74701400

CONTROL DATA CORPORATION

COMMUNICATIONS CONTROL PROGRAM, VERSION 1.0 SOFTWARE OPERATOR'S GUIDE

CONTROL DATA®
2550 SERIES MODELS 2550-1, 2550-2

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PAGE	SFC†	REV
COVER		–
TITLE		–
ii		A
iii		A
v		A
vi		A
1-1		A
2-1		A
2-2		A
2-3		A
2-4		A
2-5		A
2-6		A
2-7		A
2-8		A
2-9		A
2-10		A
2-11		A
2-12		A
2-13		A
2-14		A
CMT. SHT.		–
RET. ENV.		–
BACK COV		–

PAGE	SFC†	REV

PAGE	SFC†	REV

PAGE	SFC†	REV

SFC † Software Feature Change

PREFACE

This manual describes the operating procedures necessary to permit an operator to control the Communications Control Program (CCP) Version 1.0. These procedures are useful to system analysts in using the console.

The procedures are used by computer operators who are presumed to have no detailed knowledge of the operating system hardware, its internal functions, or of programming.

CCP 1.0 supports the Control Data 2550-1 or 2550-2 Host Communications Processor (HCP).

The following manuals also contain information pertaining to CCP 1.0:

CCP 1.0 Reference Manual 74701200

CCP 1.0 Software Diagnostic Handbook 74700600

CONTENTS

FIGURES

TABLES

INTRODUCTION

The Communications Control Program (CCP) is the online operating and support software for the 2550 Host Communications Processor (HCP). The HCP provides front-end communications functions for a CDC 6000/CYBER 70/170 Host Computer System. The host computer system operates under control of the SCOPE 3.4 operating system.

The 2550 HCP is designed to operate with little or no operator intervention and with most of the system under control of the CYBER host computer system. Some of the functions performed by the host include loading the CCP into the HCP, configuring the communications lines, reloading the HCP after system failure, and receiving and processing CE error and statistics messages.

The 2550 operator has online supervisory control that enables such functions as changing the routing of service and statistics messages and the initiation of online diagnostic programs.

EQUIPMENT SPECIFICATIONS

The CCP requires the following minimum equipment configuration of the 2550-1 or 2550-2 Host Communications Processor:

- 1 Multiplex Loop Interface Adapter (MLIA)
- 1 Loop Multiplexer
- 1 Cyclic Encoder Circuit Card
- 1 CYBER Communications Coupler
- 1 Communications Line Adapter (CLA) selected from the following types:

  2560-1, -2, or -3 Synchronous CLA

  2561-1 Asynchronous CLA

Memory unit options for the different configurations are shown in table 1-1.

SPECIAL PORT ZERO FUNCTIONS

Port number zero is logically associated with the Multiplex Loop Interface Adapter (MLIA), the local console, and the CYBER Communications Coupler. Therefore, no CLA should be assigned address zero.

TABLE 1-1. MEMORY UNIT OPTIONS

System Configuration	Basic Memory	Expansion Memory
2550-1 (core)	3 8K modules	1 2554-8 8K-module
2550-2 (core)	4 8K modules	1 thru 4 2554-8 8K modules
2550-2 (MOS)	1 32K module	1 2554-16 16K-module or 1 2554-32 32K-module

OPERATING PROCEDURES 2

INTRODUCTION

Operating procedures for the CCP consist of loading and initializing the 2550 system, procedures associated with a host failure, suspension of 2550 operation, and entry of operator control statements (commands) through the local console keyboard.

2550 LOAD/INITIALIZE

The 2550 system is loaded and initialized by the host computer system. Therefore, few procedures associated with these functions are the concern of the 2550 operator. However, to prepare for such a downline load, the 2550 operator must:

1. Verify that ports (CLA addresses) to the communications network connections are correct.

2. On the loop multiplexer circuit card, set the power (PWR) switch to ON. See figure 2-1.

3. On the CLA circuit card, set the CLA ON/OFF switch to ON. See figure 2-2. Only those cards that are configured are affected.

4. Verify the local console is in the normal ON condition.

Upon successful completion of the downline load operation by the host, a message containing the CCP version, host identification number, and NPU identification number is output at the local console. The following is an example of that message format:

```
CCP          1.0
HOST ID:      00
NPU ID:       01
```

The host then configures the 2550 terminals and normal system operation begins.

