



A Business Specification for an Enhancement Module of Asset Management System

By

Mr. Prasert Thaptimkuna

A Final Report of the Three - Credit Course
CE 6998 Project

Submitted in Partial Fulfillment
of the Requirements for the Degree of
Master of Science
in Computer and Engineering Management
Assumption University

November 1999

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Project Title Business Specification for an Enhancement Module of Asset Management System


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The Graduate School of Assumption University has approved this final report of the three-credit course, CE 6998 PROJECT, submitted in partial fulfillment of the requirements for the degree of Master of Science in Computer and Engineering Management.

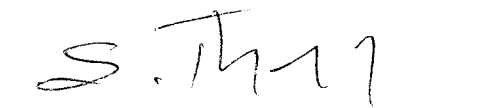
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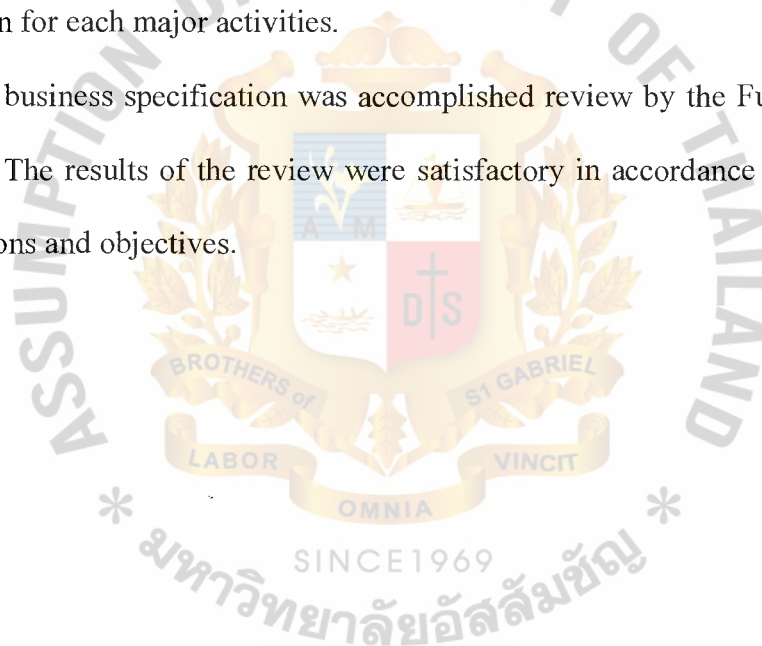
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ABSTRACT

This project examines the business specification of promissory note in Thailand for assisting facilities developers in improving the asset management system. This can fulfill several kinds of investment reports and valuation to fund managers and custody's.

The project is organized by system analysis and designs which is involving asset management regulations and trading activities in order to draw up a precise model of a portfolio management. That was conducted to identify all the activities on Promissory Notes in Thailand by worked examples. The study also designs the reports to support information for each major activities.

This business specification was accomplished review by the Fund Managers and Custody's. The results of the review were satisfactory in accordance with the designed specifications and objectives.



ACKNOWLEDGEMENTS

I am indebted to the following people and organizations without whom, this project would not have been possible.

I wish to express my sincere gratitude and regards to Professor Dr. Srisakdi Charmonman, my advisor and chairman of the Advisory Committee and Dr. Chamnong Jungthirapanich, Dean and Co-advisor, for their constant encouragement and invaluable advice that have helped me from the study inception to its completion. I would like to express my appreciation to my Advisory Committee members: Asst. Prof. Dr. Boonmark Sirinaovakul, Dr. Prapon Phasukyud and Assoc. Prof. Somchai Thayarnyong for their constructive comments and advice throughout the study.

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I. INTRODUCTION

The globalization has introduced a new phase to business competition. The market for talents is becoming increasingly global. In the financial field, the asset management system is one of the cores of the business in both in-house and package application. For Krung Thai Bank, Capital Market Services Office, we use the package application from Australia, which call Hiportfolio/2. Hiportfolio/2 is an integrated front and back office asset management system made up of over thirty modules, each of which provides processing support for a specific category of investment instruments or investment business functions. It can handle both the European Monetary Union and Year 2000. Actually, this application can fulfil most of the requirement of the standard financial market. However, the financial market in Thailand still does not have standard yet and the financial market in Thailand is fairly simplistic and trading activities predominantly center around four main financial instrument types: Fixed Interest, Discount Securities, Equities and Promissory Notes.

At present, Hiportfolio/2 has some limitation, with respect to the ability to deal adequately with the trading of Promissory Notes. (Thailand Promissory Notes)
This project aims to outline the business specification relating to the treatment of Thailand Promissory Notes instrument type so that the appropriate modification can be made to accommodate our business needs.

1.1 Objective

To enhance the performance of The Asset Management System so that it may deal adequately with the trading financial instruments (Promissory Notes) in Thailand.
(Which is not yet fully supported)

1.2 Type of Promissory Note

Promissory Notes (hereinafter referred to as PN) are very similar to Call and Fixed Deposits placed at banks. Upon maturity, the holder of the PN will receive the capital plus interest earned during that period. The interest rate, in general, is determined by money market movements. However, in some cases the interest rate at which the holder of the note receives is also dependent on negotiations between the individual investor and financial institution. The interest receipt frequency can be on a monthly, quarterly or at maturity basis.

There are basically two types of PN traded in Thailand.

(1) Term Promissory Note

Term PNs are identical to a Bank Fixed Deposit. A principal amount is placed for a fixed term, for example, one month, three months or at maturity, at a fixed interest rate, which remains unchanged during the agreed period of deposit. Upon maturity, the holder of the PN will receive the principal plus interest accrued. However, in the case where the PN holder makes an early redemption, an interest penalty (by way of lower rate) is incurred on the investment.

(2) Call Promissory Note

Call PNs carry a variable interest rate and can be redeemed by the holder at any time. Interest will be calculated to the day prior to the redemption date. Holders of such PNs are exposed to interest rate movements and an appropriate adjustment will be made by the issuer upon any rate changes in the market place.

1.3 Literature Review of Custodian

Custodian is the organization, which has been given an approval by the Office in accordance with the rules, conditions and procedures as specified in the notification of

the SEC. The custodian shall keep separate the deposited securities from its own assets. Under the SEC act Chapter 4, section 136, the securities company (Mutual Fund, Private Fund) shall deposit the assets which are securities with the custodian who has been given an approval under Section 135 within the business day following the day on which the securities company has received such securities, or within the time specified in the notification of the Office.

Under Section 127, The mutual fund supervisor, custodian, shall have the power and duty to:

- (1) Ensure that the Securities Company strictly comply with the provision of Section 125;
- (2) Accept into custody assets of the mutual fund and separate them from other assets as well as ensure the disposition of the mutual fund in accordance with the mutual fund project;
- (3) Prepare deposit and payment accounts of the assets of the mutual fund;
- (4) Prepare a report to the Office in the event that the securities company has done any act or omitted to do any act which has caused damage to the mutual fund or has not acted in accordance with Section 125;
- (5) File a legal action in court to cause the securities company to perform its duties or to claim compensation for damage from the securities company for the benefit of unit holders as a whole or when instructed by the Office.

The above is the duty to custodian shall be implemented under the SEC act. However, for custody house its has provide services as follow:

- (1) Asset safekeeping both in certificate and uncertificate (scripless)
- (2) Securities and / or cash settlement
- (3) Corporate action notification

- (4) Rights subscription
- (5) Securities registration
- (6) Report of portfolio, Settlement, Problems and history via electronics banking or paper
- (7) Cash and Securities account maintenance



II. CURRENT APPROACH

2.1 Analysis of Current Approach

At present, Hiportfolio/2 does not cater much for the trading of PNs. The system can broadly cope with Term PNs, which are held to maturity, and Call PNs subject to rate changes. The present approach is to set up the PNs as a non-current internal account type for each individual issuer of the PN. The interest type is set to Actual/365.

When a Term PN is purchased, a cash deposit is made to the PN account of the PN issuer. Conversely, when a PN is matured, a withdrawal is made on the account of the PN issuer.

For a Call PN, the same approach is adopted with the exception that there is no maturity date. A withdrawal is made on the account as when the holder of the note makes redemption. In the case where an interest rate adjustment is required (as inherent in a Call PN), the functionality of renegotiations in Hiportfolio/2 is used.

However, many other requirements cannot be integrated into the system at present.

2.2 Existing Problems

The current problems of the existing system can be summarized as follows:

(1) Insufficient Data for Reporting

The system does not gather the dummy number of the promissory note at the contact date, which the actual promissory note number is unknown until the settlement date. This makes the officer unable to input that note into the system at the contact date, therefore, it reduces the potential of functionality of the cash forecast function.

(2) Time Consumption and Less Accuracy of Information

To correct the information's (Report) into requirement format are time consuming. The system gives the lump sum amount of the interest. For business requirement in Thailand, the interest amount calculated on each note should be shows separately on the report. That requires the officers to do it manually and off the system. This may cause inaccurate information and time consumption.

(3) Data Inaccuracy

Many serious problems of manual operation have led to mistakes made by officers. High workload and limitation of time can cause data inaccuracy, which affect company reputation. (Services) And all these were done off the system so the officers were easily forgot to update in the system.

(4) Cannot Support Some Business Function

The current system mainly deals with promissory note like fixed deposit. So, it loses some functions, which relates to other types of promissory notes. For example, the normal practice in promissory note market, when the note holder made early redemption, the penalty rates apply back date to that note. The accrued interest will be recalculated from the beginning till the early redemption date.

(5) Security and Control

There are many problems when the report and interest calculations are not printed out from the main system. For example, it can not protect unauthorized users to access the system through a document files on the unlock cabinet.

2.3 Area for Improvement

The area of improvement can be analyzed as follow:

- (1) Term PNs may be subject to early redemption by the holder of the note. In such instances, an interest rate penalty is introduced and interest component needs to be re-calculated from contract date to redemption date to reflect the change in the rate. There are also in General Ledger (GL) implications when the holder of the PN makes an early redemption. Since an interest rate penalty is introduced upon such a redemption type, appropriate journal entries should be automatically generated to account for the accrued interest adjustment.
- (2) The accrued interest amount of the PN should be calculated individually. The system should not group and calculate the interest component as a whole for all PNs which have the same term, interest rate, maturity date and issuer.
- (3) When the order is placed for a PN, it must be entered into system as at the day the order was placed. At the time the order is placed, the PN number is unknown and the system must allow the user to fill in this information on the transaction record as when the physical note is received the following day.
- (4) For renegotiations of interest rate on Call PNs, the functionality to merge or split must be made available. For example, if we have three PNs to renegotiate the rate of interest, there are instances where the issuer may want to merge them into one single PN and carry the same PN number.
- (5) System needs to create only one master record for each issuer instead of one master record for each issue at the current system. The master record can hold several issues of the PNs regardless of the different terms and types of PN.

III. PROPOSE PROCESS

3.1 General Operation Flow

The trading of PN is fairly straightforward. In general, it basically involves several stages of processing:

- (1) Contracting stage
- (2) Instruction stage (Advice Note)
- (3) Cash Flow Forecasting stage
- (4) Settlement Stage

The above stages can be best outlined diagrammatically in a flow chart (Figure 3.1)

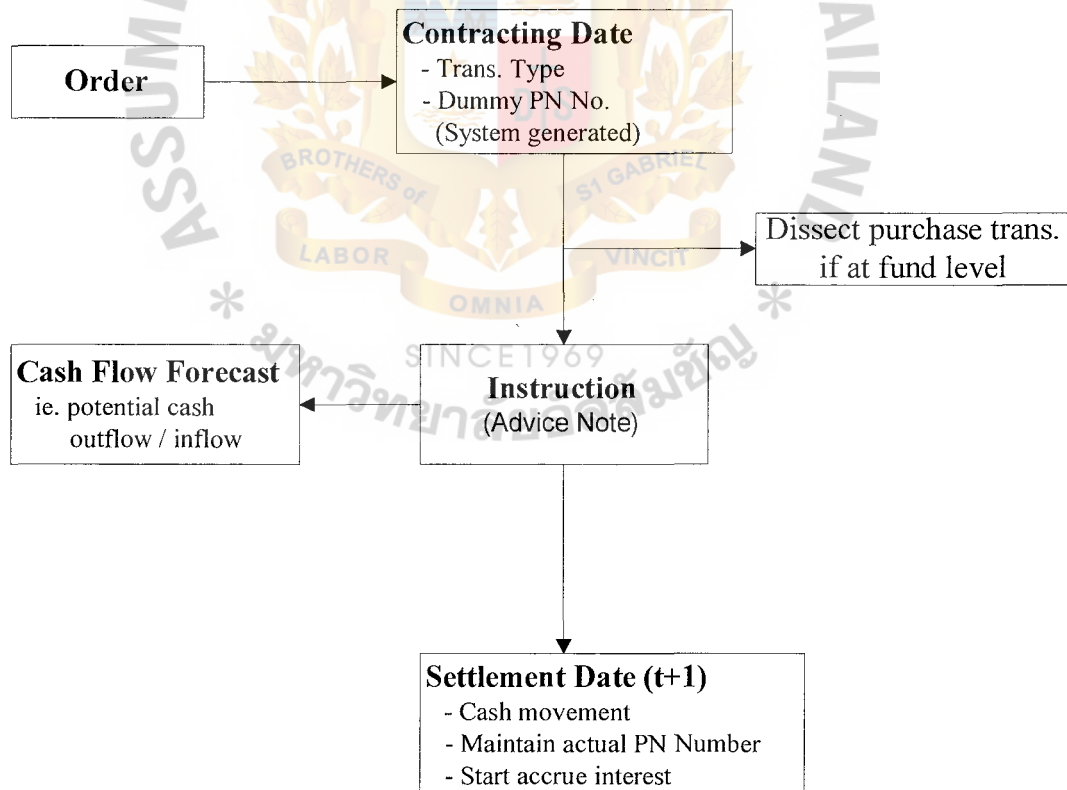


Figure 3.1. General Operation Flow.

