

NO 4

**BASIC DESIGN STUDY REPORT
ON
THE PROJECT
OF
THE ASEAN POULTRY DISEASE RESEARCH AND TRAINING CENTRE
IN
MALAYSIA**

APRIL 1986

JAPAN INTERNATIONAL COOPERATION AGENCY

GRF

86-46

JICA LIBRARY



1031368[2]

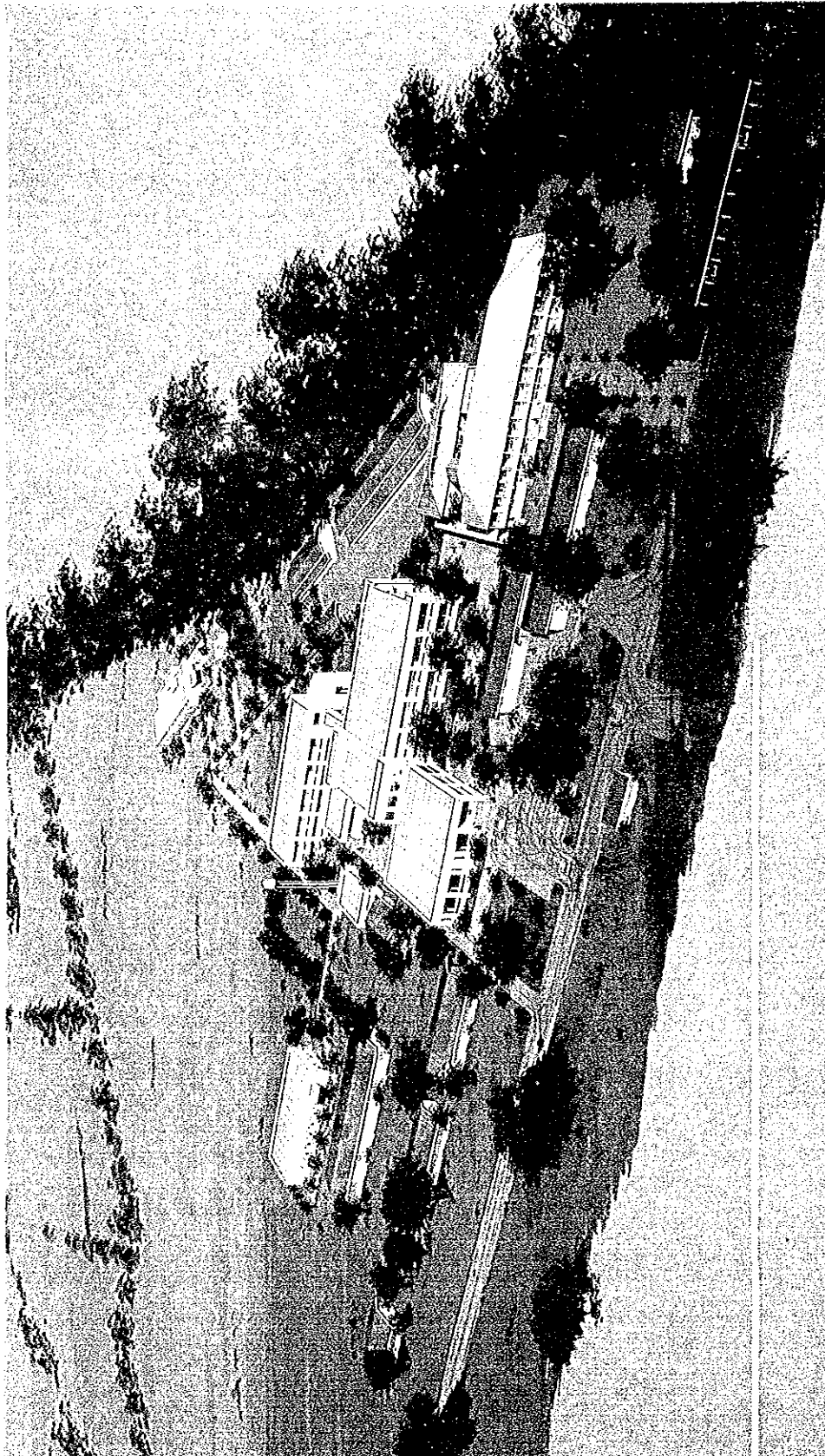
**BASIC DESIGN STUDY REPORT
ON
THE PROJECT
OF
THE ASEAN POULTRY DISEASE RESEARCH AND TRAINING CENTRE
IN
MALAYSIA**

APRIL 1986

JAPAN INTERNATIONAL COOPERATION AGENCY

国際協力事業団

受入 月日	86. 8. 20	113
登録 No.	15196	87.9
		GRF



PERSPECTIVE DRAWING

PREFACE

In response to the request of the Government of Malaysia, the Government of Japan has decided to conduct a basic design study on the Project of the ASEAN Poultry Disease Research and Training Centre and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to Malaysia a study team headed by Dr. Takayasu TAKIZAWA, Director, First Research Division, National Institute of Animal Health, Ministry of Agriculture, Forestry and Fisheries from 28th November to 19th December, 1985.

The team had discussions on the Project with the officials concerned of the Government of Malaysia and conducted a field survey in Ipoh area. After the team returned to Japan, further studies were made, a draft report was prepared and, for the explanation and discussion of it, a mission headed by Dr. Hitoshi KAWAMURA, Chief, Second Virology Laboratory, Second Research Division, National Institute of Animal Health, Ministry of Agriculture, Forestry and Fisheries was sent to Malaysia from 27th March to 4th April, 1986. As a result, the present report has been prepared.

I hope that this report will serve for the development of the project and contribute to the promotion of friendly relations among Japan, Malaysia and other ASEAN countries.

I wish to express my deep appreciation to the officials concerned of the Government of Malaysia for their close cooperation extended to the team.

