MDH

MDH TRANSMISSION USER GUIDES

20. 08 MAINFRAME DUAL HOST (MDH) SYSTEM USER GUIDE FOR PORS ACTIVITY (INPUT & OUTPUT) INPUT: MMI BALANCE CONFIRMATIONS (POR1) OUTPUT: MMI BALANCE NOTIFICATIONS (MDLS)

Version 1

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PREFACE

This document describes, specifically, the input and output requirements for Payment Obligation Reporting System (PORS) activity processing via DTC's Mainframe Dual Host (MDH) system.

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I. OVERVIEW

A. Criteria for Developing MDH

The Mainframe Dual Host (MDH) system is designed to converse with those participants whose mainframes can support 'real-time' (e.g., CICS) processing via the LU6.2 communications protocol. This protocol is described in the next section of this document.

The MDH system provides the following advantages over older systems at DTC:

- Allows two-way traffic activity between DTC and the participant in a real-time environment.
- Eliminates the need for intermediate hardware/software.
- Provides backup through redundant mainframes and lines.

MDH will control the data flow between the DTC 'host' computer and the Participant 'host' computer via a dedicated point-to-point communication (telephone) line. The procedure with which the participant can either request data to be transmitted to DTC or request data to be transmitted to it from DTC is described in other sections of this document.

II. PARTICIPANT-TO-DTC 'PORS BALANCE CONFIRMATION' TRANSMISSIONS

A. General

This section describes in detail the procedure that the participant's host uses to **send** 'PORS Balance Confirmation' transmission blocks to MDH.

To review the sequence of transmissions required to send data to MDH, the participant will:

- Signon to MDH by transmitting a Type '01' logon block.
- Request the appropriate function to send the specific type of data by transmitting a Type '03' function-request block. The corresponding training functions may also be selected.
- Send blocks of selected transactions by transmitting Type '05' data blocks.

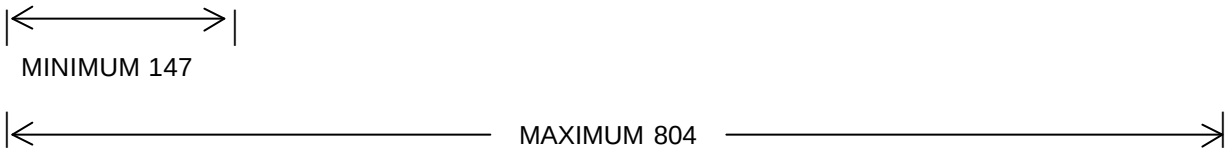
B. Sending PORS Balance Confirmations to DTC

PORS Balances Transmission Block Format

The PORS Balance Confirmation transmission block format is shown in the diagram below:

The Type '08' transmission block format is shown in the diagram below:

BLOCK PREFX	BAL CNFM TRANS #1	BAL CNFM TRANS #2	BAL CNFM TRANS #3	BAL CNFM TRANS #4	BAL CNFM TRANS #5	BAL CNFM TRANS #6	BAL CNFM TRANS #7	BAL CNFM TRANS #8	BAL CNFM TRANS #9	BAL CNFM TRANS #10
(74)	(73)	(73)	(73)	(73)	(73)	(73)	(73)	(73)	(73)	(73)



Each block contains a 74-byte prefix followed by up to ten 73-byte PORS Balance Confirmation transactions. Thus the minimum block length is 147 bytes and the maximum length is 804 bytes.

PORS Balance input Editing Criteria

This section describes each field that must be entered in the prefix and PORS Balance Confirmation transaction(s) and the editing that will be performed on each field. The Prefix layout is shown in Exhibit 3 and the PORS Balance confirmation layout is shown in Exhibit 5h. The fields are shown below in the same order as they appear in the exhibits.

1. Prefix Editing

- **Block Type** must be '05'.
- **Time Stamp** is provided by MDH and used for cutoff-time checking.
- **Participant Sign-on ID** must be a valid 8-character field.

- **Individual user Number** - This 2-digit field is provided by MDH in the Type '02' logon response block. It must be inserted in the prefix of *every* transmission block sent to MDH to uniquely identify the transmission.
- **Function Requested** must be 'POR1'.
- **Block Number** is assigned by the participant. It starts with 0001 for the first block transmitted during the day and is incremented by 1.
- **Block Transaction Count** - the number of transactions in the block must be between 01 and 10.
- **Data Length -** the length of the Data Segment that follows must be a multiple of 73 between 73 and 730.

Although the total block length is not a field contained in the prefix, MDH checks that:

- the length of the block provided by CICS is equal to or less than 804
- the block length minus 74 is evenly divisible by 73
- the result of the division above equals the Block-Transactions-Count field in the prefix.

Note: If any of the above conditions are not met, the entire transmission block will be rejected**.**

2. Transaction-level Editing

Refer to Exhibit 4 (Input Record Layout) for field-by-field requirements for PORS Balance Confirmations.

Balance Confirmation Return Status Block - Type '06'

After editing the Type 'O5' Input transmission block, MDH will return a type '06' status block with the following format:

BALANCE CONFIRMATION RETURN STATUS BLOCK - TYPE '06' (ICM-type)

BLOCK PREFIX (76)	TRANS STAT #1 (68)	TRANS STAT #2 (68)	TRANS STAT #3 (68)	TRANS STAT #4 (68)	TRANS STAT #5 (68)	TRANS STAT #6 (68)	TRANS STAT #7 (68)	TRANS STAT #8 (68)	TRANS STAT #9 (68)	TRANS STAT #10 (68)

The block consists of a 76-byte Prefix and 680 bytes of status data. This is shown in Exhibit 6. It is important to note that this is a different format than the '06' status block that is returned from the non-ICM input functions (for example, MDIN, MPIN, etc.).

There are 10 'buckets' of 68 bytes each, one for each of the input transactions, up to 10. Each bucket contains:

- the 26-byte participant-supplied Transaction Prefix and
- a 2-byte Transaction Number and
- up to five 8-byte error codes determined when editing the transaction.

Note: See Exhibit 17 for a list of the Editing Criteria and associated Error Codes.

C. Special Input Functions

1. Training Function

A participant may wish to submit PORS confirmation data to DTC via MDH for 'Training' purposes only. This would allow the data to be accepted, edited, and responded to without the participant actually updating its DTC account.

The benefits of having this special processing available are:

- A single session in the production environment is sufficient and eliminates the need to switch regions, programs, etc., to a non production environment in order to test enhancements.
- An environment is created where personnel can be trained in the use of MDH features and functions after cutover to production.

The procedure for accomplishing this is to enter the regular production 'function' (for example .-POR1) in the '03' function-request block, but to place a 'T' (instead of a 'P') in the 'Test/Prod Indicator' field found in the transaction's 26-byte prefix area when transmitting the '05' data blocks.

MDH will validate the function request and will return a Type '04' block. The participant will then submit the corresponding test transactions in a Type '05' data block. MDH will edit each transaction within the block and respond with a Type '06' block. The only difference between this and production processing is that no data bases, that is, participant DTC accounts, are updated.

The participant will remain in the Training function status until he either changes the function or signs off the session.

III. DTC-TO-PARTICIPANT DATA TRANSMISSION

A. General

This section describes in detail the procedure that the participant uses to *receive* data transmission blocks from MDH.

The types of data available are MMI 'Balance' and 'Activity' (PORS) records.

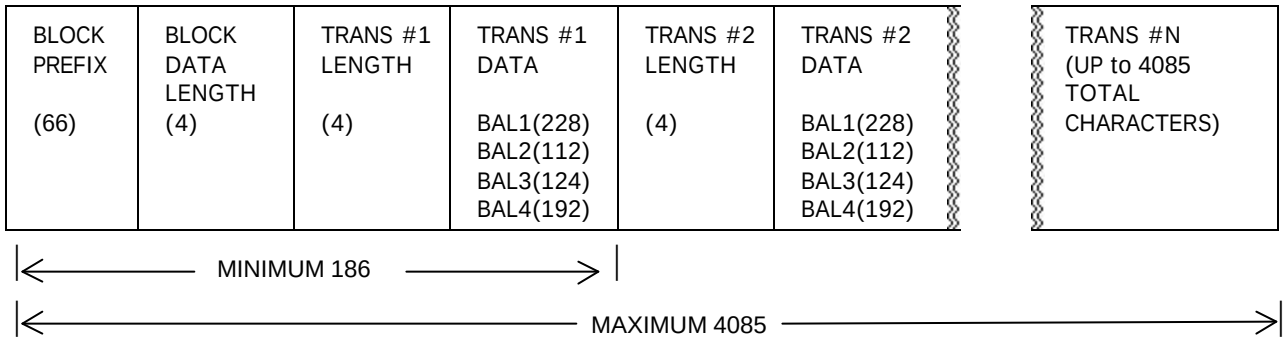
To review the sequence of transmissions required to receive data, the participant's host will:

- Signon to MDH by transmitting a Type '01' logon block.
- Request the MDLS function by transmitting a Type '03' function-request block.
- Transmit a type '07' transmission-request block.
- Receive one or more type '08' data blocks until all the available data has been transmitted.

