



## **MDH TRANSMISSION USER GUIDES**

# **20.02 MAINFRAME DUAL HOST (MDH) SYSTEM USER GUIDE FOR PAYMENT ORDER OUTPUT (FOR SPO, PPO AND ACATS PAYORDER)**

**Version 2**

20.16 MQ Payment Order Output (for SPO, PPO and ACATS)

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03/01/13	Settlement Matching Updates for RAD Stage 3 (Figures 7-9 Data Response Blocks for SPO, PPO, and ACAT respectively).
08/01/13	Amended RAD Zero dates for RAD Stage 3 (Figures 7-9 Data Response Blocks for SPO, PPO, and ACAT respectively).
11/30/18	Removed formatting and references to old changes.

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## PREFACE

This document describes, specifically, the output requirements for Payment Order activity processing via DTC's Mainframe Dual Host (MDH) system.

A complete description of the MDH system and the functions which it supports are contained in the *M.D.H. User Guide - Version 4*.

## I. OVERVIEW

### ***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 DTB 'host' computer and the participant 'host' computer via a dedicated point-to-point communication (that is, telephone) line. The procedure with which the participant can either request data to be transmitted to DTC or request data to be transmitted to him from DTC is described in other sections of this document.

## II. PARTICIPANT-TO-DTC 'PAYMENT ORDER' TRANSMISSIONS

### A. General

This section describes in detail the procedure that the participant's host uses to send 'Payment Order' transmission blocks to MDH.

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

- Sign on 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 Payment Orders to DTC

Please refer to the document titled "POL1/POL5 Function Users Guide."

#### PO Transmission Block Format

The PO transmission block format is shown in the diagram below:

BLOCK PREFIX	PO TRANS	PO TRANS	PO TRANS	PO TRANS	PO TRANS	PO TRANS	PO TRANS	PO TRANS	PO TRANS	PO TRANS
	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10

∟↓MINIMUM↓∟

∟↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓MAXIMUM ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓∟

Each block contains a 74-byte prefix followed by up to ten PO transactions.

Two types of PO data may be entered:

- SPO - Security Payment Order - Code '78'
- PPO - Premium Payment Order - Code '82'

### 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 Payment Order data available are:

- Payment Order (PO) Types '078', '082' and '027'.

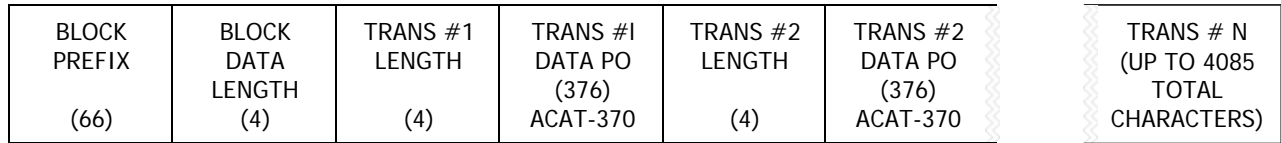
To review the sequence of transmissions required to receive data, the participant's host will:

- Sign on 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:



∟↓↓↓↓↓MINIMUM 450↓↓↓↓↓∟

∟↓↓↓↓↓MAXIMUM 4085↓↓↓↓↓∟

**Note:** This data can be interspersed with other types of non-Payment Order activity.

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 450 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).

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

**Note:** The 'starting seq. #' and 'total #' parameters are six-character numeric fields that must be right aligned and left zero filled.

See Exhibit 3 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 4).
- The participant can now submit a Type '03' function-request block or a Type '90' signoff 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.

