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PLANNING AN INFORMATION SYSTEM FOR THE  
HOUSING DEVELOPMENT FINANCE CORPORATION (HDFC)  
COLOMBO, SRI LANKA

Prepared for:

Office of Housing and Urban Programs  
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by

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Executive Summary: Conclusions and Recommendations

It is difficult for a modern financial institution to operate effectively without automated data processing. The sheer volume of transactions, reconciliations and reporting required exceed the ability of manual systems to perform effectively. While it would certainly be possible to support the projected deposit and loan accounts of the HDFC with a manual system over the five-year planning horizon, the increased speed, accuracy, flexibility and additional information benefits that can be obtained through an automated system far outweigh the excess cost.

Recommendation No. 1. The HDFC should continue steps to automate its operations, administrative, retail and management support systems.

Between August 24 and September 8 we reviewed the major activities and operations of the Housing Development Finance Corporation (HDFC), focusing on the type of information system that would be necessary to support these activities and operations. The long-run computer applications needed to support the HDFC can be divided into three major systems: a Management Support System, a Retail Services System, and an Operations and Administrative System.

Of these the retail services system should be developed first; it is needed to support the day-to-day business operations of the HDFC, and must be in place before a management support system can be developed. The Retail Services System includes the following subsystems: member/customer master control, deposits, loan processing, loan disbursements and loan collections. A property development and management subsystem may be required at a later date.

However, the Retail Services System should be developed, from the beginning, within the framework of an integrated information system plan whose primary objective is to support the Management Support System. Since the HDFC represents a new form of institution in Sri Lanka there is little precedence that management can rely on to establish policies, procedures and strategies. "Management" information, as opposed to accounts processing, will be critical to long range success. Management needs more summarized, specialized and analytic information than is normally generated by systems designed to support

administrative and retail services. The Retail Services System needs to be designed to provide the needed information, in appropriate levels of detail, to a Management Support System. This system should be developed second.

Because of the low level of transaction volumes and small staff, the Administrative and Operations System should be the last system developed. Still, it should be noted that most of the cost analysis aspects of the Management Support System require data that would normally be provided by the Administrative System. In the absence of such a system the HDFC will have to calculate and insert that data manually.

Recommendation No. 2. The first system to be developed should be the Retail Services System, followed closely by the Management Support System. The two should be planned together. The Administrative and Operations System should be the last system to be automated.

Recommendation No. 3. Because of the interrelated nature of the three major systems, the overall information system should be designed and implemented as an integrated data base system so that management reports can be developed and generated quickly and easily.

If cost were the only consideration, the HDFC should secure its data processing services from a batch processing service bureau. But cost should not be the only consideration. Flexibility, confidentiality, responsiveness of the system to organizational priorities, and certain requirements for on-line processing need to be considered as well. In the context of Sri Lanka a service bureau approach would represent a "minimal" solution. Because of telecommunication problems a service bureau could not support on-line transaction processing, and would not support minimal on-line inquiries in a satisfactory manner. A service bureau approach would tend to be inflexible in scheduling and software, and would not support the analysis and reporting requirements of HDFC management. In addition, there would be questions of confidentiality, security and, in some cases, conflict of interest.

Recommendation No. 4. The HDFC should strongly consider an in-house system.

Recommendation No. 5. If the HDFC chooses an in-house system it should contract a facility manager for the first year of operations.

Recommendation No. 6. The HDFC should give strong consideration to purchasing the IBM 34 owned by the Maharaja Group. This system is large enough to handle the HDFC's projected volumes for the next five years, has a large variety of software available and, because it is no longer marketed by IBM, should be obtainable at a reasonable cost. In addition, the HDFC could operate its existing applications immediately on this system

There is nothing unique or unusual about the application requirements of the HDFC. The activities are typical of normal savings and loan associations (building societies).

Recommendation No. 7. If at all feasible, the HDFC should choose to use and adapt an existing software package rather than write its own software or contract custom software development.

## Introduction

The Housing Development Finance Corporation (HDFC) is a semi-private institution incorporated under the guidelines of the National Housing Law of Sri Lanka. Its purpose is to accept deposits from members for savings oriented toward the purchase or construction of housing and to provide construction financing and long term mortgages to those members. Most of the capital of the HDFC is provided by the Government of Sri Lanka in the form of a low-interest (7%) loan. In most respects the HDFC functions as a normal savings and loan association (building society) with a large block of government-provided mortgage capital. Many of the mortgages financed by the HDFC are expected to qualify for U.S. AID financing under the Housing Guaranty program.

In July, 1984, Mr. George Behymer of the National Council of Savings Institutions, provided consultancy to the HDFC for the review and development of operating procedures and policies. During the course of the consultancy he recommended that the HDFC take immediate steps to automate operations and management information systems, while transaction volumes were still low and manageable.

This consultancy was to follow up on that recommendation. Its purpose was to review the needs and requirements of the HDFC in the area of automated data processing, and to provide guidelines and a plan for future steps to successfully install such a system.

### Steps in Planning and Designing an Information System

There are several logical steps that are involved in planning and developing an information system. It is important to understand these in order to understand the scope of this report and the steps that still remain to arrive at a workable system.

- Step I - Initial Requirements Analysis and Needs Definition.  
Define the scope and components (architecture) of the system in terms of the business functions and decisions it must support.
- Step II - External Design. Define, from the users' perspectives, the objectives, purpose and special characteristics of each major component of the system architecture. This includes volume estimates, performance characteristics and required outputs.
- Step III - Evaluate and Decide on an Alternative Solution.  
This includes the selection of a basic approach (particularly in-house versus service bureau, batch

versus on-line, and packaged software versus custom-developed software) as well as the particular vendor(s) and (if appropriate) hardware, software and application programs.

Step IV - Internal Design. Develop, with systems analysts (in-house or service bureau), the precise internal workings of the computer programs that are to implement the system. This step also normally includes form design.

Step V - Installation. The physical installation of equipment and programs, as well as staff training, procedures development, and documentation.

Step VI - Systems Operation and Maintenance. Running, correcting and expanding the system.

The purpose of this report is to develop steps I and II, and provide some guidelines for accomplishing step III. The HDFC will need to add detail and accuracy to the information presented in this report to have a completely finalized external design.

#### Structure of The Report

The remainder of this report is divided into three sections:

1. Needs assessment and preliminary external design of a system to support the management needs of the HDFC.
2. Recommended next steps for the HDFC to undertake to develop and install and automated system.
3. A discussion of options to consider in planning a system.

Much of the specific data needed to produce a detailed external design was not available at the time of this report. The HDFC does not have a long-range corporate plan that projects members and accounts or deposits and loan volumes. Such a plan will be necessary, not only for automated system planning, but for planning and managing the activities of the HDFC itself.

PART ONE. Basic Requirements for an Automated Information System to Support the Business Activities of the HDFC

I. System Architecture

A long-range complete information system architecture for the HDFC should contain three major systems: (1) a Management Support System, (2) a Retail Services System, and (3) an Operations and Administrative System. Each of these would be further divided into subsystems and applications. The major components of the long-range system can be summarized as follows:

I. Management Support System.

Statistics, spreadsheet, financial analysis and graphics programs to support detailed analysis and planning for the HDFC

II. Retail Services System

A. Member Servicing Subsystem. Supports the master customer file, which contains all data on each member. Includes customer credit worthiness and loan appraisal analysis applications.

B. Deposits Subsystem. Supports all activities related to accepting and managing member deposits.

C. Loans Subsystem. Supports all activities related to making and servicing construction and mortgage loans to members and interim (bridge) financing for developer projects. This subsystem has three major applications: loan processing, loan disbursements and collections.

D. Land Management and Development Subsystem. Supports all activities related to developing properties owned or syndicated by HDFC.

III. Operations and Administrative System.

A. Internal Accounting Subsystem. Supports all activities related to maintaining the internal accounting records of the HDFC. This includes voucher entries, accounts receivable, accounts payable, general ledger, budgeting, financial reports, inventory management and fixed asset accounting.

B. Personnel Administration Subsystem. Supports all activities related to personnel administration, including personnel records, time management and payroll.

C. Office Support Subsystem. Includes text processing, report preparation, etc.

Not all of these systems and subsystems are of equal priority. Because of low projected volumes and a small staff, the HDFC can handle its internal accounting and personnel functions manually during the time horizon of this study. The Land Management/Development Subsystem will not be an immediate need. The other Retail Service subsystems and the Management Support System are the most important applications for automation in the short run.

## II. Specific System and Subsystem Requirements

### Management Support System

#### A. Management Support System

While the Retail Services and Administrative Systems are necessary to operate the HDFC on a day-to-day basis, the Management Support System is essential to managing it successfully. This system depends on data from the other two systems, but organizes and presents that data in such a way that it can be analyzed, understood, and used to support strategic decision-making and planning.

Purpose - Support management decision making for the HDFC, including planning, forecasting, evaluation of performance and evaluation of alternatives.

Characteristics - The Management Support System is essentially a collection of analytic tools and report generators that assist top management. These would typically include spreadsheet, graphics, statistical functions, financial analysis functions and report generation programs that can be easily developed, integrated and used by non-computer professionals (end users). Some analysis programs may be developed and stored on the computer for repeated use. Flexibility and ease-of-use are critical.

In addition to these, there may be regularly scheduled management reports generated by the Retail Services and Administrative systems that would be specifically tailored to provide management decision-oriented information.



Elements -

- The Management Support System will include, but not be limited to:
- \* Market analysis, including market segmentation analysis.
  - \* Depositor profile analysis.
  - \* Pricing analysis, including rate calculations, analyzing cost of funds and profitability, performing sensitivity analysis for planning rate structures and asset mix.
  - \* Portfolio analysis.
  - \* Forecasting and budgeting.
  - \* Investment Planning.
  - \* Delinquency analysis, including aging reports.

Requirements -

- \* Timeliness -- Management reports are needed when decisions must be made, not at predetermined fixed intervals.
- \* Ad hoc report generation when needed, without a systems analyst or programmer.
- \* Universality of data -- Must be able to draw data from any of the Retail Services or Administrative data bases to use in any analysis.
- \* Ability to sort, merge, and select subsets of data and data fields, and to produce summarized or aggregate reports from the data.
- \* Integrated high-resolution graphics (preferably color graphics), spreadsheet, data base management, statistical and financial programs capable of supporting a wide variety of analyses using any technique.
- \* Statistical analysis functions such as chi-square, linear regression and descriptive statistics.
- \* Financial analysis tools, including internal rate of return calculations, cost/benefit, net-present value, time-value-of-money, ratio analysis, cash flow analysis, credit worthiness analysis, calculation and printing of loan amortization tables, etc.
- \* Budgeting and financial simulations.
- \* On-line, interactive executive training programs

Mode -

Should be interactive, on-line. Many of the features of the management support System might be best served by a microcomputer that has an integrated spreadsheet, graphics and database management program, such as the Visicalc series, Lotus 1-2-3, or others.

Outputs -

Regular summary reports produced by the Retail Services and Administrative systems that cover financial position, profit-or-loss, cost of

capital, delinquency aging, etc.

Also specialized output designed and prepared by the management staff, including graphs, charts, statistical analyses, forecasts, and the like.

Volume Estimate - Regular reports once a month. Other reports, analyses and inquiries would occur frequently. Expect a large volume of activity in this system, but not possible to quantify it.

### Retail Services System

#### B. Member Servicing Subsystem

Purpose - Create and maintain a master record for each member of the HDFC. This record is used in all systems and subsystems that require identification and characteristics of the individual member.

Characteristics - This subsystem provides for the entry and editing of all relevant data concerning the individual member. The source document is the application form and other forms used to correct or change information. The member/customer data base is the only place in the entire system that this information is stored. All other systems and subsystems that use names, addresses and other similar information draw it from this subsystem.

Elements -

- Application programs
  - \* Entry program to enter application information
  - \* Editing program to change or modify data
  - \* Credit worthiness, risk analysis program.
  - \* Report program to call up information on a single member, list members, etc.
- Data elements
  - \* Membership number
  - \* Name, address, city, district
  - \* Age, sex, race, language preferred
  - \* Employment information: company, job, time, income, family income
  - \* HDFC services utilized by member
  - \* Savings goal
  - \* Date of membership application
  - \* Agent identification number
  - \* Other

Requirements - 1. Ability to sort, select and merge membership

lists by last name, membership number, sex, age, city, district, race or other characteristics.

2. Use of data by other systems and subsystems, including the Management Support System and Loan and Deposit subsystems.

Mode - This subsystem should be on-line, accessible by batch systems as needed.

Outputs -

- \* Membership lists, sorted or selected as needed.
- \* Mailing labels, or addresses for statements, billings and notices
- \* On-screen reviews of a customer record

Volume Estimate - One master entry per member, two updates per year per member, numerous inquiries and uses by application programs.

### C. Deposits Subsystem

This system is currently supported by a batch data processing service provided by the Maharaja Group. The programs were custom developed for the HDFC.

Purpose - To manage all aspects of savings deposits (including cash and check deposits) withdrawals, interest accruals and postings.

Characteristics - This system covers both savings/time deposits and certificates of deposit or other term deposits. It must be able to maintain foreign deposits in foreign currencies as well as domestic deposits. It must be capable of supporting at least 10 different deposit types:

- \* Accounts for minors
- \* Employee accounts that have either a lump sum deposit or fixed installment contract.
- \* Corporate member accounts for employees with either a lump sum deposit or fixed installment contract.
- \* Non-resident foreign currency accounts
- \* Fixed deposits of various terms and rates.

Any member may have any one of these accounts, and a member may have several account types simultaneously.

- Requirements -
1. Interest rate calculations  
Interest rates are calculated semi-annually on fully-paid subscriptions only, from date of deposit to end of the period. Interest is credited either to a special interest account or to the partial subscriptions of the member until those reach a full subscription share.
  2. A member contracts to deposit a certain amount of funds on a regular basis. Management reports should indicate when a member is not fulfilling that obligation, and permit analysis of patterns and trends.
  3. Members set a targets for the amount of savings they want to achieve. Management reports need to forecast probably loan demand based on achievement of savings objectives.
  4. Agents receive commissions on deposits from members that they helped recruit. The system needs to identify agents from the master member file and credit commissions correctly at the time of interest postings.
  5. The system needs to maintain a history file of all deposits and withdrawals for at least one year in the active system.

Mode - Batch entries and updates. On-line account inquiry system.

Outputs - Periodic statements, depositor profiles, management report on installment contracts, accrual and posting of interest, on-screen inquiries to review member accounts.

Volume Estimate - 10,000 members with one deposit transaction per month and an average of three withdrawals per year. Three member account inquiries per year.

#### D. Loans Subsystem

This will become, over time, the major Retail Sales subsystem for the HDFC.

Purpose - Support all activities related to making and servicing mortgage loans to members. Also must support interim (bridge) construction financing for developers.

This subsystem consists of three major applications: loan

processing, loan disbursements and loan collections.

Purpose -            Loan Processing: track and account for steps and costs associated with preparing to make a loan to a developer or member

                    Loan Disbursements: monitor and control loan disbursements.

                    Loan Collections: control and perform the accounting for loan collections for all active HDFC loans.

Characteristics - These are standard savings and loan (building society) applications.

Requirements -    Loan Processing

- \* Allow the credit manager to inquire about the status (steps completed and cost) of each individual loan in process.
- \* Provide a means to summarize all loan applications -- stage, cost, delays
- \* Provide an estimate of the loan requirements by forecasting loan processing completion dates.
- \* Provide a final statement of amount for the loan preparation stage, and post that to accounts receivable or payable.