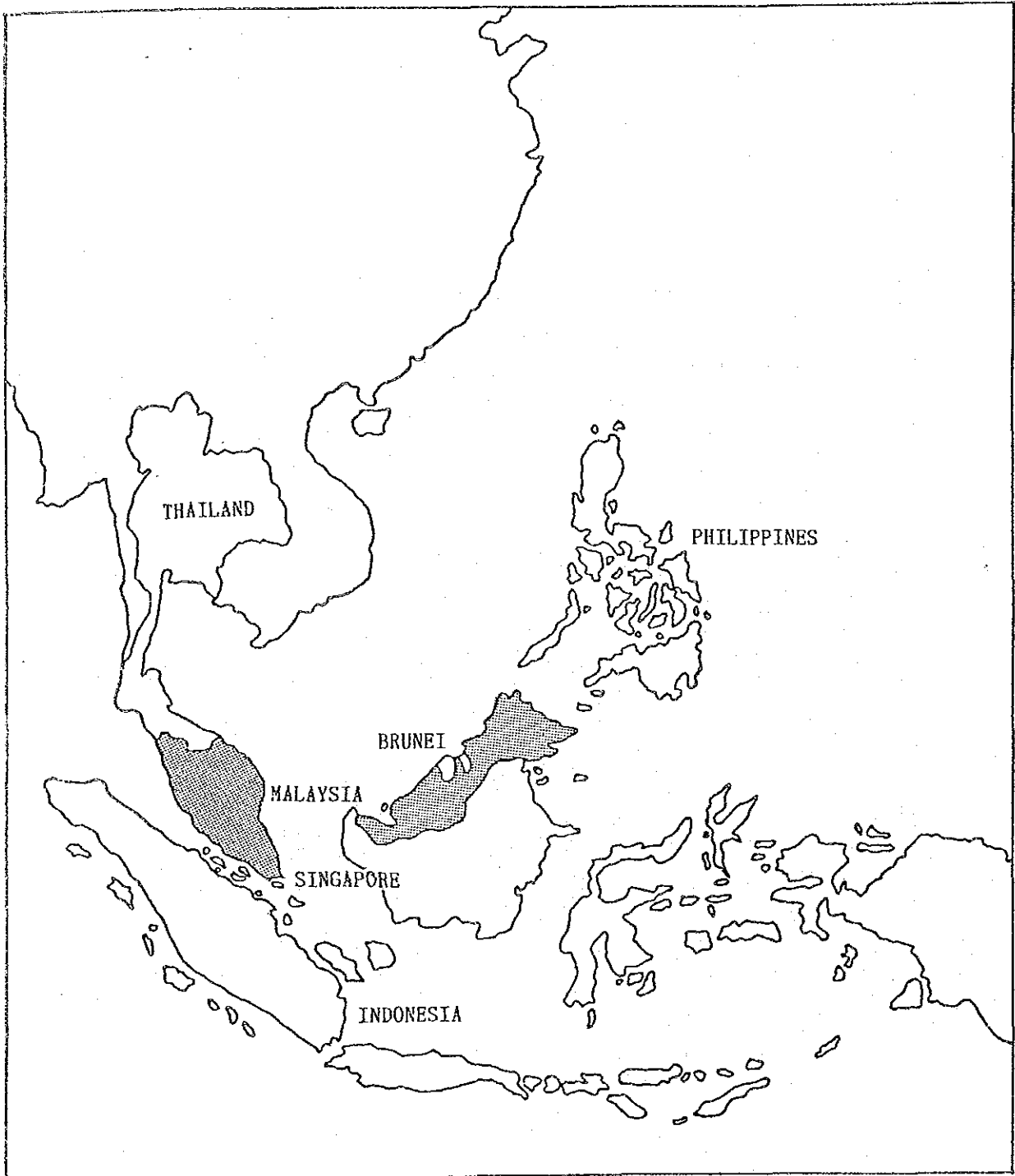
April, 1986



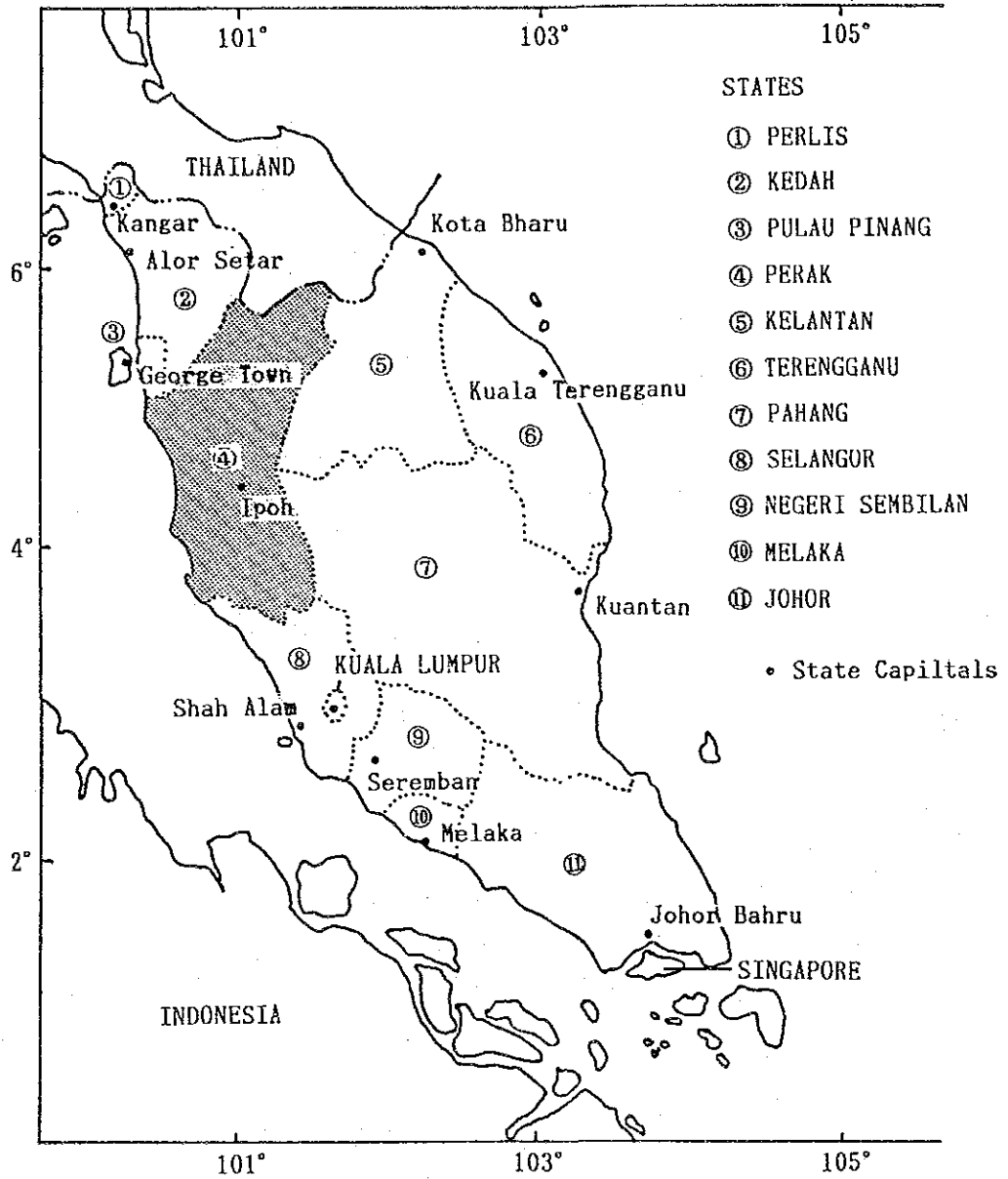
Keisuke ARITA

President
Japan International Cooperation Agency

MAP OF ASEAN COUNTRIES







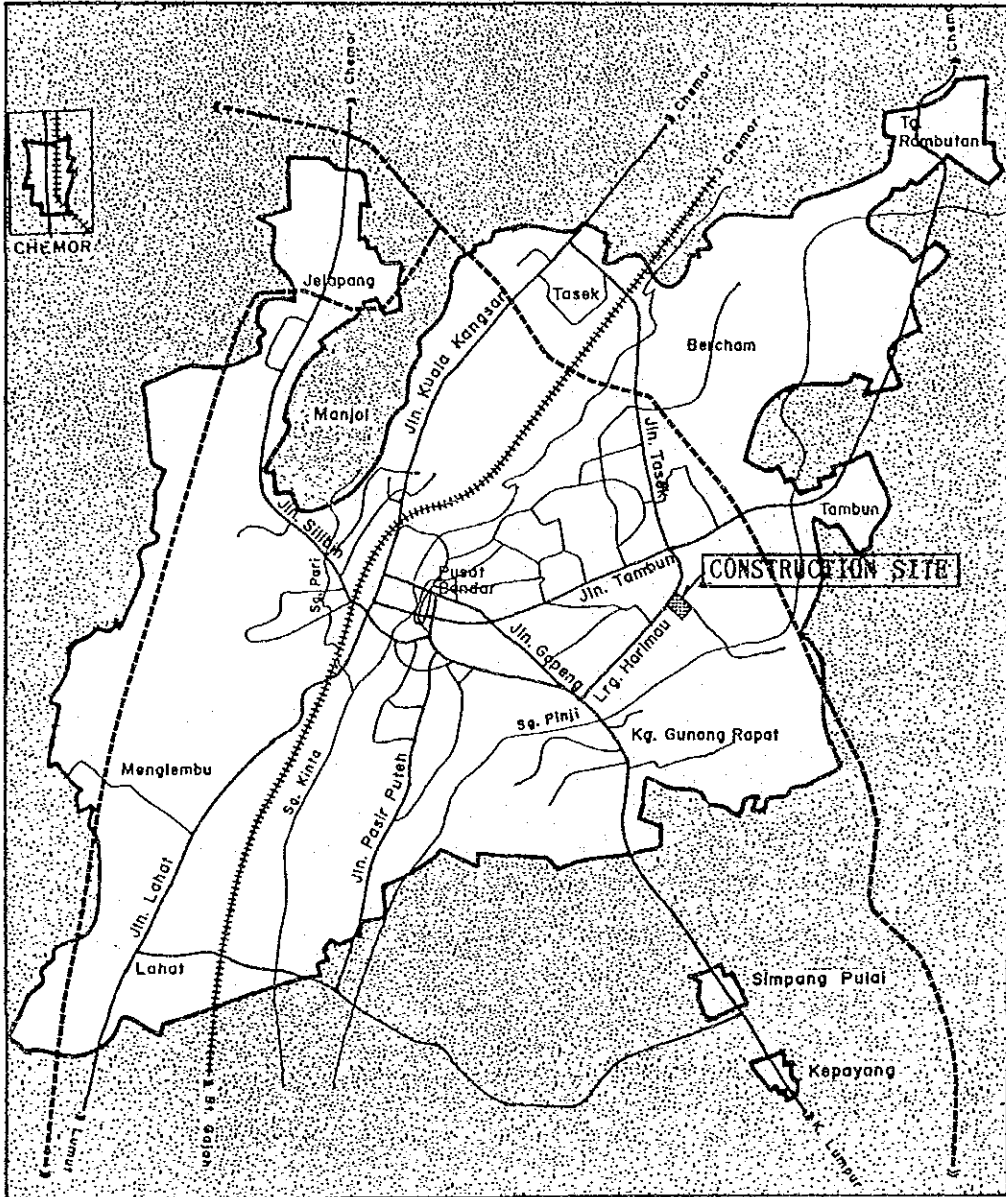
MAP OF PENINSULAR MALAYSIA



IPOH CITY MAP

LEGEND

-  Arterial Roads
-  Collector Roads And Local Roads
-  Approved Highway
-  Railway Line



SUMMARY

The modern poultry industry in ASEAN countries has shown rapid progress in the last 20 years providing these nations with an inexpensive source of animal protein. The industry has benefited from high breeding efficiency and therefore high productivity, the absence of religious taboo concerning chicken flesh, and from the relative ease of raising chickens in a tropical climate. By introducing superior breeds and advanced technology from overseas, mass production of eggs and chickens in ASEAN countries has been firmly established. Poultry farming has grown from a backyard business into a major industry handling up to tens of thousands of chicken per farm.

Today, total sales of the industry in ASEAN countries as a whole is assessed at about US\$1 billion per year. Regrettably, however, about \$200 million, or 20% of the total sales are lost each year due to improper handling and lack of care. Of this loss, about half, or \$100 million, are estimated to be inflicted by poultry diseases.

In order to reduce the heavy economic loss, ASEAN countries are trying to set up more thorough experiment and inspection system, to improve the breeding method through diagnosis and guidance services and to promote prevention of poultry diseases. ASEAN countries decided to realize the project of ASEAN Poultry Disease Research and Training Centre which will contribute to research of poultry disease, training researchers, upgrading standards of research and popularizing the results to these countries.

With this as the background, a request for a technical cooperation was made from ASEAN to the Government of Japan in the Japan-ASEAN forum in 1982 when they requested the aid to be classified as an ASEAN project with Malaysia as the host country. Then Malaysia made clear the intention of requesting a grant aid for construction of the Centre and supply of necessary equipment. A formal request for the grant aid was submitted to the Government of Japan in May, 1985. The Government of Japan found this grant aid request difficult to conduct since Malaysia's income standards far exceed the general grant aid requirements. However, as

the project is one that benefits all ASEAN countries, the Government of Japan decided to implement a preliminary study, and the Japan International Cooperation Agency (JICA) sent a Preliminary Study Team in July, 1985 to determine whether it would be appropriate to the grant aid, as well as to pave the way for implementing a technical cooperation.

Based on the report by the Preliminary Study Team, the Government of Japan decided to implement the Basic Design Study. Accordingly, the Basic Design Study Team was sent to Malaysia by JICA from Nov. 28 to Dec. 19, 1985. The team met with Malaysian officials in charge and discussed the details of the requests, as well as inspected the building location and related facilities to grasp the current state of the construction industry, and collected other related information. After its return, the study team studied the appropriateness of the project in terms of the outcome of its field survey and it carried out basic designing of the centre, selection of equipment for research and training, calculation of the Project costs and formulation of maintenance and operation programmes. The results were compiled in the draft final report of the Basic Design Study. Then, the Basic Design Study Team for the explanation of the draft final report was sent to Malaysia by JICA from Mar. 27 to Apr. 4, 1986. The Team explained and discussed the contents of the report with Malaysian officials.

Management of the Centre will be in the hands of the Department of Veterinary Services (DVS) of the Malaysian Ministry of Agriculture, in collaboration with the Coordinating Group on Livestock of the ASEAN-COFAF. The Centre will be a branch of the Veterinary Research Institute (VRI) which is an organization under the DVS. An own director is appointed to secure the functional independence of the Centre from VRI under which the Centre is organized.

The Centre will be constructed on the campus of VRI in Ipoh City, State of Perak.

The activities in the Centre will be chiefly research and training. The fields of research will be Virology, Bacteriology, Parasitology and

Pathology. Through studies of poultry diseases in ASEAN regions, an upgrading of research standards is aimed at. Training activities are aimed at developing human resources and popular application of research findings in the region through training of researchers and technicians of poultry diseases. For these activities, the Government of Japan decided to implement the project-type technical cooperation (in research) and is planning the third country training programme (in training) to be implemented in the near future.

The following describes those facilities and equipment judged proper to be provided by the grant aid from the Government of Japan.

Facilities

The Centre will consist of 4 buildings, total floor space of which will be 6,208 m². The function and scale of each building is as follows.

- 1) Research and Training Building (Two-storeyed, partly one storeyed, 3,524 m²)
This will function as the main building of the Centre, with 3 sections, Management, Research, Training.
- 2) International Hostel (Two-storeyed, 1,600 m²)
This will consist of the trainees' section for ASEAN trainees (25) and the lecturers' section for lecturers and scientists (4) from ASEAN countries.
- 3) SPF Poultry Unit (One-storeyed, 376 m²)
This is the facility for producing the Specific Pathogen Free (SPF) eggs and chickens.
- 4) Experimental Chicken House (One-storeyed, 576 m²)
This is the facility for the research of isolation of virus, immunity, diagnosis, treatment and so forth through contagious experiment using SPF chickens.
- 5) Auxiliary Facility (One-storeyed, 132 m²)
Incinerator, Pump station, Power station, Generator room

Equipment

Since the research and training equipment is considered to be supplied by means of project-type technical cooperation within its framework, high priority in grant aid formula is given to the equipment which is closely related to building facilities in installation, as well as plumbing and exhaust work and so forth.