3.2 Type of Transaction

3.2.1 Deposit

When an order is placed for a PN, it must be entered into Hiportfolio/2 system as at the day the order was placed. This is referred to as the contract date. The reason is that fund managers have to send appropriate instructions to advise their custodians and custodians must make the appropriate arrangement on the order day to dispatch the sum of money (and in the process affect the bank account balance) in exchange for the actual PN the next working day. This day is referred to as the settlement date.

Therefore, at the time the order is placed, the PN number is unknown. To identify each line of PN on the order day, a system generating dummy PN number must be introduced for each order. This is to allow the input of the actual PN number "matching" to each order on the settlement date. Hence, the system must allow such a modification on the PN number field.

The prefix of the dummy number must be user definable. Thereafter, it should be a continuous count and it is expected that a six-digit limitation should be sufficient. The actual PN number field should be a free format type of 10 characters long. The dummy PN numbers must be maintained in the system and not deleted after the input of the actual PN number on settlement date for audit and security purposes.

(1) Fund Level Transaction

Fund level transactions must be allowed to be put through to the system. The concept of fund level is the same as that currently adopted in Hiportfolio/2. That is, when processing at fund level, a single trade amount is keyed into the system and subsequently, dissected to various sub-portfolios. The system must automatically generate one dummy PN number for the fund level trade.

Example 1: Buy order for PN issued by NAVA Finance

Pfolio: Leave Blank

Contract date: 1/2/1999

Settle date: 2/2/1999

Principal: 900,000 baht

Rate: 10%

Type: Term

Maturity Date: 3/5/1999

PN Number: D1

The above transaction was put through to the system and dissected equally across to three sub-portfolios, namely sub-portfolio ABC1, sub-portfolio ABC2 and sub-portfolio ABC3. Each of these sub-portfolios will receive a PN of 300,000 baht, each carrying the same trade details as the fund level and same dummy PN number D1. On the settlement date, the PN numbers on each of the dissected sub-portfolios are maintained with their actual PN numbers with reference to the dummy PN number of D1. (Figure 3.2)

Table 3.1. Cash Flow Forecast Report (as at 1 Feb 1999).

Portfolio	Account	Contract Date	Settlement Date
		1/2/1999 Balance(Bahts)	2/2/1999 Balance (Bahts)
ABC1	KTB Bank	500,000.00	200,000.00
ABC2	KTB Bank	1,000,000.00	700,000.00
ABC3	KTB Bank	1,500,000.00	1,200,000.00

The above cash flow forecast report (Table 3.1) is run as at the contract date of the trade and shows the potential outflow of cash in

Example 1 on the settlement date. As at the settlement date, the balance is reduced by the appropriate amount transacted on the trade. The balance on contract date can be viewed as the opening balance or balance brought forward from the previous day.

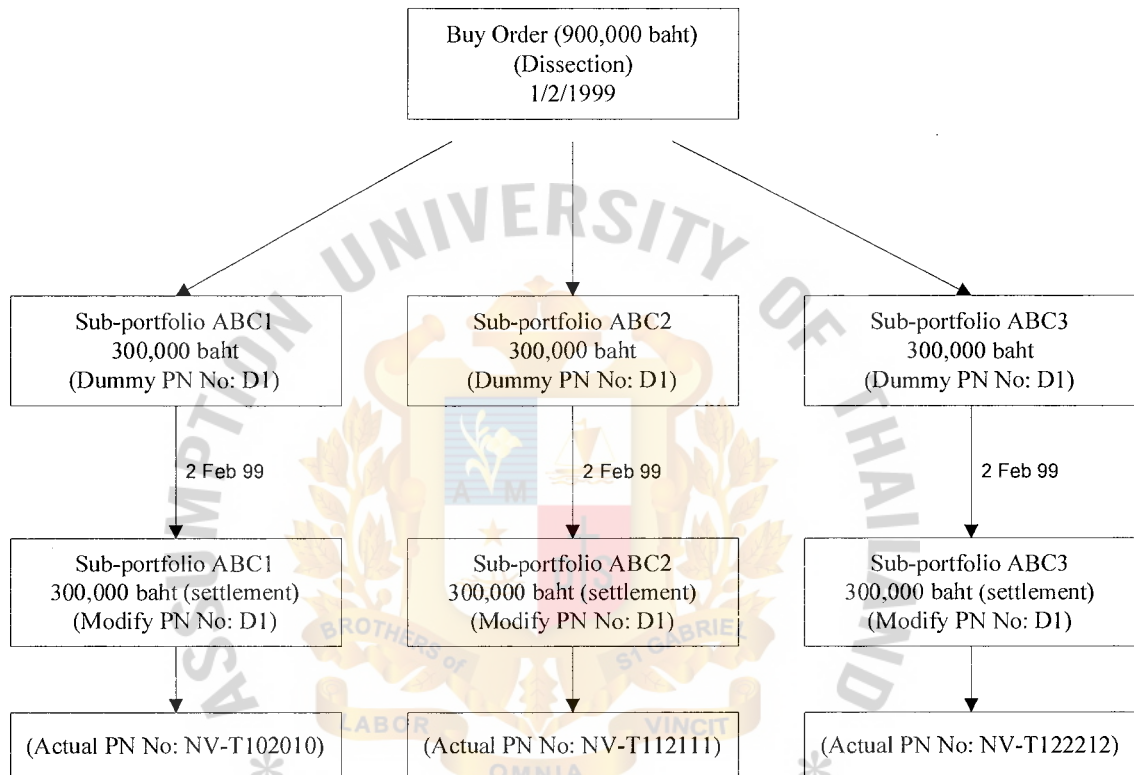


Figure 3.2. Fund Level Transaction.

(2) Portfolio Level Transaction

A portfolio level transaction is placed when a buy order for a PN is made for a specific portfolio at the time of trade. This simply means a PN purchase transaction is put through the system with a portfolio code attached to it at the time of trade.

Example 2: Buy order for PN issued by Dynamic Eastern

Pfolio: ABC3
Contract date: 1/2/1999
Settle date: 2/2/1999
Principal: 500,000 baht
Rate: 11%
Type: Call
Maturity Date: (This field will be skipped if "Type" is set to Call)
PN Number: D2

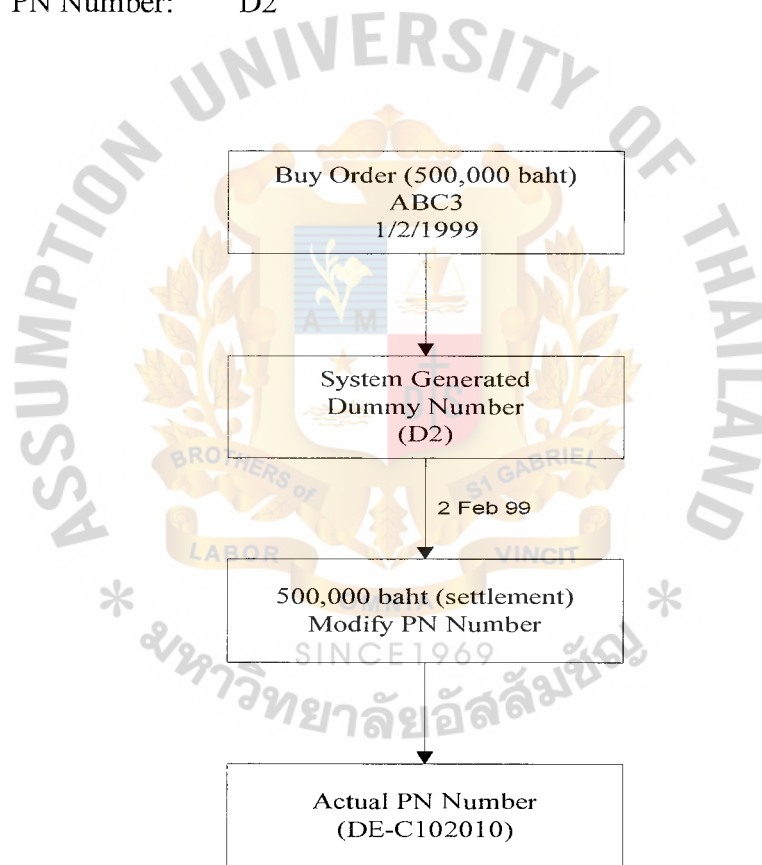


Figure 3.3. Portfolio Level Transaction.

When the principal is settled on settlement date in exchange for the actual PN, the PN number is maintained with the actual PN number. All

subsequent dealings with this (or any other) PN will be referenced to the actual PN number. (Figure 3.3)

The cash flow forecast report (Table 3.2) is run as at the contract date of the trade and shows the potential outflow of cash in Example 2 on the settlement date. As at the settlement date, the balance is reduced by the appropriate amount transacted on the trade. The balance on contract date can be viewed as the opening balance or balance brought forward from the previous day.

Table 3.2. Cash Flow Forecast Report (as at 1 Feb 1999).

Portfolio	Account	Contract Date	Settlement Date
		1/2/1999 Balance(Bahts)	2/2/1999 Balance (Bahts)
ABC3	KTB Bank	1,500,000	1,000,000

3.2.2 Redemption

The concept of redemption is similar to a withdrawal. When redemption is made, cash is redeemed from the issuer of the PN and then deposited into the bank account.

As at any one time, there are often several PNs to be redeemed from the system. In general, a list showing all PNs filtered by several key fields such as maturity date (only apply to Term PNs), issuer, portfolio and type of PN should be available for the user to specify, after which a selection (tag) for redemption is made. Upon tagging these PNs, a function key should be available to update all tagged items to the system. This "redemption" functionality should be made similar to that of the current automatic Settlement Transaction Selection.

However, prior to redemption being processed and updated, the system must perform two additional checks.

The system must check the settlement date (for Term PN, this date will also be the maturity date) of the PN against the calendar. This is to ensure that the settlement date does not fall on a non-working day. If indeed the settlement date does fall on a non-working day, the system must "push" the settlement date forward to the next working day. This next working date will be termed as the actual settlement date. The interest will be calculated up to (excluding) this actual date. This will be illustrated in the last part of this sub-section.

The reason for performing the check against the calendar as at the time of redemption as opposed to at the time of deposit is to ensure that the check is reliable. This is because should the term of deposit (for Term PNs) extend to the following year, where the calendar has not been set up, the check will not be effected.

There are basically three types of redemption's that can occur for a PN. They are full redemption, partial redemption and early redemption.

(1) Full Redemption

A full redemption on a PN result is a full withdrawal of the entire sum of principal including interest earned at a predetermined rate for the period of deposit. The cash received is then deposited back to the relevant bank account.

Full redemption applies to both Term and Call PNs.

(a) Term PN

A worked example is best to illustrate a Full Redemption of a Term PN.

Example 3: Full Redemption of Term PN issued by Wall Street Finance.

PN Holding Details:

Pfolio: ABC1
Contract date: 1/3/1999
Settle date: 2/3/1999
Principal: 1,000,000 baht
Rate: 10%
Type: Term
Maturity Date: 2/4/1999
PN Number: WS-T102010

Full Redemption Order:

Pfolio: ABC1
Contract date: 1/4/1999
Settle date: 2/4/1999
PN Number: WS-T102010

Payout Details:

Principal: 1,000,000 bahts
Interest days: 31
Interest receipt: $1,000,000 * 10\% * 31/365 = 8,493.15$ bahts
Total payout: $1,000,000 + 8,493.15 = 1,008,493.15$ bahts

When a full redemption is made the order or contract is put through on the day prior to the maturity date of the Term PN. This is to facilitate the cash flow (advice instruction) that will be effected on the maturity date (and in this case, is the settlement date). The interest

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is calculated from the settlement date of the buy order to the contract date, inclusive, of the redemption order.

(b) Call PN

Again, a worked example is best used to illustrate a Full Redemption of a Call PN.

Example 4: Full Redemption of Call PN issued by Cathay Trust

PN Holding Details:

Pfolio: ABC2
Contract date: 15/3/1999
Settle date: 16/3/1999
Principal: 3,000,000 bahts
Rate: 12%
Type: Call
Maturity Date: -
PN Number: CT-CIO2OIO

Full Redemption Order:

Pfolio: DST2
Contract date: 30/3/1999
Settle date: 31/3/1999
PN Number: CT-C102010

Payout Details:

Principal: 3,000,000 bahts
Interest days: 15
Interest receipt: $3,000,000 * 12\% * 15/365 = 14,794.52$ bahts
Total payout: $3,000,000 + 14,794.52 = 1,014,794.52$ bahts

The procedure for a full redemption on a Call PN is the same to that of a Term PN. The only difference being that the Call PN can be redeemed at any time, as it is not bound to a maturity date. The number of days used in the interest calculation is the same as that used for the Term PN.

(2) Partial Redemption

In this case, when redemption is made, the entire principal is *not* fully redeemed. Only part of the principal is redeemed and the remaining sum is re-invested into another *chosen* type of PN. Note that a new dummy PN number will be required to be generated for the PN of the re-invested portion of the principal.

For partial withdrawals, the daily cash flow activity should only reflect the portion of principal plus accrued interest (if chosen to withdraw the interest component as well). It *should not* treat the partial withdrawal as a full withdrawal and then re-depositing the “non-withdrawn” component back to the system.

Partial redemption applies to both Term and Call PNs.

(a) Term PN

Upon maturity, the holder of the PN can redeem part of the investment principal only or principal plus interest earned for the agreed period.

The requirements of this can be best detailed in a worked example.

Example 5: Partial Redemption of Term PN issued by Dynamic Eastern

PN Holding Details:

Pfolio: ABC2
Contract date: 1/3/1999
Settle date: 2/3/1999
Principal: 1,000,000 bahts
Rate: 12%
Type: Term
Maturity Date: 2/6/1999
PNNumber: DE-T112111

Partial Redemption Order:

Pfolio: ABC2
Contract date: 1/6/1999
Settle date: 2/6/1999
PNNumber: DE-T112111
Principal: 700,000

Payout Details:

Re-investment basis: Principal plus Interest

Amount redeemed

Principal: 700,000 bahts
Interest days: 92
Interest receivable: $1,000,000 * 12\% * 92/365 = 30,246.58$ bahts
Total payout: 700,000 bahts

Amount Re-invested

Principal 300,000 bahts
Interest receipt: $1,000,000 * 12\% * 92/365 = 30,246.58$ bahts

Total re-investment: $300,000 + 30,246.58 = 330,246.58$ bahts

If re-investment basis is set to Principal only, then 300,000 bahts is re-invested into the new PN as opposed to 330,246.58 bahts.