B. Receiving Data From DTC

Type '08' Transmission Block Format

The Type '08' transmission block format is shown in the diagram below:



Each block contains a 66-byte prefix followed by one to 10 transactions in any combination of the data record types described above. The minimum block length is 186 bytes and the maximum is 4085 bytes.

Transmitting the Request Block

The participant will transmit a Type '07' block containing the following fields:

- **Block type** must be '07'.
- **Time stamp** is provided by MDH and used for cutoff-time checking.
- **Participant Sign-on ID** must be a valid 8-character field.
- **Individual user Number** - This 2-digit field is provided by MDH in the Type '02' logon response block. It must be inserted in the prefix of every transmission block sent to MDH to uniquely identify the transmission.
- **Function Requested** must be 'MDLS'.
- **Request Code** (should be 'AD' for 'all data').
- **File Control Number** (YYYYDDDs).(Julian date + session).

- **Starting Sequence Number** desired ('nnnnnn').
- **Total Number** desired ('nnnnnn' - *optional).*

Note: The 'starting seq. C' and 'total parameters are six-character numeric fields which must be right justified and left zero filled.

See Exhibit 6 *for this block's format.*

Receiving the Response Block

The participant host will receive one of the three following responses as a result of the Type '07' request.

1. A 'No Data Available' condition. The Type '08' block will contain:

- A 70-byte block prefix.
- A transaction length attribute with a value of 8.
- A message 'NONE' in the data portion of the transaction indicating that there was no data available for the requested range. (See Exhibit 8).

The Participant can now submit a Type '03' function-request block or a Type '90' sign-off block.

2. A 'Data Sent' condition. The Type '08' block will contain**:**

- A 70-byte block prefix indicating the number of transactions sent in the block.
- One or more occurrences of intermixed transactions in the sequence that they were chronologically processed at DTC.

Note: The first block will be followed by additional '08' blocks until either no more data is available or the desired range has been satisfied***.***

- A 'No More Data' condition. The Type '08' block will contain:
  - A 70-byte block prefix.
  - A transaction length attribute with a value of 8.
  - A message 'END ' in the data portion of the transaction indicating that no more data is available or that the desired range has been satisfied. (See Exhibit 7).

The participant can now submit a Type '03' function-request block or a Type '90' sign-off block.

Notes:

- The transaction length attributes shown above always contain the length of the data that follows plus four for the length of the length attribute field itself.
- The use of the 'Starting Seq. #' and 'Total #' parameters allows the end-User to receive the same data more than once if he so requests, similar to the 'RPNT' function on PTS. It does not, however, mark this data as being sent as an 'original transmission'.
- As discussed earlier, if a system problem occurs at DTC and is caused, for example, by a program ABEND, unavailability of files or tables, or for other reasons, MDH will send a Type '99' response transmission block instead of the Type '08' block currently being transmitted. When the problem is resolved at DTC, the participant will be informed and should attempt to reestablish the session in the normal manner.

IV. EXHIBITS

Exhibit 1 - Logon Request

Logon Request Block from Participant - Length 68 bytes

Field Name	Pos	Len	Field Attributes
TYPE-OF-BLOCK	01	02	Numeric - Value is '01'
TIME-STAMP	03	06	Time received (HHMMSS)
USER-ID	09	08	Numeric for individual user (e.g. 00000161); Alphanumeric far group user (e.g. G0000123)
INDIVIDUAL-USER-NUMBER	17	02	Internal to MDH
LU6.2-TERMID	19	04	Internal to MDH
Filler	23	38	Value spaces
PASSWORD	61	08	DTC-assigned user password

Figure 1. Logon Request Block from Participant

Logon Response Block from MDH - Length 142 bytes

Field Name	Pos	Len	Field Attributes
TYPE-OF-BLOCK	01	02	Numeric - Value is '02'
TIME-STAMP	03	06	Time received (HHMMSS)
USER-ID	09	08	Numeric for individual user (e.g. 00000161); Alphanumeric for group user (e.g. G0000123)
INDIVIDUAL-USER-NUMBER	17	02	Returned by MDH. Must be copied by participant into all blocks sent to MDH.
LU6.P-TERMID	19	04	Internal to MDH
Filler	23	38	Value spaces
RESPONSE-CODE	61	01	Values: - 'A': Logon accepted - 'R': Logon rejected
RESPONSE-REASON-CODE	62	01	Code indicating reason for rejection : - 'B': Invalid black type - 'C': Invalid connection I.D. - 'D': Already logged on - 'H': PTS is in 'Halt' mode - 'P': PTS is down - 'Q': DQF Recovery down - 'S': Invalid sign-on ID - 'X': Invalid password
RESPONSE-ERROR-MESSAGE	63	80	Message explaining why the logon was rejected

Figure 2. Logon Response Block from MDH

Exhibit 2 - Function Request

Function Request Block from Participant - Length 65 bytes

Field Name	Pos	Len	Field Attributes
TYPE-OF-BLOCK	01	02	Numeric – Value is '03'
TIME-STAMP	03	06	Time received (HHMMSS)
USER-ID	09	08	Numeric for individual user (e.g. 00000161); Alphanumeric for group user (e.g. G0000123)
INDIVIDUAL-USER-NUMBER	17	02	Copied from Type '02' logon response.
LU6.2-TERMID	19	04	Internal to MDH
Filler	23	38	Value spaces
FUNCTION-REQUESTED	61	04	Possible values: - 'MDLS': PORS output to participant - 'POR1': PORS balance confirm
Filler	65	01	Value space

Figure 3. Function Request Block from Participant

Function Response Block from MDH - Length 146 bytes

Field Name	Pos	Len	Field Attributes
TYPE-OF-BLOCK	01	02	Numeric - Value is '04'
TIME-STAMP	03	06	Time received (HHMMSS)
USER-ID	09	08	Numeric for individual user (e.g. 00000161); Alphanumeric for group user (e.g. G0000123)
INDIVIDUAL-USER-NUMBER	17	02	Internal to MDH
LU6.2-TERMID	19	04	Internal to MDH
Filler	23	38	Value spaces
FUNCTION-REQUESTED	61	04	Possible values: -'MDLS': PORS output to participant - 'POR1': PORS balance confirm
RESPONSE-CODE	65	01	Values: - 'A': Function request accepted - 'R': Function request rejected
RESPONSE-REASON-CODE	66	01	Code indicating reason for rejection: - 'A': Not signed on - 'B': Past cutoff time - 'C': Function does not exist - 'D': User not eligible for function - 'E': Function quiescing - 'F': Function mismatch for block-type '05' - 'G': Function not for LU6.2 (MDH)

Field Name	Pos	Len	Field Attributes
			- 'H' Previous function not completed - 'P': PTS is down - 'Q': Recovery not available
RESPONSE-ERROR-MESSAGE	67	80	Message explaining why Response-Code is 'R'

Figure 4. Function Response Block from MDH

Exhibit 3 - Transmission Block Prefix

Data Block Prefix Segment From Participant - Length 74 bytes

Field Name	Pos	Len	Field Attributes
TYPE-OF-BLOCK	01	02	Numeric Value: - '05': input to MDH
TIME-STAMP	03	06	Time Received (HHMMSS) by MDH.
USER-ID	09	08	Numeric for individual user (e.g. 00000161); Alphanumeric for group user (e.g. G0000123)
INDIVIDUAL-USER-NUMBER	17	02	Entered by Sender from Type '02' logon response.
LU6.2-TERMID	19	04	Internal to MDH
Filler	23	38	Value spaces
FUNCTION-REQUESTED	61	04	Possible values: - 'POR1': PORS balance confirm
BLOCK-NUMBER	65	04	User-assigned block number – starts with 0001 and is incremented by one
BLOCK-TRANS-COUNT	69	02	Number of transactions in the block (must be between 1 and 10).
DATA-LENGTH	71	04	Length of the data segment that follows (must be a multiple of 73 for PORS Confirmation input).

Figure 5. Data Block Prefix Segment from Participant

This 'Prefix' is followed by the 'Data' segment of the block as described in Exhibit 4.

