

## 5.610 Investment Contracts Processing

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## 1 OVERVIEW

An Investment Contract is a loan agreement between two parties. In the context of the functionality available within InvestOne Enterprise, a managed investment portfolio represents the lending party, and an insurance company represents the lender. The specifics of the contract dictate the principal amount and terms of the loan.

The interest rate may be fixed or variable and may be calculated using a simple, daily compounding or monthly compounding method. Interest may accrue beginning on the contractual settlement date of the opening of the contract through the day before the payment date, or beginning on the day after settlement through the payment date. Interest may be calculated such that no interest is earned on February 29th of leap year (i.e. assume 365 days in every year), or such that interest is in fact earned on February 29th (i.e. accrue over the actual number of days in any given year).

### PAYMENT SCHEDULES

Investment Contracts have periodic payments of principal and interest typically scheduled on a monthly, quarterly, semi-annual or at maturity basis. The payment schedule for principal and interest is determined at the beginning of the investment contract, and may specify dates at which only the accumulated interest (or a portion of the accumulated interest) is to be paid, dates at which a portion or all of the accumulated interest and a portion or all of the principal balance is to be paid, or dates at which only a portion of the principal balance is to be paid.

The schedule may indicate that:

- The total contract value (principal plus accumulated interest) is paid down such that the remaining balance will be reduced to a stated amount with accumulated interest paid out first (payment type A)
- A stated percentage of the outstanding contract value (principal plus accumulated interest) balance is to be paid (payment type C).
- Only total accumulated interest is to be paid (payment type I).
- A stated percentage of the outstanding principal balance is to be paid (payment type N).
- All accumulated interest plus a stated percentage of the outstanding principal balance is to be paid (payment type P).

NOTE: A major difference between investment contracts and other bond-like securities is that instead of the interest earned accumulating between payment dates as accrued interest receivable, the interest earned is added back to shares/par (securities at value) on a daily basis.

### INVESTMENT CONTRACTS MAY BE OPENED IN ONE OF TWO FORMS.

In the first form, the Investment Contract is complete upon its opening (i.e. the principal loan amount and payment schedule are final).

In the second form, the Investment Contract is opened at the beginning of a window period, during which additional contributions and withdrawals may occur.

- Contributions are for principal only (therefore, interest is not purchased).
- During the window period withdrawals may be made only from principal.
- After the window period is closed the completed Investment Contract may have withdrawals from either principal or accumulated interest.

Since the window period is not actually defined to InvestOne Enterprise it is the user's responsibility to acknowledge the restrictions implied by the concept of the 'window period' of

a given Investment Contract. InvestOne Enterprise allows principal deposits and principal and accumulated income withdrawals at any time during the life of the contract.

**CONSTRAINTS**

- Investment Contracts may be processed only in purely domestic commingled or mutual funds. Global and UK Unit Trust funds may not hold Investment Contracts.
- Guaranteed Investment Contracts (or GICs) should not be confused with Investment Contracts. For GICs income earned accumulates as accrued income receivable until it is collected or reinvested at payment dates. This section addresses Investment Contracts (Accrual Methods K and L), not GICs (Accrual Method G).

The following sections discuss the processing of Investment Contracts available within InvestOne Enterprise. Additional processing information is available on these topics in [Processing Help](#):

- INTIC, PMTIC, and SELIC
- Adjustments to Principal Payment, Maturity and Accumulated Income
- Transaction/GNMA Generator
- Interest and Investment Contracts

## 2 INVESTMENT CONTRACT SECURITY DEFINITION ACTIVITIES

Investment Contracts are initially defined to InvestOne Enterprise via the same basic screen progression as that which is used to define any bond-like security: Security Definition (BOBD), Security Definition - Bond (BOSB) and Security Description (BODE). Special considerations in defining Investment Contracts via this progression of screens follow:

### 2.1 BOBD: SECURITY DEFINITION SCREEN

- PRICE CODE must be 'F' (bond-like: price per 100 of face; no taxlots).
- ASSET GROUP must be 'IC' (Investment Contracts).

The rest of the data on this screen should be entered with the same considerations as those given in defining other bond-like securities. See [Section 5.20](#), *Security Activities* for further details.

### 2.2 BOSB: SECURITY DEFINITION - BOND SCREEN

The fields in this table must be configured as specified. The rest of the data on this screen should be entered with the same considerations as those given in defining other bond-like securities. See [Section 5.20](#), *Security Activities* for further details.

Field	Description. Fields Shaded Gray are Required.
ACCRUAL METHOD	Must be 'K' or 'L'. K - interest is accrued over 365 days each year (i.e. no interest is earned on February 29th of a leap year. L - interest is accrued over the actual number of days in a given year.
ACCR INCM OPT	Must be '0', '1' or blank. 0 - Day of deposit. Full accumulation of interest on the day before a payment date; 1 - Day of withdrawal. Full accumulation of interest on payment date. Blank - the ACCRUED INCOME OPTION selected for the account is used to determine whether income is fully accumulated on a day of deposit or day of withdrawal basis (see <a href="#">Section 5.30</a> , <i>Account Definition</i> for further details on this option).
ISSUE DATE	Must be <b>specified only if</b> ACCRUAL METHOD 'L' is selected, and then only if the fiscal year of the contract differs from the calendar year. In this case, enter the first day of a contract fiscal year in the ISSUE DATE field. It is used by the accumulated interest calculation in determining the number of actual days (i.e. 365 or 366) in a given year. <ul style="list-style-type: none"> <li>• The presence of an ISSUE DATE indicates that the contract fiscal year is to be used in this determination</li> <li>• The absence of an ISSUE DATE indicates that the calendar year is to be used.</li> </ul>
INTEREST RATE	Must Enter rate of interest for fixed rate contracts. For variable rate contracts, entering the initial rate of interest is optional. The format assumes an annual percentage rate from 0.000000000 to 99.999999999 or 100.000000000 even.
MATURITY DATE	Enter the maturity date of the contract.
COMPOUNDING OPT	Must be specified only if the calculation of accumulated interest is to use a compounding method. Valid Values D - daily compounding M - monthly compounding Blank - no compounding, i.e. simple interest calculation is performed.

Field	Description. Fields Shaded Gray are Required.
ANNUAL RATE TYPE	Must be 'IC' (Investment Contracts) to indicate how interest rates stored on file for this instrument are to be interpreted (i.e. rates are saved as annual percentage rates).

The following fields are not used for Investment Contracts, as the information they imply is either not applicable to these instruments or is defined elsewhere: FIRST COUPON DATE, PYMT FREQ, PAYMENT MONTH/DAY, EFFECTIVE MATURITY DATE, CONSTANT DTM, EFFECTIVE MATURITY PRICE, EFFECTIVE MATURITY LENGTH and EFFECTIVE MATY REF-DATE.

### 2.3 BODE: SECURITY DESCRIPTION SCREEN

In defining Investment Contracts, no unique considerations apply to this screen.

### 2.4 BOPM: PAYMENT SCHEDULE SCREEN

If the contract provides for payment of interest and principal only at maturity, the security definition requirements are complete after following the basic screen progression described above.

If the contract payment schedule indicates that payments are due before maturity, the Payment Schedule (BOPM) screen must be called to establish the schedule of principal and interest payments specific to the contract.

#### **BASIC BOPM**

To add a schedule or to add, change or delete an entry in an existing schedule, request the BOPM screen (default is MODE ADD). Enter SECURITY NUMBER and PAYMENT DATE. Press ENTER and the screen returns with the cursor at the TYPE field, and displays the security's short name. Enter the TYPE and PRINCIPAL AMT/%, and then press ENTER again to complete the process. Values for the fields are interrelated. See [explanation](#) after the Field Descriptions.

The message PAYMENT DATA APPLIED displayed in the lower left area of the screen indicates a successful update. This results in recalculations of valuation-dependent system-calculated amounts for open valuations period from the specified PAYMENT DATE forward.

#### **CONSTRAINTS**

- The Payment Schedule (BOPM) screen is valid only for Investment Contracts.
- Payment Schedule data may not be automatically captured from external sources.
- Once specified, the asset group of an Investment Contract (i.e. ASSET GROUP 'IC') may not be changed. Conversely, the asset group of a security that is not an Investment Contract (i.e. ASSET GROUP other than 'IC') may not be changed to 'IC'.

BOPM Screen: Payment Schedule

```

NEXT                BOPM                MODE ADD    FDMP253
* * * * * PAYMENT SCHEDULE * * * * *

SECURITY NO:
PAYMENT DATE:
TYPE.....:        PRINCIPAL AMT/%
    
```

Field	Description. Fields Shaded Gray are Required.
SECURITY NO	The security number (including date and qualifier, if applicable) of the security for which a payment date is to be input or maintained.
PAYMENT DATE	Payment date of the specific entry to be input or maintained. Up to 11 payment dates worth of schedule data are displayed, in descending order by payment date.
TYPE	Type of payment scheduled for the requested payment date. Valid Values are I, N, C, P, and A. – Refer to <a href="#">Type and Principal Amount%</a> for details on the use and significance of these values.
PRINCIPAL AMT/%	<p>Amount or percentage associated with a principal payment (i.e. a payment date for which type 'A', 'C', 'N' or 'P' has been specified).</p> <ul style="list-style-type: none"> <li>'0.00' is displayed if an amount is not already on file as of the requested PAYMENT DATE.</li> <li>Payment dates scheduled via BOPM must be less than or equal to maturity date. A payment date is not required on the maturity date of a contract but may optionally be scheduled.</li> <li>Whether the final payment date is scheduled via BOPM or not, all remaining interest and principal is assumed to be paid at maturity.</li> </ul> <p>Range for type A - 0.00 to 99,999,999.99 inclusive, where the format assumes currency and the implication is that the outstanding principal balance is to be paid down to this amount at this date.</p> <p>Range for type 'C', 'N' or 'P' - .01 to 100.00 inclusive, where the format assumes percentage and the implication is that the outstanding principal balance or contract value is to be paid down by this percentage at this date.</p>

**TYPE AND PRINCIPAL AMOUNT%**

<b>TYPE</b>	<b>When To Use</b>	<b>Result</b>	<b>Effect on PRINCIPAL AMT/%</b>
I	To schedule a date for payment of interest only.	All accumulated interest is to be paid; no principal is to be paid.	No entry is required.
N	To schedule a date for payment of a percentage of the principal balance and no accumulated interest.	No interest is to be paid; the outstanding principal balance is to be paid down by a percentage.	Specify the percentage of outstanding principal or contract value to be paid.
C	To schedule a date for payment of a percentage of the total contract value prorated between accumulated interest and the principal balance.	Both the accumulated interest and outstanding principal balance are reduced proportionately by a percentage of the total contract value.	Specify the percentage of outstanding principal or contract value to be paid '100.00' indicates the principal balance or outstanding contract balance is to be paid down in full at this date. This allows the entire loan to be paid off prior to maturity of the contract.
P	To schedule a date for payment of all accumulated interest plus a portion of the principal balance where the principal payment is to be stated in the schedule as being a percentage of the outstanding principal balance.	All accumulated interest is to be paid; additionally, the outstanding principal balance is to be paid down by a percentage.	Specify the percentage of outstanding principal or contract value to be paid '100.00' indicates the principal balance or outstanding contract balance is to be paid down in full at this date. This allows the entire loan to be paid off prior to maturity of the contract.
A	To schedule a date for payment of interest or payment of interest plus principal where the payment itself is not actually stated in the schedule, rather the remaining contract value to be paid down to is stated.	Pay down to a specific contract value; reducing accumulated interest first.	Adding or changing a TYPE 'A' payment requires that the contract value to be paid down to is specified in this field (as an amount). A PRINCIPAL AMT /% of '0.00' for payment 'A' indicates the outstanding contract balance is to be paid down in full at this date (thereby providing a means of paying off the entire loan prior to maturity of the contract).

### 3 VARIABLE RATES MAINTENANCE ACTIVITIES

Interest rates used for the processing of variable rate Investment Contracts within InvestOne Enterprise are maintained via the Corporate Actions/Rates (DECR) screen. The use of the screen in Investment Contract processing is presented here, and detailed further in [Investment Contract Processing Explanation and Examples](#).

The initial rate can be defined on DECR, or on the Security Definition - Bond (BOSB) screen as part of the initial security definition process (See [Investment Contract Security Definition Activities](#)), in which case the BOSB rate is assumed to be in effect until the Effective Date of a rate entered via DECR is encountered.