Main items of equipment to be supplied are as follows.

- ° VTR system for research
- ° Laboratory tables and pharmaceutical shelves for each laboratory
- ° Lamina flow
- ° Electron microscope
- ° Photo development apparatus
- ° Autopsy table and equipment
- ° Washing and sterilizing equipment
- ° Freeze drying equipment
- ° Equipment for SPF poultry unit
- ° Feed manufacturing equipment for SPF and experimental chicken
- ° Autoclave, passbox and VTR camera system for experimental chicken house

Responsibilities of the Government of Malaysia for the establishment of the Centre are execution of the project, securing the necessary personnel, construction, procurement of equipment necessary for completion of the project other than those to be provided under Japan's grant aid. The necessary budget to be borne by the Government of Malaysia is about M\$600,000.

The approximate period required for construction of the Centre after the Exchange of Notes (E/N) is : 3 months to work up detail designs, 2 months for tendering, and 12 months for construction. Total: 17 months.

The total cost of facility operation, maintenance and personnel expenses per year is estimated approximately M\$1,095,000. The Government of Malaysia pledged to obtain the amount of the budget for the Centre.

ASEAN countries' opinions on the activities of the Centre will be fully reflected through the ASEAN-COFAF/CGL, and therefore the project will be expected to be executed smoothly. Concerning the operation of the Centre, it can be said that there is, at the same time, independent and interdependent relationship between the Centre and VRI. This operation system will be sufficiently workable in practice.

If the Centre is established and the basis for continuous research and training activities are set up, it will be expected that the results and techniques are spreaded all over the ASEAN poultry industry. Moreover, it will be expected to supply safe, inexpensive, quality protein widely to ASEAN nations. It is therefore valid that this project be executed by grant aid. In order to propel the project more smoothly, the following items are suggested and appropriate execution will be desired.

- 1) Japanese technical cooperation is an essential factor and its smooth and effective execution is desired.
- 2) The research and training equipment supplied by the grant aid is selected from the equipment which are closely related to building facilities in installation, as well as plumbing and exhaust work and so forth in carrying out research and training activities at this Centre, and as for auxiliary equipment and consumption goods, it is desirable that Malaysia procure them by its own means (or within the scope of the Japanese technical cooperation).
- 3) It is desired that responsible persons for maintenance, inspection and control of research and training equipment would be nominated and an appropriate organization for the operation of equipment be established.

TABLE OF CONTENTS

PERSPECTIVE DRAWING

PREFACE

MAP OF ASEAN COUNTRIES

MAP OF PENINSULAR MALAYSIA

IPOH CITY MAP

SUMMARY

TABLE OF CONTENTS

ABBREVIATION

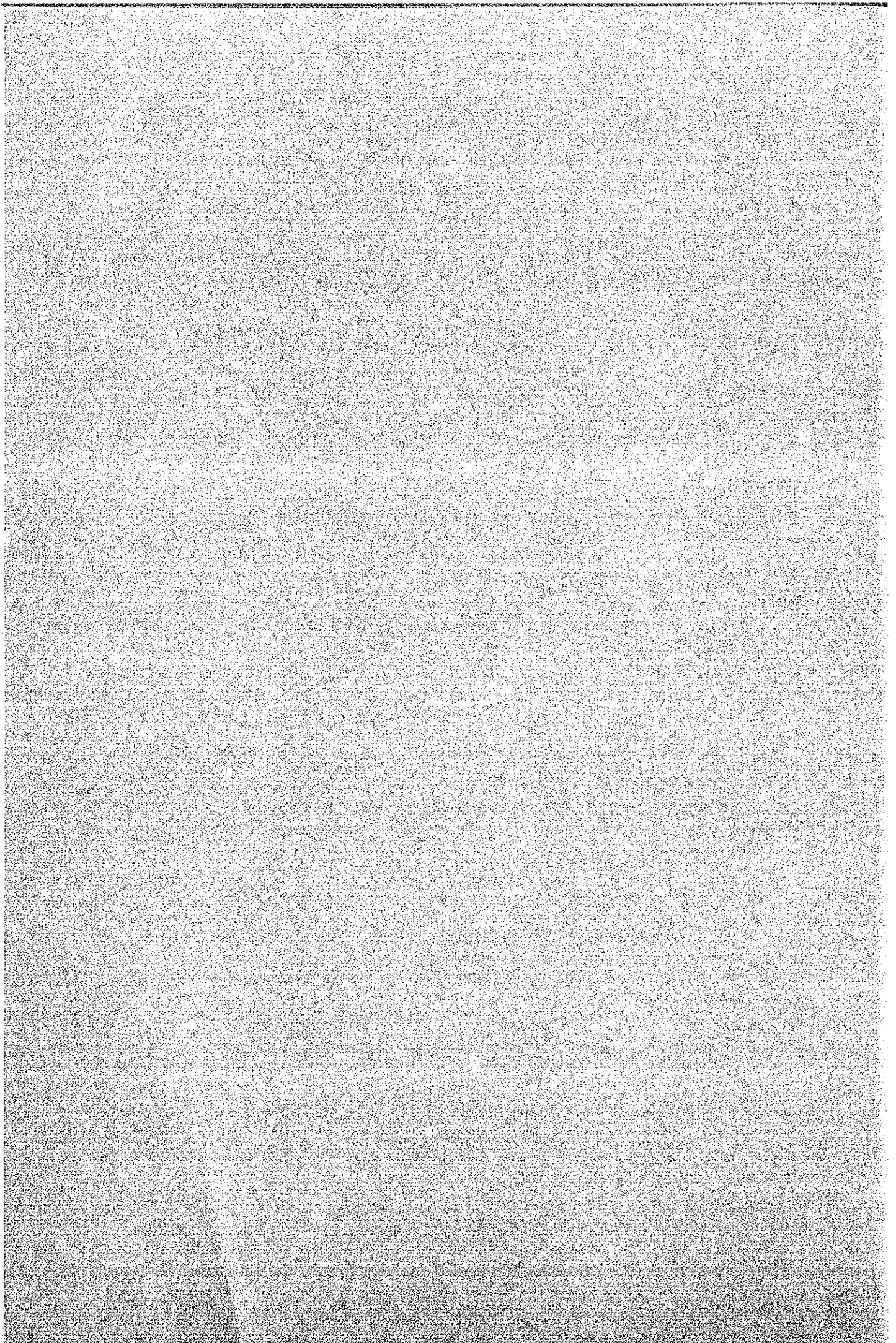
CHAPTER 1	INTRODUCTION	1
CHAPTER 2	BACKGROUND OF THE PROJECT	5
2-1	Poultry Industry in ASEAN Countries	5
2-1-1	Overview	5
2-1-2	Present State of the Poultry Industry	7
2-1-2-1	Malaysia	7
2-1-2-2	Other ASEAN Countries	11
2-2	Poultry Diseases in ASEAN Countries	14
2-2-1	Overview	14
2-2-2	Present State of Poultry Diseases	16
2-2-2-1	Malaysia	16
2-2-2-2	Other ASEAN Countries	22
2-3	Animal Health in ASEAN Countries	24
2-3-1	ASEAN-CONFAF	24
2-3-2	Animal Health in Respective Countries	25
2-3-2-1	Malaysia	25
2-3-2-2	Other ASEAN Countries	34
2-4	Background and Contents of the Request	37
2-4-1	Background of the Request	37
2-4-2	Contents of the Request	38
CHAPTER 3	CONTENTS OF THE PROJECT	41
3-1	Objectives	41
3-2	Study on the Request Contents	42
3-2-1	Concept for the Centre	42
3-2-2	Research Activities	44
3-2-3	Training Activities	53
3-2-4	Building and Equipment	54
3-2-5	Operation and Budget	60
3-3	Outline of the Project	63
3-3-1	Executing Agency and Operational Structure	63

3-3-2	Plan of Operation	67
3-3-2-1	Research Plan	67
3-3-2-2	Training Programme	78
3-3-3	Project Site and Environment	80
3-3-3-1	Construction Site	80
3-3-3-2	Natural Environment	82
3-3-3-3	Conditions of the Infra-Structure	83
3-3-4	Outline of Building and Equipment	85
3-3-4-1	Building	85
3-3-4-2	Equipment	87
3-3-5	Management Plan	88
3-4	Technical Cooperation	90
CHAPTER 4 BASIC DESIGN		93
4-1	Basic Principles	93
4-2	Design Criteria for Basic Design	95
4-3	Basic Plan	114
4-3-1	Site Plan	114
4-3-1-1	Site Plan	114
4-3-1-2	Landscape Plan	119
4-3-2	Architectural Plan	120
4-3-2-1	Floor Plan	120
4-3-2-2	Section Plan	123
4-3-2-3	Structural Plan	125
4-3-2-4	Building Facility Plan	128
4-3-2-5	Construction Material Plan	141
4-3-3	Equipment Plan	148
4-3-4	Basic Design Drawings	153
4-4	Implementation Plan	177
4-4-1	Implementation Organization	177
4-4-2	Scope of Works	178
4-4-3	Construction and Supervisory Plan	181
4-4-4	Procurement Plan	183
4-4-5	Execution Schedule	185
4-5	Maintenance and Operation Cost	187
4-6	Estimated Overall Project Cost	190
CHAPTER 5 PROJECT EVALUATION		191
CHAPTER 6 CONCLUSION AND RECOMMENDATION		193
APPENDIX		

ABBREVIATION

APHCA:	Animal Production Health commission for Asia, Far East and South West Pacific
ASEAN:	Association of South East Asian Nations
BIMAS:	Bimo-ingan Masal (Mass Guidance Scheme for Self-sufficiency in Food)
CGL:	Coordinating Group on Livestock
COFAF:	Committee on Food, Agriculture and Forestry
DVS:	Department of Veterinary Services
EPU:	Economic Planning Unit
FAO:	Food and Agriculture Organization
MARDI:	Malaysia Agriculture Research Development Institute
PWD:	Public Works Department
RVDL:	Regional Veterinary Diagnostic Laboratory
VRI:	Veterinary Research Institute

CHAPTER 1 INTRODUCTION



CHAPTER 1 INTRODUCTION

Recent years have witnessed an increase in the consumption of livestock in line with the improvement of diet for the population in ASEAN countries. Poultry consumption has especially grown. The reasons for this development are attributed to the high productivity of poultry raising and the non-existence of religious restrictions on poultry consumption. Meanwhile, however, cases of poultry diseases show clear signs of augmentation in accordance with the increase in the number of chickens being raised, a serious problem being tackled by respective countries in promoting poultry raising.