3. 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 4).
- The participant can now submit a Type '03' function-request block or a Type '90' signoff 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 needed, 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 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
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.
LU6.2-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 block 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 signon 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-TERMINID	19	04	Internal to MDH
Filler	23	38	Value spaces
FUNCTION-REQUESTED	61	04	Possible values: 'POL1': PO input to MDH 'MDLS': DO/PO output to participant
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-TERMIN	19	04	Internal to MDH
Filler	23	38	Value spaces
FUNCTION-REQUESTED	61	04	Possible values: 'POL1': PO input to MDH 'MDLS': DO/PO output to participant
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) '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 - 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-TERMINID	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'
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 5. Data Request Block from Participant

**Exhibit 4 - Data Response Block from MDH with 'END' or 'NONE'****Data Response Block from MDH - Length 78 Bytes**

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-TERMINID	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 6. Data Response Block from MDH

**Exhibit 5 - Data Response Block for SPOs from MDH**

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 four-byte length attribute. The exhibit below shows a block that contains a single SPO transaction. It consists of the 70-byte prefix, the four-byte length attribute, and 376 bytes of the SPO transaction.

**Data Response Block for SPO Free MDH - Length Variable**

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': Accepted 'R': Rejected
RESPONSE-REASON-CODE	62	01	'A': Not signed on 'B': Past cutoff 'C': Not in 'MDLU' 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 Req-Type inval 'P': PTS is down
TRANSACTIONS-IN-BLOCK	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 '380'.
Filler	75	02	For DTC internal use only
Filler	77	01	Value space
DEST-PARTIC-ACCOUNT	78	08	Individual participant # or group user #
DEST-SYMBOL	86	02	Destination symbol - numeric
Filler	88	01	Value '-'
DEST-ACCOUNT-SEQ-#	89	06	Sequence of the transaction unique for each account destination
TYPE-OF-08-RESPONSE	95	01	Value 'P' (PO data)
DTC-SYS-ORIGIN-CODE	96	01	DTC system origination Values:

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Field Name	Pos	Len	Field Attributes
			2 = CCF 3 = PTS 4 = ID 5 = MDH 0 = Other
DTC-SYS-ACTIVITY-CODE	97	03	Value '078' (Security Payment Order)
SPO-OUT-PAYEE-NUMBER	100	08	Participant number of the payee
SPO-OUT-COPY-IND	108	01	Values: Space = Original copy (Payor) 'O' = Duplicate copy (Payor) 'E' = Original copy (Payee)
Filler	109	01	Value space
SPO-OUT-CUSIP-NUMBER	110	09	CUSIP number
SPO-OUT-PAYOR-NUMBER	119	08	Participant number of the payor
Filler	127	02	Value spaces
SPO-OUT-SHARE-QUANTITY	129	07	Share quantity
Filler	136	02	Value spaces
SPO-OUT-MONEY-AMOUNT	138	12	Dollars and cents value of the payment (decimal point assumed). PIC 9(10)V9(2)
Filler	150	02	Value spaces
SPO-OUT-REASON-CODE	152	02	Reason code: 'S0' = Mark to market / stock loan 'S1' = Mark to market / stock loan reclaim 'S2' = Due bill redemptions 'S3' = Due bill redemptions reclaim 'S4' = Mark to market / fail 'S5' = Mark to market / fail reclaim 'S6' = Buy in / pair off 'S7' = Buy in / pair off reclaim 'S8' = Fail pair off 'S9' = Fail pair off reclaim  <i><b>Note:</b> The following 10 fields correspond exactly to the 10 fields above. The only difference is that the following codes are internally generated within DTC and may not be used by a participant in a '05' data transmission block to DTC.</i>  'SA' = Mark to market / stock loan 'SB' = Mark to market / stock loan reclaim 'SC' = Due bill redemptions 'SD' = Due bill redemptions / reclaim 'SE' = Mark to market / fail 'SF' = Mark to market / fail reclaim 'SG' = Buy in / pair off 'SH' = Buy in / pair off reclaim 'SI' = Fail pair off