The re-investment basis determines whether the interest earned on the original principal is to be re-invested into the new PN. In addition to the fields on the *Partial Redemption Order*, several other fields must be made available for the keying in of the re-investment portion of the PN details. These are:

Re-investment amount: Amount re-invested into the new PN

Type: Type of PN for the re-investment

Maturity: Maturity date of the re-invested Term PN. Field will be skipped if re-invested into a Call PN type.

New PN: System generated dummy PN number for the re-investment.

Diagrammatically, the Term PN partial redemption process can be summarized as Figure 3.4

(b) Call PN

Partial redemption of Call PNs is similar to Term PNs with the difference being that such redemption can be at any time. All other operational procedures are the same as its counterpart.

Example 6: Partial Redemption of Call PN issued by Vajira Finance

PN Holding Details:

Pfolio:	ABC3
Contract date:	19/4/1999
Settle date:	20/4/1999

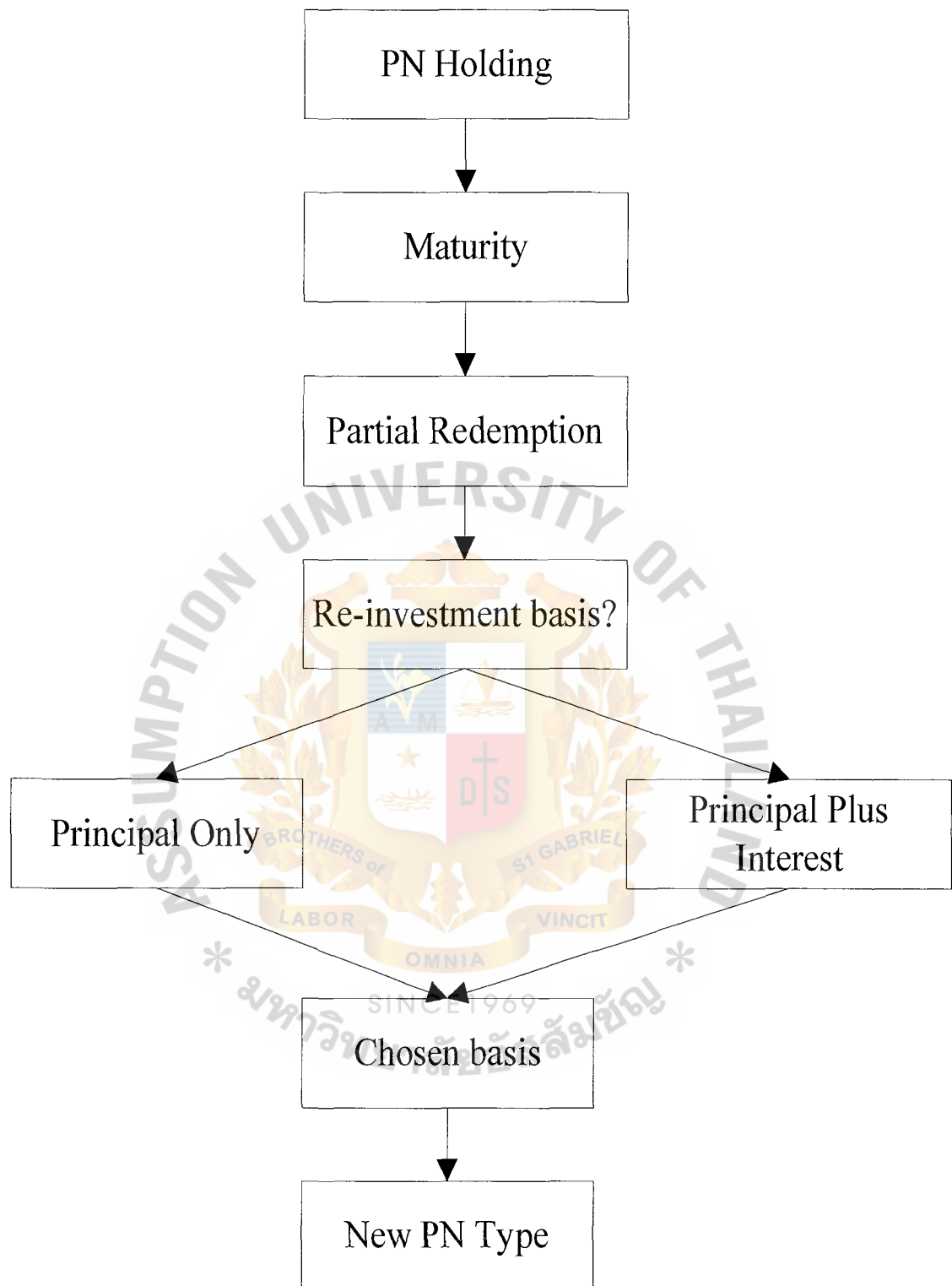


Figure 3.4. Partial Redemption Process (Term PN).

Principal: 300,000 bahts

Rate: 7%

Type: Call

Maturity Date: -

PN Number: VJ-C102010

Partial Redemption Order:

Pfolio: ABC3

Contract date: 26/4/1999

Settle date: 27/4/1999

PN Number: VJ-C102010

Principal: 100,000 Bahts

Payout Details:

Re-investment basis: Principal plus Interest

Amount redeemed

Principal: 100,000 bahts

Interest days: 7

Interest receivable: $300,000 * 7\% * 7/365 = 402.74$ bahts

Total payout: 100,000 bahts

Amount Re-invested

Principal: 200,000 bahts

Interest receipt: $300,000 * 7\% * 7/365 = 402.74$ bahts

Total re-investment: $200,000 + 402.74 = 200,402.74$ bahts

If re-investment basis is set to Principal only, then 200,000 bahts is re-invested into the new PN as opposed to 200,402.74 bahts.

Figure 3.5, the Call PN partial redemption process can be summarized as follow:

(3) Early Redemption

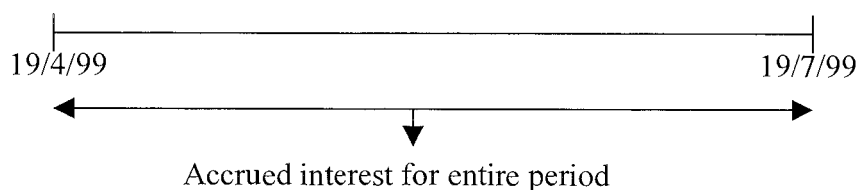
Early redemption *only* applies to Term PNs. When a Term PN is redeemed prior to its maturity date, it is deemed to be an early redemption. In such instances, an interest rate penalty is introduced (by way of a lower rate) and the interest component needs to be re-calculated from the *deposit* settlement date to the *redemption* settlement date (exclusive) of the PN to reflect the change (penalty) in the interest rate.

Example 7: Early redemption of Term PN issued by Wall Street Finance

PN holding details

Pfolio: ABC2
Contract date: 16/4/1999
Settle date: 19/4/1999
Principal: 500,000 bahts
Rate: 9%
Type: Term
Maturity Date: 19/7/1999
PNNumber: WS-T112111

If the above PN was *held to maturity*, the total payout including interest accrued will be as follows:



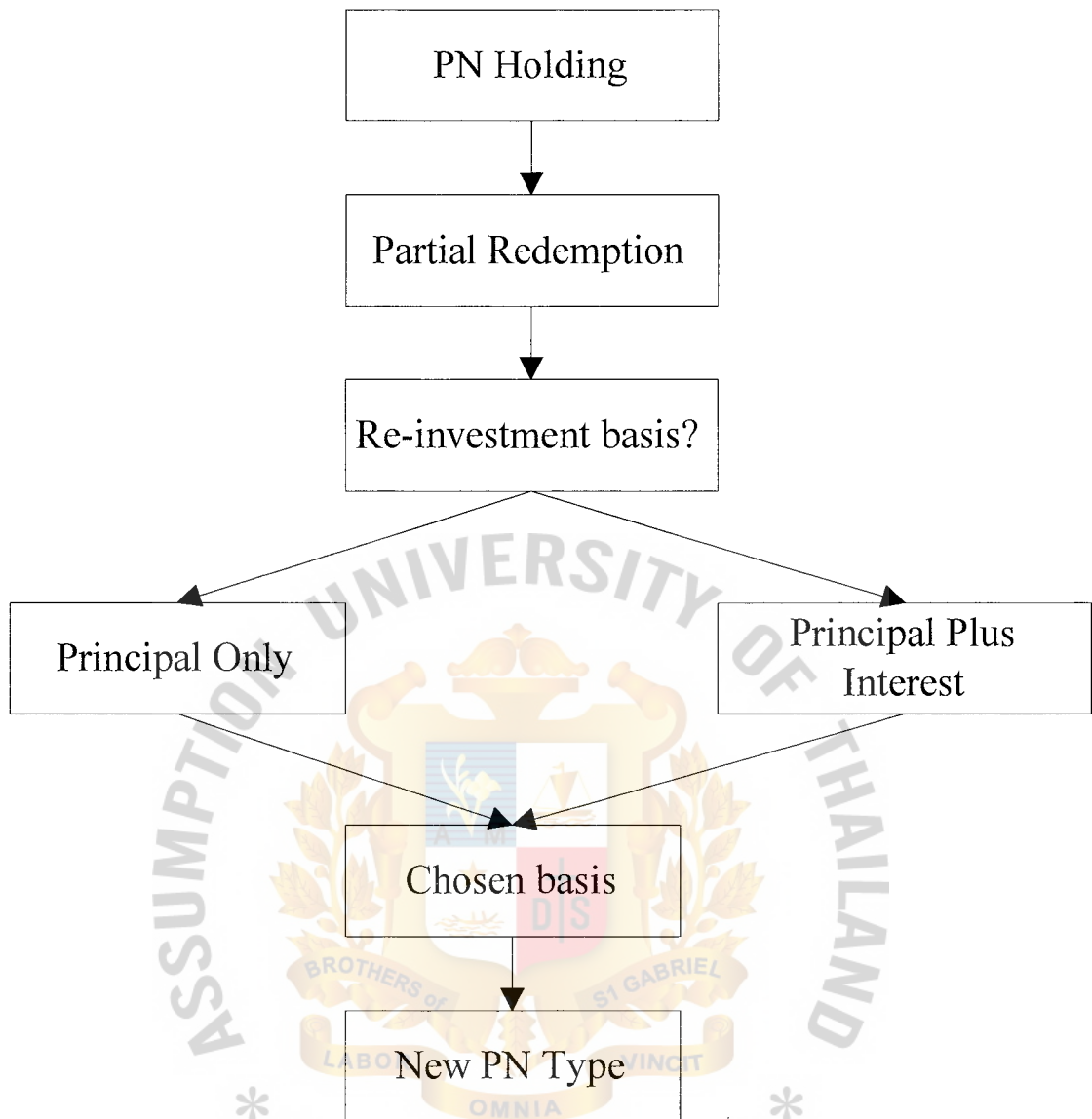


Figure 3.5. Partial Redemption Process (Call PN).

$$= 91/365 * 9\% * 500,000$$

$$= 11,219.18 \text{ bahts}$$

Total payout

$$= 500,000 + 11,219.18$$

$$= 511,219.18 \text{ bahts}$$

When an early redemption is made, the following procedure takes place:

Early redemption order

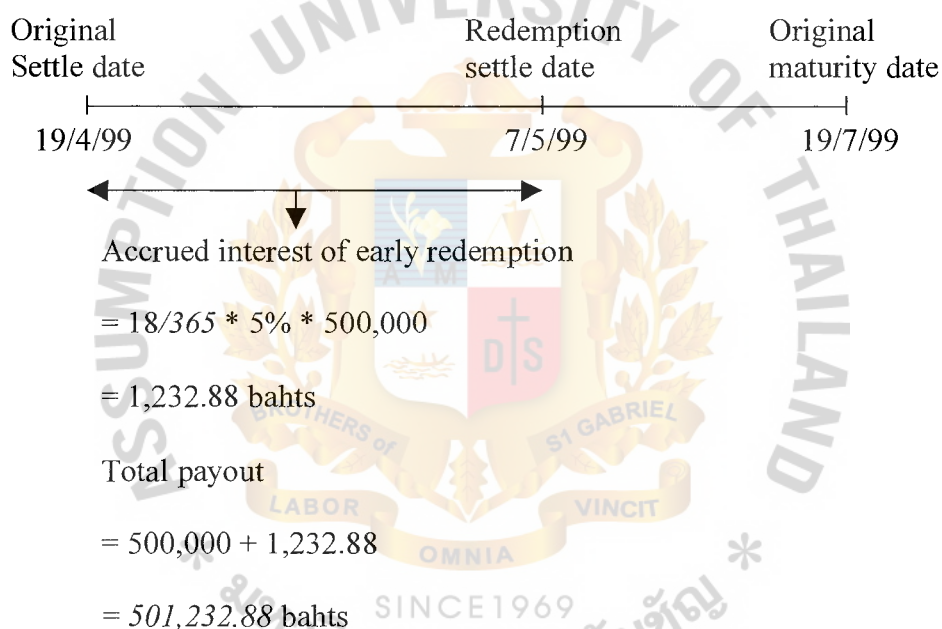
Pfolio: ABC2

Contract date: 6/5/1999

Settle date: 7/5/1999

PNNumber: WS-T112111

Penalty rate: 5.00%



NB: The accrued interest of the early redemption must be displayed for the user to override, if necessary. This is because there are some instances where a minor rounding adjustment is needed.

(4) Redemption Check

A redemption check must be made on the settlement date (or maturity date for Term PN) of the PN against the calendar. As pointed out earlier in section B.2, should the settlement date fall on a non-working day, the system must “push” this date to the next working day, which we term it as

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the *actual settlement date*. Interest will be calculated up to and excluding this actual date.