Exhibit 4 - PORS Balance Confirmation Input Data Record

PORS Confirm Segment from Participant - Length 73 bytes

Field Name	Pos	Len	Field Attributes
ICMPFX-ERROR-FLAG	01	1	(To be set to 'space')
ICMPFX-TEST-OR-PROD-IND	02	1	Value 'T' or 'P'
ICMPFX-RECORD-TYPE	03	6	For PORS Confirms = 'PORCNF'
ICMPFX-RECORD-SUFFIX	09	2	Value = '01'
ICMPFX-RECORD-VERSION	11	2	Value = '0I'
ICMPFX-RECORD-USR SEQ – NO	13	6	Used to uniquely sequence the transaction (*Optiona*l)
ICMPFX-ADDRESSEE	19	8	Identifies the entity on behalf of whom the transaction is being processed. Must be numeric or Mnnnnnnn. *(**Mandatory**)*
POR-REPORT-DATE	27	8	The reporting date of the MMI balance being confirmed. Format=CCYYMMDD
POR-PAYING-AGENT-ID	35	8	The number of the DTC Participant identified as the paying agent confirming the MMI balance. It must be an authorized paying agent far the issuer. Format=right-justified with leading zeros.
POR-CONF-BAL-DATE	43	8	The date the MMI balance was confirmed by the paying agent. Format=CCYYMMDD
POR-PA-MGMT-NAME	51	20	The name of the paying agent who confirmed the balance.
POR-MMI-AGGREGATE-NAME	71	5	The name given to a group of Money Market Instrument types or 'ALL' to confirm all aggregate types. Format=left-aligned and blank filled.

Exhibit 5 - MDH Data Status Block (for ICM Types: POR1)

Data Status Block from MDH. – Length 756 bytes

Field Name	Pos	Len	Field Attributes
TYPE-OF-BLOCK	01	02	Value '06'
TIMR-STAMP	03	06	Time received (HHMMSS)
USER-ID	09	08	Numeric for individual user (e.g. 00000161); Alphanumeric for group user (e.g. G0000123)
INDIVIDUAL-USER-NUMBER	17	02	Internal to MDH
LU6.2-TERMID	19	04	Internal to MDH

Field Name	Pos	Len	Field Attributes
Filler	23	38	Value spaces
RESPONSE-CODE	61	01	Possible values: - 'A': Function request accepted - 'R': Function request rejected
RESPONSE-REASON-CODE	62	01	Possible values: - 'A': Not signed on - 'B': Past cutoff time - 'C': Function mismatch - 'M': MDH is down
FUNCTION-REQUESTED	63	04	Possible values: - 'POR1': PORS balance confirm
BLOCK-NUMBER	67	04	User assigned sequential block number
BLOCK-TRANS-COUNT	71	02	User-assigned 'count' of transactions in the block (must be between 01 and 10)
DATA-LENGTH	73	04	Length of the Data segment that follows (Value 680)
TRANSACTION-1-HEADER	77	26	This field contains either: - 'END CONFIRM' (11 bytes) if the preceding Type '05' block contained 'END' in the data segment. No other data follows this. – Or- - The user-supplied standard 'header' information from the input transaction.
TRANSACTION-1-RECORD #	103	02	The record number within the input block - starting at '01'
TRANSACTION-1-FIELD1-IDENT	105	04	Code that identifies the first field which is in error; or 'AZZZ', which signifies that this record is valid but another record in the transaction set is in error thus invalidating this record.
TRANSACTION-1-FIELD1-ERROR CODE	109	04	Code that identifies the type of error encountered; or '9ZZZ', that signifies that this record is valid but another record in the transaction set is in error thus invalidating this record.
TRANSACTION-1-FIELD2-IDENT	113	04	Code that identifies the 2nd field that is in error (or 'blanks' if not applicable).
TRANSACTION-1-FIELD2- ERROR CODE	117	04	Code that identifies the type of error encountered (or 'blanks' if not applicable).
TRANSACTION-1-FIELD3-IDENT	121	04	Code that identifies the 3rd field that is in error..etc.
TRANSACTION-1-FIELD3- ERROR-CODE	125	04	Code that identifies the type of error encountered..etc.
TRANSACTION-1-FIELD4-IDENT	129	04	Code that identifies the 4th field which is in error..etc.
TRANSACTION-1-FIELD4- ERROR-CODE	133	04	Code that identifies the type of error

Field Name	Pos	Len	Field Attributes
			encountered..etc.
TRANSACTION-I-FIELD5-IDENT	137	04	Code that identifies the 5th field that is in error..etc.
TRANSACTION-1-FIELD5- ERROR-CODE	141	04	Code that identifies the type of error encountered..etc.
TRANSACTION-2 (Hdr,Rec#,Field-IDs/Codes)	145	68	Transaction Header, Record #, and 5 sets of 8-byte areas.(same as Record-l, above)
TRANSACTION-3 (Hdr,Rec#,Field-IDs/Codes)	213	68	(Same as above)
TRANSACTION-4 (Hdr,Rec#,Field-IDs/Codes)	281	68	(Same as above)
TRANSACTION-5 (Hdr,Rec#,Field-IDs/Codes)	349	68	(Sane as above)
TRANSACTION-6 (Hdr,Rec#,Field-IDs/Codes)	417	68	(Same as above)
TRANSACTION-7 (Hdr,Rec#,Field-IDs/Codes)	485	68	(Sane as above)
TRANSACTION-8 (Hdr,Rec#,Field-IDs/Codes)	553	68	(Same as above)
TRANSACTION-9 (Hdr,Rec#,Field-IDs/Codes)	621	68	(Same as above)
TRANSACTION-10 (Hdr,Rec#,Field-IDs/Codes)	689	68	(Same as above)

Figure 6. Data Status Block from MDH

Exhibit 6 - Data Request Block (for MDLS Function)

Data Request Block from Participant - Length 86 bytes

Field Name	Pos	Len	Field Attributes
TYPE-OF-BLOCK	01	02	Value '07'
TIME-STAMP	03	06	Time received (HHMMSS)
USER-ID	09	08	Numeric for individual user (e.g. 00000161); Alphanumeric for group user (e.g. G0000123)
INDIVIDUAL-USER-NUMBER	17	02	Entered by Sender from Type '02' logon response.
LU6.2-TERMID	19	04	Internal to MDH
Filler	23	38	Value spaces
FUNCTION-REQUESTED	61	04	Value 'MDLS'
REQUEST-TYPE	65	02	Value of 'AD', 'OP' or 'OD'

Field Name	Pos	Len	Field Attributes
FILE-CONTROL-NUMBER	67	08	Format : YYYYDDDS
STARTING-SEQ-#	75	06	Numeric 'starting' sequence number desired.
MAXIMUM-NUM-REQUESTED	81	06	Numeric number of transactions desired.

Figure 7. Data Request Block from Participant

Exhibit 7 - Data Response Block from MDH with 'END' or 'NONE'

'Data Response' Block from MDH - Length 78

Field Name	Pos	Len	Field Attributes
TYPE-OF-BLOCK	01	02	Value '08'
TIME-STAMP	03	06	Time received (HHMMSS)
USER-ID	09	08	Numeric for individual user (e.g. 00000161); Alphanumeric for group user (e.g. G0000123)
INDIVIDUAL-USER-NUMBER	17	02	Internal to MDH
LU6.2-TERMID	19	04	Internal to MDH
Filler	23	30	Value spaces
FILE-CONTROL-NUMBER	53	08	Format : YYYYDDDS
RESPONSE-CODE	61	01	'A' or 'R'
RESPONSE-REASON-CODE	62	01	'A': Not signed on 'B': Past cutoff 'C': Not in 'MDLS' function 'D': Invalid range request 'E': Function incorrect 'F': Invalid Request-Type (MDLS) 'G': Wrong File-Control-# (MDLS) 'M': Message Delivery is down 'N': File-Ctl# vs Request-Type is invalid (MDLS) 'P': PTS is down
TRANSACTIONS-IN-BLOCK	63	04	Number of transactions in this block (Value 0)
BLOCK-DATA-LENGTH	67	04	Length of the data following this field plus 4. Value 12.
TRANSACTION-LENGTH	71	04	Length of the transaction following this field plus 4. Value 8.
REQUEST-END-MESSAGE	75	04	Values: - 'END ' = All data requested has been sent. - 'NONE' = No data has been found for this request.

Figure 8. Data Response Block from MDH

Exhibit 8 - Data Response Block for MMI Balance Information (PORS)

The '08' Response Block is variable length and consists of a 70-byte Block Prefix followed by up to 10 transactions, each preceded by a 4-byte length attribute.

For each CUSIP there will be up to four record types provided:

1. Record type '1' will contain the issue quantity, payment quantity and payment obligation summary balances, along with the activity debit and credit totals for the date being reported.

2. Record type '2' will contain the issue quantity detail layout for any issue activity that occurred for the date being reported.

3. Record type '3' will contain the payment quantity detail for any payment activity that occurred for the reported date which affects the agent's payment obligation balance**.**

4. Record type '4' will contain the payment obligation information including any changes to the rate, actual payment date and/or target payment date which may impact the payment obligation balance.

The file layouts of the four record types, that is, summary, issue quantity detail, payment quantity detail and payment obligation detail, follow.

Exhibit 9 - The PORS CUSIP Summary Record

The MMI CUSIP SUMMARY record contains the issue, payment and obligation opening and closing balances and the debit and credit detail summary for any activity for the report date being displayed. The format of the MMI CUSIP SUMMARY record appears below.