                    Loan Disbursements

- \* Ability to establish and monitor a loan disbursement schedule for a single loan, with draws to a predetermined limit.
- \* Calculate interest owed on outstanding interim financing balances according to HDFC interest calculation formula.
- \* Allow loan manager to check the status of any given loan.
- \* Prepare a cash requirements forecast based on all current loan disbursement schedules, with ability to use those forecasts in other cash-flow modeling and budgeting analyses.
- \* Close the disbursement account into an active loan-for-collection account.

                    Loan Collections

- \* Ability to calculate and post interest for any loan on any interest basis chosen by the HDFC -- simple equated monthly payment, variable rate, balloon mortgages, graduated rate mortgages and special yearly amount divided by twelve that is currently used by HDFC.
- \* Forecast anticipated cash receipts, with ability to use those forecasts in other analysis applications.

- \* Identify delinquencies and report by age, number of payments due and other characteristics.
- \* Automatically generate payment notices, receipts and follow-up notices for delinquencies.
- \* Perform accounting functions for outstanding loans and post to general ledger.

Mode -

The loan collections system should be a batch operated system. The other two should be on-line applications.

Outputs -

Loan Processing

- \* Advices of charges to be mailed or handed to member.
- \* Final statement of account.
- \* On-screen inquiry of status of processing.
- \* Post to journal vouchers.

Loan Disbursements

- \* Status reports
- \* Spreadsheet of all disbursement schedules.
- \* On-screen inquiry of disbursement status.

Loan collections

- \* Auditable transactions ledger of all payments.
- \* Monitoring and tracking reports.
- \* Delinquency reports.
- \* Data for Management Support System to analyze profitability, delinquency characteristics, etc.
- \* Monthly statement of budgeted versus actual receipts.
- \* On-screen inquiry of account status and balance.

Volume Estimate - Loan Processing: One application, ten updates, three inquiries, four notifications and one statement per loan.

Loan Disbursements: One disbursement schedule, four disbursements and unknown number of inquiries per loan.

Loan Collections: One payment per mortgage per month. Annual statements to members. One statement for next installment per mortgage per month.

E. Land Development/Management Subsystem

Not planned at the present time.

Operations and Administrative System

Because of the small staff and relatively low volume of internal accounting transactions, this is a low priority system for automation. Still, the advantages of automated accounting, particularly in the ability to generate management reports, are sufficient to justify automation if it can be accomplished at a reasonable cost. It may be possible to purchase a package for a microcomputer rather than developing a mainframe system. This system consists of three major subsystems: accounting, personnel and office automation.

F. Internal Accounting Subsystem

Purpose - Support all activities related to maintaining HDFC's internal accounting records.

Characteristics - Includes voucher entries, accounts receivable, accounts payable, purchase order, general ledger, budgeting financial reports and fixed asset accounting.

Elements -

Requirements - Conformity to Sri Lankan law and HDFC-specific requirements, including:

1. Ability to report accrued interest payable on a monthly basis and post it to member accounts semi-annually.
2. Ability to analyze profitability of particular service lines (cost centers).
3. Ability to calculate interest on fully paid subscription shares only.

Mode - Batch

Outputs - Budgets, balance sheets, financial statements with variances, audit trail, general ledger listings.

Volume Estimate - Unknown.

G. Personnel Subsystem

This subsystem is not recommended for automation at this time, but any computer system selected should have the capability of supporting a full-featured, integrated personnel system.

#### H. Office Automation Subsystem

The HDFC currently has several electronic typewriters with limited memory and editing capabilities. Text processing would facilitate the work of report preparation and custom correspondence to preferential customers. Mainframe text processing systems are generally incompatible with transaction processing applications. Consideration should be given to using a word processing package on a microcomputer that can also be used as a terminal to the mainframe computer when needed. Any word processing package should have spelling verification and mail merging programs.

#### III. Estimated Volumes

At the present the HDFC has 1700 members enrolled in its deposits program. This is expected to grow to 10,000 within the first five years of the program. These members would normally be expected to make one deposit per month. In fact, however, deposit transactions have only averaged between 350 and 380 transactions per month, with a peak of 409 transactions during the month of July. For purposes of estimating volumes we will still use the figure of 1 deposit transaction per month per member.

These are intended as permanent savings, so that withdrawals are discouraged. Still, it is estimated that an average member will have about 3 withdrawals per year.

Loan volumes depend on several factors: the amount of government funds available, the average loan size, and the ability of members to save down payments and meet mortgage servicing requirements. According to HDFC rules a member must normally save for one year before (s)he is eligible for a loan. There is some indication that this will be relaxed. With housing costs estimated at 100,000 to 200,000 rupees, a member will have to save between 20,000 and 40,00 rupees (20% of the value of the house) to qualify for a loan. If a member saves 500 rupees per month (s)he would have to save for 40 to 80 months to generate sufficient savings. With this assumption, 15 to 30% of the members would qualify for loans each year once the program is mature. Limited funds currently available of 45,000,000 rupees will fund between 250 and 500 houses; it is estimated that additional government funding will become available as needed to fund the program on a continuing basis.

As a modest estimate of loan volumes, some 500 loans are expected to be developed during the first two years (1984 and 1985), rising to 1000 loans per year by the end of the first five years. By the end of 5 years there should be some 2750 active mortgages in the portfolio. Mortgages will be amortized over a twenty year period with monthly payments. This implies a transaction volume of approximately 2750 payments per month.

The HDFC has not developed a corporate plan that estimates accounts,



transactions or balances. That should be developed as soon as possible. The following table reflects rough transaction volume estimates based on the preceding assumptions. It does not take time lags into account, and needs to be verified, but only as part of a realistic planning and estimating effort within the HDFC.

TABLE I  
PRELIMINARY VOLUME ESTIMATES

Item	1984	1985	1986	1987	1988
No. of New Members	2,000	2,000	2,000	2,000	2,000
No. of Deposits*	24,000	48,000	72,000	72,000	72,000
No. of Withdrawals*	6,000	12,000	18,000	18,000	18,000
No. of New Loans	100	400	500	750	1,000
No. of Repayments	600	6,000	12,000	21,000	33,000
<b>Total</b>	<b>32,700</b>	<b>62,400</b>	<b>98,500</b>	<b>113,750</b>	<b>126,000</b>
<b>Average Per Month</b>	<b>2,750</b>	<b>5,200</b>	<b>8,208</b>	<b>9,480</b>	<b>10,500</b>
<b>Average per day</b>	<b>136</b>	<b>260</b>	<b>410</b>	<b>474</b>	<b>525</b>

\* Once a member qualifies for a loan (s)he will probably stop making deposits and withdrawals

#### IV. Other Requirements

##### Auditing

The system must provide a complete audit trail of all transactions and other modifications to the data bases, and other internal controls as required by good accounting practice.

##### Security

Member records are confidential, and customer information is of potential value to competitors. The system must provide security against unauthorized access to files, accidental or intentional incorrect modifications of records, and unauthorized disclosure of customer information. The system should provide a means to limit particular activities to certain user codes or job codes. Modification of records should only be possible through established programs that use internal password protections.

In addition to hardware and software security provisions, the HDFC will have to develop and apply appropriate internal procedures and controls.

##### Standard Applications

Planned HDFC activities are similar to standard savings and loan operations in the U.S. In fact, many of the more sophisticated savings and loan applications -- such as NOW accounts, credit card operations and automated teller machines -- are not contemplated for the HDFC. The only service that is not typical of U.S. savings and loan associations is the non-resident foreign currency deposit program, which requires that balances be maintained separately in foreign currencies. For the most part, however, the data processing requirements of the HDFC are not unusual or unique, and could be met with appropriate off-the-shelf software.

#### V. Equipment Necessary for the HDFC System

The precise equipment necessary to service HDFC needs will depend on several choices the HDFC must make, such as in-house versus service bureau, on-line versus batch processing, and whether the HDFC performs teller operations or arranges with a bank for cash receipts and disbursements. The following configurations are based on the assumption that the HDFC operates an in-house system that is predominantly on-line, and that it performs its own teller operations. These are intended as a guideline only. In evaluating alternatives the HDFC will undoubtedly modify the assumptions on which these configurations are based, and will need to make appropriate modifications in the configurations as well.

No attempt has been made here to estimate recommended computer configurations. The vendor(s) should be forced to specify the size and configuration of hardware that is necessary to support the described system in their bids, and held to that estimate in a signed contract.

TABLE II  
TYPICAL PERIPHERAL EQUIPMENT CONFIGURATION  
FOR IN-HOUSE ON-LINE SYSTEM

Items and Location	Minimum Number	Recommended Number	Comments
On-line terminals for teller stations	2	2	Used for entering new applications, cash receipts, and answering member inquiries about status
On-line terminals or batch data entry terminals for accounting	1	2	Used for entering accounting records, verifying balances, updating accounting records, journal entries
On-line terminal for financial manager	1	1	This terminal may become the manager's executive terminal if a microcomputer is used for financial analysis. Otherwise, this terminal is used for budget simulations, cash forecasting, profitability analysis, sensitivity analysis, portfolio management, etc.
On-line terminal for credit manager	1	1	Used for assessing credit worthiness, portfolio analysis, inquiries on account status and activity, delinquencies, etc.
On-line terminal for general manager	0	1	Pre-generated programs would allow the manager to review all aspects of the business at any time.
Microcomputer for finance	0	1	Used for budget planning, financial analysis, sensitivity analysis and other modeling and planning functions. Could also be used as a word processor.
High-speed line printer	1	1	Used for printing statements, notices, and reports
Letter-quality printer	0	1	Needed to generate high-quality board reports, tables, and custom letters to preferential members

## PART TWO. Next Steps

The previous section described the basic information system requirements for the HDFC, and provided a preliminary description of each major system and subsystem, with preliminary volume estimates for each. As was pointed out, these volume estimates are not particularly valid because they are not based on projections made by the HDFC.

The next steps that the HDFC should undertake are as follows:

1. Review the details contained in PART ONE of this report, and correct the information presented. This should include modifying data and information, correcting volume estimates, and adding details and information about specific reports, calculation requirements, special handling requirements and other additions needed to accurately reflect the needs of the HDFC. The two forms presented on the following two pages can provide a basis for improving volume estimates. PART ONE could then serve as a basis for requesting proposals and evaluating alternatives.
2. The HDFC then needs to assess its options and determine the basic course of action it wishes to pursue. The next section of this report presents a discussion of the basic options, which can serve as a basis for this determination. The options are basically:
  - a. In-house system versus a service bureau.
  - b. On-line versus batch processing for each application.
  - c. Packaged software versus custom-developed software.
  - d. In-house staff versus using a facility manager.
3. Using PART One as a basic system description, the HDFC should then solicit proposals from potential suppliers of the desired system components. Again, some of the options are discussed in the next section of this report. If the HDFC decides to go with an in-house system proposals can be solicited from IBM, WANG, the Maharaja Group, Ernst and Whinney and others for a completely installed and functioning system. If the HDFC decides to proceed with a service bureau during the short run, proposals can be requested from the Maharaja Group, Ernst and Whinney, SMIB, and other potential suppliers of service. With either approach, the detailed system requirements of PART ONE should then serve as a basis for evaluating the proposals to make certain that the offered services will in fact meet the needs of the HDFC.

TABLE III

FORM FOR ESTIMATING NUMBER OF ACCOUNTS

Item	1984	1985	1986	1987	1988	Total
<u>Deposit Accounts</u>						
Membership Applications						
New						
Closed						
Net Addition						
Active accounts						
Accounts for Minors						
New						
Closed						
Net Addition						
Active accounts						
Individual Accounts (A)						
New						
Closed						
Net Addition						
Active accounts						
Individual Accounts (B)						
New						
Closed						
Net Addition						
Active accounts						
Corporate Accounts (C)						
New						
Closed						
Net Addition						
Active accounts						
Corporate Accounts (D)						
New						
Closed						
Net Addition						
Active accounts						
NRFCA						
New						
Closed						
Net Addition						
Active accounts						
<u>Loan Accounts</u>						
Loan Applications						
New						
Closed						
Net Addition						
Active accounts						
<u>Totals</u>						
Openings/Closings						
Additions						
Active accounts						

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TABLE IV  
FORM FOR ESTIMATING NUMBER OF TRANSACTIONS

Year 19\_\_

Item (1)	No. of Active Accounts (2)	Number of transactions Per Year			Total (3+4+5)x(2)
		Deposits (3)	Withdrawals (4)	Other* (5)	
<u>Deposit Accounts</u>					
Accounts for Minors	_____	_____	_____	_____	_____
Individual Accounts (A)	_____	_____	_____	_____	_____
Individual Accounts (B)	_____	_____	_____	_____	_____
Corporate Accounts (C)	_____	_____	_____	_____	_____
Corporate Accounts (D)	_____	_____	_____	_____	_____
NRFCAs	_____	_____	_____	_____	_____
<u>Loan accounts</u>					
_____	_____	_____	_____	_____	_____
<u>Openings/Closings</u>					
_____	_____	_____	_____	_____	_____
Total					_____
Average per month					_____
Average per day					_____

\* Includes account inquiries

### PART THREE. Options

Developing an information system for the HDFC entails a number of choices. Each of these has important cost and long-term system implications, and must therefore be considered and evaluated carefully before the HDFC commits itself to any course of action. Among the options to be considered are:

1. Establish and operate an in-house computer facility or purchase services (time or transactions) from a service bureau.
2. Use a pre-existing software package, custom develop software internally, or hire an outside programming service to develop custom software.
3. Develop an on-line system utilizing video display terminals in HDFC's office to enter and access data, or develop a batch processing system that processes jobs and transactions in batches, at specific times. It is possible to combine these two forms to have some processes on-line while others are processed in batch runs.

These are not "pure" categories. Within each there may be variations or mixed alternatives that can be considered. For example, a service bureau may develop a program with an agreement to license the software to HDFC at a later date for installation on an in-house computer. Or, HDFC may purchase a computer but contract an outside firm or individual to set the system up and operate it during the first year or so (facility management).

It is important to keep in mind that no decision should be made on a hardware system until the components of the information system itself are understood and agreed upon. The only purpose of a computer system is to run software. The most important criteria for selecting a computer system is whether or not it will run the software that is needed at a reasonable cost. The first step is to determine the information needs. The second is to determine the software that will meet those needs. Only after those two steps are completed should any attention be paid to hardware.

In-House versus Service Bureau

There are actually three separate options in this area:

1. In-house computer facility owned and operated by permanent, full-time HDFC staff.
2. In-house computer facility owned by HDFC, but operated on a contract basis by an outside facility manager (such as the Maharaja Group, Management Services, Ltd. or other)
3. External service bureau -- purchase of processing services for cost from an external supplier. Potential suppliers include the Maharaja Group, Management Services Ltd, SMIB and several banks in Colombo.

The advantages and disadvantages of each are presented on the following page.

The general alternatives available to the HDFC in this area are presented in the table below. There may be others, especially service bureaus, banks that are capable of providing processing services, and firms that can offer facility management capabilities. These should be researched and evaluated during the decision-making process.