Example 8: Redemption check - Term PN

PN Holding Details:

Pfolio: ABC1
Contract date: 18/3/1999
Settle date: 19/3/1999
Principal: 1,000,000 bahts
Rate: 7%
Type: Term
Maturity Date: 19/6/1999
PN Number: WS-T182810

Full Redemption Order:

Pfolio: ABC1
Contract date: 18/6/1999
Settle date: 19/6/1999
PN Number: WS-T182810

As 19/6/1999 is a Saturday, the system must “push” the settlement date to the next working date, that is, 21/6/1999. An additional field called “actual settle date” must therefore be made available.

Full Redemption Order:

Pfolio: ABC1
Contract date: 18/6/1999
Settle date: 19/6/1999
Actual settle date: 21/6/1999

PN Number: WS-T182810

Payout Details:

Principal: 1,000,000 bahts

Interest days: 94

Interest receipt: $1,000,000 * 7\% * 94/365 = 18,027.40$ bahts

Total payout: $1,000,000 + 18,027.40 = 1,018,027.40$ bahts

Example 9: Redemption check - Call PN

PN Holding Details:

Pfolio: ABC2

Contract date: 1/3/1999

Settle date: 2/3/1999

Principal: 3,000,000 bahts

Rate: 12%

Type: Call

Maturity Date: -

PN Number: CT-C152511

Full Redemption Order:

Pfolio: ABC2

Contract date: 19/3/1999

Settle date: 20/3/1999

PN Number: CT-C152511

The settle date (20/3/1999) falls on a Saturday. The system must then “push” this date to the next working date (22/3/1999) and populate this date on the actual settle date field.

Full Redemption Order:

Pfolio: ABC2
Contract date: 19/3/1999
Settle date: 20/3/1999
Actual settle date: 22/3/1999
PN Number: CT-C152511

Payout Details:

Principal: 3,000,000 bahts
Interest days: 20
Interest receipt: $3,000,000 * 12\% * 20/365 = 19,726.03$ bahts
Total payout: $3,000,000 + 19,726.03 = 3,019,726.03$ bahts

The same concept and procedure will apply to the processing of any partial redemption.

3.2.3 Renegotiate

Interest rates fluctuate in the market place. Any “at call” interest rate linked instruments will be affected by such changes in the market. Therefore, in terms of PN trading, only Call PNs are subject to interest rate changes.

When a financial institution changes the interest rate on Call PNs, it is broadly termed as a *renegotiations*. Once an interest rate change occurs, the physical PN certificate is re-issued and changed (and hence a new PN number) by the issuer with the new interest rate. The system must, therefore, re-generate a new dummy PN number whenever a rate change occurs. It is also possible for the holder of the PN to change the type of PN to re-invest their money in, that is, the holder can opt to change the type of PN from a Call to a Term PN investment.

Moreover, very often upon the announcement of an interest rate change by the issuer, many PNs (Call) issued by the same issuer in the portfolio will be affected. To

minimize resources spent on individually changing the rate on each PN, the system must provide an automatic type process to change the interest rate at portfolio or fund level for each issuer of PN. Filter options should be made available to the user to filter all the desired information to be shown on screen. The filter must include key fields such as:

Issuer code

Portfolio code

Settle date - must include “from-to” date

Rate - three options: (G)reater or equal to — (rate)

(L)ess or equal to — (rate)

(E)qual to rate — (rate)

There are four case scenarios to be considered in the process of renegotiations. These are discussed below.

(1) Full Re-investment including Interest

Whenever an interest rate change is announced by the financial institution on their Call PNs, the holder of the note has two options to choose on the amount of money to be re-invested. This re-investment basis can be principal plus interest or principal only.

When the principal plus interest basis is chosen, that is, full re-investment including interest, the original principal placed on the Call PN plus its interest earned at the interest rate for the period prior to the rate change is re-invested at the new announced rate.

Example 10: Rate changes - Principal plus Interest basis

PN Holding Details:

Pfolio: ABC3

Contract date: 3/3/1999
Settle date: 4/3/1999
Principal: 2,000,000 bahts
Rate: 9%
Type: Call
Maturity Date: -
PN Number: NV-C202010

Renegotiate transaction

Pfolio: ABC3
PN Number: NV-C202010
Contract date: 22/3/1999
Settle date: 23/3/1999
Original Principal: 2,000,000 bahts
Rate: 10%
Type: Call
Maturity Date: (Field is skipped if “Type” is set to Call)
New PN Number: D3

The total amount re-invested into the new Call PN is calculated as follows:

Interest days: 19 days (4/3/99 to 22/3/99, inclusive)

Interest amount: $2,000,000 * 19/365 * 9\%$
 $= 9,369.86$ bahts

Re-invested amount: $2,000,000 + 9,369.86$
 $= 2,009,369.86$ bahts

(2) Full Re-investment excluding Interest

This section deals with the second option of the re-investment basis, that is, full re-investment excluding interest when there is an interest rate change announcement. In this instance, the amount being re-invested into the new PN only includes the principal and the interest earned on the original principal at the invested rate prior to the rate change announcement is received into the bank account.

Example 11: Renegotiate - Principal only basis

PN Holding Details:

Pfolio: ABC2
Contract date: 3/3/1999
Settle date: 4/3/1999
Principal: 2,000,000 bahts
Rate: 9%
Type: Call
Maturity Date: -
PN Number: NV-C212110

Renegotiate transaction

Pfolio: ABC2
PN Number: NV-C212110
Contract date: 22/3/1999
Settle date: 23/3/1999
Original Principal: 2,000,000 bahts
Rate: 8%
Type: Term
Maturity Date: 23/9/1999

New PN Number: D4

The total amount re-invested into the new Term PN is calculated as follows:

Interest days: 19 days (4/3/99 to 22/3/99, inclusive)

Interest amount: $2,000,000 * 19/365 * 9\%$
 $= 9,369.86$ bahts (received into the bank account)

Re-invested amount: 2,000,000 bahts

(3) Consolidations

When several PNs of the same issuer are subject to renegotiations at the same time and to be changed to the *same* new interest rate (regardless of their original rates), the PNs have the *option* to be consolidated into a single PN. A single new dummy PN number must be generated to represent the consolidated transaction. Such functionality must therefore be made available in the system.

The main reason for performing splits in PNs is for cash management purposes. Some of these include:

(a) Preferred rate:

The client may get a preferred rate from the issuer of the PN if depositing in sums of greater than a specified amount.

(b) Liquidity:

Where liquidity requirements are low, the client may want to place cash in Term PNs (rather than Call PNs) and lock in an interest rate for a specified period. This management approach is preferred and used in times of excess volatility in the market.

Example 12: Consolidating three Call PNs (Table 3.3)

PN holding details:

Portfolio: ABC1

Contracted on: 19/4/1999

Settle on: 20/4/1999

Suppose we have the following three Call PN's (Table 3.3(a)) issued by the same issuer on hold subject to interest rate renegotiations.

Table 3.3. Consolidate Call PN's (a).

PN Number	Principal (Bahts)	Interest Rate
NV-2232003	500,000.00	5.00%
NV-2333004	500,000.00	5.00%
NV-2434005	1,000,000.00	6.00%

Renegotiate and Consolidate Transaction:

Portfolio: ABC1

Contract date: 26/4/1999

Settle date: 27/4/1999

Table 3.3. Consolidate Call PN's (b).

PN Number	Principal (Bahts)	New Rate	New Type	New PN Number	Re-investment Basis
NV-2232003	500,000	6.50%	Call	D5	Include Interest
NV-2333004	500,000	6.50%	Call	D5	Include Interest
NV-2434005	1,000,000	6.50%	Call	D5	Include Interest

The total amount re-invested and consolidated into a single PN with dummy PN number D5 is calculated as follows:

Table 3.3. Consolidate Call PNs (c).

PN number	Interest days	Interest earned	Re-invested amt. (int. + principal)
NV-2232003	7	$500,000 * 5\% * 7/365$	500,479.45
NV-2333004	7	$500,000 * 5\% * 7/365$	500,479.45
NV-2434005	7	$1,000,000 * 6\% * 7/365$	1,001,150.68

Total rollover amount: $500,479.45 + 500,479.45 + 1,001,150.68$

= 2,002,109.58 bahts

Consolidated Call PN details

Table 3.3. Consolidate Call PNs (d).

PN Number	Principal	Rate	Type
D5	2,002,109.58	6.50%	Call

Notes on above example:

- (1) The original PNs could have been contracted on different dates. If so, the interest days on each PN will be different and thus, the interest calculation must be modified accordingly taking into account the difference in days.
- (2) The “PN type” of the resulting consolidation must be the same.
- (3) There should be no limit on the number of Call PNs that can be consolidated into a single PN.

- (4) The re-investment basis will be the same for all PNs that form the consolidated transaction.

Diagrammatically, the consolidation of the three Call PNs can be shown as in Figure 3.6

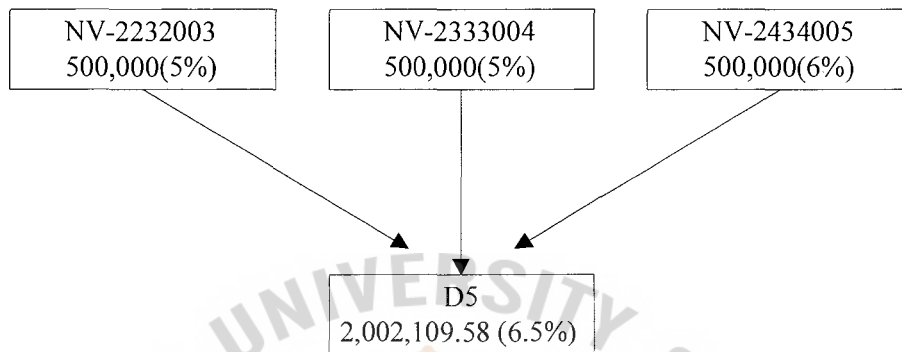


Figure 3.6. Consolidation Call PN.

(4) Splits

In contrast to the “Consolidations” case scenario, Splits can occur when a single Call PN is renegotiated. A split simply means that subsequent to a PN renegotiations, the principal or principal plus interest on the Call PN has the *option* to be split into several new PNs. All the new PNs created from the split will carry the same PN dummy number. Only when the physical notes are received, the individual PN numbers will be different.

The main reason for performing splits in PNs is for cash management purposes. Some of these include:

- (a) Preferred rate:

The client may get a preferred rate from the issuer of the PN if depositing in sums of greater than a specified amount.

- (b) Liquidity:

Where liquidity requirements are low, the client may want to place cash in Term PNs (rather than Call PNs) and lock in an interest rate for a specified period. This management approach is preferred and used in times of excess volatility in the market.

(c) Authorization:

Some institutions require senior level authorization for deposit or withdrawal of PNs' for face values greater than a specified amount. To increase the operation efficiency, the PNs may be split to several smaller (face values) PNs to cater for smaller liquidity needs. This would reduce a layer of authorization, which would have been necessary, if the original PN were not split; assuming the original face value required authorization.

Example 13: Split Transaction (Table 3.4)

PN Holding Details:

Pfolio: * ABC1

Contract date: 19/4/1999

Settle date: 20/4/1999

Principal: 3,000,000 bahts

Rate: 10%

Type: Call

Maturity Date: -

PNNumber: NV-C311310

Renegotiate and split transaction

Portfolio: ABC1

Contract date: 10/5/1999

Settle date: 11/5/1999

Re-investment basis: Include interest

Amount available for re-investment

Interest days: 21 days

Interest earned: $21/365 * 3,000,000 * 10\%$
 $= 17,260.27$ bahts

Total amount: $3,000,000 + 17,260.27$
 $= 3,017,260.27$ bahts

Split details

Table 3.4. Split PN.

New PN Number	Re-investment amount	New Rate	Type	Maturity Date
D6	500,000	5.00%	Call	-
D6	500,000	5.00%	Call	-
D6	2,017,260.27	4.00%	Term	11/8/1999

Notes on above example:

- (1) All records created from the split carry the same dummy PN number. The PN number will only be different once the individual PN certificates are received.
- (2) Each record created from the split can carry a different interest rate and type of PN.
- (3) Similar to the consolidation process, there are no restrictions on the number of PNs that a PN can be split into.

The splitting of the Call PN into three new PNs can be shown in

Figure 3.7. and the entire renegotiations process can be viewed in Figure 3.8

3.2.4 Maturity Rollover (Term PN Only)

Maturity rollovers only apply to Term PNs. When Term PNs mature, they have the option of being redeemed from the system or alternatively, being re-invested for another specified period at an agreed interest rate. The latter is termed as a maturity rollover. Such a case can be similarly viewed as redemption and then a re-deposit back into the system. However, it should not be treated explicitly in this manner. There is a need to distinguish between a rollover (which is as a result of an existing investment) compared to a redemption being made and re-deposit (which is viewed as a new investment) back into the system.

Whenever a rollover occurs, a new fixed term and interest rate applies. The physical PN certificate is re-issued and changed (and hence a new PN number) by the issuer with the new terms of investment. The system must, therefore, re-generate a new dummy PN number whenever a maturity rollover occurs. Additionally, the interest on the new PN created will start to accrue on the maturity date of the previous PN. Similar to the discussion outlined under section B.2 Redemption, a check must be made to ensure that the maturity date of the PN being rolled over does not fall on a non-working date. If so, the next working date should be automatically populated in another field, *actual settle date*, from which the newly created PN from the rolled over PN will start to accrue interest as at and including this actual settle date.