- An interest rate must be available for each day for which income is to be calculated (i.e. for all days including and since the contractual settle date of the opening of an Investment Contract).
- An Effective Date is associated with each rate and determines the date as of which the accounting effects of a given rate change are taken.
- A Reset Date is also associated with each rate and corresponds with the actual rate change date.

When a rate change is entered in a timely manner (i.e. the effects of the rate change are taken on the date the rate actually changes) the effective and reset dates are equal. When notification of a rate change occurs after the actual rate change date (or 'Reset Date') the provision of two dates on the DECR screen allows for control over the exact date at which the accounting effects are to be taken. EX: If the rate changed on the first day of the month but notification of the rate change occurred on the third day, the rate could be entered with the third day of the month as its Effective Date, and the first day of the month as its Reset Date. The impact of the rate change (on daily earned income) is then calculated from the first day of the month yet the accounting impacts would not be taken until the third day of the month.

The Reset Date may be less than the Effective Date by up to one month to allow for this backdating of rate changes. A given rate remains in effect until the Effective Date of the next rate is reached. Therefore, rate entries are required only as of Contractual Settle Date of the initial opening of the contract, and thereafter only when the rate actually changes or notification of a rate change occurs.

#### **ADD, CHANGE OR DELETE A RATE**

To add, change or delete a rate, request the DECR screen in either ADD or CHANGE mode, enter the SECURITY NO (including security date and qualifier, if applicable), the effective date of the rate change in the COUPON/EX-DATE/EFF-DATE field and press ENTER. The screen returns with the cursor at the RESET DATE field. '00 00 00' is shown if a rate is not already on file as of the requested EFF-DATE. Enter the RESET DATE of the rate and the cursor moves to INTEREST RATE. Zeroes are shown if a rate is not on file as of the requested EFF-DATE. Enter the actual rate, expressed as an annualized interest percentage rate.

If a rate is already on file as of the requested EFF-DATE, your RESET DATE and/or INTEREST RATE entries override those already on file for that rate. Overtyping a displayed rate with zero deletes that rate.

Up to 11 rates prior to the requested EFF-DATE (if any such rates are already on file) are displayed below (in descending order, by EFF-DATE). To complete the update function, press ENTER. "RATES APPLIED" indicates a successful update: recalculations of valuation dependent system-calculated amounts for open valuation periods (from EFF-DATE forward).

#### 4 INVESTMENT CONTRACT TRANSACTION CODES

A set of specialized transaction codes is required for the processing of Investment Contracts. The following charts identify these transaction codes and their requirements and accounting effects:

##### TRAN CODE PROCESSING REQUIREMENTS

	I C F I C +	I C F I C -	M D E I C C	I N T I C +	N T I C -	P N T I C -	P A U I C C	O P N I C C	P M T I C +	M T I C -	M T I C -	S E L I C C	W T H I C C
TRAN CODE													
ACCOUNT NO.	X	X	X	X	X	X	X	X	X	X	X	X	X
SECURITY NO.	X	X	X	X	X	X	X	X	X	X	X	X	X
EFFECTIVE DATE	X	X	X	X	X	X	X	X	X	X	X	X	X
TRAN CODE	X	X	X	X	X	X	X	X	X	X	X	X	X
TRADE DATE	D	D	D	D	D	D	D	D	D	D	D	D	D
CONTRACTUAL SETTLE DATE	D	D	D	D	D	D	D	D	D	D	D	D	D
ACTUAL SETTLE DATE	D	D	D	D	D	D	D	D	D	D	D	D	D
INCOME EFFECT	X	X	X						O	O			
SHARES/PAR	X	X	X				X	X	X	X	X	X	X
TOTAL PRINCIPAL	S				S	S	S	S	S	O	O		
COST	C				C	C	C	C	C	C	C		

X - Required (or expected)  
 O - Optional  
 D - Defaults to effective date  
 S - Defaults to Shares/Par amount  
 C - Calculated

SECURITY NO. includes security DATE and QUALIFIER, if applicable.

		Accounting Effects				
		Cash				
Tran Code	Description	Inc	Prin	Share	Cost	Class
CFIC+	Increase Contract Value (Accumulated Income)	N	N	+	N	VICA
CFIC-	Decrease Contract Value (Accumulated Income)	N	N	-	N	VICA
DEPIC	Investment Contract Deposit	N	-	+	+	VICO
INTIC	Interest Payment for Investment Contract	+	N	N	N	VICI
INTIC+	Increase Int Payment for Investment Contract	+	N	N	N	VICI
INTIC-	Decrease Int Payment for Investment Contract	-	N	N	N	VICI
MATUIC	Maturity of Investment Contract	N	+	-	-	VICM
OPNIC	Open Investment Contract	N	-	+	+	VICO
PMTIC	Principal Payment for Investment Contract	N	+	-	-	VICP
PMTIC+	Increase Prin Payment for Investment Contract	N	+	-	-	VICP
PMTIC-	Decrease Prin Payment for Investment Contract	N	-	+	+	VICP
SELIC	Sell Investment Contract	+	+	-	-	VICC
WTHIC	Investment Contract Withdrawal	+	+	-	-	VICC

##### NOTES

- The ACCOUNTING EFFECTS indicated above are those specified on the Transaction Code Definition (CD) Master Record. General Ledger accounting effects (as seen on the GLIN screen) are documented in [Section 8.110](#), *General Ledger Entries*.
- These [transaction codes](#) are valid only for Investment Contracts and are the only transaction codes valid for Investment Contracts.

## 5 INVESTMENT CONTRACT PROCESSING EXPLANATION AND EXAMPLES

The examples in this section illustrate the processing of Investment Contracts within the context of InvestOne Enterprise. They also:

- Demonstrate the influence of security and account definition characteristics on processing
- Show the intended use and general ledger effects of the various transaction codes associated with Investment Contracts.
- Present the calculations of income accumulated and due at key points in time.

We assume a working knowledge of the InvestOne Enterprise system in a more general context.

The characteristics of a given contract are determined based on:

- The security definition characteristics
- The variable rate maintenance activities
- The transaction activities related to the contract

For an Investment Contract position, the shares/par, cost and market values are all equal. They represent the contract value, which is comprised of the remaining principal and accumulated income balances.

Daily income earned accumulates until it becomes due at a scheduled coupon date and/or at maturity, at which time it is reset in anticipation of an interest payment transaction. Income earned on an Investment Contract depends on the interaction of account and security definition characteristics, and on whether the interest rate is fixed or variable in nature and on transaction events influencing the position. These dependencies are shown in these examples, each using a unique compounding option for income calculations.

NOTE: Many characteristics are common to all examples. Differences in the examples illustrate the available functionality in InvestOne Enterprise for the processing of Investment Contracts. Each of the first three examples is mainly distinguished by its compounding option. Where income calculations for multiple day's worth of income are shown, keep in mind that the actual calculations performed by InvestOne Enterprise result in each day's income result being rounded to 2 decimal places. The calculations in the examples approximate the actual calculations; the actual results are presented. A fourth and final example is provided to illustrate the use of transaction codes designed to manually adjust the accumulating income balance of an Investment Contract position.

Example 1: Fixed Rate Investment Contract Using Daily Compounding Option.

Example 2: Fixed Rate Investment Contract Using Monthly Compounding Option.

Example 3: Variable Rate Investment Contract Using Simple Interest Calculation.

Example 4: Partial Interest Payments.

Example 5: Manual Adjustment To Investment Contract Accumulated Income Balance.

## 5.1 FORMULAS USED FOR EXAMPLES

The basic formula for the compounding options is first presented, followed by the actual examples.

### **Example One**

The daily compounding option for which one day of income for the current accumulation period is calculated as follows:

$$I = (P * (1 + R)^{1/F}) - P$$

Where, I - Income  
P - Remaining contractually settled principal balance  
R - Annual interest rate in effect for the date of the calculation  
F - Frequency of compounding. Values are '365' for 365-day basis (i.e. BOSB ACCRUAL METHOD 'K') or '365' or '366' for actual-day basis (i.e. BOSB ACCRUAL METHOD 'L')

### **Example Two**

The monthly compounding option for which one day of income for the current accumulation period is calculated as follows:

$$I = CV * \frac{R}{Y}$$

Where, I - Income  
CV - Contractually settled contract value at prior month end  
R - Annual interest rate in effect for the date of the calculation  
Y - Number of days in the year. Values are '365' for 365-day basis (i.e. BOSB ACCRUAL METHOD 'K') or '365' or '366' for actual-day basis (i.e. BOSB ACCRUAL METHOD 'L')

### **Example Three**

No compounding (i.e. elects a simple interest method) for which one day of income for the current accumulation period is calculated as follows:

$$I = P * \frac{R}{Y}$$

Where, I - Income  
P - Remaining contractually settled principal balance  
R - Annual interest rate in effect for the date of the calculation  
Y - Number of days in the year. Values are '365' for 365-day basis (i.e. BOSB ACCRUAL METHOD 'K') or '365' or '366' for actual-day basis (i.e. BOSB ACCRUAL METHOD 'L')

## 5.2 EXAMPLES

### EXAMPLE 1: FIXED RATE INVESTMENT CONTRACT USING DAILY COMPOUNDING OPTION.

Account 16998 enters into an investment contract on 10/01/95. An additional deposit of principal is made on 10/07/95 and a partial withdrawal of principal is made on 10/15/95. Accumulated interest is due at 12/31/95. At 01/31/96 accumulated interest is again due, as is 60% of the then remaining principal balance. On 03/25/96 a partial withdrawal of principal and interest takes place. The contract matures on 03/31/96.

The security is defined via the standard security definition screen progression for bonds (BOBD → BOSB → BODE) as documented in [Section 5.20 Security Activities](#). The BOBD screen appears as follows, where (aside from the usual bond-like security definition considerations) the IC ASSET GROUP designation is of most significance:

NEXT		BOBD		MODE VIEW		FDMP43
* * * SECURITY DEFINITION * * *						
SECURITY NO IC001		SHORT NAME	IC #001	SHORT NAME		
MODEL SECURITY IND:						
STATE CODE.....	80	INCEPTION DATE.....	04	10	95	
REPT/NO:...		CUSIP (PRICING) NUMBER.....	IC001			
PRICE CODE.....	F	ASSET GROUP.....	IC			
SEGMENT.....	0000	CATEGORY.....	0000			
SECTOR.....	0000	INDUSTRY.....	0000			
HIGH PRICE RANGE .....	99.9	LOW PRICE RANGE.....	99.9-			
SIC CODE.....		CROSS REFERENCE CODE.....				
ISSUER CODE.....	IC001	TRANSACTION GENERATION.....	Y			
LAG DAYS.. 0005	LAG DAYS METHOD.. 1	FEDERAL TAX STATUS.....	T			
INCOME CATE MAIN.....	0000	INCOME CATE SUB.....	0000			
PRICE SOURCE.....		PRICE TYPE.....				
BACKUP PRICE SOURCE.....		BACKUP PRICE TYPE.....				
FORM 13F FLAG. Y	EXCLUDE MGT FEES N	TITLE OF CLASS (CODE).....				
ISSUE CURRENCY..	PREC...	ISSUE COUNTRY CODE.....				
INCOME CURRENCY..	PREC...	GUARANTOR.....				
TRADE CURRENCY..	PREC...	PRICE GROUP.....				
FRANKED/UNFRANKED.....		BID/OFFER SPREAD (%).....	0.000			

The BOSB screen appears as follows, where the following characteristics are significant:

Field	Description. Fields Shaded Gray are Required.
ACCRUAL METHOD	L - Investment Contract - actual days
ACCR INCM OPT	0 - day of deposit
ISSUE DATE	10/01/95 - representing the first day of a contract fiscal year
INTEREST RATE	6.9(%) - the fixed annual interest percentage rate of the contract
MATURITY DATE	03/31/1996
COMPOUNDING OPT	D - daily compounding of accumulating interest
ANNUAL RATE TYPE	IC - Investment Contract

```

NEXT                BOSB                MODE VIEW FDMP46
          * * * SECURITY DEFINITION - BOND * * *

SECURITY NO: IC001                IC #001 SHORT NAME
BOND CODE .1 1ST PWDN DATE..      ACCR METH. L  ACCR OPT. 0  INT PUR.
FIRST COUPON DATE .....          ISSUE DATE..... 10 01 95
INTEREST RATE ... 6.900000000     MATURITY DATE ..... 03 31 1996
COMPOUNDING OPT.. D  PYMT FREQ..   PAYMENT MONTH/DAY ..... MM DD
AMORT/ACCRET.. N  INFLAT INDEX..  DEFAULT DATE..          CPN CC
MSTR NOTE FLOOR (000) ....        ISSUE PRICE ...
MSTR NOTE CEILING (000)...        RATING: S AND P          MOODYS
MATRIX CODE.... TBA FLAG..        ORIGINAL BAL....
EFF MATY DATE.. CCYY PREPAY..     PAR OUTSTANDING..
BENCHMARK.. CCYY                  RATE CHANGE FREQ..      INCREMENT..
BENCHMARK SPREAD .....          FIRST DATE..            MONTH-END...
ANN RATE TYPE .....IC GNMA GEN .. CONSTANT DTM.          2A-7. DEMAND.
AMORT TO EFF MATY DATE..N  ACTIVE.. CLASS OF SHARES      REF X
CCB DAYS... CONTRA EXPENSE...N   EFF MATY PRICE.. 100.0000 MATU
SEC YIELD: MAX. MIN.             SEC OVR          EFF MAT LEN
REPORT AS CASH. N  PEP EXPIRY    EFFECTIVE MATY REF-DATE
NOTE: RATES FOR MULTIPLE RATE ITEMS ARE NOT ENTERED HERE          SWP=>
    
```