If the downline load is unsuccessful, the host initiates and receives a dump of the 2550 memory, micromemory, and file registers. The initiation of another downline load attempt is under control of the host.

HOST FAILURE

If the 2550 should lose communication with the host because of host failure, the console and interactive terminals are sent a "host down" message and input from the terminals is stopped. When communication with the host is restored, if the loss was of short duration caused by a temporary inability of the host to obtain control of the 2550 channel, a "host up" message signals restoration of communication and system operation resumes unaffected by the temporary loss. Following longer or more serious losses of communication, however, the host may reload the 2550 processor and cause the system to operate as after the initial load operation.

SUSPENSION OF 2550 OPERATION

If it becomes necessary to stop operation of the 2550 system for any reason, momentarily press the MASTER CLEAR switch on the maintenance panel. See figure 2-3.

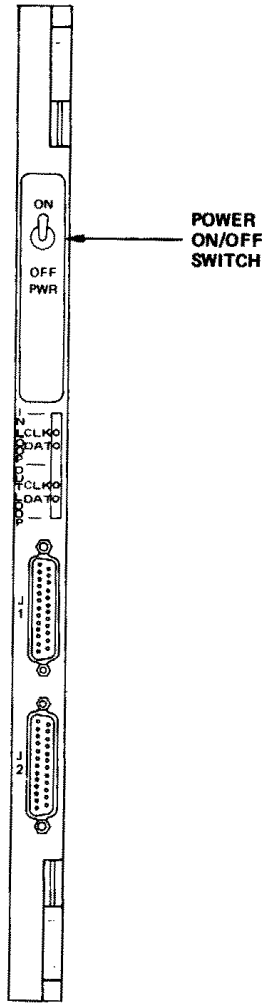


Figure 2-1. Loop Multiplexer Circuit Card PWR ON/OFF Switch Location

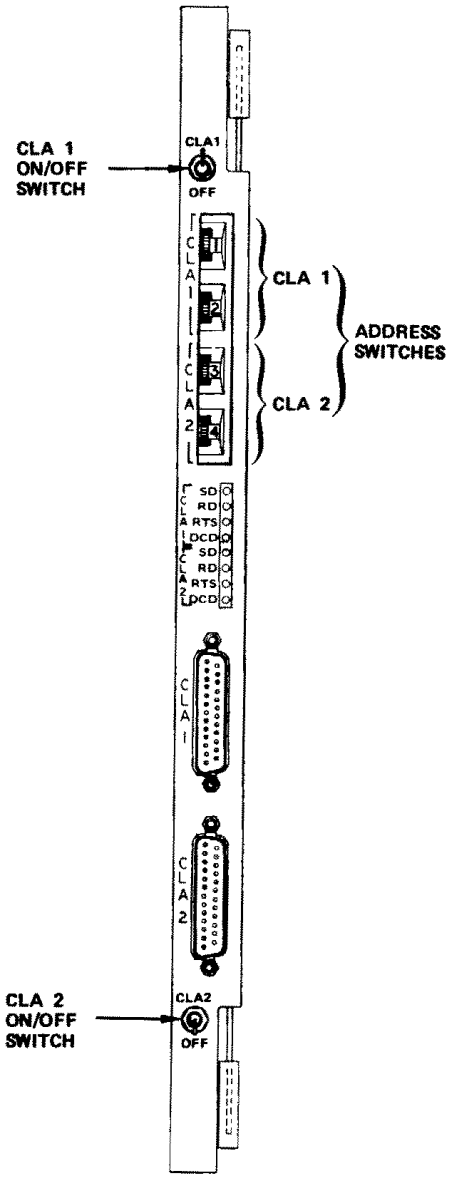


Figure 2-2. CLA Circuit Card ON/OFF Switch Locations

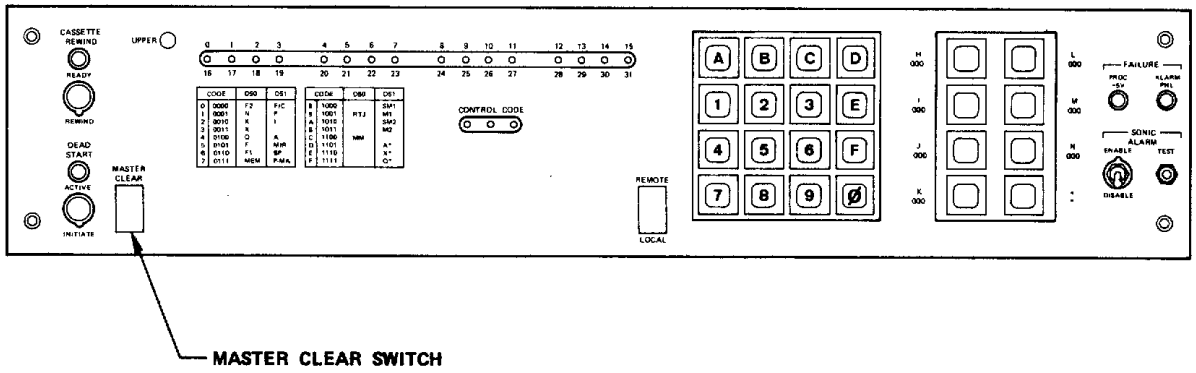


Figure 2-3. Maintenance Panel MASTER CLEAR Switch Location

CONTROL STATEMENTS ENTRY

Operator control statements (commands) are entered through the local console keyboard. These statements specify either supervisory or diagnostic functions that can be selectively activated or deactivated.

The NPU console can be in either the read or write mode, selected by the Ⓖ (control G) character key on the console keyboard. Pressing the Ⓖ key causes a manual interrupt that, in turn, causes the console to alternate between the read and write modes with the mode changing each time the key is pressed. To input operator control statements, the console must be in the read mode, and to output responses, the console must be in the write mode. All operator control statements begin with a slash (/) character and terminate with an EOT (control D) character. Each parameter within the control statement is separated by either a comma or a blank character. Any number of control statements can be entered before the write mode is activated to receive responses. When the write mode is activated, the following response is output at the console:

*WM
Ⓖ (CONTROL G)