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Field Name	Pos	Len	Field Attributes
			'SJ' = Fail pair off reclaim
SPO-OUT-NEW-PRICE	154	07	New price (\$/¢) of share value (decimal point is assumed). PIC 9(5)V9(2)
Filler	161	02	Value spaces
SPO-OUT-OLD-PRICE	163	07	Old price (\$/¢) of share value (decimal point is assumed). PIC 9(5)V9(2)
Filler	170	02	Value spaces
SPO-OUT-ADJUSTMENTS	172	10	Adjustment figure (\$/¢) (decimal point is assumed). PIC 9(8)V9(2)
Filler	182	02	Value spaces
SPO-OUT-CONTRACT-DATE	184	06	Contract date (MMDDYY format)
SPO-OUT-PAYEE-REP-NAME	190	30	Representative's name of the payee
SPO-OUT-PAYEE-REP-PHONE	220	10	Representative's phone number of the payee
SPO-OUT-PAYOR-REP-NAME	230	30	Representative's name of the payor
SPO-OUT-PAYOR-REP-PHONE	260	10	Representative's phone number of the payor
SPO-OUT-COMMENTS	270	60	Comments
SPO-OUT-SETTLEMENT-DATE	330	06	Settlement Date - MMDDYY format
SPO-OUT-PAYABLE-DATE	336	06	Payable Date - MMDDYY format
SPO-OUT-RECORD-DATE	342	06	Record Date - MMDDYY format
SPO-OUT-CUSIP-DESC	348	20	CUSIP description
SPO-OUT-TIME-STAMP	368	06	Time at which the SPO was processed at DTC in HHMMSS format
Filler	374	1	Value space
SPO-OUT-DTC-RBN-REC#	375	8	Pointer to this record on the DTC Central ATP data base
Filler	383	13	Value spaces
SPO-OUT-MUNI/BOND-IND	396	01	Muni or regular bond indicator values: 'B' = Regular bond 'M' = Muni bond ' ' = Stock (non-bond)
SPO-OUT-ATP-STATUS	397	01	Values: 'M' = Make 'P' = Pending (SDFS only) 'E' = Error
SPO-OUT-SDFS-IND	398	01	Same Day Funds System CUSIP involved. Values:

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Field Name	Pos	Len	Field Attributes
			'S' = SDFS 'C' = Commercial paper (SubI=525) 'M' = Medium term note (SubI=530) ' ' = Non-SDFS
Filler	399	01	Value space
SPO-OUT-SHARE-PTY-NEW	400	09	Share quantity (new format where 1 = 1 for all issues)
Filler	409	02	Value space
SPO-OUT-SUBISSUE-TYPE	411	03	Sub-issue type for SDFS Cusips. Values: '000' = NOT APPLICABLE '030' = LMTD PARTNRSHP '040' = CMO in units '041' = ABS in units '042' = ISSUE in units '110' = ADR '120' = PFD-CP '320' = MUNI VRDO/CP '330' = MUNI CP '340' = BEARER/ZERO CPN '502' = BAs '504' =CDs '505' = CERTFD MMI '506' = CTFD MMI-PER. '525' = CORPORATE CP '526' = CORP. VRDO/CP '530' = MTNs '531' = Deposit notes '532' = M/T bank notes '533' = MMI MTNs '540' = CMO '541' = ABS '542' = NON-CMO/ABS '550' = S/T bank notes '551' = ZERO COUPON '560' = DISCOUNT NOTES
RAD Sequence Number	414	08	This field is the IMS TID displayed in the "non-displayable character" version. This is the current format used in RAD output.
IMS TID	422	16	This is the number generated by DTC which uniquely identifies any transaction.
Filler	438	13	Value spaces

Figure 7. Data Response Block for SPO from MDH

**Exhibit 6 - Data Response Block for PPOs from MDH**

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 four-byte length attribute. The exhibit below shows a block that contains a single PPO transaction. It consists of the 70-byte prefix, the four-byte length attribute, and 376 bytes of the PPO transaction.

