

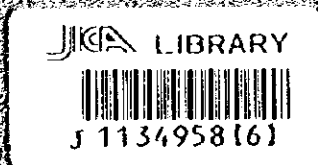
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
CIVIL AVIATION ADMINISTRATION OF VIETNAM

FEASIBILITY STUDY
ON
NEW DEVELOPMENT PLAN
OF
HANOI INTERNATIONAL AIRPORT
IN
THE SOCIALIST REPUBLIC OF VIETNAM

FINAL REPORT

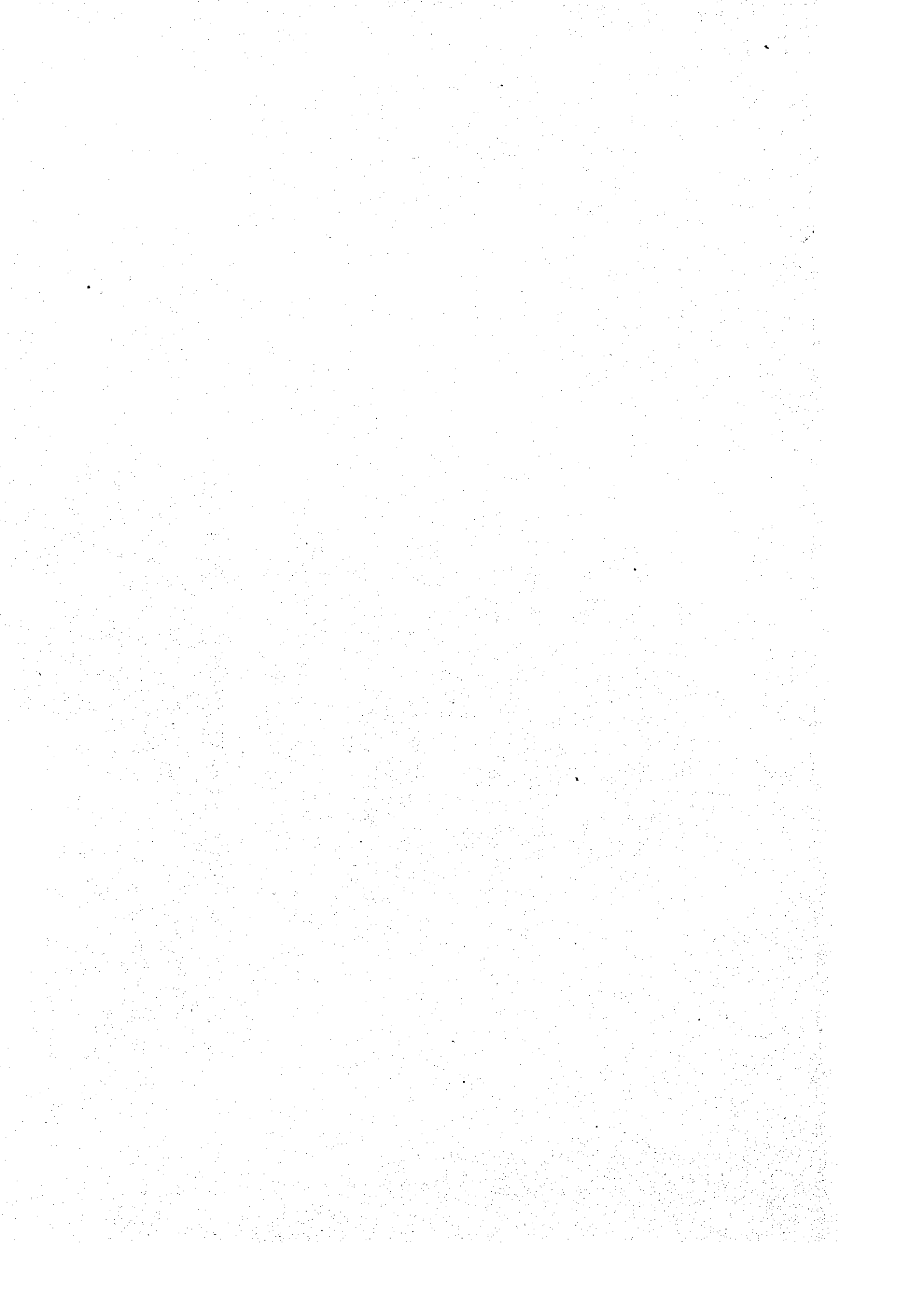
Volume III: APPENDIX

March 1997



PACIFIC CONSULTANTS INTERNATIONAL
TOKYO, JAPAN

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JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)

CIVIL AVIATION ADMINISTRATION OF VIETNAM

**FEASIBILITY STUDY
ON
NEW DEVELOPMENT PLAN
OF
HANOI INTERNATIONAL AIRPORT
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THE SOCIALIST REPUBLIC OF VIET NAM**

FINAL REPORT

Volume III: APPENDIX

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PACIFIC CONSULTANTS INTERNATIONAL

TOKYO, JAPAN



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TERMS OF REFERENCE
FOR
FEASIBILITY STUDY
OF
HANOI INTERNATIONAL AIRPORT DEVELOPMENT PLAN

FHA0399--17

1. INTRODUCTION

The Government of Vietnam intends to enhance the national transportation network in the country, thereby producing more efficient and economic movements of population and cargo, energizing the country's economy and encouraging more dynamic investment from foreign countries. To strengthen the civil aviation sector, two fundamental studies have recently been completed, Civil Aviation Master Plan (CAMP) by UNDP/ICAO in 1992 and National Transportation Sector Review by UNDP in 1992. Both studies have identified the urgent need of the airport development of major three international airports - Noi Bai/Hanoi, Tan Son Nhat/Ho Chi Minh, and Da Nang. The Government of Vietnam, among them, put high emphasis on developing the HANOI International Airport (hereinafter referred to as "the Airport"). The Government of Vietnam plans to develop the Airport to serve as a first class international gateway to Vietnam, and induce more air traffic concentration to the north and also accelerate investment to north Vietnam. The Civil Aviation Administration of Vietnam (CAAV), the executing agency of the airport development and operation, intends to develop the new airport at the southern adjacent area to the existing airport (hereinafter referred to as "the Plan"). The outline of the Plan is summarized in Annex-1.

Government of Vietnam intends to proceed urgently the implementation of the Plan and requests the Government of Japan for technical cooperation and economic assistance for a feasibility study of the Plan. A tentative schedule of project implementation is shown in Annex-2.

2. BACKGROUND

FHA0399--17

The development of civil aviation in Vietnam began in 1975, soon after the unification of the country, with the formation of the General Civil Aviation Administration (GCAA) which came under the control of the Ministry of Defense and embodied the air carrier, airports, air navigation and regulatory components. With regard to equipment, supplies and training etc., GCAA relied almost exclusively on assistance from the USSR and other COMECON States.

ICAO has executed a series of UNDP funded projects from 1978 to 1991 primarily intending to urgently upgrade the airports service level to the international standard particularly regarding the telecommunication systems and radio navigation aids, the electromechanical facilities at airports and the air traffic services. However, these projects have been constrained by a severe shortage of investment funding, insufficient technical assistance and the United States Trade Embargo which was implemented in 1979.

The strain on civil aviation infrastructure became more significant in 1986 when the Government embarked on a continuing program of economic reform which resulted in a rapid increase in the demand for air transportation to and from Vietnam.

In April 1991, GCAA was disbanded and the Civil Aviation Department (CAD) was established within the Ministry of Transport and Communications (MOTC) while Vietnam Airlines (VNA) continues to exist on a state enterprise under the MOTC. In 1992, CAD was reformed to CAAV, under which VNA is managed.

The CAMP to the year 2000 has been prepared under the UNDP/ICAO Project VIB/88/023 through October 1990 to March 1992.

3. NECESSITY OF THE PROJECT

The present facilities of the Noi Bai Airport is not sufficient to handle ever rising traffic demand and still poor in terms of international airport standard. It is forecasted that international passenger in 2010 will be

3,500,000 while the existing terminal facility's capacity is for the maximum of 500,000. The Government of Vietnam has decided to construct a new international airport complex in Hanoi since the existing airport has a limitation for its large expansion.

The site for the proposed international airport will be selected most likely at the southern adjacent area to the existing airport. Reasons to select this site include: easiness of land acquisition, advantages to utilize the existing environment which has supported the various activities of airport sector and passenger, and availability of natural and physical data for studies and designs to facilitate the earliest start of the implementation. From navigational viewpoint, the proposed location will have no critical problem in any conflicts with the existing airport, since the new runway shall be constructed with the separation distance of approximately 1,550 m from the existing runway 11 - 29 and approach control procedure for instrument landing and departure can be newly established, in which aircraft movement of military and international civil aviation shall be completely separated. Until the completion of the proposed new airport, the existing airport, particularly international terminal building, will be improved temporarily using local budget to cope with the future demand. Upon completion of the new international airport, all the international passenger function will be shifted from the existing airport to the new one, but the domestic traffic will continue to use the existing airport.

To realize the proposed Plan, a considerable size of external funding is required to be searched. For this purpose, a comprehensive feasibility study of the Plan should be conducted as soon as possible to justify the viability of the project works for financing.

4. OBJECTIVES

The objectives of the required Feasibility Study of the HANOI International Airport Development Plan (hereinafter referred to as "the Study") are to review the Plan under the current conditions and future aviation requirement and to identify the project works for the development of the Airport through assessment of technical, economic and financial feasibility. The planning target years shall be set at year 2,005 for phase-I development, and after ten years for phase-II development.

Throughout the Study, the Study Team shall provide for sufficient technology transfer to the Government officials and local engineers.

5. SCOPE OF THE STUDY

A team of consultants/experts (the Study Team) shall be organized for carrying out of the required study.

The scope of the Study shall include the following:

- 1) Collection and Analysis of existing data, information, and reports concerned, and site reconnaissance.

In order to sort out backgrounds of the Study, existing data, information, and reports concerned on the Airport shall be collected and analyzed, and site reconnaissance shall be conducted.

- 2) Review of Master Development.

The Study Team shall review and appraise the Plan based on the current conditions to confirm the justification of the development of the southern area of the existing airport and to define the scope of the development project for the target year of 2,005 as a phase-I development.

- 3) Preliminary Design of Phase-I Development Works.

The Study Team shall carry out the preliminary design of the phase-I development component like a new international terminal complex and runway, taxiway, apron and others. While the existing available data shall be utmostly utilized in the design works, minimized additional field survey and investigation shall be conducted if required. The Study Team shall prepare the preliminary construction schedule based on the preliminary design and preliminary cost estimates to be broken down into construction items and by local and foreign currency elements.

- 4) Project Evaluation of the Phase-I Development.