26  
TABLE V

In-House Owned and Operated

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>* Flexible — can modify to suit particular needs</li> <li>* Total control over computer resources</li> <li>* Greater security and privacy of data</li> <li>* Greater responsiveness of computer facility to organization priorities; ability to set priorities and schedules according to needs; HDPC's applications get top priority</li> </ul>	<ul style="list-style-type: none"> <li>* High "up-front" costs of equipment, training and set-up</li> <li>* Totally responsible for risk of failure</li> <li>* Need permanent staff with all system skills. Risk of staff turnover in key positions.</li> <li>* Must provide for in-house space, air conditioning, uninterruptible power supply, power stabilizer, security and fire protection, as well as on-site and off-site storage of data.</li> <li>* Must make all arrangements for backup, security, reliability and validity</li> </ul>

In-House System with Facility Management Contract

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>* Generally the same advantages as for the in-house system</li> <li>* No need to hire operational staff or skilled analysts and programmers</li> <li>* Less need to worry about staff turnover, training and retraining</li> <li>* Overall staff costs should be less</li> <li>* Facility management firm handles all backup, security and technical aspects of the computer facility.</li> <li>* The HDPC can take on advanced functions gradually, as in-house staff becomes familiar with operations</li> </ul>	<ul style="list-style-type: none"> <li>* May have scheduling conflicts with facility management firm, allocation of staff, priorities, etc.</li> <li>* High "up-front" fixed cost of equipment</li> <li>* Must have a good contract and relationship with facility management firm</li> <li>* Rate paid for personnel will be higher</li> </ul>

Service Bureau

Advantage	Disadvantages
<ul style="list-style-type: none"> <li>* No "up-front" hardware costs</li> <li>* Lower initial costs because volumes, and therefore processing charges, will be low</li> <li>* Does not require in-house computer expertise, so no problem of staff turnover and training</li> <li>* Does not require in-house space, air conditioning, power supply, storage, etc.</li> </ul>	<ul style="list-style-type: none"> <li>* Higher per-unit processing costs</li> <li>* Must conform to operational style of the service bureau</li> <li>* Inflexibility of service bureau scheduling, general inability to insist on priorities</li> <li>* Must depend on software, backup, security and confidentiality of service bureau</li> </ul>

### Software Development Options

Software development only becomes an issue if the HDFC decides to install an in-house system or contracts for custom software developed by a service bureau.

There are few, if any, unusual features in the systems required to support the business activities and processes of the HDFC, with the possible exceptions of accounting for non-resident foreign currency deposits and specialized interest rate calculations (such as calculating an annual amortization schedule and dividing the annual payments by 12 to obtain the monthly payments). Graduated payment mortgages and interest paid on "whole share" deposits are not uncommon. The features described earlier to support the retail services and administrative functions of the HDFC would be found in any complete banking/savings and loan package used by U.S. savings and loan institutions or credit unions. From this it appears that installing or modifying an existing package might be a feasible alternative. A list of possible software suppliers for the IBM 34 and 36 series can be found in Appendix 1.

While it is possible to develop individual applications separately, ad hoc development is not a particularly good way to develop a workable system, especially in this instance, where the systems are closely related and need to be designed together. The entire system should be mapped out in advance with a good implementation plan.

The major requirement for the HDFC is that the system should be based on a data base design, with the ability to easily develop analysis and reporting programs independent of the other application subsystems.

As mentioned earlier, there are three basic alternatives available to the HDFC: purchase and install a pre-existing package; hire an internal programming staff and develop custom software internally; or contract for custom software development from an outside vendor. Each has obvious advantages and disadvantages, as outlined on the following page. The general rule of thumb in the United States is: buy a package first, if one is available; modify a package as second choice; and only as a last resort develop custom software.

Situations in Sri Lanka may mitigate a different order of preference. The availability and support of U.S.-developed software packages is limited, and access to different vendors to evaluate and test products is difficult. The tendency is much more to develop custom software, but I consider this to be a high and unnecessary risk. This field is too well known, understood and supported by existing, well-tested software to justify custom development except in rare circumstances.

TABLE VI

Use of an Existing Package	
Advantage	Disadvantages
<ul style="list-style-type: none"> <li>* Interrelationships, details and calculations are usually well developed and tested</li> <li>* Avoids "recreating" the wheel</li> <li>* Generally costs less over the long run than developing custom software</li> <li>* Vendor will provide updates and make modifications to package</li> <li>* If vendor provides source code it is possible to make internal custom modifications</li> <li>* Fewer programmers needed on staff; less risk of staff turnover; less need for training</li> <li>* System can be developed, installed and operational in much less time</li> </ul>	<ul style="list-style-type: none"> <li>* May not have some features needed by the HDFC; may have more features than needed.</li> <li>* Relatively high initial cost</li> <li>* May not be possible to modify programs to suit precise needs. May have to compromise and adjust planned operations to meet package requirements</li> <li>* Vendor may go out of business or fail to make needed modifications</li> <li>* Internal modifications will generally void any vendor warranty</li> </ul>
Internally Developed Software	
Advantages	Disadvantages
<ul style="list-style-type: none"> <li>* Can be custom-tailored to fit precise needs</li> <li>* Can modify when conditions change or new needs arise</li> <li>* Will cost less initially than buying a package</li> </ul>	<ul style="list-style-type: none"> <li>* May never work</li> <li>* All risk lies with the HDFC</li> <li>* Will tend to cost more in the long run</li> <li>* Requires a permanent, knowledgeable programming staff; staff turnover will cause problems</li> <li>* Takes a long time to develop, test and "debug"</li> <li>* "Recreating the wheel"; may not think of key elements or plan effective ties to future applications or techniques</li> </ul>
Externally Developed Custom Software	
Advantages	Disadvantages
<ul style="list-style-type: none"> <li>* Generally same advantages as with internally developed software</li> <li>* No need for permanent programming staff; no need to recruit and train an initial programming staff</li> <li>Developer will provide backup, support, maintenance and "debugging"</li> </ul>	<ul style="list-style-type: none"> <li>* Generally same disadvantages as with internally developed software</li> <li>* Generally a very high initial cost</li> <li>* Generally the client (HDFC) does not own the software</li> </ul>

### Batch versus On-Line Processing

The HDFC system could operate in either an "off-line" (batch) mode in which transactions vouchers are accumulated for several days and entered at one time into the computer in a single batch, or in an "on-line" mode in which the teller receiving a payment types the information directly into a terminal and updates the member's account immediately. The major trade-off has traditionally been one of cost: on-line systems require more memory, more equipment and more sophisticated software. On the other hand, the cost of equipment and memory has declined over time, and the value of having constantly current data have encouraged more and more financial institutions to move to an on-line processing system.

In a normal banking system, "back-office" operations -- such as posting, balancing accounts, preparing statements and other similar operations -- are performed off-line in a batch processing mode. These operations are large, slow runs that consume considerable computer resources. There is no operational or managerial reason for doing these functions on-line. Batch statement preparation and large reports.

On the other hand, management analysis and services which deal directly with customers are usually on-line. Enrolling a new member, entering a transaction (deposit or withdrawal), checking on an account balance or inquiring about the status and activity in a member's account usually require a quick turnaround time because the customer is either waiting at the counter or on the phone. Most management reports will be prepared at regular intervals during the processing cycle, but there are often management and financial analyses that are required immediately, or that require thoughtful interaction with the user to test several hypotheses or experiment with various rate structures or effects of policy changes. These should be supported on-line, or by a microcomputer dedicated specifically to that purpose.

The choice of off-line (batch) processing versus on-line processing will be determined to a great extent by the in-house versus service bureau choice. Given telecommunications problems in Sri Lanka it is unlikely that a service bureau could adequately support any on-line transaction processing.

## APPENDICES

1. Listing of General Purpose, Integrated Banking, Savings and Loan or Credit Union Software for the IBM 34, IBM 36 and WANG VS Systems
2. Descriptive Information on the IBM System/34 Banking System
3. Selected Bibliography of Helpful Publications

## APPENDIX 1

### Listing of General Purpose, Integrated Banking, Savings and Loan or Credit Union Software for the IBM 34, IBM 36 and WANG VS Systems[\*]

Computer Marketing Corp., 3331 S. 900 E., Suite 220, Salt Lake City, Utah 84106, Tel. (801)486-3401. Credit union data processing system for IBM 34/36/38 with SSP operating system, minimum of 64K memory, RPG-II. Source code available. Three systems installed. Price: \$25,000

Dexel Systems Corp., 479 N. Potomac, Hagerstown, Maryland 21740, Tel. (301)790-1177. (Subsidiary address: 8111 Courthouse Road, Vienna, Virginia 22180, Tel. (703)448-9400. Credit union share and loan accounting for IBM 34/36 with minimum of 64K memory, RPG-II or BASIC. Source code available. Sixty systems installed. Price: \$6,000 to \$15,000.

Financial Communications Services, Inc., 5520 LBJ Freeway, Dallas, Texas 75240, Tel. (214)960-8471. Mortgages, savings and loan system for IBM 36/43xx with SSP operating system, RPG-II or Cobol, and a minimum of 200K memory. Source code available. Forty-five systems installed. Price: not available.

Perfect Software Solutions, 27 Atlanta Ave., East Williston, Pennsylvania 11596. Amortizes loans, maintains repayment late charges, back office collections, handles prepayments. For the IBM 34/36 with SSP operating system, RPG-II or FORTRAN, 96K bytes of main memory. Source code available. Only 1 system installed. Price: not available.

South Trust Company, P.O. Box 2554, Birmingham, Alabama 35290, Tel. (205)599-5116. INDY Banking System. A comprehensive banking system for the IBM 34/36 with an SSP operating system, a minimum of 128K memory, RPG-II. Source code available. Nine systems installed. Price: \$40,000 to \$50,000.

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All information in this listing is from the Computerworld Buyer's Guide to Large System Software. Other sources that might be consulted are the Datapro Banking Applications series, and the Auerbach reviews of system software. I have not located any packages listed for the WANG VS series, although there must be some.



IBM System/34  
Banking System

LICENSED  
PROGRAM

Program Number: 5710 F017 F027 F037 F047  
F057 F067 F077 F087

GB30-2010-0

ACCOUNT # \_\_\_\_\_ SYSTEM # \_\_\_\_\_ CIF CUSTOMER PROFITABILITY \_\_\_\_\_ CIF909B  
3000671 FFI TX F JACORS S. NAME F JACORS  
TEL# \_\_\_\_\_  
SS# \_\_\_\_\_  
BIRTH/DT \_\_\_\_\_  
VER# \_\_\_\_\_ SEC. ATM CC UNI

ACCT NARRATIVE

HAS BANKED WITH US SINCE 1962

SYSTEM	ACCOUNTS	BALANCE	EARNINGS	COSTS	PROFIT/LOSS	YIELD RATIO
CHECKING	2	4,152	117	152	35	
SAVINGS	2	12,568	225	175	110	9
CERTIFICATES	3	2,150	178	101	77	3.6
INSTALLMENT LOAN		0	0	0	0	0
MORTGAGE LOAN	1	18,400	195	50	145	8
COMMERCIAL LOAN		0	0	0	0	0
<b>CUSTOMER TOTAL</b>	<b>8</b>	<b>37,270</b>	<b>715</b>	<b>418</b>	<b>267</b>	<b>8</b>

ENTER AN ACCOUNT # AND A SYSTEM # OR CMDZ TO END

The System/34 Banking System consists of a set of batch and online programs to support eight major banking applications: Demand Deposit Accounting, Savings Accounting, Central Information Facility, Certificates of Deposit Accounting, Installment Loan Accounting, Commercial Loan Accounting, Mortgage Loan Accounting, and the Financial In-

formation System. It produces reports required for bank operations and marketing.

The System/34 Banking System can make a significant contribution to the profitability of a small bank through improved availability of management information and analyses.

## HIGHLIGHTS

- *Multi-Bank*: The system supports up to 9 banks.
- *Account Profitability Analysis*: At any time a summarized profitability analysis can be calculated for all of a customer's accounts.
- *Interface to other banking products*: Support is supplied for the 3694, 1255 and keyed transaction entry. Interfaces to the IBM 3624 Consumer Transaction Facility FDP (5798-RDP) and the System/34 Proof of Deposit Transit System (5798-NWW) are also supplied.
- *Complete audit trail*: Every item within this system is controlled and accounted for by thorough reporting. All reports are time-stamped, dated and sequence numbered for security and audit purposes.
- *Automatic posting to FIS*: Daily general ledger summary entries are prepared automatically by the savings, loan, CD and DDA applications.
- *Automatic transfer*: The system provides for automatic transfer of funds from DDA or savings accounts to loan accounts.
- *Microfiche/paper reports*: In addition to paper reports, the system can create diskettes that can be used to create the same reports on microfiche.
- *Service flexibility*: Support is provided for NOW accounts, "sweep" accounts, overdraft banking, money market certificates, repurchase agreements, repriced loans, variable rate loans with multiple bases, loan participation, dealer reserve, escrow for mortgage loans (with escrow analysis), pricing options and more.
- *Third party audit support*: A set of programs produces audit confirmation notices and audit journals that can be used by examiners to audit any bank on the system.
- *Security*: The full security capabilities of the System/34 can be utilized with this system. In addition, the bank can specify certain accounts for which an additional security code is required before access is allowed, and can specify which workstations are allowed to do customer inquiries.
- *Service charge modeling*: The system allows the user to test the effect of service charge changes on gross service charge income using the current customer base.

- *Control codes*: For each account the bank may specify a two-digit control code. This allows flexibility in determining the content and format of management reports as well as providing the capability of supporting branches.
- *Menu-driven*: All functions are performed by selecting an option from a list of options on a display screen.

## SYSTEM DESCRIPTION

### CENTRAL INFORMATION FACILITY (CIF)

CIF maintains a customer profile which shows detail information about customers and each account they have with the bank. CIF allows full inquiry using the customers' name, last name or one of their account numbers. History information is also available. Password security is available for specified accounts. All maintenance of common information (name, address, etc.) is done once and is effective for all accounts. DDA and savings transactions can be memo-posted online. Mailing labels can be produced for each banking system, on specific accounts or by several selection criteria. Also, year-end statements can be generated showing interest paid and interest earned for all accounts. CIF is pre-requisite to all the other applications, except FIS.

### DEMAND DEPOSIT ACCOUNTING (DDA)

DDA provides all the customary accounting, recording, reports and statements associated with demand deposit accounting. In addition, collected balances are calculated according to the number of days assigned to an item, and up to three levels of float are available through the Proof of Deposit/Transit System FDP (5798-NWW). Overdraft banking, multiple service charges, multiple statement cycles, combined (uni) statements and "sweep" account processing are supported.

### SAVINGS ACCOUNTING

Savings Accounting provides daily interest calculation with optional daily compounding. The bank may choose different interest rates, payment frequency and service charge structures. Flexible saving plans can be offered by the bank through the use of plans tailored to various characteristics of bank customers. Each plan has a separate statement cycle which is specified when the plan is established or through a combined statement with DDA. Up to 26 plans may be defined. The system generates daily, month-end, quarter-end and year-end reports. Account maintenance is provided through workstation entry.



## CERTIFICATES OF DEPOSIT ACCOUNTING (CDA)

Certificates of Deposit Accounting maintains customer balances and historical information on time-oriented savings instruments. Interest earned may be paid by check, added to the balance or deposited to a savings or checking account. Interest checks can be printed from a starting date up to a through date, and may be printed up to 45 days in advance. Interest calculations for each CD are controlled by one of 26 customized CD plans. Calculations may be based on a 365 or 360 day year and compounding may be daily, monthly, quarterly, or annually. The bank can also process customer investment deposits (such as repos or money market funds sold to a customer) with the CDA system. Statements are printed at a specified frequency or may be reported on a combined statement through the CIF statement feature. IRS reporting on diskette is provided for IRA, Keough and all-saver certificates.

## INSTALLMENT LOAN ACCOUNTING (ILA)

Simple interest, add-on, repriceable, and variable rate loans are supported. Up to 99 different loan types can be specified. Flexible interest and insurance options are provided to satisfy state law variations. Support is provided for credit life, accident and health and dealer reserves. Any frequency of payment up to 99 months is supported, as well as automatic payments from DDA and savings accounts.

## MORTGAGE LOAN ACCOUNTING (MLA)

Mortgage Loan Accounting provides daily mortgage processing for accurate current balance information, posting and statistical reporting. These functions are accomplished through the use of online entry/inquiry and daily, weekly, monthly and yearly processing. 360 or 365 amortized and 365 simple interest rate methods are supported. Variable rate loans and automatic loan payments from DDA and savings are also supported. Escrow support and escrow analysis are provided.