Field Name	Pos	Len	Description
TYPE-OF-BLOCK	01	02	Value '08'
TIME-STAMP	03	06	Time received (HHMMSS)
USER-ID	09	08	Numeric far individual user (e.g. 00000161); Alphanumeric for group user (e.g. G0000123)
INDIVIDUAL-USER-NUM	17	02	Internal to MDH
LU6.2-TERMID	19	04	Internal to MDH
Filler	23	30	Value spaces
FILE-CONTROL-NUMBER	53	08	Format : YYYYDDDS
RESPONSE-CODE	61	01	'A' or 'R'
RESPONSE-REASON-CODE	62	01	'A': Not signed on 'B': Past cutoff 'C': Not in 'MDLS' function 'D': Invalid range request 'E': Function incorrect 'M': Message Delivery is down 'P': PTS is down
TRANSACTIONS-INBLOCK	63	04	Number of transactions in this block
BLOCK-DATA-LENGTH	67	04	Length of the data following this field plus 4.
TRANSACTION-LENGTH	71	04	Length of the transaction following this field plus 4. Value = '232'
Filler	75	02	For DTC internal use only
Filler	77	01	Value space
POR-PARTIC-ACCOUNT	78	08	Individual participant #
POR-SYMBOL	86	02	Destination symbol
Filler	88	01	Value '-'

Field Name	Pos	Len	Description
POR-ACCOUNT-SEQ-#	89	06	Sequence # of the transaction - unique for each account destination
TYPE-OF-08-RESPONSE	95	01	Value 'Z' (POR data)
POR-OUT-ORIGIN-CODE	96	01	Values: DTC System origination code. 2 = CCF 3 = PTS 4 = ID 5 = MDH 0 = Other
POR-FUNCTION-NAME	97	04	Value 'PORS'
POR-PAYING-AGT-NUM	101.	8	**Paying Agent Number**: the DTC Participant number of the paying agent. Numeric
POR-MMI-TYPE	109	2	**MMI TYPE** : the MMI type is the product abbreviation. BA - Bankers' Acceptance BS – Short Term Bank Notes BM - Bank Note, Medium Term CD – Institutional Cert. of Deposit CF – Corporate Commercial Paper CV – Corp. Var-Rate Demand Obligations in CP Mode DN - Discount Notes ME - Medium Term Notes including Medium Term Bank & Deposit Notes MN - Medium Term Notes DP - Deposit Notes MU - Muni Commercial Paper (including Tax Exempt and Taxable) MC - Muni Commercial Paper Tax Exempt MT - Muni Commercial Paper Taxable MY* - Muni Var-Rate Demand Obligations in CP mode including Tax Exempt and Taxable MV - Muni Var-Rate Demand Obligations in CP mode – Tax Exempt MX - Muni Var-Rate Demand Obligations in CP mode – Taxable PC - Preferred Stock in CP-Like Mode * ME includes MNI BM and DF. MU includes MC and MT MY includes MV and MX
POR-REPORT-DATE	111	8	**Report Date**: the reporting date of the MMI detail (YYYYMMDD)
POR-CUSIP-NUM	119	9	**CUSIP:** the issue's CUSIP number
POR-CUSIP-DESC	128	20	**CUSIP-DESC**: the issue's SECURITY
Filler	148	1	Filler - reserved for future use
POR-RECORD-TYPE	149	1	**Record Type**: this field will contain the value "1", indicating a CUSIP Summary Record.

Field Name	Pos	Len	Description
POR-ACTUAL-DATE	150	8	**Actual Date**: Actual date that this MMI will pay/redeem/mature in (YYYYMMDD) format
POR-TARGET-DATE	158	8	**Target Date**: Target date that this MMI will pay/redeem/mature in (YYYYMMDD) format.
POR-PAYMENT-TYPE	166	3	**Record Payment Type**: this field will contain the activity payment type. MAT – MATURITY REO – REORGANIZATION PIP – PERIODIC INCOME PAYMENT PPP - PERIODIC PRINCIPAL PAYMENT
POR-OPEN-ISSUE-QTY	169	13	**Opening Issue Quantity**: the paying agent's opening balance for this issue in his Maturity Obligation (MO) account at the start of the day. The COBOL representation is S9(13).
POR-ISSUE-QTY-DEBITS	182	13	**Total Issue Quantity Debits**: the total issue quantity debited to the agent's MO account today.
POR-ISSUE-QTY-CREDIT	195	13	**Total Issue Quantity Credits**: the total issue quantity credited to the agent's MO account today.
POR-CLOSE-ISSUE-QTY.	208	13	**Closing Issue Quantity**: the paying agent's closing balance for this issue in his Maturity Obligation (MO) account at the end of the day. COBOL representation is S9(13).
POR-OPEN-PAY-QTY.	221	13	**Opening Payment Quantity**: is the opening quantity on which payment is based. The Cobol representation is 59(13).
POR-TOTP-QTY-DEBITS	234	13	**Total Payment Ouantity** Debits: the total payment debit activity in the agent's account today.
POR-TOTP-BTY-CREDIT	247	13	**Total Payment Ouantity Credits**: the total payment credit activity in the agent's account today.
POR-CLOSE-PAY-QTY.	260	13	**Closing Payment Ouantity**: is the closing quantity on which payment is based. The Cobol representation is S9(13).
POR-OPEN-PAY-OBLIG.	273	14	**Opening Payment Obligation**: The opening Payment Obligation for this issue at the start of day. COBOL representation is S9(12)v99.
POR-CLOSE-PAY-OBLIG.	287	14	**Closing Payment Obligation**: The closing Payment Obligation for this issue at the end of day. COBOL representation is S9(12)v99
Filler	301	2	Filler - reserved for future use.

Figure 9. Format of CUSIP SUMMARY RECORD

Exhibit 10 - The PORS CUSIP Issue Quantity Detail Record

The MMI CUSIP issue quantity detail record contains the individual detail record for any activity occurring on the reported date that affects the agent's issue quantity balance. The format of the MMI CUSIP ISSUE QUANTITY DETAIL record appears below.

Field Name	Pos	Len	Description
TYPE-OF-BLOCK	01	02	Value '08'
TIME-STAMP	03	06	Time received (HHMMSS)
USER-ID	09	08	Numeric for individual user (e.g. 00000161); Alphanumeric for group user (e.g. 60000123)
INDIVIDUAL-USER-NUM	17	02	Internal to MDH
LU6.2-TERMID	19	04	Internal to MDH
Filler	23	30	Value spaces
FILE-CONTROL-NUMBER	53	08	Format : YYYYDDDS
RESPONSE-CODE	61	01	'A' or 'R'
RESPONSE-REASON-CODE	62	01	'A': Not signed on 'B': Past cutoff 'C': Not in 'MDLS' function 'D': Invalid range request 'E': Function incorrect 'M': Message Delivery is down 'P': PTS is down
TRANSACTIONS-INBLOCK	63	04	Number of transactions in this block
BLOCK-DATA-LENGTH	67	04	Length of the data following this field plus 4.
TRANSACTION-LENGTH	71	04	Length of the transaction following this field plus 4, Value = '116'
Filler	75	02	For DTC internal use only
Filler	77	01	Value space
POR-PARTIC-ACCOUNT	78	08	Individual Participant B
FOR-SYMBOL	86	02	Destination symbol
Filler	88	01	Value '-'
POR-ACCOUNT-SEQ-#	89	06	Sequence # of the transaction - unique for each account destination
TYPE-OF-08-RESPONSE	95	01	Value 'Z' (FOR data)
POR-OUT-ORIGIN-CODE	96	01	DTC System origination code Values: 2 = CCF 3 = PTS 4 = ID 5 = MDH 0 = Other

Field Name	Pos	Len	Description
POR-FUNCTION-NAME	97	04	Value 'PORS'
POR-PAYING-AGT-NUM	101	8	**Paying Agent Number**: the DTC participant number of the paying agent.
POR-MMI-TYPE	109	2	MMI TYPE : the MMI type is the product abbreviation BA - Bankers' Acceptance BS - Short Term Bank Notes BM - Bank Note, Medium Term CD - Institutional Cert. Of Deposit CP - Corporate Commercial Paper CV - Corp. Var-Rate Demand Obligations in CP Mode DN - Discount Notes ME* - Medium Term Notes (including Medium Term Bank & Deposit Notes) MN - Medium Term Notes DP - Deposit Notes MU* - Muni Commercial Paper (including Tax Exempt and Taxable) MC - Muni Commercial Paper Tax Exempt MT - Muni Commercial Paper Taxable MY - Muni Var-Rate Demand Obligations in CP mode including Tax Exempt and Taxable MV – Muni Var-Rate Demand Obligations in CP mode – Tax Exempt MX – Muni Var-Rate Demand Obligations in CP mode – Taxable PC – Preferred Stock in CP-Like Mode *ME includes MNI BM and DP MU includes MC and MT MY includes MV and MX.
POR-REPORT-DATE	111	8	**Report Date**: the reporting date of the MMI detail (YYYYMMDD)
POR-CUSIP-NUM	119	9	**CUSIP**: the issue's CUSIP number
POR-CUSIP-DESC	128	20	**CUSIP-DESC**: the issue's SECURITY DESCRIPTION
Filler	148	1	Filler - reserved for future use
POR-RECORD-TYPE 149	149	1	**Record Type**: this field will contain the value "2", indicating a CUSIP Issue quantity Detail Record.
POR-ACTIVITY-TYPE	150	3	**Transaction Activity Type**: the activity type associated with this transaction. Valid values are: 007 - PA Swing 008 - Security Swing 022 - Withdrawal/Exit 038 – Issuance Deposit 110 - Call w/o Interest 120 - Call with Interest