The BOPM screen appears as follows, where the following characteristics are significant:

Accumulated interest is due at:	Entry at that date:
12/31/95	TYPE 'I'
01/31/96 as is 60% of the principal balance remaining at that time	TYPE 'P'
03/31/96 (maturity) as is 100% of the principal balance remaining at that time	TYPE 'P'

```

NEXT                BOPM                MODE ADD    FDMP253
          * * * * * PAYMENT SCHEDULE * * * * *

SECURITY NO: IC001                IC #001 SHORT NAME
PAYMENT DATE: 03 31 96
TYPE.....: P  PRINCIPAL AMOUNT/%    100.00
              DATE      TYPE      PRINCIPAL AMOUNT/%
              03/31/96  P        100.00
              01/31/96  P         60.00
              12/31/95  I          .00
    
```

The series of transactions entered by the user via the Trade Entry (DETE) screen are as follows (where, for all transactions, the account number entered was 16998 and the security number entered was IC001):

Tran Code	Effective Date	Trade and Contractual Settle Dates	Actual Settle Date	Share/Par	Total Principal	Income Effect	Cost (calculated)
OPNIC	10/01/95	10/01/95	10/01/95	10,000,000.00	10,000,000.00	0.00	10,000,000.00
DEPIC	10/07/95	10/07/95	10/07/95	150,000.00	150,000.00	0.00	150,000.00
WTHIC	10/15/95	10/15/95	10/15/95	70,000.00	70,000.00	0.00	70,000.00
INTIC	12/31/95	12/31/95	01/05/96	0.00	0.00	168,634.25	0.00
INTIC	01/31/96	01/31/96	02/05/96	0.00	0.00	57,127.94	0.00
PMTIC	01/31/96	01/31/96	02/05/96	6,048,000.00	6,048,000.00	0.00	6,048,000.00
WTHIC	03/25/96	03/25/96	03/25/96	201,978.62	200,000.00	1,978.62	200,000.00
INTIC	03/31/96	03/31/96	03/31/96	0.00	0.00	42,145.67	0.00
MATUIC	03/31/96	03/31/96	03/31/96	3,832,000.00	3,832,000.00	0.00	3,832,000.00

For each of the above transactions the cost amount is calculated by the system and represents the impact of the transaction on the principal balance (seen on the Holdings Definition (VSHO) screen as PRINCIPAL BALANCE). The shares/par amount of a given transaction represents its direct impact on the contract value (seen on the Holdings Definition (VSHO) screen as CARRY, COST and MARKET VALUES). The income effect of a given INTIC transaction drives the other income receivable and income cash general ledger entries expected when the accumulated income balance (seen on the Holdings Definition (VSHO) screen as INCOME BALANCE) is reset based on a scheduled interest payment date.

The income effect of a given WTHIC transaction represents its direct impact on the accumulated income balance. The general ledger effects of each of the above transactions (as would be seen on the General Ledger Transaction Inquiry (GLIN) screen) are as follows:

- The 10/01/95 OPNIC (Open Investment Contract):  
*(Entries for 10/01/95) -*

Securities at Value	10,000,000.00	
Cash (Principal)		10,000,000.00
- The 10/07/95 DEPIC (Investment Contract Deposit):  
*(Entries for 10/07/95) -*

Securities at Value	150,000.00	
Cash (Principal)		150,000.00
- The 10/15/95 WTHIC (Investment Contract Withdrawal):  
*(Entries for 10/15/95) -*

Cash (Principal)	70,000.00	
Securities at Value		70,000.00
- The 12/31/95 INTIC (Interest Payment for Investment Contract):  
*(Entries for 12/31/95) -*

Other Income Receivable (Income Main Classification)	168,634.25	168,634.25
---	------------	------------

  
*(Entries for 01/05/96) -*

Cash (Income)	168,634.25	
Other Income Receivable		168,634.25



The 10/31/95 position in the contract as seen on the Holdings Definition (VSHO) screen:

NEXT	VSHO	MODE VIEW	FDMP28
* * * HOLDINGS DEFINITION * * *			
ACCOUNT NO: . . . . .	000000000016998	INVESTMENT CONTRACT FUND	
SECURITY NO: . . . . .	IC001	IC #001 SHORT NAME	
SECURITY DATE . . . . .	00 00 0000	SECURITY UNIQUE . . . . .	00000
HOLDINGS DATE . . . . .	10 31 95		
PRICE CODE . . . . .	F	COMMITMENT FLAG . . . . .	N
EFFT DATE/OLDEST PEND . . .	99 99 99	THERE ARE TRANS DURING THE PERIOD	
SCHEDULE PAYMENT DATE . . .	00 00 00	INCOME BALANCE . . . . .	57,142.49
		BASE AMORT . . . . .	0.00
SETTLED MARKET . . . . .		10,137,142.49 DURATION . .	N/A
TRADED MARKET . . . . .		10,137,142.49 DIVIDEND REINVEST . . .	
PRICE . . . . .	0.000000	ACCRUED INCOME . . . . .	0.00
AMORT/ACCRET . . . . .	0.00	WITHHOLDING . . . . .	0.00
DESCRIPTION		CARRY	COST
TRADED . . . . .		10,137,142.4900	10,137,142.49
PLEGGED . . . . .		0.0000	0.00
SETTLED . . . . .		10,137,142.4900	10,137,142.49
PRINCIPAL BALANCE . . . . .			10,080,000.00

The contract value at 10/31/95 is 10,137,142.49 and is comprised of 10,080,000.00 in principal (the net effect of transactions to date) and 57,142.49 in accumulated income. The income accumulation calculations are approximated as follows:

10/01 through 10/06 = 6 days of income:  
 $(10,000,000.00 * ((1+0.069)^{(6/366)})) - 10,000,000.00 = 10,944.29$

10/07 through 10/14 = 8 days of income:  
 $((10,010,944.29+150,000)*((1+0.069)^{(8/366)}))- (10,010,944.29+150,000)=14,829.95$

10/15 through 10/31 = 17 days of income:  
 $((10,175,774.24-70,000)*((1+0.069)^{(17/366)}))- (10,175,774.24-70,000)=31,368.25$

$10,944.29 + 14,829.95 + 31,368.25 = 57,142.49$  income balance at 10/31/95

$10,080,000.00 + 57,142.49 = 10,137,142.49$  contract value at 10/31/95

The contract value at 11/30/95 is 10,192,735.94 and is comprised of 10,080,000.00 in principal and 112,735.94 in accumulated income. The calculation of additional income accumulated for the month of November is approximated as follows:

11/01 through 11/30 = 30 days of income:  
 $(10,137,142.49 * ((1+0.069)^{(30/366)})) - 10,137,142.49 = 55,593.45$

$57,142.49 + 55,593.45 = 112,735.94$  income balance at 11/30/95

$10,080,000.00 + 112,735.94 = 10,192,735.94$  contract value at 11/30/95

Accumulated income is due on 12/31/95 and the income balance is reset to zero in anticipation of the income collection. The calculation of income due at 12/31/95 is based on the accumulation of income through November plus the additional accumulation for the month of December approximated as follows:

$$\begin{aligned} &12/01 \text{ through } 12/30 = 30 \text{ days of income:} \\ &\quad (10,192,735.94 * ((1+0.069)^{(30/366)})) - 10,192,735.94 = 55,898.31 \\ &112,735.94 + 55,898.31 = 168,634.25 \text{ income due at } 12/31/95 \end{aligned}$$

The contract value at 12/31/95 is 10,081,837.80 and is comprised of 10,080,000.00 in principal and 1,837.80 in accumulated income where the income calculation is approximated as follows:

$$\begin{aligned} &12/31 \text{ through } 12/31 = 1 \text{ day of income:} \\ &\quad (10,080,000.00 * ((1+0.069)^{(1/366)})) - 10,080,000.00 = 1,837.80 \\ &10,080,000.00 + 1,837.80 = 10,081,837.80 \text{ contract value at } 12/31/95 \end{aligned}$$

Accumulated income and 60% of remaining principal is due on 01/31/96 and the income balance is reset to zero in anticipation of the income collection. The calculation of income due at 01/31/96 is based on the accumulation of income through December plus the additional accumulation for the month of January approximated as follows:

$$\begin{aligned} &01/01 \text{ through } 01/30 = 30 \text{ days of income:} \\ &\quad (10,081,827.80 * ((1+0.069)^{(30/366)})) - 10,081,827.80 = 55,290.14 \\ &1,837.80 + 55,290.14 = 57,127.94 \text{ income due at } 01/31/96 \end{aligned}$$

The contract value at 01/31/96 is 4,032,735.12 and is comprised of 4,032,000.00 in principal and 735.12 in accumulated income where the income calculation is approximated as follows:

$$\begin{aligned} &01/31 \text{ through } 01/31 = 1 \text{ day of income:} \\ &\quad (4,032,000.00 * ((1+0.069)^{(1/366)})) - 4,032,000.00 = 735.12 \\ &4,032,000.00 + 735.12 = 4,032,735.12 \text{ contract value at } 01/31/96 \end{aligned}$$

Note that the 01/31/96 principal payment has reduced the principal balance by 60% (or 6,048,000.00) to 4,032,000.00.

The contract value at 02/29/96 is 4,541,112.03 and is comprised of 4,032,000.00 in principal and 22,112.03 in accumulated income where the income calculation is approximated as follows:

$$\begin{aligned} &01/31 \text{ through } 02/29 = 30 \text{ days of income:} \\ &\quad (4,032,000.00 * ((1+0.069)^{(30/366)})) - 4,032,000.00 = 22,112.03 \\ &4,032,000.00 + 22,112.03 = 4,054,112.03 \text{ contract value at } 02/29/96 \end{aligned}$$

Accumulated income and 100% of remaining principal is due on 03/31/96 and the income balance is reset to zero in anticipation of the income collection. The calculation of income due at 03/31/96 is approximated as follows:

01/31 through 03/24 = 54 days of income:

$$(4,032,000.00 * ((1+0.069)^(54/366))) - 4,032,000.00 = 39,888.95$$

Less the income withdrawn on 03/25, or 1,978.62

Plus 03/25 through 03/30 = 6 days of income based on remaining contract value of:

$$3,832,000.00 + 39,888.95 - 1,978.62 = 3,869,910.33 \text{ contract value at 03/25}$$

$$3,869,910.33 * ((1+0.069)^(6/366)) - 3,869,910.33 = 4,235.34$$

$$39,888.95 - 1,978.62 + 4,235.34 = 42,145.67 \text{ income due at 03/31/96.}$$

The 03/25 withdrawal reduced the principal balance (by 200,000.00) to 3,832,000.00 and the maturity reduced the principal balance (by 100%) to zero.

**EXAMPLE 2: FIXED RATE INVESTMENT CONTRACT USING MONTHLY COMPOUNDING OPTION.**

Account 16998 enters into an investment contract on 10/01/95. An additional deposit of principal is made on 10/07/95 and a partial withdrawal of principal is made on 10/15/95. Accumulated interest is due at 12/31/95. At 01/31/96 accumulated interest is again due and the remaining principal balance is to be paid down to 4,032,000.00. On 03/25/96 a partial withdrawal of principal and interest takes place. The contract matures on 03/31/96.