The Study Team shall carry out the project evaluation of the phase-I development features through economic and financial analyses.

5) Preparation of Implementation Program.

To accelerate the implementation, the Study Team shall prepare a draft of Implementation Program (I/P) of the Plan for the Governments use for fund requesting. The I/P will include mainly project works to be financed, project justification, funding plan, organization plan for Implementation and operation.

6) Refinement of Master Plan

The Study Team shall refine the Airport Master Plan for airside facilities and landside facilities in coordination with the land use and airspace use planning and environment impacts. Clarification of the scope of the phase-II development shall also be made.

6. REPORTS

During the Study, the following reports shall be submitted:

- 1) Inception Report: 30 copies (English)
Framework, detailed scope, and schedule of the Study.
- 2) Progress Report: 30 copies (English)
Results of the reviewal and appraisal of the existing master plan and the scope of the phase-I development.
- 3) Interim Report : 30 copies (English)
Results of the feasibility study including preliminary design, cost estimate, and project evaluation of the phase-I development, and Implementation Program thereof.
- 4) Draft Final Report: 30 copies (English)
Result of the Study including the refinement of the Master Plan.

5) Final Report: 50 copies (English)

FHA0399--17

Finalized report based on the comment by the Government of Vietnam.

7. SCHEDULE OF THE STUDY

The Study shall be completed within a period of ten (10) months. The tentative schedule of the Study is as attached herewith as Annex-3.

8. UNDERTAKINGS OF THE GOVERNMENT OF VIETNAM

1) To facilitate the smooth implementation of the Study, the Government of Vietnam shall make necessary arrangements:

a) To secure the safety of the Japanese Study Team.

b) To permit the members of Japanese Study Team to enter, leave and sojourn in Vietnam for the duration of their assignment therein, and exempt them from alien registration requirements and consular fees.

c) To exempt the members of Japanese Study Team from taxes, duties and other charges on equipment, machinery and other materials brought into Vietnam for the implementation of the Services.

d) To exempt the members of Japanese Study Team from income tax and other charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of Japanese Study Team for their services in connection with the implementation of the Services.

e) To provide the necessary facilities to the Japanese Study Team for the remittances as well as utilization of funds introduced into Vietnam from Japan in connection with the implementation of the Services.

- f) To secure permission for entry into private properties and restricted areas in connection with field survey in accordance with the Vietnamese procedures.
 - g) To secure permission for Japanese Study Team to take all data and documents, including the dispositions and other aerial photographs related to the Study out of Vietnam to Japan.
 - h) To provide medical services as needed. Its expenses will be chargeable to the members of the Japanese Study Team.
- 2) The Government of Vietnam shall bear claims, if any arises against the members of the Team resulting from, occurring in the course of, or otherwise connected with discharges of their duties in the implementation of the Study, except when such claim arise from gross negligence or willful misconduct on part of members of the Team.
- 3) To facilitate smooth conduct of the Study. CAAV shall take necessary arrangement for the Team as follows, in cooperation with other relevant organizations:
- a) To secure permission for use of airport facilities for the carrying out of the Study.
 - b) To arrange to hire helicopter and/or aircraft for the Team, at the Teams expenses.
 - c) To secure permission for the use of communication facilities including transceivers.
 - d) To employ laborers and drivers.
- 4) CAAV shall, at its own expenses, provide the Study Team with following, in cooperation with other related organizations:
- a) Available data and information related to the Study.
 - b) Counterpart personnels.

- c) Suitable office space at Noi Bai and Gia Lam for the Study Team while in Vietnam
- d) Credential or identification cards to the members of the Team.

BASIC OUTLINE OF THE PLAN

Basic Concept of the Plan

- 1) Existing airport facilities shall be used for military and domestic aviation purposes.
- 2) International air traffic function shall be newly allocated into the southern area of the existing airport, located in the south of the access road newly completed.
- 3) The new international air traffic function maintains double runways which can be independently operated of the existing north runway 11-29.
- 4) The new airport shall be separately operated from the existing airport conforming to the new approach control procedure for instrument landing and departure.

Phase-I Development Plan (up to the year 2,005)

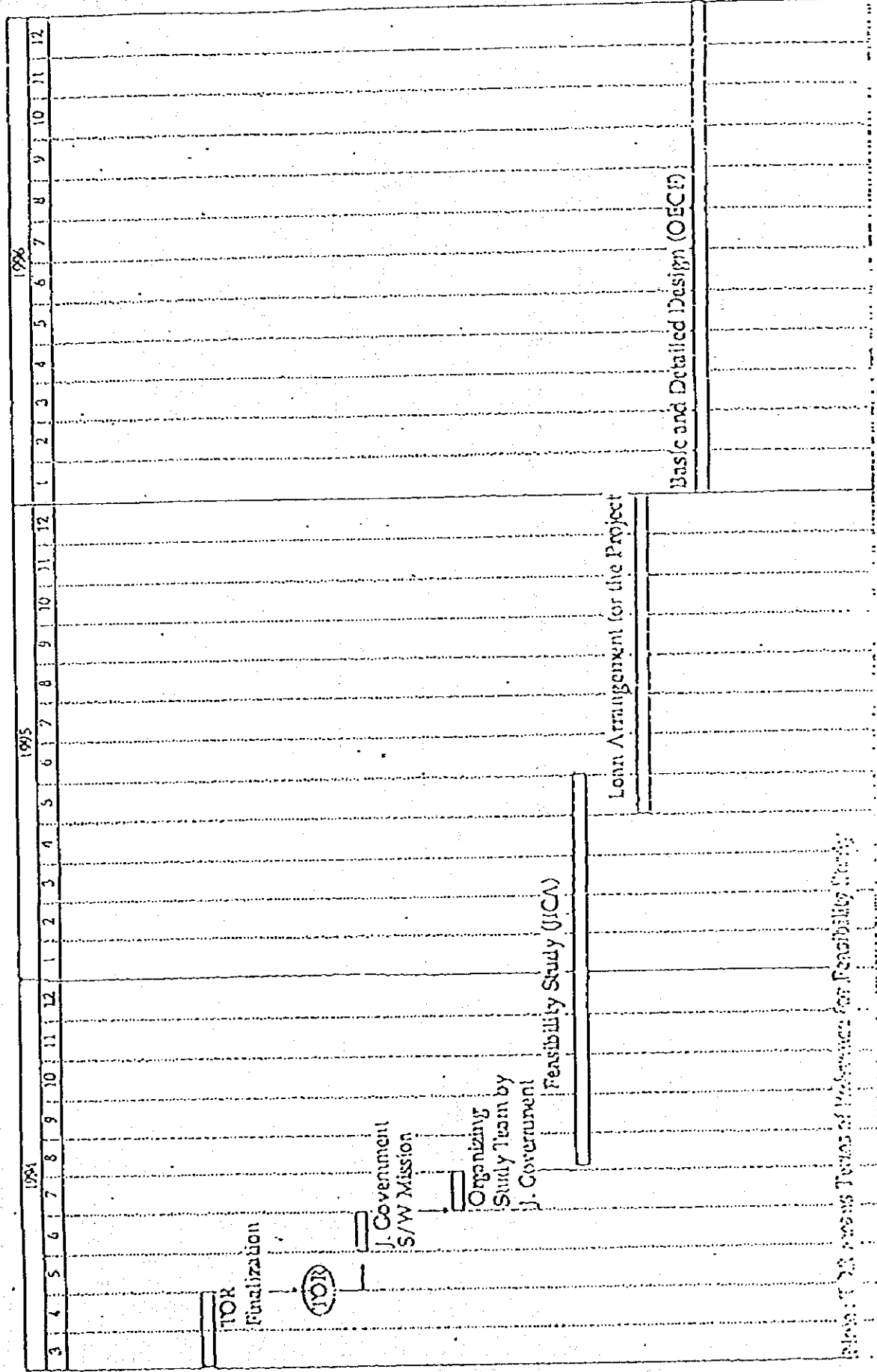
- 1) Construction of new runway 11L-29R, with separation distance approximate 1,550m from the existing runway 11-29, including necessary associated works.
- 2) Construction of parallel taxiway including high speed exit taxiways and stud taxiways associated to the new runway.
- 3) Diversion of existing channel along the access road.
- 4) Construction of a new international terminal complex, including international passenger terminal building module-1 having a capacity of approximately 1,000 peak hour passengers, other associated facilities like catering, new hangar, parking apron and other associated civil works such as landside service road including new flyover, new car-parking, etc.

- 5) Construction of a new air traffic control tower at a new location.
- 6) Installation of a new navigational aids facilities like new ILS/MLS system to be Precision Approach Category II of Runway 11L, SALS for Runway 29R, and new VOR/DME, etc.
- 7) Construction of a new internal roads, perimeter road and perimeter fencing.
- 8) Reinforcement of the utilities like water supply, power supply, telephone system and sewerage system.

Phase-II Development (after ten years from 2,005)

- 1) Construction of a parallel runway beyond the new runway (11L-29R) and additional taxiways.
- 2) Expansion of the international terminal complex, including international passenger terminal building module-2, apron, landside service roads and associated facilities.
- 3) Diversion of National Road Route No.2 and eastern access road.

