | AM:Bangkok-Vientiane (TG690,8:20-9:30)<br>PM:Site Survey | ③Vientiane |
| 3 | 3.3 | Mon | | Courtesy Call on JICA and DMH, Survey | ③Vientiane |
| 4<br>~<br>9 | 3.4<br>~<br>3.9 | Tue<br>~<br>Sun | | Survey | ③Vientiane |
| 10 | 3.10 | Mon | Narita-Bangkok (JL717,10:55-15:50) | Survey | ①②<br>Bangkok<br>③Vientiane |
| 11 | 3.11 | Tue | AM:Bangkok-Vientiane (TG690,8:20-9:30) | Survey | ①②③<br>Vientiane |
| | | | PM:Courtesy Call on Embassy of Japan,JICA<br>Kick off Meeting with DMH | | |
| 12 | 3.12 | Wed | Discussion with DMH and VIA,Site Survey at DMH Head Office and VIA | | ①②③<br>Vientiane |
| 13 | 3.13 | Thu | Discussion with DMH | | ①②③<br>Vientiane |
| 14 | 3.14 | Fri | AM:Discussion with DMH(Signature of the Minutes of Discussion) | | ①②③<br>Vientiane |
| | | | PM:Report to Embassy of Japan,JICA | | |
| 15 | 3.15 | Sat | Vientiane – Bangkok (TG691,10:35-11:40)<br>Bangkok-Narita (JL718,22:35-6:10+1) | Survey | ①② in air<br>③Vientiane |
| 16 | 3.16 | Sun | Narita(-6:10) | Survey | ③Vientiane |
| 17 | 3.17 | Mon | | Survey | ③Vientiane |
| 18 | 3.18 | Tue | | Vientiane-Luangprabang(QV635)<br>Survey | ③<br>Luangprabang |
| 19 | 3.19 | Wed | | Survey<br>Luangprabang-Vientiane(QV104) | ③Vientiane |
| 20 | 3.20 | Thu | | Vientiane-Savannkhet (QV201)<br>Survey | ③<br>Savannakhet |
| | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 21 | 3.21 | Fri | | Savannkhet-Pakse<br>Survey | ③Pakse |
| 22 | 3.22 | Sat | | Survey<br>Pakse-Vientiane(QV55<br>2) | ③Vientiane |
| 23<br>~<br>27 | 3.23<br>~<br>2.27 | Mon<br>~<br>Thu | | Survey | ③Vientiane |
| 28 | 3.28 | Fri | | Report to JICA | ③Vientiane |
| 29 | 3.29 | Sat | | Vientiane – Bangkok<br>(TG691,10:35-11:40)<br>Bangkok-Narita<br>(JL718,22:35-6:10+1) | ③in air |
| 30 | 3.30 | Sun | | Narita(-6:10) | |

## 3. 主要面談者リスト

現地調査期間中の主要面談者は下記の方々である。

（1）ラオス国側

| 氏　　名 | 役　　職 | 所　　属 |
|---|---|---|
| Mr.Thongphou VONGSYPRASOM | Director General | ＭＡＦ |
| Mr.Nitharath SOMSANITH | Director General | DMH |
| Mr.Singthong PATHOUMMADY | Chief of Division | DMH |
| Mr.Sithanh SOUTHICHACK | Director Division | DMH |
| Mrs.Souvanny PHONEVILAY | Deputy Director | DMH |
| Mr.Khanmany KHOUNPHONH | Chief of Division | DMH |
| Mr.Nene PONGKHAMSAO | Deputy Chief | DMH |
| Dr.Bountheuang MOUNLASY | Director General | CPC&DIC |
| Mr.Kaykeo VORARATH | Director General | LAA |

（2）日本側

| 氏　　名 | 所　　属 |
|---|---|
| 川田一等書記官 | 日本国大使館 |
| 西脇所長 | JICA ﾗｵｽ事務所 |
| 池田次長 | JICA ﾗｵｽ事務所 |
| 作道所員 | JICA ﾗｵｽ事務所 |
| 楠瀬専門家 | DMH |
| 畠山専門家 | DCA |

# MINUTES OF DISCUSSIONS
# ON
# THE PREPARATORY STUDY
# ON
# THE PROJECT FOR ESTABLISHMENT OF DISASTROUS WEATHER MONITORING FOR SAFE KEEPING OPERATION IN VIENTIANE
# IN
# LAO PEOPLE'S DEMOCRATIC REPUBLIC

In response to a request for Grant Aid from the Government of Lao People's Democratic Republic, the Government of Japan decided to conduct a Preparatory Study on the Project for Establishment of Disastrous Weather Monitoring for Safe Keeping Operation in Vientiane (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to Lao People's Democratic Republic the Preparatory Study Team (hereinafter referred to as "the Team"), which is headed by Mr. Takao SHIBUSAWA, Deputy Director, Fourth Project Management Division, Grant Aid Management Department, JICA and is scheduled to stay in the country from March 2 to March 29, 2003.