If an input error is made during entry of control statements, the console response is an echo of the input message followed by:

*ERR

CONSOLE COMMANDS

SUPERVISORY FUNCTION /SUP

This console command causes the console to engage the supervisory function. While the supervisory function is active, the following supervisory inputs are accepted:

XY Ⓓ

where X is message-type interpreted as follows:

0 = Upline error and statistics messages

1 = Other upline service messages

2 = Downline service messages

3 = Diagnostic response CE messages

Y specifies routing for messages indicated by X, as follows:

NOTE

**Indicates service messages to the console may cause system overload due to excessive print time.

0 = Discard all messages

**1 = Print all messages on NPU console

2 = Send all messages to host or service module

**3 = Send all messages to host or service module and also print on local console.

Ⓓ indicates the control Ⓓ key on the console keyboard.

Each message type can be individually designated by X and independently routed by Y, without regard to routing of other message types. The system default is the supervisory mode with all upline service messages sent to the host and all downline service messages sent to the service module.

DIAGNOSTIC FUNCTION /DIA(D)(G)

This console command (G) causes the console to engage the diagnostic

function. While the diagnostic function is active, the group of commands described in the following paragraphs are available. In those command formats, the terms used are interpreted as follows:

DN = Destination node address. Two hexadecimal characters specifying the ID for the NPU

SN = Source node address. Two hexadecimal characters specifying the ID for the host

PORT = Port number. Two hexadecimal characters specifying the port associated with the line to be affected by the command

SUBPORT = Subport number. Two hexadecimal characters specifying the subport associated with the line to be affected by the command

CLA TYPE = 00 if 2560-1 CLA
01 if 2561-1 CLA
02 if 2560-2 or 2560-3 CLA

NOTE

Although all input parameters for each command are shown as two hexadecimal characters, it can be omitted if the leftmost character is zero.

PLACE LINE OUT OF SERVICE

This command causes all activity on a specified line to terminate and must be entered prior to initiating any diagnostic test command. Servicing of other lines is not affected. The format of this command is as follows:

DN	SN	00	40	03	00	00	PORT	SUBPORT

A line taken out of service can be reactivated by the "place line in service" command.