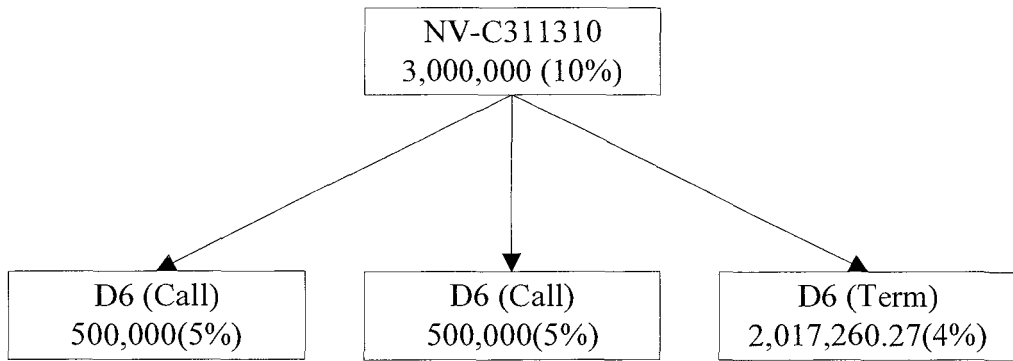


Figure 3.7. Splitting Call PN.

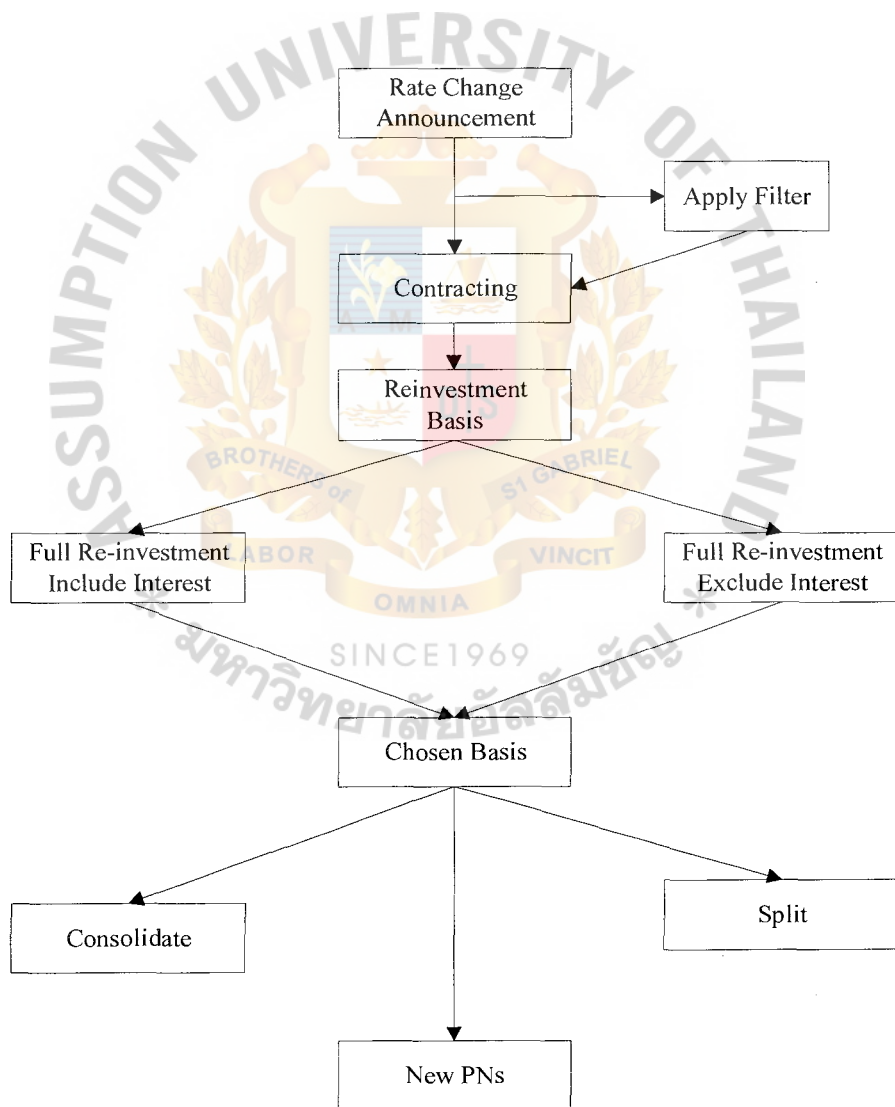


Figure 3.8. Renegotiations Process.

Maturity rollover transactions happen fairly often in the financial industry of Thailand, particularly in the provident fund business. As such, to minimize resources spent on individually rolling over each matured PN at any one time, the system must provide an automatic type process to roll over the matured PN investments at portfolio or fund level for each issuer of PN. Filter options should be made available to the user to filter all the desired information to be shown on screen. The filter must include key fields such as:

Issuer code

Portfolio code

Maturity date

Rate - three (3) options: (G) reater or equal to ____ (rate)

(L) ess or equal to ____ (rate)

(E) qual to rate ____ (rate)

There are four case scenarios to be considered in the process of a maturity rollover. These are discussed in the following sub-sections.

(1) Full Rollover including Interest

Whenever a Term PN matures and the holder of the note chooses to rollover the investment, two options are available on the amount of money to be rolled over. This rollover basis can be principal plus interest or principal only.

When the principal plus interest basis is chosen, that is, full rollover including interest, the original principal placed on the Term PN plus its interest earned at the agreed interest rate for the specified period is rolled over with new investment conditions. The interest rate and term can be

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changed based upon negotiations between the investor and financial institution.

Example 14: Rollover - Principal plus Interest basis

PN Holding Details:

Pfolio: ABC2
Contract date: 20/4/1999
Settle date: 21/4/1999
Principal: 2,000,000 bahts
Rate: 6%
Type: Term

Maturity Date: 21/5/1999
PN Number: WS-T505010

Rollover transaction

Pfolio: ABC2
PN Number: WS-T505010

Contract date: 20/5/1999

Settle date: 21/5/1999

Original Principal: 2,000,000 bahts

New Rate: 5%

Type: Term

Contract date: 21/5/1999 (This date should be defaulted from the settle date of the rollover transaction ie. original maturity date of the matured PN)

Maturity Date: 21/6/1999

New PN Number: D7

The *total amount* rolled over into the new Term PN is calculated as follows:

Interest days: 30 days (21/4/99 to 20/5/99, inclusive)
Interest amount: $2,000,000 * 30/365 * 6\% = 9,863.01$ bahts
Re-invested amount: $2,000,000 + 9,863.01$
 $= 2,009,863.01$ bahts

(2) Full Rollover excluding Interest

The second option of the rollover basis, that is, full rollover excluding interest is similar to the first option. The difference being that the amount rolled over into the new Term PN only includes the principal and the interest earned on the original principal at the pre-determined interest rate for the specified period is received into the bank account.

Example 15: Rollover - Principal only basis

PN Holding Details:

Pfolio: ABC2
Contract date: 20/4/1999
Settle date: 21/4/1999
Principal: 2,000,000 bahts
Rate: 6%
Type: Term
Maturity Date: 21/5/1999
PN Number: WS-T515110

Rollover transaction

Pfolio: ABC2
PN Number: WS-T515110
Contract date: 20/5/1999

Settle date: 21/5/1999

Original Principal: 2,000,000 bahts

New Rate: 4.00%

Type: Term

Contract date: 21/5/1999 (This date should be defaulted from the settle date of the rollover transaction ie. original maturity date of the matured PN. However, if the original settle date of the rollover transaction is altered, the actual settlement date should be defaulted)

Maturity Date: 21/7/1999

New PN Number: D8

The *total amount* rolled over into the new Term PN is calculated as follows:

Interest days: 30 days (21/4/99 to 20/5/99, inclusive)

Interest amount: $2,000,000 * 30/365 * 6\%$
 $= 9,863.01$ bahts (amount received into bank account)

Re-invested amount: $= 2,000,000$ bahts

(3) Consolidations

Similar to a renegotiations of a PN, when there are several Term PNs issued by the same issuer to be rolled over at the same time, to a common interest rate and term, there is an *option* (depending on financial institution and investor) to consolidate them into a single PN. This single PN will contain the consolidated principal (include or exclude interest earned) and will be identified by a single PN number. As with all PNs, when a new

physical note is issued, a new PN number exist and prior to receiving the actual PN number, a dummy number must be generated, which is the same as in this case.

Example 16: Maturity rollover - Consolidating two Term PNs (Table 3.5)

Suppose we hold the following two Term PNs issued by the *same* issuer which were contracted on the same day and both mature on 20/5/1999

PN holding details:

Portfolio: ABC1

Contracted on: 19/4/1999

Settle on: 20/4/1999

Table 3.5. Consolidate Term PN (a).

PN Number	Principal (Bahts)	Interest rate	Maturity
NV-T521201	1,000,000	6.00%	20/5/1999
NV-T531302	5,000,000	7.00%	20/5/1999

Rollover and Consolidate Transaction:

Portfolio: ABC1

Contract date: 19/5/1999

Settle date: 20/5/1999

Rollover basis: Interest included

Table 3.5. Consolidate Term PN (b).

PN No.	Principal (Bahts)	New Rate	Type	New PN No.	Maturity
NV-T521201	1,000,000.00	4.00%	Term	D9	20/8/1999
NV-T531302	5,000,000.00	4.00%	Term	D9	20/8/1999

The total amount rolled over and consolidated into a single PN with dummy PN number D9 is calculated as follows:

Table 3.5. Consolidate Term PN (c).

PN number	Interest day	Interest earned	Rollover amt (mt + principal)
NV-T52 1201	30	1,000,000* 6%*30/365	1,004,931.51
NV-T53 1302	30	5,000,000* 7%*30/365	5,028,767.12

Total rollover amount: $1,004,931.51 + 5,028,767.12$
 $= 6,033,698.63$ bahts

Consolidated Term PN details

Table 3.5. Consolidate Term PN (d).

PN number	Principal	Rate	Maturity
D9	6,033,698.63	4.00%	20/8/1999

Notes on above example:

- (1) The original PNs could have been contracted on different dates but *must* mature on the *same day*. If so, the interest days on each PN will be different and thus, the interest calculation must be modified accordingly taking into account the difference in days.
- (2) The “Type” of PN must remain the same ie. Term PN.
- (3) There should be no limit on the number of Term PNs that can be consolidated into a single PN.
- (4) The re-investment basis will be the same for all PNs that form the consolidated transaction.

Diagrammatically, the consolidation of the two Term PNs can be shown in Figure 3.9

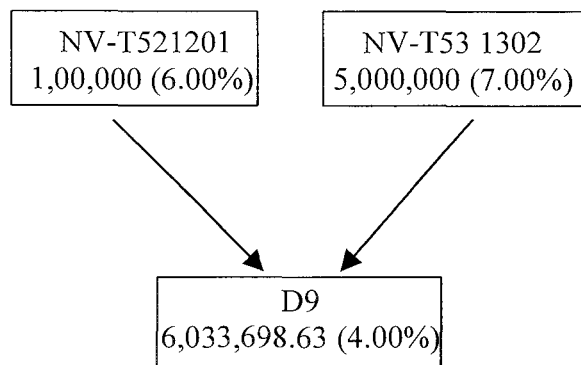


Figure 3. 9. Consolidation PN (Term).

(4) Splits

Splits can occur when a single Term PN is rolled over. The concept is the same as that discussed for a split re-negotiation. A split simply means that subsequent to a PN being rolled over, the principal or principal plus interest on the Term PN has the *option* to be split into several new Term PNs. All the new Term PNs created from the split will carry the same PN dummy number. Only when the physical notes are received, the individual PN numbers will be different, and thus maintained in the system.

Example 17: Maturity Rollover - Split Transaction (Table 3.6)

PN Holding Details:

Pfolio:	ABC1
Contract date:	26/4/1999
Settle date:	27/4/1999
Principal:	3,000,000 bahts
Rate:	7.00%

Type: Term

Maturity Date: 27/5/1999

PN Number: VF-T102001

Rollover and split transaction

Portfolio: ABC1

Contract date: 26/5/1999

Settle date: 27/5/1999

Re-investment basis: Interest included

Amount available for rollover

Interest days: 30 days (27/4/99 to 26/5/99, inclusive)

Interest earned: $30/365 * 3,000,000 * 7.00\%$
 $= 17,260.27$ bahts

Total amount: $3,000,000 + 17,260.27$
 $= 3,017,260.27$ bahts

Split details

Table 3.6. Split Term PN.

New PN Number	Re-invested amount	New Rate	Type	Maturity Date
D10	1,200,000.00	5.00%	Type	28/6/1999
D10	1,817,260.27.0	5.00%	Type	28/6/1999

Notes on above example:

- (1) All records created from the split carry the same dummy PN number. The PN number will only be different once the individual PN certificates are received.

- (2) Each record created from the split can carry a different interest rate and term.
- (3) Similar to the consolidation process, there are no restrictions on the number of PNs that a PN can be split into.

Diagrammatically, the splitting of the above Term PN example into two (2) new Term PNs can be shown in Figure 3.10

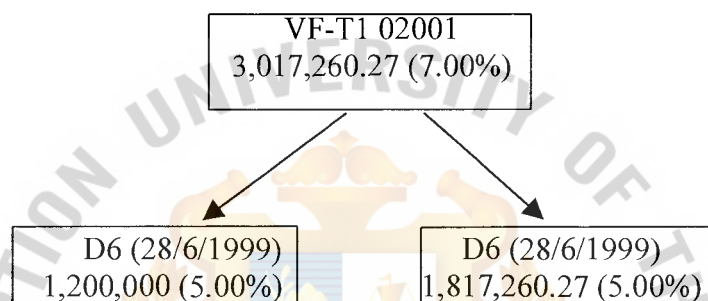


Figure 3.10. Splitting of Term PN.

3.3 Interest

This section deals with the interest rate issues of PN. There are three main areas addressed in this section relating to the type of interest, calculation methodology and interest entitlements and receipts.

3.3.1 Type of Interest

The type of interest relates to the interest payment frequency of the PN. When a PN investment is made, the interest payment on the note can be made on a *monthly*, *quarterly* or at *maturity* basis. The investor can request for the type of interest frequency at the time the investment is made. Therefore, the system must allow the specification of this parameter at the time the PN transaction is keyed into the system.