Field Name	Pos	Len	Description
POR-ISSUING-AGT-NUM	153	8	**Issuing Agent Number**: for Issuance Deposits (activity type 038), the DTC participant number of the Issuing Agent. For other activity types this field will be zero.
POR-ISSUE-QTY-DEBITS	161	13	**Issue Quantity Debits**: the quantity for this MMI issue debited to the paying agent's MO account for this transaction. COBOL representation is S9(13).
POR-ISSUE-QTY-CREDIT	174	13	**Issue Quantity Credits**: the quantity for this MMI issue credited to the paying agent's MO account for this transaction. COBOL representation is S9(13)

Figure 10. Format of CUSIP ISSUE QUANTITY DETAIL RECORD

Exhibit 11 - The PORS CUSIP Payment Quantity Detail Record

The MMI CUSIP payment quantity detail record contains the individual detail record for any activity occurring on the report date which affects the agent's payment quantity balance. The format of the MMI CUSIP PAYMENT QUANTITY DETAIL record appears below.

Field Name	Pos	Len	Description
TYPE-OF-BLOCK	01	02	Value '08'
TIME-STAMP	03	06	Time received (HHMMSS)
USER-ID	09	08	Numeric for individual user (e.g. 00000161); Alphanumeric for group user (e.g. G0000123)
INDIVIDUAL-USER-NUM	17	02	Internal to MDH
LU6.2-TERMID	19	04	Internal to MDH
Filler	23	30	Value spaces
FILE-CONTROL-NUMBER	53	08	Format : YYYYDDDS
RESPONSE-CODE	61	01	'A' or 'R'
RESPONSE-REASON-CODE	62	01	'A': Not signed on 'B': Past cutoff 'C': Not in 'MDLS' function 'D': Invalid range request 'E': Function incorrect 'M': Message Delivery is down 'P': PTS is down
TRANSACTIONS-INBLOCK	63	04	Number of transactions in this block
BLOCK-DATA-LENGTH	67	04	Length of the data following this field plus 4.
TRANSACTION-LENGTH	71	04	Length of the transaction following this field plus 4. Value = '128'
Filler	75	02	For DTC internal use only

Field Name	Pos	Len	Description
Filler	77	01	Value space
POR-PARTIC-ACCOUNT	78	08	Individual Participant #
POR-SYMBOL	86	02	Destination symbol
Filler	88	01	Value '-'
POR-ACCOUNT-SEQ-#	89	06	Sequence of the transaction - unique for each account destination
TYPE-OF-08-RESPONSE	95	01	Value 'Z' (POR data)
POR-OUT-ORIGIN-CODE	96	01	DTC system origination code Values: 2 = CCF 3 = PTS 4 = ID 5 = MDH 0 = Other
POR-FUNCTION-NAME	97	04	Value 'PORS'
POR-PAYING-AGT-NUM	101	8	**Paying Agent Number**: the DTC Participant number of the paying agent.
POR-MMI-TYPE	109	2	**MMI TYPE** : the MMI type is the product abbreviation BA – Bankers' Acceptance BS – Short Term Bank Notes BM – Bank Note, Medium Term CD – Institutional Cert. of Deposit CP – Corporate Commercial Paper CV – Corp. Var-Rate Demand Obligations in CP Mode DN – Discount Notes ME – Medium Term Notes (including Medium Term Bank & Deposit Notes) MN – Medium Term Notes DP - Deposit Notes MU - Muni Commercial Paper (including Tax Exempt and Taxable) MC – Muni Commercial Paper Tax Exempt MT – Muni Commercial Paper Taxable MY* - Muni Var-Rate Demand Obligations in CP mode including Tax Exempt and Taxable. MV – Muni Var-Rate Demand Obligations in CP mode - Tax Exempt MX - Muni Var-Rate Demand Obligations in CP mode – Taxable PC – Preferred Stock in CP-Like Mode *ME includes MNI BM and DP MU includes MC and MT MY includes MV and MX
POR-REPORT-DATE	111	8	**Report Date**: the reporting date of the MMI detail (YYYYMMDD)
POR-CUSIP-NUM	119	9	**CUSIP**: the issue's CUSIP number

Field Name	Pos	Len	Description
POR-CUSIP-DESC	128	20	**CUSIP-DESC**: the issue's SECURITY DESCRIPTION
Filler	148	1	Filler – reserved for future use
POR-RECORD-TYPE	149	1	**Record Type**: this field will contain the value "3", indicating a CUSIP Payment Quantity Detail Record.
POR-ACTUAL-DATE	150	8	**Actual Date**: Actual date this MMI will pay/redeem/mature in (YYYYMMDD) format.
POR-TARGET-DATE	158	8	**Target Date**: Target date this MMI will pay/redeem/mature in (YYYYMMDD) format.
POR-PAYMENT-TYPE	166	3	**Record Payment Type**: this field will contain the activity payment type. MAT – MATURITY REO – REORGANIZATION PIP - PERIODIC INCOME PAYMENT PPP – PERIODIC PRINCIPAL PAYMENT
POR-ACTIVITY-TYPE	169	3	**Payment Activity Type**, the activity type associated with this transaction. Valid values are: 007 - PA Swing 008 - Security Swing 022 - Withdrawal/Exit 028, 060, 061 - Payment Made 038 – Issuance Deposit
POR-PAY-QTY-DEBITS	172	13	**Payment Quantity Debits**: the quantity for this MMI issue debited to the paying agent's account affecting the payment obligation. COBOL representation is S9(13).
POR-PAY-QTY-CREDITS	185	13	**Payment Quantity Credits** the quantity for this MMI issue credited to the paying agent's account affecting the payment obligation. COBOL representation is S9(13).
Filler	198	1	Filler - reserved for future use.

Figure 11. Format of CUSIP PAYMENT QUANTITY DETAIL RECORD

Exhibit 12 - The PORS CUSIP Payment Obligation Detail Record

The MMI CUSIP payment obligation detail record contains the individual transactions that affect the payment obligation balance. This record may also reflect changes to the actual payment date, target payment date, or rate that may affect the payment obligation balance. If there are no payment detail activity transactions or rate, actual payment date, or target payment date changes there will be no type '4' records for this report date. The format for the MMI CUSIP PAYMENT OBLIGATION DETAIL record appears below.

Field Name	Pos	Len	Description
TYPE-OF-BLOCK	01	02	Value '08'
TIME-STAMP	03	06	Time received (HHMMSS)
USER-ID	09	08	Numeric for individual user (e.g. 00000161); Alphanumeric for group user (e.g. G0000123)
INDIVIDUAL-USER-NUM	17	02	Internal to MDH
LU6.2-TERMID	19	04	Internal to MDH
Filler	23	30	Value spaces
FILE-CONTROL-NUMBER	53	08	Format : YYYYDDDS
RESPONSE-CODE	61	01	'A' or 'R'
RESPONSE-REASON-CODE	62	01	'A': Not signed on 'B': Past cutoff 'C': Not in 'MDLS' function 'D': Invalid range request 'E': Function incorrect 'M': Message Delivery is down 'P': PTS is down
TRANSACTIONS-INBLOCK	63	04	Number of transactions in this block
BLOCK-DATA-LENGTH	67	04	Length of the data following this field plus 4.
TRANSACTION-LENGTH	71	04	Length of the transaction following this field plus 4. Value = '196'
Filler	75	02	For DTC internal use only
Filler	77	01	Value space
POR-PARTIC-ACCOUNT	78	08	Individual participant #
POR-SYMBOL	86	02	Destination Symbol
Filler	88	01	Value '-'
POR-ACCOUNT-SEQ-#	89	06	Sequence # of the transaction - unique for each account destination
TYPE-OF-08-RESPONSE	95	01	Value 'Z' (POR data).
POR-OUT-ORIGIN-CODE	96	01	DTC System origination code Values: 2 = CCF 3 = PTS