HANOI INTERNATIONAL AIRPORT DEVELOPMENT PROJECT
 TENTATIVE SCHEDULE OF PROJECT IMPLEMENTATION



Scale of 200 hours Terms of Reference for Feasibility Study

TENTATIVE STUDY SCHEDULE

FHA0399--17

APPENDIX-5

MONTH DESCRIPTION	1	2	3	4	5	6	7	8	9	10
WORK IN VIETNAM	■	■	■	■	■	■	■	■		
WORK IN JAPAN	□									
REPORT PRESENTATION	△ IC/R		△ P/R		△ IT/R			△ DF/R		△ F/R

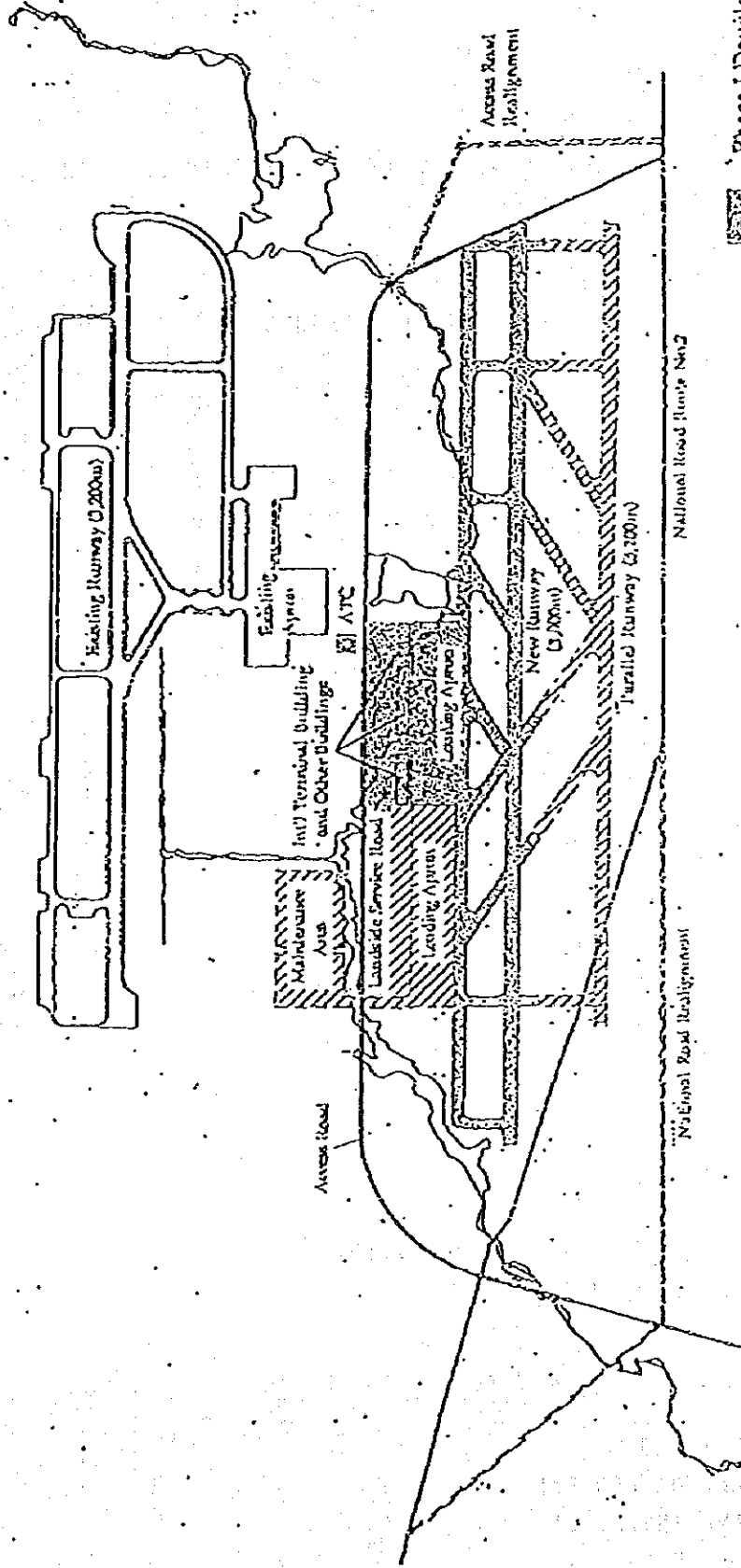
Note: IC/R : Initiation Report

P/R : Progress Report

IT/R : Interim Report

DF/R : Draft Final Report

F/R : Final Report



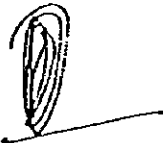
Phase I Development

Phase II Development

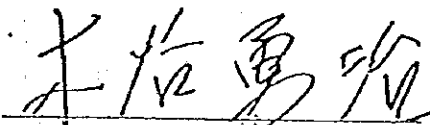
Chart International Airport Development Plan

SCOPE OF WORK
FOR
THE FEASIBILITY STUDY
ON
NEW DEVELOPMENT PLAN OF HANOI INTERNATIONAL AIRPORT
IN
THE SOCIALIST REPUBLIC OF VIET NAM
AGREED UPON BETWEEN
CIVIL AVIATION ADMINISTRATION OF VIETNAM,
MINISTRY OF TRANSPORT
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

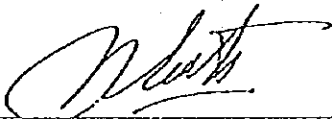
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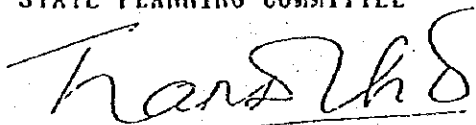
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I. INTRODUCTION

In response to the request of the Government of the Socialist Republic of Viet Nam (hereinafter referred to as "Viet Nam"), the Government of Japan decided to conduct a feasibility study on New Development Plan of Hanoi International Airport (hereinafter referred to as "the Study") in accordance with the relevant laws and regulations in force in Japan.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programmes of the Government of Japan, will undertake the Study in close cooperation with the authorities concerned of Viet Nam, and in principle on the condition that the Study shall be conducted solely for the civil aviation purpose.

The present document sets forth the scope of work with regard to the Study.

II. OBJECTIVE OF THE STUDY

The objective of the Study is to formulate a comprehensive development plan of the international airport for the year 2015 and conduct a feasibility study for the year 2005.

III. SCOPE OF THE STUDY

In order to achieve the objective mentioned above, the Study shall cover the following items:

1. Study on existing conditions:

- (1) Social and economic conditions
- (2) Airport facilities of Hanoi International Airport
- (3) Existing improvement/expansion plan of Hanoi International Airport
- (4) Airspace use, air traffic control system and aircraft operational procedures of Hanoi International Airport
- (5) Air traffic (passenger, cargo and aircraft movement) volume of Viet Nam

(6) Operation and management system of airport and relevant facilities in Hanoi International Airport

(7) Access transport and public utilities to a proposed site

(8) Natural conditions of a proposed site

(9) Environmental conditions of a proposed site

2. Setting a future framework

(1) Socio-economic framework (year 2005 and 2015)

(2) Definition of characteristics and function of new facilities

(3) Air traffic demand forecast (year 2005 and 2015)

3. Formulation and evaluation of new development plan of the airport in the year 2015

(1) Site evaluation

(2) Formulation of alternative plans

(3) Evaluation of alternative plans
(Initial Environmental Evaluation(IEE) is included)

4. Formulation and evaluation of new development plan of the airport in the year 2005

(1) Airspace use, aircraft traffic control system and aircraft operational procedures

(2) Airport facilities and equipment development plan (layout plan is included)

(3) Access transport improvement plan

(4) Preliminary design

(5) Construction and procurement works plan

(6) Management, operation and institutional development plan

- (7) Implementation schedule
- (8) Cost estimation
- (9) Environmental Impact Assessment (EIA)
- (10) Financial analysis and evaluation
- (11) Economic analysis and evaluation
- (12) Comprehensive evaluation and recommendation

IV. STUDY SCHEDULE

The Study Shall be carried out in accordance with the attached tentative work schedule.

V. REPORTS

JICA shall prepare and submit the following reports to the Government of Viet Nam.

1. Inception Report
Thirty(30) copies in English at the commencement of the Study in Viet Nam.
2. Progress Report
Thirty(30) copies in English within four(4) months after the Inception Report.
3. Interim Report
Thirty(30) copies in English within eight(8) months after the commencement of the Study.
4. Draft Final Report
Thirty(30) copies in English within eleven(11) months after the commencement of the Study.
5. Final Report
Fifty(50) copies in English within two(2) months after the receipt of the written comments on the Draft Final Report from the Government of Viet Nam, while these comments are expected to be delivered to JICA within one(1) month after the receipt of the Draft Final Report.

VI. UNDERTAKING OF THE GOVERNMENT OF VIET NAM

1. The Government of Viet Nam shall facilitate the carrying out of the Study in accordance with the prevailing laws and regulations stipulated by the Vietnamese State, as follows:

- (1) to secure the safety of the Japanese study team;
- (2) to permit the members of the Japanese study team to enter, leave and stay in Viet Nam for the duration of their assignment therein, and exempt them from foreign registration requirements and consular fees;
- (3) to exempt the members of the Japanese study team from taxes, duties, fees and other charges on equipment, machinery and other materials brought into Viet Nam for the conduct of the Study;
- (4) to exempt the members of the Japanese study team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Japanese study team for their services in connection with the implementation of the Study;
- (5) to provide necessary facilities to the Japanese study team for remittance as well as utilization of the funds introduced into Viet Nam from Japan in connection with the implementation of the Study.
- (6) to obtain permission for entry into special areas regarded to be necessary by relevant authorities for implementing the Study;
- (7) to obtain permission which is considered and issued by the relevant authorities for the Japanese study team to take all data and documents including maps and photographs necessary for the Study out of Viet Nam to Japan; and
- (8) to provide medical services as needed. Its expenses will be chargeable on the members of the Japanese study team.

2. The Government of Viet Nam shall bear claims, if any arises, against the members of the Japanese study team resulting from, occurring in the course of, or otherwise connected with, the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willfull misconduct on the part of the members of the Japanese study team.

3. Civil Aviation Administration of Vietnam, Ministry of Transport (hereinafter referred to as "CAAV") shall designate a "Team" to act as counterpart to the Japanese study team. The CAAV shall act as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.
4. To facilitate smooth conduct of the Study, CAAV shall take necessary arrangements for the Japanese study team as follows, in cooperation with other relevant organizations:
 - (1) to arrange permission for the use of airport facilities and communication facilities including transceivers;
 - (2) to arrange to hire helicopter and/or aircraft for the Japanese study team;
5. CAAV shall, at its own expense, provide the Japanese study team with the followings, in cooperation with other organizations concerned:
 - (1) available data and information necessary for the Study;
 - (2) counterpart personnel;
 - (3) suitable office space in Noi Bai and Gia Lam;
 - (4) credentials or identification cards.
6. CAAV shall, at its own expense, get all the reports of the Study translated into Vietnamese.

VII. UNDERTAKING OF JICA

For the implementation of the Study, JICA shall take the following measures:

1. to dispatch, at its own expense, the study team to Viet Nam; and
2. to pursue technology transfer to the Viet Nam counterpart personnel in the course of the Study.

VIII. OTHERS

JICA and CAAV shall consult with each other in respect of any matter that may arise from or in connection with the Study.