Example 18: Type of Interest - Monthly

Type: Term PN
Face value: 3,000,000
Interest rate: 5.00%
Contract date: 2/6/1999
Settle date: 3/6/1999
Maturity date: 3/12/1 999
Interest frequency: 1 month (monthly)

In the above example, the interest payment on every month is calculated as follows:

- (1) Interest days: 28 days (3/6/99 to 30/6/99, inclusive)
 $3,000,000 * 5\% * 28/365 = 11,506.85$ bahts
- (2) Interest days: 31 days (1/7/99 to 31/7/99, inclusive)
 $3,000,000 * 5\% * 31/365 = 12,739.73$ bahts
- (3) Interest days: 31 days (1/8/99 to 31/8/99, inclusive)
 $3,000,000 * 5\% * 31/365 = 12,739.73$ bahts
- (4) Interest days: 30 days (1/9/99 to 30/9/99, inclusive)
 $3,000,000 * 5\% * 30/365 = 12,328.77$ bahts
- (5) Interest days: 31 days (1/10/99 to 31/10/99, inclusive)
 $3,000,000 * 5\% * 31/365 = 12,739.735$ bahts
- (6) Interest days: 32 days (1/11/99 to 2/12/99, inclusive)
 $3,000,000 * 5\% * 32/365 = 13,150.68$ bahts

Example 19: Type of Interest - Quarterly

Type: Term PN
Face value: 3,000,000
Interest rate: 5.00%

Contract date: 2/6/1999
Settle date: 3/6/1 999
Maturity date: 3/12/1999
Interest frequency: Quarterly (3 month)

In the above example, the interest payments on every quarter is calculated as follows:

- (1) Interest days: 90 days (3/6/99 to 31/8/99, inclusive)

$$3,000,000 * 5\% * 90/365 = 36,986.30 \text{ bahts}$$

- (2) Interest days: 93 days (1/9/97 to 2/12/99, inclusive)

$$3,000,000 * 5\% * 93/365 = 38,219.18 \text{ bahts}$$

Example 20: Type of Interest - at maturity

Type: Term PN
Face value: 3,000,000
Interest rate: 5.00%
Contract date: 2/6/1999
Settle date: 3/6/1999
Maturity date: 3/12/1999
Interest frequency: at maturity

In the above example, the interest is paid at maturity and calculated as follows:

- (1) Interest days: 183 days (3/6/99 to 2/12/99, inclusive)

$$3,000,000 * 5\% * 183/365 = 75,205.48 \text{ bahts}$$

Note that interest is calculated from the settlement date of the transaction to the day prior (inclusive) to the maturity date or settlement date of the Term PN. This method also applies to Call PNs, that is, interest is calculated from the settle date of the deposit up to and inclusive of the contract date of the redemption.

3.3.2 Calculation Methodology

Two interest rate calculation issues need to be addressed to allow for the complete maintenance and management of the PN security in the system. Note that the system must allow the input of a *zero interest rate*, when necessary, on all fields which prompt for an interest rate entry.

The two issues relating to interest rate calculation are discussed below.

3.3.3 Individual PN Calculation

The accrued interest amount of the PN should be calculated *individually*. The system should *not* group and calculate the interest component as a whole for all PNs which have the same term, interest rate, maturity date and issuer. For example, suppose we have the following two PNs:

Example 21: Interest rate calculation (Table 3.7)

Table 3.7. Individual Interest Rate Calculation.

PN Number	Principal (Bahts)	Interest Rate	Days to Maturity
BB-C303010	1,000,000	12%	92
BB-C313111	1,000,000	12%	92
The accrued interest should be calculated <i>individually</i> per PN. That is,			
PN Number	Interest payment		
BB-C303010	$92/365 * 12\% * 1,000,000 = 30,246.58$ bahts		
BB-C313111	$92/365 * 12\% * 1,000,000 = 30,246.58$ bahts		

The system should not *group* together the two PNs principal amount, that is, 2,000,000 bahts and calculate the accrued interest based on this consolidated amount.

Interest payment: $2,000,000 * 92/365 * 12\%$
 $= 60,493.15$

The total accrued interest when calculating the interest *individually* per PN is 60,493.16 bahts compared to a *consolidated* interest calculation which gives a total of 60,493.15 bahts.

3.3.4 Backdate Calculation

There are some special cases whereby a backdated interest calculation is required on some PNs issued by some issuers. This situation could arise when the government authority imposes a temporary suspension on some issuers of PN pending an investigation. In such a case, holders of PNs issued by this issuer could receive a zero interest rate (renegotiate and a new PN with zero interest rate is issued) during the period of suspension. Thereafter, when the investigation has been completed and the suspension lifted, an interest rate will be paid back for the period of suspension (renegotiate and a new PN is issued with the new interest rate) which then requires a backdated interest calculation.

Example 22: Backdated Interest Calculation

PNNumber: FA-CIOIOIO
Type: Call PN issued by Finance XYZ
Principal: 1,000,000 bahts
Interest rate: 10%
Contract date: 8/3/1999
Settle date: 9/3/1999
Announcement on 17/3/99: Finance XYZ under investigation. The above PN will carry a *zero* interest rate as at announcement date.

Renegotiate transaction

PNNumber: FA-CIOIOIO
Contract date: 17/3/1999

Settle date: 18/3/1999

Original Principal: 1,000,000 bahts

Rate: 0%

Type: Call

New PN Number: DI5

Announcement on 3/5/99: Investigation completed. The above PN will carry a 2.00% interest rate backdated to 18/5/99.



Renegotiate transaction

PN Number: FA-C101010

Contract date: 3/5/1999

Settle date: 4/5/1999

Original Principal: 1,000,000 bahts

Rate: 2%

Type: Call

New PN Number: DI6

Expected results as at 3/5/1999

Accrued interest:

Period 1

9/3/99 - 17/3/99 (inclusive)

$1,000,000 * 9/365 * 10\%$

$= 2,465.75$ bahts

Period 2

18/3/99 - 3/5/99 (inclusive)

$$1,000,000 * 47/365 * 2\%$$

$$= 2,575.34 \text{ bahts}$$

We expect that the interest amount for period 2 to be recalculated from a zero interest amount to that shown above, that is, interest payment for period 2 is 2,575.34 bahts.

3.3.5 Interest Entitlements and Receipts

Interest entitlements must be able to be generated and updated both at portfolio and fund level. If generated at fund level, the system must automatically dissect them to the relevant portfolios. The process of interest entitlements and receipts should be different to that currently available for security-type interest generation. Rather, the process should be made similar to that of the cash side of the system.

Required interest process:

- (1) Interest entitlements can be generated at any required frequency as desired by the user.
- (2) A field must be introduced to keep track of the last date interest entitlement was generated so that the next interest generation will begin from this date.
- (3) Another field must be created to store the accumulated interest entitlement. This is similar to the current HiPortfolio “interest owing” field in the cash system.
- (4) Receive interest as specified on the transaction record.
- (5) Upon receipt, the “interest owing” field is reduced.

Example 23: Interest Entitlement and Receipt

PN holding details:

Type: Term PN

Face value: 1,000,000

St. Gabriel's Library

Interest rate: 10%
Contract date: 2/2/1999
Settle date: 3/2/1999
Maturity date: 3/8/1999
Interest frequency: 3 month

Generate entitlement; say at every end of month.

Month 1

Interest entitlement: 3/2/1999 to 28/2/1999 (26 days)
$$\frac{26}{365} * 1,000,000 * 10\%$$
$$= 7,123.29 \text{ bahts}$$

Month 2

Interest entitlement: 1/3/1999 to 31/3/1999 (31 days)
$$\frac{31}{365} * 1,000,000 * 10\%$$
$$= 8,493.15 \text{ baht}$$

Accumulated interest: $7,123.29 + 8,493.15 = 15,616.44 \text{ bahts}$

Month 3

Interest entitlement: 1/4/1999 to 2/5/1999 (32 days)
$$\frac{32}{365} * 1,000,000 * 10\%$$
$$= 8,767.12 \text{ baht}$$

Accumulated interest: $15,616.44 + 8,767.12 = 24,383.56 \text{ baht}$

Interest receipt: 24,383.56

After interest receipt, the accumulated interest becomes zero.

Month 4

Interest entitlement: 3/5/1999 to 31/5/1999 (29 days)
$$\frac{29}{365} * 1,000,000 * 10\%$$

$$= 7,945.21 \text{ bahts}$$

Accumulated interest: 7,945.21 bahts

Month 5

Interest entitlement: 1/6/1999 to 30/6/1999 (30 days)

$$30/365 * 1,000,000 * 10\%$$

$$= 8,219.18 \text{ bahts}$$

Accumulated interest: $7,945.21 + 8,219.15 = 16,164.39 \text{ bahts}$

Month 6 (on maturity)

Interest entitlement: 1/7/1999 to 3/8/1999 (33 days)

$$33/365 * 1,000,000 * 10\%$$

$$= 9,041.10 \text{ bahts}$$

Accumulated interest: $16,464.39 + 9,041.10 = 25,205.49$

Interest receipt: 25,205.49

After interest receipt, the accumulated interest becomes Zero.

IV. GENERAL LEDGER POSTINGS

All PN transactions, as discussed above that are carried out are expected to be posted through to the General Ledger automatically via the same process as that currently adopted in HiPortfolio/2.

4.1 Deposit Transactions

The posting of a deposit or investment transaction is fairly straightforward.

Example 24: Deposit transaction

INVESTMENT SYSTEM	GENERAL LEDGER SYSTEM
-------------------	-----------------------

PN - Asia Credit	Dr PN	1,000,000
Principal: 1,000,000	Cr. Bank	1,000,000

4.2 Redemption Transactions

The GL posting of redemption transactions are little less straight forward compared to Deposit transactions. There are two general cases to consider, one of which relates to a normal type redemption transaction and the other being, an early redemption or sometimes termed as a “break maturity”.

4.2.1 Normal Redemption

The GL implication of a normal redemption can be best explained through an example.

Example 25: Normal redemption - With Entitlement

INVESTMENT SYSTEM	GENERAL LEDGER SYSTEM
-------------------	-----------------------

Purchase PN - Asia Credit	Dr PN	1,000,000
Principal: 1,000,000	Cr. Bank	1,000,000

Maturity: 15/5/99

Normal redemption

As at 15/5/1999	Dr Bank	1,000,000
Interest Receivable = 15,000	Cr. PN	1,000,000
	Dr Bank	15,000
	Cr. Interest Receivable	15,000
	Dr Interest Receivable	15,000
	Cr. Interest Income	15,000

Example 26: Normal redemption - Without Entitlement

INVESTMENT SYSTEM

GENERAL LEDGER SYSTEM

Purchase PN - Asia Credit	Dr PN	1,000,000
Principal: 1,000,000	Cr. Bank	1,000,000
Maturity: 15/5/1999		
Normal redemption		
As at 15/5/1999	Dr Bank	1,000,000
Interest Receivable = 15,000	Cr. PN	1,000,000
	Dr Bank	15,000
	Cr. Interest Income	15,000

4.2.2 Early Redemption

There are GL implications when the holder of the PN makes an early redemption. Since an interest rate penalty is introduced upon such a redemption type and subsequently, the interest component re-calculated, appropriate journal entries should be automatically generated to account for the accrued interest “adjustment”.

At present, when an early redemption is made in HiPortfolio, an additional Interest Adjustment transaction must be entered, as there are no facilities to change the interest rate to account for the penalty. When such functionality is introduced, it is

expected that the system will automatically generate journal entries to reverse out the penalty portion of the original interest receivable.

Example 27: Early redemption - With Entitlement

INVESTMENT SYSTEM

Purchase PN - Asia Credit

Principal: 1,000,000

Maturity: 15/5/1999

GENERAL LEDGER SYSTEM

Dr PN 1,000,000

Cr. Bank 1,000,000

Early redemption

As at 30/4/1999

Dr Bank 1,000,000

Interest Receivable at original rate = 10,000.

Cr. PN 1,000,000

Interest Receivable reduced to 9,000

Dr Interest Receivable 10,000

with penalty rate.

Cr. Interest Income 10,000

Dr Bank 9,000

Cr. Interest Receivable 9,000

Dr Interest Income 1,000

Cr. Interest Receivable 1,000

Example 28: Early redemption - Without Entitlement

INVESTMENT SYSTEM

Purchase PN - Asia Credit

Principal: 1,000,000

Maturity: 15/5/1999

GENERAL LEDGER SYSTEM

Dr PN 1,000,000

Cr. Bank 1,000,000

Early redemption

As at 30/4/1999

Dr Bank 1,000,000

Interest Receivable at original rate = 10,000.

Cr. PN 1,000,000

Interest Receivable reduced to 9,000

Dr Bank 9,000

with penalty rate.

Cr. Interest Income 9,000



V. REPORTING

The reporting requirements form an important part of the clients' business. In general, the information to be extracted and reported on are similar for all clients. The only difference being that the sorting and positioning of the information may differ for some clients.

The reported fields could be made available in the Report Generator or Standard reports could be built with several parameters, allowing the user to select their required output.

There are basically six types of reports that must be produced by the client. These are individually discussed below.

5.1 Instruction Reports

Instruction reports are daily reports. They are primarily sent to custodians to execute the appropriate instruction for all transactions that have been carried out by the mutual and provident funds for that particular day.

There are five types of instruction reports. Each report should contain the information as outlined below.

5.1.1 Deposit (Investment) Instruction

This instruction report documents all *new* PN investment that have been carried out on that particular day that needs to be settled on the following day. It does not include any PN re-investments or rollovers that occur on this day.

Instruction reports are sent out to custodians per Portfolio (Table 5.1) or per Issuer. (Table 5.2) A "per portfolio" instruction report will list all transactions for all PNs (ie. issued by all issuers) carried out for that day on one specific portfolio. On the

other hand, a “per issuer instruction report will list all PN transactions issued by one specific issuer carried out on all portfolios.

The report should contain the following information with the sorting and positioning of the information being made flexible.

Example 29: Per Portfolio Deposit Instruction Report

Portfolio Name: Blue Tiger

Date of report: 4 May 1999

Custodian name: Citibank

Company name: ABC International Co., Ltd.

Table 5.1. Per portfolio Deposit Instruction.