**Please Note - For the Options Symbology Initiative (OSI), effective February 2010, DTC took existing filler, beginning on position 399 and ending on position 424, and used it for the new extended format of the fields affected by OSI.**

**Data Response Block for PPO from MDH - Length Variable**

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': Accepted 'R': Rejected
RESPONSE-REASON-CODE	62	01	'A': Not signed on 'B': Past cutoff 'C': Not in 'MDLU' 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 Req-Type inval 'P': PTS is down
TRANSACTIONS-IN-BLOCK	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 '380'.
Filler	75	02	For DTC internal use only
Filler	77	01	Value space
DEST-PARTIC-ACCOUNT	78	01	Individual participant # or group user #
DEST-SYMBOL	86	02	Destination symbol - numeric
Filler	88	01	Value '-'

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Field Name	Pos	Len	Field Attributes
DEST-ACCOUNT-SEQ-#	89	06	Sequence # of the transaction - unique for each account destination
TYPE-OF-08-RESPONSE	95	01	Value 'P' (PO data)
DTC-SYSTEM-ORIGIN-CODE	96	01	System at DTC through which the participants originally sent in the data: 2 = CCF 3 = PTS 4 = ID 5 = MDH 0 = Other
DTC-SYS-ACTIVITY-CODE	97	03	Value '082' (PPO)
PPO-OUT-PAYEE-NUMBER	100	08	Participant number of the payee
PPO-OUT-COPY-IND	108	01	Values: Space = Original copy (payor) 'Q' = Duplicate copy (payor) 'E' = Original copy (payee)
Filler	109	01	Value spaces
PPO-OUT-TRADING-SYMBOL	110	05	Trading symbol  <b>Note:</b> As a result of the Options Symbology Initiative (OSI), effective February 12, 2010, this field was redefined as filler and populated with spaces. Participants should program to receive the new OSI extended data from the following field:  PPO-OUT-OPTION-SYMBOL-EXT, Pos 399, Len 06, Option symbol extended
PPO-OUT-EXPIRATION-DATE	115	04	Contract's expiration date (month year only)  <b>Note:</b> As a result of the Options Symbology Initiative (OSI), effective February 12, 2010, this field was redefined as filler and populated with spaces. Participants should program to receive the new OSI extended data from the following field:  PPO-OUT-EXPIRATION-DATE-EXT, Pos 405, Len 08, Contract's expiration date (YYYYMMDD) extended
Filler	119	02	Value spaces
PPO-OUT-PAYOR-NUMBER	121	08	Participant number of the payor
Filler	129	02	Value spaces
PPO-OUT-RECEIPT-RELEASE	131	01	Values: '1' = Receipt '2' = Release
PPO-OUT-PUT-CALL	132	01	Values: '1' = Put

20.16 MQ Payment Order Output (for SPO, PPO and ACATS)

Field Name	Pos	Len	Field Attributes
			'2' = Call
PPO-OUT-MONEY-AMOUNT	133	12	Dollar and cents value of the payment (decimal point is assumed). PIC 9(10)V9(2)
Filler	145	02	Value spaces
PPO-OUT-REASON-CODE	147	02	Values: 'P0' = Put 'P1' = Put reclaim 'P2' = Call 'P3' = Call reclaim <b>Note:</b> The following four fields correspond exactly to the four fields above. The only difference is that the following codes are internally generated within DTC and may not be used by a participant in a '05' data transmission block to DTC. 'P4' = Put 'P5' = Put reclaim 'P6' = Call 'P7' = Call reclaim
PPO-OUT-EXERCISE-PRICE	149	07	Exercise price (\$/¢) of shares (decimal point is assumed). PIC 9(5)V9(2)  <b>Note:</b> As a result of the Options Symbology Initiative (OSI), effective February 12, 2010, this field will be redefined as filler and populated with spaces. Participants should program to receive the new OSI extended data from the following field:  PPO-OUT-EXERCISE-PRICE-EXT, Pos 413, Len 12, Exercise price (\$/¢) of shares extended (decimal point is assumed), PIC 9(6)V9(6)
Filler	156	02	Value spaces
PPO-OUT-LINE-NUMBER	158	02	Line number
PPO-OUT-XREF-DATE	160	06	Cross reference date (MMDDYY format)
PPO-OUT-NUMBER-CONTRACTS	166	05	Number of contracts
PPO-OUT-SERIAL-NUMBER	171	09	Serial number
PPO-OUT-BANK-NAME	180	30	Bank name
PPO-OUT-OCC-NAME	210	20	OCC member name
Filler	230	1	Value space
PPO-OUT-DTC-RBN-REC#	231	8	Pointer to this record on the DTC Central ATP data base
Filler	239	1	Value space
PPO-OUT-PAYEE-REP-NAME	240	30	Representative's name of the payee
PPD-OUT-PAYEE-REP-PHONE	270	10	Representative's phone number of the payee