Field Name	Pos	Len	Description
			4 = ID 5 = MDH 0 = Other
POR-FUNCTION-NAME	97	04	Value 'PORS'
POR-PAYING-AGT-NUM	101	8	**Paying Agent Number**: the DTC participant number of the paying agent.
POR-MMI-TYPE	109	2	**MMI TYPE** : the MMI type is the product abbreviation BA - Bankers' Acceptance BS - Short Term Bank Notes BM - Bank Note, Medium Term CD - Institutional Cert. of Deposit CP - Corporate Commercial Paper CV - Corp. Var-Rate Demand Obligations in CP Mode DN - Discount Notes ME* - Medium Term Notes (including Medium Term Bank & Deposit Notes) MN - Medium Term Notes DP - Deposit Notes MU* - Muni Commercial Paper (including Tax Exempt andTaxable) MC - Muni Commercial Paper Tax Exempt MT - Muni Commercial Paper Taxable MY* - Muni Var-Rate Demand Obligations in CP mode including Tax Exempt and Taxable. MV - Muni Var-Rate Demand Obligations in CP mode – Tax Exempt MX - Muni Var-Rate Demand Obligations in CP mode – Taxable PC – Preferred Stock in CP-Like Mode *ME includes MN, BM and DP MU includes MC and MT MY includes MV and MX
POR-REPORT-DATE	111	8	**Report Date**: the reporting date of the MMI detail (YYYYMMDD).
POR-CUSIP-NUM	119	9	**CUSIP**: the issue's CUSIP number.
POR-CUSIP-DESC	128	20	**CUSIP-DESC**: the issue's SECURITY DESCRIPTION
Filler	148	1	Filler - reserved for future use.
POR-RECORD-TYPE	149	1	**Record Type**: this field will contain the value "4", indicating a CUSIP Payment Obligation Detail Record.
POR-ACTUAL-DATE-TO	150	8	**(To) Actual Date**: Actual date that this MMI will pay/redeem/mature in (YYYYMMDD) format.
POR-TARGET-DATE-TO	158	8	**(To) Target Date**: Target date that this MMI will pay/redeem/mature in (YYYYMMDD) format.
POR-PAYMENT-TYPE	166	3	**Record Payment Type**: this field will contain

Field Name	Pos	Len	Description
			the activity payment type. MAT – MATURITY REO – REORGANIZATION PIP – PERIODIC INCOME PAYMENT PPP - PERIODIC PRINCIPAL PAYMENT
POR-PAYMENT-RATE-TO	169	13	(**To) MMI Payment Rate**: this field will contain the rate concerned with the type of payment being made. The COBOL representation is S9(07)V9(06).
POR-OPEN-PAY-QTY	182	13	**Opening payment Quantity**: is the opening quantity far the opening payment obligation. The Cobol representation is S9(13).
POR-CLOSE-PAY-QTY	195	13	**Closing payment Quantity**: is the closing quantity for the closing payment obligation. The Cobol representation is S9(13).
POR-OPEN-PAY-OBLIG	208	14	**Opening payment Obligation**: The opening Payment Obligation for this issue at the start of day. COBOL representation is S9(12)v99.
POR-CLOSE-PAY-OBLIG	222	14	**Closing payment Obligation**: The closing Payment Obligation for this issue at the end of day. COBOL representation is S9(12)v99.
POR-ACTUAL-DATE-FROM	236	8	**(From) Actual Date**: the actual payment/redemption/maturity date for the MMI in (YYYYMMDD) format prior to being changed.
POR-TARGET-DATE-FROM	244	8	**(From) Target Date**: the target payment/redemption/maturity date for the MMI in (YYYYMMDD) format prior to being changed.
POR-PAY-RATE-FROM	252	13	**(From) MMI Payment Rate**: this field will contain the payment rate prior to being changed. The COBOL representation is S9(07)V9(06).
Filler	265	2	Filler - reserved for future use.
TYPE-OF-BLOCK	01	02	Numeric - value is '01'
TIME-STAMP	03	06	Time received (HHMMSS)
USER-ID	09	08	Numeric for individual user (e.g. 00000161); Alphanumeric for group user (e.g. G0000123)
INDIVIDUAL-USER-NUMBER	17	02	Internal to MDH

Figure 12. Format of CUSIP PAYMENT OBLIGATION DETAIL RECORD

Exhibit 13 - Function Change Request Block from Participant

Function Change (End Function) Request Block - Length 77 bytes

Field Name	Pos	Len	Field Attributes
TYPE-OF-BLOCK	01	02	Numeric value '05' : input to MDH
TIME-STAMP	03	06	Time received (HHMMSS)
USER-ID	09	08	Numeric for individual user (e.g. 00000161); Alphanumeric for group user (e.g. G0000123)
INDIVIDUAL-USER-NUMBER	17	02	Entered by Sender from Type '02' logon response.
LU6.2-TERMID	19	04	Internal to MDH
Filler	23	38	Value spaces
CURRENT FUNCTION	61	04	Possible values:'POR1': PORS Balance Confirm
BLOCK-NUMBER	65	04	Not required
BLOCK-TRANS-NUMBER	69	02	Not required
DATA-LENGTH	71	04	Length of the data segment that follows; Value '3'
FUNCTION-END-CODE	75	03	Value 'END'

Figure 13. Function Change Request Block from Participant

Exhibit 14 - Logoff Request Block

'Logoff Request' Block from Participant - Length 60 bytes

Field Name	Pos	Len	Field Attributes
TYPE-OF-BLOCK	01	02	Value '90'
TIME-STAMP	03	06	Time received (HHMMSS)
USER-ID	09	08	Numeric for Individual user (e.g. 00000161); Alphanumeric for group user (e.g. G0000123)
Individual-User-Number	17	02	Entered by sender from Type '02' logon response.
LU6.2-TERMID	19	04	Internal to MDH
Filler	23	38	Value spaces

Figure 14. Logoff Request Block From Participant

Logoff Response Block From MDH - Length 142 bytes

Field Name	Pos	Len	Field Attributes
TYPE-OF-BLOCK	01	02	Value '91'
TIME-STAMP	03	06	Time received (HHMMSS)
USER-ID	09	08	Numeric for Individual user (e.g. 00000161); Alphanumeric for Group user (e.g. G0000123)
Individual-USER-Number	17	02	Internal to MDH
LU6.2-TERMID	19	04	Internal to MDH
Filler	23	38	Value spaces
Response-Code	61	01	Values: 'A' = Logoff Accepted 'R' = Logoff Rejected
Response-Error-Code	62	01	Code indicating reason for rejection. Values: 'A' = Not logged on 'B' = Wrong Signon-ID 'P' = PTS is down
Error-Message	63	80	Error message if logoff has been rejected.

Figure 15. Logoff Response Block from MDH

Exhibit 15 - System Error Block from MDH

'System Error' Block From MDH - Length 145 bytes

Field Name	Pos	Len	Field Attributes
TYPE-OF-BLOCK	01	02	Value '99'
TIME-STAMP	03	06	Time received (HHMMSS)
USER-ID	09	08	Numeric for individual user (e.g. 00000161); Alphanumeric for group user (e.g. G0000123)
Individual-User-Number	17	02	Internal to MDH
LU6.2-TERMID	19	04	Internal to MDH
Filler	23	38	Value spaces
Function	61	04	Function in progress at time of error
Error-Code	65	01	This error-code field is currently not used, but will eventually contain the CICS ABEND code at the time of system failure.
Error-Message	66	80	System error message

Figure 16. System Error Block From MDH

Exhibit 16 - Participant Request/MDH Response

Participant Request/'MDH Response' – Chart

PARTICIPANT REQUEST		**MDH RESPONSE**	
Block type	**Description**	**Block type**	**Description**
'01'	**Logon**	'02' '06' '99'	**Logon** (accepted/rejected) OR **Status** of last good transmission ('recovery' after abnormal session termination) OR **Logon** rejected (System error)
'03'	**Function**	'04' '99'	**Function** (accepted/ rejected) OR **Function** rejected (System error)
'05'	**Data** to DTC (or 'Change of Function')	'06' '99'	**Status** of Data Block OR **Data** rejected (System error)
'07'	**Data** from DTC (using 'AD' Request)	'08' '99'	**Data** transmission OR **Data** rejected (System error)
'90'	**Logoff**	'91' '99'	**Logoff**(accepted/ rejected) OR **Logoff** rejected (System error)
NONE	**'Time-out'** (Automatic)	NONE	Session terminated via LU6.2-to-LU6.2 system protocol message

Figure 17. Participant Request/MDH Response – Chart

Exhibit 17 - MDH Error Codes Specific to PORS Balance Confirmations

Field Name	**Field Code**	**Error Code**	**Description**
POR-REPORT-DATE	BABA	9AAJ	Invalid month for Report Date. (i.e., month is not equal to 1-12) OR Invalid day for Report Date. (i.e., day is not equal to 1-31 for months 1, 3, 5, 7, 8, 10, 12; day is not equal to 1-30 for months 4, 6, 9, and 11; day is not equal to 1-28 for month 2 of a non-leap year; day is not equal to 1-29 for month 2 of leap year).
POR-REPORT-DATE	BABA	9AAF	Report Date is not numeric.
POR-REPORT-DATE	BABA	9ABL	Report Date is greater than the current date.