TENTATIVE STUDY SCHEDULE

2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14

MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14
DESCRIPTION														
STAGE	<p>FORMULATION OF DEVELOPMENT PLAN IN 2015</p> <p>FORMULATION OF DEVELOPMENT PLAN 2005</p>													
WORK IN VIET NAM														
WORK IN JAPAN														
REPORT PRESENTATION	△ IC/R				△ PR/R			△ IT/R			△ DF/R			△ F/R

Note: IC/R : Inception Report DF/R : Draft Final Report
 PR/R : Progress Report F/R : Final Report
 IT/R : Interim Report

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MINUTES OF MEETING
ON THE SCOPE OF WORK FOR THE FEASIBILITY STUDY
ON NEW DEVELOPMENT PLAN OF HANOI INTERNATIONAL AIRPORT
BETWEEN
CIVIL AVIATION ADMINISTRATION OF VIETNAM(CAAV),
MINISTRY OF TRANSPORT(MOT)
AND
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)

The Delegation of Civil Aviation Administration of Vietnam(CAAV), headed by Dr.DINH XUAN HUONG-Director, Planning & Investment Dep., of CAAV, MOT and the Delegation of JICA headed by Mr.YUJI KITANI-Director, Construction Div., Aerodrome Dep., Civil Aviation Bureau, Ministry of Transport of Japan met in Hanoi from 31th October to 8th November 1994 to discuss matters regarding "The Feasibility Study on New Development Plan of Hanoi International Airport"(hereinafter referred to as "The Study").

The discussions were held in frank and friendly atmosphere. The List of the two Delegations is attached herewith in Annex 1.

Through these discussions, both delegations have agreed as follows:

1. Two Delegations agreed on the contents of the Scope of Work for the Study(Annex 2).
2. The CAAV Delegation stated that the CAAV Counterpart Team shall consists of experts from relevant organizations and shall be formed before the start of the Study.
3. Both Delegations agreed that the Japanese Study Team shall stand the cost for use of airport facilities specified in the Chapter VI. 4. (1) of the Scope of Work.
4. Both Delegations agreed that data and information which is not available by CAAV in spite of negotiation with relevant organizations shall be borne by the Japanese Study Team.
5. Both Delegations agreed that the English reports specified in the Chapter V. of the Scope of Work is only official authorized version.
6. Both Delegations agreed that the Japanese Study Team shall at its expense have opportunity to hold the presentation meeting for each report to the relevant authorities of Viet Nam.
7. The JICA Delegation requested to the CAAV Delegation that the Steering Committee, which consists of State Planning Committee(SPC), MOT, Ministry of Technology, Science and Environment, Ministry of Finance, Hanoi People's Committee and other organizations concerned, shall be established. The CAAV Delegation confirmed the necessity of the Steering Committee and agreed to file this matter to the Vietnamese Government for its decision.

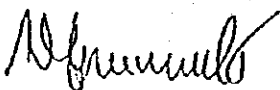
8. Both Delegations recognized that the environmental consideration is a important matter and concluded that the following items are especially necessary to study as the result of the Screening and Scoping of environmental matters.

- (1) Relocation of residents
- (2) Lost of farm land
- (3) Change of water system (river and pond)
- (4) Aircraft noise pollution

9. Both Delegations agreed that both sides shall finalize the Study through coordination with idea of the Project Appraisal Committee of Vietnamese Government in order to combine the project cycle of the implementation between Viet Nam and Japan.

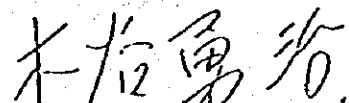
This Minutes of Meeting is made in Hanoi on 8/11/1994 in duplicate in English language.

FOR CAAV DELEGATION



DR. DINH XUAN HUONG
LEADER,
CAAV DELEGATION

FOR JICA DELEGATION



MR. YUJI KITANI
LEADER,
PREPARATORY STUDY TEAM,

LIST OF DELEGATIONS

1. VIETNAMESE DELEGATION:

Mr. DINH XUAN HUONG Director, Planning and Investment Dep., CAAV

Mr. QUACH VAN THU Expert, Transport & Telecom. Dep., State Planning Committee

Ms. NGUYEN THANH HANG Expert, Planning & Investment Dep., MOT

Mr. DINH VIET THANG Expert, Planning & Investment Dept., CAAV

Mr. NGUYEN NHU THANG Official, Administration & International Affairs Dep., CAAV

2. JAPANESE DELEGATION:

Mr. YUJI KITANI Leader Director, Construction Div.,
Aerodrome Dep., Civil Aviation Bureau,
Ministry of Transport

Mr. KATSUHIKO TAKAHASHI Cooperation Assistant Director, Development
Policy Cooperation Div.,
Economic Cooperation Bureau,
Ministry of Foreign Affairs

Mr. KOJI KITAMURA Airport Planning Director, Tokyo International Airport
Development Office, Aerodrome Dep.,
Tokyo Regional Civil Aviation Bureau,
Ministry of Transport

Mr. SUMITOMO IJICHI Safety Facilities Special Assistant to the Director,
Radio Engineering Div., Air Traffic
Service Dep., Civil Aviation Bureau,
Ministry of Transport

Mr. TORU AOYAMA Environmental NOMURA Research Institute
Condition

Mr. WASAKAZU TAKAHASHI

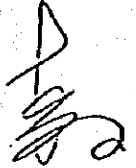

Natural
Condition

OYO Corporation

Mr. HIROSHI TSUJINO

Study Planning

First Development Study Div.,
Social Development Study Dep.,
Japan International Cooperation
Agency



FOR
THE FEASIBILITY STUDY
ON
NEW DEVELOPMENT PLAN OF HANOI INTERNATIONAL AIRPORT
IN
THE SOCIALIST REPUBLIC OF VIET NAM
AGREED UPON BETWEEN
CIVIL AVIATION ADMINISTRATION OF VIETNAM,
MINISTRY OF TRANSPORT

AND

JAPAN INTERNATIONAL COOPERATION AGENCY

NOV. 8TH, 1994

MR. DAO MANH NHUONG
DEPUTY DIRECTOR GENERAL,
CIVIL AVIATION ADMINISTRATION
OF VIETNAM,
MINISTRY OF TRANSPORT

MR. YUJI KITANI
LEADER,
PREPARATORY STUDY TEAM,
JAPAN INTERNATIONAL
COOPERATION AGENCY

MR. NGUYEN NGOC NHAT
DIRECTOR GENERAL,
DEP. OF TRANSPORT AND COMMUNICATION,
STATE PLANNING COMMITTEE

MR. TRAN DOAN THO
DEPUTY DIRECTOR GENERAL,
PLANNING AND INVESTMENT DEP.,
MINISTRY OF TRANSPORT

I. INTRODUCTION

In response to the request of the Government of the Socialist Republic of Viet Nam (hereinafter referred to as "Viet Nam"), the Government of Japan decided to conduct a feasibility study on New Development Plan of Hanoi International Airport (hereinafter referred to as "the Study") in accordance with the relevant laws and regulations in force in Japan.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programmes of the Government of Japan, will undertake the Study in close cooperation with the authorities concerned of Viet Nam, and in principle on the condition that the Study shall be conducted solely for the civil aviation purpose.

The present document sets forth the scope of work with regard to the Study.

II. OBJECTIVE OF THE STUDY

The objective of the Study is to formulate a comprehensive development plan of the international airport for the year 2015 and conduct a feasibility study for the year 2005.

III. SCOPE OF THE STUDY

In order to achieve the objective mentioned above, the Study shall cover the following items:

1. Study on existing conditions:

- (1) Social and economic conditions
- (2) Airport facilities of Hanoi International Airport
- (3) Existing improvement/expansion plan of Hanoi International Airport
- (4) Airspace use, air traffic control system and aircraft operational procedures of Hanoi International Airport
- (5) Air traffic (passenger, cargo and aircraft movement) volume of Viet Nam

(6) Operation and management system of airport and relevant facilities in Hanoi International Airport

(7) Access transport and public utilities to a proposed site

(8) Natural conditions of a proposed site

(9) Environmental conditions of a proposed site

2. Setting a future framework

(1) Socio-economic framework (year 2005 and 2015)

(2) Definition of characteristics and function of new facilities

(3) Air traffic demand forecast (year 2005 and 2015)

3. Formulation and evaluation of new development plan of the airport in the year 2015

(1) Site evaluation

(2) Formulation of alternative plans

(3) Evaluation of alternative plans
(Initial Environmental Evaluation(IEE) is included)

4. Formulation and evaluation of new development plan of the airport in the year 2005

(1) Airspace use, aircraft traffic control system and aircraft operational procedures

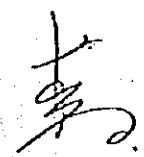

(2) Airport facilities and equipment development plan (layout plan is included)

(3) Access transport improvement plan

(4) Preliminary design

(5) Construction and procurement works plan

(6) Management, operation and institutional development plan



- (7) Implementation schedule
- (8) Cost estimation
- (9) Environmental Impact Assessment (EIA)
- (10) Financial analysis and evaluation
- (11) Economic analysis and evaluation
- (12) Comprehensive evaluation and recommendation

IV. STUDY SCHEDULE

The Study Shall be carried out in accordance with the attached tentative work schedule.

V. REPORTS

JICA shall prepare and submit the following reports to the Government of Viet Nam.

1. Inception Report
Thirty(30) copies in English at the commencement of the Study in Viet Nam.
2. Progress Report
Thirty(30) copies in English within four(4) months after the Inception Report.
3. Interim Report
Thirty(30) copies in English within eight(8) months after the commencement of the Study.
4. Draft Final Report
Thirty(30) copies in English within eleven(11) months after the commencement of the Study.
5. Final Report
Fifty(50) copies in English within two(2) months after the receipt of the written comments on the Draft Final Report from the Government of Viet Nam, while these comments are expected to be delivered to JICA within one(1) month after the receipt of the Draft Final Report.

VI. UNDERTAKING OF THE GOVERNMENT OF VIET NAM

1. The Government of Viet Nam shall facilitate the carrying out of the Study in accordance with the prevailing laws and regulations stipulated by the Vietnamese State, as follows:

- (1) to secure the safety of the Japanese study team;
- (2) to permit the members of the Japanese study team to enter, leave and stay in Viet Nam for the duration of their assignment therein, and exempt them from foreign registration requirements and consular fees;
- (3) to exempt the members of the Japanese study team from taxes, duties, fees and other charges on equipment, machinery and other materials brought into Viet Nam for the conduct of the Study;
- (4) to exempt the members of the Japanese study team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Japanese study team for their services in connection with the implementation of the Study;
- (5) to provide necessary facilities to the Japanese study team for remittance as well as utilization of the funds introduced into Viet Nam from Japan in connection with the implementation of the Study.
- (6) to obtain permission for entry into special areas regarded to be necessary by relevant authorities for implementing the Study;
- (7) to obtain permission which is considered and issued by the relevant authorities for the Japanese study team to take all data and documents including maps and photographs necessary for the Study out of Viet Nam to Japan; and
- (8) to provide medical services as needed. Its expenses will be chargeable on the members of the Japanese study team.

2. The Government of Viet Nam shall bear claims, if any arises, against the members of the Japanese study team resulting from, occurring in the course of, or otherwise connected with, the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the members of the Japanese study team.