The security is defined via the standard security definition screen progression for bonds (BOBD → BOSB → BODE) as documented in [Section 5.20 Security Activities](#). The BOBD screen appears as follows, where (aside from the usual bond-like security definition considerations) the IC ASSET GROUP designation is of most significance:

```

NEXT                BOBD                MODE VIEW  FDMP43
                   * * * SECURITY DEFINITION * * *

SECURITY NO IC002    00 00 0000 00000    SHORT NAME  IC #002 SHORT NAME
MODEL SECURITY IND:
STATE CODE..... 80    INCEPTION DATE.....04 10 95
REPT/NO:....        CUSIP (PRICING) NUMBER..... IC002
PRICE CODE..... F    ASSET GROUP.....IC
SEGMENT..... 0000    CATEGORY.....0000
SECTOR..... 0000    INDUSTRY.....0000
HIGH PRICE RANGE .. 99.9    LOW PRICE RANGE.....99.9-
SIC CODE.....        CROSS REFERENCE CODE.....
ISSUER CODE..... IC002    TRANSACTION GENERATION..... Y
LAG DAYS.. 0000    LAG DAYS METHOD.. 1    FEDERAL TAX STATUS..... T
INCOME CATE MAIN..... 0000    INCOME CATE SUB..... 0000
PRICE SOURCE.....        PRICE TYPE.....
BACKUP PRICE SOURCE.....    BACKUP PRICE TYPE.....
FORM 13F FLAG. Y    EXCLUDE MGT FEES N    TITLE OF CLASS (CODE).....
ISSUE CURRENCY..    PREC...    ISSUE COUNTRY CODE.....
INCOME CURRENCY..    PREC...    GUARANTOR.....
TRADE CURRENCY..    PREC...    PRICE GROUP.....
FRANKED/UNFRANKED.....    BID/OFFER SPREAD (%)..... 0.000
    
```

SYSTEM MANUAL - SECTION 5.610 - INVESTMENT CONTRACTS PROCESSING  
INVESTMENT CONTRACT PROCESSING EXPLANATION AND EXAMPLES

BOSB Screen

```

NEXT                BOSB                MODE VIEW  FDMP46
* * * SECURITY DEFINITION - BOND * * *

SECURITY NO: IC002      00 00 0000 00000  IC #002 SHORT NAME
BOND CODE . 1 1ST PWDN DATE.. ACCR METH. L  ACCR OPT.          INT PUR.
FIRST COUPON DATE ..... ISSUE DATE.....          00 00 00
INTEREST RATE ... 6.900000000 MATURITY DATE .....          03 31 1996
COMPOUNDING OPT.. M      PYMT FREQ.. PAYMENT MONTH/DAY .....          MM DD
AMORT/ACCRET.. N  INFLAT INDEX.. DEFAULT DATE..          CPN CC
MSTR NOTE FLOOR (000) .... 0  ISSUE PRICE ...
MSTR NOTE CEILING (000) .. 0  RATING: S AND P          MOODYS
MATRIX CODE.... TBA FLAG.. ORIGINAL BAL....
EFF MATY DATE.. CCYY PREPAY.. PAR OUTSTANDING..
BENCHMARK.. CCYY RATE CHANGE FREQ.. INCREMENT..
BENCHMARK SPREAD ..... FIRST DATE.. 00 00 00 MONTH-END...
ANN RATE TYPE .....IC GNMA GEN .. CONSTANT DTM.          2A-7. DEMAND.
AMORT TO EFF MATY DATE..N ACTIVE.. CLASS OF SHARES          REF X
CCB DAYS... CONTRA EXPENSE...N EFF MATY PRICE.. 100.0000 MATU
SEC YIELD: MAX. MIN. SEC OVR          EFF MAT LEN
REPORT AS CASH. N PEP EXPIRY EFFECTIVE MATY REF-DATE
NOTE: RATES FOR MULTIPLE RATE ITEMS ARE NOT ENTERED HERE          SWP=>
    
```

The following characteristics are significant:

Field	Description. Fields Shaded Gray are Required.
ACCRUAL METHOD	L - Investment Contract - actual days
ACCR OPT	Blank - use accrued income option of the account - day of deposit
ISSUE DATE	00/00/00 - use calendar year to identify 365 or 366 as numerator
INTEREST RATE	6.9(%) - the fixed annual interest percentage rate of the contract
MATURITY DATE	03/31/1996
COMPOUNDING OPT	M - monthly compounding of accumulating interest
ANNUAL RATE TYPE	IC - Investment Contract

The BOPM screen appears as follows, where the following characteristics are significant:

- Accumulated interest is due at 12/31/95, designated by the TYPE 'I' entry at that date.
- Accumulated interest is due at 01/31/96, and the principal balance is to be paid down to 4,032,000.000 at that time, designated by the TYPE 'A' entry at that date.
- Accumulated interest is due at 03/31/96 (maturity), and the principal balance is to be paid down to zero at that time, designated by the TYPE 'A' entry at that date.

```

NEXT                BOPM                MODE VIEW  FDMP253
      * * * * * PAYMENT SCHEDULE * * * * *

SECURITY NO: IC002      00 00 0000      IC #002 SHORT NAME
PAYMENT DATE: 03 31 96
TYPE.....: A  PRINCIPAL AMOUNT/%          .00
                DATE      TYPE      PRINCIPAL AMOUNT/%
                03/31/96  A          .00
                01/31/96  A          4,032,000.00
                12/31/95  I          .00
    
```

The series of transactions entered by the user via the Trade Entry (DETE) screen are as follows (where, for all transactions, the account number entered was 16998 and the security number entered was IC002):

Tran Code	Effective Date	Trade and Contractual Settle Dates	Actual Settle Date	Share/Par	Total Principal	Income Effect	Cost (calculated)
OPNIC	10/01/95	10/01/95	10/01/95	10,000,000.00	10,000,000.00	0.00	10,000,000.00
DEPIC	10/07/95	10/07/95	10/07/95	150,000.00	150,000.00	0.00	150,000.00
WTHIC	10/15/95	10/15/95	10/15/95	70,000.00	70,000.00	0.00	70,000.00
INTIC	12/31/95	12/31/95	12/31/95	0.00	0.00	174,414.73	0.00
INTIC	01/31/96	01/31/96	01/31/96	0.00	0.00	58,926.23	0.00
PMTIC	01/31/96	01/31/96	01/31/96	6,048,000.00	6,048,000.00	0.00	6,048,000.00
WTHIC	03/25/96	03/25/96	03/25/96	202,041.38	200,000.00	2,041.38	200,000.00
INTIC	03/31/96	03/31/96	03/31/96	0.00	0.00	43,473.28	0.00
MATUIC	03/31/96	03/31/96	03/31/96	3,832,000.00	3,832,000.00	0.00	3,832,000.00

For each of the above transactions the cost amount is calculated by the system and represents the impact of the transaction on the principal balance (seen on the Holdings Definition (VSHO) screen as PRINCIPAL BALANCE). The shares/par amount of a given transaction represents its direct impact on the contract value (seen on the Holdings Definition (VSHO) screen as CARRY, COST and MARKET VALUES). The income effect of a given INTIC transaction drives the other income receivable and income cash general ledger entries expected when the accumulated income balance (seen on the Holdings Definition (VSHO) screen as INCOME BALANCE) is reset based on a scheduled interest payment date. The income effect of a given WTHIC transaction represents its direct impact on the accumulated income balance. The 10/31/95 position in the contract would appear as follows if viewed via the Holdings Definition (VSHO) screen:

NEXT	VSHO	MODE VIEW	FDMP28
* * * HOLDINGS DEFINITION * * *			
ACCOUNT NO: . . . . .	000000000016998	INVESTMENT CONTRACT FUND	
SECURITY NO: . . . . .	IC002	IC #002 SHORT NAME	
SECURITY DATE . . . . .	00 00 0000	SECURITY UNIQUE . . . . .	
HOLDINGS DATE . . . . .	10 31 95		
PRICE CODE . . . . .	F	COMMITMENT FLAG . . . . .	N
EFFT DATE/OLDEST PEND . . .	99 99 99	THERE ARE TRANS DURING THE PERIOD	
SCHEDULE PAYMENT DATE . . .	00 00 00	INCOME BALANCE . . . . .	59,086.63
		BASE AMORT . . . . .	0.00
SETTLED MARKET . . . . .		10,139,086.63 DURATION . .	N/A
TRADED MARKET . . . . .		10,139,086.63 DIVIDEND REINVEST . . .	
PRICE . . . . .	0.000000	ACCRUED INCOME . . . . .	0.00
AMORT/ACCRET . . . . .	0.00	WITHHOLDING . . . . .	0.00
DESCRIPTION		CARRY	COST
TRADED . . . . .		10,139,086.6300	10,139,086.63
PLEDGED . . . . .		0.0000	0.00
SETTLED . . . . .		10,139,086.6300	10,139,086.63
PRINCIPAL BALANCE . . . . .			10,080,000.00

The contract value at 10/31/95 is 10,139,086.63 and is comprised of 10,080,000.00 in principal (the net effect of transactions to date) and 59,086.63 in accumulated income. The income accumulation calculations are approximated as follows:

- 10/01 through 10/06 = 6 days of income:  
 $(10,000,000.00 * (0.069/365))$  rounded \* 6 days = 11,342.46
- 10/07 through 10/14 = 8 days of income:  
 $(10,150,000.00 * (0.069/365))$  rounded \* 8 days = 15,350.16
- 10/15 through 10/31 = 17 days of income:  
 $(10,080,000.00 * (0.069/365))$  rounded \* 17 days = 32,394.01
- 11,342.46 + 15,350.16 + 32,394.01 = 59,086.63 income balance at 10/31/95
- 10,080,000.00 + 59,086.63 = 10,139,086.63 contract value at 10/31/95

The contract value at 11/30/95 is 10,196,587.63 and is comprised of 10,080,000.00 in principal and 116,587.63 in accumulated income. The calculation of additional income accumulated for the month of November is approximated as follows:

$$\begin{aligned} &11/01 \text{ through } 11/30 = 30 \text{ days of income:} \\ &\quad (10,139,086.63 * (0.069/365)) \text{ rounded } * 30 \text{ days} = 57,501.00 \\ &59,086.63 + 57,501.00 = 116,587.63 \text{ income balance at } 11/30/95 \\ &10,080,000.00 + 116,587.63 = 10,196,587.63 \text{ contract value at } 11/30/95 \end{aligned}$$

Accumulated income is due on 12/31/95 and the income balance is reset to zero in anticipation of the income collection. The calculation of income due at 12/31/95 is based on the accumulation of income through November plus the additional accumulation for the month of December approximated as follows:

$$\begin{aligned} &12/01 \text{ through } 12/30 = 30 \text{ days of income:} \\ &\quad (10,196,587.63 * (0.069/365)) \text{ rounded } * 30 \text{ days} = 57,827.10 \\ &116,587.63 + 57,827.10 = 174,414.73 \text{ income due at } 12/31/95 \end{aligned}$$

The contract value at 12/31/95 is 10,081,905.53 and is comprised of 10,080,000.00 in principal and 1,905.53 in accumulated income where the income calculation is approximated as follows:

$$\begin{aligned} &12/31 \text{ through } 12/31 = 1 \text{ day of income:} \\ &\quad (10,080,000.00 * (0.069/365)) \text{ rounded } * 1 \text{ day} = 1,905.53 \\ &10,080,000.00 + 1,905.53 = 10,081,905.53 \text{ contract value at } 12/31/95 \end{aligned}$$

Accumulated income is due on 01/31/96 and the income balance is reset to zero in anticipation of the income collection. The principal balance is also to be paid down to 4,032,000.00 at this date. The calculation of income due at 01/31/96 is based on the accumulation of income for the month of January approximated as follows:

$$\begin{aligned} &01/01 \text{ through } 01/30 = 30 \text{ days of income:} \\ &\quad (10,081,905.53 * (0.069/366)) \text{ rounded } * 30 \text{ days} = 57,020.70 \\ &1,905.53 + 57,020.70 = 58,926.23 \text{ income due at } 01/31/96 \end{aligned}$$

The contract value at 01/31/96 is 4,032,760.13 and is comprised of 4,032,000.00 in principal and 760.13 in accumulated income where the income calculation is approximated as follows:

$$\begin{aligned} &01/31 \text{ through } 01/31 = 1 \text{ day of income:} \\ &\quad (4,032,000.00 * (0.069/366)) \text{ rounded } * 1 \text{ day} = 760.13 \\ &4,032,000.00 + 760.13 = 4,032,760.13 \text{ contract value at } 01/31/96 \end{aligned}$$

Note that the 01/31/96 principal payment has reduced the principal balance (by 6,048,000.00) to 4,032,000.00.