20.16 MQ Payment Order Output (for SPO, PPO and ACATS)

Field Name	Pos	Len	Field Attributes
PPO-OUT-PAYOR-REP-NAME	280	30	Representative's name of the payor
PPO-OUT-PAYOR-REP-PHONE	310	10	Representative's phone number of the payor
PPO-OUT-COMMENTS	320	60	Comments
PPO-OUT-CUSIP-NO	380	09	CUSIP number
PPO-OUT-TIME-STAMP	389	06	Time that PPO was processed at DTC - HHMMSS format
Filler	395	01	Value space
PPO-OUT-MUNI-BOND-IND	396	01	Muni or regular bond indicator values: 'B' = Regular bond 'M' = Muni bond ' ' = Stock (non-bond)
PPO-OUT-ATP-STATUS	397	01	Values: 'M' = Made 'E' = Edit Error
PPO-OUT-SDFS-IND	398	01	Same Day Funds System CUSIP involved. Values: 'S' = SDFS 'C' = Commercial paper (SubI=525) 'M' = Medium term note (SubI=530) ' ' = Non-SDFS
PPO-OUT-OPTION-SYMBOL-EXT	399	06	Option symbol extended (previously referred to as "Trading Symbol")  Note: This field was extended, as a result of the Options Symbology Initiative (OSI).
PPO-OUT-EXPIRATION-DATE-EXT	405	08	Contract's expiration date (YYYYMMDD) extended  Note: This field was extended, as a result of the Options Symbology Initiative (OSI).
PPO-OUT-EXERCISE-PRICE-EXT	413	12	Exercise price (\$/¢) of shares extended (decimal point is assumed). PIC 9(6)V9(6)  Note: This field was extended, as a result of the Options Symbology Initiative (OSI)
RAD Sequence Number	425	08	This field is the IMS TID displayed in the "non-displayable character" version. This is the current format used in RAD output.
IMS TID	433	16	This is the number generated by DTC which uniquely identifies any transaction.
Filler	449	2	Value space

Figure 8. Data Response Block for PPO From MDH

**Exhibit 7 - Data Response Block for ACAT Payorder Record**

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 four-byte length attribute. The exhibit below shows a block that contains a single ACAT Payorder. It consists of the 70-byte prefix, the four-byte length attribute, and 391 bytes of the ACAT transaction.

**Data Response Block for ACAT from MDH - Length Variable**

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': Accepted 'R': Rejected
RESPONSE-REASON-CODE	62	01	'A': Not signed on 'B': Past cutoff 'C': Not in 'MDLU' 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 Req-Type inval 'P': PTS is down
TRANSACTIONS-IN-BLOCK	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 '395'.
Filler	75	02	For DTC internal use only
Filler	77	01	Value space
DEST-PARTIC-ACCOUNT	78	08	Individual participant # or group user #
DEST-SYMBOL	86	02	Destination symbol - numeric
Filler	88	01	Value '-'
DEST-ACCOUNT-SEQ-#	89	06	Sequence # of the transaction, unique for each account destination
TYPE-OF-08-RESPONSE	95	01	Value 'P' (PO data)

20.16 MQ Payment Order Output (for SPO, PPO and ACATS)

DTC-SYS-ORIGIN-CODE	96	01	DTC System origination Values: 2 = CCF 3 = PTS 4 = ID 5 = MDH 0 = Other
DTC-SYS-ACTIVITY-CODE	97	03	Value '079' (ACAT Payment Order)