## COMMERCIAL LOAN ACCOUNTING (CLA)

Commercial Loan Accounting allows for specifying up to 99 different types of loans. Support is provided for variable rate loans with up to five bases and loan participation. The system also accepts automatic loan payments from DDA or savings, provides loan history reports for delinquent and/or paid loans, interest based on 360 and/or 365 day basis and a Large Borrower Report.

## FINANCIAL INFORMATION SYSTEM (FIS)

The Financial Information System maintains the bank's income, expense, asset, and liability balances and keeps a history of all transactions applied to these balances for the year. The system allows 99 profit centers, monthly budgets, key ratio analyses, and interest margin rate spread. A category structure is provided to allow up to four different levels of reporting.

## SPECIFIED OPERATING ENVIRONMENT

### PROGRAMMING SYSTEMS

The following programs are required to use the various System/34 Banking System Licensed Programs:

System/34 SSP	5726-SS1
System/34 Utilities	5726-UT1
RPG II	5726-RG1

### SYSTEM REQUIREMENTS

This system was designed to execute on a System/34 with the following minimum configuration. However, volumes, performance or operational considerations may require a larger system.

S/34 with 64K memory  
64MB disk storage  
2D Diskette Drive  
Printer  
5251 Display Station (Model 11) or  
5291 Display Station or  
5292 Color Display Station

## CUSTOMER INSTALLATION TASKS

Read the Install Guide and the Guide to Daily Operations to understand the functions provided by the programs and the installation procedures. Installation must be done by a person thoroughly qualified with RPG II, Auto Report feature, the System/34 Utilities and the IBM 3694 or IBM 1255 if either of these machines is to be used.

The user must take the following steps in installing the programs:

1. Load the programs and OCL onto the System/34
2. Determine which set(s) of OCL is to be utilized (up to 9 banks may be processed using 9 sets of OCL).
3. Convert any existing master data files and possibly history files to a format described in the documentation.
4. Create each application's master files.
5. Determine and enter the appropriate table file and bank information depending on the program and operational options desired.

## MODIFICATIONS

The programs are designed to produce useful results with no modifications. Modifications, if desired, are the responsibility of the user.

## CUSTOMER RESPONSIBILITIES

The customer is responsible for the supervision, management and control of its use of these Licensed Programs, including program installation, audit controls, operation and the establishment of adequate backup plans.

## PROGRAM SUPPORT

The IBM System/34 Banking System was developed by NU COMP Systems, Inc. of St. Paul, MN.

## TELEPHONE SUPPORT

Telephone support via an 800 number is provided to each licensed user at no charge for 90 days from the date of program installation. This telephone support is limited to:

- Clarifying operating and installation instructions contained in the documentation delivered with the programs
- Reporting program and documentation defects

## ADDITIONAL SUPPORT SERVICES

NU COMP Systems, Inc. currently makes available (\*), for a fee, additional support services for these Licensed Programs:

- Telephone support after the 90 days of no-charge telephone support
- Customer education
- Program installation services on-site to include file size tailoring, procedure tailoring for multi-bank operations, user data file conversion and system operation tailoring

Contact the following for further information on these support services.

NU COMP Systems, Inc.  
1573 Selby Avenue  
St. Paul, MN 55104  
(612) 646-4507

IBM references these fee services as a convenience to its customers and makes no warranty, recommendation, endorsement, or direction as to their performance or appropriateness.

It is a user's responsibility to evaluate the appropriateness of these services in the user's environment. Specific information on these additional support services must be obtained from NU COMP Systems, Inc.

These services are not part of the IBM Licensed Programs or any other IBM offering. IBM cannot be involved in negotiations or contracts for these services, nor can IBM assume responsibility for the performance of such services.

Other companies may also offer similar services for these Licensed Programs.

- \* These offerings may be discontinued by NU COMP Systems, Inc. at any time without notice.

## PROGRAM SERVICES

Central Service:

Available until December 31, 1985

Local Service: Not Applicable

Local Assistance: Not Applicable

Designated IBM Representative: Not Applicable

Central Service is available only to licensed users of this program in the United States and Puerto Rico.

Warranted: No

If, within the service period, a problem is encountered which user diagnosis indicates is caused by a defect in the Licensed Program, documentation may be submitted to:

IBM Corporation  
P.O. Box 2150  
Atlanta, GA 30055  
Attn: R. Reith, 89D

with a copy to

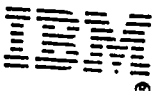
IBM Corporation  
Released Product Coordinator  
Department 20N/89D  
P.O. Box 2150  
Atlanta, Georgia 30055

Through the program developers IBM will, without additional charge, respond to a reported defect in the current unaltered release of the Licensed Program which is operated in the Specified Operating Environment by issuing known defect correction information to the customer reporting the problem, and/or issuing corrected code or notice of availability of corrected code. In addition IBM will, within the service period, issue updates to these Licensed Programs, with or without charge, to maintain their currency with applicable Federal banking regulations. However, IBM does not guarantee service results or represent or warrant that all defects will be corrected or all updates provided.

All charges shown are provided for information and are subject to change.

*This program is distributed on an "as is" basis, without warranty either express or implied. Successful implementation depends solely on the customer's ability to integrate each program into the total inventory of "in-house" produced programs, including the acceptance of full maintenance responsibility. While each offering has been reviewed by IBM for its transferability and maintainability, no assurance of successful installation can be given.*

IBM System/34 Banking System



International Business Machines Corporation  
P.O. Box 2150, Atlanta, Georgia 30055

Printed in U.S.A.  
GB30-2010-0

## ORDERING INFORMATION

These programs and their related documentation (except the Programmer's Reference Manuals) are scheduled to be available December 3, 1982. Contact your local IBM Branch Office to order these programs.

References in this publication to IBM products, programs, or services do not imply that IBM intends to make these available outside the United States.

### BASIC MATERIAL

Licensed Documentation: There is no Licensed Documentation for this Licensed Program.

Unlicensed Documentation: Programmer's Reference Manuals (available from Mechanicsburg at a charge after January 28, 1983).

5710-F01	SB30-2015	Central Information Facility
5710-F02	SB30-2016	Demand Deposit Accounting
5710-F03	SB30-2017	Savings Accounting System
5710-F04	SB30-2018	Certificates of Deposit Accounting
5710-F05	SB30-2019	Installment Loan Accounting
5710-F06	SB30-2020	Commercial Loan Accounting
5710-F07	SB30-2021	Mortgage Loan Accounting
5710-F08	SB30-2022	Financial Information System

With program 5710-F01 and 5710-F08, one copy each of the following unlicensed documentation.

Guide to Daily Operations	SB30-2013
Install Guide	SB30-2012
Operator's Run Book	SB30-2014

Licensed Machine Readable material: One copy of the machine readable material containing source code, object code, procedures and data files.

To order this Basic Material use the following Specify Number:

Specify Number	Description	User Volume Required
9049	Diskette 2D @1024 BPS	None

Unless a later ship date is requested, orders will be scheduled for shipment the Friday of the week following AAS order entry, but not before December 3, 1982.

Payment Period: One time charge

Type	Program	Charge
5710	F01	\$10,000
5710	F02	\$ 9,375
5710	F03	\$ 8,125
5710	F04	\$ 6,875
5710	F05	\$ 8,125
5710	F06	\$ 6,875
5710	F07	\$ 6,875
5710	F08	\$ 6,250

Location license does not apply

Installation license does not apply

A separate license is required for each designated machine on which the licensed program materials will be used except as otherwise provided by IBM.

Testing period: One month

### CHARGES FOR ADDITIONAL COPIES OF DOCUMENTATION

Unlicensed Documentation: The Programmer's Reference Manuals. Order from Mechanicsburg after January 28, 1983. Prices to be announced.

The Guide to Daily Operations. Order from Mechanicsburg after December 3, 1982.

Form Number	Price/Copy
SB30-2013	\$91

The Operator's Run Book. Order from Mechanicsburg after December 3, 1982.

Form Number	Price/Copy
SB30-2014	\$28

The Install Guide. Order from Mechanicsburg after October 29, 1982.

Form Number	Price/Copy
SB30-2012	\$24

General Documentation: Order after December 3, 1982 from Mechanicsburg.

Form Number		Price/Copy
GB30-2010	Availability Notice	No Charge
GB30-2011	Report Brochure	No Charge

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# INTRODUCTION

## SYSTEM FEATURES

The System/34 Banking System consists of batch and online programs which support eight major bank applications. It produces reports regularly required for bank operations and marketing. The more noteworthy features of the system are described below:

*Multi-Bank:* This system supports up to 9 banks. All system and report options are specified by each bank, allowing each to take full advantage of the flexibility built into the system.

*Account Profitability Analysis:* On request, a summarized profitability can be calculated for all of a customer's accounts and displayed.

ACCOUNT #	SYSTEM #	CIF CUSTOMER PROFITABILITY					CIF909B
3000671	FELIX F JACOBS	S. NAME	F JACOBS	TEL#			
		SS#		BIRTH DT			
		VER	SEC	ATM	CC	UNI	
<u>ACCT NARRATIVE:</u>							
[REDACTED]							
SYSTEM	ACCOUNTS	BALANCE	EARNINGS	COSTS	PROFIT/LOSS	YIELD RATIO	
CHECKING	2	4,152	117	152	35-	8-	
SAVINGS	2	12,568	225	115	110	9	
CERTIFICATES	3	2,150	178	101	77	3.6	
INSTALLMENT LOAN		0	0	0	0	0	
MORTGAGE LOAN	1	18,400	195	50	145	8	
COMMERCIAL LOAN		0	0	0	0	0	
<b>CUSTOMER TOTAL</b>				418			
ENTER AN ACCOUNT # AND SYSTEM # OR CMD/7 TO END							

This display allows the user to assess the profitability of a customer. Information about the customer appears on the top of the screen, account profitability for each application is shown and is then summarized on the bottom line.

*Interface to Other Banking Products:* The system allows much flexibility in hardware and services selection. Support is supplied for the IBM 3694, 1255 and keyed transaction entry. An interface to the IBM 3624 support FDP (5798-RDP) is also supplied.

*Service Flexibility:* Support is provided for NOW accounts, sweep accounts, overdraft banking, money market certificates, repurchase agreements, repriced loans, variable rate loans with multiple bases, loan participation, dealer reserve, escrow for mortgage loans (with escrow analysis), pricing options and more. These give the bank flexibility in choosing the services it can offer and the pricing of those services.

*Complete Audit Trail:* Every item within the system is controlled and accounted for by thorough reporting. All reports are time-stamped, dated and sequence numbered for security.

*Automatic Posting to the Financial Information System:* Daily general ledger summary entries are prepared automatically by the savings, loan, CD and DDA applications.

*Automatic Transfer:* The system provides for automatic transfer of funds to or from DDA, savings accounts and automatic loan payment accounts.

*Microfiche/Paper Report:* The System/34 Banking System provides the ability to create microfiche input as well as paper reports. The microfiche input is transferred to diskette to be used for reproducing the reports on microfiche.

*Third Party Audit Support:* A set of programs produces, for all or selected accounts, audit confirmation notices and audit journals that can be used by examiners to audit any bank on the system. Notices can be printed requesting either negative or positive response.

*Security:* The full security capabilities of the System/34 can be utilized with this system. In addition, the bank can specify accounts for which an additional security code is required before access is allowed.

*Service Charge Modeling:* The system allows the user to test the effect of service charge changes on gross service charge income, using the current customer base. This allows the bank to test changes and see the effect of those changes on customers before deciding which changes to make.

*Control Codes:* For each account, the bank may specify a two-digit control code. This allows management analysis of accounts grouped in whatever fashion is desired by the bank. In addition, all bank recap control reports contain totals by control code.

*Other features include:*

- Eased reentry of MICR rejects
- Expansion room in all master files
- Support for six- and/or seven-day week
- Unlimited number of accounts per customer
- Existing transaction codes and account numbers (up to 10 digits) can be used
- Reprinting of selected vital reports in the event of loss or misrouting
- Nine-digit zip code
- Combined (uni) statements as a bank option

*Menu Driven:* All functions performed within the System/34 Banking System are initiated by simply choosing an option from a list of options on a display screen. This makes the system easier to use.

COMMAND	MENU: QUIRY1	C1
1. CIF INQUIRY	13. ILA ACCOUNT INQUIRY	
2. CIF SHORT NAME ACCESS	14. ILA HISTORY INQUIRY	
3. CIF CUSTOMER PROFITABILITY	15. CLA ACCOUNT INQUIRY	
4. DDA ACCOUNT INQUIRY	16. CLA HISTORY INQUIRY	
5. DDA HISTORY INQUIRY	17. MLA ACCOUNT INQUIRY	
6. DDA RESTRICTION INQUIRY	18. MLA DOLLAR HISTORY INQUIRY	
7. SAV ACCOUNT INQUIRY	19. MLA NON-DOLLAR HISTORY INQUIRY	
8. SAV HISTORY INQUIRY	20.	
9. SAV RESTRICTION INQUIRY	21. FIS ACCOUNT INQUIRY	
10. CDA ACCOUNT INQUIRY	22.	
11. CDA BY CERTIFICATE NUMBER	23. MEMO POST	
12. CDA HISTORY INQUIRY	24. *** RETURN TO MASTER MENU	

ENTER NUMBER, COMMAND, OR OCL.

READY

The menu approach to running the system allows the operator to start jobs by keying in the number of the job required. Here, for example, CLA History Inquiry is done simply by keying in the number 16 and pressing ENTER.



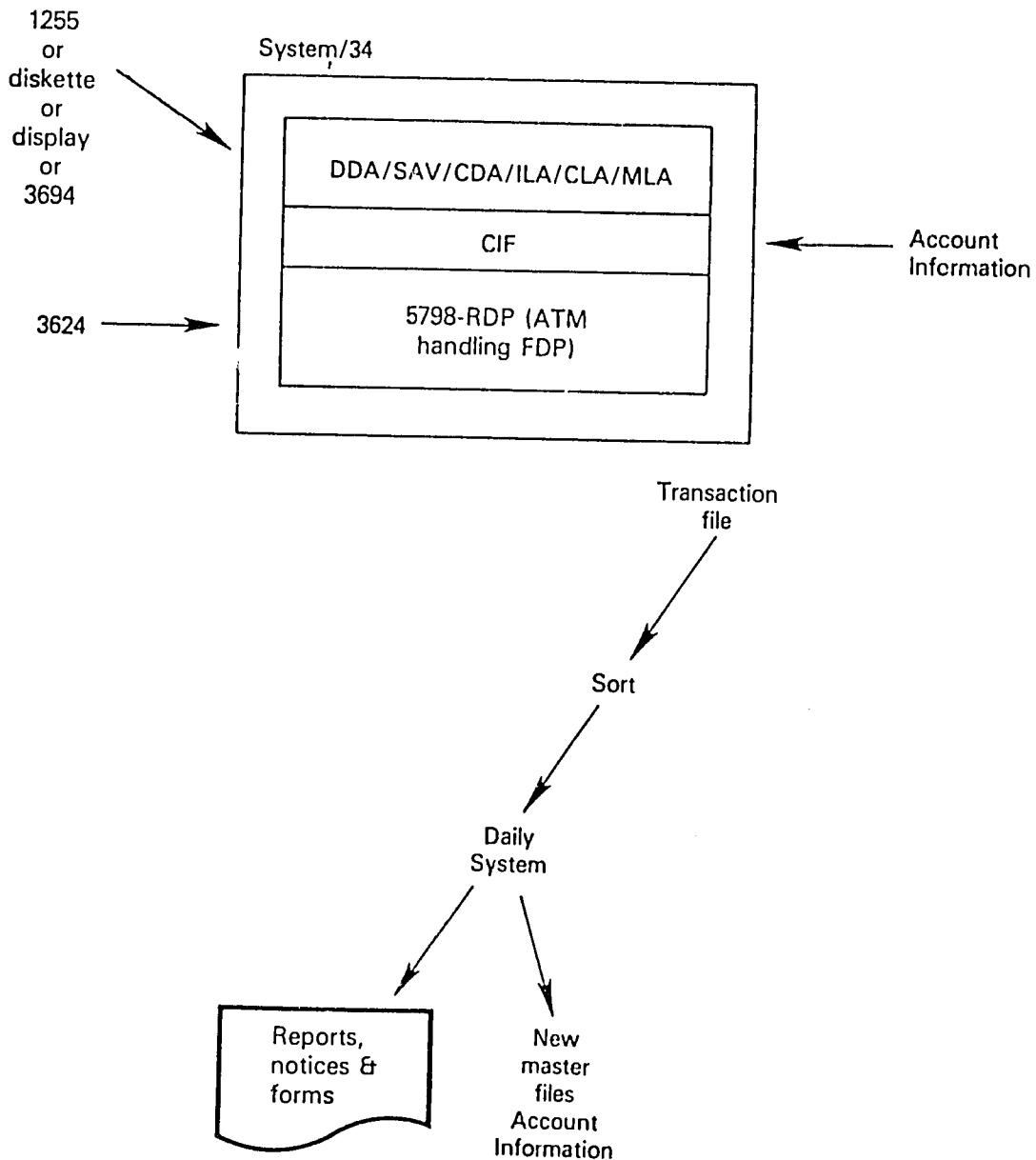
## PROCESSING DESCRIPTION

The overall function of the System/34 Banking System is to provide financial account processing to support key application areas for financial institutions.