Issuer Name	Term	Principal	Interest Rate	PN Number	Settle Date
HongKong Bank	30 days	1,000,000	10%	D20	5/5/1999
Dynamic Eastern	30 days	2,000,000	12%	D21	5/5/1999
Indosuez	Call	500,000	9%	D22	5/5/1999

Example 30: Per Issuer Deposit Instruction

Issuer Name: HongKong Bank

Date of Report: 4 May 1999

Custodian name: Citibank

Company name: ABC International Co., Ltd.

Table 5.2. Per Issuer Deposit Instruction.

Portfolio Name	Term	Principal	Interest Rate	PN Number	Settle Date
Blue Tiger	30 days	1,000,000	10%	D23	5/5/1999
White Tiger	Call	2,000,000	12%	D24	5/5/1999
Black Tiger	Call	5,000,000	13%	D25	5/5/1999

Note that the PN number is the dummy PN number of each transaction. The actual PN number is not available until the following day after the contract date of the

investment, when the settlement of cash is made. On this settlement date, the physical note is received and the actual PN number is maintained in the system.

5.1.2 Account Withdrawal Instruction

This instruction report documents the bank account to which the settlement of the PN *investment* is to be made. Similar to the Deposit Instruction report, the information can be reported at portfolio or issuer levels.

As an example of the type of information to be included in the report, a Portfolio Account Withdrawal report is shown on Table 5.3.

Example 31: Per Portfolio Account Withdrawal

Portfolio Name: Blue Tiger

Date of report: 4 May 1999

Custodian name: Citibank

Company name: ABC International Co., Ltd.

Table 5.3. Per Portfolio Account Withdrawal.

PN Number	Bank/Branch	Account No.	Settle Date	Amount(Baht)
D21	KTB, Sukhumvit	510513257	5/5/1999	1,000,000.00
D22	BBL, Silom	916505555	5/5/1999	2,000,000.00
D23	BBL, Silom	241918800	5/5/1999	500,000.00

5.1.3 Redemption Instruction

This instruction report lists all PN full redemption and early redemption transactions carried out on a specific day that need to be settled on the next day. The report can be at portfolio or issuer level as discussed earlier.

The information to be included in the report are:

Example 32: Per Portfolio Redemption Instruction

Portfolio Name: Blue Tiger

Date of report: 14 June 1999

Custodian name: Citibank

Company name: ABC International Co., Ltd.

Table 5.4. Per Portfolio Redemption Instruction.

Issuer Name	PN No.	Settle Date	Principal	Interest Rate	Interest Amount	Total Amount
HongKong Bank	HK-1010555	14/6/1999	1,000,000	5%	4,219.18	1,004,219.18
Dynamic Eastern	DE-2020999	14/6/1999	2,000,000	5%	10,726.03	2,010,726.03

Note: The above PN redemption figures come from the dummy PN number of D20 and D2 1 in example. The PN numbers have changed as the actual PN numbers have been maintained. For early redemption's, the interest rate and interest amount fields will be populated by the penalty rate and the interest amount based on this new rate, respectively.

5.1.4 Redemption and Re-investment Instruction

This instruction report lists all partial redemption's that are made and the investment portion to be re-invested on a specific day and to be settled the following day. It also includes all rollover transactions that need to be settled the next day. Similar to the above instruction reports, the format can be at portfolio or issuer level on Table 5.5

Example 33: Per Portfolio Redemption and Re-investment Instruction

Portfolio Name: Blue Tiger

Date of report: 7 June 1999 (Contract date)

Custodian name: Citibank

Company name: ABC International Co., Ltd.

Table 5.5. Per Portfolio Redemption and Re-investment Instruction.

Redeem PN								
Issuer Name	PN Number	Contract Date	Settle Date	Interest Rate	Term	Interest Amount	Principal	Total
Indosuez	IN-c102001	7/5/1999	8/5/1999	10%	Call	7,945.21	1,000,000	1,007,945.21
Indosuez	IN-T112101	7/5/1999	8/5/1999	12%	91 days	29,917.81	1,000,000	1,029,917.81
Re-invest PN								
Indosuez	D24	7/6/1999	8/6/1999	7%	31 days		500,000	500,000.00
Indosuez	D25	7/6/1999	8/6/1999	8%	31 days		1,029,917.81	1,029,917.81

Notes:

- (1) PN number IN-C 102001 is a Call PN that is subject to a partial redemption. PN number IN-T112101 is a Term PN that has matured and being rolled over.
- (2) Under the “Redeem PN” section, the information is related to the original PN transaction. The interest amount is calculated from the settle date of the original transaction up to and inclusive of the contract date of the redemption (i.e. the date of this report). The “principal” column is the original principal of the transaction. The “total” column is the amount being redeemed.
- (3) The information under the “Re-invest PN” section relates to the new trade information. The “Interest amount” column is left blank. The “principal” column relates to the amount being re-invested and/or rolled over.

5.1.5 Account Deposit Instruction

This instruction report documents the bank account to which the settlements of all types of PN redemption are to be made. This includes full, partial and early redemptions. (Table 5.6)

The information can be reported at portfolio or issuer levels.

Example 34: Per Portfolio Deposit Instruction

Portfolio Name: Blue Tiger

Date of report: 3 May 1999

Custodian name: Citibank

Company name: ABC International Co., Ltd.

Table 5.6. Per Portfolio Deposit Instruction.

PN Number	Bank/Branch	Account Number	Settle Date	Amount(Baht)
HK-1010555	KTB, Sukhumvit	5105132571	4/5/1999	1,008,219.18
DE-2020999	BBL, Silom	9165155559	4/5/1999	2,019,726.03

5.2 Daily Transaction Reports

Daily transaction reports must be produced. All PN transactions carried out on each day must be reported in order for the back-office to perform their relevant roles to process and reconcile the trades.

Daily transaction reports are split up to six categories. They are similar to instruction reports except that the information provided are in greater detail. The information contained in these reports is listed individually in the following sections.

5.2.1 Daily Deposits

This report will include all PN purchase transactions on a specific day with the following fields included:

P/folio: Portfolio code

Issuer: Issuer of the PN

Contract Date: Contract date of the PN

Settle Date: Settle date of the PN

PN type: Type of PN i.e. Call or Term

PNNNo: PN number

Maturity date: Maturity date of PN

Principal: Face value of the PN

Interest Rate: Interest rate associated with the PN investment

Ordered by: User ID putting through the Order

5.2.2 Daily Redemption's

This report will show all PN redemption transactions on a selected day including partial withdrawals (and the subsequent new re-investment) full withdrawals and early redemption's (inclusive of the penalty rate and the final pay out amount).

The report should include the following fields:

Pfolio: Portfolio code

Issuer: Issuer of the PN

PNNNo: PN number

Contract date: Contract date of the redemption

Settle date: Settle date of the redemption

Maturity date: Maturity date of the Term PN

Principal: Face value of the PN

Interest Rate: Interest rate associated with the PN investment

Redeemed Amt: Amount redeemed on the PN

Erate: For early redemption on Term PNs, this is the new penalty interest rate

Trans. Type: Indicate whether redemption is partial, full or early

Ncontract date: Applicable to partial redemptions only. This will be the contract date of the newly created PN of the re-invested portion not redeemed.

- Nmat date: Applicable to partial redemption only. This will be the new maturity date of the new Term PN.
- Nprincipal: For partial redemption, this field should be populated by the new re-invested sum of money. For full redemption, this field will show the total amount received, that is, principal plus accrued interest of the PN. For early redemption, this field should report the total amount received calculated based on the principal by the new penalty interest rate.
- Nrate: Applicable to partial redemptions only. This will be the new interest rate applicable to the re-invested portion of the original investment sum.

5.2.3 Daily Consolidations

This report will contain all PNs that were consolidated on a particular day. It should include details of the original PNs prior to the consolidation. Suppose we had 2 PNs, PN number BB-C909101 and PN number BB-C929302 which were consolidated. The report must include details of *each* of the PN numbers BB-. C909 101 and BB-C929302 Thereafter, the consolidated transaction should be reported.

The following fields should be included in the report:

- P/folio: Portfolio code
- Issuer: Issuer name of the PN
- PNNNo: PN number
- Contract date: Contract date of PN
- Settle date: Settlement date of PN
- Due date: Maturity date of Term PN. If it is a Call PN, this field will be blank
- Principal: Face value of the PN

Rate: Interest rate associated with the PN

Ordered By: User ID

CPN No: Consolidated PN number.

Ccontract date: Contract date of the consolidated PN

Csettle date: Settle date of the consolidated PN

Cdue date: Maturity date of the consolidated PN, if Term PN

Cprincipal: Face value of the consolidated PN

Crate: Interest rate associated with the consolidated PN

5.2.4 Daily Splits

This report will include all PNs that were split on a specific date. It should report the details of the original PN prior to the split and all subsequent PNs created as a result of the split.

The following fields must be included in the report:

P/folio: Portfolio code

Issuer: Issuer name of the PN

PNNo: PN number

Contract date: Contract date of the PN

Settle date: Settle date of PN

Due date: Maturity date of the PN

Principal: Face value of the PN

Rate: Interest rate associated with the PN

Ordered By: User ID

SPN No: PN number of the individual newly created PNs resulting from the split

Scontract date: Contract date of the individual newly created PNs resulting from the split

Ssettle date: Settlement date of the individual newly created PNs resulting from the split

Sdue date: Maturity date of the individual newly created PNs resulting from the split

Sprincipal: Face value of the individual newly created PNs resulting from the split

Srate: Interest rate of the individual newly created PNs resulting from the split

5.2.5 Daily Renegotiations

This report will list the details of all Call PN renegotiations that were carried out on a particular day. Information on the original PN prior to the renegotiation and the new investment terms of the newly created PN after the renegotiations must be shown.

The following fields must be shown:

P/folio: Portfolio code

Issuer: Issuer name of the PN

PNNo: PN number

Contract date: Contract date of the PN

Settle date: Settle date of the PN

Due date: Maturity date of the PN

Principal: Face value of the PN

Rate: Interest rate associated with the PN

Ordered By: User ID

RpnNo: New PN number associated with the rate change

Rcontract date: Contract date of the new PN associated with the rate change

Rsettle date: Settle date of the new PN associated with the rate change

Rdue date: Maturity date of the new PN associated with the rate change

Rrate: Interest rate associated with the new PN

5.2.6 Daily Rollovers

This report will list all PN rollovers that were carried out on a particular day. It must include the details of the original PN followed by the details of the rolled over PN.

The following fields should be included in the report:

P/folio: Portfolio code

Issuer: Issuer of the PN

PNNo: PN Number

Contract Date: Contract date of the PN

Settle Date: Settle date of the PN

Maturity date: Maturity date of PN

Principal: Face value of the PN

Interest Rate: Interest rate associated with the PN investment

Ordered by: User ID putting through the Order

Ocontract date: Contract date of the rollover transaction

Osefle date: Settle date of the rollover transaction

OPN number: New PN number resulting from rollover

Oprincipal: Face value of the rollover PN

Ointerest rate: Interest rate of the rollover PN

Omaturity date: Maturity date of the rollover PN

5.3 Valuation Reports

Valuation reports must be produced to list the details of all holdings of PN for a single or all issuer at portfolio level. Alternatively, the report should be able to list

information at an issuer level for a single or all portfolios having holdings of PN issued by this issuer. Sort sequences and the information to be included in the report will vary between some clients.

The following fields are generally reported in a valuation report:

P/folio:	Portfolio code
Issuer:	Issuer name of PN
PNNNo:	PN number
Type:	Type of PN ie. Call or Term
Contract date:	Contract date of PN
Due date:	Maturity date of the PN
Principal:	Face value of the PN
Rate:	Interest rate associated with the PN
Acc Int:	Accrued interest amount earned on the PN
Status:	Indicate whether the PN is Aval, Direct issue or None.

5.4 Compliance Reports

Compliance reports are generally used to track PN investments, which exceed the trading limit allowable with each particular issuer. The report will be done at a summary” level where the consolidation of all investments with each issuer is compared to the allowable investment limit. Below is an example of such a report (Table 5.7) but note that some variations to the sort sequences will be required to cater for different clients’ needs.

Example 35: Compliance Report

Portfolio: ABC1

Valuation date: 1/7/1999

Table 5.7. Compliance Report.

Issuer	PN-Call	PN-Term	Total	%	Limit	Diff.	NB
Dynamic Eastern	2,577,200	3,030,900	5,608,100	35.1746	5,000,000	-608,100	*
HongKong Bank	1,305,700	1,627,400	2,933,100	18.3967	10,000,000	7,066,900	
Peregrine	5,105,100	2,297,300	7,402,400	46.4287	7,000,000	-402,400	*
Grand Total	8,988,000	6,955,600	15,943,600	100			

In the above example, whenever the “Total” exceeds the “Limit”, an asterisk will be placed under the “NB” column for that issuer. Note that the report has been sorted by issuer in ascending order.

5.5 Maturity Reports

Maturity reports are intended to list all Term PNs that will mature within a specified date range period. The report can be run at portfolio or issuer level. The former will list all PNs currently held by the portfolio that will mature in the specified date range. For the issuer level, it will list all PNs issued by this issuer for all portfolios that will mature within the specified date range. (Table 5.8)

Example 36: Maturity Report - by Portfolio

Portfolio: ABC1

Date range: 5/7/1999 to 9/7/1999

Table 5.8. Maturity Report (By Portfolio).

Issuer	PN No.	Maturity Date	Principal	Interest Rate	Accrued Int.
Peregrine	PE-1010001	7/7/1999	1,000,000	9.00%	15,534.25
Wall street Fin	WS-1010002	9/7/1999	5,000,000	10.50%	132,328.77

Notes:

(1) PN PE-10100001 was contracted on 5/5/1999 and settled on 6/5/1999.

(2) PN WS-1010002 was contracted on 8/4/1999 and settled on 9/4/1999.

5.6 Interest Accrual Reports

There are two types of interest accrual reports to be produced. The first is a summary report and the second, a detailed report. The summary report will show the total accrued interest for *each* type of PN held with each individual issuer. The detailed report will break down the accrued interest of each individual PN for each issuer. See Table 5.9

Example 37: Interest Accrual Report - Individual

Portfolio: ABC1

Valuation Date: 1/6/1999

Table 5.9. Interest Accrual Report (Individual).