20.16 MQ Payment Order Output (for SPO, PPO and ACATS)

Field Name	Pos	Len	Field Attributes
ACAT-OUT-PAYEE-NUMBER	100	08	Participant number of the payee.
ACAT-OUT-COPY-IND	108	01	Values: Space = Original copy (Payor) 'O' = Duplicate copy (Payor) 'E' = Original copy (Payee)
Filler	109	01	Value space
ACAT-OUT-CUSIP-NUMBER	110	09	CUSIP number
ACAT-OUT-PAYOR-NUMBER	119	08	Participant number of the payor
Filler	127	01	Value spaces
ACAT-OUT-SHARE-QUANTITY	128	09	Share quantity
Filler	137	02	Value spaces
ACAT-OUT-MONEY-AMOUNT	139	12	Dollars and cents value of the payment (decimal point assumed). PIC 9(10)V9(2)
Filler	151	03	Value spaces
ACAT-OUT-REASON-CODE	154	03	Reason code: '791'
Filler	157	01	Value space
ACAT-OUT-ACT-CODE	158	01	Action code : '+' or '-'
ACAT-OUT-JRNL-CODE	159	01	Journal code: 'O', 'N' or 'S'
ACAT-OUT-PEND-RSN	160	01	Reason for pend: ' ' = no pend 'C' = for major collateral 'O' = for minor collateral 'G' = for pledgee collateral 'D' = for minor net debit 'E' = for major net debit 'H' = for pledgee net debit 'A' = for major other NA 'B' = for minor other NA 'P' = for major other NA 'S' = for insufficient shares
Filler	161	01	Value space
ACAT-ORIGIN-SOURCE	162	04	Value 'PCAT'
ACAT-STATUS-CODE	166	01	Possible values: 'P' = pending 'M' = made 'D' = drop
ACAT-OUT-COMMENTS	167	210	Comments: pos. 12-31 = orig. rcvr. cust. # pos. 42-55 = ACAT cntl. # pos. 65-70 = asset seq. # pos. 78-79 = rsn. code = A0 pos. 91-94 = orig. rcvr. corresp.

20.16 MQ Payment Order Output (for SPO, PPO and ACATS)

Field Name	Pos	Len	Field Attributes
			pos. 107-126 = orig. dlv. cust. # pos. 137-140 = original receiver pos. 152-155 = original deliverer pos. 179-187 = orig. rcvr. cust. primary soc. sec. # pos. 202-210 = orig. rcvr. cust. secondary soc. sec. #
Filler	377	01	Value space
ACAT-DUE-BILL-IND	378	01	Possible values: 'Y' = due-bill 'N' = No due-bill ' ' = No due-bill
ACAT-CMO-FACTOR	379	14	CMO factor Format = 9(2)V9(12)
ACAT-3RD-PARTY-ID	393	06	Third party identifier
ACAT-OUT-CUSIP-DESC	399	20	CUSIP description
ACAT-PROCESS-DATE	419	08	Format = CCYYMMDD
Filler	427	1	Value space
ACAT-PROCESS-TIME	428	06	Time that transaction was processed at DTC - HHMMSS format
Filler	434	1	Value space
ACAT-OUT-DTC-RBN-REC#	435	8	Pointer to this record on the DTC Central ATP data base
Filler	443	01	Value space
ACAT-MUNI/BOND-IND	444	01	Muni or regular bond indicator values: 'B' = Regular bond 'M' = Muni bond ' ' = Stock (non-bond)
ACAT-OUT-SDFS-IND	445	01	Same Day Funds System CUSIP involved. Values: 'S' = SDFS 'C' = Commercial paper (SubI=525) 'M' = Medium term note (SubI=530) ' ' = Non-SDFS
ACAT-SUBISSUE-TYPE	446	03	Sub-issue type for SDFS Cusips. Values: '000' = NOT APPLICABLE '030' = LMTD PARTNRSHP '040' = CMO in units '041' = ABS in units '042' = ISSUE in units '110' = ADR '120' = PFD-CP '320' = MUNI VRDO/CP '330' = MUNI CP '340' = BEARER/ZERO CPN '502' = BAs