The contract value at 02/29/96 is 4,054,807.96 and is comprised of 4,032,000.00 in principal and 22,807.96 in accumulated income where the income calculation is approximated as follows:

01/31 through 01/31 = 1 day of income:  
 $(4,032,000.00 * (0.069/366))$  rounded \* 1 day = 760.13

02/01 through 02/29 = 29 days of income:  
 $(4,032,760.13 * (0.069/366))$  rounded \* 29 days = 22,047.83

$760.13 + 22,047.83 = 22,807.96$  income balance at 02/29/96

$4,032,000.00 + 22,807.96 = 4,054,807.96$  contract value at 02/29/96

Accumulated income and remaining principal is due on 03/31/96 and the income balance is reset to zero in anticipation of the income collection. The calculation of income due at 03/31/96 is approximated as follows:

01/31 through 01/31 = 1 day of income:  
 $(4,032,000.00 * (0.069/366))$  rounded \* 1 day = 760.13

02/01 through 02/29 = 29 days of income:  
 $(4,032,760.13 * (0.069/366))$  rounded \* 29 days = 22,047.83

03/01 through 03/24 = 24 days of income:  
 $(4,054,807.96 * (0.069/366))$  rounded \* 24 days = 18,346.32

Less the income withdrawn on 03/25: 2,041.38

Plus 03/25 through 03/30 = 6 days of income:  
 $(3,854,807.96 * (0.069/366))$  rounded \* 6 days = 4,360.38

$760.13 + 22,047.83 + 18,346.32 - 2,041.38 + 4,360.38 = 43,473.28$  income due at 03/31/96.

The 03/25 withdrawal reduced the principal balance and the basis for earnings for the remaining days in the current month by 200,000.00. (i.e. at 03/25 the principal balance is reduced to 3,832,000.00 and the basis for earnings for the remaining days in the current month is reduced to 3,854,807.96). The maturity transaction reduced the principal balance to zero.

**EXAMPLE 3: VARIABLE RATE INVESTMENT CONTRACT USING SIMPLE INTEREST CALCULATION.**

Account 16998 enters into an investment contract on 10/01/95. An additional deposit of principal is made on 10/07/95 and a partial withdrawal of principal is made on 10/15/95. Accumulated interest is due at 12/31/95. At 01/31/96 accumulated interest is again due and the remaining principal balance is to be paid down to 4,032,000.00. On 03/25/96 a partial withdrawal of principal and interest takes place. The contract matures on 03/31/96.

The security is defined via the standard security definition screen progression for bonds (BOBD → BOSB → BODE) as documented in Section 5.20 Security Activities. The BOBD screen appears as follows, where (aside from the usual bond-like security definition considerations) the IC asset group designation is of most significance:

NEXT	BOBD	MODE VIEW	FDMP43
* * * SECURITY DEFINITION * * *			
SECURITY NO IC003	00 00 0000	SHORT NAME	IC #003 SHORT NAME
MODEL SECURITY IND:			
STATE CODE.....	80	INCEPTION DATE.....	04 10 95
REPT/NO:...		CUSIP (PRICING) NUMBER.....	IC003
PRICE CODE.....	F	ASSET GROUP.....	IC
SEGMENT.....	0000	CATEGORY.....	0000
SECTOR.....	0000	INDUSTRY.....	0000
HIGH PRICE RANGE .....	99.9	LOW PRICE RANGE.....	99.9-
SIC CODE.....		CROSS REFERENCE CODE.....	
ISSUER CODE.....	IC003	TRANSACTION GENERATION.....	Y
LAG DAYS.. 0000	LAG DAYS METHOD.. 1	FEDERAL TAX STATUS.....	T
INCOME CATE MAIN.....	0000	INCOME CATE SUB.....	0000
PRICE SOURCE.....		PRICE TYPE.....	
BACKUP PRICE SOURCE.....		BACKUP PRICE TYPE.....	
FORM 13F FLAG. Y	EXCLUDE MGT FEES N	TITLE OF CLASS (CODE).....	
ISSUE CURRENCY..	PREC...	ISSUE COUNTRY CODE.....	
INCOME CURRENCY..	PREC...	GUARANTOR.....	
TRADE CURRENCY..	PREC...	PRICE GROUP.....	
FRANKED/UNFRANKED.....		BID/OFFER SPREAD (%).....	0.000

The BOSB screen appears as follows, where the following characteristics are significant:

ACCRUAL METHOD	K - Investment Contract - 365 days
ACCR INCM OPT	1 - day of withdrawal
INTEREST RATE	6.9(%) - the initial annual interest percentage rate of the contract
MATURITY DATE	03/31/1996
COMPOUNDING OPT	Blank - no compounding of accumulating interest
ANNUAL RATE TYPE	IC - Investment Contract

Rate changes are anticipated on the second Tuesday of each month (as indicated by the rate change schedule data present on BOSB). See [Section 5.20](#), *Security Activities* for further information on the BOSB rate change schedule). The rate in effect at the opening of the contract has been entered on BOSB. Rate changes are entered via the Corporate Actions/Rates (DECR) screen. Defining the initial rate via BOSB is optional and is available as a convenience, as all rates (including the initial rate) could instead be entered via DECR.

NEXT	BOSB	MODE CHANGE	FDMP46
* * * SECURITY DEFINITION - BOND * * *			
SECURITY NO: IC003	00 00 0000	IC #003	SHORT NAME
BOND CODE . 1	1ST PWDN DATE..	ACCR METH. K	ACCR OPT. 1 INT PUR.
FIRST COUPON DATE .....		ISSUE DATE .....	00 00 00
INTEREST RATE ... 6.900000000		MATURITY DATE .....	03 31 1996
COMPOUNDING OPT..	PYMT FREQ..	PAYMENT MONTH/DAY .....	00 00
AMORT/ACCRET.. N	INFLAT INDEX..	DEFAULT DATE..	CPN CC
MSTR NOTE FLOOR (000) ....	0	ISSUE PRICE ...	0.00000000
MSTR NOTE CEILING (000) ..	0	RATING: S AND P	MOODYS
MATRIX CODE....	TBA FLAG..	ORIGINAL BAL...	0.00
EFF MATY DATE..	CCYY PREPAY..	PAR OUTSTANDING..	0.00
BENCHMARK..	CCYY	RATE CHANGE FREQ.. TU	INCREMENT..02
BENCHMARK SPREAD .....		FIRST DATE..	MONTH-END...
ANN RATE TYPE .....	IC GNMA GEN ..	CONSTANT DTM.	2A-7. DEMAND.
AMORT TO EFF MATY DATE..M	ACTIVE..	CLASS OF SHARES	00 REF X
CCB DAYS...	CONTRA EXPENSE...N	EFF MATY PRICE..	100.0000 MATU
SEC YIELD: MAX.	MIN.	SEC OVR	EFF MAT LEN
REPORT AS CASH. N	PEP EXPIRY	EFFECTIVE MATY REF-DATE	
			SWP=>

The BOPM screen appears as follows, where the following characteristics are significant:

<b>This condition is designated by the TYPE→</b>	<b>TYPE</b>
Accumulated interest is due at 12/31/95	I
Accumulated interest is due at 01/31/96, and the principal balance is to be paid down to 3,832,000.000 at that time	A

- No payment date entry is present for the 03/31/96 maturity date. Whether or not an entry is present on BOPM, all income and remaining principal is due at maturity.

```

NEXT                BOPM                MODE VIEW  FDMP253
      * * * * * PAYMENT SCHEDULE * * * * *

SECURITY NO: IC003      00 00 0000      IC #003 SHORT NAME
PAYMENT DATE: 03 31 96
TYPE.....:      PRINCIPAL AMOUNT/%      .00
                  DATE      TYPE      PRINCIPAL AMOUNT/%
                  01/31/96      A      4,032,000.00
                  12/31/95      I      .00
    
```

Rate changes over the life of the contract are maintained via the DECR screen. The equivalent screen requested in VIEW mode for the contract presented in this example appears as follows:

```

NEXT                VSCR                MODE VIEW  FDMP53
      * * * CORPORATE ACTIONS/RATES * * *

SECURITY NO: IC003      00 00 0000      IC #003 SHORT NAME
COUPON/EX-DATE/EFF-DATE:..... 03 31 96      TYPE: IC      ORDER: 0      PRICE CODE:... F
RESET DATE:..... 00 00 00      INTEREST RATE:..      0.000000000000
GIVE:                SHRS FOR EVERY      SHRS

EFF-DATE  RESET  ORDER  TYPE      INTEREST RATE
03/12/96  03/12/96  0      IC      7.625000000000
02/13/96  02/13/96  0      IC      7.500000000000
01/09/96  01/09/96  0      IC      7.375000000000
12/17/95  12/12/95  0      IC      7.250000000000
11/14/95  11/14/95  0      IC      7.125000000000
10/17/95  10/17/95  0      IC      7.000000000000
    
```

Note that most of the rates were entered in a timely manner (i.e. each rate's EFF-DATE is equal to its RESET DATE), resulting in the accounting impacts of each of these rates being taken at the same date (i.e. the EFF-DATE) as of which the rate is to change the daily income earned (i.e. the RESET DATE)). The exception is the rate entered with an EFF-DATE of 12/17/95. This rate change ultimately impacts the daily income calculation starting at 12/12/95 (its RESET DATE)), but its accounting effects (based on its impact on the accumulated income balance) are not taken until 12/17/95 (its EFF-DATE).

The series of transactions entered by the user via the Trade Entry (DETE) screen are as follows (where, for all transactions, the account number entered was 16998 and the security number entered was IC003):

Tran Code	Effective Date	Trade and Contractual Settle Dates	Actual Settle Date	Share/Par	Total Principal	Income Effect	Cost (calculated)
OPNIC	10/01/95	10/01/95	10/01/95	10,000,000.00	10,000,000.00	0.00	10,000,000.00
DEPIC	10/07/95	10/07/95	10/07/95	150,000.00	150,000.00	0.00	150,000.00
WTHIC	10/15/95	10/15/95	10/15/95	70,000.00	70,000.00	0.00	70,000.00
INTIC	12/31/95	12/31/95	12/31/95	0.00	0.00	177,864.91	0.00
INTIC	01/31/96	01/31/96	01/31/96	0.00	0.00	62,861.85	0.00
PMTIC	01/31/96	01/31/96	01/31/96	6,048,000.00	6,048,000.00	0.00	6,048,000.00
WTHIC	03/25/96	03/25/96	03/25/96	202,179.44	200,000.00	2,179.44	200,000.00
INTIC	03/31/96	03/31/96	03/31/96	0.00	0.00	46,561.27	0.00
MATUIC	03/31/96	03/31/96	03/31/96	3,832,000.00	3,832,000.00	0.00	3,832,000.00

For each of the above transactions the cost amount is calculated by the system and represents the impact of the transaction on the principal balance (seen on the Holdings Definition (VSHO) screen as PRINCIPAL BALANCE). The shares/par amount of a given transaction represents its direct impact on the contract value (seen on the Holdings Definition (VSHO) screen as CARRY, COST and MARKET VALUES). The income effect of a given INTIC transaction drives the other income receivable and income cash general ledger entries expected when the accumulated income balance (seen on the Holdings Definition (VSHO) screen as INCOME BALANCE) is reset based on a scheduled interest payment date. The income effect of a given WTHIC transaction represents its direct impact on the accumulated income balance.