The figure below is an overall flow diagram for the system showing the interfaces between applications.

Transactions, maintenance, inquiries and memo posts are entered during the banking day. All except transactions are completed as soon as they are entered. The transactions (i.e., from proof, ACH, etc.) are stored in a transaction file which is posted to the accounts at the end of the day.

Applications interface with each other through the CIF application for such functions as automatic payments and transfers and automatic posting to FIS.



## APPLICATION FEATURES

The System/34 Banking System application programs may be used individually or collectively depending on a bank's requirements. Each of the eight applications available on the system has unique features.

### CENTRAL INFORMATION FACILITY (CIF)

*Full Customer Inquiry:* The bank's personnel can quickly see all of a customer's relationships with the bank if they know the customer's name, last name or one of his/her account numbers. All information about an account is available, including history. Password security is available for specified accounts to restrict access to them.

*Central Maintenance:* All maintenance of common information (name, address, etc.) is done once and is immediately effective for all accounts.

*Memo Post:* Tellers can memo-post DDA and savings transactions online. All subsequent inquiries will reflect the transaction. This may be done in conjunction with memo-posting being done for IBM 3624 automated tellers.

*Cross Selling of System Analysis:* Through CIF, several management reports can highlight potential customers or areas for product promotion. For example, all customers age 62 and older may be eligible for a special savings program, or you may want to market tax-deferred instruments to those with savings balances above a certain amount.

*Label Processing:* Mailing labels can be produced for each banking application, on specific accounts, or by several selection criteria.

*Zip Code Analysis:* This capability can help you in analyzing the account base or in planning expansion. The report includes both the balance and the types of accounts.

*Other features of the CIF application include:*

- Ability to install as a standalone application
- ACH input on diskette supported
- Year-end customer statement reporting interest paid and interest earned for all accounts
- CIF is a prerequisite to installing DDA, Savings, Certificates of Deposit and the loan applications.

## DEMAND DEPOSIT ACCOUNTING (DDA)

*Collected Balance Analysis:* Collected balances are calculated according to the number of days assigned to an item. Up to three levels of float are available through the Proof of Deposit/Transit System FDP (5798-NWW). Float fields may also be used when calculating activity service charges.

*Overdraft Banking:* Fixed or as needed advances are provided with up to three levels of interest on advances. Year-end interest notices for customers with overdraft protection may be printed at the bank's option.

*Multiple Service Charge Capabilities:* The user bank has the option of either automatically or manually charging an account for NSF, overdrafts, stop payments, or inactive accounts. Multiple service charge calculations are available for each bank using the system.

*Multiple Statement Cycles:* Up to 99 statement cycles are supported and multiple cycles are permitted per day.

*Combined Statements:* The user bank can offer its customers a combined statement that includes DDA, savings accounts, CD's and loans. DDA information may be in date sequence or check serial number sequence.

*Other features* of the DDA application include:

- Generation of Audit Confirmations with either positive or negative responses requested
- Uncollected funds reporting
- 1099 interest reporting for NOW accounts on year-end account statement
- Account service charges analysis for customer and bank management
- "Sweep" account processing
- Service charge modeling

## SAVINGS ACCOUNTING

*Statement Flexibility:* Statements can be printed at any frequency, e.g. quarterly, semi-annually or yearly. Monthly statements are also supported to comply with Regulation E.

*Multiple Savings Plans:* Up to 26 different savings plans are supported, each with its own interest rate, service charge, compounding frequency, etc. The system supports statement savings, Christmas Club, passbook, and other savings plans.

*1099 Reporting:* 1099 interest is reported on the year end customer statement. 1099's are prepared on diskette for ease of submission to the IRS.

*Other features* of the Savings Accounting application include:

- Interest compounded daily or at statement date
- Audit Confirmations generated on request with either positive or negative responses requested
- Tax code to permit grouping of various accounts for tax reporting
- Service charge modeling
- Service charges may be charged by reducing interest paid

## CERTIFICATES OF DEPOSIT ACCOUNTING (CDA)

*Variable Payment Methods:* Interest may be paid on individual accounts by adding to current balance, transferring to a DDA or savings account or by printing a check.

*Plan Flexibility:* Accounts may be compounded daily, quarterly, or yearly on a 360 or 365 day basis. Provisions are made for money market certificates, tax exempt certificates, automatic and non-renewable certificates and re-purchase agreements. Up to 99 different types of CD's are supported.

*Account Analysis:* Reports are produced monthly reflecting CD yield and margins for each type of CD. Transaction history and account information on an individual account can be requested at any time.

*Customer Communications:* Interest paid, renewal and maturity notices can be printed as well as 1099 interest reporting (on the year end statement) and audit confirmation notices.

*Other features of the CD application include:*

- Checks can be produced on demand for a specified period
- Audit confirmations can be generated on request
- Accrued interest is shown on year-end statement
- Large Balance Report automatically printed
- Continuous variable rate CD's are supported, as well as variable rate at renewal
- IRS reporting on diskette for IRA, Keogh, and all-saver certificates

## INSTALLMENT LOAN ACCOUNTING (ILA)

*Plan Flexibility:* Simple interest, add-on, repriced, and variable rate loans are supported. Up to 99 different plans can be specified. Flexible interest and insurance options are provided to satisfy state law variations and support is provided for credit life, accident and health, and dealer reserve.

*Payment Flexibility:* Any frequency of payment up to 99 months is supported.

*Automatic Loan Payments:* Payments may be made automatically from a customer's DDA or savings account.

*Other features* of the ILA application include:

- Credit life and A&H rebatable under rule of 78's or level method
- Dealer earnings rebatable under rule of 78's or simple interest method
- Optional loan history report available for delinquent or paid loans
- Audit confirmation notices are available on request
- Variable rate loans may use up to five bases

## COMMERCIAL LOAN ACCOUNTING (CLA)

*Plan Flexibility:* Up to 99 different types of loans may be specified. Support is provided for loan participation and for variable rate loans with up to five bases.

*Payment Flexibility:* Support includes single payment loans, interest only, principal plus interest and payments including interest.

*Reporting:* Regular reports are provided daily, monthly and yearly. Management reports may be printed in detail or summarized by customer.

*Other features* of the CLA application include:

- Provision for loan participation
- Automatic loan payments for DDA or savings
- Loan history report for delinquent and/or paid loans
- Audit confirmation notices are available on request
- Flexible payment frequency up to 99 months
- Interest based on 360- and/or 365-day basis
- Large Borrower' Report automatically generated

## MORTGAGE LOAN ACCOUNTING (MLA)

*Plan Flexibility:* Up to 99 different loan types may be specified. Three different calculations for interest are provided — 360 day amortized, 365 day amortized and 365 day simple interest. Provisions are made for loan participations and variable rate loans with up to 5 bases.

*Escrow Support:* Escrow is supported for mortgage loans and escrow analysis is provided.

*Customer Communications:* Inquiry into account information and history is provided for response to customer inquiries. Advance notices of payment due, delinquency notices, interest reporting and audit confirmation notices are all supported.

*Other features* of the MLA application include:

- Detail reporting on paid-off or delinquent loans, remittance reports, and more
- Delinquency report by loan officer
- Loans are easily extended
- Interest may be paid on escrow
- Automatic payment from DDA or savings



## FINANCIAL INFORMATION SYSTEM

*Required Reporting:* The Statement of Condition and income statements are automatically generated daily.

*Report Flexibility:* The Statement of Condition is available in three formats. Budgeting is available as well as current-year comparisons to last year and to budget. A "category" structure is used to provide different levels of reporting.

*Automatic Entries:* Automatic entries from other applications are created and these can be reviewed and/or modified. At year end, all income and expense accounts are automatically closed.

*Other features of the FIS application include:*

- Transaction history retained for current calendar year, then saved on diskette
- Reports compare current year actual to last year actual and current year budget
- Inquiry into an account balance history can be seen numerically or graphically
- Graphic budget inquiries in color on 5292 Color Display Station

## APPLICATION DESCRIPTIONS

### CENTRAL INFORMATION FACILITY

CIF allows the bank to tie together all of a customer's relationships with the bank. This can allow the bank's employees to give more personal service to each customer.

Displays allow bank employees to access a customer's account information by name, short name, part of a name or by one of his/her account numbers. Information and history are immediately available on any account of that customer from the six customer accounting applications.

All maintenance of standard information, such as name and address, is accomplished by a single entry to the CIF application. That information is then shared by the other applications.

Paper flow can be reduced through the automatic entry system of CIF which handles automatic transfers between DDA and savings, automatic loan payments and ACH items.

### CIF REPORTS

CIF can produce reports such as:

*Customer Profitability Report:* This report allows analysis of customers' profitability.

*Balance/Transaction Statistics Report:* Lists the daily balances and transaction counts for all applications for the previous month.

*Loan Calculator:* This program allows you to use the display screen like a calculator. Given the loan amount, date, payment date, interest rate, term and insurance rates, it shows the monthly payment and other disclosure information. You can then print the screen to have a hard copy record.

FUNCTION	LOAN CALCULATOR MONTHLY PAYMENT ON AN INSTALLMENT LOAN		CIF910C
INPUT FIELDS.....		RESULT OF CALCULATION.....	
AMOUNT FINANCED	(9999999.99)	AMOUNT FINANCED	200,000.00
LOAN DATE	(MMDDYY)	LOAN DATE	8/24/82
FIRST PAYMENT DATE	(MMDDYY)	FIRST PAYMENT DATE	9/24/82
INTEREST RATE	(99.999)	INTEREST RATE	14.500
CREDIT LIFE RATE/100	(9.9999)	CREDIT LIFE RATE/100	.0000
A&H RATE/100	(9.9999)	A&H RATE/100	.0000 -
TERM IN MONTHS	(999)	TERM IN MONTHS	360
		AMOUNT FINANCED	200,000.00
		CREDIT LIFE AMOUNT	.00 -
		A&H AMOUNT	.00 -
		SUB-TOTAL	200,000.00 -
		FINANCE CHARGE	681,679.60
		TOTAL LOAN AMOUNT	681,679.60
		MONTHLY PAYMENT	2,449.11
KEY ANOTHER LOAN AND PRESS ENTER, ELSE CHANGE FUNCTION TO 'I'			CMD/7 END

## DEMAND DEPOSIT ACCOUNTING (DDA)

DDA has several processing options, as do all of the other applications. These options allow individual banks to customize the system to meet their needs. They can offer NOW accounts, overdraft protection, multiple service charge options defined by the bank, combined statements and cycle accounts into one of up to 99 cycles.

The online portion of DDA allows the bank to find all information about an account easily, including history.

Account analysis reports are provided to assist in pricing decisions.

Banks using this system can assign up to 3 levels of float on foreign items. Uncollected funds reporting allows the bank to analyze the effect of these uncollected funds.

## DDA REPORTS

The DDA application can produce reports such as:

**Sweep Account Report:** This daily report lists all the accounts which qualify to be swept the next morning. This allows the institution to review these accounts and make changes prior to sweeping.

**DDA File Listing:** The file listing allows the user to get a list of all DDA accounts. It can be printed by account number, balance, cycle, control number, officer, plan, or name. A sample is shown below.