3. Civil Aviation Administration of Vietnam, Ministry of Transport (hereinafter referred to as "CAAV") shall designate a "Team" to act as counterpart to the Japanese study team. The CAAV shall act as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.

4. To facilitate smooth conduct of the Study, CAAV shall take necessary arrangements for the Japanese study team as follows, in cooperation with other relevant organizations:

(1) to arrange permission for the use of airport facilities and communication facilities including transceivers;

(2) to arrange to hire helicopter and/or aircraft for the Japanese study team;

5. CAAV shall, at its own expense, provide the Japanese study team with the followings, in cooperation with other organizations concerned:

(1) available data and information necessary for the Study;

(2) counterpart personnel;

(3) suitable office space in Noi Bai and Gia Lam;

(4) credentials or identification cards.

6. CAAV shall, at its own expense, get all the reports of the Study translated into Vietnamese.

VII. UNDERTAKING OF JICA

For the implementation of the Study, JICA shall take the following measures:

1. to dispatch, at its own expense, the study team to Viet Nam; and

2. to pursue technology transfer to the Viet Nam counterpart personnel in the course of the Study.

VIII. OTHERS

JICA and CAAV shall consult with each other in respect of any matter that may arise from or in connection with the Study.

Minutes of Meeting
on the
Inception Report
of
Feasibility Study on New Development Plan
of
Hanoi International Airport
in
Vietnam

A team organized by Japan International Cooperation Agency (hereinafter referred to as JICA) arrived in Hanoi on March 20, 1995 for the Feasibility Study on New Development Plan of Hanoi International Airport (hereinafter referred to as the Study). The JICA Team consisted of the Study Team headed by Mr. Hideki Murata, two members of the JICA advisory committee and a JICA coordinator.

The JICA Team submitted thirty (30) copies of the Inception Report to the Civil Aviation Administration of Vietnam (hereinafter referred to as CAAV) on March 21, 1995.

A meeting was held on March 24, 1995 between the JICA Team and the Vietnamese side for presentation and discussions of the Inception Report. The Vietnamese side consisted of the members of Counterpart Team headed by Mr. Nguyen Xuan Hien, Director General of Northern Airports Region - Director of Noi Bai International Airport, CAAV. The meeting was chaired by Mr. Nguyen Xuan Hien. A list of attendees is attached as Appendix-A.

After the presentation and discussion, the Vietnamese side on behalf of the Government of the Socialist Republic of Vietnam (hereinafter referred to as the GOV) accepted the Inception Report, and promised full cooperation for the Study. Some additional comments noted by both sides are as follows:

- 1) The Vietnamese side shall be responsible for coordination with the organizations concerned with the Study, such as State Planning Committee and Steering Committee. Official comments and/or approval (including these minutes) by the Vietnamese side shall be deemed as the comments and/or approval by the GOV, unless otherwise

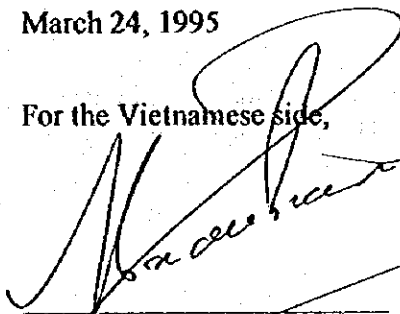
specifically noted. The Vietnamese side shall inform the Study Team of the establishment of the Steering Committee as soon as it is approved by the GOV.

- 2) The Vietnamese side requested a JICA funded training program in Japan for a few of their professional staff. The Study Team promised to convey their request to JICA.

On behalf of the GOV, the Vietnamese side expressed its sincere appreciation for the Japanese assistance to the Study.

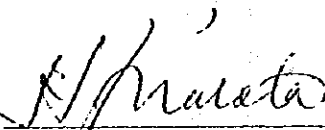
March 24, 1995

For the Vietnamese side,



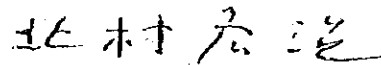
Nguyen Xuan Hien
Team Leader of the Vietnamese Counterpart,
Director General of Northern
Airports Region - Director of
Noi Bai International Airport,
Civil Aviation Administration of Vietnam

For the Japanese side,



Hideki Murata
Team Leader,
The JICA Study Team

Witnessed by



Koji Kitamura
Member of the JICA Advisory
Committee

LIST OF ATTENDEES

1. VIETNAMESE SIDE

- | | |
|-------------------------|--|
| 1. Mr. Nguyen Xuan Hien | Team Leader of the Vietnamese Counterpart, |
| 2. Dr. Hoang Minh Chinh | Member of the Counterpart Team |
| 3. Mr. Tran Son | Member of the Counterpart Team |
| 4. Mr. Phan Van Hung | Member of the Counterpart Team |
| 5. Mr. Dang Hong Cuong | Member of the Counterpart Team |
| 6. Mr. Bui Quang Dao | Member of the Counterpart Team |
| 7. Mr. Ngo The Diep | Member of the Counterpart Team |
| 8. Mr. Tran Manh Kien | Member of the Counterpart Team |

2. JAPANESE SIDE

2.1 JICA Advisory Committee

- | | |
|---------------------------|---------------------------------------|
| 1. Mr. Koji Kitamura | Member of the JICA Advisory Committee |
| 2. Mr. Kihachiro Shibadai | Member of the JICA Advisory Committee |

2.2 JICA Coordinator

- | | |
|-------------------|-----------------|
| 1. Mr. Takao Toda | Project Officer |
|-------------------|-----------------|

2.3 JICA Study Team

- | | |
|---------------------------|---|
| 1. Mr. Hideki Murata | Team Leader of the JICA Study Team |
| 2. Mr. Toru Shimada | Deputy Team Leader of the JICA Study Team |
| 3. Dr. Katsuhide Nagayama | Member of the JICA Study Team |
| 4. Mr. Peter E. Davies | Member of the JICA Study Team |
| 5. Mr. Hiroshi Ijima | Member of the JICA Study Team |
| 6. Mr. Takao Yamaguchi | Member of the JICA Study Team |

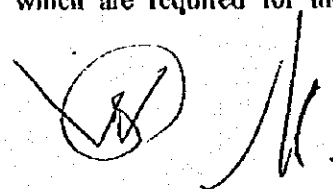
Minutes of Meeting
on
Progress Report
of
Feasibility Study
on
New Development Plan of Hanoi International Airport

As a preliminary result of the First Field Survey in Vietnam, the JICA Study Team submitted ten (10) and twenty (20) copies of the Progress Report on 12 and 13 May, 1995 respectively, and these were received by the Counterpart Team.

A meeting was held on 16 and 17 May, 1995 between the JICA Study Team and the Counterpart Team to present and discuss the Progress Report. A list of participants is attached as Appendix-A.

After the presentation and discussion, the Counterpart Team on behalf of the Government of the Socialist Republic of Viet Nam accepted, in principle, the Progress Report. The following additional comments were noted by both sides:

- 1) The Government of Vietnam intends to proceed with the project to construct a new terminal on the North side which will provide a passenger throughput capacity of up to 5 million passengers per year. This will accommodate forecast demands to approximately the year 2005. This would conflict with the South side development supported by the Government of Japan. The Japanese side promised to convey the information to the Japanese authorities concerned and inquire them on the possibility of their assistance for the North side development.
- 2) The Vietnamese side shall provide the Japanese side with the information regarding the feasibility study on the North side airport development currently conducted by the Civil Aviation Consultant and Survey Company of Vietnam since it will require close coordination.
- 3) The Vietnamese side stated that the land acquisition of the southern area is not impossible if the Government of Vietnam provide sufficient budget for compensation. But compensation negotiation could take more than a year.
- 4) The Japanese side requested the Vietnamese side to provide, as soon as possible, the statistical data on the air passengers, cargo, aircraft movements, etc., which are required for the

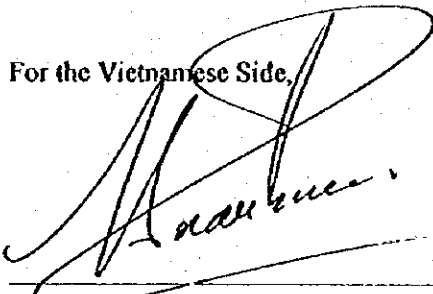


execution of the Study. The Vietnamese side promised to provide these data by 20 May, 1995.

- 5) The Japanese side requested the Vietnamese side to provide information and data on the finances of the NAR, and the Vietnamese side promised to do so by 20 May, 1995.
- 6) In order to minimise any adverse effects (confusions, hostile reaction, etc.) of the interview survey of households, which will be carried out by a Vietnamese company, the Japanese side requested the Vietnamese side to facilitate the interview survey in close coordination with organizations concerned.

17 May, 1995

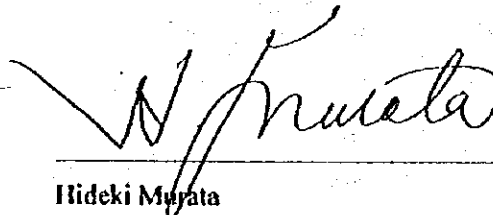
For the Vietnamese Side,



Nguyen Xuan Hien

Leader of the CAAV Counterpart Team,
Director General of Northern Airports Region -
Director of Noi Bai International Airport,
Civil Aviation Administration of Vietnam

For the Japanese side,



Hideki Murata

Team Leader,
The JICA Study Team

LIST OF PARTICIPANTS

1. Vietnamese Side

- | | | |
|----|----------------------|-------------------------------------|
| 1. | Mr. Nguyen Xuan Hien | Leader of the CAAV Counterpart Team |
| 2. | Dr. Hoang Minh Chinh | Member of the Counterpart Team |
| 3. | Mr. Tran Son | Member of the Counterpart Team |
| 4. | Mr. Phan Van Hung | Member of the Counterpart Team |
| 5. | Mr. Dang Hong Cuong | Member of the Counterpart Team |
| 6. | Mr. Bui Quang Dao | Member of the Counterpart Team |
| 7. | Mr. Ngo The Diep | Member of the Counterpart Team |
| 8. | Mr. Tran Manh Kien | Member of the Counterpart Team |

2. Japanese Side

2.1 JICA Study Team

- | | | |
|-----|---------------------|---|
| 1. | Mr. Hideki MURATA | Team Leader of the JICA Study Team |
| 2. | Mr. Tori SHIMADA | Deputy Team Leader of the JICA Study Team |
| 3. | Mr. Hayato NAGASAWA | Member of the JICA Study Team |
| 4. | Mr. Hajime HONJO | Member of the JICA Study Team |
| 5. | Mr. Tadamitsu ITHO | Member of the JICA Study Team |
| 6. | Mr. Peter E. DAVIES | Member of the JICA Study Team |
| 7. | Mr. Shohei NAGATAKE | Member of the JICA Study Team |
| 8. | Mr. Hiroyuki UEDA | Member of the JICA Study Team |
| 9. | Mr. Osamu ISODA | Member of the JICA Study Team |
| 10. | Mr. Teruo TAHARA | Member of the JICA Study Team |
| 11. | Ms. Eiko MORI | Coordinator |

**Minutes of Meeting
on
Interim Report
of
Feasibility Study
on
New Development Plan of Hanoi International Airport**

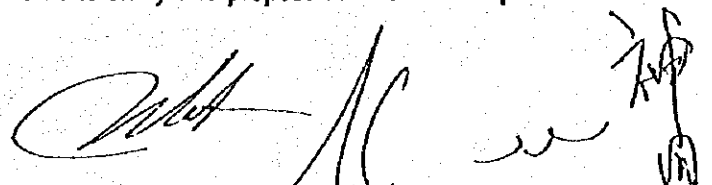
As an interim result of the Study, the JICA Study Team submitted thirty (30) copies of the Interim Report on October 3rd, 1995, and these were received by the Counterpart Team, on behalf of the CAAV and the Government of the Socialist Republic of Viet Nam.