The 10/31/95 position in the contract as it appears on the Holdings Definition (VSHO) screen

NEXT	VSHO	MODE VIEW	FDMP28
* * * HOLDINGS DEFINITION * * *			
ACCOUNT NO: . . . . .	000000000016998	INVESTMENT CONTRACT FUND	
SECURITY NO: . . . . .	IC003	IC #003 SHORT NAME	
SECURITY DATE . . . . .	00 00 0000	SECURITY UNIQUE . . . . .	
HOLDINGS DATE . . . . .	10 31 95		
PRICE CODE . . . . .	F	COMMITMENT FLAG . . . . .	N
EFFT DATE/OLDEST PEND . . .	99 99 99	THERE ARE TRANS DURING THE PERIOD	
SCHEDULE PAYMENT DATE . . .	00 00 00	INCOME BALANCE . . . . .	57,595.40
		BASE AMORT . . . . .	0.00
SETTLED MARKET . . . . .		10,137,595.40 DURATION..	N/A
TRADED MARKET . . . . .		10,137,595.40 DIVIDEND REINVEST . . .	
PRICE . . . . .	0.000000	ACCRUED INCOME . . . . .	0.00
AMORT/ACCRET . . . . .	0.00	WITHHOLDING . . . . .	0.00
DESCRIPTION		CARRY	COST
TRADED . . . . .		10,137,595.4000	10,137,595.40
PLEGGED . . . . .		0.0000	0.00
SETTLED . . . . .		10,137,595.4000	10,137,595.40
PRINCIPAL BALANCE . . . . .			10,080,000.00

The contract value at 10/31/95 is 10,137,595.40 and is comprised of 10,080,000.00 in principal (the net effect of transactions to date) and 57,595.40 in accumulated income. The income accumulation calculations are approximated as follows:

10/02 through 10/07 = 6 days of income:  
 $(10,000,000.00 * (0.069/365))$  rounded \* 6 days = 11,342.46

10/08 through 10/15 = 8 days of income:  
 $(10,150,000.00 * (0.069/365))$  rounded \* 8 days = 15,350.16

10/16 through 10/16 = 1 day of income:  
 $(10,080,000.00 * (0.069/365))$  rounded \* 1 day = 1,905.53

10/17 through 10/31 = 15 days of income:  
 $(10,080,000.00 * (0.07/365))$  rounded \* 15 days = 28,997.25

$11,342.46 + 15,350.16 + 1,905.53 + 28,997.25 = 57,595.40$  income balance at 10/31/95

$10,080,000.00 + 57,595.40 = 10,137,595.40$  contract value at 10/31/95

The contract value at 11/30/95 is 10,196,176.74 and is comprised of 10,080,000.00 in principal and 116,176.74 in accumulated income. The calculation of additional income accumulated for the month of November is approximated as follows:

$$\begin{aligned} &11/01 \text{ through } 11/13 = 13 \text{ days of income:} \\ &\quad (10,080,000.00 * (0.07/365)) \text{ rounded } * 13 \text{ days} = 25,130.95 \\ &11/14 \text{ through } 11/30 = 17 \text{ days of income:} \\ &\quad (10,080,000.00 * (0.07125/365)) \text{ rounded } * 17 \text{ days} = 33,450.39 \\ &57,595.40 + 25,130.95 + 33,450.39 = 116,176.74 \text{ income balance at } 11/30/95 \\ &10,080,000.00 + 116,176.74 = 10,196,176.74 \text{ contract value at } 11/30/95 \end{aligned}$$

Accumulated income is due on 12/31/95 and the income balance is reset to zero in anticipation of the income collection. The calculation of income due at 12/31/95 is based on the accumulation of income through November plus the additional accumulation for the month of December approximated as follows:

$$\begin{aligned} &12/01 \text{ through } 12/11 = 11 \text{ days of income:} \\ &\quad (10,080,000.00 * (0.07125/365)) \text{ rounded } * 11 \text{ days} = 21,644.37 \\ &12/12 \text{ through } 12/31 = 20 \text{ days of income:} \\ &\quad (10,080,000.00 * (0.0725/365)) \text{ rounded } * 20 \text{ days} = 40,043.80 \\ &116,176.74 + 21,644.37 + 40,043.80 = 177,864.91 \text{ income due at } 12/31/95 \end{aligned}$$

The contract value at 12/31/95 is 10,080,000.00 and is comprised of 10,080,000.00 in principal and 0.00 in accumulated income. (Based on day of withdrawal, income earned on the 12/31/95 payment date is assumed to be collected on this date).

Accumulated income is due on 01/31/96 and the income balance is reset to zero in anticipation of the income collection. The principal balance is also to be paid down to 4,032,000.00 at this date. The calculation of income due at 01/31/96 is based on the accumulation of income for the month of January approximated as follows:

$$\begin{aligned} &01/01 \text{ through } 01/08 = 8 \text{ days of income:} \\ &\quad (10,080,000.00 * (0.0725/365)) \text{ rounded } * 8 \text{ days} = 16,017.52 \\ &01/09 \text{ through } 01/31 = 23 \text{ days of income:} \\ &\quad (10,080,000.00 * (0.07375/365)) \text{ rounded } * 23 \text{ days} = 46,844.33 \\ &16,017.52 + 46,844.33 = 62,861.85 \text{ income due at } 01/31/96 \end{aligned}$$

The contract value at 01/31/96 is 4,032,000.00 and is comprised of 4,032,000.00 in principal and 0.00 in accumulated income. (Based on day of withdrawal, income earned on the 01/31/96 payment date is assumed to be collected on this date). Note that the 01/31/96 principal payment has reduced the principal balance (by 6,048,000.00) to 4,032,000.00.

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INVESTMENT CONTRACT PROCESSING EXPLANATION AND EXAMPLES

The contract value at 02/29/96 is 4,055,032.00 and is comprised of 4,032,000.00 in principal and 23,032.00 in accumulated income where the income calculation is approximated as follows:

02/01 through 02/12 = 12 days of income:  
 $(4,032,000.00 * (0.07375/365))$  rounded \* 12 days = 9,776.16

02/13 through 02/28 = 16 days of income:  
 $(4,032,000.00 * (0.075/365))$  rounded \* 16 days = 13,255.84

02/29 through 02/29 = 0 days of income (ACCRUAL METHOD 'K' does not count 02/29)  
 $9,776.16 + 13,255.84 = 23,032.00$  income balance at 02/29/96

$4,032,000.00 + 23,032.00 = 4,055,032.00$  contract value at 02/29/96

Accumulated income and remaining principal is due on 03/31/96 and the income balance is reset to zero in anticipation of the income collection. The calculation of income due at 03/31/96 is approximated as follows:

02/01 through 02/12 = 12 days of income:  
 $(4,032,000.00 * (0.07375/365))$  rounded \* 12 days = 9,776.16

02/13 through 03/11 = 27 days of income:  
 $(4,032,000.00 * (0.075/365))$  rounded \* 27 days = 22,369.23

03/12 through 03/25 = 14 days of income:  
 $(4,032,000.00 * (0.07625/365))$  rounded \* 14 days = 11,792.20

Less the income withdrawn on 03/25: 2,179.44

Plus 03/26 through 03/31 = 6 days of income:  
 $(3,832,000.00 * (0.07625/365))$  rounded \* 6 days = 4,803.12

$9,776.16 + 22,369.23 + 11,792.20 - 2,179.44 + 4,803.12 = 46,561.27$  income due at 03/31/96.

The 03/25 withdrawal reduced the principal balance (by 200,000.00) to 3,832,000.00 and the maturity reduced the principal balance to zero.

**EXAMPLE 4: PARTIAL INTEREST PAYMENTS**

Account 514 enters into an investment contract on 10/01/95. An additional deposit of principal is made on 10/07/95, a partial withdrawal of principal is made on 10/15/95 and a partial withdrawal of principal and interest is made on 03/25/96.

Additionally, the contract calls for the following scheduled payments:

- 12/31/95 Half of the outstanding principal plus half of the accumulated interest
- 01/31/96 One tenth of the outstanding principal and no accumulated interest
- 02/29/96 Total contract value is paid down to \$4,600,000.00
- 03/31/96 Total contract value is paid down to \$4,000,000.00

The contract matures on 04/30/96.

The security is defined via the standard security definition screen progression for bonds (BOBD → BOSB → BODE) as documented in [Section 5.20 Security Activities](#). The BOBD screen appears as follows, where (aside from the usual bond-like security definition considerations) the IC ASSET GROUP designation is of most significance:

```

NEXT                BOBD                MODE VIEW  FDMP43
* * * SECURITY DEFINITION * * *

SECURITY NO IC004          SHORT NAME  IC #004 SHORT NAME
MODEL SECURITY IND:        STATUS DATE .....06 10 96
STATE CODE..... 80      INCEPTION DATE.....06 10 96
REPT/NO:..              CUSIP (PRICING) NUMBER..... IC004
PRICE CODE..... F       ASSET GROUP.....IC
SEGMENT..... 0007      CATEGORY.....0720
SECTOR..... 0000      INDUSTRY.....0000
HIGH PRICE RANGE ..... 99.9  LOW PRICE RANGE.....99.9-
SIC CODE.....          CROSS REFERENCE CODE.....
ISSUER CODE..... IC004  TRANSACTION GENERATION..... Y
LAG DAYS.. 0000  LAG DAYS METHOD.. 1  FEDERAL TAX STATUS..... T
INCOME CATE MAIN..... 0020  INCOME CATE SUB..... 000
PRICE SOURCE.....      PRICE TYPE.....
BACKUP PRICE SOURCE.....  BACKUP PRICE TYPE.....
FORM 13F FLAG. Y  EXCLUDE MGT FEES N  TITLE OF CLASS (CODE).....
ISSUE CURRENCY..   PREC...           ISSUE COUNTRY CODE.....
INCOME CURRENCY..   PREC...           GUARANTOR.....
TRADE CURRENCY..   PREC...           PRICE GROUP.....
FRANKED/UNFRANKED.....  BID/OFFER SPREAD (%).. 0.000
    
```

The BOSB screen appears as follows, where the following characteristics are significant:

ACCRUAL METHOD	L - Investment Contract - actual days
ACCR INCM OPT	Blank - use accrued income option of the account - day of deposit
ISSUE DATE	00/00/00 - use calendar year to identify 365 or 366 as numerator
INTEREST RATE	6.9(%) - the fixed annual interest percentage rate of the contract
MATURITY DATE	04/30/1996
COMPOUNDING OPT	M - monthly compounding of accumulating interest
ANNUAL RATE TYPE	IC - Investment Contract

```

NEXT                BOSB                MODE CHANGE FDMP46
* * * SECURITY DEFINITION - BOND * * *

SECURITY NO: IC004                IC #004 SHORT NAME
BOND CODE . 1 1ST PWDN DATE..     ACCR METH. L  ACCR OPT.        INT PUR.
FIRST COUPON DATE ..... 00 00 00  ISSUE DATE ..... 00 00 00
INTEREST RATE ... 6.900000000     MATURITY DATE ..... 04 30 1996
COMPOUNDING OPT.. M      PYMT FREQ..  PAYMENT MONTH/DAY ..... MM DD
AMORT/ACCRET.. N      INFLAT INDEX..  DEFAULT DATE..          CPN CC
MSTR NOTE FLOOR (000) .... 0       ISSUE PRICE ...
MSTR NOTE CEILING (000) .. 0       RATING: S AND P          MOODYS
MATRIX CODE....      TBA FLAG..     ORIGINAL BAL....
EFF MATY DATE..      CCYY PREPAY..   PAR OUTSTANDING..
BENCHMARK..         CCYY           RATE CHANGE FREQ..      INCREMENT..
BENCHMARK SPREAD .....           FIRST DATE..           MONTH-END...
ANN RATE TYPE .....IC GNMA GEN ..  CONSTANT DTM.         2A-7.  DEMAND.
AMORT TO EFF MATY DATE..N  ACTIVE..  CLASS OF SHARES       REF X
CCB DAYS...         CONTRA EXPENSE...N  EFF MATY PRICE.. 100.0000 MATU
SEC YIELD: MAX.     MIN.           SEC OVR           EFF MAT LEN
REPORT AS CASH. N  PEP EXPIRY     EFFECTIVE MATY REF-DATE
NOTE: RATES FOR MULTIPLE RATE ITEMS ARE NOT ENTERED HERE                SWP=>
    
```

The BOPM screen appears as follows, where the following characteristics are significant:

<b>This condition is designated by the TYPE→</b>	<b>TYPE</b>
Half of the outstanding principal plus half of the accumulated interest is due at 12/31/95	C
Ten percent of the remaining principal balance is due to be paid down at 01/31/96	N
The total contract value (remaining principal plus accumulated interest) is due to be paid down to \$4,600,000.00 as of 02/29/96	A
The total contract value (remaining principal plus accumulated interest) is due to be paid down to \$4,000,000.00 as of 03/31/96	A

```

NEXT                BOPM                MODE ADD    FDMP253
      * * * * * PAYMENT SCHEDULE * * * * *

SECURITY NO: IC004                IC #004 SHORT NAME
PAYMENT DATE: 04 30 96
TYPE.....:      PRINCIPAL AMOUNT/%          .00
                  DATE      TYPE      PRINCIPAL AMOUNT/%
                  03/31/96   A          4,000,000.00
                  02/29/96   A          4,600,000.00
                  01/31/96   N           10.00
                  12/31/95   C           50.00
    
```

The series of transactions entered by the user via the Trade Entry (DETE) screen are as follows (where, for all transactions, the account number entered was 514 and the security number entered was IC004):