PLACE LINE IN SERVICE

This command allows a line to be returned to operational service by an "enable line" service message currently outstanding or subsequently issued by the host. System servicing of other lines is not affected by this command. The "place line in service" command has the following format:

DN	SN	00	40	03	01	00	PORT	SUBPORT

START CLA INTERNAL LOOPBACK TEST

This command initiates the CLA internal loopback test which consists of a CLA command test and a data verification test. The CLA command test verifies operation of the CLA as it relates to command functions. System servicing of other lines is not affected by this command. The command has the following format:

DN	SN	00	40	03	02	00	PORT	SUBPORT	CLA TYPE

Any errors detected during the CLA test result in printout of a response service message with an appropriate error code at the local NPU console and termination of the test. To restart the test, re-enter the "start CLA internal loopback test" command at the local console.

START MODEM LOOPBACK TEST

If modem loopback is available, this command isolates problems occurring further out in the communication system. The test consists of a data verification test with limited analysis of modem control signals. System servicing of other lines is not affected by this command. The command has the following format:

DN	SN	00	40	03	02	01	PORT	SUBPORT	CLA TYPE

START EXTERNAL LOOPBACK TEST

This command provides for loopback of data external to the CLA. The test consists of a command and data verification test with the primary purpose of verifying operation of the line drivers and receivers. The loopback jumper plug (2560-1 External Test Connector for synchronous CLA or 2561-1 External Test Connector for asynchronous CLA) must be connected to the CLA to be tested before this command is entered at the console. System servicing of other lines is not affected by this command. The command has the following format:

DN	SN	00	40	03	02	02	PORT	SUBPORT	CLA TYPE

TERMINATE TEST

This command, entered while a test is in progress, causes the test to terminate at the end of the normal test cycle currently being executed. System servicing of other lines is not affected by this command. The command format is as follows:

DN	SN	00	40	03	03	00	PORT	SUBPORT

The diagnostic test responses are output to the local console in the following standard format:

DN	SN	00	40	00	04	00	RCEC	PORT	SUBPORT

where: RCEC = Response code or error code

Response codes and error codes are interpreted in tables 2-1 and 2-2, respectively.

TABLE 2-1. RESPONSE CODES

Response Code (hex)	Meaning	Remarks
A0	Line is out of service	Normal response to "place line out of service" command
A1	Command rejected	System temporarily low on buffers
A2	Line in service	Normal response to "place line in service" command
A3	Diagnostics in process	Response to "place line in service" command if diagnostics still in process
A4	Diagnostics started	Normal response to "diagnostic function" command
A5	Invalid line number or bad command	Invalid line number issued in command or command code (byte 5) is not valid
A6	Invalid CLA type	Invalid CLA type issued in command
A7	Invalid test mode	Invalid diagnostic test mode (byte 6) issued with command
A8	Line not out of service	Response to "place line in service" command if line specified was not out of service when command issued
A9	Test already in process	Response to a diagnostic loopback test command if the test specified is already in process
~~AA~~ DD	Test completed, no errors	Normal response to a "terminate test" command
CE DE	Diagnostic not in progress	Response to "terminate test" command if not preceded by diagnostic command

TABLE 2-2. ERROR CODES

Error Code (hex)	Meaning
AB	Unsolicited input detected
AC	Unsolicited output data demand detected
AD	Input loop error
AE	Output loop error
AF	Parity error
BO	Framing error
B1	Data transfer overrun
B2	Next character not available
B3	No CLA status after CLA status was requested
B4	Unsolicited CLA status
B5	CLA status not cleared after input supervision on (ISON) was sent
B6	No status after request to send (RTS) or input status request (ISR) was sent
B7	No clear to send (CTS) after RTS
B8	No status after data terminal ready (DTR)
B9	No data set ready (DSR) after DTR
BA	No signal quality detect (SQD) after DTR
BB	No ring (RI) after DTR
BC	No status after secondary request to send (SRTS)
BD	No secondary received line signal detector (SRLSD) after SRTS
BE	No CLA status after local mode (LM)
BF	No data carrier detect (DCD) after LM
CO	Unsolicited status after originate mode (OM)
C1	No status or improper operation of ring indicator (RI) after terminal busy (TB)
C2	No status after new sync (NSYN)
C3	Improper operation of DCD, RI, quality monitor (QM) after NSYN
C4	No RI after RTS
C5	Input data timeout during data verification test
C6-CD	Data compare errors
BE	Unsolicited status after LM

QUESTION IF SUPERVISORY /QIS

This command causes the current console function (supervisory or diagnostic) to be printed at the console in the following format:

```
Q = XXX
```

where:

XXX is SUP or DIA

The purpose of /QIS is to allow the operator to determine if the console is in the supervisory or the diagnostic mode.