The Team held a series of discussions with the officials concerned of the Government of Lao People's Democratic Republic and conducted a field survey at the study area.

In the course of discussions and field survey, both parties confirmed the main items described on the attached sheet.

Vientiane, March 13, 2003

Takao SHIBUSAWA
Leader
Preparatory Study Team
JICA

Nitharath SOMSANITH
Director General

Department of Meteorology and Hydrology

# ATTACHMENT

1. Objective of the Project

The main objective of the Project is to contribute to the safe operation of the capital city by strengthening the disastrous weather monitoring capabilities and providing more accurate hazardous weather information. The Project also contributes to the safe operation of the civil aviation.

2. Project Site

The site of the Project is located in Department of Meteorology and Hydrology Head Office in Vientiane.

3. Responsible Agency and Implementing Agency

3-1. The Responsible Agency is Department of Meteorology and Hydrology.
3-2. The Implementing Agency is Department of Meteorology and Hydrology.

4. Requested items and its necessity explained by the Government of Lao People's Democratic Republic

The Government of Lao People's Democratic Republic requested items as follows and explained necessity of above mentioned items. Laotian side explained that the establishment of the Meteorological Data Acquisition System was particularly needed urgently because existing system became unavailable due to HIMAWARI with analogue mode was exchanged by MTSAT with digital mode.

- Radar system -
  antenna, radome, other radar equipment, radar imagery display equipment, power supply equipment
- Meteorological Data Acquisition System (through MTSAT of Japan) -
  antenna, data ingestion and display equipment, other necessary equipment
- Data Communication System between DMH Head Office and Vientiane International Airport –
  antenna, data communication equipment, other necessary equipment

5. Japan's Grant Aid System

Laotian side understood the Japan's grant aid scheme explained by the Team, as described in ANNEX-1.

6. Other Relevant Issues

6-1. Both side agreed that the objective of the Study was to identify the necessity, appropriateness and urgency of the Project and the Team would convey the results of the Preparatory Study to the Government of Japan for further consideration.
6-2. Most answers to the Questionnaire were submitted to the Team by Laotian side quickly, as listed in ANNEX-2. Laotian side explained that all necessary documents would be addressed to the Team by 28 March, 2003.

## ANNEX-1 Japan's Grant Aid Scheme

The Grant Aid Scheme provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

### 1. Grant Aid procedures

Japan's Grant Aid Scheme is executed through the following procedures:

| | |
|---|---|
| Application | (Request made by a recipient country) |
| Study | (Basic Design Study conducted by JICA) |
| Appraisal & Approval | (Appraisal by the Government of Japan and Approval by Cabinet) |
| Determination of Implementation | (The Notes exchanged between the Government of Japan and the recipient country) |

Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study), using (a) Japanese consulting firm(s).

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Scheme, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes (E/N) signed by the Government of Japan and the recipient country.

Finally, for the smooth implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

### 2. Basic Design Study

1) Contents of the Study

The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project")

is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

- Confirmation of the background, objectives, and benefits of the requested project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic point of view.
- Confirmation of items agreed upon by both parties concerning the basic concept of the Project.
- Preparation of a Basic Design of the Project
- Estimation of cost of the Project

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid Project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures is necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For smooth implementation of the Study, JICA uses (a) registered consultant firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms. The firm(s) selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference set by JICA.

The consulting firm(s) used for the Study is (are) recommended by JICA to the recipient country to also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency.

## 3. Japan's Grant Aid Scheme

1) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

2) "The period of the Grant Aid" means the one fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedures such as exchanging of the Notes, concluding contracts with (a) consultant firm(s) and (a) contractor(s) and final payment to them must be completed.

However in case of delays in delivery, installation or construction due to unforeseen factors such as natural disaster, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

3) Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However the prime contractors, namely, consulting, contracting and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

4) Necessity of "Verification"

The Government of recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

5) Undertakings required to the Government of the Recipient Country

In the implementation of the Grant Aid project, the recipient country is required to undertake such necessary measures as the following:

① To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction,

② To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,

③ To secure buildings prior to the procurement in case the installation of the

equipment,

④ To ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid.

⑤ To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified contracts.

⑥ To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

6) "Proper Use"

The recipient country is required to operate and maintain the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

7) "Re-export"

The products purchased under the Grant Aid should not be re-exported from the recipient country.

8) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions to the Bank.