DDA790 5.0060		YOUR BANK NAME		DDA - FILE LISTING BY CYCLE :						BANK DATE 03/30/82		PAGE NO. 1	
ACCOUNT NUMBER	S-NAME	CTL #	CURRENT BALANCE	AVAILABLE BALANCE	--- LAST DEPOSIT AMOUNT	--- DATE	LAST TRANS	OPEN DATE	---STAT--	S W S A T I S L N	DATE RUN 08/28/82	TIME 00.55.15	INTEREST OFF
10-073-0	F AMNOT	11	2,047.14	2,047	200.00	03/18/82	03/29/82	03/75	9	1 A A C M O Y			8.41
10-170-9	A AVIS	01	319.06	319	806.20	03/03/82	03/31/82	03/75	17	1 A G W N O Y			.00
10-091-7	M BACH	01	1,282.00	1,282	529.00	03/31/82	03/31/82	03/75	13	1 A G W N O Y			.00
10-112-7	M BARNES	01	1,461.14	1,461	419.20	03/03/82	03/31/82	03/75	1	1 A G W N O Y			.00
10-113-5	M BARNICK	01	1,413.46	1,413	669.13	03/03/82	03/24/82	03/75	7	1 A G W N O Y			.00
10-139-7	V BUCK	01	261.88	264	329.20	03/16/82	03/31/82	03/75	15	1 A G W N O Y			.00
10-152-2	M BELL	02	12,231.01	12,232	50.20	03/04/82	03/31/82	03/75	4	1 A J C M O Y			53.59
10-156-5	A BENJAMIN	11	10,570.28	10,570	916.70	03/03/82	03/30/82	03/75	14	1 A A W N O Y			43.37
10-158-1	C BENJAMIN	11	6,725.51	6,024	652.40	03/30/82	03/30/82	03/75	8	1 A A C M O Y			25.10
10-163-7	M BENTON	02	495.06	495	555.50	03/03/82	03/29/82	03/75	23	1 A I U N O Y			.00
10-176-8	E BERWACO	01	589.22	589	229.20	03/03/82	03/03/82	03/75	1	1 A G W N O Y			.00
10-214-6	M BIECK	01	11.95	34	25.20	03/30/82	03/30/82	03/75	10	1 A G W N O Y			.00
10-230-6	L BLOTT	01	1,069.03	1,070	115.96	03/11/82	03/31/82	03/75	23	1 A G W N O Y			.00
10-277-1	I BRUNBERG	01	312.86	313	227.65	03/11/82	03/26/82	03/75	4	1 A G W N O Y			.00
10-360-5	K BUTLER	11	6,134.11	6,133	67.20	03/26/82	03/31/82	03/75	29	1 A A C N O Y			25.55
10-354-4	M BROWN	01	1,725.75	1,725	55.20	03/29/82	03/30/82	03/75	28	1 A G W N O Y			.00
10-427-7	M BIPES	02	2,011.44	2,011	545.20	03/03/82	03/30/82	03/75	13	1 A G W N O Y			.00
10-465-2	F CLARK	01	585.87	586	271.10	03/03/82	03/30/82	03/75	1	1 A G W N O Y			.00
11-002-3	M STICKLE	01	14.26	15	20.00	03/30/82	03/30/82	03/75	1	1 A G W N O Y			20.57 LMS
11-009-0	A BENTZ	01	791.07	791	300.00	03/04/82	03/30/82	03/75	1	1 A G W N O Y			.00
11-019-7	A BUMMER	01	834.74	835	149.60	03/03/82	03/24/82	03/75	25	1 A G W N O Y			.00
11-079-5	C BRUNDSON	02	1,458.69	1,459	189.14	03/31/82	03/31/82	03/75	2	1 A I C N O Y			.00
11-106-9	A BROWN	01	424.54	424	262.20	03/03/82	03/26/82	03/75	3	1 A G W N O Y			.00
11-120-2	G ALLEN	02	6,738.41	6,738	558.00	03/30/82	03/31/82	03/75	10	1 A A C N O Y			25.21
11-123-7	L BRUNDSON	11	6,131.25	6,040	1,099.85	03/30/82	03/30/82	03/75	7	1 A A C N O Y			21.04
11-308-0	R ENGLL	01	60.22	60	141.20	03/03/82	03/31/82	03/75	17	1 A G W N O Y			.00
11-388-1	O ENGLL	02	3,071.11	3,071	209.00	03/26/82	03/30/82	05/75	19	1 A J C N O Y			15.14
11-523-8	J AMEIS	02	1,061.97	1,064	811.50	03/03/82	03/26/82	04/76	18	1 A I C N O Y			.00
11-613-7	T CARLSON	01	11,585.86	11,586	6,257.40	03/03/82	03/31/82	01/77	15	1 A G W N O Y			.00
11-652-1	G BRUNBERG	01	641.26	641	209.00	03/16/82	03/16/82	03/77	4	1 A G W N O Y			.00
11-679-1	M DWELL	01	96.25	98	259.56	03/03/82	03/25/82	06/77	13	1 A G W N O Y			.00
11-708-1	I ERICKSON	01	2,469.88	618	2,175.07	03/11/82	03/31/82	08/77	7	1 A G W N O Y			.00
11-785-6	A ANDERSON	01	62.09	62	2,179.00	03/03/82	03/30/82	02/78	17	1 A G W N O Y			.00
11-797-0	F DAVIS	11	2,130.01	2,131	401.30	03/03/82	03/31/82	04/78	16	1 A C N O Y			8.79
11-871-1	H DILLEY	01	527.91	528	311.94	03/30/82	03/31/82	08/78	17	1 A G W N O Y			.00
12-017-6	J HURSTADT	02	5,713.31	5,713	175.00	03/05/82	03/30/82	06/79	21	1 A J C N O Y			26.49
12-025-6	E HEINER	01	352.83	353	339.00	03/03/82	03/31/82	01/79	10	1 A G W N O Y			.00

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*DDA Account Inquiry:* This information is available on the display screen and may be printed at any time. It gives the user quick access to all the account information for any DDA account.

```

FUNCTION F ACCOUNT # 0000061022      DDA ACCOUNT INQUIRY      DDA901B
06-102-2 NANCY BALDER
██████████ ██████████ ██████████ ██████████
S. NAME N BALDER
TEL# ██████████ ██████████
BIRTH ██████████
VER ██████████ SEC ATM CC UNI 0

CURR BALANCE 6,400.57 STATUS A ACTIVE LAST DEPOSIT
LINE AVAIL .00 CONTROL # 11 AMOUNT 466.67
SUB-TOTAL 6,400.57 CYCLE # 08 DATE 3/30/82
HOLD AMOUNT .00 PLAN A LAST $ TRAN DT 3/30/82
FLOAT DAY 1 273.04 S.C. CODE W LAST MAINT DT
FLOAT DAY 2 .00 TAX TYPE LAST STMT DT 2/26/82
AVAIL BALANCE 6,127.53 OFFICER
IMMED CREDIT .00

--LAST 4 QTRS AVG BALANCES, OD DAYS AND TIMES NSF--
CURRENT 12/31/81 9/30/81 6/30/81
BAL 5,887 13,071 7,798 3,554
DAYS OD
# NSF

4 QTRS AVG BAL 7,582

PRESS ENTER FOR MORE, ELSE CHANGE FUNCTION (I,GC,GN,GV,GH,GX) CMD/7 TO END
  
```

*DDA History Inquiry:* This information is available on the display screen and may be printed at any time. All account history since the last statement is shown, as well as a running balance.

```

FUNCTION F ACCOUNT # 0000061022      DDA HISTORY INQUIRY      DDA902B
D FIRE
DATE XTC/ITC SERIAL # AMOUNT BALANCE
2/26/82 BEGINNING BALANCE 26,319.05
3/01 35 35 193.63 26,512.68
3/01 60 60 3117 21,000.00 5,512.68
3/02 60 60 3128 80.00 5,432.68
3/02 60 60 3122 96.00 5,336.68
3/02 60 60 3130 96.00 5,240.68
3/02 60 60 3132 120.00 5,120.68
3/04 60 60 3120 104.00 5,016.68
3/04 60 60 3129 112.00 4,904.68
3/04 60 60 3124 120.00 4,784.68
3/05 60 60 3118 120.00 4,664.68
3/08 60 60 3126 80.00 4,584.68
3/08 60 60 3127 92.00 4,492.68
3/08 60 60 3131 100.00 4,392.68
3/09 60 60 3107 84.00 4,308.68
3/09 60 60 3123 84.00 4,224.68
3/10 60 60 3125 92.00 4,132.68
3/19 60 60 3121 108.00 4,024.68

PRESS ENTER TO CONTINUE, ELSE CHANGE FUNCTION (E,I,R,GA,GX,GC) CMD/7 TO END
  
```

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## SAVINGS ACCOUNTING

Savings Accounting is capable of handling interest compounded daily or on the statement date. The saving application also provides daily accrual and posting of interest to the general ledger.

Regular statements can be printed at any frequency, such as quarterly, semi-annually or yearly. Optional montly statements can be printed to comply with Regulation E. Request statements can be printed at any time.

Multiple interest rates up to five digits are supported. Up to 99 holds can be placed on one account. Up to 26 savings plans can be defined by the bank.

1099 interest is reported on the year-end customer statement as well as prepared on diskette for IRS submission.

## SAVINGS REPORTS

The Savings application provides reports such as:

*Accounts with Balances in Range:* This report lists all accounts with an average, collected or ledger balance between ranges specified when the report is requested.

SAV720 YOUR BANK NAME S-0067		SAVINGS - ACCOUNTS WITH AVERAGE BALANCES 200.00 TO 400.00						BANK DATE 03/30/82 PAGE NO. 1 DATE RUN 08/28/82 TIME 01.12.54		
ACCOUNT NUMBER	S-NAME	LEOGER BALANCE	COLLECTED BALANCE	A AVG BAL	OPEN DATE	LAST TRAN DATE	OFF	S T	P L	S C
60-261-8	BUACHTERA	577.83	577.83	395	11/79	03/31/82		A	E	C
60-269-3	LOGAN L U*	244.91	244.91	260	11/79	03/17/82		A	A	C
60-275-7	MKREIDLER	211.07	211.07	367	11/79	02/01/82		A	A	C
62-436-6	RPELAVA	914.20	914.20	278	02/82	03/31/82	LBC	A	A	C
90-022-8	RBAAR	909.69	909.69	344	07/70	03/31/82		A	E	C
90-043-9	HBAKLEN	312.19	312.19	292	07/70	12/31/81		A	A	C
94-294-6	PDLKA DUT	79.89	79.89	275	06/74	03/25/82		A	A	C
94-317-2	LBARRY	385.08	385.08	345	06/74	03/16/82		A	A	C
94-325-2	PCHARLES	212.90	212.90	205	06/74	10/15/79		I	A	C
98-560-3	HORTON MAC	470.73	470.73	310	03/78	03/17/82		A	A	C
98-595-4	WRISSAHL	6.41	6.41	334	04/78	02/27/82		A	A	C

11 ACCOUNTS SELECTED  
... END REPORT SAV720

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# CERTIFICATES OF DEPOSIT ACCOUNTING

CDA processes both automatic renewable and non-renewable certificates as well as money market and tax-exempt CD's. The term for certificates may be days or months. Interest is accrued and posted to the general ledger daily. Interest may be compounded, paid by check or deposited to a DDA or savings account. Compounding can be daily, quarterly or yearly. Interest may also be calculated on either a 360 or 365 day basis.

Provision is made for the specification of up to 99 types of CD's. Repurchase agreements are also supported. A report can be produced showing CD yield and margins by month for each CD class.

## CDA REPORTS

Some reports produced by CDA are:

*Report of Interest Paid:* This report shows all interest paid and by what method (add to balance, by check or transfer to another account.) If the amount is transferred, the application and account number are printed.

*Automatic Rate Changes:* Reports the new and old rates on renewal and variable rate loans.

*File Listing by Large Holder:* This report lists each CDA customer, detailing the total amount of CDs held. It is printed in descending order from the largest holder.

CDA770 5.0068		YOUR BANK NAME		CDA - FILE LISTING BY LARGE HOLDER CASHED ARE NOT PRINTED										BANK DATE 03/30/82		PAGE NO. 1						
														DATE RUN 08/28/82		TIME 01:15.49						
ACCOUNT NUMBER	CD #	S-NAME	CTL	P	T	S	#	L	X	T	TERM	RATE	VALUE	ACCPLED INTEREST	--- NERT DATE	INTEREST AMOUNT	--- PAY F M DATE	MATURITY DATE	1ST ISSUED	--- OFF- REPOS	--- LST DATE	ACTIVITY C
08002-19	28970	C ELMQUIST	01	S	O	A	910	12.375	300,000.00	9,155.11	03/30/82		9,255.82	T	3	03/30/82	17/29/81	JAD.	12/30/81			N
08002-19	28977	C ELMQUIST	01	S	O	A	900	15.000	500,000.00	8,219.15	05/18/82		18,493.15	T	3	05/18/82	02/17/82	JAD.	02/17/82			N
08002-19	28980	C ELMQUIST	01	S	O	A	640	13.000	200,000.00	2,219.45	04/30/82		4,558.50	T	3	04/30/82	02/25/82	JAD.	02/25/82			N
08002-19	28981	C ELMQUIST	01	S	O	A	640	13.000	120,000.00	1,361.67	04/30/82		2,735.34	T	3	04/30/82	02/25/82	JAD.	02/25/82			N
08002-19	28985	C ELMQUIST	01	S	O	A	900	13.250	200,000.00	1,234.25	06/10/82		6,534.25	T	3	06/10/82	03/12/82	OHJ.	03/12/82			N
*****														YTD INTEREST								
08002-35	28966	OSVOLD CO	01	S	O	A	1200	12.100	286,000.00	9,765.53	04/15/82		11,377.32	T	3	04/15/82	12/16/81	JAD.	12/16/81			N
08002-35	28984	OSVOLD CO	01	S	O	A	600	12.750	200,000.00	1,467.17	05/07/82		4,191.78	T	3	05/07/82	03/08/82	OHJ.	03/08/82			N
*****														YTD INTEREST								
08694-35	30926	T MILAN	01	U	O	A	1820	12.100	10,000.00	23.18	04/21/82		95.35	M	1	06/22/82	12/23/80			12/22/81		R
08694-35	30927	T MILAN	01	U	O	A	1820	12.000	10,000.00	21.18	04/21/82		95.35	M	1	06/22/82	12/23/80			12/22/81		R
08694-35	30944	T MILAN	01	U	O	A	1820	12.000	11,544.30	36.70	06/23/82		695.81	T	3	06/23/82	12/24/80			12/23/81		R
08694-35	31104	T MILAN	01	U	O	A	1820	13.152	12,037.70	295.03	07/22/82		801.44	T	3	07/22/82	01/22/81			01/21/82		R
08694-35	31118	T MILAN	01	U	O	A	1820	13.152	11,971.51	321.99	07/26/82		930.18	T	3	07/26/82	01/26/81			01/25/82		R
08694-35	31308	T MILAN	01	U	O	A	1820	14.379	14,802.25	1,009.88	07/31/82		1,061.34	T	3	07/31/82	04/01/81			12/21/81		R
08694-35	32205	T MILAN	01	U	O	A	1820	12.698	40,000.00	1,168.91	07/05/82		2,532.64	T	3	07/05/82	01/04/81			01/05/82		N
*****														YTD INTEREST								
08102-66	30911	FINANCIAL	01	U	O	A	1820	11.845	10,000.00	118.03	06/21/82		590.63	T	1	06/21/82	12/22/80			12/21/81		H
08102-66	31227	FINANCIAL	01	U	O	A	1820	13.958	40,000.00	443.60	07/30/82		458.89	M	1	08/29/82	03/01/81			02/26/82		K
08102-66	31885	FINANCIAL	01	U	O	A	1820	14.183	10,000.00	62.74	04/17/82		284.64	M	1	08/17/82	08/14/81			02/16/82		K
08102-66	30168	FINANCIAL	01	J	O	A	30M	9.250	12,000.00	268.83	04/04/82		284.64	M	4	01/04/82	01/04/81			01/25/82		T
08102-66	31734	FINANCIAL	01	J	O	A	30M	15.950	20,000.00	253.20	04/01/82		271.29	M	1	04/01/82	10/01/81			10/02/81		N
08102-66	31766	FINANCIAL	01	J	O	A	30M	15.950	20,000.00	207.99	04/06/82		271.29	M	4	04/06/82	10/06/81			10/07/81		N
*****														YTD INTEREST								
08116-98	28982	J VEROEN	01	S	O	A	300	11.250	100,000.00	1,016.44	03/31/82		3,193.12	T	3	03/31/82	03/01/82	OHJ.	03/01/82			N
*****														YTD INTEREST								
08258-62	17568	P BLUOM	01	O	O	A	48M	7.250	16,000.00	187.92	05/02/82		64.91	Q	4	08/02/82	08/02/81			11/31/80		J
08258-62	17973	P BLUOM	01	O	O	A	48M	7.250	3,500.00	55.53	04/12/82		74.18	Q	4	07/12/82	01/21/81			02/25/81		T
08258-62	18284	P BLUOM	01	O	O	A	48M	7.250	4,000.00	64.29	04/11/82		74.18	Q	4	07/11/82	01/21/81			02/25/81		T
08258-62	31303	P BLUOM	01	U	O	A	1820	14.379	10,500.00	248.69	03/10/82		152.83	T	4	03/10/82	03/31/81			11/17/81		T
08258-62	32329	P BLUOM	01	U	O	A	1820	13.152	21,500.00	62.92	04/20/82		235.95	M	1	07/21/82	01/20/82			01/21/82		N
08258-62	32466	P BLUOM	01	U	O	A	1820	13.693	22,500.00	219.46	04/02/82		253.23	M	1	04/01/82	03/03/82			03/03/82		N
08258-62	32506	P BLUOM	01	U	O	A	1820	13.212	12,500.00	54.30	04/16/82		135.14	M	1	04/15/82	03/17/82			03/17/82		N
*****														YTD INTEREST								
08198-26	15412	FAIRVIEW C	01	F	O	A	12M	7.500	2,735.98	43.75	04/14/82		52.50	U	3	07/14/82	07/14/81			06/09/81		T
08198-26	16010	FAIRVIEW C	01	F	O	A	12M	7.500	17,554.04	280.12	04/14/82		336.87	U	3	07/14/82	01/14/81			06/09/81		T
08198-26	16662	FAIRVIEW C	01	F	O	A	12M	7.500	15,681.66	102.35	05/11/82		297.14	U	3	06/31/82	08/31/81			06/09/81		T
08198-26	16768	FAIRVIEW C	01	F	O	A	12M	7.500	1,500.22	60	06/21/82		21.02	Q	3	06/21/82	03/21/81			06/09/81		T
08198-26	17205	FAIRVIEW C	01	F	O	A	12M	7.500	2,712.78	14.72	06/01/82		52.05	U	3	07/01/82	03/01/81			06/09/81		T
08198-26	28598	FAIRVIEW C	01	I	O	A	30M	10.500	1,200.27	18.78	05/07/82		32.50	Q	3	07/07/82	05/01/80			06/09/81		T
08198-26	32360	FAIRVIEW C	01	U	O	A	1820	13.780	15,000.00	134.78	07/29/82		1,030.67	T	3	07/29/82	01/28/82			01/28/82		N
08198-26	30185	FAIRVIEW C	01	J	O	A	30M	9.250	11,511.48	246.58	04/04/82		271.29	M	1	04/04/82	01/04/81			03/25/82		N
08198-26	30259	FAIRVIEW C	01	J	O	A	30M	9.250	11,512.52	175.98	05/01/82		271.29	M	1	05/01/82	08/01/80			03/25/82		N
08198-26	30382	FAIRVIEW C	01	J	O	A	30M	9.450	2,300.53	27.13	05/15/82		55.98	Q	3	02/15/82	06/15/80			03/25/82		N
08198-26	30382	FAIRVIEW C	01	J	O	A	30M	11.250	1,186.48	64.48	06/12/82		34.31	Q	3	03/12/82	09/12/80			03/25/82		N
08198-26	30712	FAIRVIEW C	01	J	O	A	30M	11.750	1,160.55	7.80	06/09/82		35.08	Q	3	06/09/82	12/09/80			06/09/81		T
08198-26	30991	FAIRVIEW C	01	J	O	A	30M	11.750	2,816.25	12.16	07/25/82		85.12	Q	3	08/25/82	02/25/81			06/09/81		T
08198-26	31201	FAIRVIEW C	01	J	O	A	30M	11.750	1,091.55	16.16	05/15/82		13.05	Q	3	07/15/82	05/15/81			06/02/81		N
08198-26	31216	FAIRVIEW C	01	J	O	A	30M	11.750	5,467.23	60.57	05/16/82		165.25	Q	3	07/16/82	05/26/81			06/02/81		N
08198-26	31486	FAIRVIEW C	01	J	O	A	30M	15.650	2,165.10	31.09	05/25/82		87.59	Q	3	02/25/82	08/25/81			09/01/81		N
08198-26	32273	FAIRVIEW C	01	J	O	A	30M	12.700	3,000.00	37.07	05/25/82		96.13	Q	3	08/25/82	02/25/82			02/25/82		N
*****														YTD INTEREST								
														1,557.61**								