The JICA Study Team made presentation of the Interim Report to the Counterpart Team on October 5th, 1995. In addition to the Interim Report, the Study Team submitted additional airport layout plan named "Alternative-A" with a 1,525m separation distance between the two parallel runways. Alternative-A aimed to minimize land acquisition and the number of households to be relocated by relocating the existing access road toward north at western half of the airport. However, it has less future expandability in the long term than Alternative-2(a).

The subsequent meeting was held on October 6th, 1995 between the JICA Study Team and the Counterpart Team to discuss the contents of the Interim Report. A list of participants for the both meetings is shown in Appendix-A.

After the presentation and discussions, the Counterpart Team accepted in principle the Interim Report. The major items to be noted here are as follows:

- 1) The Vietnamese side selected Alternative-2(a) for the feasibility study in the next stage of the Study to be pursued.
- 2) In the Scope of Work originally agreed between the JICA and the CAAV, MOT and SPC on November 4th, 1994, the target year of the project was the year 2005 for which a feasibility study should be conducted. Because the currently planned T1 project is estimated to accommodate the traffic demand up to the year 2005, both sides agreed to propose to the SPC and JICA the change of the target year from the year 2005 to the year 2010 as proposed in the Interim Report.
- 3) The Vietnamese side requested the Japanese side to study and propose the installation plan of

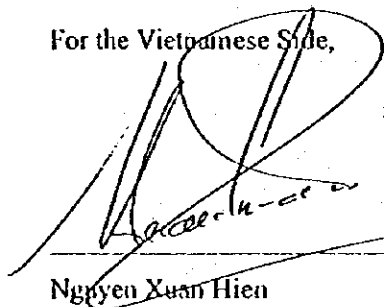


air navigation systems as a single total system for Noi Bai International Airport such as weather radar, ILS, VOR/DME and approach radar which will be installed by the CAAV in near future. The Japanese side promised to convey the request to the Japanese authorities concerned.

- 4) The Counterpart Team is responsible for obtaining an approval of the above items 1) and 2) from the organisations concerned for the Study such as the SPC. The Counterpart Team agreed to inform the JICA Vietnam Office of the approval by the Government of Vietnam as soon as possible.

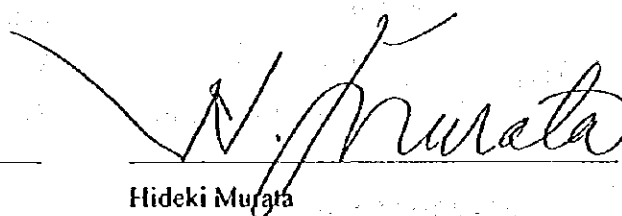
October 7th, 1995

For the Vietnamese Side,



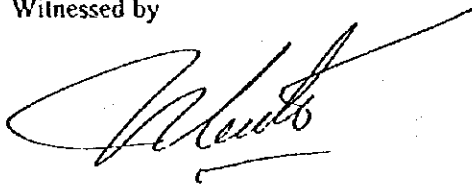
Nguyen Xuan Hien
Leader of the CAAV Counterpart Team,
Director General of Northern Airports Region -
Director of Noi Bai International Airport,
Civil Aviation Administration of Vietnam

For the Japanese side,



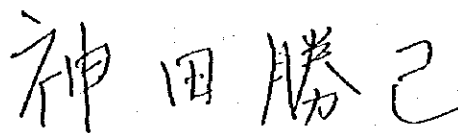
Hideki Murata
Team Leader of the JICA Study Team

Witnessed by



Nguyen Ngoc Nhat
Director General of Infrastructure Department
State Planning Committee

Witnessed by



Katsumi Kanda
Chairman of the JICA Advisory Committee

LIST OF PARTICIPANTS

1. VIETNAMESE SIDE

October 5th, 1995

- | | | |
|----|----------------------|--|
| 1. | Mr. Nguyen Xuan Hien | Leader of the CAAV Counterpart Team |
| 2. | Mr. Nguyen Si Hung | Deputy Director General, NAR, CAAV |
| 3. | Mr. Phan Van Hung | Member of the Counterpart Team |
| 4. | Mr. Tran Manh Kien | Member of the Counterpart Team |
| 5. | Ms. Phan Thi Tuyet | Expert of Foreign Affairs Dept., NAR, CAAV |
| 6. | Ms. Tran Thi Thuy | Expert of Foreign Affairs Dept., NAR, CAAV |

October 6th, 1995

- | | | |
|----|------------------------|--|
| 1. | Mr. Nguyen Xuan Hien | Leader of the CAAV Counterpart Team |
| 2. | Mr. Phan Van Hung | Member of the Counterpart Team |
| 3. | Mr. Tran Manh Kien | Member of the Counterpart Team |
| 4. | Mr. Nguyen Cong Nguyen | Expert of Foreign Affairs Dept., NAR, CAAV |

2. JAPANESE SIDE

Both October 5th and 6th, 1995

2.1 JICA Advisory Committee

- | | | |
|----|---------------------|---|
| 1. | Mr. Katsumi Kanda | Chairman of the JICA Advisory Committee |
| 2. | Mr. Nobumasa Funaki | Member of the JICA Advisory Committee |

2.2 JICA Coordinator

- | | | |
|----|---------------------|---------------------|
| 1. | Ms. Mari Ito | JICA Headquarters |
| 2. | Mr. Hiroshi Tsujino | JICA Vietnam Office |

2.3 JICA Study Team

- | | | |
|----|-------------------|---|
| 1. | Mr. Hideki Murata | Team Leader of the JICA Study Team |
| 2. | Mr. Toru Shimada | Deputy Team Leader of the JICA Study Team |
| 3. | Mr. Hiroyuki Ueda | Member of the JICA Study Team |
| 4. | Mr. Osamu Isoda | Member of the JICA Study Team |
| 5. | Ms. Eiko Mori | Coordinator |

Minutes of Meeting
on
the Draft Final Report
of
the Feasibility Study
on
New Development Plan of Hanoi International Airport

A team organized by Japan International Cooperation Agency (hereinafter referred to as the JICA) arrived in Hanoi on October 17, 1996 for the Feasibility Study on New Development Plan of Hanoi International Airport (hereinafter referred to as the Study). The JICA mission consisted of the Study Team, three members of the Advisory Committee, and a Coordinator.

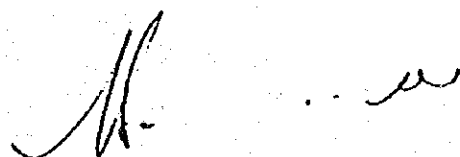
The JICA mission submitted thirty (30) copies of the Draft Final Report to the Civil Aviation Administration of Vietnam (hereinafter referred to as the CAAV) on October 18, 1996.

The JICA mission held three meetings with the Vietnamese Counterpart Team on October 21, 22 and 26, 1996 for the presentation and discussion of the Draft Final Report. A list of participants is shown in Appendix-A. A seminar was organized jointly by JICA and CAAV and held on October 25, 1996.

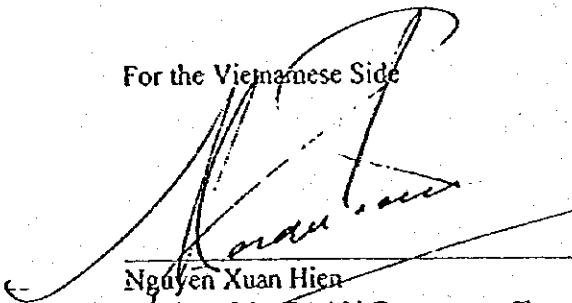
After the presentation and discussions, CAAV, in principle, agreed to the main contents of the Draft Final Report. The major items to be noted here are as follows:

- 1) The planning and preliminary design of the Medium Term Development and its feasibility study are based on the previous discussions and agreements between the Vietnamese and Japanese sides.
- 2) The CAAV will consolidate the Vietnamese Government's comments on the Draft Final Report and deliver them to the JICA Vietnam Office by November 18, 1996.
- 3) The Japanese side proposed that the Final Report would be made public. The Vietnamese side promised to reply whether it could be made public to the JICA Vietnam Office by November 18, 1996.

Signed on 28th of October 1996 in Noi Bai, Hanoi.