## ANNEX-2 RECEIVED DATA LISTS (1/4)

| No | Name of data | Date | Issue | Note |
|---|---|---|---|---|
| DMH-01 | Organization Chart of the Ministry of Agriculture and Forestry | 2003.03.0 6 | DMH | |
| DMH-02 | Organization Chart of DMH | 2003.03.05 | DMH | |
| DMH-03 | Budget for DMH | 2003.03.06 | DMH | |
| DMH-04 | Damage Caused by Flood and Drought in LAO P.D.R | 2003.03.05 | DMH | |
| DMH-05 | The Project for Establishment of Disastrous Weather Monitoring for safe keeping Operation in Vientiane Lao PDR | 2003.03.06 | DMH | 11 pages |
| DMH-06 | JICA Muster plan | 2003.03.06 | DMH | 5 pages |
| DMH-07 | Organizational structure for Disseminating of weather and flood forecasts and warning in Lao PDR | 2003.03.05 | DMH | |
| DMH-08 | TROPICAL CYCLONE'S TRACKS 1996 | 2003.03.06 | DMH | 3 pages |
| DMH-09 | Weather Chart | 2003.03,06 | DMH | 4 pages |
| DMH-10 | Record of weather data | 2003.03.06 | DMH | Main 17station |
| DMH-11 | The severe weather condition occurrence in Lao(year 2002) | 2003.03.06 | DMH | 4 pages |
| DMH-12 | Case study on severe weather condition occurrence at Viengphoukha district (31 July-1 August 2002) | 2003.03.06 | DMH | 9 pages |
| DMH-13 | Situation of Severe Weather at Laksao(Khamkert district)from the 18 September,2002 | 2003.03.06 | DMH | 12pages |
| DMH-14 | VIENTIANE METEOROLOGICAL RADER STATION | 2003.03.06 | DMH | 2pages |
| DMH-15 | List of existing Meteorological Station and Rain gauges in Lao PDR | 2003.03.10 | DMH | 10pages |

## ANNEX-2 RECEIVED DATA LISTS (2/4)

| No | Name of data | Date | Issue | Note |
|---|---|---|---|---|
| DMH-16 | Aerial disasters from 1998 to 2003 | 2003.03.10 | DMH | |
| DMH-17 | Number of airplane can not go to destinations (missed approach) | 2003.03.10 | DMH | |
| DMH-18 | Hydrology Data Communication System (気象水文観測網) | 2003.03.10 | Mr.Kusunose | |
| DMH-19 | Location of Hydrology Station Constructed Under JICA Program | 2003.03.10 | Mr.Kusunose | 6pages |
| DMH-20 | Project No.LW-07 | 2003.03.10 | Mr.Kusunose | 3pages |
| DMH-21 | Master plane study on integrated agricultural development in Lao | 2003.03.10 | Mr.Kusunose | 49pages |

## ANNEX-2 RECEIVED DATA LISTS (3/4)

| No | Name of data | Date | Issue | Note |
|---|---|---|---|---|
| DCA-01 | Number of Passengers (Wattay International Aieport) | 2003.03.07 | Mr.Hatakeyama | |
| DCA-02 | Cargo (Wattay International Aieport) | 2003.03.07 | Mr.Hatakeyama | |
| DCA-03 | Number of Flights (Wattay International Aieport) | 2003.03.07 | Mr.Hatakeyama | |
| DCA-04 | Number of over flying traffic in Vientiane FIR | 2003.03.07 | Mr.Hatakeyama | |
| DCA-05 | Number of Passengers (Wattay International Aieport) Annex2 | 2003.03.07 | Mr.Hatakeyama | |
| DCA-06 | Number of Flights (Wattay International Aieport) Annex2 | 2003.03.07 | Mr.Hatakeyama | |
| DCA-07 | Number of over flying traffic in Vientiane FIR Annex2 | 2003.03.07 | Mr.Hatakeyama | |
| DCA-08 | International Air Route | 2003.03.07 | Mr.Hatakeyama | |
| DCA-09 | Communication Navigation Surveillance Systems | 2003.03.07 | Mr.Hatakeyama | |
| DCA-10 | STATISTIC OF THE YEAR 2002 | 2003.03.07 | Mr.Hatakeyama | 2 pages |
| DCA-11 | Organization Chart of MCTPC and LAA | 2003.03.12 | DCA | 3pages |
| DCA-12 | LAOS METEO/AIRPORT SYSTEM | 2003.03.12 | DCA | |
| DCS-13 | Statistic by type of aircraft 2001 | 2003.03.12 | DCA | 2pages |
| DCA-14 | International Civil Aviation Organization Air Transport Reporting From Airport Traffic 2001 | 2003.03.12 | DCA | 4pages |
| DCA-15 | International Civil Aviation Organization Air Transport Reporting From Airport Traffic 2002 | 2003.03.12 | DCA | 4pages |
| DCA-16 | Balance sheet for FY 1999-2000&2001 | 2003.03.12 | DCA | 2pages |
| DCA-17 | Divert list | 2003.03.12 | DCA | 2pages |

## ANNEX-2 RECEIVED DATA LISTS (4 / 4)

| No | Name of data | Date | Issue | Note |
|---|---|---|---|---|
| DCA-18 | LAA's annual Budget Received FY 2003 | 2003.03.12 | DCA | |
| DCA-19 | LAA's Revenue FY2002 | 2003.03.12 | DCA | 2pages |
| DCA-20 | Additional Budget Approved FY 2002 | 2003.03.12 | DCA | 3pages |