## INSTALLMENT LOAN ACCOUNTING

*Variable Rate Loans:* The bank can specify that a loan's rate is to change according to a bank specified variable (up to 5 may be used). (For example, prime rate, discount rate, etc.) All loan rates that are tied to a particular variable rate can then be changed with one maintenance transaction.

*Different Loan Controls:* The bank can set up controls for up to 99 different loan classifications. Daily totals and a month end report by control allow the bank to classify loans for call reports and internal reporting purposes. These control totals can also be defined by the bank to generate debits and credits for automated entry to the Financial Information System.

*Interest Calculations:* Two interest calculation methods are available to ILA. The simple interest method calculates interest daily on the outstanding principal balance of the loan using a 365 day year factor. Add-on interest is precomputed by the bank and added to the original loan balance. It is earned by the bank on a monthly basis using the original and remaining term of the loan applied to the original finance charge.

*Dealer Loans:* Dealer loans can be set up on the system with the dealer earnings based on the rule of 78's or a simple interest method where the dealer earns a portion of the daily interest calculated on the outstanding principal balance. Month end reports for dealer earnings and for delinquent dealer loans are provided.

*Payment Schedules:* Payment schedules can be set up for any payment frequency up to 99 months between payments. The system also allows skipped payments within the payment schedule.

*Automatic Loan Payments:* Paperless automatic loan payments from DDA or savings accounts are a feature provided.

*Loan Payoffs:* Through online inquiry display and on the daily trial balances, loan payoffs always reflect the current day's payoff of a customer's loan.

*Insurance:* Credit Life and Accident and Health Insurance can be maintained by ILA. These insurances are earned/rebatable according to the rule of 78's or on a straight line basis.

*Audit Confirmations:* Positive or negative audit confirmations are available for verification of a customer account balance.

*Flexibility:* The system can be personalized to meet your bank's needs for such items as payment/payoff tolerance, late charge, calculations, minimum interest, number of days to late notices, collector's reports, and payment/payoff tolerances.



## ILA REPORTS

Some reports that ILA can produce are:

*Trial Balance:* Two trial balances are printed, one for all regular loans, one for loans with participation.

*Payment Against Delinquent Accounts Report:* Lists all payments received against delinquent accounts. This allows personnel tracking delinquent accounts to see quickly which ones have made payments.

*Rate Summary Report:* A summary of the total number and amount of loans in each rate category.

114725 5-0070	YOUR BANK NAME	ILA - RATE SUMMARY		BANK DATE 03/30/82	PAGE NO. 1
RATE	COUNT	AMOUNT	DATE RUN 08/28/82	TIME 01:21:48	
=000	2	466.01			
15-000	1	8-10 3- 12			
16-000	8	41-730- 38			
16-500	16	40-765- 58			
17-000	14	41-506- 81			
17-500	42	78-02 9- 45			
17-500	1	5-88 3- 86			
18-000	4	20-497- 11			
18-160	1	1-01 1- 57			
18-500	5	17-869- 72			
19-500	2	7-56 7- 36			
19-570	2	6-44 4- 11			
19-800	2	3-68 1- 04			
20-000	1	6-03 0- 28			
20-450	1	406- 00			
21-200	1	3-66 5- 00			
21-410	1	5-03 8- 04			
21-450	1	8 7- 31			
21-460	6	2-07 3- 87			
21-500	1	1-77 1- 68			
21-550	1	2-24 4- 11			
21-570	2	2-59 8- 86			
21-640	1	21 7- 54			
22-000	2	4-32 1- 96			
23-190	2	732- 81			
23-260	2	3-46 4- 50			

## COMMERCIAL LOAN ACCOUNTING

*Variable Rate Loans:* The bank can specify that a loan's rate is to change according to a bank specified variable. (For example, prime rate, discount rate, etc.) All loan rates that are tied to a particular variable can then be changed with one maintenance transaction.

*Participation Loans:* Loans partially or fully sold to investors can be maintained using CLA. Debit/Credit (dollar) transactions are split according to the percentage of the loan sold. The daily and monthly Bank Control Recaps show totals for the bank and investor portions of the loan balances outstanding.

*Different Loan Controls:* The bank can set up controls for up to 99 different loan classifications. Daily totals and a month end report by control allow the bank to classify loans for call reports and internal reporting purposes. These control totals can also be defined by the bank to generate debits and credits for automatic entry to the Financial Information System.

*Interest Calculations:* Interest calculations can be based on a 360 or 365 day year. Interest added to the interest accrual on a daily basis is calculated by multiplying the current balance by the rate and dividing by 360 or 365. The result is carried to 5 decimal positions internally and then truncated to 2 decimal positions for reporting.

*Automatic Loan Payments:* Paperless automatic loan payments from DDA or savings accounts are a feature provided through interface to the CIF system.

*Loan Payoffs:* Through online inquiry display and on the Daily Trial Balance, loan payoffs always reflect the current day's payoff for a customer's loan.

*Payment Schedules:* Payment schedules can be set up for any payment frequency up to 99 months between payments. The system also allows skipped payments within the payment schedule.

*Flexibility:* The system can be personalized to meet your bank's needs for such items as payoff tolerance, minimum interest, number of days to late notices and collector's report.

## CLA REPORTS

Some reports that CLA can produce are:

*CLA Trial Balance:* Two trial balances are printed, one for all regular loans, one for loans with participation. The participation trial balance includes service fee information, investor percentage and dollar amount, maturity date, and interest rate.

*Payment Against Delinquent Accounts Report:* Lists all payments received against delinquent accounts. This allows personnel tracking delinquent accounts to see quickly which ones have had payments made on them.

**Rate Summary Report:** A summary of the total amount of loans in each rate category.

**Forecasted Maturity Report:** This report summarizes all commercial loans by maturity month for planning purposes. For each month, the number of loans that will mature, their balance and average interest rate are printed.

CLA440 5.0019		YOUR BANK NAME		CLA - FORECASTED MATURITY REPORT					BANK DATE 03/30/82		PAGE NO. 1		
									DATE RUN 08/28/82		TIME 01:38:54		
ACCOUNT NUMBER	S. NAME	CTL #	COL CD	CURRENT BALANCE	INTEREST ACCRUED	PAYOFF	CONTRACT DATE	ORIGINAL PRINCIPAL	MATURITY DATE	NEXT PMT DATE	INT PAID THRU	RATE	OFF
500244308	L LEWIS	11	MU	50,000.00	2,187.67	52,187.67	12/29/81	50,000.00	04/01/82	04/01/82M		17.500V1	RPS
500244309	L LEWIS	11	MLE	20,000.00	1,084.67	21,084.67	12/31/81	14,000.00	04/01/82	04/01/82M		17.500V1	RPS
500244312	L LEWIS	11	MUG	10,000.00	71.91	10,071.91	03/15/82	10,000.00	04/01/82	04/01/82M		17.500V1	RPS
500337009	W SWANSON	13	MU	4,000.00	337.04	4,337.04	10/05/81	4,000.00	04/01/82	04/01/82M		17.000V1	PTS
500400011	R BROOKS	13	MU	17,500.00	627.61	18,127.61	08/28/81	17,500.00	04/01/82	04/01/82M	01/11/82	17.000V1	PTS
500400015	R BROOKS	13	MU	10,000.00	395.89	10,395.89	01/04/82	10,000.00	04/01/82	04/01/82M		17.000V1	PTS
500400016	R BROOKS	13	MU	11,000.00	394.49	11,394.49	01/12/82	11,000.00	04/01/82	04/01/82M		17.000V1	PTS
500552123	F LOWE	13	MU	16,009.10	202.07	16,211.17	12/16/81	17,250.45	04/01/82	04/01/82M	03/02/82	17.000V1	PTS
TOTALS FOR	04/01			139,069.10	5,301.35	144,370.45						AVERAGE RATE	17.289
500274277	J STEWART	11	FLP	15,000.00	233.90	15,233.90	10/07/81	27,100.00	04/02/82	03/31/82	02/26/82	18.000V1	RPS
TOTALS FOR	04/02			15,000.00	233.90	15,233.90						AVERAGE RATE	18.000
500648701	F MCGEE	35	OIP	15,000.00	1,327.80	16,327.80	10/04/81	15,000.00	04/09/82	04/09/82M		17.950	OHJ
500648702	F MCGEE	35	OIP	6,000.00	418.99	6,418.99	11/16/81	6,000.00	04/09/82	04/09/82M		17.950	OHJ
TOTALS FOR	04/09			21,000.00	1,746.79	22,746.79						AVERAGE RATE	17.950
500273412	C HANSON	21	VEH	4,002.13	19.73	4,021.86	12/16/81	4,542.90	04/10/82	04/10/82M	03/23/82	12.000	RPS
TOTALS FOR	04/10			4,002.13	19.73	4,021.86						AVERAGE RATE	12.000
500552122	F LOWE	13	MU	1,650.00	91.45	1,741.45	12/15/81	1,650.00	04/15/82	04/15/82M		17.000V1	PTS
TOTALS FOR	04/15			1,650.00	91.45	1,741.45						AVERAGE RATE	17.000
500244310	L LEWIS	11	MU	25,000.00	1,066.78	26,066.78	01/18/82	25,000.00	04/19/82	04/19/82M		17.500V1	RPS
TOTALS FOR	04/19			25,000.00	1,066.78	26,066.78						AVERAGE RATE	17.500
500503806	C SMITH	33	MU	2,000.00	165.53	2,165.53	11/10/81	2,000.00	04/20/82	04/20/82M		19.000	PTS
500503807	C SMITH	33	MU	1,500.00	112.43	1,612.43	11/17/81	1,500.00	04/20/82	04/20/82M		18.000	PTS
500503808	C SMITH	33	MU	800.00	14.89	814.89	02/22/82	800.00	04/20/82	04/20/82M		16.500	PTS
TOTALS FOR	04/20			4,300.00	292.85	4,592.85						AVERAGE RATE	18.186
500552124	F LOWE	13	MU	2,100.00	96.78	2,196.78	01/12/82	2,100.00	04/25/82	04/25/82M		17.000V1	PTS
TOTALS FOR	04/25			2,100.00	96.78	2,196.78						AVERAGE RATE	17.000
500196913	A SCHMIDT	21	MLE	13,500.00	569.58	14,069.58	01/26/82	13,500.00	04/26/82	04/26/82M		17.500	TFO
500196914	A SCHMIDT	21	MLE	4,000.00	168.76	4,168.76	01/26/82	4,000.00	04/26/82	04/26/82M		17.500	TFO
TOTALS FOR	04/26			17,500.00	738.34	18,238.34						AVERAGE RATE	17.500
500139504	J ANDERSON	21	VEH	15,500.00	758.01	16,258.01	01/13/82	15,500.00	04/30/82	04/30/82M		17.000	RPS
TOTALS FOR	04/30			15,500.00	758.01	16,258.01						AVERAGE RATE	17.000
TOTALS FOR	04			245,421.23	10,352.98	255,774.21						AVERAGE RATE	17.333

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## MORTGAGE LOAN ACCOUNTING

*Variable Rate Loans:* The bank can specify that a loan's rate is to change according to a bank specified variable. (For example, prime rate, discount rate, etc.) All loans that are tied to a particular variable rate can then be changed with one maintenance transaction.

*Participation Loans:* Loans partially or fully sold to investors can be maintained on the MLA system. Dollar transactions involving principal and/or interest are split according to the percentage of the loan sold. The daily and monthly Bank Control Recaps show totals for the bank and investor portions of the loan balances outstanding.

*Interest Calculations:* Interest calculations can be based on 360 or 365 day year.

*Loan Payoffs:* Online inquiry displays and the Daily Trial Balance always reflect the current day's payoff of a customer's loan. This figure includes principal, interest, escrow (if used) and late charges.

*Different Loan Controls:* The bank can set up loans for up to 99 different controls. Daily totals and a month-end report by control allow the bank to classify loans for call reports and internal reporting purposes. These control totals can also be defined by the bank so that debits and credits can be generated for automated entry to the Financial Information System.

*Automatic Loan Payments:* Paperless automatic loan payments from a DDA or savings account are a feature provided through interface to the CIF system.

*Flexibility:* The system can be personalized to meet the needs of each bank using the system for items such as whether to pay interest on escrow balances, charge calculations, minimum interest, number of days to late notices and collector's reports, and payoff tolerances.

**MLA REPORTS**

Some reports produced by MLA are:

**MLA Trial Balance:** Two daily trial balances are produced, one for regular loans, one for participation loans.

**Payment Against Delinquent Accounts Report:** Lists all payments received against delinquent accounts. This allows personnel tracking delinquent accounts to see quickly which ones have made payments.