Against this background, ASEAN countries asked the Government of Japan, at the 5th session of the Japan-ASEAN Forum in 1982, to extend a technical cooperation in a project to develop an ASEAN Poultry Disease Research and Training Centre designed for research on poultry diseases and personnel training. Subsequently, the Government of Japan dispatched a contact mission relating to this case in November, 1984, and continued discussions on the matter with the ASEAN countries. As a result, it was confirmed at the Coordinating Group on Livestock (CGL) of the Committee on Food, Agriculture and Forestry (COFAF) held in Brunei in February, 1985 that this undertaking will be defined as an ASEAN project to be hosted by Malaysia. Further, in May, 1985, the Government of Malaysia requested a grant aid relating to the establishment of facilities necessary for the centre and the supply of equipment. Although the extension of the general grant aid to Malaysia was irregular in principle, since the living standard of that country is far above the standards required for the extension of Japan's general grant aid, cooperation in the form of such grant aid in addition to a project-type technical cooperation and a third country training programme was studied in the view that it will be a project benefiting all ASEAN countries. Accordingly, a preliminary study was conducted in July 1985.

The Preliminary Study Team confirmed the necessity for the facilities and equipment requested through discussions with officials of the Government of Malaysia and concluded that these facilities be made the subject of a "grant aid" and that materialization be studied.

Based on the results of the Preliminary Study, the Government of Japan decided to carry out a basic design study for this project. Pursuant to this decision, the Japan International Cooperation Agency (JICA) sent a basic design study team headed by Dr. Takayasu TAKIZAWA, Director, First Research Division, National Institute of Animal Health, Ministry of Agriculture, Forestry and Fisheries, to Malaysia for a period of 22 days from November 28 to December 19, 1985.

The study team discussed the contents of the request with Malaysian officials, conducted a field surveys regarding the projected construction site, related facilities, and the local state of construction and also collected data concerning the project. Matters of basic agreement reached in discussions with the Government of Malaysia were compiled in the Minutes of Discussions, and on December 6 signatures were exchanged between Dr. TAKIZAWA, leader of the Basic Design Study Team and Dr. Ahmad Mustaffa bin Haji Babjee, Director-General of Department of Veterinary Services, the Ministry of Agriculture, MALAYSIA, with Mr. Sopian bin Haji Ahmad of ASEAN Secretariat, Ministry of Foreign Affairs, MALAYSIA, acting as witness.

The study team enforced a joint survey with long-term surveyors from November 28 to December 3, and from November 29 to December 1 with the preliminary study team regarding the third country training programme. The line-up of the Basic Design Study Team, survey schedule, list of counterparts discussed and Minutes of Discussions are shown in Appendix attached at the end of the report.

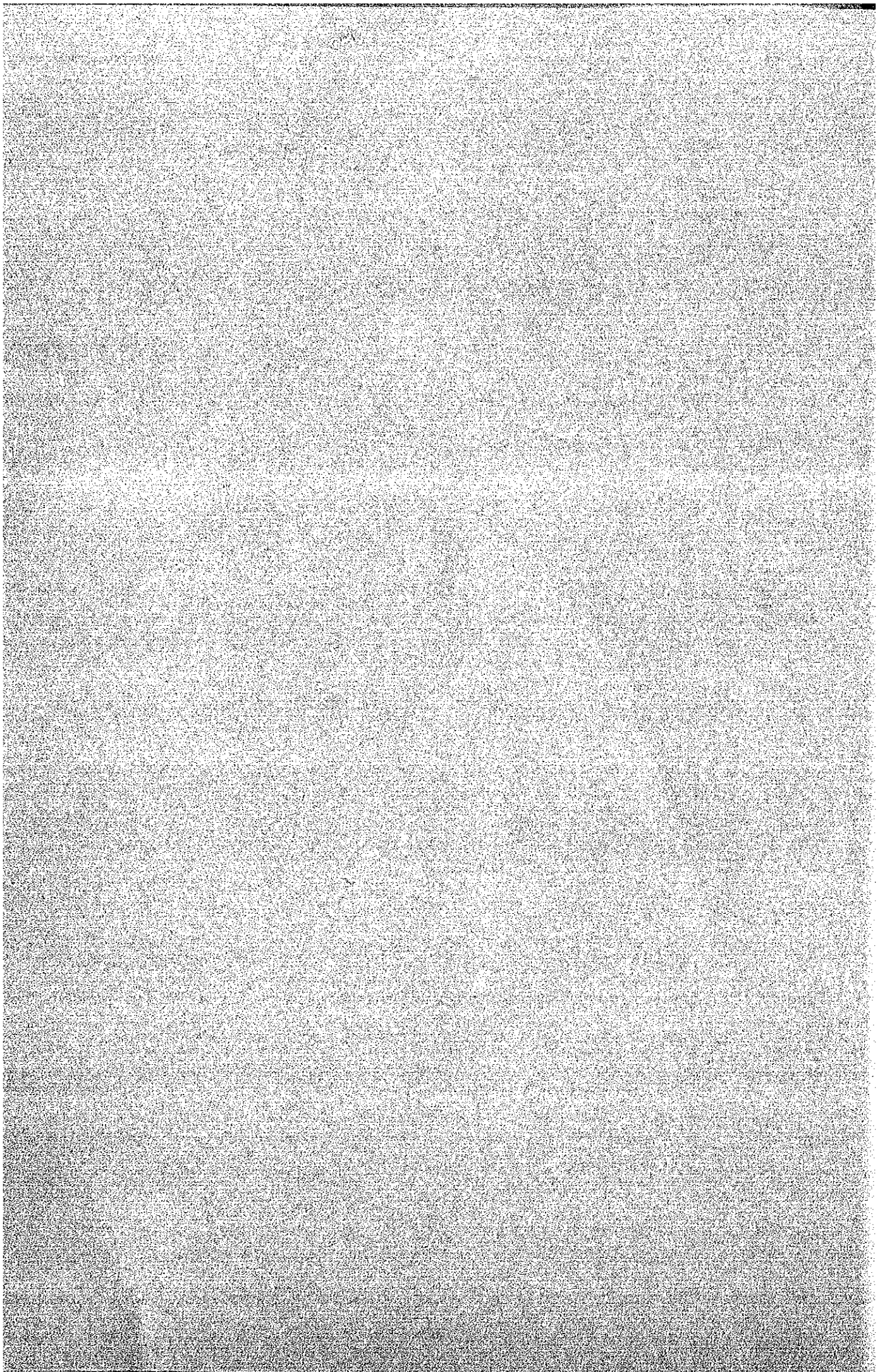
After its return, the study team studied the appropriateness of the project in terms of the outcome of its field survey and it carried out basic designing of the centre, selection of equipment for research and training, calculation of the Project costs and formulation of maintenance and operation programmes.

The results were compiled in the draft final report, and the Basic Design Study Team, headed by Dr. Hitoshi KAWAMURA, Chief of Second Virology Laboratory, Second Research Division, National Institute of Animal Health, Ministry of Agriculture, Forestry and Fisheries, was sent to Malaysia for explaining the report by JICA from Mar. 27 to Apr. 4, 1986.

The team explained the report to Malaysian officials and confirmed and discussed the contents of the report. Matters of basic agreement reached in discussions compiled the Minutes of Discussions, and on April 3 signatures were exchanged between Dr. KAWAMURA, leader of the Basic Design Study Team, and Dr. Nik Mahmood bin Nik Mohamed, Deputy Director-General of Department of Veterinary Services, Ministry of Agriculture, MALAYSIA. The line-up of the Basic Design Study Team, survey schedule, list of counterparts discussed and the Minutes of Discussions are shown in Appendix attached at the end of the report.

This report described the results of the series of basic design study explained above.

CHAPTER 2 BACKGROUND OF THE PROJECT



CHAPTER 2 BACKGROUND OF THE PROJECT

2-1 Poultry Industry in ASEAN Countries

2-1-1 Overview

The Kampong birds, the conventional chickens in ASEAN countries, closely relate to the people's life in ASEAN countries by occupying the important position of being the main supply source of animal protein. Although more than one race often forms a single nation in the ASEAN region, Kampong birds have been raised in backyards of farm-households since old days because chicken meat and eggs are free from any religious inhibitions in the regional diet of the populace. And, although its productivity is inferior to that of exotic strains of poultry, farm households and the general public are fond of its meat because it is tasty and suits the popular liking.

In accordance with the advance of local interest in the poultry industry in the 1960s, laying breeders superior to the Kampong birds in terms of economy and resistance to diseases were introduced from the U.S.A. and European countries. This was due to the facts that start up operations with a small amount of capital was possible and excellent technical services of breeding farms, the exporters, facilitated technical introduction.

In the 1970s meat type breeders were introduced from the U.S.A. and European countries. Based on the supply of cheap feed and a smooth growth of demand, they helped accelerate expansion of poultry farming in the suburbs of major cities. The poultry population in ASEAN countries in 1983 was as shown in the following table:

Poultry Population in ASEAN Countries (1983)
(unit 1,000 birds)

	Philip- pines	Thailand	Singapore	Indonesia	Malaysia
Chickens	59,205	64,000	14,000	209,302	55,000
Ducks	5,764	18,900	1,000	25,436	210

Under these circumstances, annual sales of the poultry industry in ASEAN countries have recently reached an estimated US\$1 billion. Due to mismanagement of poultry farming, out-breaks of diseases and failure in preventive treatment, however, a loss of about US\$200 million or 20 percent of the sales incurred and, around US\$100 million or half of the loss is believed to be due to poultry diseases.

2-1-2 Present State of the Poultry Industry

2-1-2-1 Malaysia

In Malaysia the poultry industry occupies an important position in livestock raising with meat and eggs of poultry satisfying domestic demand and affording export to Singapore, Hong Kong, etc. The management scale of chicken raising in this country developed from a small-scale substance production to a middle-scale business and eventually to a large corporate operation all within the past 20 years. This resulted from the introduction of breeding chickens superior to Kampong birds from the U.S.A. and European countries.

1) Meat type breeder

The sector that attained the most remarkable growth in the entire poultry industry is that of meat type birds. At present, 16 million broiler chickens of this category are being raised, with 95 million, 75 percent, of the total broiler chicken population annually produced for consumption. The remaining 25 percent are account for chicken meat coming from breeders, layers that can no longer lay and chickens grown in backyard or small scale substance production. Farm households raising meat type birds totalled 2,500 (in 1982) with their operational scale as follows:

Broiler Industry in Malaysia

Monthly average of boiler produced	%
500 or less	30
500 - 1,000	30
1,000 - 5,000	28
5,000 - 10,000	10
10,000 - 50,000	1.8
50,000 or more	0.2

As for the breeds of these meat type birds, Arbor Acres, Harvard, Hybro and Ross account for 90% of the total, with the remaining 10% being Kampong birds. Places of production are such states as Johore, Perak, Penang/Wellesly, Malacca and Selangor, where about 75 - 80 percent of the total meat type birds are produced. The production volume breakdown of poultry meat by kinds of birds in 1984 was as seen in the following table:

Production Volume of Poultry Meat

Kind	Production Volume (tons)	%
Meat type birds	128,000	75
Kampong fowls (Chicken raised in backyards)	17,000	10
Breeders Layers	15,000	9
Ducks	10,000	6
Total	170,000	100

2) Laying hens

According to the agricultural census of 1973, there were 1,900 layer farms and 3,500,000 chickens. Recently, however, the number of such households has increased to 2,500 with a total of 13,500,000 chickens. Close to 30% of these households are concentrated in Selangor State and 20% in Malacca State. The Sungei Buloh District of Selangor, in particular accounts for 50% of the state's egg production. The production volume break-down of table eggs by kinds of birds is as shown in the table below:

Production Volume of Table Eggs

Kinds	Production Volume (in 10,000)	%
Laying hens	15,200	80
Kampong fowls (raised in backyard)	3,420	18
Ducks	380	2
Total	19,000	100

3) Breeding chickens (parent stock)

According to a survey done in 1984, there were 90 parent stock farms in Malaysia. They are mainly located in such states as Penang/Wellesly, Johore, Perak, Malacca, Selangor and Negeri Sembilan. About half of the large-scale parent stock farms are concentrated in Penang/Wellesly state. At these farms, a total of 1,300,000 parent stocks for meat type birds and 120,000 parent stocks for layers are being raised. Annually hatched chicks amount to 90,000,000 for broilers and 15,500,000 for laying hens.

