

BASIC DESIGN STUDY REPORT
ON
THE PROJECT FOR ESTABLISHMENT OF
AUTOMATED FINGERPRINT
IDENTIFICATION SYSTEM (AFIS)
IN
THE REPUBLIC OF THE PHILIPPINES

February 2003

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
SECURITY ELECTRONICS AND COMMUNICATIONS
TECHNOLOGY ASSOCIATION (SECTA)

PREFACE

In response to a request from the Government of the Republic of the Philippines, the Government of Japan decided to conduct a basic design study on the Project for Establishment of Automated Fingerprint Identification System (AFIS) and entrusted the study to the Japan International Cooperation Agency (JICA).

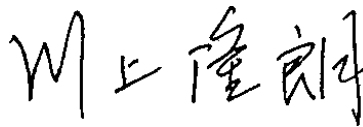
JICA sent to the Philippines a study team from 15 July to 3 August 2002.

The team held discussions with the officials concerned of the Government of the Philippines, and conducted a field study at the survey area. After the team returned to Japan, further studies were made. Then, a mission was sent to the Philippines in order to discuss a draft basic design, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of the Philippines for their close cooperation extended to the team.

February 2003



Takao Kawakami

President
Japan International Cooperation Agency

February, 2003

Letter of Transmittal

We are pleased to submit to you the basic design study report on the project for Establishment of Automated Fingerprint Identification System (AFIS) in the Republic of the Philippines.

This study was conducted by the Security Electronics and Communications Technology Association, under a contract to JICA, during the period from July 2002 to February 2003. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of the Philippines and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,



Takashi Matsuoka
Project Manager,

Basic Design Study Team on
the Project for Establishment
of Automated Fingerprint
Identification System (AFIS)

Security Electronics and
Communications Technology
Association

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Abbreviations

Abbreviation	Expansion
AFIS	Automated Fingerprint Identification
CIDG	Crime Investigation Detection Group
CLO	Crime Laboratory Office
CLS	Crime Laboratory Service
DILG	Department of Interior and Local
FBI	Federal Investigation Bureau
ICPO	International Criminal Police Organization
INP	Integrated National Police
IQS	Image Quality Specification
LP	Latent Print
LP/LP	Latent To Latent Inquiry
LP/TP	Latent To Ten Print Inquiry
NCR	National Capital Region
PC	Philippine Constabulary
PNP	Philippine National Police
TP	Ten Print
TP/LP	Ten Print To Latent Inquiry

Other Terminologies

AFIS Administrator	:	System Administrator
Arch& Tented Arch	:	Arch and Tented Arch type of Fingerprint Patterns (One of the Fingerprint patterns)
Candidate List	:	Candidate List
Case No	:	Criminal Case Number
Computer Division	:	A division which deals with Computer
CORE/AXIS	:	Definition of the Center of Fingerprint (CORE)/Definition of Finger Direction (AXIS)
Database Manager	:	An Administrator who is in charge of Database
Duplicate Hit	:	The fact that duplicated fingerprint exists in the Database of Ten Fingerprint Database
Exhibit No.	:	Evidence Number
Fingerprint Identification Section	:	A Section in charge of Fingerprint Verification
Hit	:	Coincidence of Fingerprints after inquiry
Index Crime	:	The criminal category of murder, injury, robber, thief, and Rape in the Philippines
Key No.	:	A Number to specify a criminal person
Latent Registration	:	Registration of Latent Fingerprint
Latent Section	:	A Section in charge of Latent fingerprint
Latent Supervisor	:	The Supervisor in charge of Latent Fingerprint
Loop	:	Loop type of Fingerprint Pattern (One of the Fingerprint Patterns)
Maintenance Section	:	A Section in charge of System Maintenance

National Police Commission	:	National Committee of Police by Civilian Organization
No Hit	:	Disagreement of Fingerprints at inquiry
Non-Index Crime	:	The criminal category rather than Index Crime mentioned above
Operational Supporting Unit	:	An unit who assists operation
Pattern Type	:	Fingerprint Patterns Type
Region	:	Police Regions, total of 16
Sequence No.	:	Serial Numbers derived from Latent Fingerprint Pattern (Sub Numbers))
Software Maintenance	:	A group in charge of Software Maintenance
Ten Print Registration	:	Registration of Ten fingerprint
Ten Print Section	:	A Section in charge of Ten Fingerprint System
Ten Print Supervisor	:	The Supervisor in charge of Ten Fingerprint
Verify	:	Confirmation of Fingerprint Inquiry Results
Whorl	:	Whorl Type of Fingerprint Pattern (One of the Fingerprint Patterns)

Summary

The Republic of the Philippines (hereafter called the Philippines) is one of the ASEAN countries where democracy has been rooted firmly most and is making her efforts toward further enhancement of democracy with the slogan, "Peace and Public Order under the respect of Human Rights" under the Medium-Term Philippine Development Plan, 2001-2004 of the National Development Plan produced by the former Estrada Government. Also her recent economical activities are getting more active and more internationalized and her GDP shows 4.1% of increasing rate. However, the increasing of economical disparity between rural and urban, poverty problem, and anti-government activities are getting her serious problem.

On the Medium-Term Philippines Development Plan, 2001-2004, it is raised to be one of the important subject of priority theme to enhance local development and reformation of governance, while in the country, it is reported that the battle with the anti-government Islam power in the mid Mindanao Island area and the communist guerrilla activities in the Visayan region are still active. Those anti-government activities together with recent growing economical activities and its globalization, the criminal situation goes toward to diversified pattern in modes, wider in area, and more heinous in nature.

The Philippine National Police (PNP), in charge of security activities in the Philippines, has drawn up the senior plan of this project, "PNP Modernization Program 2001-2003", in order to react these criminals and is trying very hard to enhance police capability. On this Program, improvement of police equipment and technique to enhance capability of PNP are put into the position of importance. Existing PNP equipment are getting old and far behind with respect to those of the developed countries, however, equipment update is hard due to the lack of budget.

It is important to collect evidence such as latent fingerprints during the initial investigation including scene identification activities to specify a suspect person. In the Philippines, importance of fingerprint lifting is recognized and technical instruction by the experts dispatched from JICA has been promoted since 1982. However, even though the fingerprint lifting work has been done, it takes much time to specify suspects and lifted fingerprints have not been utilized efficiently because fingerprint inquiry work has been done by human eyes from 200,000 sheets of fingerprint cards at CLS (Crime Laboratory Service) which is subordinated to PNP. Currently, they are not in the position of doing ample coordination with foreign countries to react criminal cases happening in wider area and of internationalized.

With these background, the Government of Philippines has requested funds necessary for

promoting the project as the grant aid to the Government of Japan in April 1998 to implement AFIS (Automated Fingerprint Identification System) following her plan of implementation in order to inquire quick processing of mass fingerprint cards automatically as well as protecting mistaken arrests.

Upon the reception of this request, JICA had sent first Basic Design Survey Team I in September 2001 and Basic Design Survey Team II has been sent in August 2002 to the Philippines. The Basic Design Survey Team II has studied requested equipment, related equipment, administrative status, social situation (Number of Criminals happened, etc.) and confirmed feasibility of the request, necessity of equipment, adaptability with activities, operational and maintenance system, etc. After those activities, the team has discussed with CLS and PNP to wrap up minutes of discussion. Following the domestic analysis, the team has produced a draft basic design, dispatched a mission in January 2003 and after the briefing, both sides agreed to set discussion minutes.

Through the survey, the Government of Japan has decided to produce a plan to implement the following equipment in the Philippines to protect her criminal cases and to contribute her security rests by efficient fingerprint inquiry, increasing the number of verification, and improvement of inquiry accuracy.

<Details of Equipment under planning>

No.	Equipment Name	Purpose	Quantity
1	AFIS	Automatic Fingerprint Identification	1 set
2	Fingerprint Kit	Fingerprint Lifting	1,373 sets
3	Engine Generator	Power feeding during commercial power down	1 Unit
4	Cabinet for Fingerprint cards	Classification and retaining fingerprint cards	100 Units
5	Computer terminal's Rack	For installation of operation workstation	18 Units
6	Lamp with loupe	For confirmation of fingerprint cards	18 Units
7	Working desk for fingerprint classification	For pre-processing work on fingerprint cards	18 Units
8	Backup media storage cabinet	For retaining and management of backing up media	5 Units
9	Book shelves for AFIS manual	For retaining and reviewing of AFIS instruction manuals	2 Units
10	Cabinet for Blank Fingerprint Cards	For retaining of blank fingerprint cards	4 Units
11	Air-Conditioner for Server Room	For protection of server	1 Unit
12	Air-Conditioner for working Room	For protection of operation workstaion	1 Unit

< Soft Component Plan >

No.	Items
1	Data Conversion
2	AFIS Operation Skill
3	Software Maintenance Skill
4	System Administrator Skill
5	Fingerprint Verifier Skill
6	Database Quality Control

It is required total term of 19 months to promote the project by the Japan Grant Aid.

The following effects are expected by the promotion of the project:

<Direct Effects>

- 1) After the implementation of AFIS, when the AFIS usage proficiency of CLS being increased through the processing training, AFIS will contribute to the increasing of fingerprint processing numbers. Assuming that 0.3 hour/case for Ten Prints, it is able to process 200 cases per day and that 0.83 hour/case for Latent Prints, it is able to process 57 cases per day.
- 2) After the delivery of Fingerprint Kits to all of the CLO posts in the Philippines, procurement of the necessary number of Fingerprint Cards, and lifting fingerprints from all of the Index Crimes completed as scheduled, it is able to collect 40,000 cases per year and data for approx. 40,000 cases per year and those data will be piled up in AFIS which will be contributed to the criminal investigation efficiently.
- 3) It will be able to inquire other criminal cases for about 20,000 cases per year after the implementation of AFIS and those will be contributed to resolve pending criminal cases, etc.
- 4) It will be able to inquire the same criminals for about 10,000 cases of Latent Prints annually after the implementation of AFIS and those will be able to provide hints to resolve pending cases.

<Indirect Effects>

- 1) The equipment for this project is planned to follow the international quality specifications (IQS), so it will be able to provide effective data for the inquiry from overseas as well as to

cooperate with foreign countries for the international crime cases.

- 2) It will be able to reduce the possibility of mistaken arrest by using high accuracy fingerprint verification capability of AFIS.
- 3) By the implementation of AFIS, descriptive data on cards will be re-arranged, cards will be classified by ID card, furthermore, sub-classification will be done for each Key No. and ID No.. As the result, a correct card will be extracted even if a suspect uses false name or the same full names and this will be able to obtain hints or keys for a criminal person by using fingerprint verification.

The following two points are indicated to the Philippines side for the expected effects by this project in order to realize and to maintain the increased number of fingerprint processing, and to realize and keep the protection of mistaken arrests by utilizing AFIS.

(1) Continuous Procurement of Fingerprint Cards (40,000 sheets/year)

The fingerprint information on Ten Print Cards is the original data to be registered into AFIS and it is required to procure and distribute approximately 40,000 sheets of fingerprint cards annually corresponding to the Index Crimes(This IS included arresyed persons and suspected persons.).

(2) Keeping Concentration of Fingerprint Cards to CLS

Ten Finger Prints are collected all over the Philippines and AFIS will be utilized more efficiently if all of these cards are concentrated into CLS and CLS manages all fingerprint data for all country. Therefore, it is necessary to make up a system to forward fingerprints lifted by CLO to CLS securely after the implementation of AFIS.

The effect of the fingerprint capability enhancement project is great and it is considered to be important to obtain security for the Philippines nationals as well as foreigners in the Philippines. Also, it is expected to have a certain level of sustaining effects to the terrorism activities which have been broken out in recent years and will contribute to the target of modernization of the Philippines National Police through their Medium-Term Philippines Development Plan,1999-2004 to secure pubic safety and national security.

Furthermore, it is already confirmed that the Philippines side will obtain necessary budget and personnel required for the project operation and maintenance and no problem exists.

Upon reviewing the above factors, it is considered that this project is adequate to subject the

grant aid project by Japan.

As previously mentioned, tremendous effects are expected through this project and the project will contribute to the secure life of the Philippines accordingly. Therefore, it is considered to be adequate to decide this AFIS project to be subjected to the cooperation project by the Grant Aid.

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11. AFIS Equipment Layout(2F)

Chapter 1 Background of the Project

1-1 Background and Circumstances of the Requests

In the Republic of the Philippines (hereafter referred to as the Philippines), criminal investigation activities by fingerprint have also been promoted as one of the means to resolve criminal cases which has been increased year by year. In the criminal investigation activities to react domestic criminal cases, evidence such as latent fingerprints have been lifted during the initial investigation activities to specify criminal suspects and the current total number of ten fingerprints and latent fingerprints of criminal person have been piled up approximately 200,000 person. Fingerprint verification work has been promoted by CLS (Crime Laboratory Service) which is one of the subordinate of PNP (Philippine National Police), however, the work to specify has been done by manual from approximately 200,000 sheets of fingerprint cards and it resulted that lifted fingerprints have not been utilized efficiently on the criminal investigation.

It is being an urgent matter to establish and expand fingerprint verification system in order to utilize lifted fingerprints to their criminal investigation activities efficiently. Establishment of AFIS (Automatic Fingerprint Identification System) comprises the core of fingerprint verification system and is considered to be necessary and essential as a criminal resolving means.

Most of the major countries in the world have been established AFIS in order to react the global and international crime cases. It is quite efficient to exterminate criminal cases not only in the Philippines but also worldwide criminal cases by implementing AFIS in the Philippines to cooperate those countries. Major countries which have been established AFIS are followings;

➤ Countries established AFIS

Major Countries:

- | | | |
|---|----------|-------------|
| - United States of America (Federal Police, State Police) | - Canada | - Australia |
| - United Kingdom | - France | - Italy |
| - Germany | - Spain | |

Southeast Asian Countries

- | | | |
|--|------------|-------------|
| - China (Taiwan, Hong Kong, Shanghai, and Guangdong) | - Malaysia | - Thailand |
| - Indonesia | - Vietnam | - Singapore |

Under those situations, it is becoming an important subject, to modernize the capability and equipment of PNP such as the establishment of AFIS in order to respond domestic criminal cases in the Philippines as well as wider area criminals.

In addition to those situations, to respond the fact that many Japanese people in the Philippines and Japanese tourists to the Philippines have been involved by criminal cases in the Philippines, to expand to out put dispatch of expert by JICA since April 1982, and instruction efforts to the Philippines technicians in Japan for fingerprint identification, to reflect those technical assistance results to fingerprint verification and scientific investigation efforts, it is considered to be necessary to establish AFIS.

With those background, the Government of the Philippines has requested the grant aid to the Government of Japan in April 1998 to establish AFIS following their plan of implementation in order to inquire mass fingerprint cards automatically and quickly as well as protecting mistaken arrest. Based upon this request, the first Basic Design Study Team I had been dispatched in September 2001 and the Basic Design Study Team II has been dispatched in August 2002 to the Philippines, consecutively.

This project is aiming a goal of improving the investigation capability of PNP which has the responsibility of governing security of the Philippines, and will contribute to the crime protection and keep peace and order in the Philippines.

1-2 General Scope of the Request and Major Components

Requests of this project by the Government of the Philippines are a procurement of set of AFIS, its related modification on facility, and technical transfer of operation and maintenance.

Requested major items are as follows:

(1) Requested Equipment List

Requested Equipment List is as follows;

Item	Equipment	Qty
AFIS	1. AFIS Server	2
	2. Fingerprint Matching System	3
	3. Archive System	2
	4. Tenprint Fingerprint Workstation	10
	5. Latent Fingerprint Workstation	7
	6. Image Process Unit	3
	7. Administration Workstation	1
	8. Network Administration System	2
	9. UPS	2
	10. Backing Up System	1
	11. Fingerprint Printer	2
Fingerprint Lifting Kit and others	12. Fingerprint Kits for Latent	1,700
	13. Engine Generator	1

14. Cabinet for Fingerprint Cards	100
15. Computer Terminal's Rack	18
16. Latent Lux Lamps	18
17. Working Desks for Fingerprint Classification	18
18. Backup Media Storage Cabinets	5
19. Book Shelves for AFIS Manual	2
20. Cabinets for Blank Fingerprint Cards	4
21. Air-Conditioner for Server room	1

It was confirmed that facility modification for the installation of the requested equipment will be done by the Philippines side.

(2) Technology Transfer for AFIS Operating Skill

As for the technical support for the AFIS operation skill, the following eleven items were requested.

Requested Technical Support is as follows;

Request Number	Requested Technical Guidance Service
1	Data Conversion Skill
2	AFIS Operation Skill
3	Software Maintenance Skill
4	Hardware Maintenance Skill
5	System Administrator Skill
6	Fingerprint Verifier Skill
7	Database Quality Control
8	Instructor Training Skill
9	Latent Tracing Skill
10	Latent Lifting Skill
11	Fingerprint Classification Skill

Those requested items have been examined against soft component scheme.

Chapter 2 Contents of The Project

2-1 Basic Concept of the Project

2-1-1 Senior Objectives and the Project Objectives

On the Republic of The Philippines (hereafter referred to as “the Philippines”) , the Medium-Term Philippine Development Plan (2001-2004) of the National Development Plan produced by the former Estrada Government has been taken over by the Arroyo Government and the Philippines is making efforts toward further enhancement of democracy with the slogan, “Peace and Public Order under the respect of human rights”.

However, while in the Philippines, the battle with the anti-government Islam power in the region of Mindanao area and the communist activities in the Visayan region are still active and 30 people kidnapping case has been occurred by the Abu Sayyaf group on Palawan Island. With these terrorism cases which is considered to be based on the anti-government activities together with recent economical activities of globalization, the criminal situation goes toward to diversified pattern in modes, wider in area, and more heinous in nature. Furthermore, criminal cases caused by the Filipino in Japan as well as criminal cases caused by the Japanese people in the Philippines have a tendency of increasing and the action against those is appending issue for the both countries.

Philippine National Police (PNP) has been started in 1991 under the control of National Police Commission of civilian organization, in the form of integration of Philippines Constabulary (PC) with the Integrated National Police (INP). Total number of the employees is 112,000 and the total budget is 28 billion PhP (FY2000). In order for dealing with the recent tendency of crimes, PNP has arranged the Crime Laboratory Service (CLS) and the Crime Investigation Detection Group(CIDG) to enhance scientific crime investigation capabilities. However, all the equipment of the investigation are too old for work and extremely behind respect to those of the developed countries.

CLS has drawn up a modernization plan to enhance scientific crime investigation by replacing and making satisfaction of equipment, however, the plan has not been proceeded as scheduled due to the lack of funds. Subsequently, fingerprint verification work which is the major responsibility of CLS does not contribute to criminal investigation efficiently due to lack of fingerprint cards, lack of fingerprint collection kits, and time consuming manual verification work of fingerprint Inquiring.

Under such circumstances, this project is aiming to make CLS to be able to inquiry large number of fingerprint cards automatically, to specify suspects quickly, to avoid mistaken arrest and to make fast identification of a suspect by establishing an Automated Fingerprint Identification System (AFIS)

into CLS which will contribute to suspend criminal cases and maintain public order in the Philippines. Also, the performance of the equipment to be supplied should have international common standards in order to perform smooth international inquiry and investigation cooperation through the International Criminal Police Organization: ICPO for criminal cases by foreigners in the Philippines.

2-1-2 General Scope of the Project

Under this project, the Japan side will procure a set of AFIS, a set of related equipment and 1,373 sets of fingerprint kit for CLS. In addition to these, the Japan side will take care instruction work on data conversion against 210,000 cards of retained Ten Print data as well as giving technical assistance for the enhancement of operational capability as software components.

While by the Philippine side, securing personnel required to operate and maintain the AFIS, securing the budget to maintain the system, and fingerprint inquiring work against Ten Print work (approx.40,000/year) and Latent-fingerprint work (approx. 7,500/year) should be taken care. Beside these, the Philippine side will take responsibilities of delivering fingerprint cards required for fingerprint verification work, its collection, and necessary funds for them.

The Philippine side has already built an AFIS building of 2 story, 560 square-meter RC building which has been completed on May 20 , 2002 to secure the AFIS installation area.