20.16 MQ Payment Order Output (for SPO, PPO and ACATS)

Field Name	Pos	Len	Field Attributes
			'504' = CDs '505' = CERTFD MMI '506' = CTFD MMI-PER. '525' = CORPORATE CP '526' = CORP. VRDO/CP '530' = MTNs '531' = Deposit notes '532' = M/T bank notes '533' = MMI MTNs '540' = CMO '541' = ABS '542' = NON-CMO/ABS '550' = S/T bank notes '551' = ZERO COUPON '560' = DISCOUNT NOTES
RAD Sequence Number/(IMS TID)	449	08	This field is the IMS TID displayed in the "non-displayable character" version. This is the current format used in RAD output.
Filler	457	08	Reserved for Future Use

Figure 9. Data Response Block for ACAT from MDH

**Exhibit 8 - 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'
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-TERMINID	19	04	Internal to MDH
Filler	23	38	Value spaces
CURRENT FUNCTION	61	04	Possible values: 'POL1': PO input to MDH 'MDLS': DO/PO output to participant
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 10. Function Change Request Block From Participant

### **Exhibit 9 - Logoff Request Block**

#### **Logoff Request Block From Participant - Length 60 Bytes**

<b>Field Name</b>	<b>Pos</b>	<b>Len</b>	<b>Field Attributes</b>
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-TERMINID	19	04	Internal to MDH
Filler	23	38	Value spaces

Figure 11. Logoff Request Block From Participant

#### **Logoff Response Block From MDH - Length 142 Bytes**

<b>Field Name</b>	<b>Pos</b>	<b>Len</b>	<b>Field Attributes</b>
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-TERMINID	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 12. Logoff Response Block From MDH

**Exhibit 10 - 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-TERMINID	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 13. System Error Block From MDH