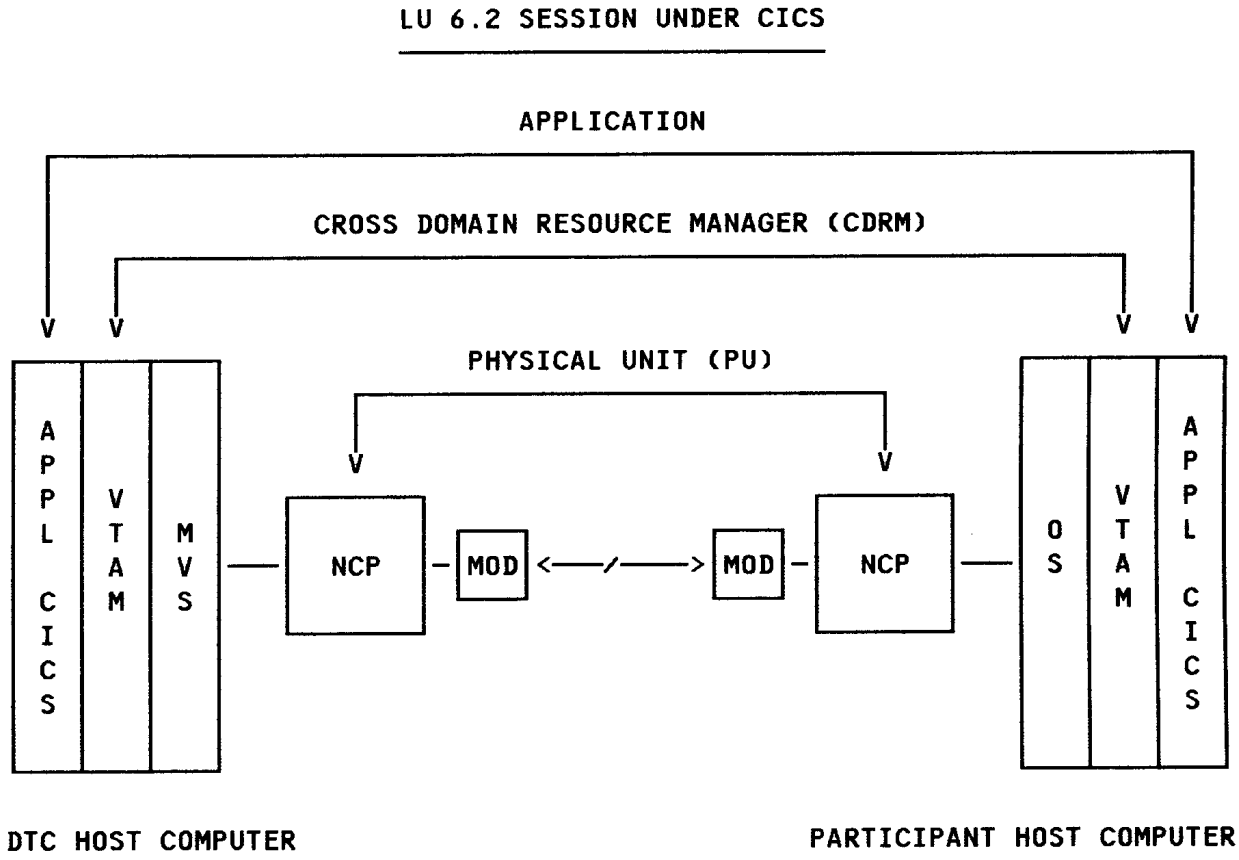
Field Name	Field Code	Error Code	Description
POR-REPORT-DATE	BABA	RAAA	Report Date is greater than the Confirmation Balance date.
POR-REPORT-DATE	BABA	9AAJ	Invalid Report Date.
POR-REPORT-DATE	BABA	9ABD	Report Date required.
POR-REPORT-DATE	BABA	9ABB	Report Date not found for MMI Type.
POR-REPORT-DATE	BABA	RAAB	Previous Report Date requires confirmation.
POR-PAYING-AGT-ID	CAAK	9ABD	Paying agent number required.
POR-PAYING-AGT-ID	CAAK	9AAF	Paying agent number is not numeric.
POR-PAYING-AGT-ID	CAAK	9AAT	Paying agent number is not a DTC Participant.
POR-PAYING-AGT-ID	CAAK	9AAA	Paying agent number is not valid.
POR-CONF-BAL-DATE	BABB	9AAJ	Invalid month for Confirmation Balance Date (i.e., month is not equal to 1-12). OR Invalid day for Confirmation Balance Date. (Day is not equal to 1-31 for months 1, 3, 5, 7, 8, 10, 12; day is not equal to 1-30 for months 4, 6, 9, and 11; day is not equal to 1-28 for month 2 of a non-leap year; day is not equal to 1-29 for month 2 of a leap year).
POR-CONF-BAL-DATE	BAAB	9AAF	Confirmation Balance Date is not numeric.
POR-CONF-BAL-DATE	BAAB	9ABL	Confirmation Balance Date is greater than today's date.
POR-CONF-BAL-DATE	BABB	9ABD	Confirmation Balance Date *required*.
POR-PA-MGMT-NAME	HAAJ	9ABD	No user name supplied.
POR-MMI-AGGREGT-NAME	HAAK	9ABD	No aggregate name supplied.
POR-MMI-AGGREGT-NAME	HAAK	9AAA	Aggregate name is invalid.

Figure 18. Error Codes and Descriptions

V. MDH TECHNICAL DOCUMENTATION

This section describes the Communications end Systems Programming Requirements for participants that wish to use the Mainframe Dual Host (MDH) System. The test and production environments at DTC are described along with guidelines for the environment at the participant's location.

The diagram below represents the 'layers' of communications that comprise an LU6.2 session:



A. General Communications Definitions

Listed below are the characteristics of the DTC test and production systems. For a participant to use MDH, its system must have matching characteristics at the same or a higher level and this information will be exchanged with DTC as soon as it is known:

No	Feature	DTC Test Frame	DTC Prod Frame
1	VTAM Level	CSV2R8	CSV2R8
2	NCP Level	V7 R5	V7 R5
3	NETID	DTCT	DTCT
4	NULL NETID **		
5	GWNCP	Yes	Yes
6	MAXSUBA	31	31
7	NULL NET MAXSUBA **		
8	HOST SUBAREA (NON GATEWAY)	Not applicable	Not applicable
9	NCP SUBAREA (NON GATEWAY)	Not applicable	Not applicable
10	NULL NET NCPSUBAREA **		
11	CDRM NAME	DTCT02	DTCP03
12	CDRM ADDRESS, ELEMENT (GATEWAY)	(,2)	(,2)
13	SSCPID	1025	1027
14	Transmission Group for Line	1	1
15	ERS, VRS	0,0 and 1,1	0,0 and 1,1
16	MAX RU SIZE	3840	3840
17	Application Name **	UTOR	PLCICS
18	Line Name **		
19	Line Station Name **		

Figure 11. Communication Requirements

** To be determined at time of installation by agreement between DTC and participant.

Note: The production link will run at 9600 Baud Full Duplex

Note: Items 8 and 9 do not apply if participant's installation is Gateway capable.

B. Controller 'Sysgen' Definitions

The following parameters must be included in 3705 or 3725 gens:

1. For Both 3705 and 3725 Group or Line Macros:

- NRZI = No
- NEWSYNC = No
- DUPLEX = Full

2. For 3725, code the Line Address as follows **:**

- Address = (XXX,Full) for Full Duplex
- Address = (XXX,Half) for Half Duplex

Note: IBM Informational APAR II01803 is very useful for Link Station definitions.

C. VTAM Requirements

1. Mode Table Definitions

The required Mode Table entry for use with LU6.2 is shown below:

MODELU62 TITLE MVS/XA SYSTEM MODE TABLE FOR LU 6.2 USE

MODULE NAME = MODELU62

```
MODELU62    MODETAB
SNASVCMG    MODEENT     LOGMODE=SNASVCMG
SNASVCUS    MODEENT     LOGMODE=SNASVCUS
            MODEEND
            END
```

2. VTAM CICS Application Definition

*****

```
XXX     APPL        EAS=160,                ESTIMATED CONCURRENT SESSIONS
                    ACBNAME=XXX,            APPLID FOR ACB
                    SONSCIP=YES,
                    VPACING=3
                    MODETAB=MODELU62,
                    PARSESS=YES,
                    AUTH=(ACQ,VPACE,PASS)
```

D. CICS Requirements (General)

The participant's system must have the following:

1. At least CICS Release 1.6.1.

2. At least a PUT Level 8601 (with Release 1.6.1).

3. A TCT entry defining the CICS/LU6.2 line as suggested below. This entry defines the link for the LU6.2 Communications Facility and will be allocated by the LU6.2 Participant Application Region.

```
LU62    DFHTCT    TYPE=SYSTEM,          DEFINE IRC
                  ACCMETH=VTAM,         USE VTAM
                  TRMTYPE=LUTYPE62,     LOGICAL UNIT 6.2
                  FEATURE=SINGLE,       SINGLE SESSION
                  SYSIDNT=LU62,         NAME OF THIS LINK (ANY NAME)
                  NETNAME=PLCICS,       APPLID OF REMOTE SYSTEM AT DTC -
                                        (NOTE: USE TTCICS FOR TESTING)
                  MODENAME=SNASVCUS     LOG MODE ENTRY NAME -
                                        MATCH TO MODETAB ENTRY
                  BUFFER=1024,          OUTBOUND RUSIZE
                  RUSIZE=1024,          INBOUND RUSIZE
                  TCTUAL=172            OPTIONAL TCT USER AREA
```

Participants must provide DTC with the NETNAME, that is, 'APPLID', of *their* systems for inclusion in the DTC DFHTCT.