Making efforts and activities by the both countries, current inquiring time by CLS of 1 case of latent fingerprint for 10 days and 1 case of Ten Print for a week will be improved by 50 minutes for the latent fingerprint and 20 minuets for Ten Print after the introduction of the AFIS. Consequently, it is expected that the number of fingerprint inquiring will be extraordinary increased. Furthermore, it is expected that the number of resolved criminal cases took only 21 cases in the past 5 years will be expanded to 450 cases per year.

2-1-3 General Description of the Fingerprint Inquiring Work Flow after completion of the Project

(1) Fingerprint Inquiry Work Flow of Current and after Completion of the Project

Fingerprint inquiring work is divided into two, Ten Print work and latent fingerprint work. The Ten Print work is done through ten print cards from suspects and Latent fingerprint work is done through latent fingerprint cards collected at the scene of criminal. Each card is firstly verified by each Crime Laboratory Office (CLO) subordinated to CLS through a local police station by which the card has been collected in their area and is verified and retained by CLS lastly.

CLS Operation Service as it is.

CLS provide the following two services currently.

1) Suspected Ten Print to Unsolved Latent Inquiry Service. (LI or TLI likes)

Ten print to Latent Inquiry Service for every criminal case.

Every crime scene, Local Region Office takes Latent Print and Suspected person's Ten print Cards from Criminal spot, and CLS compare Latent Print with Ten Print Cards for making the investigation. Unique Case Number assign to every criminal case, and keep Suspected person's Ten Print cards and Latent Print with case information and investigation in the envelope until providing Court as a piece of evidence from CLS.

To detect Ten Print card as a current offender from Name Search.

In case officer is already detected one of suspected person's Name, and there is no chance to take a Ten Print Card for this suspected person who is as a current offender. Take a Ten print Card's photo, and adding one of suspected persons to case information and investigation.

Ten print card to Ten Print card Inquiry Service.

In case officer is already detected one of suspected person's Ten Print Card, and he assumes a false name of this suspected person who is as a current offender. CLS find the right name by using Ten Print to Ten Print Inquiry Service, and adding one of suspected persons to case information and investigation.

2) Collecting arrested person's Ten Print Card.

After arresting the criminal person, all of Ten Print Cards are collected to CLS. And these cards should go to Tenprint Criminal Cabinet.

The fingerprint workflow of current and that of future after the completion of the project are shown on Figure 1-1 and 1-2. After the project completion, there will be no remarkable change in the current workflow. Time required to work at CLS which occupies most of the time, will be reduced extraordinary by computerization. As the result, it is expected to shorten the total time required to fingerprint inquiring.

Working Div.

Current Work Flow for Ten Print Inquiry

New Work Flow for Ten Print Inquiry

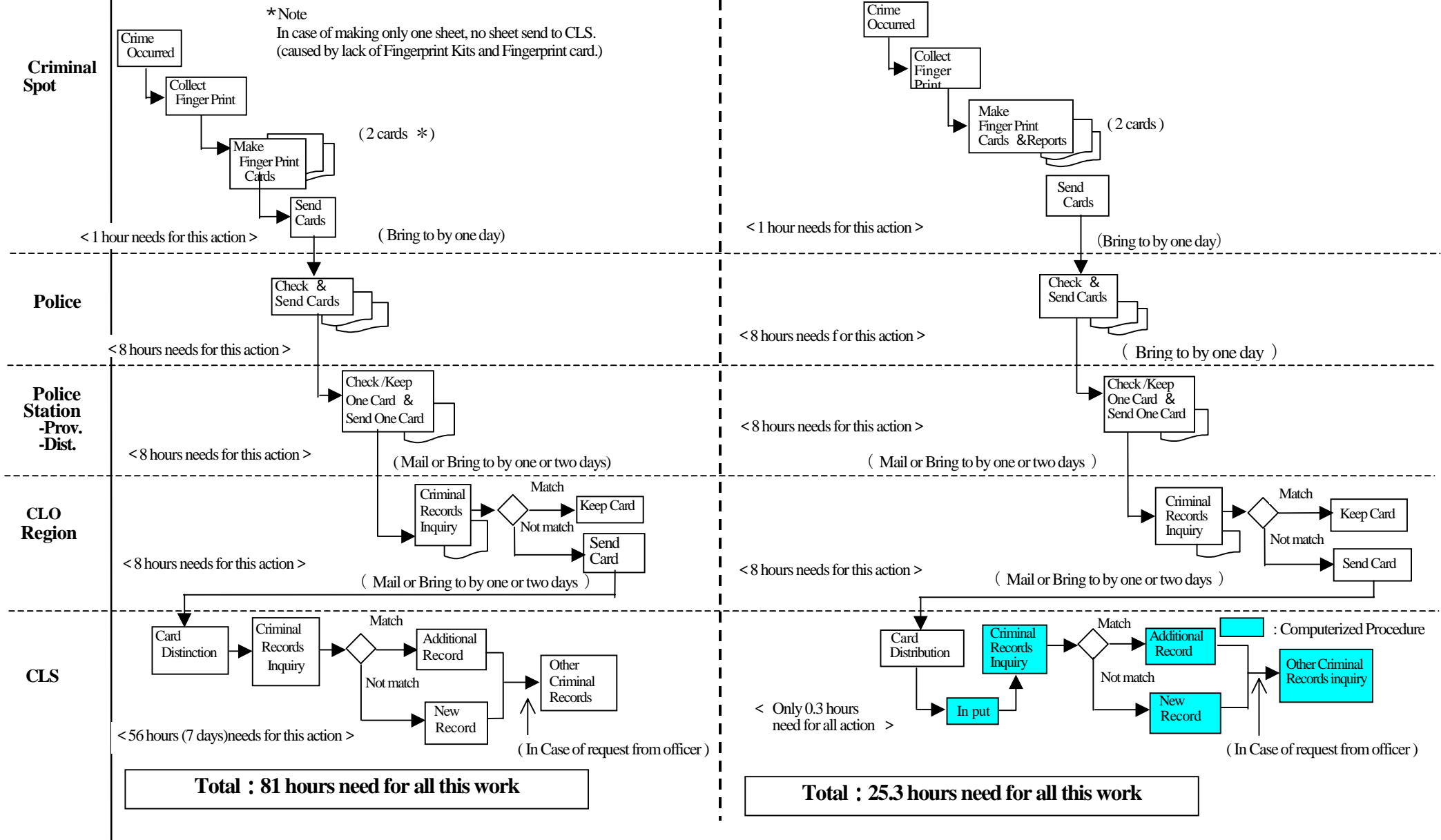


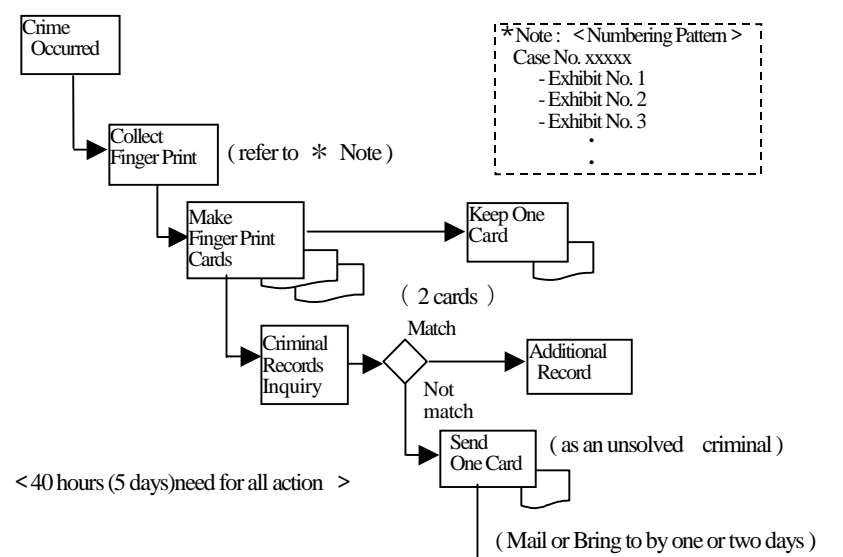
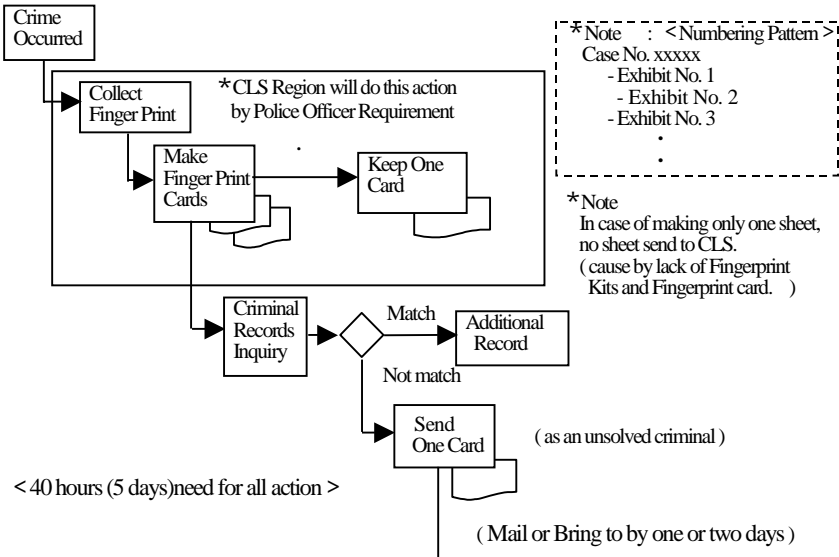
Fig.1-1 Current Work Flow & New Work Flow for Ten Print Inquiry

Working

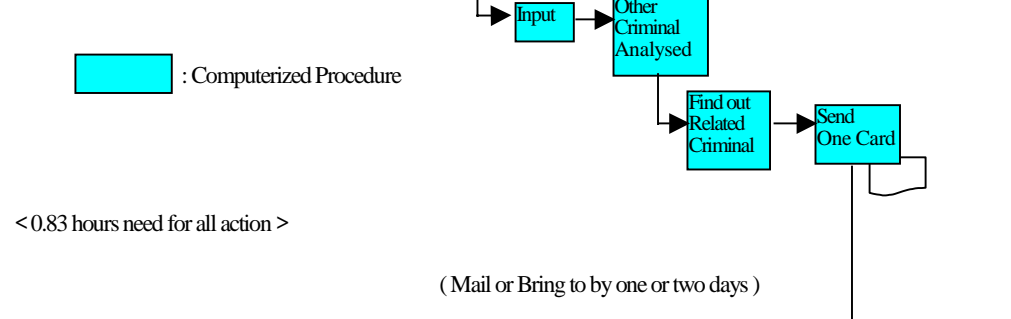
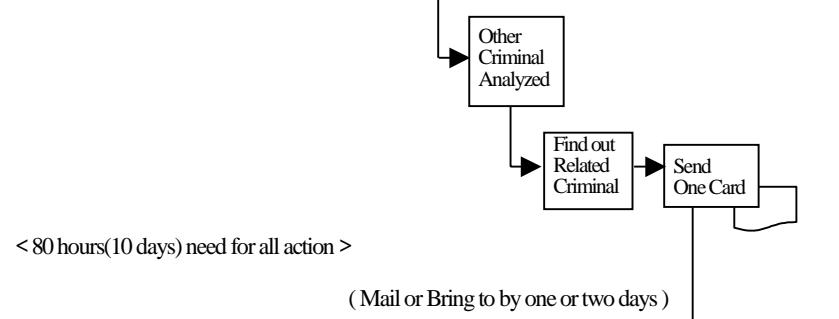
Current Work Flow for Latent Inquiry

New Work Flow for Latent Inquiry

**Criminal Spot
Police Office
-Dist.
-Prov.
-Regi.**



CLS



Other Related Office

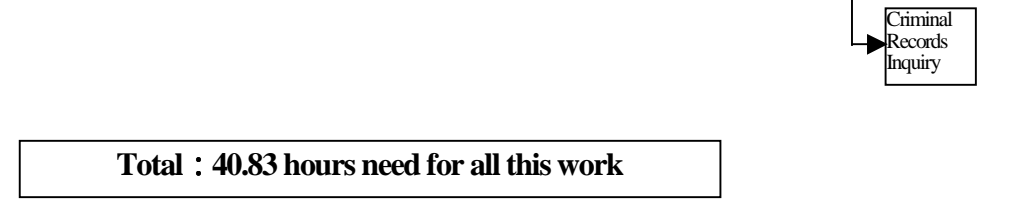


Fig.1-2 Current Work Flow & New Work Flow for Latent Inquiry

(2) CLS Fingerprint Workflow after the project Completion

As stated above, CLS inquiries fingerprint finally and retains the results to use at criminal investigation. Currently, CLS verifies a card from the criminal site with 210,000 cards by human eyes and CLS feed the results back to the investigation sites. However, when this plan starts, a part of Ten Print and Latent fingerprint inquiring work will be computerized. The processing flow after the plan started is shown on the flow on Figure 1-3 and Figure 1-4

1) Processing Flow of the Ten print Work

The processing workflow of the Ten print work is shown on the Figure 1-3. Operators action is shown on the left hand side and internal processing by the computer is shown on the right hand side.

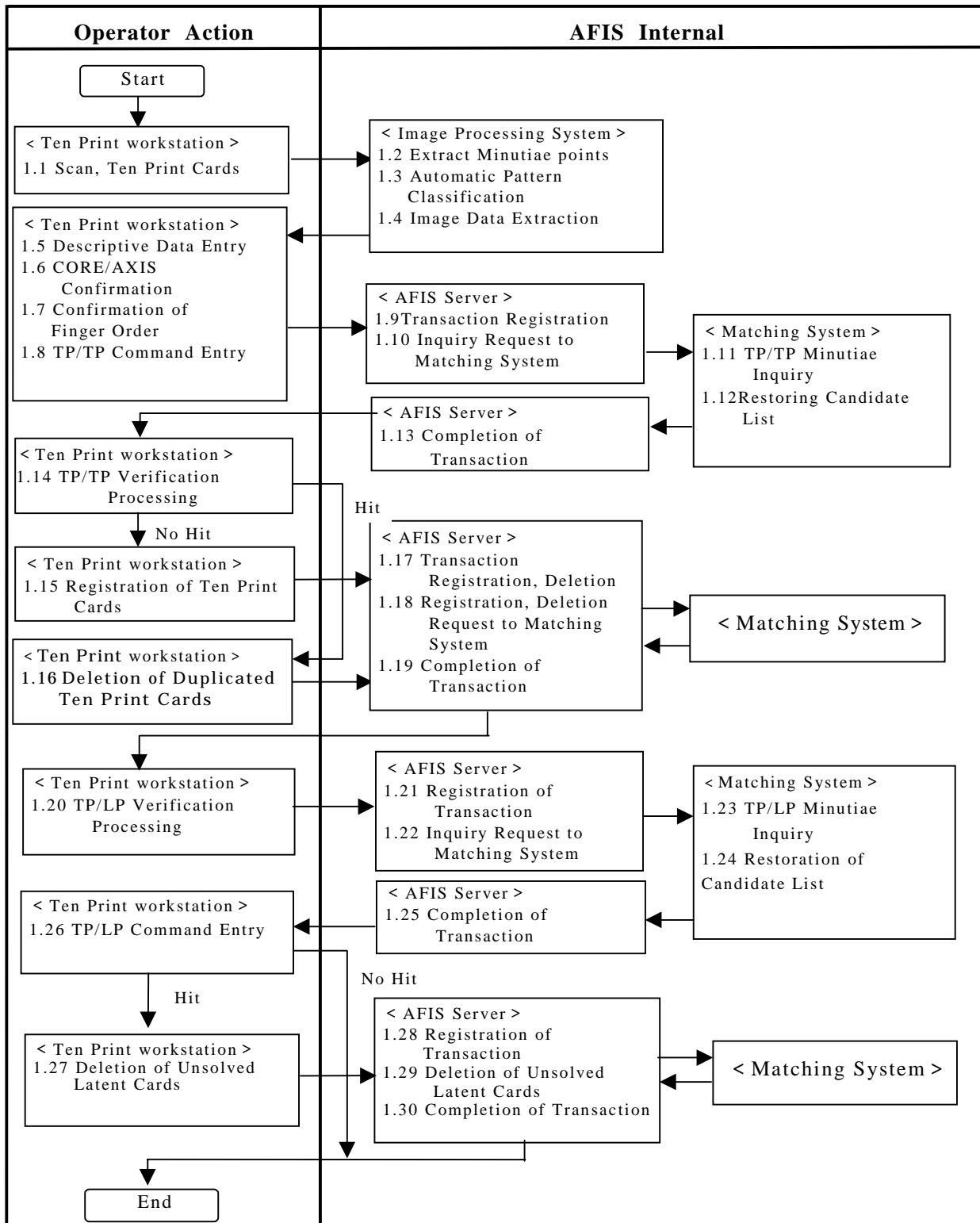


Fig. 1-3 Processing Flow of the Ten Print Work after the Plan starts

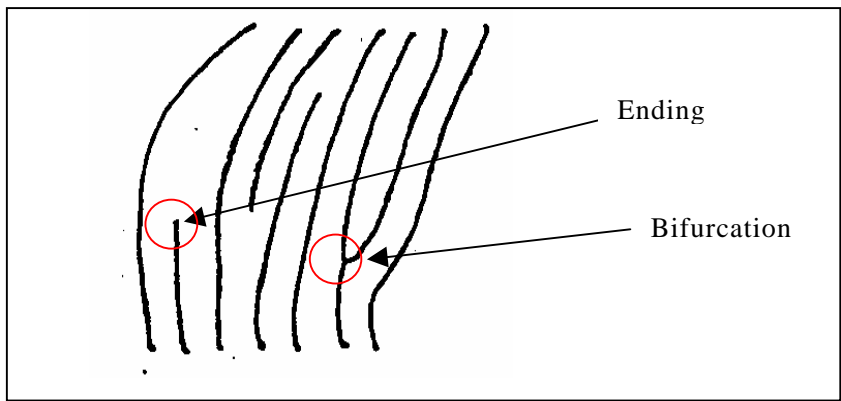
The processing details stated above are described below:

1.1 Scan, Ten Print Cards

Operator will read in a fingerprint image on the rolled ten-print card by using a scanner and confirm whether the scanned fingerprint image is read on the correct position.

1.2 Extract Minutiae Points

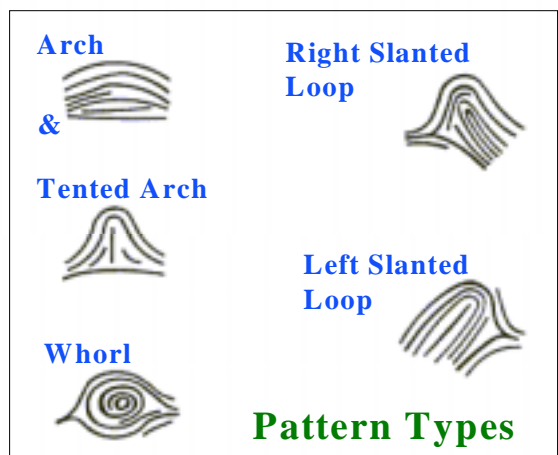
The Image Processing System will make up Minutiae data for inquiring from read-in ten-fingerprint image. This Minutiae includes Bifurcation Points and Ending as shown below. AFIS makes inquiring by using these Minutiae.



< Minutiae Examples >

1.3 Automatic Pattern Classification

The Image Processing System will extract Minutiae of the ten fingerprint automatically from the read-in fingerprints. Pattern types are shown on the figure, <Fingerprint Pattern Examples>, shown below:



<Fingerprint Pattern Examples>

1.4 Image Data Extraction

The Image Processing System will make up fingerprint image data (512 pixel x 512 pixel x 16 depth) to be registered in the ten fingerprint database.

1.5 Descriptive Data Entry

Operator will enter the information of a card numbered by the format shown below and personal information described on the card.