**Rate Summary Report:** A summary of the total amount of loans in each rate category.

**MLA Account Inquiry:** This information is available on the display screen and may be printed at any time. It gives the user quick access to all of the account information for any loan, including payment history.

MLA750 YOUR BANK NAME		MLA - LOAN MASTER INQUIRY - VIA WORKSTATION										BANK DATE 03/31/82		PAGE NO. 1	
5-1252												DATE RUN 03/31/82		TIME 12:55:59	
LOAN STATUS INFORMATION *****															
ACCOUNT NUMBER	NAME AND ADDRESS		ORIGINAL PRINCIPAL	ORIGINAL RATE	ORIGINAL MATURITY DATE	FIRST PAY-DATE	LTL	LOAN SUB	ESC ADV	DU	CHARGE-ACCT	365	STAT		
3300006	BERNARD GAFFAGN 1253 SULLY AV STILLWATER MN 55158		15,000.00	11/09/77	12/01/92	12/01/77	04	06	0	0M	N	Y	Y	0	000000000
B GAFFAGN		442-371-0153		CURRENT INVESTMENTS		INVEST	INV	INV	SEH-FEE	ESCHOW	VARIABLE RATE INFO				
PROPI		PROP2		PRINCIPAL	PRINCIPAL	PERCENT	%	SUB	RATE	BALANCE	RATE	%	DU	FLGUR	CELENC
				29,261.31	0.00	0.000	0.00	0.00	0.00	0.00	9.500	0.00	0.00	0.00	0.00
PAYMENT INFORMATION															
PAY-AMOUNT		NEXT-DUE	FR	PREL	PLT	CONST	ESL-CONST	ASSIST-AMT	RENEWAL	LAST NUMBER	LOU	STP			
365.00		4/01/82	1	100		365.00	0.00	0.00	0/00/00		0				
TAX AND INSURANCE INFORMATION															
TYPE	FRQ	DUE-DT	ESCHOW	TAX	CU	IP	TYPE	FRQ	DUE-DT	DUE-AMT	CO	IP	CU	CO	IDENTIFICATION
TAX 1	0/00/00		0.00	TAX 2	0/00/00		0.00	0/00/00		0.00	22	NY	0		
SPEC TAX	0/00/00		0.00	MORT INS	0/00/00		0.00	0/00/00		0.00					ADVANCE DELINQNT
HAZARD 1	0/00/00		0.00	ALH INS 1	0/00/00		0.00	0/00/00		0.00					DATE
ALH INS 1	0/00/00		0.00	ALH INS 2	0/00/00		0.00	0/00/00		0.00					DATE
AMORTIZED AMOUNT															
AMORTIZED	AMRTIZE	INTEREST	DAILY-INT	-TIMES	LATE-	LATE-CHG	LE	LATE-CHG	LE	LATE-CHG	INT-DY-	ESCHOW			
BALANCE	DATE	ACCRUED	AMOUNT	30	90	30	DATE	RT	ACCRUED	FLG	DATE				
29,261.31	04/01/82	231.62	7.47264				04/16/82	1	0.00	N	0.00				
MONTH TO DATE															
PAY-OFF	INT-ACCRUED	INT-PAID	ST-EARNED	INT-PAID	PRIN-PAID	TAX-PA	LECHG-PO	ALH-PO	HAZ-PO	MONTH-PO	MISC-PO				
29,492.93	2,624.40	232.73	0.00	701.21	193.79	0.00	0.00	0.00	0.00	0.00	0.00				
HISTORY INFORMATION *****															
TRN	POSTING	APPLIC	TRANS-	PREVIOUS	TOTAL	PRINCIPAL	INTEREST	ESCHOW	LECHG	INVEST	SPLIT				
#	DATE	DATE	DATE	PRIN-HAL	PAYMENT	PORTION	PORTION	PORTION	PORTION	PRINCS	PRINCIPAL	INTEREST			
1	05/01/81	05/01/81	075	078	30,667.00	172.27	242.73	0.00	0.00	1	0.00	0.00			
2	05/22/81	05/22/81	075	078	165.00	173.24	241.76	0.00	0.00	1	0.00	0.00			
3	07/06/81	07/06/81	075	078	30,445.24	174.21	240.79	0.00	0.00	1	0.00	0.00			
4	07/21/81	07/21/81	075	078	30,291.08	175.20	239.80	0.00	0.00	1	0.00	0.00			
5	08/21/81	08/21/81	075	078	30,165.88	176.19	238.81	0.00	0.00	1	0.00	0.00			
6	10/01/81	10/01/81	075	078	30,039.59	177.19	237.81	0.00	0.00	1	0.00	0.00			
7	10/22/81	10/22/81	075	078	29,912.50	1.00	0.00	0.00	0.00	1	0.00	0.00			
8	10/28/81	10/28/81	075	078	29,912.50	165.00	178.19	236.81	0.00	0.00	1	0.00			
9	11/10/81	11/10/81	075	078	29,786.31	165.00	179.21	235.81	0.00	0.00	1	0.00			
10	01/24/82	01/24/82	075	078	29,655.10	165.00	180.23	234.81	0.00	0.00	1	0.00			
11	02/02/82	02/02/82	075	078	29,524.81	165.00	181.26	233.81	0.00	0.00	1	0.00			
12	02/24/82	02/24/82	075	078	29,391.61	14.60	0.00	0.00	14.60	0.00	0.00	0.00			
13	03/22/82	03/22/82	075	078	29,391.61	165.00	182.26	232.81	0.00	0.00	1	0.00			

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*Investors Remittance Report:* If participation loans are used, this report summarizes all remittances due each investor. The detail includes the balance, payments, investor's percentage, the portion of principal and interest, service fee charged, and net remittance.

MLATTO 5.0076		YOUR BANK NAME		MORTGAGE LOAN - INVESTORS REMITTANCE REPORT				03/30/82 PAGE NO. 1		DATE RUN 03/28/82 TIME 01.28.04		
INV CTL 004 000		INVESTOR NAME AND ADDRESS.....						FROM 03/01/82 TO 03/30/82				
		CITIZENS STATE BANK OF TILSON TILSON, NORTH DAKOTA 58999										
ACCOUNT NUMBER	LAST NAME	CURRENT BALANCE	PREVIOUS BALANCE	PMTS-THIS PERIOD	DUE DATE	INV PCT	SFEE PCT	INV-PRIN PORTION	INV-INT PORTION	SERVICE FEE-AMT	NET REMITTANCE	TAN (10-
3000081	VOYE	25,281.71	.00	332.76	03/01/82	100.0000	.000	32.16	300.60	.00	332.76	628
3000225	HEIMZ	30,727.03	.00	285.17	03/01/82	100.0000	.000	35.23	249.94	.00	285.17	628
3000444	KOEMMEN	30,551.32	.00	266.53	02/01/82	100.0000	.000	24.47	242.06	.00	266.53	628
3000508	OSVOLD CO	38,617.26	.00	363.49	03/01/82	100.0000	.000	41.34	322.15	.00	363.49	628
3000743	ORTHROPLOIC	26,571.85	.00	268.13	03/01/82	100.0000	.000	68.33	199.80	.00	268.13	628
3000778	TROST	18,897.72	.00	185.00	03/01/82	100.0000	.000	15.27	149.73	.00	165.00	628
3000807	GOODWILL	19,496.42	.00	199.19	03/01/82	100.0000	.000	40.45	158.74	.00	199.19	628
3000903	FLANAGAN	60,479.84	.00	585.40	03/01/82	100.0000	.000	55.71	529.69	.00	585.40	628
3000989	FRITZ PLUM	39,780.77	.00	374.85	03/01/82	100.0000	.000	42.99	331.86	.00	374.85	628
3001260	NEMCEK	40,727.37	.00	369.25	03/01/82	100.0000	.000	63.32	305.93	.00	369.25	628
INV/CTL SUBTOTALS		351131.79	.00	3209.77				419.27	2790.50	.00	3209.77	
INV TOTALS		351131.79	.00	3209.77		LOANS-	10	419.27	2790.50	.00	3209.77	

## FINANCIAL INFORMATION SYSTEM

*Profit Centers:* The bank can specify up to 99 different profit centers for reporting purposes. In addition to the 99 different profit centers, a corporate profit center can be set up to allow individual accounts to post to it selectively.

*Two Budget Methods:* Budgets can be entered as an annual amount which the FIS system will divide into monthly amounts or budgets can be set up for individual months.

*Category Levels:* The bank can define category levels which allow you to combine accounts into groups for reporting purposes.

*Key Ratios:* The bank can select account categories and calculate various key ratios for analysis purposes.

*Rate Spread:* The bank can select categories and calculate their interest margin rate spread.

*User Report:* The bank can select a set of accounts and get a report of their total amount.

*Flexibility:* Each user bank can customize the application to meet its needs, specifying such things as the number of profit centers, automatic entries (i.e. depreciation amounts) and which applications should automatically post to the FIS system.

## FIS REPORTS

Some reports that the FIS system can produce are:

*Income Statements and Balance Sheets:* Each bank can get a standard income statements and balance sheet and an income statement by profit center.

*Daily Statement:* The daily statement of condition is produced at the end of each day and can be either one-up or two-up style.

## CUSTOMER RESPONSIBILITIES

In order to prepare for and install the System/34 Banking System, the user must:

- Install the System Support Program to support operation of the programs.
- Become knowledgeable in the operation and functional characteristics of the system.
- Install the desired application program products and become familiar with the product documentation and operation.
- Become familiar with the accounting procedures of the program products and the data requirements for the conversion process associated with each application as described in the Install Guide.
- Determine which processing options are desired for your bank operations and enter them into the System/34.
- Create the account master files.
- Establish run procedures and controls for the bank's operations.



## DOCUMENTATION

The System/34 Banking System is supported by the following documentation:

*Guide to Daily Operations:* This is the daily handbook for bank officers and other bank personnel. It is functionally oriented — it tells you how to do things. It also explains how to modify the various applications you are using to meet your needs.

*Install Guide:* This contains detailed installation instructions for each application, data conversion instructions, and other start-up information. It is very technical. It is only needed when you first install the banking system.

*Operator's Run Book:* This book contains detailed instructions for the system operator on how to run each job in the banking system. Also, it contains instructions on how to get any report printed.

The three manuals described above contain information concerning all eight applications in the System/34 Banking System.

*Programmer's Reference Manual:* This book contains detailed descriptions of every program, file, procedure and data layout used in an application. This is very technical and is meant for programmers only. There is one Programmer's Reference Manual for each of the eight applications in the System/34 Banking System.

## RECOVERY PROCEDURES

Backup of certain files provides for recovery of data in the event of file or computer damage.

A backup procedure is detailed in the Install Guide and should be adhered to. This will make recovery as easy as possible. During recovery, the last good set of files is restored, all transactions are reposted and reports are reprinted.

## PROGRAMMING SYSTEM

The System/34 Banking System runs on the IBM System/34 using the System Support Program (5726-SS1) and the Sort Utility (5726-UT1). If the user intends to modify any of the programs in the system, the RPG II (5726-RG1) compiler with the Auto Report feature is required. No other programming systems are required.

If the interface to the IBM 3624 Consumer Transaction Facility is desired, the IBM System/34 Application Support for the 3624 Consumer Transaction Facility FDP (5798-RDP) must be installed.

## SYSTEM CONFIGURATION "

The minimum machine requirement for the system is an IBM System/34 model C14 (64K of memory, 64MB of disk). In addition, a display (minimum 5251 Model 11 or a 5291 model 1) and printer (minimum 5256 Model 1) are required.

## ADDITIONAL REPORTS

### CIF

- ACH Tape List
- ATM Transaction List
- Audited Account List
- Available Account Number List
- CIF Account Analysis Summary Report
- CIF Accounts Missing Report
- CIF Zip Code Analysis
- Missing Social Security Number Report
- IRS 1099 File List

### DDA

- Account Restriction Daily
- Bank Control Recap (Daily)
- Commercial Account Analysis (Statement Day)
- Credit Life Insurance Expiration Report (Monthly)
- DDA Audit Confirmation
- DDA Combined Statements
- DDA File List (On Request)
- DDA New Account Report (Daily)
- DDA Regular Statements
- DDA Trial Balance (Daily)
- Line of Credit Advance Notices
- Line of Credit Aged Delinquency Report (Daily)
- Line of Credit Audit Letters
- Line of Credit Delinquency Notices
- Line of Credit Interest Paid Report (Year End)
- Line of Credit Review Report (Monthly)
- Line of Credit Statistical Report (Monthly)
- NSF Notices
- NSF Reversals Report (Daily)
- Quarterly Credit Information Report (Quarterly)
- Reserve Delinquent Notices
- Service Charge Simulation Report (On Request)
- Stop Pay Suspect Report (Daily)
- Unposted Transaction Report (Daily)

### Savings

- Balance Report
- Bank Control Recap
- Closed Account Report
- Cycled Plan Audit Trail Report
- Dormant Account Report
- Exception Report
- New Account Report
- Savings Account Restriction Report
- Savings Trial Balance
- Service Charge Report
- Year-end 1099 Report

## Certificates of Deposit

- Cashed Certificates Report
- CDA Trial Balance
- Exception Balance Report
- Interest Payment Journal
- Matured and Not Cashed Report
- Pledged Certificates Report
- Repo/Investments Sold Analyses
- Year End Tax Deferred Summary
- Year End 1099 Report

## Installment Loan Accounting

- Automatic Payments Report
- Bank Control Recap
- Credit Bureau Notices - New and Paid Loans
- Exception Report
- Loan Collectors Delinquent Report
- Loan Officers Analysis
- Loan Officers Delinquency Report
- Loan Payoff Report
- Large Borrower Report
- Late Charge Report
- New Loan Report
- Year-end Interest Report
- Variable Rate Maintenance Report

## Commercial Loan Accounting

- Activity or Participation Loans
- Automatic Payments Report
- Bank Control Recap
- Credit Bureau Notices - New and Paid Loans
- Exception Report
- Fill Listing
- Loan Collectors Delinquency Report
- Loan Officers Analysis
- Loan Officers Delinquent Report
- Loan Payoff Report
- Large Borrower Report
- New Loan Report
- Variable Late Maintenance Report
- Year-end Interest Report

## Mortgage Loan Accounting

- Activity and Participation Loans
- Automatic Payments Report
- Bank Control Recap
- Credit Bureau Notices - New and Void Loans
- Escrow Analysis Report
- Exception Report
- Loan Collectors Delinquency Report
- Loan Officers Analysis
- Loan Officers Delinquent Report
- Loan Payoff Report
- Large Borrower Report
- Late Charge Report
- New Loan Report
- Variable Late Maintenance Report
- Year End Interest Report

## Financial Information System

- Automated Entries Report
- Average Balance Report
- Budget Report
- Budget Update Exception Report
- Category Report
- Chart of Accounts Report
- Interest Rate Spread Analysis
- Key Ratio Analysis Report
- Trial Balance
- Year-end Closing Entries Report

## Appendix 3

### Selected Bibliography

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- Munyan, Jack. So You're Going to Automate. New York.: Petrocelli, 1975. This is an excellent book to illustrate the minute details that you must pay attention to in automating business systems. It gives examples of payroll, accounts payable, accounts receivable, personnel, inventory management, order entry and general ledger.
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- Reichenbach, Robert R. and Tasso, Charles A. Organizing for Data Processing. AMA Research Study 92. New York: American Management Association, Inc., 1968. Generally a good overview of the commitment required and decisions to be made in establishing a data processing center.
- Schaeffer, Howard. Data Center Operations: a Guide to Effective Planning, Processing and Performance. Englewood Cliffs, N.J.: Prentice-Hall, 1981. Very detailed and complete discussion of what it takes to run a full-blown data processing center. Many of the points would be relevant to the HDFC even though the computer installation there would be much less complex.