<b>Tran Code</b>	<b>Effective Date</b>	<b>Trade and Contractual Settle Dates</b>	<b>Actual Settle Date</b>	<b>Share/Par</b>	<b>Total Principal</b>	<b>Income Effect</b>	<b>Cost (Calculated)</b>
OPNIC	10/01/95	10/01/95	10/01/95	10,000,000.00	10,000,000.00	0.00	10,000,000.00
DEPIC	10/07/95	10/07/95	10/07/95	150,000.00	150,000.00	0.00	150,000.00
WTHIC	10/15/95	10/15/95	10/15/95	70,000.00	70,000.00	0.00	70,000.00
INTIC	12/31/95	12/31/95	12/31/95	0.00	0.00	87,207.36	0.00
PMTIC	12/31/95	12/31/95	12/31/95	5,040,000.00	5,040,000.00	0.00	5,040,000.00
PMTIC	01/31/96	01/31/96	01/31/96	504,000.00	504,000.00	0.00	504,000.00
INTIC	02/29/96	02/29/96	02/29/96	0.00	0.00	78,608.36	0.00
WTHIC	03/25/96	03/25/96	03/25/96	202,179.44	200,000.00	2,179.44	200,000.00
INTIC	03/31/96	03/31/96	03/31/96	0.00	0.00	88,475.82	0.00
PMTIC	03/31/96	03/31/96	03/31/96	336,000.00	336,000.00	0.00	336,000.00
INTIC	04/30/96	04/30/96	04/30/96	0.00	0.00	22,627.06	0.00
MATUIC	0430/96	04/30/96	04/30/96	4,000,000.00	4,000,000.00	0.00	4,000,000.00

For each of the above transactions the cost amount is calculated by the system and represents the impact of the transaction on the principal balance (seen on the Holdings Definition (VSHO) screen as PRINCIPAL BALANCE). The shares/par amount of a given transaction represents its direct impact on the contract value (seen on the Holdings Definition (VSHO) screen as CARRY, COST and MARKET VALUES). The income effect of a given INTIC transaction drives the other income receivable and income cash general ledger entries expected when the accumulated income balance (seen on the Holdings Definition (VSHO) screen as INCOME BALANCE) is reset based on a scheduled interest payment date. The income effect of a given WTHIC transaction represents its direct impact on the accumulated income balance.

The 10/31/95 position in the contract would appear as follows if viewed via the Holdings Definition (VSHO) screen:

NEXT	VSHO	MODE	ADD	FDMP28
* * * HOLDINGS DEFINITION * * *				
ACCOUNT NO: .....	000000000000514	IC EXAMPLE ACCOUNT		
SECURITY NO: .....	IC004	IC #004 SHORT NAME		
SECURITY DATE .....	CCYY	SECURITY UNIQUE .....		
HOLDINGS DATE .....	10 31 95			
PRICE CODE .....	F	COMMITMENT FLAG.....		
EFFT DATE/OLDEST PEND ...	99 99 99	THERE ARE TRANS DURING THE PERIOD		
		INCOME BALANCE....	59,086.63	
		BASE AMORT.....	0.00	
SETTLED MARKET.....		10,139,086.63 DURATION..	N/A	
TRADED MARKET.....		10,139,086.63 DIVIDEND REINVEST....	N	
PRICE.....	0.000000	ACCRUED INCOME....	0.00	
AMORT/ACCRET..	0.00	WITHHOLDING.....	0.00	
DESCRIPTION		CARRY	COST	
TRADED.....		10,139,086.6300	10,139,086.63	
PLEGGED.....		0.0000	0.00	
SETTLED.....		10,139,086.6300	10,139,086.63	
PRINCIPAL BALANCE.....			10,080,000.00	

The contract value at 10/31/95 is \$10,139,086.63 and is comprised of \$10,080,000.00 in principal (the net effect of transactions to date) and \$59,086.63 in accumulated income. The income accumulation calculations are approximated as follows:

10/01 through 10/06 = 6 days of income:  
 $(10,000,000.00 * (0.069/365))$  rounded \* 6 days = 11,342.46

10/07 through 10/14 = 8 days of income:  
 $(10,150,000.00 * (0.069/365))$  rounded \* 8 days = 15,350.16

10/15 through 10/31 = 17 days of income:  
 $(10,080,000.00 * (0.069/365))$  rounded \* 17 days = 32,394.01

11,342.46 + 15,350.16 + 32,394.01 = \$59,086.63 income balance at 10/31/95

10,080,000.00 + 59,086.63 = 10,139,086.63 contract value at 10/31/95

The contract value at 11/30/95 is \$10,196,587.63 and is comprised of \$10,080,000.00 in principal and \$116,587.63 in accumulated income. The calculation of additional income accumulated for the month of November is approximated as follows:

11/01 through 11/30 = 30 days of income:  
 $(10,139,086.63 * (0.069/365))$  rounded \* 30 days = 57,501.00

59,086.63 + 57,501.00 = 116,587.63 income balance at 11/30/95

10,080,000.00 + 116,587.63 = 10,196,587.63 contract value at 11/30/95

Half of the outstanding principal plus half of the accumulated interest (payment due) is due at 12/31/95, and the income balance is reset to \$87,207.37 (one half of the accumulated income balance as of the end of day 12/30/95\*) in anticipation of the income collection. The calculation of income due at 12/31/95 is based on the accumulation of income through November plus the additional accumulation for the month of December approximated as follows:

$$\begin{aligned} &12/01 \text{ through } 12/30 = 30 \text{ days of income:} \\ &\quad (10,196,587.63 * (0.069/365)) \text{ rounded } * 30 \text{ days} = 57,827.10 \\ &116,587.63 + 57,827.10 = 174,414.73 \text{ accumulated income at } 12/30/95 \\ &174,414.73 * 50\% = 87,207.36 \text{ income due at } 12/31/95 \end{aligned}$$

Half of the outstanding principal balance is also due to be paid down at 12/31/95.

$$10,080,000.00 * 50\% = 5,040,000.00 \text{ principal payment due at } 12/31/95$$

The contract value at 12/31/95 is \$5,128,165.69 and is comprised of \$5,040,000.00 in principal and \$88,165.69 in accumulated income where the income calculation is approximated as follows:

$$\begin{aligned} &12/31 \text{ through } 12/31 = 1 \text{ day of income:} \\ &\quad (5,069,380.45 * (0.069/365)) \text{ rounded } * 1 \text{ day} = 958.32 \\ &(116,587.63 - 87,207.36) + 57,827.10 + 958.32 = 88,165.69 \text{ accumulated income} \\ &\text{at } 12/31/95 \\ &5,040,000.00 + 88,165.69 = 5,128,165.69 \text{ contract value at } 12/31/95 \end{aligned}$$

Note that the income payment due 12/31/95 is applied to the oldest accumulated balance (prior to the last compounding date of 11/30/95) first.

Ten percent of the remaining principal balance (payment due) is due to be paid down at 01/31/96. No interest payment is due.

$$5,040,000.00 * 10\% = 504,000.00 \text{ principal payment due at } 01/31/96.$$

---

\*Accumulated Income is reset to one half of the accumulated income balance as of the end of day 12/30/95 rather than as of 12/31/95 (the payment date) because this contract is accruing on a day of deposit basis. The reset is effective at the beginning of the day 12/31/95.

The contract value at 01/31/96 is \$4,654,041.16 and is comprised of \$4,536,000.00 in principal and \$118,041.16 in accumulated income where the income calculation is approximated as follows:

01/01 through 01/30 = 30 days of income:  
 $(5,128,165.69 * (0.069/366)) \text{ rounded } * 30 \text{ days} = 29,003.70$

01/31 through 01/31 = 1 day of income:  
 $(4,624,165.69 * (0.069/366)) \text{ rounded } * 1 \text{ day} = 871.77$

$88,165.69 + 29,003.70 + 871.77 = 118,041.16$  accumulated income as of 01/31/96

$4,536,000.00 + 118,041.16 = 4,654,041.16$  contract value at 01/31/96

The total contract value (remaining principal plus accumulated interest) is due to be paid down to \$4,600,000.00 as of 02/29/96. The payment due on 2/29/96 is approximated as follows:

Total contract value as of 02/28/96\*\* is \$4,678,608.36 and is comprised of \$4,536,000.00 in principal and \$142,608.36 in accumulated income where the income calculation is approximated as follows:

02/01 through 02/28 = 28 days of income:  
 $(4,654,041.16 * (0.069/366)) \text{ rounded } * 28 \text{ days} = 24,567.20$

$118,041.16 + 24,57.20 = 142,608.36$

$4,536,000.00 + 142,608.36 = 4,678,608.36$

Because the paid down contract value per BOPM is greater than the current principal outstanding, no principal payment is due at 02/29/96. The entire payment due will be taken from accumulated income.

$4,678,608.36 - 4,600,000.00 = 78,608.36$  interest payment due 02/29/96.

The contract value at 02/29/96 (after the payment) is \$4,600,862.58 and is comprised of \$4,536,000.00 in principal and \$64,862.58 in accumulated income where the income calculation is approximated as follows:

02/29 through 02/29 = 1 day of income:  
 $((4,654,041.16 - 78,608.36) * (0.069/366)) \text{ rounded } * 1 \text{ day} = 862.58$

$(118,041.16 - 78,608.36) + 24,567.20 + 862.58 = 64,862.58$  accumulated income as of 02/29/96

$4,536,000.00 + 64,862.58 = 4,600,862.58$  contract value at 02/29/96

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\*\*The total contract value as of 02/28/96 is used to determine the amount of the 02/29/96 payment because the contract is accrued on a day of deposit basis.

The total contract value (remaining principal plus accumulated interest) is due to be paid down to \$4,000,000.00 as of 03/31/96.

The 03/25 withdrawal reduced the principal balance by \$200,000.00, the accumulated income balance by \$2,179.44 and the basis for earnings compounding for the remaining days in the current month by \$202,179.44.

The payment due on 3/31/96 is approximated as follows:

Total contract value as of 03/30/96\*\*\* is \$4,424,475.82 and is comprised of \$4,336,000.00 in principal and \$88,475.82 in accumulated income where the income calculation is approximated as follows:

$$\begin{aligned} &03/01 \text{ through } 03/24 = 24 \text{ days of income:} \\ &(4,600,862.58 * (0.069/366)) \text{ rounded } * 24 \text{ days} = 20,817.12 \end{aligned}$$

Less income withdrawn on 03/25: 2,179.44

$$\begin{aligned} &03/25 \text{ through } 03/30 = 6 \text{ days of income:} \\ &(4,398,683.14 * (0.069/366)) \text{ rounded } * 6 \text{ days} = 4,975.56 \end{aligned}$$

$$64,862.58 + 20,817.12 - 2,179.44 + 4,975.56 = 88,475.82 \text{ accumulated income as of } 03/30/96$$

$$4,336,000.00 + 88,475.82 = 4,424,475.82 \text{ contract value at } 03/30/96$$

Because the paid down contract value per BOPM is less than the current principal outstanding, a principal payment is due at 03/31/96. In addition to this principal, all accumulated income will be paid out, bringing the total contract value down to the amount specified.

Total contract value as of 03/30/96	4,424,475.82
03/31/96 paid down contract value per BOPM	<u>4,000,000.00</u>
Total payment due 03/31/96	424,475.82
Less accumulated income as of 03/30/96	<u>88,475.82</u>
Principal payment due 03/31/96	<u><u>336,000.00</u></u>

The contract value at 03/31/96 is \$4,000,754.10 and is comprised of \$4,000,000.00 in principal and \$754.10 in accumulated income where the income calculation is approximated as follows:

$$\begin{aligned} &03/31 \text{ through } 03/31 = 1 \text{ day of income:} \\ &((4,424,475.82 - 424,475.82) * (0.069/366)) \text{ rounded } * 1 \text{ day} = 754.10 \end{aligned}$$

$$4,000,000.00 + 754.10 = 4,000,754.10 \text{ contract value } 03/31/96$$

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\*\*\*The total contract value as of 03/30/96 is used to determine the amount of the 03/31/96 payment because the contract is accrued on a day of deposit basis.

**EXAMPLE 5: MANUAL ADJUSTMENT TO INVESTMENT CONTRACT ACCUMULATED INCOME BALANCE.**

A final example is presented to illustrate the use of transaction codes available for adjusting the accumulated income balance of an Investment Contract position. The transaction codes are CFIC+ and CFIC- and are used to increase or decrease (respectively) the accumulated income balance. The amount entered on the transaction is applied to the income balance at the specified date. Where the transaction is entered such that contractual settle and effective dates are equal the adjustment is applied to the balance remaining at that date (i.e. the closing balance in accumulated income) as of the entry point in time of the transaction. Where compounding of accumulating income is elected for a given Investment Contract the adjustment transaction's effects on compounding begin on the next compounding date (i.e. for daily compounding this would be the day after contractual settle date; for monthly compounding this would be the first day of the month after contractual settle date). This allows the transaction's effect to be readily predictable and allows it to influence future compounding in a logical way. Where the transaction is entered such that its contractual settle date is less than its effective date the adjustment is applied to the balance remaining at the contractual settle date (i.e. the closing balance in accumulated income) as of the effective date and entry point in time of the transaction. This allows the transaction to adjust what the balance was at some previous date (i.e. the contractual settle date) but to delay the accounting effects (driven by the transaction's influence actually changing the income balance on the position) until a later date (i.e. the effective date). The contractual settle date may be less than the effective date by up to one month to allow for backdating of adjustment transactions in this manner.