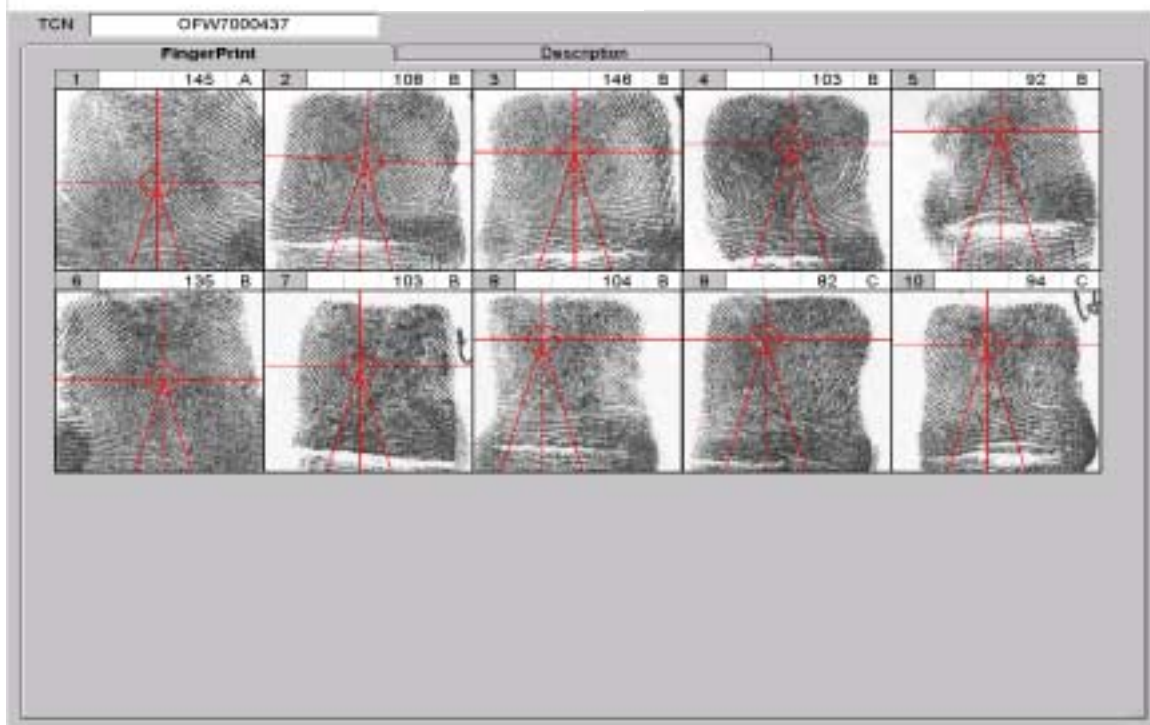
<Card ID Format>

Card ID Format	CCYYMMDD-C-SS-NNN
(Definition)	CC: Century YY: Last Two-Digits of the Year MM: Month DD: Date C: Card Type (C: Criminal, N: Non-Criminal, L: Latent) SS: Stational Office ID NNN: Sequence Number

1.6 CORE/AXIS Confirmation

The Image processing System will detect fingerprint CORE (Definition of Center) / AXIS (Definition of Finger direction) automatically. Operator will confirm the center of a fingerprint and axis of a finger by using screen, e.g. display examples as show below:

[sample screen]



< CORE/AXIS Display Examples >

1.7 Confirmation of Finger Order

Operator will confirm order of ten fingers whether they are placed correctly to compare with those on the rolled ten-fingerprint cards. On a fingerprint card, fingers are placed in order as shown on the table below.

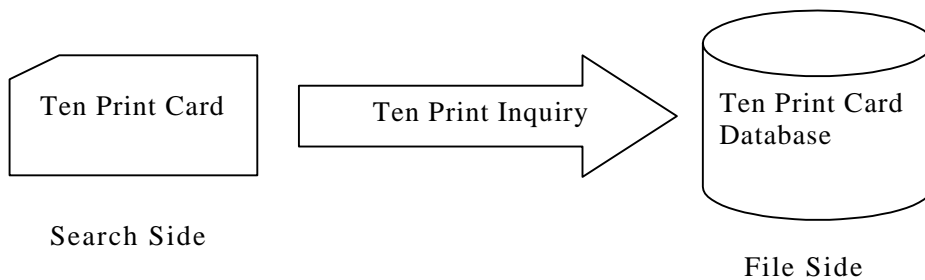
RH Thumb	RH Index Finger	RH Middle Finger	RH Ring Finger	RH A Little Finger
LH Thumb	LH Index Finger	LH Middle Finger	LH Ring Finger	LH A Little Finger

Note: RH: Right Hand, LH: Left Hand

<Rolling Order of Fingers on a Fingerprint Card>

1.8 TP/TP Command Entry

Operator will select Ten-Print to Ten-Print Inquiry processing and order comparison of ten-fingerprints of a suspect (Search Side) with all fingerprint data retained in the database. (File Side)



< Ten print To Ten Print Inquiry processing >

Database for Rolled Ten Fingerprint Cards is consisting of three groups shown on the table below:

Database Group	Contents
a. Personal Information Description Data	Sex, Race, Type of Finger, Pattern, Date of Birth
b. Ten Print Minutiae Data	Data Group for Fingerprint Inquiry
c. Ten Print Image Data	Fingerprint Image group for verification and card printing

< Database Structure of AFIS Ten-fingerprint >

1.9 Transaction Registration

The AFIS Server will accept an execution to process the item 1.8 above by the transaction management capability.

1.10 Inquiry Request to the Inquiry System

The AFIS Server will send out Minutiae data at search side to the Inquiry System for requesting

inquiry.

1.11 TP/TP Minutiae Inquiry

The Inquiry System will make inquiry of the Ten-print Minutiae Data at search side with those at file side one by one.

1.12 Restoring Candidate List

The Inquiry System will output Key No. (the number to specify a criminal) as the result of inquiry and score (degree of similarity) as well. In addition to these, the system will proceed editing process to rearrange by score order, read-in descriptive information from database for editing. The result of this editing will be stored in the primary file and inform AFIS Server the completion.

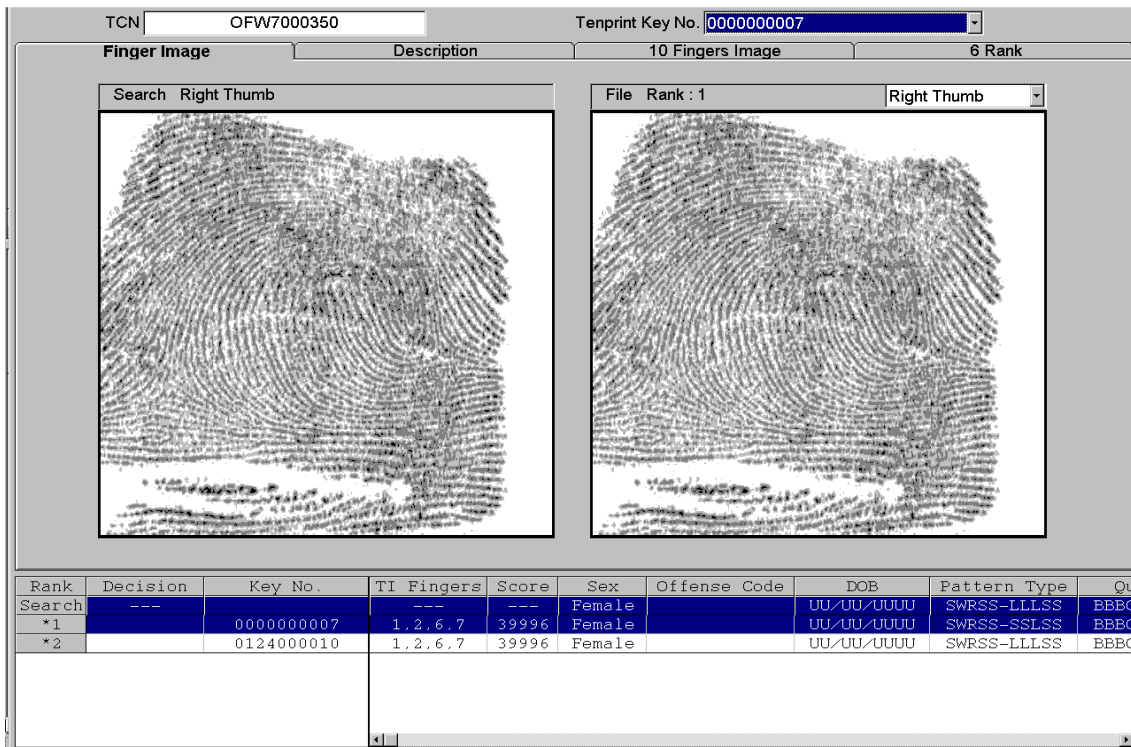
1.13 Completion of Transaction

The AFIS Server will recognize the completion of transaction mentioned in the item 1.8 above by using Transaction Management Function and shifts the Transaction Queue Status from Under Execution to Completion. Operator will confirm the completion of the transaction on the screen.

1.14 TP/TP Verification Processing

Operator will determine the result of Ten Print inquiry on the verification screen as shown below. Maximum number of candidates will be set as 255 and Key No. with score (degree of similarity) is displayed on the screen in descending order. Usually, right hand thumb of the first ranked candidate is displayed first.

[Sample Screen]



< Example of Verification Display >

Fingerprint image shown on the left side is the right hand thumb at the search side and on the right hand side fingerprint image shows the right hand thumb of the first ranked candidate at the file side.

1.15 Registration of Ten Print Cards

Operator will enter the key number (number to specify the suspect) when it is determined as No-Hit by the verification processing and make editing description data (refer to item 1.5) required to be registered.

1.16 Deletion of Duplicated Ten Print Cards

Operator will order AFIS to delete any other Rolled Ten-fingerprint Cards except leaving one with the best quality among Hit-candidates when determined Duplication Hit during the verification processing.

1.17 Transaction Registration, Deletion

AFIS Server will accept Registration Processing of the 1.15 or Deletion Processing of the 1.16 above by the Transaction Management Capability.

1.18 Registration, Deletion Request to the Inquiry System

At the AFIS Server, the server sends Minutiae Data at the search side to the Ten Print registration

queue line for the registration process during the Ten-fingerprint registration. When in the case of deleting the Rolled Ten-fingerprint, the server sends Key No.to be deleted to the Ten Print deletion queue line for deletion process. After the completion, the Matching System informs the AFIS Server the completion of the execution process.

1.19 Completion of the Transaction

The AFIS Server determines the completion of the execution on the above item 1.15 or 1.16 by the transaction management function and shifts the status of transaction queue from Under Execution to Completion.

1.20 TP/LP Verification Processing

Operator will determine the result of other criminal inquiry whether they are the same fingerprints or not on the verification screen. Maximum number of candidates will be set as 255 and Case No.+ Exhibit No.with score (degree of similarity) and they are displayed on the screen in the Ten Print unit (ten finger x 255 cases) in descending order

1.21 Registration of Transaction

The AFIS Server will accept Execution Processing of the item 1.20, above, by using Transaction Management Function.

1.22 Inquiry Request to the Inquiry System

The AFIS Server will send out Minutiae Data at the search side to the Inquiry System for Inquiry Request.

1.23 TP/LP Minutiae Inquiry

The Inquiry System will make inquiry of Ten-fingerprint Minutiae Data at search side with latent Fingerprint Minutiae Data at file side one by one.

1.24 Restoration of Candidate List

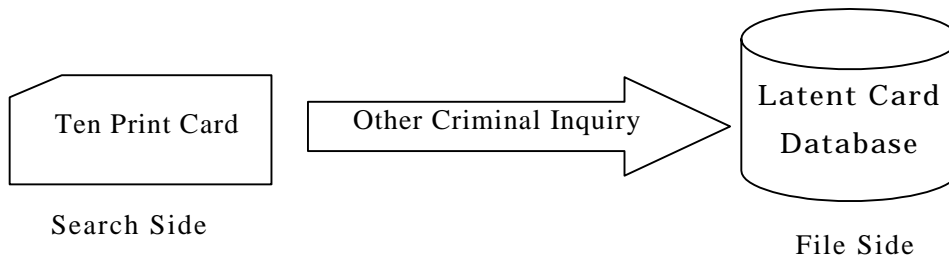
The Inquiry System will output Case No.+Exhibit No. +Sequence No.(serial number of derived latent fingerprints) and score. In addition, the list will be rearranged by score value in descending order, the system reads out necessary descriptive information to the Workstation display to proceed editing processing. The result of the editing will be restored in the primary file and the completion will be informed to the AFIS Server.

1.25 Completion of transaction

The AFIS Server will determine the completion of Execution Processing Completion of the item 1.23 above by the Transaction Management Function and shifts the Transaction Queue Status from Under Execution to Completion.

1.26 TP/LP Command Entry

Operator will execute TP/LP processing (Other crime Inquiry Processing) under the condition of either the first criminal experience and/or repeated criminals whose fingerprints at search side and those of file side have been transposed. Operator also determines in the other criminal inquiry to make inquiry Rolled Ten-fingerprints of a suspect with unsolved latent fingerprints whether the suspect has relation with other criminal acts or not.



< Other Criminal Inquiry (Ten Print to Latent Fingerprint Inquiry) >

1.27 Deletion of Unresolved Latent Fingerprint Cards

Operator will order the AFIS the card deletion processing of Hit Case No.+ Exhibit No. + Sequence No. those determined Hit during the verification processing.

1.28 Registration of Transaction

The AFIS Server will accept the deletion processing of the item 1.27 above by the Transaction Management Function.

1.29 Deletion of Unresolved Latent Cards

The AFIS Server will send out Case Number + Exhibit Number + Sequence Number subjected to be deleted and will request deletion processing.

1.30 Completion of Transaction

The Inquiry System will inform deletion completion report to the AFIS Server after the deletion completed. The AFIS Server will determine the completion of the execution of the item 1.29 above by the transaction management function and shifts the transaction queue status from Under Execution to Completion. Through this action, a series of work relating to Rolled Ten-fingerprint registration and inquiry are all completed.

The above description is the general overview of the Rolled Ten-fingerprint work. In order to proceed these procedures, knowledge regarding fingerprints and fundamental computer operation skill are essential.

2) Processing Flow of Latent-fingerprint Work

The processing flow of Latent-fingerprint work is shown on the Figure 1-4. Operating procedures by operators are on the left hand and internal processing by the computer is listed on the right hand side.

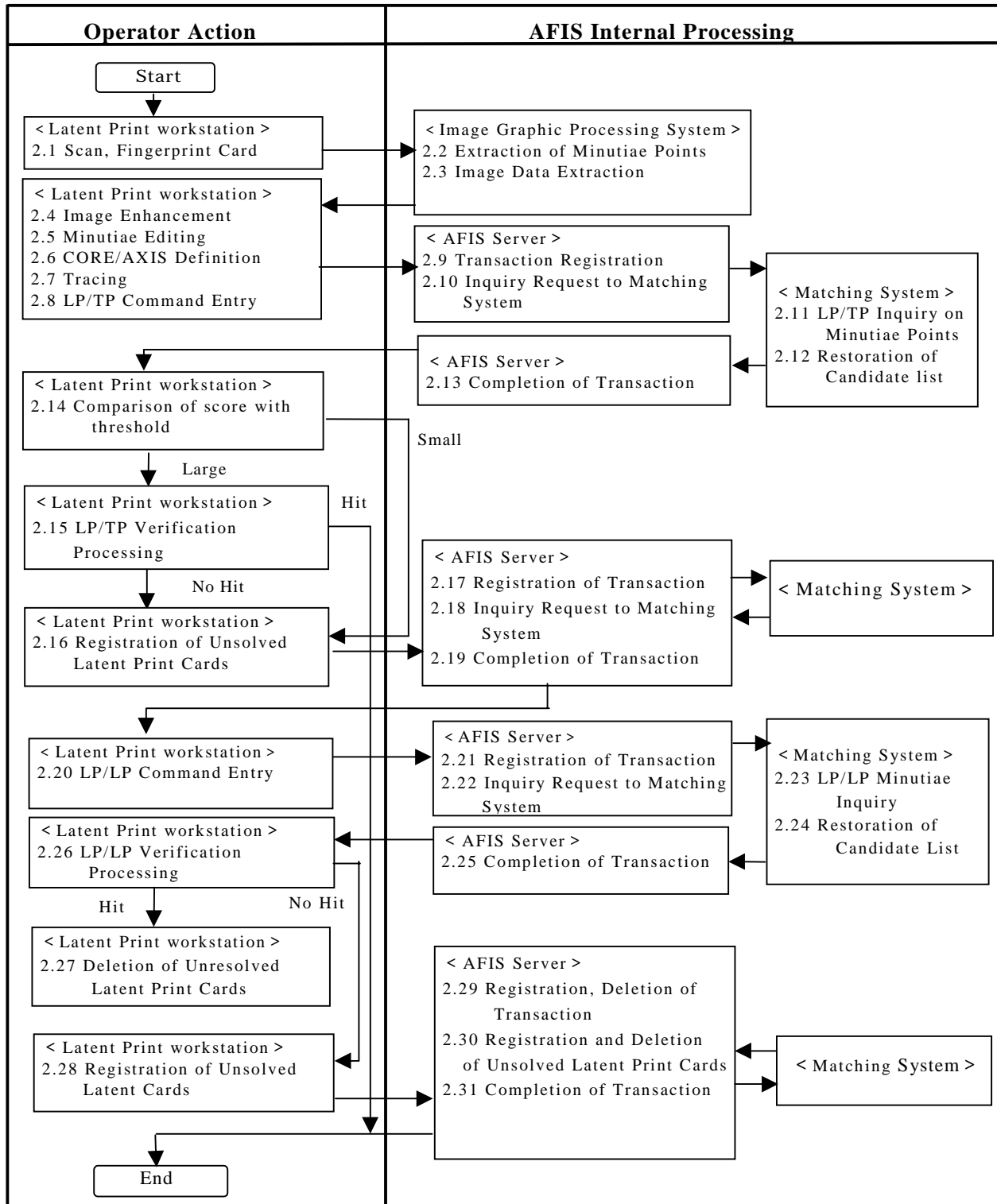


Fig. 1-4 Processing Flow of the Latent Fingerprint Work after the completion of the Project

The processing details stated above are described below:

2.1 Scan, Fingerprint Cards

Operator will read in a fingerprint image on the Latent Fingerprint card by using a scanner and confirm whether the scanned fingerprint image is read on the correct position.

2.2 Extraction of Minutiae Points

The Image Processing System will make up Minutiae data for verification from read-in Latent fingerprint image.

2.3 Image Data Extraction

The Image Processing System will make up fingerprint image data (512 pixel x 512 pixel x 256 depth) to be registered in the ten fingerprint database.

2.4 Image Enhancement

Operator will enhance ridge lines of Latent Fingerprint and will edit disconnected ridge line to fix or breaking processing of a ridge line.

2.5 Minutiae Editing

Operator will reject incorrect Minutiae due to dust or noise and select necessary Minutiae required to Latent Fingerprint Inquiry and reject unnecessary Minutiae. Also, operator will move the Minutiae point to the position considered to be correct for editing.

2.6 CORE/AXIS Definition

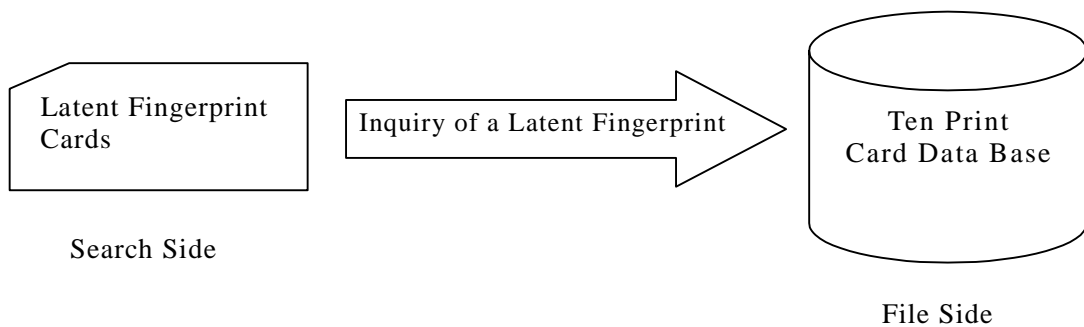
The Image Processing System automatically detects the CORE and AXIS of Latent Fingerprint. In case of partial fingerprint, operator will define CORE/AXIS.

2.7 Tracing

In the case of a partial Latent fingerprint, operator will produce whole image of the fingerprint suspecting from a Latent partial fingerprint. Produced Latent fingerprint is restored temporary file in the system as a derived partial Latent fingerprint data and subsequence numbers are assigned by the format of Case No., Exhibit No., and Sequence No.. A Latent fingerprint image derived from an original Latent fingerprint is used for each inquiry process as feature data at search side of the Latent fingerprint.