Note: It is recommended that the participant consider maintaining a separate CICS Region for the LU6.2 link with DTC. This will facilitate the coordination of PTF upgrades at each location and avoid incompatible versions of CICS. A policy paper discussing this issue is available upon request.

E. CICS/LU6.2 Application Requirements

Shown below are two skeleton programs that highlight the key activities required to establish an LU6.2 session with the MDH system and send and receive data.

The code is a combination of actual CICS commands, mainly related to establishing the session and conversing, and pseudocode ,which indicates the sequence of block types that will be transmitted back and forth over the communication line.

1. Initialization

```
EXEC    CICS HANDLE ABEND LABEL(LU62-EXIT) END-EXEC.
EXEC    CICS HANDLE CONDITION SYSIDERR(ALLOC-FAIL) END-EXEC.
```

2. Allocate an LU6.2 session with the MDH System.

```
EXEC    CICS ALLOCATE SYSID(LU62-SYSTEM) END-EXEC.
```

Where the label 'LU62-SYSTEM' should be the TCT ID of the remote facility, that is, DTC.

Note: When the resource is not available (DTC System is down or the session has already been taken), the program will wait at this point until the session becomes available.

```
MOVE    EIBRSRCE TO LU62-ID.
```

Where the label 'LU62-ID' is a storage area for the Session-ID required in subsequent code.

```
EXEC    CICS    CONNECT    PROCESS
                           PROCNAME(PROC-NAME)
                           PROCLENGTH(4)
                           SYNCLEVEL(1)
                           CONVID(LU62-ID)
                           END-EXEC.
```

Where 'PROC-NAME' is a 4-byte constant 'LU62:

3. Format a Type-01 signon block in Working-Storage including signon-ID and password.

4. Send the block to DTC and receive the response (Type-02 block).

```
EXEC    CICS    CONVERSE
                           CONVID(LU62-ID)
                           FROM(SIGNON-BLOCK-AREA)
                           FROMLENGTH(BLOCK-01-LENGTH)
                           SET(BLL-CELL-2)
                           TOLENGTH(BLOCK-02-LENGTH)
                           END-EXEC.
```

5. Validate block Type-02 returned by LU6.2 and that the signon was accepted.

6. Determine which function, 'DO', 'PO', etc., to request.

7. Build and send a 'DO', 'PO', etc., Function Request (Type-03 block) and wait for the response (Type-04 block).

```
EXEC    CICS    CONVERSE
                           CONVID(LU62-ID)
                           FROM(BLOCK-03-AREA)
                           FROMLENGTH(BLOCK-03-LENGTH)
                           SET (BLL-CELL-4)
                           TOLENGTH(BLOCK-04-LENGTH)
                           END-EXEC.
```

8. Validate block Type-04 and response.

9. Get the next transactions to be sent (up to 10) and build a Type-05 data block.

10. Send the block and wait for the Type-06 block response.

```
EXEC    CICS    CONVERSE
                           CONVID(LU62-ID)
                           FROM(BLOCK-05-AREA)
                           FROMLENGTH(BLOCK-05-LENGTH)
                           SET(BLL-CELL-6)
                           TOLENGTH(BLOCK-06-LENGTH)
                           END-EXEC.
```

11. Validate block Type-06 and response.

12. If more transactions, go to send more data (Step 9).

13. Otherwise, build and send an 'END' Type-05 data block and go to process the next function (Step 6).

14. When there is no more input, build and send a signoff (Type-90) block and wait for the response (Type-91) block.

15. Free the session**.**

EXEC CICS FREE SESSION(LU62-ID) END-EXEC.

16. Terminate the program.

Important Notes:

- Coding should be included after every 'CONVERSE' instruction to test for a Type-99 block. This block will be returned if there is any MDH system failure at DTC.
- The 'HANDLE ABEND' Routine must contain:

  EXEC CICS FREE SESSION(LU62-ID) END-EXEC.

  as its first statement.

- In the 'HANDLE ABEND' Routine, a 'USER ABEND' is acceptable only after the 'FREE SESSION' has been requested. This is required in order to keep the LU6.2 session synchronized.

Purpose: This code describes the LU 6.2 participant processing needed to receive 'DO', 'PO', etc., transactions from DTC.

Note: ***Recovery logic is not included here.***

1. Initialization

```
EXEC   CICS   HANDLE   ABEND       LABEL(LU62-EXIT)          END-EXEC.
EXEC   CICS   HANDLE   CONDITION   SYSIDERR(ALLOC-FATL)      END-EXEC.
```

2. Allocate an LU6.2 session with the MDH System.

EXEC CICS ALLOCATE SYSID(LU62-SYSTEM) END-EXEC.

Where the label 'LU62-SYSTEM' should be the TCT ID of the remote facility, that is, DTC.

Note: When the resource is not available (DTC System is down or the session has already been taken), the program will wait at this point until the session becomes available.

MOVE EIBRSRCE TO LU62-ID.

Where the label 'LU62-ID' is a storage area for the Session-ID required in subsequent code.

```
EXEC   CICS   CONNECT   PROCESS
                        PROCNAME(PROC-NAME)
                        PROC LENGTH(4)
                        SYNCLEVEL(1)
                        CONVID(LU62-ID)
                        END-EXEC
```

Where 'PROC-NAME' is a 4-byte constant 'LU62'

3. Format a Type-01 signon block in Working-Storage including signon-ID and password.

4. Send the block to DTC and receive the response (Type '02 block).

```
EXEC   CICS   CONVERSE
                        CONVID(LU62-ID)
                        FROM(SIGNON-BLOCK-AREA)
                        FROMLENGTH(BLOCK-01-LENGTH)
                        SET(BLL-CELL-2)
                        TOLENGTH(BLOCK-02-LENGTH)
                        END-EXEC
```

5. Validate block Type-02 returned by LU6.2 and that the signon was accepted.

6. Build and send an 'MDLU' Function Request (Type-03 block) and wait for the response (Type-04 block).

```
EXEC    CICS    CONVERSE
                        CONVID(LU62-ID)
                        FROM(BLOCK-03-AREA)
                        FROMLENGTH(BLOCK-03-LENGTH)
                        SET(BLL-CELL-4)
                        TOLENGTH(BLOCK-04-LENGTH)
                        END-EXEC.
```

7. Validate block Type-04 and response.

8. Build a Type-07 block containing 'ALL' to receive all messages or a range of message numbers.

9. Send the block.

```
EXEC    CICS    SEND
                        CONVID(LU62-TD)
                        FROM(BLOCK-07-AREA)
                        LENGTH(BLOCK-07-LENGTH)
                        INVITE
                        WAIT
                        END-EXEC.
```

10. Issue a Receive for the Type-08 Response block, test whether a Confirmation is required and, if so, send the Confirmation.

```
EXEC    CICS    RECEIVE
                        CONVID(LU62-ID)
                        INTO(BLOCK-08-RESPONSE-AREA)
                        LENGTH(BLOCK-08-LENGTH)
                        END-EXEC.

    IF EIBCONF EQUAL HIGH-VALUES

EXEC    CICS    ISSUE  CONFIRMATION
                        CONVID(LU62-ID)
                        END-EXEC.
```

11. Determine whether the Type-08 block contains 'NONE', 'END', or data:

- If 'NONE', go to end the session (Step 15).
- If 'END', go to end the session (Step 15).
- If data, go to process the transactions (Step 12).

12. Process the block of data.

13. Issue a Receive for another Type-08 response block, test if a Confirmation is required and, if so, send the Confirmation.

```
EXEC    CICS    RECEIVE
                        CONVID(LU62-ID)
                        INTO(BLOCK-08-RESPONSE-AREA)
                        LENGTH(BLOCK-08-LENGTH)
                        END-EXEC.

IF EIBCONF EQUAL HIGH-VALUES

EXEC    CIC     ISSUE   CONFIRMATION
                        CONVID(LU62-ID)
                        END-EXEC.
```

14. Determine whether the Type-08 block contains 'END' or data**:**

- If 'END', go to end the session (Step 15).
- If data, go to process the transactions (Step 12).

15. Build and send a Signoff (Type-90) block and wait for the Response (Type-91) block.

16. Free the session.

```
EXEC    CICS FREE SESSION(LU62-ID) END-EXEC.
```

17. Terminate the program.