The final Investment Contract example is a variation on the scenario presented in Example 1. All characteristics are the same as those presented in Example 1 until 11/05/95, at which point the user is notified that the income balance at 10/31/95 was short by 100.00 and an adjustment to correct this needs to be made where the accounting effects are to be taken on 11/05/95. Prior to making the adjustment the contract value at 11/05/95 is 10,146,386.96 and is comprised of 10,080,000.00 in principal and 66,386.96 in accumulated income. The 11/05/95 income balance is the result of accumulating 5 additional days of onto the 57,142.49 balance at 10/31/95, where the calculation is approximated as follows:

$$11/01 \text{ through } 11/05 = 5 \text{ days of income:}$$

$$(10,137,142.49 * ((1+.069)^{(5/366)})) - 10,137,142.49 = 9,244.47$$

$$57,142.49 + 9,244.47 = 66,386.96 \text{ income balance at } 11/05/95 \text{ (before adjustment)}$$

The adjustment is made by entering the following transaction via the Trade Entry (DETE) screen (where the account number entered is 16998 and the security number entered is IC001):

Tran Code	Effective Date	Trade and Contractual Settle Dates	Actual Settle Date	Share/Par	Total Principal	Income Effect	Cost (calculated)
CFIC+	11/05/95	10/31/95	11/05/95	100.00	0.00	0.00	0.00

The position in the contract is unaffected until 11/05/95. After the adjustment the contract value at 11/05/95 is 10,146,487.06 and is comprised of 10,080,000.00 in principal and 66,487.06 in accumulated income. The 11/05/95 income balance is the result of accumulating 5 additional days of income onto the 57,242.49 balance at 10/31/95 resulting from adding the 100.00 adjustment amount to the 57,142.29 pre-adjustment balance (at the contractual settle date of the adjustment), where the calculation is approximated as follows:

11/01 through 11/05 = 5 days of income:

$$(10,137,242.49 * ((1+.069)^(5/366))) - 10,237,142.49 = 9,244.57$$

57,142.49 + 100.00 + 9,244.57 = 66,487.06 income balance at 11/05/95 (after adjustment)

The adjustment affects the position and account valuation at and beyond 11/05/95 as though it had been in effect since 10/31/95. Once the adjustment is applied in the manner shown above it is treated as an integral component of the income balance. The general ledger effects of the above transaction would therefore not be seen in detail but would be reflected in the general ledger entries made to account for the change in accumulated income for the day at which the adjustment went into effect (11/05/95). Prior to having made the above adjustment the Accumulated Income Entry for 11/05/95 would have been derived from the change in the balance from 11/04 to 11/05 (i.e. from 64,537.39 to 66,386.96) and would have been reported as follows:

The 11/05/95 Accumulated Income Entry:

Securities at Value	1,849.57	
(Income Main Classification)		1,849.57

After making the adjustment the Accumulated Income Entry for 11/05/95 would be derived from the change in the balance from 11/04 to 11/05 (i.e. from 64,537.39 to 66,487.06) and would be reported as follows:

The 11/05/95 Accumulated Income Entry:

Securities at Value	1,949.67	
(Income Main Classification)		1,949.67

The difference in the Accumulated Income Entries seen before and after the adjustment is due to the adjustment amount itself (100.00) and the additional income accumulation based on daily compounding of interest on the adjustment amount for the 5 days since the contractual settle date of the adjustment (.10).

### 5.3 INVESTMENT CONTRACT CONVERSION CONSIDERATIONS

There are several methods available for the establishment of a fund and related Investment Contract position in the InvestOne Enterprise® system. Variables to consider when choosing a method include:

- Whether the contract has a fixed or variable interest rate.
- How frequently the rate has changed since the payment date prior to the conversion date (or since the opening date of the contract, if there have been no payments).
- Which compounding option (if any) has been defined to the contract.
- How much deposit or withdrawal activity has taken place against the position since the payment date prior to the conversion date (or since the opening date of the contract, if there have been no payments).

In view of these considerations the user may select from the following methods:

#### **WHERE THE CONTRACT HAD A RECENT PAYMENT AND/OR HAD FEW RATE CHANGES**

Where the contract had a recent payment and/or had few rate changes this may prove to be an efficient option and should result in the correct principal and income (and, therefore, contract value) balances at the conversion date:

Establish the principal balance remaining at the payment date on or prior to the conversion date via an OPNIC transaction. Enter the history of interest rates since the payment date on or prior to the conversion date and through the conversion date itself.

Discrepancies in the accumulated income balance at conversion date can be adjusted via CFIC+ or CFIC- transactions having contractual settle and effective dates equal to the conversion date. Where monthly compounding is elected and the conversion date is not a month end, a discrepancy in accumulated income at the conversion date may be due to the wrong prior month end balance in income being arrived at via the internal calculations (as the monthly compounding calculation uses the contract value at the prior month end as the basis for income in the current month). If this is suspected a CFIC+ or CFIC- transaction having contractual settle date equal to the prior month end date may be required to arrive at the correct balance at conversion date.

#### **IF THE INTEREST RATE IS VARIABLE**

For a variable rate contract that has not had a recent payment and/or has had many rate changes this may prove to be an efficient option and should result in the correct principal and income (and, therefore, contract value) balances at the conversion date:

If the interest rate is variable do not enter the initial rate via BOSB, rather, enter the schedule of rates in effect only since the conversion date via DECR. Then, establish the principal balance remaining at the conversion date itself via an OPNIC transaction. Enter a CFIC+ transaction having contractual settle date equal to the conversion date to establish the income balance at the conversion date.

Where monthly compounding is elected (and the conversion date is not itself a month end) and a payment date has not been encountered on or since the prior month end, enter the schedule of rates in effect only since the prior month end date via DECR.

Then, establish the principal balance remaining at the prior month end date via an OPNIC transaction. A CFIC+ should then be entered having contractual settle date equal to the prior month end date and the amount of the transaction should correspond with the accumulated income balance at that date (as the monthly compounding calculation uses the contract value at the prior month end as the basis for income in the current month).

#### **IF THE INTEREST RATE IS FIXED**

For a fixed rate contract that has not had a recent payment, this may prove to be an efficient option and should result in the correct principal and income (and, therefore, contract value) balances at the conversion date:

If the interest rate is fixed enter the initial rate via BOSB. Then, establish the principal balance remaining at the conversion date itself via an OPNIC transaction. Enter a CFIC+ transaction having contractual settle date equal to the conversion date to adjust the income balance to what it should be at the conversion date.

Where monthly compounding is elected (and the conversion date is not itself a month end) and a payment date has not been encountered on or since the prior month end, establish the principal balance remaining at the prior month end date via an OPNIC transaction. A CFIC+ should then be entered having contractual settle date equal to the prior month end date and the amount of the transaction should correspond with the amount needed to adjust the accumulated income balance at that date to what it should be (as the monthly compounding calculation uses the contract value at the prior month end as the basis for income in the current month).

## 5.4 PROCESSING HELP

### **INTIC, PMTIC, AND SELIC**

Variations on the transaction codes available for Investment Contract processing presented in the examples in this section are found in [Investment Contract Transaction Codes](#).

- The INTIC+ transaction code functions like INTIC, but is intended to increase an interest payment amount. Similarly, the INTIC- transaction is intended to decrease an interest payment amount.
- The PMTIC+ transaction code functions like PMTIC, but is intended to increase a principal payment amount. Similarly, the PMTIC- transaction is intended to decrease a principal payment amount.
- The SELIC transaction code functions like the WTHIC, but it is to be regarded as a sale rather than a withdrawal.

### **ADJUSTMENTS TO PRINCIPAL PAYMENT, MATURITY AND ACCUMULATED INCOME**

Principal payment, maturity and accumulated income adjustment transactions are to be used for the current income accumulation period. The contractual settle date of a given transaction may be backdated by up to a month to allow for:

- Late notification or acknowledgement of the payment, or
- Need for adjustment while providing control over the effective date (at which time the accounting effects of the adjustment are taken).

These transactions may not be entered such that the period from contractual settle date to effective date of a given transaction crosses a payment date, as scheduled via the BOPM screen. That would imply that a previous income accumulation period was in error. If this

scenario occurs, handle the income adjustment for the previous accumulation period(s) via INTIC, INTIC+ or INTIC- transaction codes - for the payment date for which that accumulation of income applied. The principal adjustment(s) can then be handled via PMTIC, PMTIC+ or PMTIC- transactions on or since the most recent payment date.

### **TRANSACTION/GNMA GENERATOR**

Transactions expected at payment dates and at maturity date of an Investment Contract may be generated by the optional Transaction Generator module of InvestOne Enterprise. For further details see [Section 5.220](#), *Transaction/GNMA Generator*.

The Transaction/GNMA Generator process relies on analyzing balances in principal, accumulated income and contract value to build the transaction records it generates. Realistically, these balances are not expected to be negative at any point in time, and the need to generate transactions based on negative balances is not expected.

### **Negative Balances**

The processing of an Investment Contract position includes an analysis of balances since the prior payment date (or since the opening of the contract, if no prior payment date is scheduled) to warn the user of negative balances during a current or future accumulation period. Given daily account valuation cycles, transaction entries that would result in negative balances are prevented via edits. Where a transaction already on file is reprocessed such that a balance at the end of that day is negative, a warning is issued to identify the memo number of the first of such transactions processed for that day.

### **Warning Messages**

Additionally, security redefinition, variable rate maintenance, payment schedule maintenance or account redefinition and resweep activities which result in negative balances during a current or future accumulation period result in warnings for which the first nine positions of the offending security number are identified in the warning message text. The various warnings identify whether the contract value or only one of its components (principal or income) has gone negative. The error conditions resulting in such warnings should be corrected such that negative balances do not exist at the end of any day.

The edits and warnings are designed to facilitate the identification of negative balance conditions **for accounts valued daily**. For accounts valued at cycles other than daily, if a transaction or maintenance activity results in a negative income balance since the prior valuation date but prior to a payment date that occurs before the next valuation date, the condition will go undetected as such. This is because the accumulating income balance is analyzed since the payment date prior to the first valuation date affected by the transaction or other maintenance activity.

### **INTEREST AND INVESTMENT CONTRACTS**

Interest is not purchased on or deposited into an Investment Contract position. Interest may be sold or withdrawn from an Investment Contract position (via the SELIC or WTHIC transaction codes) but is not anticipated by default (i.e. interest sold or withdrawn is not calculated at transaction entry time, nor is it a projectable event). When a sale or withdrawal transaction is entered the entire amount of contract value to be disposed of is entered as a shares/par amount. Unless an income amount is also entered on the transaction the entire contract value amount to be relieved is assumed to come out of the available principal balance. To sell or withdraw a portion of the available income balance, enter the amount as an income effect on the transaction. In doing so, the difference between the transaction shares/par (i.e. contract value) and income amounts will determine the transaction cost amount (i.e. the amount to be relieved from the available principal balance).

## 6 INVESTMENT CONTRACT REPORTING

- MATUIC, PMTIC, SELIC and WTHIC transaction codes are considered sell-like for reporting purposes. OPNIC and DEPIC are considered buy-like.
- Changes in contract value that relate to the accumulation of income on an Investment Contract are not transaction driven. Therefore, the Security Holdings Ledger (R053) will include an additional 'Accumulated Income Entry' line in order to reflect these changes as part of the position roll forward.
- Income accumulated on an Investment Contract will be reported as income received, even though there is no effect on total cash. These amounts would normally be reflected as accrued income for a bond-like security; but for an Investment Contract, the daily accumulation of income becomes part of the total contract value.
- Price per share information being reported on Investment Contract transactions will not be computed using the standard shares/par amount, as shares/par on SELIC and WTHIC transactions include any income effect. Therefore, in order to arrive at a meaningful price per share, the total principal associated with the transaction is utilized.
- Estimates of annual income will use current contract value for reporting purposes.