2.8 LP/TP Command Entering

Operator will enter Latent to Ten-fingerprint Inquiry processing and order comparison of a Latent fingerprint at the criminal site (Search Side) with all fingerprint data retained in the database. (File Side)



< Latent to Ten Print Inquiry Processing >

[AFIS Latent fingerprint Database] is consisting of the following three groups shown below:

Database Group	Contents
a. Criminal Information Description Data	Type of Criminal, Type of Finger, Pattern, etc.
b. Latent-print Minutiae Data	Data Group for Fingerprint Inquiry
c. Latent-print Image Data	Fingerprint Image group for verification and card printing

< Database Structure of AFIS Latent-fingerprint >

2.9 Transaction Registration

The AFIS Server will accept an execution to process the item 2.8 above by the transaction management capability.

2.10 Inquiry Request to the Matching System

The AFIS Server will send out Minutiae data at search side to the Matching System for requesting inquiry.

2.11 LP/TP Inquiry on Minutiae Points

The Matching System will make inquiry of the Latent -print Minutiae Data at search side with those at file side one by one.

2.12 Restoration of Candidate List

The Matching System will output Key Numbers (the number to specify a criminal) as the result of inquiry and score (degree of likeliness) as well. In addition to these, the system will proceed editing process to rearrange by score order, read-in descriptive information required to display on a Workstation from database for editing. The result of this editing will be stored in the primary file and the system informs AFIS Server the completion.

2.13 Completion of Transaction

The AFIS Server will recognize the completion of transaction mentioned in the item 2.8 above by

using Transaction Management Function and shifts the Transaction Queue Status from Under Execution to Completion. Operator will confirm the completion of the transaction on the screen.

2.14 Comparison of Score with Threshold

AFIS Server will compare previously set up score threshold with that of candidate list when processing command is entered and display it on the status line of the transaction queue whether it is a transaction required to LP/TP Processing or not. The AFIS Server determines No Hit if the score of Rank 1 in candidate list is smaller than the threshold and informs the fact to an operator.

2.15 LP/TP Verification Processing

Operator will determine the result of Latent-fingerprint inquiry on the verification screen whether they are the same fingerprints or not. Maximum number of candidates will be set as 255 and Key No. with score is displayed on the screen in descending order.

2.16 Registration of Unsolved Latent Print Cards

Operator will enter the Case Number + Exhibit Number Sequence Number when it is determined as No-Hit by the verification processing and also enter criminal description data required to be registered for editing. After the editing, command AFIS Server to process Latent fingerprint registration.

2.17 Registration of Transaction

AFIS Server will accept Registration Processing of the item 2.16 above by the Transaction Management Capability.

2.18 Inquiry Request to Matching System

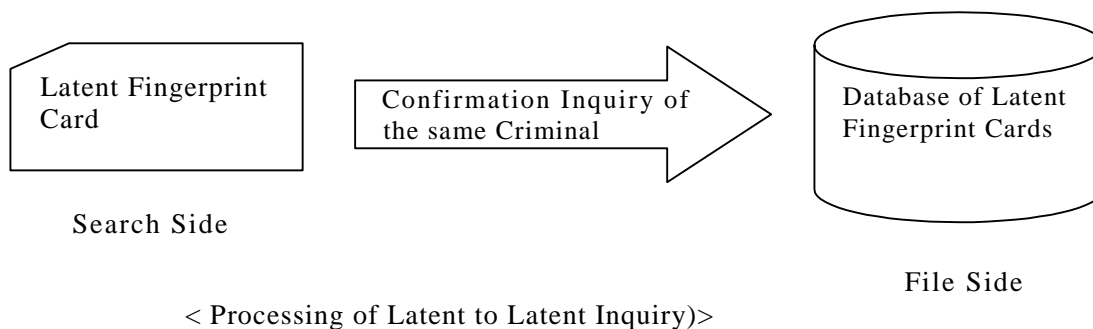
AFIS Server sends out Minutiae Data at the search side to the Matching System for requesting registration process.

2.19 Completion of the Transaction

AFIS Server determines the completion of the execution on the above item 2.16 by the transaction management function and shifts the status of transaction queue from Under Execution to Completion.

2.20 LP/LP Command Entry

Operator will execute LP/LP processing under the condition of little evidence about the suspect person. This processing is called Latent to Latent Inquiry or Confirmation Inquiry of the same criminal person and operator will compare Latent fingerprints at the scene of criminal with unresolved Latent fingerprints to confirm the relationship with the criminal act.



2.21 Registration of Transaction

The AFIS Server will accept Execution Processing of the item 2.20, above, by using Transaction Management Function.

2.22 Inquiry Request to the Inquiry System

The AFIS Server will send out Minutiae Data at the search side to the Inquiry System for Inquiry Request.

2.23 LP/LP Minutiae Inquiry

The Inquiry System will make inquiry of Latent-fingerprint Minutiae Data at search side with latent Fingerprint Minutiae Data at file side one by one.

2.24 Restoration of Candidate List

The Inquiry System will output the results of inquiry, Case Number +Exhibit Number +Sequence Number and score. In addition, the list will be rearranged by score value in descending order, the system reads out necessary descriptive information to the Workstation display to proceed editing processing. The result of the editing will be restored in the primary file and the completion will be informed to the AFIS Server.

2.25 Completion of Transaction

The AFIS Server will determine the completion of Execution Processing Completion of the item 2.23 above by the Transaction Management Function and shifts the Transaction Queue Status from Under Execution to Completion.

2.26 LP/LP Verification Processing

Operator will determine the result of other criminal inquiry whether they are the same fingerprints or not on the verification screen. Maximum number of candidates will be set as 255 and Case No.+ Exhibit No. + Sequence No. with score and they are displayed on the screen in descending order.

2.27 Deletion of Unresolved Latent Print Cards

Operator will order the AFIS the card deletion processing of Hit from the Latent Fingerprint Card Database those determined Hit during the verification processing.

2.28 Registration of Unsolved Latent Print Card

Operator will order the AFIS the card Registration Processing of No Hit during the verification processing

2.29 Registration, Deletion of Transaction

The AFIS Server will accept the registration processing of the item 2.28 or the deletion processing of the item 2.27 above by the Transaction Management Function.

2.30 Registration and Deletion of Unsolved Latent Print Card

The AFIS Server will send out Case No. + Exhibit No. + Sequence No. to the Inquiry System and will request deletion processing.

2.31 Completion of Transaction

The Matching System will inform deletion completion notice to the AFIS Server after the deletion of the process in the item 2.29 completed. The AFIS Server will recognized the completion of the execution of the item 2.29 above by the transaction management function. Through this action, a series of work relating to Latent-fingerprint registration and inquiry are all completed.

The above description is the general overview of the Latent-fingerprint work. In order to proceed these procedures, knowledge regarding fingerprints and fundamental computer operation skill are required.

2-2 Basic Design of the Requested Japanese Assistance

2-2-1 Design Policy

(1) Basic Policy

1) Project Site

The Project site is CLS which is co-located in PNP.

2) Each Enrollment

Japanese side will take responsibility of procurement and installation of AFIS and its related equipment. The Philippine side will take responsibility of facility repair needed for the system installation. Fingerprint Kits will be forwarded to CLS and CLS will deliver them to Crime Laboratory Office, CLO. As for the Instruction on Data Conversion and technical assistance due to the enhancement of AFIS operation, the Japan side will take responsibility for the soft component to extent for which the Japan side determines reasonable.

3) Applicable Sphere of AFIS

In the original request by the Philippines, AFIS with the capability of Palm-print and Foot-print in addition to Fingerprint has been requested, however, only Fingerprint is applied to the AFIS capability.

(2) Basic Condition for System Size Set Up

The number of Rolled Ten-fingerprint and Latent Fingerprint to be registered into AFIS will be the basic condition for setting up the size of equipment in the project. The system size is set based on the following criteria:

1) Setting Up the Number of Inquiry and of Registration for Ten Prints

The Number of Inquiry and Registration of Rolled Ten-fingerprints

As for the number of Rolled Ten-fingerprints to be inquired and registered, they should be referred to the number of criminal occurrence. As shown on the Figure 2-1, [Transition of the Number of Criminal Occurrence], the criminal occurrence frequency in the past twelve years (1990-2001) shows no extreme variation with 40,000 of Index crime cases and 40,000 of Non-index crime cases approximately. (In the Philippines, criminal categories of the Index Crime is defined to include murder, injury, robbery, theft, and rape; others are defined as Non-Index Crime)

CLS has the policy of collecting Ten Prints from all Index Crime suspects, and collecting Ten Prints from some of the Non-Index Criminal cases. Accordingly the Project refers to the number of criminal occurrence and sets up the number of Ten Print fingers to be registered (Ten Print Registration) and of inquiry(Ten Print to Ten Print Inquiry) as 40,000 per a year respectively.

Among the number of Ten Print Inquiry, inquiry with the other crimes inquiry (Ten Print to Latent Inquiry) is subjected to No Hit fingerprint cards at the inquiry. Since the No Hit Rate in

Japan for repeating criminal prisoners, i.e., the rate of fingerprint cards already registered in the database, is 50% (Source: Criminal White Paper, 2000), No Hit Rate is set at 50% and the number of inquiry for other criminal is taken as 20,000 (40,000 x 50%). (See Table 2-1, The Number of Inquired and Registered Fingerprints)

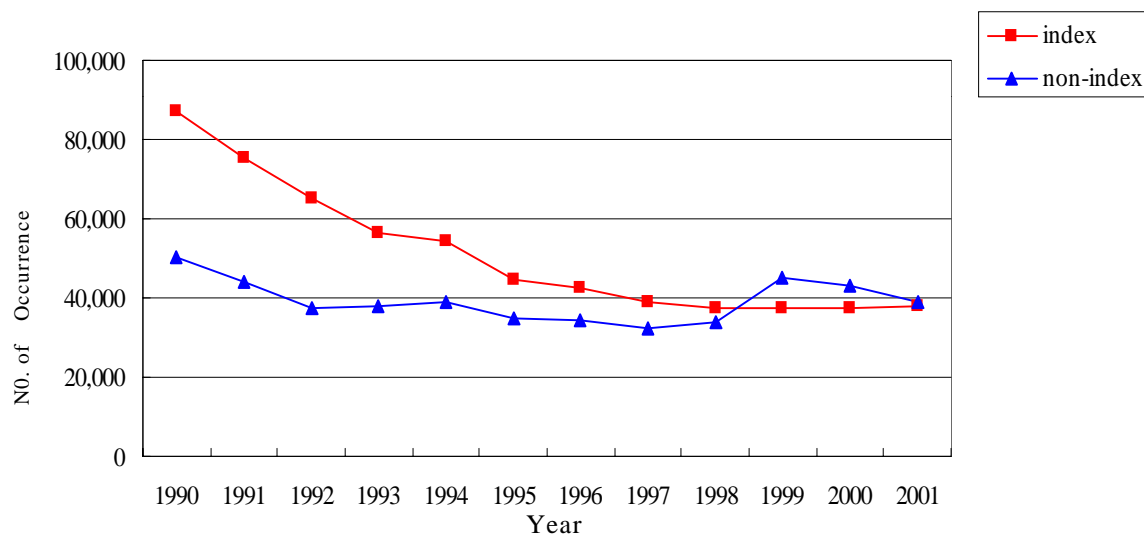


Fig. 2-1 Transition of Number of Criminal Occurrence (1990-2001)

- Basic Condition of the Number of Ten Prints

Table 2-1 Numbers of Ten print Inquiry and Registration

a. Number of Ten-Prints Inquiry	40,000 cases/year
b. Number of Ten Prints Registration	40,000 cases/year
c. Number of Other Criminal Inquiry	20,000=40,000 cases by 50%(Non-Hit rate)

The numbers of latent fingerprint Inquiry and Registration

GLS collects approximately 7,500 Latent Fingerprints annually. There are imperfect latent fingerprints with partial or unclear ones among fingerprints collected at criminal sites. Accordingly, it is required to derive a complete shape of fingerprint by assuming from traced imperfect fingerprint prior to the fingerprint inquiry.

As for the number of derivative is set at 50% of the collected Latent Fingerprints and the number of Latent Fingerprint Inquiry and their registration are set at 11,250 cases annually (= 7,500 x 150%)

Also, the inquiry of confirming the same criminal (Latent to Latent Inquiry) which inquire a

Latent Fingerprint with latent Fingerprint database is subjected to Latent Fingerprints which did not Hit during Latent Fingerprint Inquiry. Since the Hit Rate of Latent Fingerprint Inquiry indicates 8% usually, No Hit Rate of Latent Fingerprint is calculated as 92% which leads to set up 10,350 (11,250 x 92%) per year. (See Table 2-2 The Number of Latent fingerprint Inquiry and Registration)

- The Basic Condition of Latent fingerprint Inquiry and Registration

Table 2-2 The Number of Latent fingerprint Inquiry and Registration

a. Latent Prints Inquiry	11,250 cases/year
b. Latent Prints Registration	11,250 cases/year
c. Same Offender Inquiry	10,350=11,250 cases by 92%(non-hit rate)

2) Subjected Term of the Project

The subjected term of the project is 10 years and will make it the basic policy of equipment planning.

(3) Policy for the Procurement Background

It is already confirmed that among the planned equipment of the project, AFIS which is the primary part of the project, can be manufactured by a single company in Japan. Accordingly, procurement target will be extended to the third countries. As for other equipment such furniture, etc., capable to be procured in the Philippines, it is planned to proceed local purchase as a prerequisite.

(4) Policy for the Procurement Background

1) Budget of PNP and CLS

The budget of PNP and CLS for the past five years is shown on the table below:

Table 2-3 Budget of PNP and CLS (1998-2003) (In million PhP)

Year	1998	1999	2000	2001	2002	2003
Total Budget, PNP	22,938	23,937	28,024	27,643	36,085	55,986
CLS Budget /PNP	7.007	8.375	13.270	10.614	12.464	

Source: PNP Statistics

The CLS personnel expenses and utility costs are included in the PNP budget and CLS budget above only includes operational cost.

Also, it is confirmed that the AFIS operational and management cost after the completion of this project, the Department of Interior and Local Government (DILG), has a plan to secure the necessary budget and no problem is observed.

2) Personnel and Organization

As shown on the Philippines governmental organization , Philippines National Police (PNP) is the organization which possesses more than 100 thousand employees under the direction of DILG. (See Attachment 1, 2, and 3)

CLS which is the subjected site of the project is placed as an Operational Supporting Unit of PNP. CLS deploys CLOs in all 16 regions include metropolitan Manila (NCR), she collects ten-fingerprints and latent fingerprints for the criminal cases occurred in each responsible region. Each CLO may be collocated in the same building of the local police station.

Current CLS personnel organization is shown on the Table 2-4, [Current personnel System], next.

Table 2-4 Current personnel System.

Division, Managerial Position	No. of People
Director	1
Directorial Staff General	9
Internal and Legal Affairs Service	4
Deputy Direct for Administration	1
Staff for the Deputy Director's Office	3
Secretary Staff for the Director General	12
General Affair's Office	12
Trainees(staff under training)	46
Operation & Training Staff	25
Distribution Section	8
Audit Section	9
A. MedicoLegal Division	31
B. Chemistry Division	44
C. Physical Identification Division	10
D. Firearms Identification Division	8
E. Fingerprint Identification Division	19
F. Questioned Document Examination Division	9
G. Polygraph Division	10
H. Forensic Photography Division	10
TOTAL	271

Source: CLS Statistics

As indicated on the Table 2-4, 19 people are assigned at the Fingerprint Identification Division. However, all of the current fingerprint inquiring work has been done manually and it is essential to train the staff who operate AFIS to be supplied under the project. It is possible to train these 19 people at the computer training center of PNP. It is also planned to assign computer-skilled personnel from PNP computer section. As for the personnel assignment, it is planned to assign personnel with computer skill after the completion of the project. Those personnel are planned to be enhanced their AFIS operation skill through soft component by the Japan side.

(5) Policy for Grade Setting of Equipment

In this plan, grade setting of the AFIS equipment should be take into consideration, especially. The grades required for AFIS should be set to the level of relevant function as well as skill for the Project Goal, improvement of fingerprint identification work, automatic mass verification of fingerprint cards, making quick specification of a suspect, protecting mistake arresting. The fundamental concept for the size determination of AFIS, equipment rather than AFIS, and definition of grades are shown below.

1) Grade Setting Criteria of AFIS

Set Up of Major Processing of AFIS Database

For setting up the AFIS Database size, the following Table 2-5, [Major Six Processing of AFIS] is subjected:

Table 2-5 Major Six Processing of AFIS

	Name of Processing	Description of Processing
1	Ten Print to Ten Print Inquiry	Processing to inquire suspect's Ten Print (search side) against registered all en Prints (file side)
2	Ten Print to Latent Inquiry	Processing to inquire suspect's Ten Print against unresolved Latent prints to determine relationship with other criminal acts. This processing is an inquiry executed when first offender or repeating offender and their fingerprints are transposed between search side and file side.
3	Ten Print Registration	Processing to register a new Ten Print into Database with Key Number.
4	Latent to Ten Print Inquiry	Processing to inquire a Latent Print collected at the criminal site to trace for make up derived Latent Print, with Ten Prints on Database.
5	Latent to Latent Inquiry	Processing to inquire Latent Print collected at site with unresolved Latent Prints and determine relevance of the case.
6	Latent Registration	Processing to register No Hit latent Print with the key of Case No.+Evidence No. + Trace No.

Setting Up the Capacity of Fingerprint Database

The capacity of Fingerprint Database is planned corresponding to the number of Fingerprint custody to be registered into the database. There are existing Ten Print form of 210,000 cards and 10,000 cards of Latent Prints, so the estimated newly registered is calculated as 732,500 cards based on the basic condition defined in the Chapter2 Table 2-1[Number of Ten Print Inquiry and Registration]. In addition to these number of sheets, the size of the database will be set based on the above 732,500 cards and adding 30%(219,750 cards) of empty area required to maintain stable system operation which resulted 952,250 cards as fingerprint database volume to design the size.

Table 2-6 Size of Fingerprint Database Capacity

Contents	No. of Sheets
1. Existing Ten-Print Custody Form	210,000 cards
2. Assumed Newly Registration of Ten-prints (40 thousands per year by 10 years)	400,000 cards
3. Existing Latent Custody Form	10,000 cards
4. Assumed Newly Registration of Latent (11,250 per year by 10 years)	112,500 cards
5. Sum of Ten-prints and Latent Prints (1.+2.+3.+4.)	732,500 cards
6. System Required Empty Area (30% of the total)	219,750 cards
Total (5.+6.)	952,250 cards

2) Other Equipment

As for the other equipment without AFIS, make planned number of Ten Fingerprint Workstation and Latent Print Workstation as one unit and the size of furniture and other equipment are determined. Also, Fingerprint Card Cabinet will be determined in its size to retain fingerprint cards of ten years later.

2-2-2 Basic Plan (Equipment Plan)

(1) Facility Plan

The planned site for this project is new two-story of CLS building in PNP, dedicated to AFIS, built by the Philippine side. Equipment layout has been checked out by simulation on drawings and confirmed enough space for installation of the equipment. Equipment layout is shown on the Appendix.10-11.

The new building already has been equipped utilities with electric power, water supply, etc., in operational. Electric power for this building has the capacity of 100KVA, single phase 230V, 60Hz and the capacity satisfies power requirements of 58KVA which is enough for the operation of the equipment under the project. Voltage fluctuation of the power source showed 240 ± 10 Volts (approx. 4%) during the five day site survey at the outlet near primary side of power facility, which falls within the tolerance ($240V \pm 10\%$) of the planned UPS. The results of measurement are shown on the Appendix-9.

The new building constructed by the Philippine side is considered to be adequate as the installation place of the equipment.

(2) Equipment Plan

1) AFIS

AFIS Server

AFIS is consisting of Server, Workstation, and peripherals.