**Exhibit 11 - Participant Request/MDH Response**

**Participant Request/MDH Response - Chart**

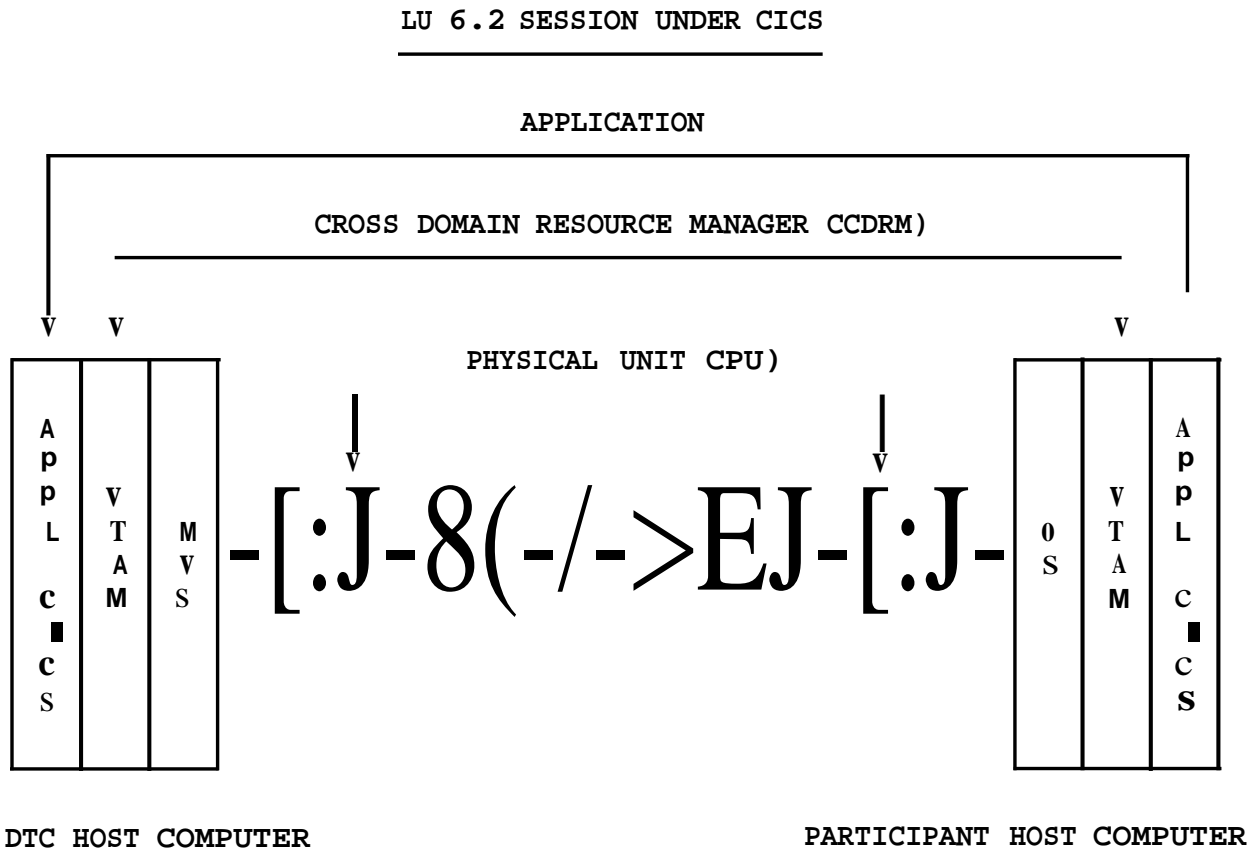
PARTICIPANT REQUEST		MDH RESPONSE	
Block type	Description	Block type	Description
'01'	Logon	'02'	Logon (accepted/rejected) - OR -
		'06'	Status of last good transmission ('recovery' after abnormal session termination) - OR -
		'99'	Logon rejected (System error)
'03'	Function	'04'	Function (accepted/rejected)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

Figure 14. Participant Request/MDH Response - Chart

## V. MDH TECHNICAL DOCUMENTATION

This section describes the Communications and Systems Programming Requirements for participants who 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, this 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 R8	V7 R8
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 15. 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.

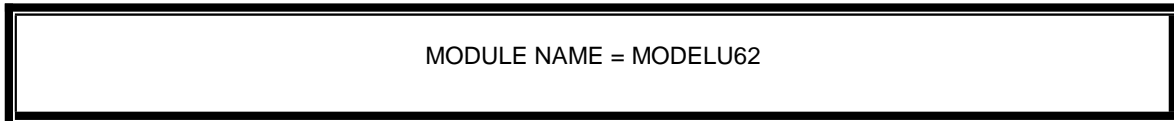
**Note:** IBM Informational APAR II01803 is very useful for Link Station definitions.

## C. VTAM Requirements

1. Mode Table Definitions

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

MODELU62 TITLE MV/S/XA SYSTEM MODE TABLE FOR LU 6.2 USE



```
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.

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

Purpose: The code below describes the LU 6.2 participant processing required to send the following transactions to DTC:

- Deliver Orders (DO)
- Payment Orders (PO)
- Issuance transactions
- RAD Approval/Cancellation transactions
- SEG-type activity
- PLEDGE-type activity

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

### 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 four-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).

20.16 MQ Payment Order Output (for SPO, PPO and ACATS)

```
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 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.

## 20.16 MQ Payment Order Output (for SPO, PPO and ACATS)

- 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-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)  
PROC LENGTH(4)  
SYNLEVEL(1)  
CONVID(LU62-ID)  
END-EXEC.
```

Where 'PROC-NAME' is a four-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.
```

20.16 MQ Payment Order Output (for SPO, PPO and ACATS)

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.

20.16 MQ Payment Order Output (for SPO, PPO and ACATS)

13. Issue a RECEIVE for another 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    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.