4) Management of Poultry Farming

Chickens being raised in Malaysia can be roughly divided into the following three patterns:

a. Backyard or small-scale substance farming

Kampong birds are grown in backyards, scavenging on kitchen scraps, grass clipping, picking of spilled padi around the vicinity of the household from the feeding pattern, but sometimes they are given compound feeds. Related products are for household consumption.

b. Semi-intensive System Poultry Farming

Fledgings are reared in brooding boxes, each of which is designed for hundreds of birds. Pullets and laying hens are free ranged in rubber forests in the daytime and housed in a shed at night. Poultry droppings serve

as are fertilisers input for the soil. Home-mixed feeds and commercial feeds are provided. Usually, 1,000 to 5,000 birds are raised with 500 to 2,000 shipped out every month. This kind of production system was popular and in common practice about 20 years ago. In usual cases, the chicken house extends from east to west. It is an open house measuring 10 - 20 metres in width, 15 - 30 metres in length and 3 metres in height with eaves with an extended overhang of approximating 1.5 - 1.75 metres in length to cut off direct sun light.

c. Intensive Poultry Farming

In modernized poultry farms, the Rearing of pullets is normally in a colony pen and laying hen are kept in a battery while broilers are raised on the floor. The average flock size varies from 10,000 to 50,000. In parent stock farms, on the other hand, all breeders are kept on the floor with two thirds of the chicken house floor covered with slats.

5) Feeds

Most poultry farmers compound their feeds by themselves. Breeder farms or large-scale integrated poultry farms, however, purchase compound feeds from feed plants. The production of feed was started 25 years ago with a total of 64 plants currently engaged in production.

2-1-2-2 Other ASEAN Countries

1. Indonesia

Of the ASEAN nations, Indonesia is raising the largest number of birds. In 1983 it had a total of 150,000,000 Kampong birds, which are the conventional breed, 5,000,000 chickens of improved breeds and 25,000,000 ducks.

So far as the chicken raising patterns are concerned, chicken raising in backyards accounts for 70%. Such a high rate of backyard bird raising is due to the Bimasu Yuam Plan adopted by the Government of Indonesia in its policy to protect small-scale poultry farmers. Against such a background, Kampong birds now account for a majority of the chickens in this country (about 70%), with 2/3 of them being raised in Java. Scavenging on kitchen scraps, picking of spilled padi around the vicinity of the household feeding pattern, these birds total 5 to 10 per household, on the average. Eggs, however, cannot be categorized as a cash income source for these farm households. It is a fact that table meat type birds, from U.S.A. and European countries, are gaining ground in the suburbs of Jakarta while that table egg type birds are steadily developing around major cities. The introduction of parent stocks is chiefly from the U.S.A., Japan, Singapore and the Philippines.

2. Philippines

The poultry industry in the Philippines used to be based on Kampong birds, but in the 1970's better breeds were introduced from the U.S.A., European countries and Japan. The business scale has steadily grown with many parent stock farms and hatchery farms mushrooming in the suburbs of Manila. At present, more than 60 percent of both layers and meat type birds have been replaced with imported breeds, local type birds currently accounting for less than 40 percent.

Poultry farming has been developing mainly under private initiative. Feed or pharmaceutical companies affiliated with foreign or local interests have been advancing into integrated management of poultry farms, mainly for parent stock farms.

3. Singapore

In Singapore, the poultry industry has been modernized to the level found in countries of developed poultry farming. However, Singapore has problems similar to those of Japan such as dependence on imported feed and increasing land prices and dispose of feces. Another big problem for the poultry industry in the country is how to dispose of chicken feces. At present, feces are carried from Singapore to the vegetable-growing zone in Malaysia, but transportation through the national border has given rise to various problems, including the spread of pathogenic organs.

The chickens are mainly of well-known U.S.A. and European breeds. They not only satisfy the domestic demand for chicken meat and table eggs but also the demand of other ASEAN countries, thereby placing Singapore in a position to play the part of supplier of parent stock and commercialized birds to these countries. In recent years, intensive poultry farming has been developed and the business scale expanded from the level of 1,000 - 5,000 birds/household to that of 15,000 chickens/households in some instances. Layers, including parent stock total 25,000,000 birds with an average egg-laying rate at around 60 percent. As for eggs, 380,000,000 are produced yearly while annual consumption stands at 170 eggs per person, which means that Singapore is self-supporting so far as eggs are concerned. Of the total eggs produced, both brown and white eggs occupy about half each, but brown eggs are preferred and traded at higher prices. Annual broiler production amounts to about 25,000,000 birds.

4. Thailand

In Thailand, more than 70 percent of the total farm households rear conventional birds in their backyard for self-supply of table eggs and chicken meat. About 80 percent of the layers lay brown eggs.

The broiler industry has been developing quite remarkably in Thailand in recent years. This development started when a broiler growing farm, established 10 years ago by local interests in the suburbs of Bangkok, expanded its production to increase its supply of chicken meat for the domestic market. Since then, three Japan-Thailand joint ventures, three local capital-owned farms and one broiler ground operated by foreign interests other than Japanese, for a total of seven such enterprises, have been established. As a result, the country has the largest hatching facilities in South East Asia and produces 6,000,000 broilers a week. The

development of the industry can also be ascribed to the steady growth of domestic chicken meat consumption (12 percent/year). In such circumstances, about 15,000 tons of chicken meat (approximately 7,500,000 chickens) are exported to Japan a year.

2-2 Poultry Diseases in ASEAN Countries

2-2-1 Overview

The out-break of poultry diseases in ASEAN countries has increased in accordance with the introduction of U.S.A. and European parent stock, which have superior hereditary characteristics, and the growth of the management scale of poultry farms. This increase in disease is considered to be the result of a delay in the spread of massive preventive hygiene techniques from group raising management and the growth of the business scale. It can be also said that, although animal pharmaceuticals, feed additives and vaccines imported into ASEAN countries have been used for prevention of epidemics for self protective purposes, deficient knowledge by poultry farmers about control and treatment of poultry diseases and also insufficient governmental control and guidance have resulted in the present state in which the nature of inherent diseases is complicated, and their diagnosis, control and treatment are confused.

Against this background, poultry diseases that break out in ASEAN countries are basically common to respective countries, as seen in the table below. So far as the out-break rates of the respective diseases are concerned, however, some variations can be witnessed depending on the differences in rearing environments and raising patterns.

Disease Name	Philippines	Thailand	Singapore	Indonesia	Peninsular Malaysia
Fowl Pest	-	-	-	-	
Newcastle Disease	+	+	+	+	+
virulent			+	+	+
Mesogenic			+		+
Lentogenic	+		+		+
Infectious Laryngotracheitis	+	+	+	+	+
Infectious Bronchitis	+	+	+	+	+
Avian Tuberculosis	?	-	-	+	-
Viral Hepatitis in ducks	-	+	-	-	?
Viral Enteritis in ducks	-	+	-	-	-
Fowl Cholera	+	+	+	+	+
Fowl Pox	+	+	+	+	+
Fowl Typhoid	+	+	-	+	+
Infectious Bursa Disease	+	+	+	+	+
Marek's Disease	+	+	+	+	+
Chronic Respiratory Disease Complex	+	+	+	+	+
Psittacosis/Ornithosis	+	+	+	+	-
Pullorum Disease	+	+	+	+	+
Infectious Coryza	+	+	+	+	+
Avian Encephalomyelitis	+	+	+	+	+
Avian Coccidiosis	+	+	+	+	+
Avian Leukosis	+	+	+	+	+
Leucocytozoonosis	+	+	+	+	+
Avian Malaria	+	+		+	+
Egg Drop Syndrome-76			+	+	+
Colibacillosis in Chicken	+	+	+	+	+

+: Cases of out-breaks reported

-: No out-breaks reported

Source: Excerpts from long-term surveyors' report.

2-2-2 Present State of Poultry Diseases

2-2-2-1 Malaysia

A rough estimate of production loss from disease would be of the magnitude of 10% to 20% of the total poultry industry production. The disease nature appraisal score at the RVDL and VRI are as follows:

Chronic Respiratory Disease Complex	20%
Newcastle Disease	19.5
Bacterial Septicaemia	16.4
Infectious Bronchitis	10.8
Coccidiosis	7.3
Marek's Disease	6.5
Leucocytozoonosis	4.5
Infectious Laryngotracheitis	4.1
Avian Leukosis Complex	3.2
Others	1.7
	100%

(Source: Poultry Industry in Malaysia, 1984)

The outline of these diseases is as described below:

1) Chronic Respiratory Disease Complex

Together with the Newcastle Disease, this disease complex is one of the most serious diseases menacing the poultry industry. The economic loss caused by death or retarded growth due to this disease complex is quite serious and it tops the rank of poultry diseases. It is often observed at broiler farms and has the tendency of frequently breaking out during the wet monsoon periods of the year. It is primarily caused by infection of *Mycoplasma gallisepticum* (M.g.), the pathogenic organ of Mycoplasma disease in chickens. Many cases of M.g.'s simple infection end in a latent infection, but in cases observed in the field it is usual that the symptoms take the form of a viral epidemic and co-Mycoplasmal infections of pathogenic organs other than M.g. They often have such complications as Aspergillosis, Infectious Coryza and Colibacillosis in chickens. As for *Mycoplasma synoviae* (M.s.), a similarly high rate of positive antibody reaction as that of M.g. (Positive rate: 50%) is shown.

In its treatment, anti-agents and antibiotics are generally used. Since they are expensive, however, they may not be administered as regularly as prescribed. Since M.g. is contagious through eggs, it is essential to eradicate the disease in parent stock farms to build up a wholesome poultry industry.

2) Newcastle Disease

This disease breaks out at various places in the country, a total of 94 cases were reported in 1983. It is one of the most serious poultry diseases in Malaysia. Until 5 or 6 years ago vaccination was insufficient so ailing chickens developed lesions respiratory symptoms, or neurosis and had a 100 percent mortality. Recently, however, most flocks, excepting birds raised in backyard, have been vaccinated with domestically produced and imported vaccines, with good results.