The server is comprised by the followings:

Table 2-7 Equipment Plan for AFIS Server

Server	Qty Req'd	Major Components
AFIS Server	2 Units	System Controller, Database
Fingerprint Matching System	2 Units	Operating System, Fingerprint Matching Software
Archive System	2 Units	Operating System, Archive Software
Image Process Unit	2 Units	Operating System, Image Processing Software
Administrator Workstation	2 Units	Operating System, Administration Software

Out of the servers above, one each of server is planned to have an operation route and one each to have a standby route in other words, two each of servers are assigned to each group except Fingerprint Matching System. This concept is brought into the system in order to avoid CLS operation down time by using the stand-by system when the server in the operating system get failure, otherwise, there will be high possibility of whole System gets down.

The quantity of server in the Fingerprint Matching System is decided to be two, based on the calculation of total processing volume. If one of the system gets down, the rest one will be able to continue processing (in reduced mode of operation) so the stand-by System is out of consideration.

In the previous list of request provided by the Philippine side, the number of Workstations were two each for the network and one each for the system administrator, however, domestic analysis revealed that the Workstation function can be handled by one Workstationso the two each of Workstations are planned for the system administrator (One for operation and one for stand-by system).

Fingerprint Workstation

10 each of Workstations are planned for Tenprint Fingerprint Workstations and 7 for Latent Fingerprint Workstations are planned. The required quantity of Workstations were calculated based on the time required for the daily work to handle. Back ground of the calculation is as follows:

(a) Background of Set Up the Number for Tenprint Fingerprint Workstations

Time calculation required to handle daily work is shown on the Table 2-8 below:

Table 2-8 Time Calculation to handle Daily Work (Ten Print)

Job Details	A. No. of Processing Cases per year	B. No. of Processing Cases per Day (A./ 200 days)	C. Time Required to Process one Case	D. Total Hours per day (B. × C.)
Ten-Print Inquiry	40,000	200	18 min.	3,600 min. (60 Hours)
Ten-Print Registration	40,000	200	5 min.	1,000 min. (16.6 Hours)
Ten Print Latent Inquiry	20,000	100	10 min.	1,000 min. (16.6 Hours)
Ten-print Inquiry Verification (+) × 3%]	60,000	300	15 min.	4,500 min. (75 Hours)
Sorting, Updating, & Deletion [Fingerprint Database size on Table 2-6 , (+) × 3%]	18,300	92	5 min.	460 min. (7.66 Hours)
Transposition Processing and Re-inquiry [Fingerprint Database size on Table 2-6 , (+) × 2%]	12,000	60	18 min.	1,080 min. (18 Hours)
Total				11,640 min. (194.0 hrs)

- Calculation of Necessary Quantity for Tenprint Fingerprint Workstations

Four hours out of a day will be assigned for adjusting job (AFIS Job Report) and daily maintenance of the servers. This brings out total one day job time being 20 hours and the necessary quantity of Workstations is calculated as 10 each by the computation shown below:

$194.0 \text{ Hours} \div 20 \text{ Hours (a day)} = 9.70 \text{ each. (Rounded up) resulted 10 Workstations.}$

Structure and major composition of each Workstation are shown below:

Table 2-9 Composition and Quantity of Tenprint Fingerprint Workstation

Workstations	Quantity	Major Components
Workstations for Ten-print Work	10 Units	Core, Monitor, etc.
Scanners for Ten-print	10 Units	IQS certified Scanner

The scanner for Ten-Prints is a Flat-bed Scanner, however, it is required to produce fingerprints digitized by the scanner which meets the Image Quality Specifications (IQS) of U.S. FBI to correspond International Crimes. Accordingly, a Ten Print Scanner should be planned by the IQS certified scanner.

(b) Background of Set Up the Number for Latent Print Workstation

Time calculation required to handle daily work is shown on the Table 2-10 below:

Table 2-10 Time Calculation to handle daily work (Latent Prints)

Job Details	A. No. of Processing per year	B. No. of Processing Per day (A./200)	C. Time Required to Process	D. Total Hours per day (B. x C.)
Latent-print Inquiry	11,250	57	54 min.	3,078 min. (51.3 Hours)
Latent-print Registration	11,250	57	5 min.	285 min. (4.75 Hours)
Same Offender Inquiry Verification	10,350	51	20 min.	1,020 min. (17 Hours)
Latent-print Inquiry (+)	21,600	108	30 min.	3,240 min. (54 Hours)
Sorting, Updating, & Deletion [Fingerprint Database size on Table 2-6, (+) x 3%]	3,675	18	5 min.	90 min. (1.5 Hours)
Total				7683 min. (128 hours)

- Calculation of Necessary Quantity for Latent Fingerprint Workstation

As mentioned in the necessary quantity of Tenprint Fingerprint Workstation, daily hours for fingerprint processing is 20 hours and the necessary quantity of Workstation is calculated as 7 each by the computation shown below:

$128 \text{ Hours} \div 20 \text{ Hours(a day)} = 6.40 \text{ each. (Rounded up) resulted 7 Workstations}$
--

Structure and major component of each Workstation are shown below:

Quantity and Composition of Latent Print

Workstation	Quantity	Major Components
Latent Finger print Workstation	7 Units	Workstation, Monitor, etc.
Scanner for Latent-print	7 Units	IQS certified Scanner

Scanners for Latent are required to meet IQS due to the same reason for Ten Print Scanners.

- Peripherals

Two each of printers are planned for one each Ten Print and one each Latent, respectively.

30KVA UPS is planned for server and Workstations which require 19.55KVA. The UPS location is decided to be installed on the 1st floor because of the UPS weight which will not be durable for the 2nd floor. Power consumption for each system is shown below:

Table 2-11 Power Consumption by System

(In KVA)

System	Quantity	Rating Power	Power Consumption	Remarks
Server Group				
AFIS Server (Main Body)	2	2.700	2.700	Operation or Standby Channel
(Self contained RAID Disk)	2	1.500	3.000	Operation and Standby Channel
Fingerprint Matching System	2	2.000	2.000	Operation or Standby Channel
Image Process Unit	2	0.500	1.000	Operation and Standby Channel
Archive System	2	0.500	0.500	Operation or Standby Channel
Administrator Workstation	2	1.500	1.500	Operation or Standby Channel
Subtotal			10.700	
Workstation Group				
Tenprint Fingerprint Workstation	10	0.450	4.500	
Latent fingerprint Workstation	7	0.450	3.150	
Image Printer	2	0.600	1.200	
Subtotal			8,850	
Total			19.55	

2) Other Equipment

Fingerprint Kit

The fingerprint kits will be delivered to CLS, and CLS delivers them to CLO. There are 1,660 CLOs through out the Philippines and 287 CLOs were already equipped with the kits. Therefore, 1,373 kits will be taken care by the project.

Engine Generator

An engine generator is essential for continuous proceeding of CLS activities during power failure. It is planned to have a 60KVA capacity generator to supply required 58KVA power consumption by all equipment planned. Further, a power house has already been constructed with the operation building by PNP.

Table 2-12 Load of the Engine Generator

(In KVA)

AFIS Power Load	19.6	Server, Workstation, etc.
Lighting Load	13.0	Lighting for the 1st and 2 nd Floors
Air Conditioners Load	23.4	For AFIS
Office Work Load	2.0	Personal Computers for expert, etc.
Total	58.0	

In order to continue fingerprint identification job while using AFIS during commercial power failure, power load for AFIS air conditioners and lighting for work should be taken into consideration beside AFIS power load itself. Since the power distribution inside of the AFIS building is common shared with emergency and general use, it is necessary to take power load such as personal computers used by specialists into consideration.

The engine generator is planned to have the capability of automatic starting since 24 hour operation is scheduled for the AFIS operation.

The power distribution drawing is shown on the Figure 2-2, below:

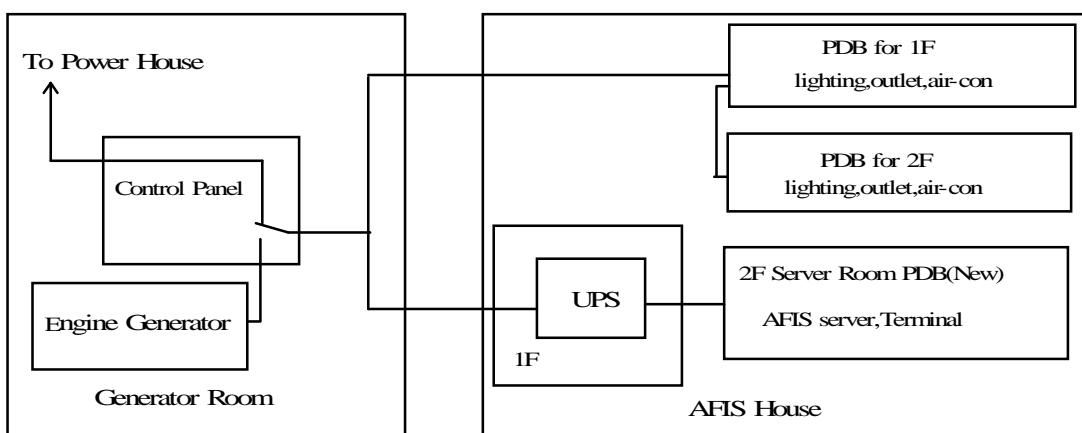


Fig. 2-2 Power Distribution Diagram

Cabinet for Fingerprint Cards

A cabinet for use with fingerprint cards will be followed by a standard of 2 rows with 5 shelves. With the cabinet, maximum number of 10,000 of the cards can be stored in one cabinet. This project considers 95 each of the cabinet which includes 732,500 of cards occupies 73 each of cabinet plus 30% of empty space area. In addition to this, considering duplication of cards and rate of find out due to fingerprint pattern, additional 5 each cabinets are planned to make 100 each in total.

Computer Workstation's Rack

Number of racks for PC will be followed by the number of Workstations since they should correspond to the number of job Workstations.

Lamp with loupe

Number of Magnifying Mirror with Light will be followed by the item of [Working Table] below.

Working desk for fingerprint classification

Working tables are necessary to execute working on fingerprint cards to be inserted into AFIS and pre-processing work on latent fingerprints. 17 tables are planned for operators and 1 table is for reception and confirmation work before processing. (Total number is 18 each)

Backup Media storage cabinet

Data will be stored in a media periodically for back up purpose on fingerprint data entered into the AFIS. The media which stored data should be retained in a safe type cabinets. The cabinet is planned to be installed in the room of Fingerprint Section Chief.

Book Shelves for AFIS manual

A book shelf is required to house AFIS documents. This book shelf will be installed in the same room of operator Workstations for quick reference by operators in any time.

Cabinet for Blank fingerprint cards

This blank card retention cabinet is planned to have the same specifications of the fingerprint card cabinet discussed in item .

Air Conditioner for Server Room and Operation Working Room

Background of the Cooling Capability Calculation is shown on the Table 2-13 next.

Table 2-13 Background of the Cooling Capability Calculation In kJ/hr

	Server Room	Operation Workstation Room
AFIS Heat Generation	29,560	27,260
Light Heat Generation	2,520	10,080
Domestic Heat generation	--	8,360
Flow Heat (Room Temperature set at 22)	8,547	27,384
Total	40,627	73,084
Capacity, Existing Air Conditioner	24,700	49,400
Additional Capacity required = -	15,927	23,684

Table 2-14 Breakdown of Heat Generation Estimation In kJ/hr

AFIS Heat Generation (Server)	AFIS Server	1 set	29,560
AFIS Heat Generation (Workstation)	Fingerprint Workstation	17sets	27,260
Lights Heat Generation	1) Server Room	0.6kW	2,520
	2) Working Room	2.4kW	10,080
	Subtotal		12,600
Domestic Heat Generation	Working Room 418kJ/hr · person	20 person	8,360
Flow Heat (Sever Room)	1) Window	6 m ²	1,638
	2) Wall	10 m ²	1,995
	3) Ceiling	20 m ²	924
	4) Side Wall	20 m ²	3,990
	Subtotal		8,547
Flow Heat(Working Room)	1) Window	40 m ²	10,920
	2) Wall	64 m ²	12,768
	3) Ceiling	80 m ²	3,696
	Subtotal		27,384

Flow Heat was calculated at maximum outdoor temperature of 32 , centigrade, and room temperature of 22 , centigrade.

$$\text{Flow Heat (kJ/hr)} = \text{Area Space} \times \text{Flow Rate (kcal/hr)} \\ \times \text{Temperature Difference} \times 4.2$$

Taking Flow Rate for window (glass) = 6.5 、 concrete block = 4.75、
Ceiling (board) = 2.2

Based on the results mentioned above, air conditioners with 15,927 kJ/hr for the Server Room and 23,684 kJ/hr for the Operation Workstation Room are required. Considering off-the-shelf air conditioners specifications, one each of 17,000kJ/hr model in the Server Room and one each of 24,000kJ/hr or equivalent model are planned to be installed, respectively.

(3) Equipment List (Draft)

The equipment (draft) list is shown on the Table 2-15.

Table 2-15 Equipment List

Code	Equipment Name	Major Spec. and Components	Q'ty	Purpose
1	AFIS	Fingerprint card:960,000 or more	1 set	
(Breakdown)				
1-1	AFIS Server	<ul style="list-style-type: none"> • Memory :3GB or more • NIC :10/100 BASE • DBS :Oracle8I & OLTP Middleware or equivalent • RAID :5 	2 Units	
1-2	Fingerprint Matching System	8,000 fingers/Sec. or more	2 Units	
1-3	Archive System	<ul style="list-style-type: none"> • 512 pixel x 512 pixel x 16 Depth • 800 pixel x 800 pixel x 256 Depth WSQ compressed image storage 	2 Units	
1-4	Tenprint Fingerprint Workstation	With AFIS Tenprint application	10 Units	
1-5	Latent Fingerprint Workstation	With AFIS Latent application	7 Units	
1-6	Image Process Unit	Minutiae Data Extraction	2 Units	
1-7	Administration Workstation	<ul style="list-style-type: none"> • Network monitoring • System control command 	2 Units	
1-8	Backup System	LTO	1 Units	
1-9	Flatbed Scanner	IQS Certified	17 Units	
1-10	Image Printer	A4, Mono Tone	2 Units	
1-11	UPS	<ul style="list-style-type: none"> • 30kVA or more, • 230V/60Hz • Backup time: more than 20 minutes 	1 Unit	
2	Fingerprint Kit	Brush, Fingerprint Powder(Black), Lifting Tape, Ink, Roller, Spoon, etc.	1,373 sets	Fingerprint detection
3	Engine Generator	<ul style="list-style-type: none"> • 60 KVA or more • 230 V, 60 Hz 	1 Unit	Backup Power when power failure
4	Cabinet for fingerprint cards	<ul style="list-style-type: none"> • 2horizontal, 5 vertical drawer • Steel • Approx. 560Wx650Dx1,360H(mm) 	100 Units	Fingerprint card Classification and storage
5	Computer Workstation's rack	<ul style="list-style-type: none"> • Computer desk & Chair • Steel • Approx.1,200Wx700Dx700H(mm) 	18 Sets	Setting up fingerprint workstation
6	Lamp with loupe	<ul style="list-style-type: none"> • 20W or more, circline fluorescent • 3x, 130mm view or more 	18 Units	Pre-and after-processing work and verification
7	Working desk for fingerprint classification	<ul style="list-style-type: none"> • Approx. 1,200Wx600Dx700H(mm) • Wood 	18 Units	Pre-and after-processing work and verification

8	Backup media storage cabinet	<ul style="list-style-type: none"> • Approx. 850Lx400Dx700H(mm):Inner • Steel 	5 Units	Storage of backup media
9	Book shelves for AFIS manual	<ul style="list-style-type: none"> • Approx.800Lx400Dx700H(mm):upper • Approx.800Lx400Dx700H(mm):lower • Wood or steel 	2 Units	AFIS manual storage and perusal
10	Cabinet for blank fingerprint cards	<ul style="list-style-type: none"> • 2horizontal, 5 vertical drawer • Steel • Approx. 560Wx650Dx1,360H(mm) 	4 Units	Blank fingerprint card storage
11	Air-conditioner for server room	<ul style="list-style-type: none"> • Wall mounted type • 17,000 kJ/hr or more 	1 Unit	Heat protection of AFIS server
12	Air-conditioner for working room	<ul style="list-style-type: none"> • Wall mounted type • 24,000 kJ/hr or more 	1 Unit	Heat protection of workstations

8	Backup media storage cabinet	<ul style="list-style-type: none"> • Approx. 850Lx400Dx700H(mm):Inner • Steel 	5 Units	Storage of backup media
9	Book shelves for AFIS manual	<ul style="list-style-type: none"> • Approx. 800Lx400Dx700H(mm):upper • Approx. 800Lx400Dx700H(mm):lower • Wood or steel 	2 Units	AFIS manual storage and perusal
10	Cabinet for blank fingerprint cards	<ul style="list-style-type: none"> • 2horizontal, 5 vertical drawer • Steel • Approx. 560Wx650Dx1,360H(mm) 	4 Units	Blank fingerprint card storage
11	Air-conditioner for server room	<ul style="list-style-type: none"> • Wall mounted type • 17,000 kJ/hr or more 	1 Unit	Heat protection of AFIS server
12	Air-conditioner for working room	<ul style="list-style-type: none"> • Wall mounted type • 24,000 kJ/hr or more 	1 Unit	Heat protection of workstations

2-2-3 Basic Design Drawing

System Configuration Diagram (Figure 2-3) and Network Connection Diagram (Fig. 2-4) are shown on the next page and after.