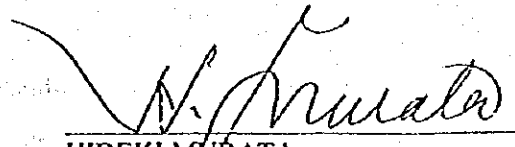


For the Vietnamese Side



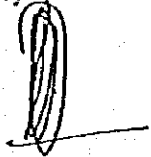
Nguyen Xuan Hien
Leader of the CAAV Counterpart Team,
Director General of Northern Airport Region
Director of Noi Bai International Airport
Civil Aviation Administration of Vietnam

For the Japanese Side



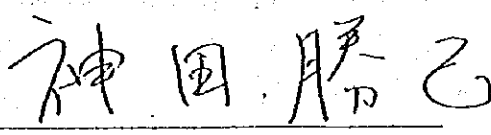
HIDEKI MURATA
Team Leader of the JICA Study Team

Witnessed by



PHÓ CỤC TRƯỞNG
ĐÀO MẠNH NHƯNG

Witnessed by



Katsumi Kanda
Chairman of the JICA Advisory Committee

Appendix-A

LIST OF PARTICIPANTS

1. Morning, October 21, 1996

(1) Vietnamese Side

1. Nguyen Xuan Hien Director General of NAR,
Leader of the CAAV Counterpart Team
2. Phan Van Hung Administration Dept., CAAV
3. Nguyen Ba Thanh Chief of Planning Dept., NAR
4. Nguyen Van Di Chief of Construction Dept., NAR
5. Pham Thanh Nha Deputy Chief of Construction Dept., NAR
6. Tran Han Lan Construction Dept., NAR
7. Nguyen Thu Giang Construction Dept., NAR
8. Nguyen Xuan Nhu Construction Dept., NAR
9. Ngo Gia Hong Giang Construction Dept., NAR
10. Dao Nguyen Tham Construction Dept., NAR
11. Vu Viet Tuyet Construction Dept., NAR
12. Nguyen Tri Duc Construction Dept., NAR
13. Bui Nhu Dien Manager of North PMU Project, NAR
14. Pham Dinh Tang Deputy Manager of North PMU Project, NAR
15. Nguyen Chuong Duc Deputy Chief of Technical Dept., NAR
16. Tran Manh Kien Chief of Foreign Affairs Dept., NAR
17. Pham Thi Tuyet Foreign Affairs Dept., NAR
18. Tran Thi Thuy Foreign Affairs Dept., NAR
19. Nguyen Cong Nguyen Foreign Affairs Dept., NAR
20. Tran Thi Khuong Foreign Affairs Dept., NAR
21. Pham Camh Chief of Planning Dept. of Construction Project

(2) Japanese Side

1. Hideki Murata Team Leader of the JICA Study Team
2. Toru Shimada Deputy Team Leader of the JICA Study Team
3. Hajime Honjo Member of the JICA Study Team
4. Peter E. Davies Member of the JICA Study Team
5. Hiroyuki Ueda Member of the JICA Study Team
6. Eiko Mori Coordinator of the JICA Study Team

2. Afternoon, October 21, 1996

(1) Vietnamese Side

1. Nguyen Van Di Chief of Construction Dept., NAR
2. Nguyen Chi Duc Construction Dept., NAR
3. Duong Hoan Giang Construction Dept., NAR
4. Nguyen Huy Duong Secretary of Director General, NAR
5. Nguyen Van Hong Chief of Financial Dept., NAR
6. Do Duc Tuan Financial Dept., NAR
7. Vu Xuan Phin Planning Dept., NAR

- | | | |
|-----|--------------------|-------------------------------------|
| 8. | Tran Manh Kien | Chief of Foreign Affairs Dept., NAR |
| 9. | Pham Thi Tuyet | Foreign Affairs Dept., NAR |
| 10. | Nguyen Cong Nguyen | Foreign Affairs Dept., NAR |
| 11. | Tran Thi Khuong | Foreign Affairs Dept., NAR |

(2) Japanese Side

- | | | |
|----|-----------------|---|
| 1. | Hideki Murata | Team Leader of the JICA Study Team |
| 2. | Toru Shimada | Deputy Team Leader of the JICA Study Team |
| 3. | Hajime Honjo | Member of the JICA Study Team |
| 4. | Peter E. Davies | Member of the JICA Study Team |
| 5. | Hiroyuki Ueda | Member of the JICA Study Team |
| 6. | Eiko Mori | Coordinator of the JICA Study Team |

3. **October 22, 1996**

(1) Vietnamese Side

- | | | |
|-----|--------------------|-------------------------------------|
| 1. | Nguyen Van Di | Chief of Construction Dept., NAR |
| 2. | Nguyen Tuan Dung | Construction Dept., NAR |
| 3. | Nguyen Xuan Nhu | Construction Dept., NAR |
| 4. | Nguyen Thu Giang | Construction Dept., NAR |
| 5. | Dao Nguyen Tham | Construction Dept., NAR |
| 6. | Tran Han Lan | Construction Dept., NAR |
| 7. | Bui Nhu Dien | Manager of North PMU Project, NAR |
| 8. | Tran Manh Kien | Chief of Foreign Affairs Dept., NAR |
| 9. | Nguyen Cong Nguyen | Foreign Affairs Dept., NAR |
| 10. | Tran Thi Thuy | Foreign Affairs Dept., NAR |
| 11. | Pham Thi Tuyet | Foreign Affairs Dept., NAR |
| 12. | Tran Thi Khuong | Foreign Affairs Dept., NAR |

(2) Japanese Side

- | | | |
|----|-----------------|---|
| 1. | Hideki Murata | Team Leader of the JICA Study Team |
| 2. | Toru Shimada | Deputy Team Leader of the JICA Study Team |
| 3. | Hajime Honjo | Member of the JICA Study Team |
| 4. | Peter E. Davies | Member of the JICA Study Team |
| 5. | Hiroyuki Ueda | Member of the JICA Study Team |
| 6. | Eiko Mori | Coordinator of the JICA Study Team |

4. **October 26, 1996**

(1) Vietnamese Side

- | | | |
|----|------------------|---|
| 1. | Nguyen Xuan Hien | Director General of NAR,
Leader of the CAAV Counterpart Team |
| 2. | Tran Manh Kien | Chief of Foreign Affairs Dept., NAR |

(2) Japanese Side

- | | |
|---------------------|---|
| 1. Katsumi Kanda | Chairman of the JICA Advisory Committee |
| 2. Nobumasa Funaki | Member of the JICA Advisory Committee |
| 3. Atsushi Iwasaki | Member of the JICA Advisory Committee |
| 4. Masaei Matsunaga | JICA Coordinator |
| 5. Hideki Murata | Team Leader of the JICA Study Team |
| 6. Toru Shimada | Deputy Team Leader of the JICA Study Team |
| 7. Hajime Honjo | Member of the JICA Study Team |
| 8. Peter E. Davies | Member of the JICA Study Team |
| 9. Hiroyuki Ueda | Member of the JICA Study Team |
| 10. Eiko Mori | Coordinator of the JICA Study Team |

SS 482 #5/7

(Translation by JICA Vietnam)

**CIVIL AVIATION
ADMINISTRATION OF VN**

The Socialist Republic of Vietnam
Independence-Freedom-Happiness

No: 314/CAAV

Hanoi, February 20, 1997

Re: P/S on the New Development

Plan of Noi Bai International Airport (Southern area)

TO: PRIME MINISTER

After studying the P/S on the New Development Plan of Noi Bai International Airport (Southern area) made out by JICA and CAAV's counterpart group, CAAV has the following opinion:

A. General Comment

1. Strength

This project is comparatively feasible with detailed and clear arguments. Most of its contents are acceptable and in accordance with the Master Plan on Noi Bai International Airport (NBIA) approved by the Government.

2. Weakness

This project requires large area of land and a large-scaled resettlement but the estimated compensation cost is low (a separate project for resettlement is needed). The connecting road and railway systems as well as the clearance should be studied or added.

B. Some issues should be considered

1. The role and function of Southern area:

According to JICA, the new development area in the South will be used only for international flights, the Northern one only for domestic flights. In the Master Plan on NBIA approved by the Prime Minister, both Northern and Southern areas will be developed to serve international and domestic flights under the common control of the whole Aviation Administration. CAAV keeps this opinion on the role of the 2 areas. The concrete demarcation will depend on the international and domestic passenger flows in the future.

2. The role of the terminal T1

According to the F/S, the terminal T1 will be changed to the domestic passenger terminal. At present, the terminal T1 is being built by international airport standards and will be equipped with many modern facilities. Using T1 as proposed by JICA is not economical and it is a waste of T1 as well as accompanied constructions.

3. The distance between 2 CHCs

JICA requests to widen the distance between 2CHCs from 1750m as in the Master Plan approved by the Government to 1850 m. The main reason of the widening is to provide one more parking line in front of the Southern airport. This causes the land compensation of 40 ha in addition. CAAV suggests that the project of widening plane parking to the Western and South- Western direction may be feasible in future, therefore it is not necessary to widen this distance, the distance of 1750m should be kept.

4. Priority Development Alternative

It is reasonable to choose the development plan 2a as JICA suggestion. The planning of 2 taxiways or only 1 taxiway which connects the Northern and Southern areas and are located in the East provide the flexible development of the airport to the West without any hindrance, more over the intersection between the taxiway and North Thang long- Noi Bai highway can be avoided. This is a most economical project ensuring the proper connection between the two flight areas, because this taxiway plays a reservation function only, if it is used the usage frequency will be very low.

5. Air traffic forecast

In comparison with other air traffic forecast, JICA's one is higher but there is not much difference, JICA forecast comparatively coincides with ADP project for T1, especially the forecast in which domestic passengers account for 60-65 % of all passengers is logical, while the Vietnamese income increase rate and comparison with regional airports in the same development period are taken into consideration.

6. High traffic point in front of Southern International Airport

According to T1 project, the plan for the entry way and car parking in front of Southern international airport as in JICA's suggestion is not feasible and it should be changed in accordance with the current constructions as well as constructions in future such as construction of over-bridges, the entry way to car parking.

7. Compensation capital

The estimated compensation capital in F/S is too low, it should be added.

8. Feasibility

SS 482 # 7/7

Investing in the airport development on large scale has rather low capital return rate so the project is considered feasible only by using ODA funds or soft loan.

9. Project's Confidentiality

Without having the permission of the Vietnamese government nobody has the right to publish or supply documents, information on the mass media or appropriate them for his private purpose. Violator will be treated in compliance with the Vietnamese law.

CAAV kindly requests the Prime Minister to consider and give instruction.

CIVIL AVIATION ADMINISTRATION OF VIETNAM

Director

(Signed and Sealed)

NGUYEN HONG NHI

TO:

- Prime Minister
- MPI
- Noi Bai International Airport
- Planning and Investment Department
- Filing

**FEASIBILITY STUDY
ON
NEW DEVELOPMENT OF HANOI INTERNATIONAL AIRPORT**

TECHNICAL SPECIFICATIONS FOR TOPOGRAPHIC SURVEY WORK

This Technical Specifications shall apply to the topographic survey work as a part of the Feasibility Study on New Development Plan of Hanoi International Airport in the Socialist Republic of Vietnam.

1. WORK PLAN

The Contractor shall consult with the Engineer with regard to the detailed survey plan prior to the commencement of the Work.

2. Scope of Works

The Work shall be executed in accordance with the terms, conditions and requirements of the Technical Specifications hereunder, and under the supervision of the Engineer. The work shall cover the topographic mapping work of the newly proposed Hanoi International Airport area of 20 km² at a scale of 1:5,000.

The Work involves the following items :

- (1) Preparation of aerial photo
- (2) Photo control point survey
- (3) Leveling
- (4) Aerial triangulation
- (5) Plotting and editing including field completion
- (6) Drawing
- (7) Longitudinal profiling and cross sectioning

3. WORK PERIOD

The Work shall be completed within two (2) months after commencement of Work.