The vaccination programme pushed under the governmental guidance is as shown below:

Week-old	No. of inoculations	Kind of vaccine	Method of administration	
			Broiler	Laying hens/Breeders
0 - 4	1	Ranikhet (lentogenic virus)	Drinking water/ Drop in nasal	Drinking water/ Drop in nasal
4 - 6	1	Ranikhet (lentogenic virus)	Drinking water/ Drop in nasal	Drinking water/ Drop in nasal
After 6 weeks Once every 3 - 6 months	1	Mukutessar (Mesogenic virus)	-	Intramuscular

3) Avian Enteritis

This disease has a high out-break rate, following Chronic Respiratory Disease Complex and Newcastle Disease. Many causes and symptoms are found for enteritis in chickens, but in Malaysia Salmonellosis, Fowl Cholera and Avian Necrotic Enteritis are frequently observed.

Of the Salmonellosis, prevention of the infectious disease of Pullorum Disease attained considerable success owing to the enforcement of the "Pullorum testing programme" operated by the "National Programme for Prevention of Epidemics," with a positive reaction of 0.03 percent (130/512,829) in 1983. Meanwhile, the damage caused by Paratyphoid and Fowl Typhoid is serious, with Avian Necrotic Enteritis with lesions in the small intestines also noted. Fowl Cholera is a disease fatally rampant in ASEAN countries and it is considered to have infiltrated deeply into poultry farms in Malaysia.

4) Infectious Bronchitis

This disease breaks out everywhere in Malaysia irrespective of the business scale of the poultry farms. The serum samples for the neutralization test brought into the VRI revealed that close to 70% were positive, which indicates that this disease has infiltrated deeply into Malaysia.

Its frequent out-break is observed among 5 - 7 weeks old broilers and young pullets. The infection of whole chicken flocks is quite prompt and it is usual that chickens show symptoms of chronic respiratory complex through co-infection with M.g. 1 - 2 weeks after initial infection.

It has been discovered that, among the currently field strains of Infectious Bronchitis now found in Malaysia, there are viral strains that cross with the Massachusetts-type strains of the vaccine now marketed in foreign countries. Accordingly, Malaysia has been allowed to use H120 strains (Massachusetts-type) in 4 - 5 week old chicks. In 1983, 920,000 chickens were vaccinated, but this number can be termed as quite small.

5) Coccidiosis

Just like the Newcastle Disease and Chronic Respiratory Disease Complex, this disease is among those that record a high out-break rate. The coccidiosis in chickens witnessed in Malaysia stems from the simple or co-infection of *Eimeria tenera*, *Eimeria maxima*, *Eimeria necatrix* and *Eimeria acervulina*. Partly because Kampong birds are so widespread, treatment of this disease is difficult. Accordingly, out-breaks of this disease are frequent and the present state is that the damage suffered by large poultry farms for both chicken meat and egg production is becoming more and more serious.

All Coccidiostats are imported but since U.S.A., Japanese and French companies are staging cut-throat sales competition, the problem of drug-resistant may have appeared on the scene. The problem has yet to be closely examined, however.

6) Marek's Disease and Avian Leukosis Complex

Cases of the out-break of Marek's Disease are reported to surpass, on some occasions, 10 percent of the total number of chickens in a flock. Out-break in flocks of laying hens soon after the start of egg laying and also in parent stock flocks is miserable. The vaccine used by Malaysian hatchery farms is imported from four countries, the U.S.A., the Netherlands, the U.K. and West Germany. About 870,000 day old chicks were vaccinated in 1983.

Meanwhile, cases of Avian Leukosis Complex have diminished greatly since the introduction of parent stocks from the U.S.A. and European countries. It still occasionally breaks out in certain flocks, however.

7) Leucocytozoonosis

All cases of this disease arise from protozoa in chickens and are seen in all the ASEAN countries. Results of the disease diagnosis in Malaysia were that the leucocytozoonosis accounted for 28 percent (in 1983) of Malaysia's diseases. Latent locally, the disease break out repeatedly throughout the year.

8) Infectious Laryngotracheitis

Out-breaks of this disease are sometimes seen in the poultry farming complex zone around the cities. Chickens that develop symptoms of this disease are mainly 6 weeks old or older. Recent cases of this disease do not show the typical symptoms of bleeding bronchitis as in past cases, but develop light respiratory system problems accompanied by a watery snivel, conjunctivitis and open mouth breathing. At present, the use of a vaccine is not authorized, but there are indications that illegally imported vaccines have been administered and researchers concerned believed that it causes light symptoms.

9) Fowl Pox

Cases of this disease arise in some districts of Malaysia from time to time. Since its clinical symptoms are clear and easily diagnosed by either chicken raisers or local instructors, reports on its out-break are rarely made in a formal way. Recently, there have been cases in turkeys and pigeons.

The domestic production of chicken embryo vaccine for this disease amounts to about 45 million doses. This cannot be termed sufficient for vaccination of all newly chicks.

2-2-2-2 Other ASEAN Countries

According to reports by long-termed surveyors of this technical cooperation, the disease out-break situation in other ASEAN countries is roughly as follows:-

1) Indonesia

In Indonesia, Newcastle Disease, Coccidiosis, Chronic Respiratory Disease Complex, Marek's Disease, etc. are the main poultry diseases. Newcastle Disease has had reported endemical out-breaks everywhere except on Bali Island, so the Government is pushing systematic vaccination in locations of initial out-break and rampant areas in order to suppress the disease. Meanwhile, it obligates parent stock farms to conduct regular diagnostic tests of Pullorum Disease and to vaccinate day old chicks at the hatchery farms for Newcastle Disease and Marek's Disease.

Several years ago, cases of Avian Leucocytozoonosis (*Leucocytozoon sabrezi*) were found. Among recently confirmed diseases are infectious Bursa Disease, Reticuloendotheliosis, Egg Drop syndrome-76, and Infectious Laryngotracheitis. Meanwhile, Fowl Pox virus, Newcastle Disease virus (mesogenic virus) and virus of A-type avian influenza (H_4N_2, H_4N_6) have been isolated in ducks, while salmonella germ was isolated in duck eggs.

2) Philippines

In the Philippines, case of Newcastle Disease, Chronic Respiratory Disease Complex and Avian Leucocytozoonosis are overwhelmingly numerous, followed by the out-break of *Collibacillosis*, Infectious Coryza, Fowl Cholera, *Staphylococcosis* in chickens, Coccidiosis and Avian Malaria.

The Government is producing vaccines for Newcastle Disease, Fowl Pox, Pigeon Pox and Fowl Cholera, but presently it cannot meet the demand for vaccines of Fowl Pox and Fowl Cholera. Under such circumstances, the government is steadily pushing for the vaccination of Newcastle Disease, Fowl Pox and Fowl Cholera at governmental agency farms and small scale poultry farms, under its own guidance, while in corporate poultry farms, self-protective control and treatment of epidemics is currently being carried out. Since telecommunications between the central and local districts, means of transport and diagnostic services are by no means

smooth and complete, it appears that there are many problems in grasping the out-break situation of poultry diseases and enforcing correct measures to prevent epidemics.

3) Singapore

The main diseases here are Newcastle Disease, Avian Leucocytozoonosis, Infectious Bronchitis, Infectious Laryngotracheitis, Infectious Coryza, Fowl Pox and Egg Drop Syndrome-76. Vaccination is enforced for all poultry diseases including the above-mentioned and Marek's Disease. Control over the poultry industry in various fields, inclusive of environmental pollution prevention, seems to be tight.

4) Thailand

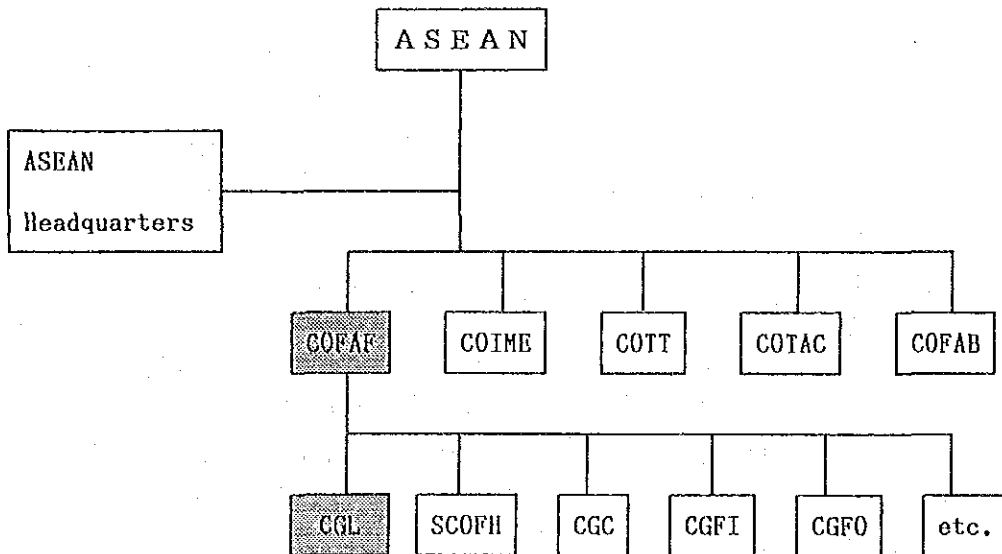
The major poultry diseases seen in this country are Newcastle Disease, Avian Leucocytozoonosis, Infectious Coryza, Chronic Respiratory Disease Complex, Coccidiosis, etc. The government has been conducting haemagglutination test of Pullorum Disease and Mycoplasmosis in chickens (M.s and M.g.9) through the Livestock Hygiene Centre, and it has reported that is found many chickens with a positive reaction. The Department of Manufacturing Biological Agents for Animals in the Livestock Promotion Bureau is producing vaccines for Newcastle Disease, Fowl Pox, Infectious Bronchitis and Fowl Cholera and Pullorum Disease diagnostic antigen and is distributing them among poultry farmers, other than corporate poultry farms, without charge.

The successful chicken of large-scale broiler farm complexes around Bangkok, on the other hand, proves to be 85 - 90 percent, not particularly high compared with those of countries of developed poultry farming. The main reason for this is reported to be poultry disease such as Colibacillosis, Chronic Respiratory Disease Complex, Infectious Coryza and Coccidiosis. From their statistics, the mortality of chickens 1 - 14 days old is (5 - 8%) and that of chickens 15 - 35 days old is (5%).