Fig. 2-3 System Configuration Diagram

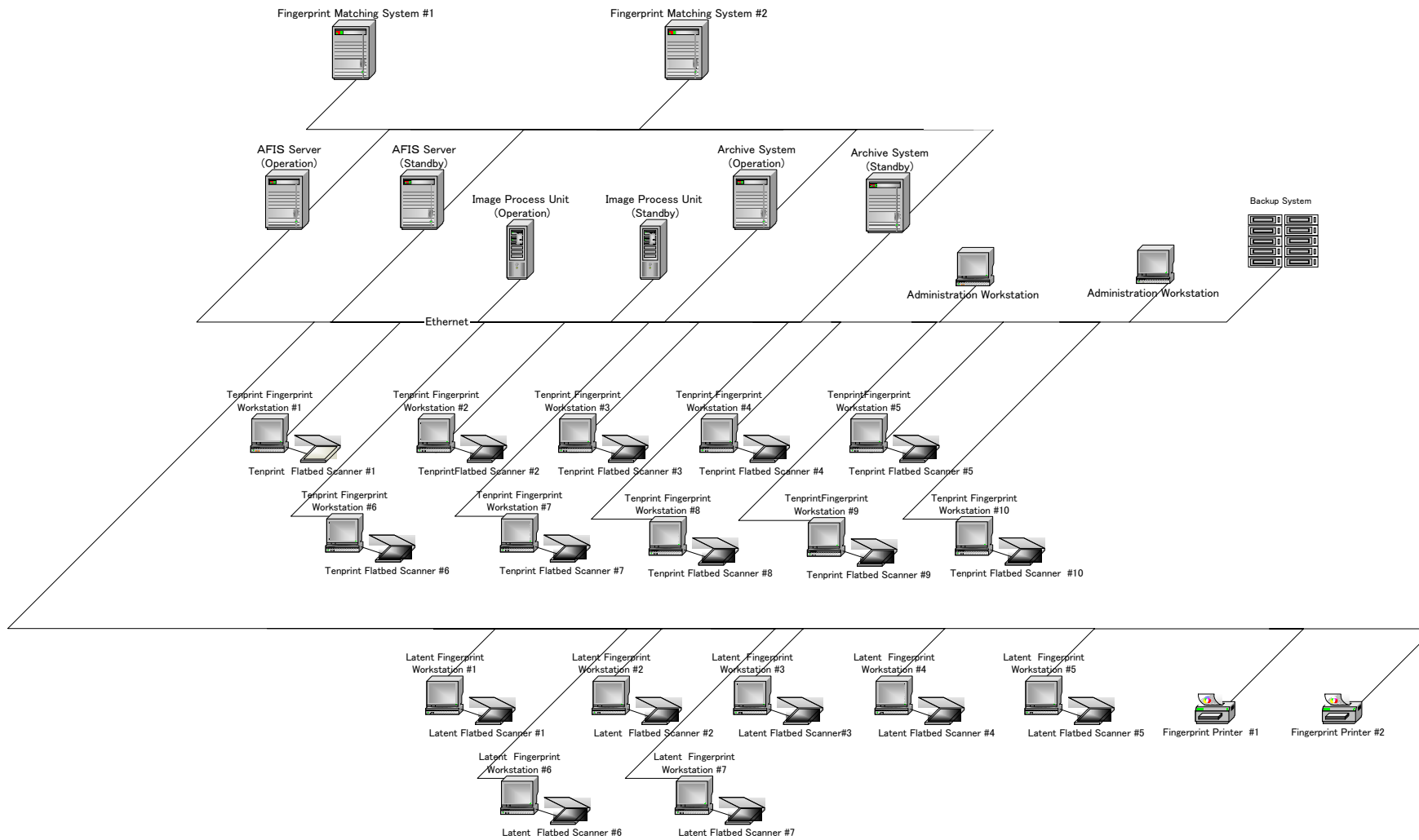
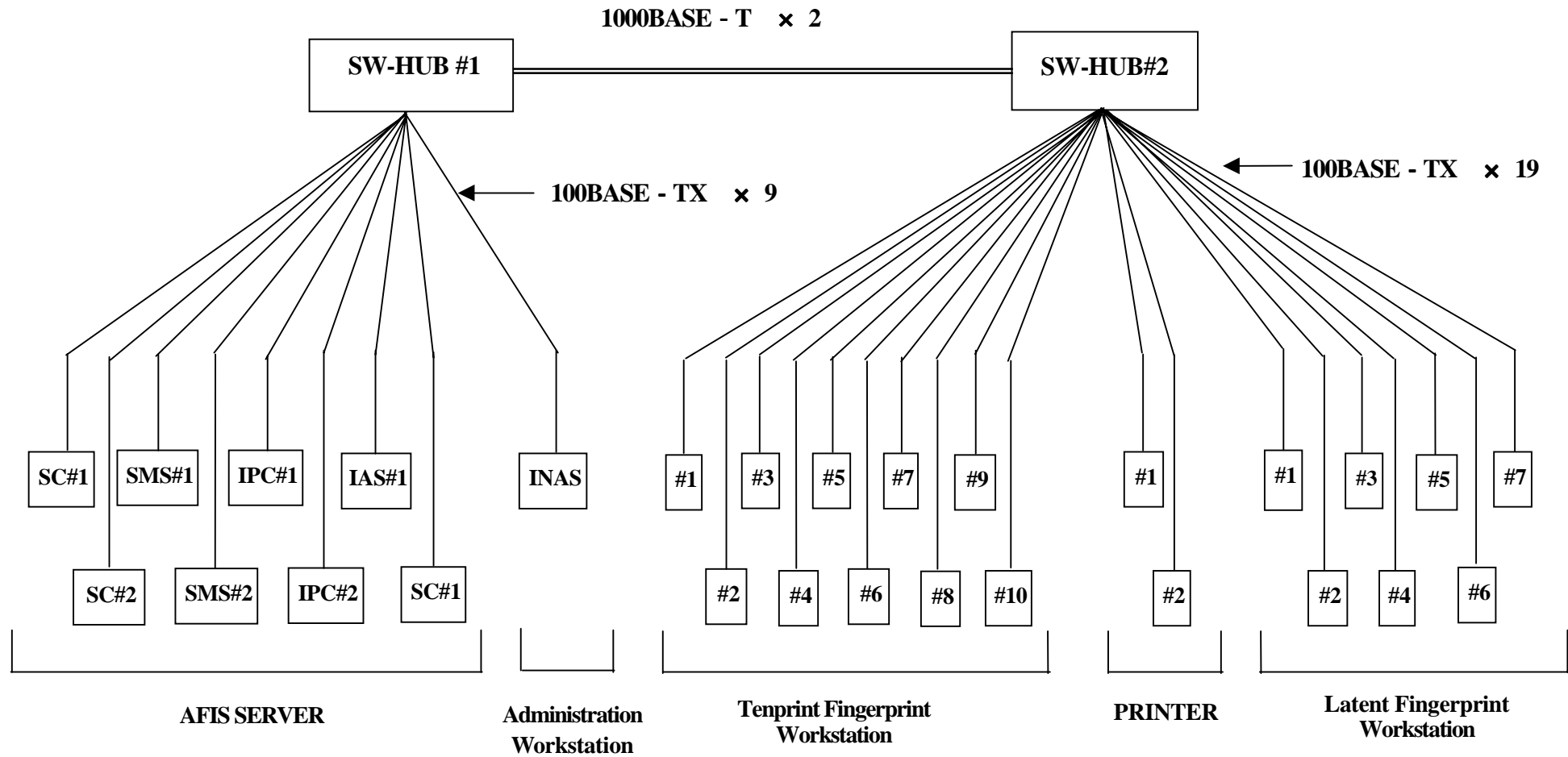


Fig. 2-4 Network Connection Diagram



2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

(1) Basic Items

The project should be executed once in a fiscal year.

Exchange of Note (E/N) will be concluded between the Government of Japan and the Government of the Philippines after the approval by the Japanese Cabinet Meeting.

By conclusion of E/N, the Japanese Government will commit the aid and concrete the project will be implemented.

After the conclusion of E/N, consultant agreement will be made between a consultant of the Japanese nationality and the Government of Philippines, then, detailed design work will be started.

(2) Bidding

The bidding will be performed following the guideline by the Japan International Cooperation Agency.

As for the equipment procurement, general way of bidding is subjected to trading companies and is limited to Japanese Trading Firms.

The bidding executor is the implementing Agency, however, the consultant will cooperate the Government of Philippines and considered to be executed this process with equity.

(3) Equipment Procurement and Installation

Equipment Procurement

As a general rule, the country of origin of the equipment to be procured should be limited to Japan and the Philippines.

Equipment Installation

AFIS, the main equipment of this project, is a special equipment, therefore, installation work should be performed by Japanese engineers. Any other equipment rather than AFIS, its installation work may be proceeded by the local contractors.

(4) Implementing Agency

The organization in charge of decision making and supervising this grant aid project in the Philippines, is the Department of Interior and Local Government (DILG) and the implementing Agency organization is PNP/CLS. The relationship between DILG, PNP, CLS, Japanese consultant, and contractor(s) is shown on the diagram, Figure 2-5, next.

(Government of Japan)

(Government of Philippines)

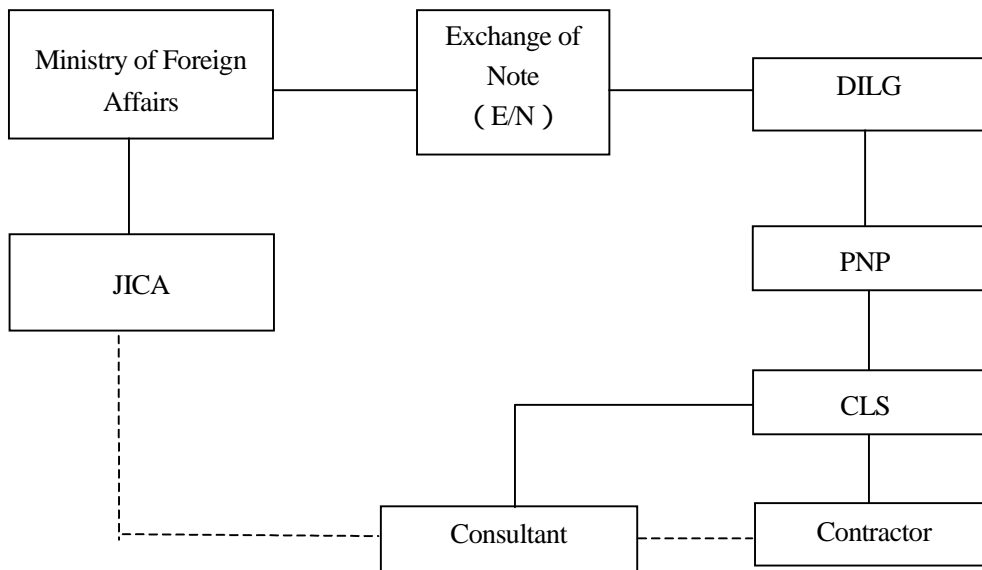


Fig. 2-5 The Relationship between DILG, PNP, CLS, Consultant, and Contractors

2-2-4-2 Implementation Conditions

Value-added tax of 10% is included in a product price in the Philippines, therefore, cost estimation is subject to the cost of 10% deducted.

2-2-4-3 Scope of Works

The role for the Japanese side and the Philippine side are shown on the list, Table 2-16 below, to proceed the project:

Table 2-16 The role for the Japan side and the Philippine side

Job Details	Japan Side	Philippine Side
Equipment		
- Equipment Procurement		
- Equipment Installation Work		
- Cable Connection Work to the Equipment, Power, etc.		
- On site Test and Adjustment		
- Instruction, How-to-Operate and Maintenance Procedures		

Facility Construction		
- Construction of the New Building (Completed)		
- Facility Modification Work Required for the Equip. Installation		
- In-facility Utility Construction		

To Secure the Area for Equipment Storage
Transportation and Customs Formality Service
- Equipment Transportation to the Site
- Customs Formality Handling
- Exemption from Taxation
Bank Nomination and Handling
Charge Payment
Convenience Provision for Necessary
Approval/Handling of the Immigration and
Stay of the Japanese who may concern to
the Project
Effective Operation and Management of the
Procured Equipment
Approval Handling Work Required for
the Operation
Expenses Required for All Related Work not
Included in the Grant Aid

2-2-4-4 Consultant Supervision

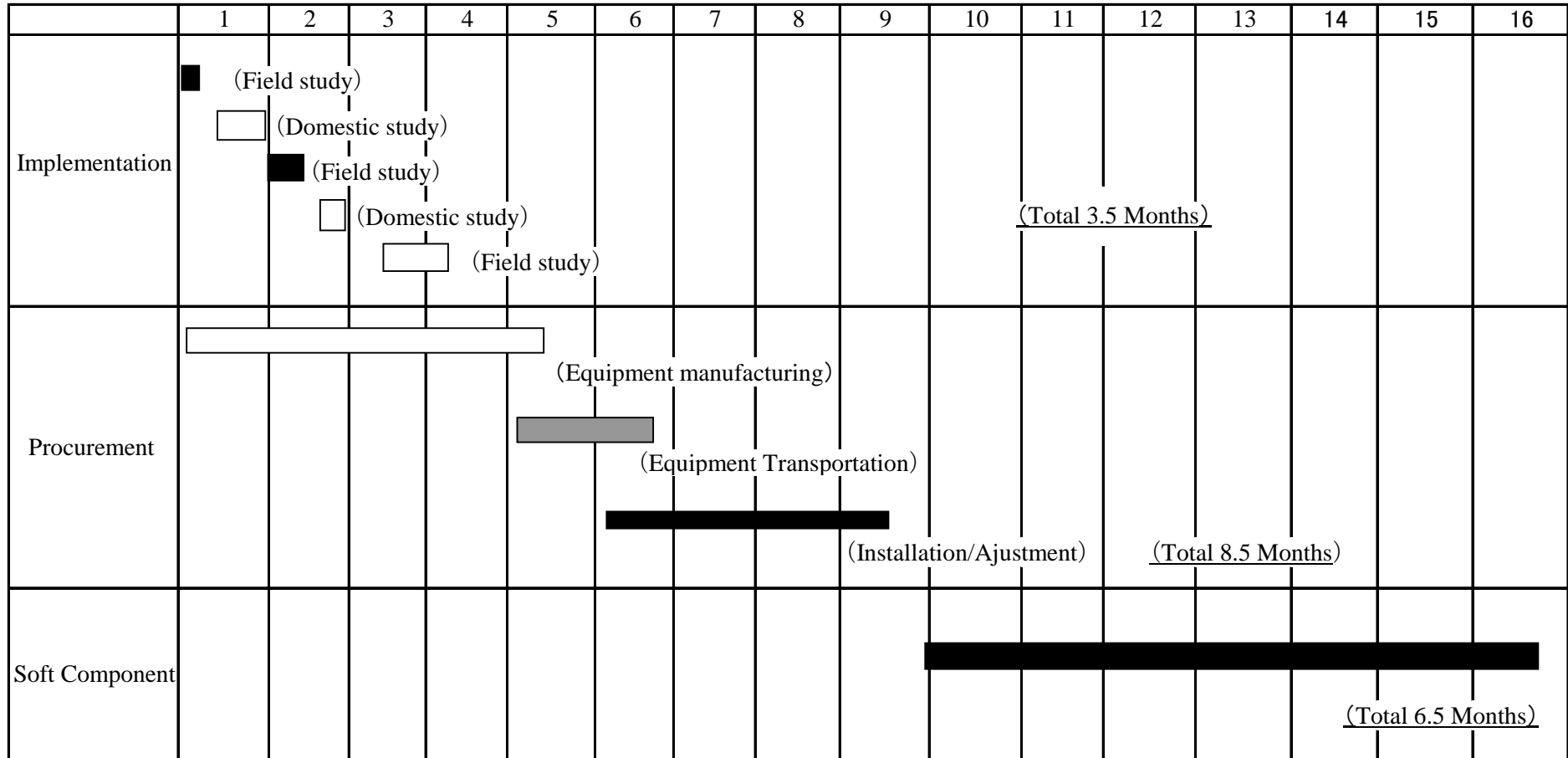
The AFIS, major equipment of the project, is a unique equipment even though the hardware installation does not require sophisticated skill, however, it is necessary to work on software installation, setting, customizing, performance check, operational test, etc., through continuous coordination with CLS and confirm each time to proceed the work carefully. Accordingly, the consultant should take on-site management role during the installation and acceptance test of the AFIS.

2-2-4-5 Procurement Plan

The AFIS, major equipment of the project, is not manufactured in the Philippines. Even in Japan, a single manufacturer has the capability of manufacturing the AFIS, the products by the third countries should be subjected in order to keep fair competition of the bid. It is suspected that repair and maintenance work on the AFIS may be possible by CLS engineers, but system level malfunction may be difficult to fix by them rather than by engineers of the manufacture. Therefore, it is suggested that PNP would take an action of making maintenance contract with the manufacture in order to avoid down time of operation and for quickly recovery when AFIS gets trouble; PNP would establish a system which will be able to proceed technical support, trouble shooting, and spare parts procurement smoothly. Since PNP is planning to make maintenance contract with the AFIS manufacture, spare parts issue is not considered in this project generally.

2-2-4-6 Implementation Schedule

Implementation Schedule



2-3 Obligations of Recipient Country

The Philippines task role items and cost in this project are described as follows:

2-3-1 Task Role Items

(1) Taxation Exemption

The Philippines will take exemption of taxation action for the import equipment from Japan and the third country (ies).

(2) Banking Arrangement (B/A), Authorization to Pay (A/D)

- Advising commission of A/P
- Payment commission

(3) Provision of Handling Benefit

Will provide the handling benefit for the immigration and staying of consultant and contractor engineers concerning to the Project

(4) Burden of Expenses for the related work not included in the Project

Will burden the expenses for the procurement of related equipment, such as facilities, equipment engineering work, furniture, etc., which are not included in this project. Facility modification work required to the project equipment installation, are as follows:

- Make partition and door in Main Computer Room of second floor
- Power Distribution Board is necessary in Main Computer Room separately
- All of windows need to be air-tight rubber packing around
- Some of Windows Lock should be fixed
- Curtain/Blind for all of windows

1) Window Sash and Window Shade

Window sash of the AFIS building is made of iron, however, there exist some gap between the window sash and window, which requires modification work of air-tight (such as silicon rubber injection) as storm counter-measure. Window shade or curtain should be equipped with the windows as well to reduce temperature rise caused by the direct sunshine.

2) Partition in the Computer Room

The space for the Computer System is already provided in the new building, the System includes the server and operation Workstations. The space for the operation Workstations is already partitioned while in the server room, no partition is provided but the server room requires partition from the security point of view.

3) Installation of Power Distribution Boards

Additional system power distribution boards (PDB) should be installed in the partitioned server

room as shown on the Figure 3, next page, since PDBs' for the system are insufficient in number. On the PDB, a 200A Non Fuse Breaker (NFB) for the primary side, six each of 30A NFBs' (Two each for AFIS server, two each for Matching system, and two each for spare), and eight each of 20A NFBs' (Two each for Tenprint Fingerprint Workstation, two each for Latent Print Workstation, two each for air conditioners, and two each for spare) at the secondary side are required.

4) Others

PNP has considered no raised floor and no under floor wiring on the second floor of the AFIS installation position at the Basic Design Discussion, however, raised floor construction (approx. 20 cm) is desirable because of wiring such as LAN cable, power cable, etc on the floor.

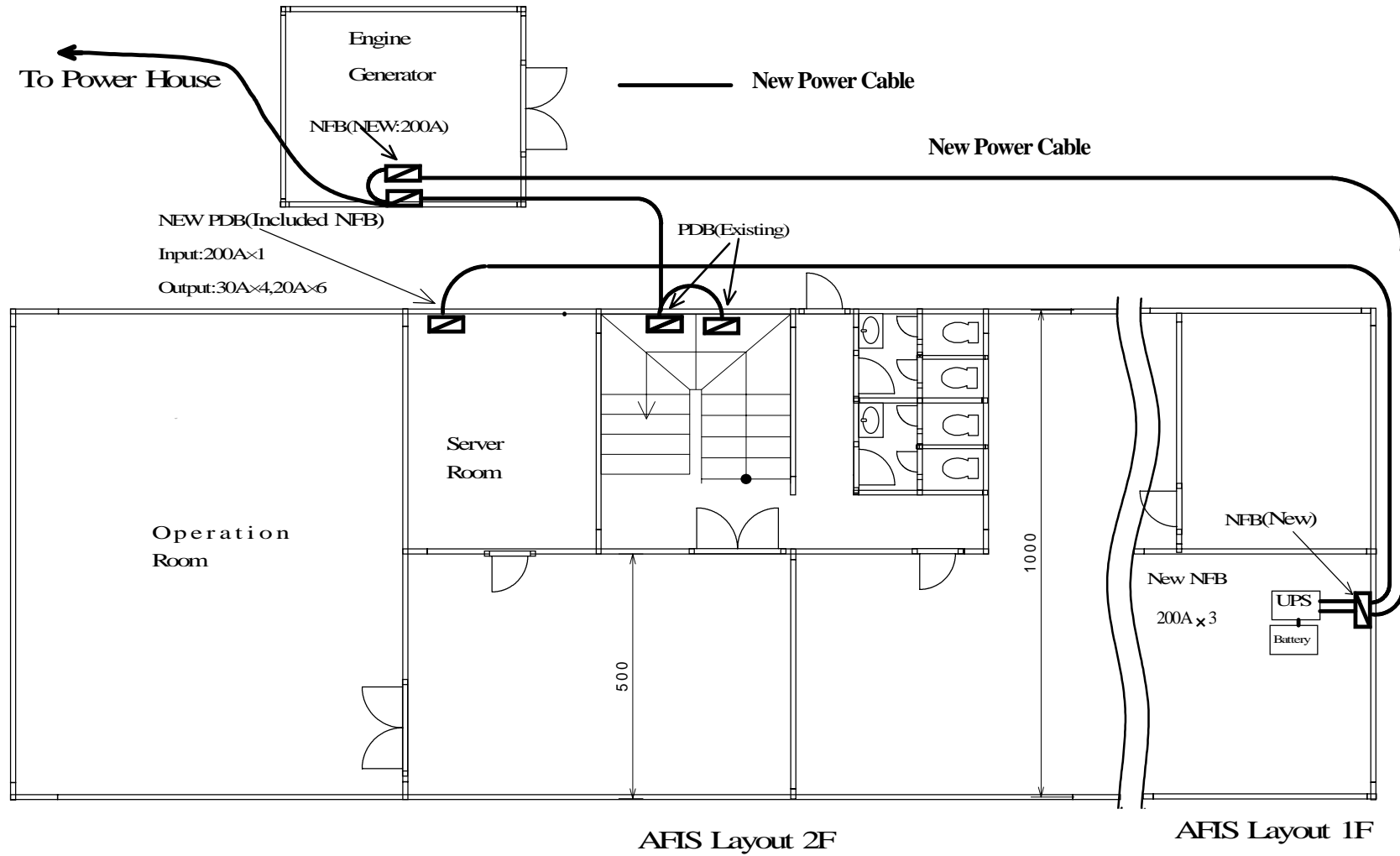
2-3-2 Cost Estimation

- (1) Burden Cost by the Philippines 619, 799 Php (Approx. 1.5 Million Yen)
- (2) Modification of Window Sash and Installation of Window Shades 576,400 Php (Approx. 1.4 Million Yen)
- (3) Installation of Partition (additional wall) in the Computer Room 20,679 Php (Approx. 0.05 Million Yen)
- (4) Installation of Power Distribution Board 22,720 Php (Approx. 0.06 Million Yen)
- (5) Terms and Conditions
 - 1) Cost Estimation Date as of : September 2002
 - 2) Exchange Rate : 127.45 Yen/US\$, 2.49 Yen/Php
 - 3) Working Period : As indicated on the Time Table
 - 4) Others : The project will be enforced implemented in accordance with the Grant Aid System of the Japanese Government.
- (6) Running Cost (Operational and Maintenance Management Cost)

The major portion of the running cost newly generated is limited to the cost for maintenance contract cost with the AFIS manufacture, procurement cost of critical expendable items, and utility cost of the AFIS building since this Project is planned to install equipment in the existing building and to operate the system by the existing number of personnel. The annual running cost for the AFIS implementation planned is estimated just roughly, as shown on the Appendix 5, 564,796.8 Php (approx. 140 million Yen). (Further, the cost for personnel, utilities, etc., are included in the PNP budget and they are not included in the CLS expenses) and maintenance fee between PNP and AFIS Vender is estimated approximately the annual US \$300,000 ~ 400,000. (The contracted vender will change this amount.)