Issuer	PN Number	Settle Date	Maturity date	Principal	Rate	Days	Acc.Int.
Asia Credit	AC-7 172001	1/5/1999	Call	100,000	5%	32	438.36
	AC-7374002	2/5/1999	1/10/1999	200,000	5%	31	424.66
Credit Lyon	CL-8 182001	8/4/1999	8/10/1999	200,000	7%	55	2,109.59
	CL-8384002	9/5/1999	9/06/1999	300,000	4%	24	789.04

Notes:

- (1) The settle date column is the settle date of the original transaction. Therefore, the accrued interest amount is calculated from this settle date to valuation date, inclusive of both dates for all types of PN.

Example 38: Interest Accrual Report – Summary (Table 5.8)

Portfolio: ABC1

Valuation Date: 1/6/1999

Table 5.10. Interest Accrual Report (Summary).

Issuer	Type	Principal	Acc. Int.
Asia Credit	Call	100,000	438.36
	Term	200,000	424.66
Credit Lyon	Term	500,000	2,898.63



VI. CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Based on all the above requirements, the author believe, perhaps the best way to implement the support of PN trading is to set it up as a security sub-type. This will also have the advantage of it being able to fully integrate it with the Order Control, Portfolio Trading and Compliance Modules.

Only one PN master record should be set up for each individual issuer. All Call and Term PN (specific to one issuer) transactions will be traded based on *one* single master record for all portfolios. This will be unlike the current set-up of DS subtype four (cash deposits) where the maturity is specified on the master record.

There should be four main menu options available.

- (1) PN Number maintenance
- (2) Deposits
- (3) Redemption
- (4) Rollovers

As the maintenance of the PN number is an important part of PN trading, a separate area should be built. This area will be used to change the dummy PN number to the actual PN number for each note on the transaction record upon the receipt of the physical note. When in this area, the system should firstly prompt the user to enter an issuer code, or the field can be left blank. A list of PNs issued by the inputted issuer should be displayed, else if left blank; *all* PNs at fund level will be displayed. The user must then be able to move to the relevant PN and change the dummy PN number to the actual PN number. All other information relating to the PN must not be allowed to change. An update function key should be made to update all changed information.

The Deposits menu option will perform several tasks. These tasks include putting through a PN investment transaction, making an interest rate adjustment (renegotiations) announced by the issuer, performing splits as well as consolidations of PNs in the system. The input of a deposit transaction should be similar to HiPortfolio's treatment of the current on-market transaction, with the concept of batches. However, the transaction screen must be modified to cater for some information specific to PN trading. A filter function to filter through the list of PNs to be displayed on screen to perform renegotiations, splits and consolidations (if necessary) must be available, as discussed earlier.

The Redemption menu option will perform all types of redemption including full, partial and early redemption of Term and Call PNs. A filter option must also be made available to the user to select the PNs to be displayed on Screen.

The Rollovers menu option will purely carry out rollover transactions.

An interest recalculation function should be made available to recalculate the interest component in case of some "miscalculations" by the system.

On-screen enquiries (Figure 6.1) on specific issuers of PN at both fund and portfolio level must be made available. As the enhancement is expected to raise a new security subtype, *all* functionalities that are currently being offered in HiPortfolio's security enquiry function must be made available for a user to enquire on their PN portfolio holdings.

All function keys listed below the Figure 6.1 must be usable to enquire on any PN transactions.

However, some small changes must be made when enquiring on individual PN transactions. (Figure 6.2) The column headings after pressing F7 in the current security enquiry should be different. The "Number" field should be populated by the PN number

Ipfeng V33		Capital Market Service (PROVIDENT FUND)	29	26/ 6/99
Excluding Orders		Security enquiry		15:43
Security code	/KT16-01	Sub type	0	
Category code	DS	Short name		
Pfolio code		Currency	THB	
Face value		Redempt yield		Mat. 12/ 9/99
Market value		Market yield		Date 12/ 4/99
Capital value		Drawer		
Capital cost		Acceptor		
		Endorser		
Purch cost PTD		Face value PTD		
Sales cost PTD		Face value PTD		
Proceeds PTD				
Full Name KRUNGTHAI THANAKIT PLC.				

F1-FX F2-Order F3-Backdate F4-Other F5/F6-Scroll F7-Txn F8-Id F10-Breakdown
 (CTL+) F2-Diary F3-Announce F4-Prices F5/F6-Pfolio F7-Parcel F10-Scrip
 (ALT+) F2-Sec.Det F3-Restrict F4-Sectors F7-Costing F10-EE

Figure 6.1. Holding Enquiry Screen.

Ipfeng V33		Capital Market Service (PROVIDENT FUND)		29	26/ 6/99	
Excluding Orders		Security enquiry			15:43	
Security code	/KT16-01	Sub type	0			
Category code	DS	Short name				
Pfolio code		Currency	THB			
Face value		Redempt yield		Mat. 12/ 9/99		
Market value		Market yield		Date 12/ 4/99		
Capital value		Drawer				
Capital cost		Acceptor				
		Endorser				
Date	ID	Type	Number	Face value	Cost	Proceeds

Figure 6.2. The Holding Enquiry Screen spread to transaction derail.

of the note. The accrued interest per PN should also be shown alongside with other columns.

6.2 Recommendations

The author hopes that the improving of the system will be beneficial toward the custodian and asset management business in the future. The fluctuation of the interest rate in Thailand is going on. Therefore, the trading manner on the promissory notes still on the market until the financial market in Thailand is mature. Due to this situation, the author recommends to modify the current asset management system to solve the current problems and future potential problems in this kind of instrument. It is believed that this study will lead to more efficiency and effectiveness and helps achieve the goal.

For this project, it has only focused on the area of one instrument. (Promissory Note) Eventhough, it is a start on the front office then back office till the accounting that is the full process on the asset management system. On this integrated system, it can reduce the error from the re-enter transaction and efficiently use the organization resources. However, it is only one part of the asset management system.

In this project, the author has set the objective to enhance the performance of the current asset management system to deal adequately with the trading financial instruments. (Promissory Notes in Thailand) Which is not fully supported. On the manner of the promissory notes, it is a kind of fixed deposit however. In Thailand most of the fund managers activities on this instrument are a kind of trading because the fluctuation of the interest rate in Thailand. From this working experience, the author realizes that it will be easier and better on the investment and custodian process if the system can support all the information and required report. Now, the study has been effectively accomplished.

Therefore, the author has analyzed the existing system and concluded the results of interviews and investigation from the documents and information provided by staffs of Custodian and Provident Fund Department at Krung Thai Bank Pcl.





Report Name : Per Portfolio Deposit Instruction Report				Page : 1	
Pfolio Nmae : Blue Tiger				Provident Fund	
As at Date : 04/05/1999				ABC International Co., Ltd.	
Issuer Name	Term	Principal	Interest Rate	PN Number	Settlement Date
HongKong Bank	30 days	1,000,000.00	10.00%	D20	5/5/1999
Dynamic Eastern	30 days	2,000,000.00	12.00%	D21	5/5/1999
Indosuez	Call	500,000.00	9.00%	D22	5/5/1999

Total

3,000,000.00

Check By :

Authorized By :

Figure A.1. Per Portfolio Deposit Instruction Report

Report Name : Per Issuer Deposit Instruction Report

Issuer Nmae : Citibank

As at Date : 04/05/1999

Page : 1

Provident Fund

ABC International Co., Ltd.

Portfolio Name	Term	Principal	Interest Rate	PN Number	Settlement Date
Blue Tiger	30 days	1,000,000	10%	D23	5/5/1999
Blue Tiger	Call	5,000,000	13%	D25	5/5/1999
Total		6,000,000.00			
White Tiger	Call	2,000,000	12%	D24	5/5/1999
Total		2,000,000.00			
Grand Total		8,000,000.00			

Check By :

Authorized By :

Figure A.2. Per Issuer Instruction Report

Report Name : Per Portfolio Account Withdrawal Report

Pfolio Nmae : Blue Tiger

As at Date : 04/05/1999

Page : 1

Provident Fund

ABC International Co., Ltd.

PN Number	Bank/Branch	Account No.	Settlement Date	Amount(Baht)
D21	KTB, Sukhumvit	510-5-132579	5/5/1999	1,000,000.00
D22	BBL, Silom	916-5-055551	5/5/1999	2,000,000.00
D23	BBL, Silom	241-9-188005	5/5/1999	500,000.00
Total				<u>3,500,000.00</u>

Check By :

Authorized By :

Figure A.3. Per Portfolio Account Withdrawal Report

Report Name : Per Portfolio Redemption Instruction Report

Pfolio Nmae : Blue Tiger

As at Date : 14/6/1999

Page : 1

Provident Fund

ABC International Co., Ltd.

Issuer Name	PN No.	Settlement Date	Principal	Interest Rate	Interest Amount	Total Amount
Hong Kong Bank	HK-1010555	14/6/1999	1,000,000.00	5%	4,219.18	1,004,219.18
	Total Hong Kong Bank		1,000,000.00		4,219.18	1,004,219.18
Dynamic Eastern	DE-2020999	14/6/1999	2,000,000.00	5%	10,726.03	2,010,726.03
	Total Dynamic Eastern		2,000,000.00		10,726.03	2,010,726.03
Grand Total			3,000,000.00		14,945.21	3,014,945.21

Check By :

Authorized By :

Figure A.4. Per Portfolio Redemption Instruction Report

Report Name : Per Portfolio Redemption Instruction Report
 Pfolio Nmae : Blue Tiger
 As at Date : 7/6/1999

Page : 1
 Provident Fund
 ABC International Co., Ltd.

Issuer Name	PN Number	Contract Date	Settlement Date	Interest Rate	Term	Interest Amount	Principal	Total
Redeem PN								
Indosuez	IN-c102001	7/5/1999	8/5/1999	10%	Call	7,945.21	1,000,000.00	1,007,945.21
Indosuez	IN-T112101	7/5/1999	8/5/1999	12%	91 days	29,917.81	1,000,000.00	1,029,917.81
	Total Redeem					37,863.02	2,000,000.00	2,037,863.02
Re-Invest PN								
Indosuez	D24	7/6/1999	8/6/1999	7%	31 days		500,000.00	500,000.00
Indosuez	D25	7/6/1999	8/6/1999	8%	31 days		1,029,917.81	1,029,917.81
	Total Re-Invest PN						1,529,917.81	1,529,917.81

Check By :

Authorized By :

Figure A.5. Per Portfolio Redemption and Re-Investment Instruction Report

Report Name : Per Portfolio Deposit Instruction Report				Page : 1	
Pfolio Nmae : Blue Tiger				Provident Fund	
As at Date : 3/5/1999				ABC International Co., Ltd.	
PN Number	Bank/Branch	Account Number	Settlement Date	Amount (Baht)	
HK-1010555	KTB, Sukhumvit	510-5-132571	4/5/1999	1,008,219.18	
DE-2020999	BBL, Silom	916-5-155559	4/5/1999	2,019,726.03	
Total				<u>3,027,945.21</u>	

Authorized By :

Check By :

Figure A.6. Per Portfolio Deposit Instruction Report

Issuer	PN-Call	PN-Term	Total	%	Limit	Diff.	NB
Dynamic Eastern	2,577,200.00	3,030,900.00	5,608,100.00	35.1746	5,000,000.00	-608,100	*
HongKong Bank	1,305,700.00	1,627,400.00	2,933,100.00	18.3967	10,000,000.00	7,066,900	
Peregrine	5,105,100.00	2,297,300.00	7,402,400.00	46.4287	7,000,000.00	-402,400	*
Grand Total	8,988,000.00	6,955,600.00	15,943,600.00	100.0000			



Check By :

Authorized By :

Figure A.7. Compliance Report

Report Name : Maturity Report
 Pfolio Nmae : ABCI
 As at Date : 5/7/1999 to 9/7/1999

Page : 1
 Provident Fund
 ABC International Co., Ltd.

Issuer	PN No.	Maturity Date	Principal	Interest Rate	Accrued Int.
Peregrine	PE-1010001	7/7/1999	1,000,000.00	9.00%	15,534.25
	PE-101056	8/7/1999	5,000,000.00	10.00%	55,687.35
Total Peregrine			<u>6,000,000.00</u>		<u>71,221.60</u>
Wall street Fin	WS-1010002	9/7/1999	5,000,000	10.50%	132,328.77
Total Wall Street Fin			<u>5,000,000.00</u>		<u>132,328.77</u>
Grand Total			<u>11,000,000.00</u>		<u>2,03,550.37</u>

Check By :
 Authorized By :

Figure A.8. Maturity Report

Report Name : Accrual Interest Report (Detail)
 Pfolio Nmae : ABC1
 As at Date : 1/6/1999

Page : 1
 Provident Fund
 ABC International Co., Ltd.

Issuer	PN Number	Settlement Date	Maturity Date	Principal	Rate	Days	Acc. Interest
Asia Credit	AC-7 172001	1/5/1999	Call	100,000.00	5%	32	438.36
	AC-7374002	2/5/1999	1/10/1999	200,000.00	5%	31	424.66
	Total Asia Credit			300,000.00			863.02
Credit Lyon	CL-8 182001	8/4/1999	8/10/1999	200,000.00	7%	55	2,109.59
	CL-8384002	9/5/1999	9/06/1999	300,000.00	4%	24	789.04
	Total Credit Lyon			500,000.00			2,898.63
Grand Total							3,761.65

Check By :

Authorized By :

Figure A.9. Accrual Interest Report (Detail)

Issuer	Type	Principal	Accrual Interest
Asia Credit	Call	100,000.00	438.36
	Term	200,000.00	424.66
	Total Asia Credit	300,000.00	863.02
Credit Lyon	Term	500,000.00	2,898.63
	Total Credit Lyon	500,000.00	2,898.63
	Grand Total	800,000.00	3,761.65

Check By :

Authorized By :

Figure A.10. Accrual Report Report (Summary)

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