2.3 Animal Health in ASEAN Countries

2.3-1 ASEAN-CONFAP

ASEAN presently consists of five committees; ASEAN-COFAF, one of them, consists of the respective ASEAN countries' agricultural ministries and has several subcommittees, one of which is CGL. The head of CGL is currently the Director-General of the DVS, Ministry of Agriculture, MALAYSIA, whose task is to ensure smooth activity within the subcommittee. The overall structure of ASEAN is shown below:-



CGL : Coordinating Group on Livestock

SCOFH : Sub-committee on Food Handling

CGC : Coordinating Group on Crops

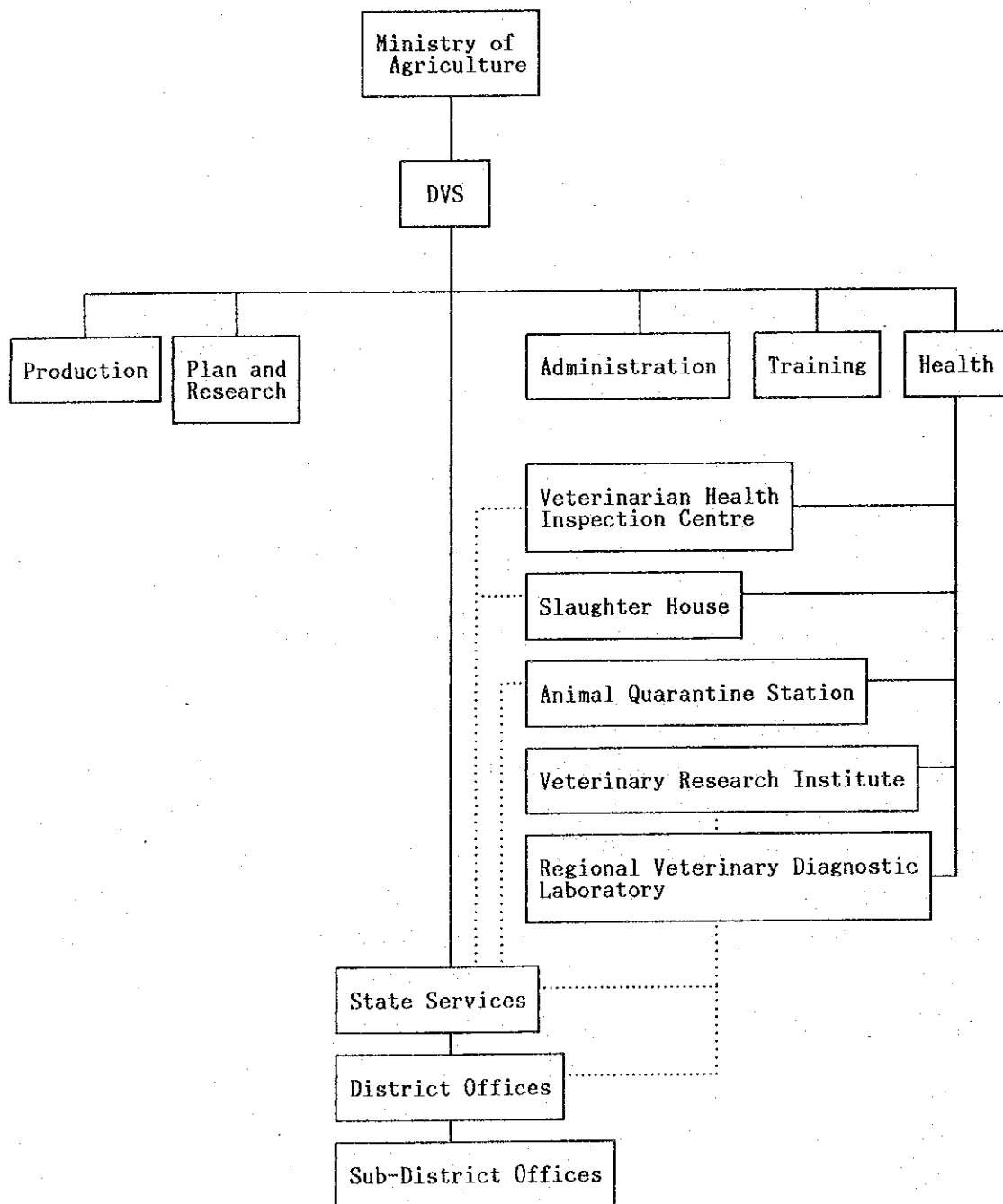
CGFI : Coordinating Group on Fishery

CGFO : Coordinating Group on Food

2-3-2 Animal Health in Respective Countries

2-3-2-1 Malaysia

The livestock hygiene administrative organization in Malaysia is in the charge of the DVS, the Ministry of Agriculture. Its organizational structure is shown below:



1. Department of Veterinary Services (DVS)

With its main purpose being promotion of livestock raising, DVS is promoting its activities through the following measures:

- a. Prevention and control of diseases in order to lower mortality of livestock and enhance productivity.
- b. Eradication of specific diseases seriously harmful to humans and livestock.
- c. Breeding of livestock through mating and artificial insemination.
- d. Modernization of livestock raising and its management.
- e. Education and training of its staff and farm households.
- f. Research and information propagation activities.
- g. Expansion of the livestock market.
- h. Quality improvement of livestock and feeds.

As regards Animal Health affairs, the Assistant Director-General in charge of Health takes charge as a Director-General staff member. The main tasks of the health-related personnel are as indicated below:

- a. Prevention and eradication of livestock diseases
- b. Animal quarantine services
- c. Public veterinary hygiene
- d. Carcass inspection
- e. Propagation and research of livestock hygiene

2. State Services

Respective State Services have a Director of State named by the Director-General of the DVS with the agreement of the State Government. At present there are 13 such directors are posted throughout the nation who are mainly engaged in the following activities in their respective states. In enforcing their tasks, these directors are in close cooperation with the Regional Veterinary Diagnosis Laboratory (RVDL), District Offices etc. under the direction of DVS.

- a. Propagation activities regarding livestock health
- b. Steps for the promotion of the livestock industry
- c. Application of rules regarding the prevention of disease and meat hygiene (including chicken plants)

3. District Offices and Sub-District Offices

Under the instruction of their superior organs, these offices mainly perform the following tasks:

- a. Prevention of diseases
- b. Collection and forwarding of disease nature appraisal materials.

4. Veterinary Research Institute (VRI)

1) Status

The VRI is a national research institute established in Ipoh, in the State of Perak, in 1948. As a subordinate organ of the DVS of the Ministry of Agriculture, it is engaged in the diagnosis and research of livestock diseases, manufacture of vaccines, and related training activities. The VRI is also the centre for RVDL, which is dispersed to nine separate localtions throughout the country and functions as a reference laboratory for these locations.

2) Operation

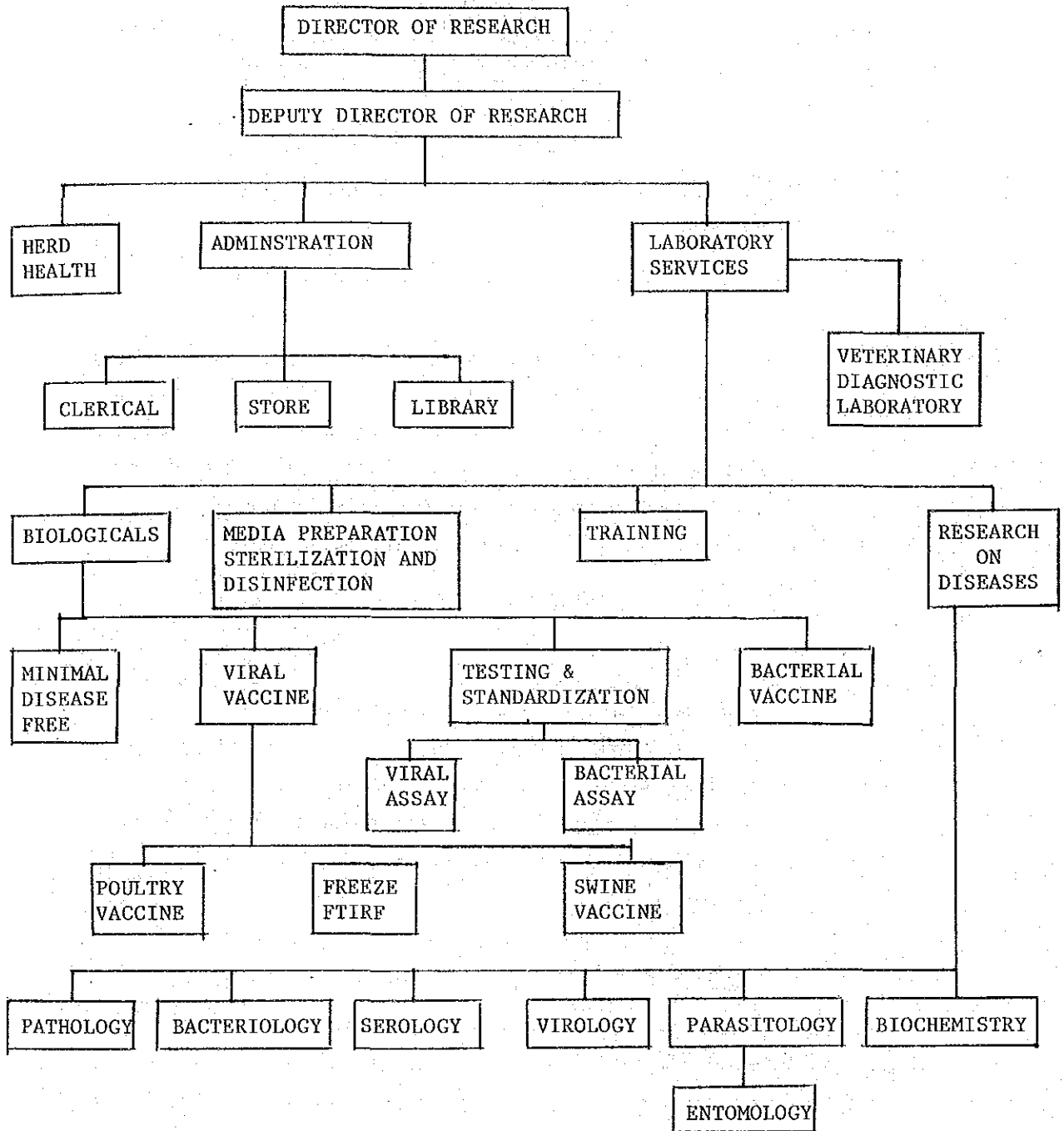
The personnel line-up and organizational chart of the VRI are as shown below:

PERSONNEL LINE-UP (1984)

VETERINARY OFFICERS	13 PERSONS
RESEARCH OFFICERS	7
ASSISTANT VET. OFFICER	1
EXPERIMENTAL OFFICERS	4
LABORATORY ASSISTANTS	40
LAB. ASSIST. (TRAINEES)	17
ADMINISTRATIVE STAFF	23
VET. LABOURERS AND IMG WORKERS	32

TOTAL	137
-------	-----

ORGANIZATIONAL CHART



As of 1984, its staff totalled 137, 20 of which were researchers and 62 research assistants. Its total operational expenditures in 1985 amounted to M\$2,219,612. When its disbursements in the past four years are broken down and analyzed, an average of 60% was spent for personnel expenses, with an expenditure increase during the period of 11 percent on the average.