The total cost will be 28,628,494.66Php (approx.71.28 million Yen.)

Fig. 3 Power Line & PDB (2F)



2-4 Project Operation Plan

2-4-1 Organization of Operation and Maintenance Management

CLS has a plan to train and to raise up 60 people of Examinars officers as operation personnel of AFIS to be assigned to the Fingerprint Identification Division. Also, the following three new groups are planned to be organized for efficient operation of AFIS:

1. Ten Print Section

* Ten Print Supervisor	3
* Ten Print Operator	30
	(Plan of additional 23 bodies)

2. Latent Section

* Latent Print Supervisor	3
* Latent Print Operator	21
	(Plan of additional 17 bodies)

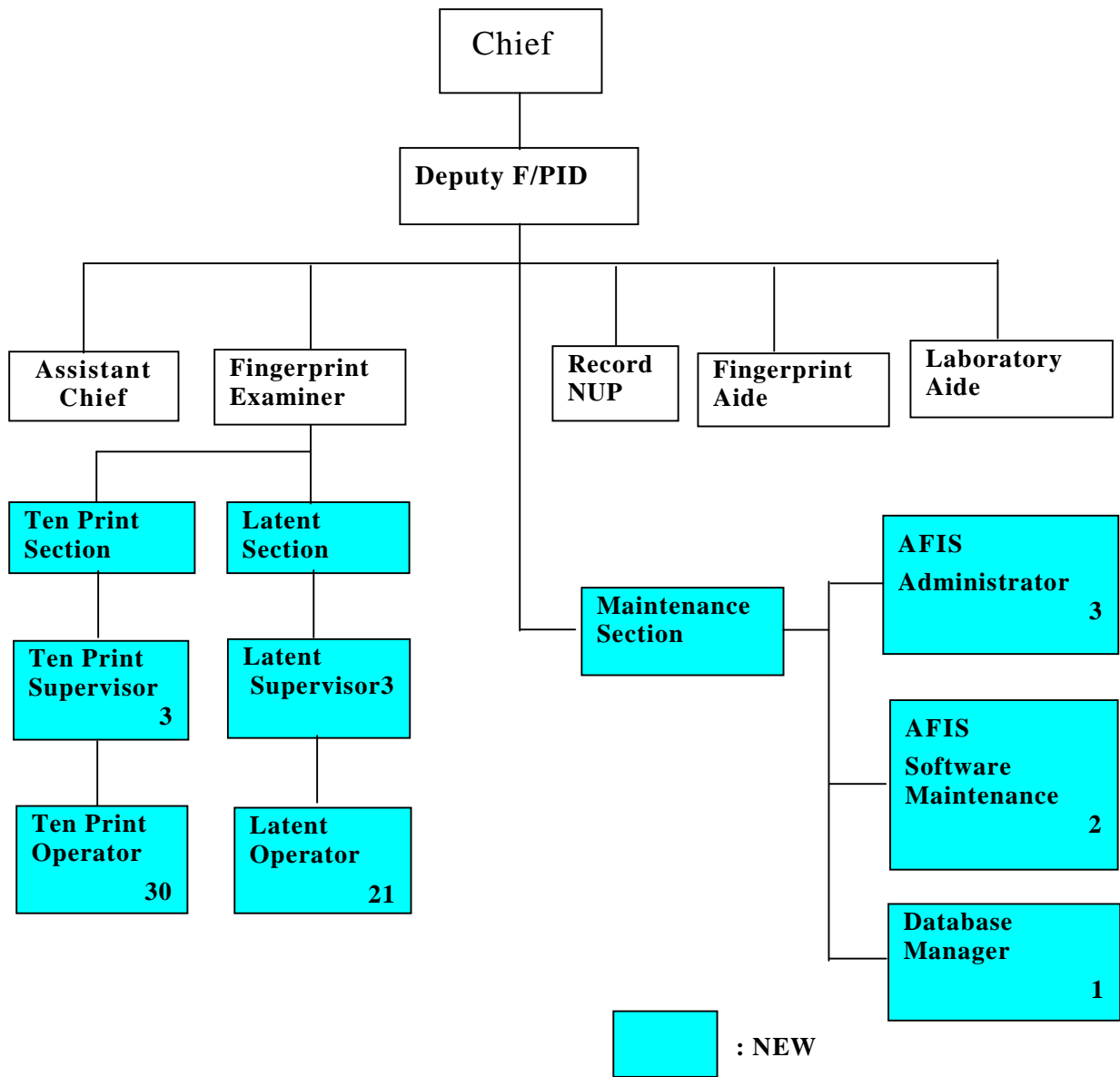
3. Maintenance Section

* AFIS Administrator	3
* Software Maintenance	2
* Database Manager	1
	(Plan of additional 6 bodies)

Also, it is planned that CLS will assign computer hardware /software experienced technicians as the personnel to the above Maintenance Section. In fact, CLS has the plan of converting personnel who has been engaged in the software/hardware development and maintenance work at PNP Computer Service to CLS. Accordingly, total system of 63 people will be able to operate AFIS efficiently

The organization chart of the Fingerprint Identification Division after the completion of the project is shown on the Figure 4-1, next page, based on the current organizational chart of the Fingerprint Identification Division as reference.

FINGERPRINT IDENTIFICATION DIVISION



<Fig. 4-1>

Fig. 4-1 Organizational Chart of the Fingerprint Identification Division after the Completion of the Project

2-4-2 Action Path in Case of Trouble Occurrence

The action to be taken when a trouble happened, will follow the flow shown below.

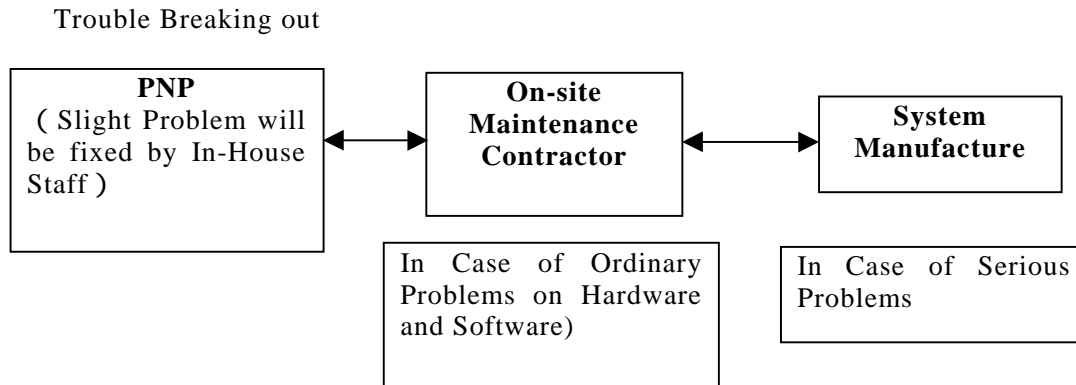


Fig. 4-2 Action Path in Case of Trouble Occurrence

2-5 Other Relevant Issues (Soft Component Planning)

(1) Necessity of the Soft Component

The following technical support has been requested by the Philippine Side:

Table 2-17 Details of the Requested Technical Support

Request No.	Items
1	Data Conversion
2	AFIS Operation Skill
3	Software Maintenance Skill
4	Hardware Maintenance Skill
5	Administrator Skill
6	Fingerprint Verifier Skill
7	Database Quality Control
8	Instructor Training Skill
9	Latent Tracing Skill
10	Latent Lifting Skill
11	Fingerprint Classification Skill

After analysis on these contents, the following contents have been reviewed with respect to the soft component scheme.

1) Data Conversion

Data conversion is essential to the fingerprint checking work by AFIS. Technical support on the data conversion is needed since they do not have any experience of data conversion in the Philippines. Further, fingerprint cards subjected to be converted are 210 thousand cards and it will be possible to convert all of them about 4 months. Also, the results of the job will be compared the number of cards which are digitized with the number of registered into the database, will sort cards by the Key No. of Ten Print cards restored in the cabinet, and compare the descriptive information with the image. Furthermore, rigid confirmation can be done by Ten Print inquiry with randomly selected cards whether the score on the candidate list is perfect or not.

As the result of the above review, the data conversion should be included in the soft component.

2) AFIS Operating Skill

It is essential for the CLS operators to learn AFIS operating Skill for the efficient operation of AFIS. It is possible to obtain some computer skill before the implementation of the system because CLS operators will be able to be trained in PNP. However, technical support including training is necessary to perform effective

fingerprint checking and registration work by using a real AFIS.

It is possible to arrange training courses by using implemented AFIS to perform technical support and an operation manual will be considered to be the product.

As the result of the above review, AFIS operating technique should be included in the soft component.

3) Software Maintenance Skill

The software maintenance skill is an essential technique as primary measure to respond when trouble occurs in software. The project pays attention not to disturb CLS operation by using dual configuration of the server, however, there is a possibility of trouble occurs. Consequently, it is desirable to enhance technical skill to respond problems by CLS employees which is the minimum requirement from the effective operation point of view. Also, a concrete trouble shooting manual will be the product of software maintenance technique.

As the result of the above review, software maintenance technique should be included in the soft component.

4) Hardware Maintenance Skill

The hardware maintenance Skill is an desirable technique as primary measure to respond by the CLS employees as well as the software maintenance skill. However, hardware, such as server, is customized by the manufacture that means it is impossible to fix the trouble without manufacture engineers. Consequently, as for the hardware trouble, that should be responded to be resolved by a contract between PNP and hardware manufacture.

As the result of the above review, hardware maintenance skill should not be included in the soft component.

5) System Administrator Skill

This system Administrator skill is a technique to monitor and to analyze the system operation status (status of network, database storing device, peripheral hardware/software, and analysis on system log file or hardware log file etc.) from the system management Workstation and determine whether any abnormality exists or not. Also, when at a trouble, it is important for the system to be recovered quickly by giving information to the maintenance group how the trouble occurred.

As the result of the above review, hardware maintenance skill should be included in the soft component.

6) Fingerprint Verifier Skill

The fingerprint verifier Skill is a technique to make match between fingerprints by using AFIS. This closely relates to the item 2) AFIS operating skill, and is possible to train about the fingerprint technique during AFIS Operation Technique instruction.

Consequently, this skill should be included in the soft component.

7) Database Quality Control

The database quality control is the most important technique for keeping accuracy and reliability of AFIS. It is usual that these are duplicated ten-fingerprints from habitual criminals. In these cases, if any good quality prints are taken from the habitual criminals with respect to the previous ones already registered, they should be replaced to the new ones to prepare latent or ten-print checking. A verifier will determine which ones are better and he is responsible to determine which finger should be replaced. The improvement of the verification skill relates to improve the quality of the database.

Consequently, this technique should be included in the soft component.

8) Instructor Training Skill

It is concluded that it is favorable for the Philippine side to establish a system rather than responding by soft-component ; in which PNP, CLS side select trainers from on-the-job experienced operators to train recruits as AFIS trainers who can raise trainers continuously and independently. The Philippine side has superiority to raise up instructors independently, however, it will take longer period of time.

As the result of the above review, instructor training should not be included in the soft component.

9) Latent Fingerprint Trace Skill

This latent fingerprint tracing skill should not be included in soft-component because the training of this technique has been already performed by the JICA experts.

10) Latent Fingerprint Lifting Skill

This latent fingerprint lifting skill should not be included in soft component because the training of this technique has been already performed by JICA experts.

11) Fingerprint Classification Skill

This fingerprint classification skill is a technique to distinguish fingerprints according to their pattern , but the classification of fingerprints are already performed in the current work and CLS operators have some skill level. It is concluded that the fingerprint classification technique will not be trained again because AFIS of the project will be designed based on fingerprint classification methodology which are currently used by PNP, CLS.

Accordingly, this fingerprint classification skill should not be included in soft component.

Based on the above analysis, it is concluded that the following six items are desirable to be subjected by soft component:

Table 2-18 Soft Component Plan

No. of Plan	No. of Request	Item
1	1	Data conversion Skill
2	2	AFIS Operation Skill
3	3	Software Maintenance Skill
4	5	System Administrator Skill
5	6	Fingerprint Verifier Skill
6	7	Database Quality Control

(2) Activity of the Soft Component (Draft)

Activities of the soft component (Draft) is summarized as shown below: refer to Table 2-20-1 and 2-20-2

1) Instruction Work for Data Conversion (Draft) ,Table 2-20-1

2)Performing the Instruction Courses (Draft) ,Table 2-20-2

It is planned to make up total of 57 trainees as Fingerprint Workstation Operators (including 33 people for Ten Print Verifiers and 24 people for Latent Print Verifiers) from current 10 Ten Print Verifiers and 7 Latent Print Verifiers in addition to 40 people recruits and Windows experienced personnel.

(3) Data Conversion Skill

Data Conversion Work will be performed by the CLS Verifiers, Ten Print Operators, and Latent Print Operators. During the Data Conversion Terms, 17 each of Workstations will be used as Tenprint Fingerprint Workstations with limited period of time.

Items	Condition
Terms Working Scheme Number of Workstations to be used Starting Time	4.1Months 20 Hours a day , 3 shifts, 6 days a week 17 each After Handing over of the equipment

Work time to register one case of Ten Print : 10 minutes (17 each of Tenprint Fingerprint Workstations will be used for this job temporarily)

$$60 \text{ minutes} \div 10 \text{ minutes} = 6 \text{ Cases / Hour} \qquad 6 \times 17 = 102 \text{ Cases / Hour}$$

$$102 \text{ Cases} \times 20 \text{ Hours} = 2040 \text{ Cases / day}$$

$$210,000 \div 2040 \text{ Cases / day} = 102 \text{ days}$$

$$102 \text{ days} \div 25 \text{ (Working days per a month)} = 4.1 \text{ Months required for the Data Conversion}$$

Data Conversion Flow

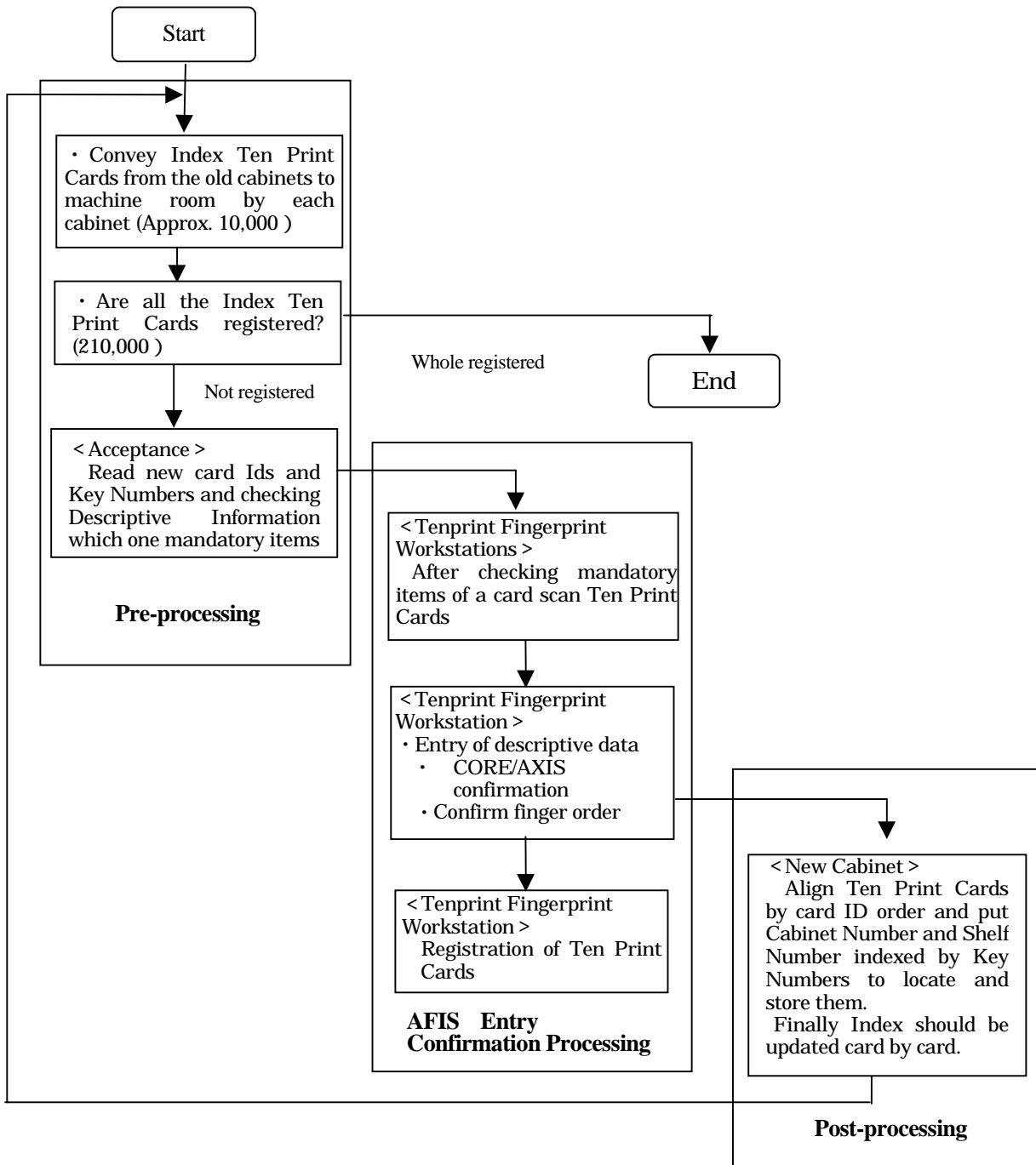


Fig 4-3 Data Conversion Flow

Table 2-19-1 Instruction Work for Data Conversion

Activity Area	Trainees	No. of Trainees	Required Skill for the Training	Activities	Output	Goal / Objectively Veritable Indicator	Instructors & Their Dispatch Period	Instruction Period
1) Data Conversion	Operators, Tenprint Fingerprint Workstation Supervisor, Tenprint Fingerprint Workstation Operators, Latent Fingerprint Workstation	30 3 21 Total 54	Fingerprint Verifiers or MS Windows computer experienced engineers	1. Ten Print Entry Operation 1) Entry of Key. No., Card ID, Descriptive Information 2) Definition of Core/Axis Position 3) Pattern Definition and Classification 2. Operation of Data Conversion and its Methodology 3. Management of Ten Print Cards 4. AFIS operation and Ten Print Card Management Procedures after the AFIS implementation	A database with 210,000 Ten Print Cards will be constructed after this instruction. 1. Operators in charge of Tenprint Fingerprint Workstations will be taught the skill to determine accurate definition of Core/Axis and Pattern which will be resulted maintaining database with high quality and to improve inquiry accuracy. 1) Operators in charge of Tenprint Fingerprint Workstations will entry mistakes of descriptive information, Key Numbers, and Card ID Numbers. Even if they continue processing, they will be able to delete or re-registration of Ten Print Cards. 2) Operators in charge of Tenprint Fingerprint Workstations will be taught the skill to identify 10 fingers Core/ Axis and will have the ability of assigning reference patterns even if they are difficult to determine. 3) Operators in charge of Tenprint Fingerprint Workstations will be able to confirm 10 fingers patterns correctly and the Hit rate will be improved. 2. Supervisors in charge of Ten print will be able to confirm the registration status of Ten Print Cards for each shift and each group at the end of operation of the day and will be able to develop registration status report. The data conversion work will register 2040 Ten Print Cards a day, however, he will confirm who in which group is behind the schedule and is able to instruct the operator how to catch up. The supervisors will be able to secure Ten Print Card registration pace of 2040 a day. 3-4. Trainees will be able to point out the original Ten Print Cards by the Key Numbers.	[Goal] 1. Registration of 2040 Ten Print Cards per day 2. Construction of 210,000 Ten Print Cards (Approx. 4 months) 3. Provision of Conversion Working Manual (Following CLS operation) [Goal / Objectively Veritable Indicator] 1. Conversion Manual 2. Confirmation of the number of registration by the database statistic information 3. Confirmation of the success of goal by job report	Two instructors, "C" and "D" by two shifts. 6 days a week, 20 hours a day 5 day of preparation period(per an instructor) 121 day dispatch [Breakdown of dispatch period] 102 working days 17 Sundays = (102 x 7/6)-102=total days - working days 2 days for movement	Give instructions and supervision, no lecture. 102 days