4. PREPARATION OF AERIAL PHOTOS

Aerial photo reproductive such as diapositives, contact prints, two (2) times enlarged prints and others necessary for the Work shall be prepared. The source material shall be the film negative taken in 1992 at a scale of 1:8,000, which Vietnam Scientific Production of Geodesy Cartography owns.

5. PHOTO CONTROL POINT SURVEY

Ground control survey shall be executed to newly establish 6 photo control points for the area of 20 km² to be mapped. The survey shall be carried out by satellite geodesy, applying Global Positioning System (GPS).

The newly established photo control points shall be coordinated to the Vietnamese Geodetic Network of the area. Measurement shall be made to obtain relative value (coordinate difference) between two points. Consequently, measurement shall start from and close to the same reference point.

Measurement shall be planned so that the signals from more than four (4) satellites shall be received simultaneously. To receive signals from the satellite, the following care shall be taken of.

- (1) Antenna shall be set at a place higher than surrounding obstacles such as trees, buildings and so on. Head clearance of more than 80 degrees care shall be secured.
- (2) Observation shall be made simultaneously at three points.
- (3) Satellites only with an elevation angle of more than 15 degrees shall be observed.
- (4) Observation hours in static mode shall be more than 1.5 hours.
- (5) Computation of the base line vector between observed points shall be executed from the observed data.
- (6) Computation of coordinates of the observed points in reference to the given point shall be executed. Checking shall be made by computing coordinate closures using simultaneously observed points. A computer attached to the GPS instrument shall be used for computation.
- (7) All the newly established photo control points shall be pricked on two (2) times enlarged aerial photos. If direct pricking at a proposed photo control point is found not appropriate due to its circumstances, eccentric pricking with its eccentricity measurement shall be allowed.

Expected accuracy shall be ± 5 PPM in trigonometric closure for both horizontal and vertical.

6. Leveling (Minor Order Leveling)

Vertical control points necessary for the execution of aerial triangulation and preparing the 1:5,000 scale topographic maps shall be increased by minor order leveling of 50 km. The height of newly established photo control points shall be measured. Existing bench marks shall be used for the origin of leveling and the datum of elevation.

- (1) The lines of sight shall not exceed 70m and length back and fore sights shall be equalized at each instrument set-up in order to avoid the residual instrument collimation error.
- (2) The observer shall avoid reading the bottom 20 cm and top 20 cm of staves.
- (3) Approximately at an approximately 300 m interval, spot elevation by leveling shall be pricked in the field on two (2) times enlarged aerial photographs. Pricked points shall be selected at such suitable positions for the undulation of the ground.
- (4) Temporary bench marks shall be painted at an approximately 5 km interval on the leveling route.
- (5) Equipment to be used shall be Sokkisha B2 Auto-Level or equivalent. Accuracy shall be $\pm 5 \text{ cm } \sqrt{S}$ for difference of the double running or closure of loop, where S is the length in kilometer of a single run of the leveling route.

7. AERIAL TRIANGULATION

The Contractor shall carry out aerial triangulation to cover the area of 20 km² for which the 1:5,000 scale topographic map is prepared.

- (1) Measurement of coordinates;

Measurement coordinates of control points, tie points and fiducial marks shall be carried out twice by a Stereo-comparator.

- (2) Program to be used;

PAT-M program shall be used for analytical adjustment of aerial triangulation.

- (3) Accuracy required;

The residuals of control points and discrepancies of pass points and tie points between adjacent models after adjustment shall be less than 0.08% of the flight altitude of aerial photo taking for both planimetry and height.

8. PLOTTING AND EDITING

Existing aerial photos at a scale of 1:8,000 taken in 1992 shall be used to produce the 1:5,000 scale plotting manuscripts. A precision plotting instrument of second order or equivalent shall be used.

On the basis of the plotting manuscripts, editing work shall be carried out and the pencil manuscripts necessary for succeeding procedures shall be prepared.

- (1) Area to be covered : 20 km²
- (2) Contour interval : 1 m intermediate contour line, and 0.5 m half interval contour line
- (3) Projection system : U.T.M
- (4) After absolute orientation of the photographs, discrepancies between the plotted points and their model points shall not be more than 0.4 mm on the map.
- (5) Spot height by a plotting instrument shall be shown on the map at an approximately 5 cm interval on the 1:5,000 scale plotting manuscript.
- (6) All of pricked points done by leveling, used for aerial triangulation and appeared in the mapping area shall be shown on the 1:5,000 scale plotting manuscript.
- (7) Heavy polyester base material which is stable and subject to little expansion or shrinkage shall be used.
- (8) Field completion work shall be carried out on the newly constructed access roads and airport facility building which are not shown on the aerial photos taken in 1992 in order to finalize the pencil manuscripts. A total station surveying method and/or equivalent shall be employed. The field completion work shall also be carried out on uncertain parts difficult to interpret on the aerial photographs, items arisen during plotting and editing works, such items to be represented on the map as other roads, railways, other buildings, rivers, vegetation covers, specified area, topography, geographical and administrative names, and administrative boundaries.
- (9) The Engineer shall give the instruction to the Contractor with regard to neat lines, letters, sheet numbers, marginal information and other details before commencement of plotting and editing works.

9. DRAWING

The drawing work shall be executed by tracing method with a drawing pen and black ink based on the final 1:5,000 scale manuscripts.

- (1) Area to be covered : 20 km²

- (2) Sheet material shall be #300 polyester base, and the size of the sheet shall be approved by the Engineer.
- (3) Annotation, symbol system and marginal information shall be approved by the Engineer.
- (4) One (1) duplicate set of the 1:5,000 topographic map shall be prepared. A large contact printer and stable polyester base shall be used. Three (3) sets of blue copies shall be prepared.

10. LONGITUDINAL PROFILING AND CROSS SECTIONING

The Longitudinal profile and cross sectioning shall be carried out for the river in the proposed airport area. The exact location shall be instructed by the Engineer in the field. This surveying work includes the following.

- (1) Longitudinal profiling : 4,000 m
- (2) Cross sectioning : 40 sections (50 m/section)

10.1 Setting of Cross Section Peg

The pegs shall be set up on the right or left bank of the river at an interval of 100 m by closed loop of traversing and leveling starting from the reliable control of the area.

10.2 Cross section Survey

Cross section survey shall be carried out at the cross section peg locations by direct leveling for riparian area and by a sounding rod for water depth.

Measurement shall be made at;

- a) Slope changing points along a cross section line
- b) River bed
- c) Water level of the river

10.3 Drawing of Cross Sections

Drawing shall be made at a horizontal scale of 1:200 and vertical 1:20. #300 polyester base or #300 polyester millimeter base shall be used for the preparation of drawing chart.

10.4 Drawing of Longitudinal Profile

Based on newly observed cross section results, longitudinal profile drawing shall be prepared at a horizontal scale of 1:200 and vertical 1:20. #300 polyester base or #300 polyester millimeter base shall be used.

11. REPORT

A technical report shall be prepared with regard to field and indoor activities including all the observation results and diagrams.

12. WORK RESULTS

Followings are the work results to be delivered to the Engineer.

- | | |
|---|----------------|
| (1) Ground Control Survey | |
| - Observation data and calculation note (including photo control points marked on two (2) times enlarged aerial photos with description sheets) | one (1) set |
| - Index map | one (1) set |
| (2) Leveling | |
| - Field note and computation note (including spot elevations by leveling marked on two (2) times enlarged aerial photos) | one (1) set |
| - Index map | one (1) set |
| (3) Aerial Triangulation | |
| - Observation and computation output | one (1) set |
| - Original index map | One (1) set |
| - Copy of index map | three (3) sets |
| (4) Plotting and Editing | |
| - Final manuscripts | one (1) set |
| - Field completion data and others | one (1) set |
| (5) Drawing | |
| - Original topographic map | one (1) set |
| - Duplicated of topographic map | one (1) set |
| - Blue copy of topographic map | three (3) sets |
| (6) Longitudinal profiling and cross sectioning | one (1) set |
| (7) Technical Report | three (3) sets |

Some of above listed results may be contained in the Final Report

FEASIBILITY STUDY
ON
NEW DEVELOPMENT OF HANOI INTERNATIONAL AIRPORT

SPECIFICATIONS FOR SOIL INVESTIGATION

1. General

The soil investigations shall include Mechanical boring with SPT, In-situ tests and Laboratory tests.

A complete report shall include soil classifications and engineering comments on them, geological profiles and recommendations of a competent geologist with respect to this investigation operation. The scope of the work shall cover the following items:

Mechanical boring

- (1) Mechanical boring
- (2) Standard penetration test (SPT) with the disturbed samplings (ASTM D-1586)
- (3) Undisturbed core sampling using a thin-wall tube sampler from the bore hole (ASTM D-1587)

In-situ test

- (4) Detection of unexploded bombs conducted by magnetic detection method
- (5) Test pit excavation
- (6) Undisturbed block sampling from the test pit
- (7) Disturbed soil sampling from the test pit
- (8) Plate bearing test in the test pit (ASTM D-1196)
- (9) Field CBR test in the test pit (ASTM D-4429)

Laboratory test

- (10) Triaxial Compression test (ASTM D-2850, UU condition)
- (11) Consolidation test (ASTM D-2435)
- (12) Compaction test (ASTM D-698)
- (13) CBR test (ASTM D-1883)
- (14) Physical property test
- (15) Preparation of report

1.1 Locations and Quantities

Locations and number of mechanical boring required for this work are shown in the Fig-1. Direction of mechanical boring shall be vertical.

The quantities of the work quoted in the Contract shall be deemed as essential and sufficient in implementing the detailed design of pavement and building foundation. Additional quantities, however, might be required depending on the new findings in soil investigation and where considered necessary in the opinion of the CONSULTANT and/or the CONTRACTOR.

1.2 Mobilization and Demobilization

Mobilization shall consist of delivery to the site of all equipment, materials and supplies to be furnished by the CONTRACTOR, the complete assemblies in satisfactory working conditions of all such equipment on the job site and satisfactory storage at the site of all materials and supplies. Demobilization shall consist of removal from the site of all equipment and excess materials and supplies after completion of the work as directed by the CONSULTANT.

1.3 Equipment

All equipment which the CONTRACTOR proposes to use in the work shall be in complete operating condition and capable of satisfactory performance of all the work specified herein as directed by the CONSULTANT. The CONTRACTOR shall submit to the CONSULTANT a list of the equipment which he proposes to use in the work and he shall provide a unit or some units of machinery necessary to complete the work within the specified Contract period.

2. Work Period

All works shall be completed within 40 calendar days from the date of signing of Contract as shown in Fig. 2.