3) Contents of the Activities

a. Research

Each of the five research departments, pathology, bacteriology, virology, parasitology and biochemistry, carries out under 2-3 research projects. In 1983, 15 research themes were pursued none of which concerned poultry diseases. In view of the number of analyses, diagnosis is considered the main activity, with the actual research portion substantially limited. It appears however, that seminars are held within the institute.

b. Diagnosis

A great many materials are processed or treated here along with separation of viruses. With regard to diagnosis, there is believed to be some degree of knowledge and technology. Examination records, sectional pieces, samples, serums, etc. are well preserved.

c. Vaccine manufacture

The VRI produces poultry disease vaccines (Newcastle Disease and Fowl Pox), meeting domestic demand and exporting some as well. The standards for vaccines are not clear, however, and testing for the efficacy of vaccines and method of administration, including imported vaccines, are presumed to have considerable room for improvement.

d. Training

There are training facilities, such as laboratories, lecture halls and hostel which provide newly-employed technical staff with basic education and technical training for a total of 1.5 years, thereby striving for the improvement of technical standards of its personnel. At present, some training activities are conducted under assistance from West Germany (GT Z).

The types of training courses now held at VIR are as follows:

Type of Course	No. of Students	Duration	Requested from:
Cryostat & Audio Visual	1	1 Week	Agricultural University of Malaysia, Serdang
Refresher Course for Veterinary Assistants Sp. Grade	8	4 days	Perak State Veterinary Department
Microbiology	2	8 Weeks	Science University of Malaysia
Microbiology	2	8 Weeks	National University of Malaysia
Vaccine Production	1	8 Weeks	(Dr.Dhabal), Chief Biologica Products, Nepal
Bacteriology/ Virology	3	6 Weeks	MARA Institute of Technology, Malaysia
All Sections	4	5 days	Nepal
Basic Micrology	1	4 Weeks	Dirdings Soya & Multifeeds Sdn Bhd Kuala Lumpur
Pullorum Course	27	5 days	Veterinary Dept. Malaysia
Various Laboratory Techniques	20	6 - 8 Weeks	Agricultural University of Malaysia, Serdang

GT 2 Sponsored Course

Type of Course	No. of Students	Duration	Requested from:
Diagnosis of and Trichomoniasis	6	4 days	Diagnostic Veterinary Laboratories, Malaysia
Basics in Computerisation	6	4 days	- do -
Course in Microcopy	6	4 days	- do -
Clinical Chemistry	5	4 days	- do -
Training the Trainer Pr. 2	27	1 week	- do -

e. Propagation activities

Concerning various livestock diseases, including poultry, farm households are directly contacted in an effort to extend hygienic guidance and field surveys on various diseases.

5. Regional Veterinary Diagnosis Laboratory (RVDL)

There are RVDL's at nine locations throughout the country and at seven locations in Peninsular Malaysia, all of which chiefly perform the following activities:

- a. Disease diagnosis
- b. Field survey
- c. Guidance of farm households

The average staff of the RVDL comprises about 30 people including four veterinarians. The RVDL's at Bukit Tenga and Petaling Jaya have four sections dealing with virology, bacteriology, parasitology and pathology. Petaling Jaya also has poison diagnosis and feed analysis sections. Diagnostic Materials are often brought in from farm households or District Offices. The results of the diagnosis is prepared in four copies of diagnostic scores, one copy to the VRI Headquarters, the State Services and the concerned District Office.

6. Outline of Related Plans

The Government of Malaysia exerted effort in the following items with regard to the said sector under the Fourth Malaysia Plan (1981 - 85):

- a. Improvement of services to the poultry industry
- b. Increase in number of, and, improvement and expansion of RVDL's
- c. Despatch of professional/technical staff to foreign countries (for post graduate training and short courses to upgrade their expertise in poultry production and disease diagnosis.
- d. Manufacture and supply of vaccines for Newcastle Disease and Fowl Pox based on VRI's research concerning the production of vaccines for poultry diseases.

Meanwhile, the following items have been planned and completed, with the exception of a few portions:

- a. Construction of biologics unit (Not enforced for budgetary reasons)
- b. Construction of pathology unit (Completed in 1982)
- c. Construction of experimental unit (Completed)
- d. Purchase of equipment and improvement of facilities

Under the Fifth Malaysian Plan (1986 - 90), the following items called for concerning the VRI:

- a. Biologics Unit (M\$5,000,000)
- b. SPF Unit (M\$1,990,000)
- c. Electromicroscope Unit (M\$660,000)
- d. Feed Analysis Unit (M\$100,000)

Also under the plan, budgetary appropriations of M\$6,000,000 are demanded for the construction of a RVDL in Johor Bharu (construction cost of M\$2,000,000), improvement of existing facilities, purchase of equipment, etc.

2-3-2-2 Other ASEAN Countries

Organization of the animal health administration of other ASEAN countries are shown below. Parentheses indicate the main task.

1. Indonesia

Administration and research concerning animal health are conducted by the Livestock General Bureau of the Department of Agriculture and the Agency for Agricultural Research & Development

Organs relating to poultry diseases are as follows:

- a. Animal Health Division of the Livestock General Bureau
(All administrative affairs relating to animal health).
- b. Research Institute for Animal Disease
(Disease diagnosis of assessment materials sent from various parts of the country)
- c. Animal Health Centre (Disease diagnosis, etc. at various locations)
- d. District organs (Vaccination, etc.)

2. Philippines

The Animal Health Administration is under the charge of the Bureau of Animal Industry of the Ministry of Agriculture. The organs relating to chicken diseases are as indicated below:

- a. Director-General of the Regional Bureau (All administrative directions including those concerning animal health are conveyed to Prefectures, cities, towns and villages through the Director-General of the Regional).
- b. Diagnostic Division of the Bureau of Animal Industry
(containing the state-run Animal Disease Diagnostic Laboratory engages in the diagnosis of poultry diseases.)

- c. Animal Disease Division, Bureau of Animal Industry
(Research on poultry diseases and manufacture of vaccines,
etc.)

3. Singapore

Animal Health is under the control of the Veterinary Division, Primary Production Department, Ministry of National Development. The organs concerned with poultry diseases are as follows:

- a. Health Section (Prevention and control out of animal diseases, diagnosis of diseases, etc.)
- b. Veterinary Public Health Laboratory
(Disease diagnosis of assessment materials sent from various parts of the country).
- c. Vaccine Assay Laboratory (inspection of vaccines to be used within the country).
- d. Treatment Centre (Clinical diagnosis of livestock diseases on the field, etc.)

4. Thailand

The animal health administration is in the hands of the Department of Livestock Development of the Ministry of Agriculture and Cooperatives. The sectors regarding poultry diseases are as shown below:

- a. Disease Control Division (Prevention of contagious epidemics)
- b. Veterinarian Service Division (Assessment of disease diagnosis, supply of pharmaceuticals, etc.)
- c. Biological Products Division
(Manufacture and supply of vaccines, etc.)
- d. Veterinary Research and Educations Division
(Research concerning livestock hygiene)
- e. Regional Livestock Development Offices (Coordination of production and hygiene of livestock)

- f. Chang Wad Livestock Development Offices
(Disease Control, including vaccinations).
- g. Animal Health Centre

2.4 Background and Contents of the Request

2.4-1 Background of the Request

In ASEAN countries, consumption of livestock has been increasing in line with the improvement of food life in recent years. Particularly, consumption of chicken has been growing every year. This is supposedly because the productivity of poultry farming is high and also because eating poultry is free from religious restrictions, if raised on the ground, and such epidemics as respiratory diseases, if grown in large flocks. Such being the case, respective countries are much interested in disease control from the standpoint of promoting the poultry industry.

The plan for the establishment of the research training centre concerning poultry disease in ASEAN countries originated with the recommendation of the APHCA Poultry Disease Workshop held in Kuala Lumpur, Malaysia, in 1978. At first, the plan was examined in contact with the Ministry of External Affairs of the United Kingdom. Subsequently, on the basis of the recognition that the plan relates to common problem for all ASEAN countries, a request was made to Japan for its technical cooperation concerning the plan at the 5th Japan-ASEAN Forum held in 1982. Through consultations at the 6th and 7th Japan-ASEAN Forum (May 1983 and October 1984, respectively), the Japanese side indicated its willingness to take up the matter as a joint ASEAN project, if Malaysia serves as its host country and if ASEAN countries agree to bear part of necessary expenses in some form or other. The Malaysian representative then made a strong request to Japan for despatching a study team to push for the realization of the project. In compliance with such a request, the JICA sent a contact mission concerning the technical cooperation under this project in November 1984.

As regards the request for the grant aid concerning this project, a request for the construction buildings and the supply of equipment was made orally at the session of annual meeting of technical cooperation with Malaysia held in August 1984. A formal request regarding this matter was made by the Government of Malaysia in 1985.

2-4-2 Contents of the Request

This project is designed to establish a Research and Training Centre concerning Poultry Diseases in ASEAN Countries in the campus of VRI in Ipoh City, Malaysia, to try to spread research results and techniques through the improvement of research levels regarding poultry diseases as well as related training and thereby contribute to personnel development concerning the research on the diseases. The execution of this project will be made by DVS of the Ministry of Agriculture of Malaysia in collaboration with ASEAN-COFAF's CGL. The mutual relations of the organs concerned with this project are as shown in page 4 of Minutes of Discussions in Appendix. Activities planned to be conducted at the centre are as follows:

1) Research Activity

Research at the planned centre will be conducted in the following four fields:

- a. Virology
- b. Bacteriology
- c. Parasitology
- d. Pathology

2) Training Activity

The training courses to be held by Malaysia for ASEAN countries will be as follows:

- 1) ASEAN seminar on Poultry Diseases
- 2) ASEAN course on Basic Diagnostic Techniques of Poultry Diseases
- 3) ASEAN course on Special Diagnostic and Research Techniques on Poultry Disease

The outline of the buildings and equipment requested by the Government of Malaysia are as follows:

1. Buildings

- 1) Main building(s) for research, training and administration
 - a. Virology research laboratory
 - b. Bacteriology research laboratory
 - c. Parasitology research laboratory
 - d. Pathology research laboratory
 - e. Common equipment and apparatus rooms
 - f. Washing and sterilizing room
 - g. Electron microscope room
 - h. Data processing room
 - i. Lecture room
 - j. Training room
 - k. Poultry inspection room
 - l. Administrative Office
 - m. Conference room
 - n. Other necessary facilities
- 2) Experimental chicken house
- 3) Specific pathogen free (SPF) poultry units
- 4) International hostel inclusive of apartments for visiting ASEAN trainees and instructors

2. Equipment

- 1) Equipment for research
 - a. Tissue culture equipment
 - b. Fluorescent antibody test equipment
 - c. Enzyme-linked immunosorbent assay system
 - d. Equipment for preparation of media
 - e. Microscopes and accessories
 - f. Fractionating collector set
 - g. Laminar flow
 - h. Insectarium
 - i. Autopsy equipment

- j. Cryostat
- k. Equipment for staining procedures
- l. Equipment for pathological inspection
- m. Refrigerator/freezer/ultra deep freezer
- n. Centrifuge
- o. Liquid nitrogen container
- p. Freeze drying apparatus
- q. Constant temperature incubator
- r. Washing and sterilizing equipment
- s. Electron microscope and accessories
- t. Data processing equipment
- u. Other necessary equipment

2) Equipment for training

- a. Microscope, discussion microscope and accessories
- b. Centrifuge
- c. Refrigerator
- d. Culture of anaerobic bacteria apparatus
- e. CO₂ incubator
- f. Egg incubator
- g. Audio-visual education aid
- h. Other necessary equipment