Table 2-19-2 Performing the Instruction Courses

Activity Area	Trainees	No. of Trainees	Required Skill	Activities	Output	Goal / Objectively Verifiable Indicator	Instructors & Their Dispatch Period	Instruction Period
2) AFIS Operation Skill	Operators, Tenprint Fingerprint Workstation Supervisors, Ten Print Operators, Latent Fingerprint Workstation Supervisors, Latent Prints	30 3 21 3 Total 57	Fingerprint examiner or Personnel who have experience of operating MS windows computers	1. Entry operation of Ten Prints 2. Command processing on Ten Prints 3. Verification Processing operation on Ten Prints and Other criminals 4. Entry operation on Latent Prints 5. Command processing operation on Latent Prints 6. Latent Inquiry and verification processing operation on the same criminal confirmation	The numbers of the goal are corresponding to those of the Instruction details 1. Operators in charge of Tenprint Fingerprint Workstations will learn the technique to determine Core/Axis and Pattern and is able to maintain Ten Print Database accurately to improve inquiry accuracy. 2. Operators in charge of Tenprint Fingerprint Workstations will learn the technique to operate the Workstation accurately and 200 cases of processing Ten print Inquiry, 200 cases of registration, and other criminal inquiry of 100 cases per day which are under planning will be accomplished. 3. Operators in charge of Tenprint Fingerprint Workstations will be able to update descriptive information of Ten print cards at each occurrence of the criminal case by the repeated criminal person and are able to maintain correspondence of the criminal history. 4. Operators in charge of Latent Print Workstations will be able to register Latent Print Cards derived from the original Latent Prints into Latent Print Database by occurrence serial numbers and the inquiry accuracy will be improved for other criminal inquiry. 5. Operators in charge of Latent Print Workstations will learn the technique to inquire accurately and will be able to accomplish daily goal of 57 Latent Print Inquiry processing , 57 Latent print registration , and 51 cases of the same criminal inquiry confirmation. 6. Operators in charge of Latent Print Workstations will be able to perform merge processing and deletion processing on Latent print Card Database in order to confirm relationship between criminal to criminal and will be able to maintain current status of the database.	[Goal] 1. 200 Ten Print Card registration and inquiry per day. 2. 57 latent print Card inquiry and registration per day. 3. Development of AFIS Operation Manual .(Followed by the CLS standards) [Confirmation means of confirming the goal] 1~2-1. Goal accomplishment confirmation by the job report 1~2-2. Confirmation of number of registration by Database Statistics information. 3. Operation Manual	Instructor "A": 5 days a week, 6.5 Hours a day, 2.5 preparation days 30.4 days of dispatch period [Breakdown of the Dispatch Period] 21 Working days 8.4 Sundays=(21 x 7/5)-21 = Total days - Working Days 2 Days for Movement	7 days per a trainee (7 days for each 19 people group, total 21 days for 3 rounds of 7 days)

Activity Area	Trainees	No. of Trainees	Required Skill	Activities	Output	Goal / Objectively Veritable Indicator	Instructors & Their Dispatch Period	Instruction Period
					7. Operators in charge of Latent Print Workstations will be able to perform merge processing and deletion processing on Latent Database in order to confirm relationship between criminal to criminal and will be able to maintain current status of the database.			
3)Software Maintenance Skill	Supervisor, Ten Prints Supervisor, latent prints Software maintenance person System Administrator Database Administrator	3 3 3 2 1 Total 12	Fingerprint Examiner Experienced Personnel Experienced System Engineer Experienced System Development Engineer	1. Recovery Procedure when System Down 2. Recovery Procedure when power Failure 3. Recovery Procedure when Database failure 4. Recovery Procedure when Disk failure 5. Recovery Procedure when Network failure 6. Analysis Procedure when Transaction abort 7. Analysis Procedure on System Log File 8. Isolation procedure between Hardware and Software Problems	1~5. Trainees will learn system maintenance procedures to make quick detection of hardware and software failure and minimize failure affection area as possible and the system operability will be improved. 6~8-1. Trainees will learn the technique to analyze the cause of trouble, to inform the trouble status to the oversea vendors correctly, and will be able to take adequate action. 6~8-2. Trainees will be able to report the log to the vendor and react requested recovery action by the vendor. 6~8-3. Trainees will be able to have the ability of replacing software modules and change settings.	[Goal] 1. To develop a Difficulty Sheet describing trouble details, to request trouble countermeasures to be taken to react the same kind of problems. 2. Development of System Maintenance Manual 3. Development of Trouble Shooting Manual . [Confirmation measures for accomplishing the Goal] 1. Difficulty Sheet Manual 2. System Maintenance Manual 3. Trouble Shooting Manual	Instructor "B" 5 days a week 6.5 Hours a day, 1.67 days for preparation 17.46 days for dispatch [Breakdown of the dispatch period] 12 Working days 4.8 days of Sunday = (12 x 7/5) -12 = Total days - Working days 2 Days for Movement	6 days per trainee (6 people for 6 days , total 6 days x 2 rounds = 12 days)

Activity Area	Trainees	No. of Trainees	Required Skill	Activities	Output	Goal / Objectively Veritable Indicator	Instructors & Their Dispatch Period	Instruction Period
4) System Administrator Skill	Supervisor, Ten Prints Supervisor, Latent Prints Software Maint. Personnel System Administrator Database Administrator	3 3 3 2 1 Total 12	Manager for Fingerprint verifier Experienced System Engineer Experienced System Development	1. Procedures for Network connection and disconnection 2. Procedures to monitor status of each equipment 3. Procedures to monitor transaction and traffic status. 4. Procedure to monitor Usage rate of Database and empty area size. 5. Operation procedures to startup and shut down the system. 6. Operation to make system backup and restoring. 7. Operation procedure to switch from operation system to standby system. 8. Operation procedure to release reducing operation of the AFIS.	1~5. Trainees will learn the ability of routine operation and inspection as well as quick findings of system trouble. 6~8. Trainees will learn monthly system maintenance procedures to maintain the system operability. Trainees will be able to switch the system to the standby system when the operation system at the AFIS Server gets failure to maintain system operability. Trainees will learn the technique for media management to make up monthly backup.	[Goal] 1. Monthly Processing Manual . 2. Development of Log Collection Manual . 3. Maintenance Manual . [Confirmation Measures to confirm Monthly Goal] 1. Monthly Processing Manual 2. Log Collection Manual 3. Maintenance Manual .	Instructor "B" 5 days a week 6.5Hours a day 1.67 days for preparation 17.46 days for dispatch [Breakdown of the dispatch] 12 Working days 4.8 days Sunday = (12 x 7/5)-12= total days -Working days Day of movement; 3)Same as software maintenance	6 days per trainee (6 people for 6 days , total 6 days x 2 rounds = 12 days)

Activity Area	Trainees	No. of Trainees	Required Skill	Activities	Output	Goal / Objectively Veritable Indicator	Instructors & Their Dispatch Period	Instruction Period
5) Fingerprint Verifier Skill	Operators, Tenprint Fingerprint Workstations Supervisors, Ten Print Operators, Latent Fingerprint Workstations Supervisors, Latent Prints	30 3 21 3 Total 57	Fingerprint Verifiers or Personnel who have experience of operating MS Windows computers	1. Hot/No Hit determination technique on Fingerprint Inquiry Results by the verification 2. Searching procedures of duplicated registration cards and selection procedures of cards to be left. 3.Hitting procedures of Latent Inquiry by entering partial fingerprints. 4.Modification on ridge lines and Minutiae points to be deleted. 5.Presuming procedures of similar patterns 6.Presuming procedures of finger numbers. 7.Presuming procedures of Core/Axis 8.Setting procedures of Inquiry Filters 9.Identification procedures of wrong Minutiae.	1. Operators in charge of Tenprint Fingerprint Workstations will be taught the technique to determine whether they are the same fingerprints or not through Ten Print Inquiry Hit Determination criteria which are set by fingerprint supervisor and operators determination skill will be improved. 2. Operators in charge of Tenprint Fingerprint Workstations will learn the procedures of retaining Ten print Cards when they made duplicated hits. 3-9. Operators in charge of Latent Print will be taught ridge line presuming procedures, presuming procedures of cross fingerprint pattern, finger numbers, Core/Axis, and selection procedures of important Minutiae point and acquisitive prescription Minutiae point from partial fingerprints to have editing skill of Ten Print Cards and the Hit Rate of Latent print Inquiry will be improved.	[Goal] 1. Development of Ten Print Inquiry Hitting Criteria . 2. Development of duplicated Ten Print deletion criteria . 3. Development of Latent Print Inquiry Presuming Criteria. [Confirmation Means of Goal Accomplishment] 1. Hitting determination criteria for Ten Print . 2. Deletion criteria of duplicated Ten Print Cards . 3. Latent Print Inquiry presuming criteria.	Instructor "A" 5 days a week, 6.5 Hours a day, 2.5 days of preparation 30.4 days of dispatch [Break down of the dispatch period] 21 Working days 8.4 Sundays = (21 x 7/5) -21= Total days - Working days Day of movement; 2)Same as AFIS Operation Skill	7 days per trainee (19 people for 7 days , total 7 days x 3rounds = 21 days)

Activity Area	Trainees	No. of Trainees	Required Skill	Activities	Output	Goal / Objectively Veritable Indicator	Instructors & Their Dispatch Period	Instruction Period
6) Database Quality Control	Supervisor, Ten Prints Supervisor, latent prints Software maintenance person System Administrator Database Administrator	3 3 3 2 1 Total 12	Manager for Fingerprint verifier Experienced System Engineer Experienced System Development	1. Setting procedure of Database deletion criteria 2. Setting procedures of Finger Transposition criteria 3. Quality determination procedures 4. Processing procedures of missing finger 5. Update of criminal history information for repeated criminals 6. Update of Criminal Number 7. Deletion of acquisitive prescription criminal 8. Deletion of Dead Criminals	1. Trainees will learn selecting procedure of cards to be left in the database and card selection criteria to be deleted among Ten Print cards duplicated registration in the database and will be able to maintain the quality of database. 2. Trainees will learn selection procedures of better quality fingerprints than the file side among fingerprints determined Hit at the search side during Ten Print Inquiry and will be able to define and instruct criteria to maintain quality of the database for the Ten Print Group. 3. Trainees will learn the technique to identify quality of Ten Print and Latent Print and will define and instruct criteria for the Ten Print Group to maintain database quality. 4. Trainees will learn handling and inquiry procedures of missing finger to be able to instruct operators in charge of Ten Prints. 5. Trainees will be able to instruct Ten Print operators when repeated criminals are found out. 6. Trainees will have a right to update Latent Print descriptive information in the database following the information obtained from the Latent Prints by the criminal numbers. 7-8. Trainees will delete a criminal who died or acquisitive prescription following CLS regulation and trainees will be taught searching procedures by acquisitive prescription data from database, by the date of birth and the name for deletion.	[Goal] 1. Development of quality determination criteria. 2. Development of handling criteria for missing finger. 3. Development of handling criteria for invalid or dead criminals. [Confirmation Means of Goal Accomplishment] 1. Quality Determination Criteria. 2. Handling criteria of missing finger. 3. Handling criteria for dead criminal	Instructor "B" 5 days a week, 6.5 Hours a day, 1.87 days of preparation 17.46 days of dispatching period [Breakdown of the dispatch period] 12 Working days 4.8 Sundays = (12 x 7/5)-12= Total days - Working days Day of movement; 3)Same as software maintenance	6 days per trainee (6 people for 6 days , total 6 days x 2 rounds = 12 days)

(4) Activity Plan and Details

1) Activity Plan

Casting Plan

Four people from the Japanese Consultant will be assigned as follows:

Table 2-20 Casting Plan by the Japanese Side

Consultant	Items in Charge	Required Ability/Proficiency
Coordinator C	1. Data Conversion	AFIS Data Conversion Experienced Personnel
Coordinator D	1. Data Conversion	AFIS Data Conversion Experienced Personnel
Instructor A	2. AFIS Operation Skill 5. Fingerprints Verifier Skill	AFIS Operation Experienced Personnel
Instructor B	3. Software Maintenance Skill 4. System Administrator Skill 6. Database Quality Control	AFIS Software Engineer or System Administrator Experienced Personnel

The casting plan by the Philippine side will be arranged as follows:

Table 2-21 Casting Plan by the Philippine side

No.	Item	Man Power Required.	Details	Required Ability/Proficiency
1.	Data Conversion	54	30 Ten Print Operator 3 Ten Print Supervisor 21 Latent Operator	Fingerprint Examiner Experienced Personnel MS Windows Operation Experienced Personnel
2.	AFIS Operation Skill	57	30 Ten Print Operator 3 Ten Print Supervisor 21 Latent Operator 3 Latent Supervisor	Fingerprint Examiner Experienced Personnel MS Windows Operation Experienced Personnel
3.	Software Maintenance Skill	12	3 Ten Print Supervisor 3 Latent Supervisor 3 System Administrator 2 System Maintenance Engineer 1 Database Manager	Fingerprint Examiner Experienced Personnel as a Supervisor System Engineer Experienced Personnel System Development Experienced Personnel

4.	System Administrator Skill	12	3 Ten Print Supervisor 3 Latent Supervisor 3 System Administrator 2 System Maintenance Engineer 1 Database Manager	Fingerprint Examiner Experienced Personnel MS Windows Operation Experienced Personnel
5.	Fingerprint Verifier Skill	57	30 Ten Print Operator 3 Ten Print Supervisor 21 Latent Operator 3 Latent Supervisor	Fingerprint Examiner Experienced Personnel as a Supervisor System Engineer Experienced Personnel System Development Experienced Personnel
6.	Database Quality Control	12	Database Quality Control 3 Ten Print Supervisor 3 Latent Supervisor 3 System Administrator 2 System Maintenance Engineer 1 Database Manager	Experienced Personnel of Fingerprint Examiner, Database Design

Chapter 3 Project Evaluation and Recommendations

3.1 Project Effect

(1) Direct Effect

Current Status & Problems	Action Taken by the Project (Subjected Project by the Grant Aid)	Effect by the Plan & Degree of Improvement
<p>CLS has been promoting fingerprint verification work manually. So Ten Prints takes 1 week and for Latent print takes about 10 days, which means that the situation does not contribute the criminal investigation job efficiently.</p>	<p>* Implementation of AFIS and its related equipment * Fingerprint Processing Training through Soft Components</p>	<p>* After the implementation of AFIS, when the AFIS usage proficiency of CLS be increased will she contribute the increasing of fingerprint processing numbers. Assuming that 0.3 hour/case for Ten Prints, it is able to process 200 cases per day and that 0.83 hour/case for Latent Prints, it is able to process 57 cases per day.</p>
<p>2. Currently, PNP lifts approximately 40,000 cases of Index Crime annually, however, due to lack of Finger Print Card and Fingerprint Lifting Kits. she can not take all of 40,000 cards. So she does not contribute to the criminal investigation effectively.</p>	<p>* Deliver Fingerprint Lifting Kits to 1,373 CLO posts.</p>	<p>* After the delivery of Fingerprint Lifting Kits to all of the CLO in the Philippines, procurement of the necessary number of Fingerprint Cards by Philippine side, and lifting fingerprints from all of the Index Crime, it is able to collect approx. 40,000 cases per year and approx. 40,000 datas per year will be stored. in AFIS which will be contributed to the criminal investigation efficiently.</p>
<p>3. Current situation shows that it is impossible to inquire other crimie suspects from Ten Prints because Fingerprint verification job at CLS has been promoted manually</p>	<p>* Implementation of AFIS and its related equipment</p>	<p>* It will be able to inquire other crimes cases for about 20,000 cases per year after the implementation of AFIS and will be contributed to resolve pending criminal cases.</p>
<p>4. Current status shows that it is impossible to inquire the same criminal from Latent Prints because CLS as been promoting fingerprint verification job manually.</p>	<p>* Implementation of AFIS and its related equipment</p>	<p>* It will be able to inquire the same criminal for about 10,000 cases of Latent Prints annually after the implementation of AFIS and will be able to provide hints to resolve pending cases..</p>

(2) Indirect Effect

Current Status & Problems	Action Taken by the Project (Subjected Project by the Grant Aid)	Effect by the Plan & Degree of Improvement
1. In the recent years, criminal cases have been internationalized, however, PNP is not able to respond fingerprint inquiry requests from overseas because she has been promoting her fingerprint job manually and she does not make up data by International Quality Specifications (IQS).	* Implementation of AFIS and Its related equipment	* The equipment for this project is planned to follow the international quality Specifications (IQS) , so it will be able to provide effective data for the inquiry from overseas as well as to cooperate with foreign countries for the international crime cases.
2. The possibility of mistaken arrest might be caused due to manual fingerprint verification.	* Implementation of AFIS and its related equipment	* It will be able to reduce the possibility of mistaken arrest by using high accuracy fingerprint verification capability of AFIS.
3. It is impossible to draw a correct card of a criminal person when their names are the same or false names because CLS has been classified fingerprint card according to name.	* Re-classification job of cards by the implementation of AFIS.	* By the implementation of AFIS, descriptive data on cards will be re-arranged, cards will be classified by ID card, furthermore, sub-classification will be done for each Key No. and ID No.. As the result, a correct card will be extracted even if suspect uses false name or the same full name and this will be able to obtain hints or keys for a criminal person by using fingerprint verification.

3-2 Recommendations

The following two points are recommended to the Philippine side to realize and maintain the expected effects of the project ; increasing of the number of fingerprint processing, and avoiding maintaining mistaken arrests by AFIS.

(1) Continuous Procurement of Fingerprint Cards (40,000 sheets/year)

The fingerprint information on Ten Print Cards is the valid data which will be registered into AFIS and if the fingerprint cards will not be prepared for annual 40,000 cases of Index Crimes, the expected effect by the implementation of AFIS will not be expected.

(2) Keeping Concentration of Fingerprint Cards to CLS

Ten Finger Prints are collected by CLO all over the Philippines. AFIS will be utilized more efficiently if all of these cards are concentrated into CLS and CLS manages all fingerprint data of all country. Therefore, it is necessary to make up a system to forward fingerprints lifted by CLO to CLS securely after the implementation of AFIS.

(3) Improvement of Fingerprint Lifting Technique

Currently, fingerprint lifting technique has been taught by the Japanese experts. It is essential for the Philippines to achieve this technique thoroughly and to improve Ten Prints and Latent prints lifting at the scene of criminal more.

Among the above three items, (1) and (2) are the items for which only the Philippines is able to be resolved. As for the item (1), it is confirmed that the Philippines side is going to secure budget to procure 40,000 sheets of fingerprint cards per year. As for the item (2), they already have a system to forward cards from CLO to CLS, however, forwarding has not been thoroughly promoted, so its perfect execution is required. As for the item (3), the instruction to improve lifting technique has been done by the Japanese experts until now, and it is required to continue this technical support in this area in future, too.