ACTIVATE FUNCTION /ACT XXX

This command activates either the supervisory or diagnostic function, as specified by XXX. XXX can equal either SUP or DIA. To activate the function does not select it as the current console function, but only prepares the function so that it may be selected if desired.

DEACTIVATE FUNCTION /DEA XXX

This command deactivates either the supervisory or diagnostic function, as specified by XXX. XXX can equal either SUP or DIA. To deactivate a function means that it cannot be selected as a console function.

REQUEUE /REQ

This command causes requeuing of a console output message that has been interrupted by a manual interrupt. The message will be output the next time the console enters the write mode.

CANCEL /CAN

This command cancels a console output message that has been interrupted by a manual interrupt.

USE OF THE MANUAL INTERRUPT

The manual interrupt is caused by pressing the G (control G) key on the console keyboard. This act causes the console to alternate between the read and write mode, with the mode changing each time the key is pressed.

If a manual interrupt occurs while output is in progress, the following applies:

1. A manual interrupt followed by /REQ causes the current output message to be requeued.
2. A manual interrupt followed by /CAN causes the current output message to be canceled and discarded.
3. A manual interrupt followed by any input other than the foregoing causes the interrupted output message to continue printing after return to the write mode (from the point at which it was interrupted).

EDITING CONSOLE INPUT

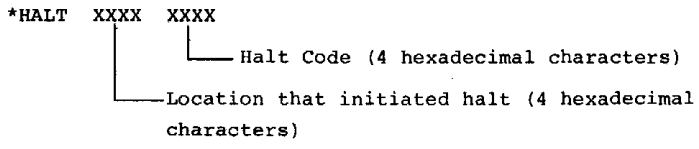
The following console editing standards apply to all console input:

1. Carriage returns (CR) and line feeds (LF) are ignored in that they are used as local characters only.
2. Control shift N is replaced by CR.
3. Control shift M is replaced by LF.
4. Control C discards input. The response to a discarded input is the input message discarded followed by *ERR.

5. Data can be overwritten by using the backspace (←), with n backspaces causing n characters to be removed. Corrections can then be entered in place of the removed characters.

SYSTEM HALTS

When the 2550 software detects an inconsistency for which no recovery is planned, the system immediately halts execution and prints a system halt message at the console. The format for such messages is as follows:



Each unrecoverable error has an associated halt code. These are described in table 2-3. When a system halt occurs, the host normally dumps the 2550 memory, micromemory, and file registers for use in analyzing the reason for the halt. For a discussion of operator actions in the event of a system halt, refer to the Software Diagnostic Handbook, Publication No. 74700600.

TABLE 2-3. HALT CODES

Halt Code	Description	Remarks
0000	Not a valid halt code	
0001	Power Failure	Location 100 (hexadecimal) indicates location of instruction that would normally be executed after the power failure.
0002	Memory parity error detected	Location 100 (hexadecimal) indicates location of instruction that would normally be executed after the instruction in which the memory parity error was detected.

TABLE 2-3. HALT CODES (CONTD)

Halt Code	Description	Remarks
0003	Program protect bit error detected by 2550	Location 100 (hexadecimal) indicates location of instruction that would normally be executed after the program protect fault.
0004	Interrupt count less than zero	
0005	Timal (base system timing services) worklist error	
0006	Active line control block (LCB) list error	
0007	No buffers left	
0008	Size error in stamp	
0009	Duplicate GET buffer	
000A	Duplicate RELEASE buffer	
000B	Buffer chain error	
000C	Buffer out of range	
000D	Bad command, not type 1 or type 2	
000E	Bad coupler initialization status	Problem in downline load. Repeat load and, if failure occurs again, contact CE.
000F	Attempted to clear an enabled line	
0010	Not used	
0011	Bad multiplex loop interface adapter (MLIA) initialization status	Problem in downline load. Repeat load and, if failure occurs again, contact CE.

TABLE 2-3. HALT CODES (CONTD)

Halt Code	Description	Remarks
0012	Duplicated CLA address detected	Check CLA addresses for duplicates. If correct, contact CE.
0013	Attempt to redefine an existing destination node (DN) directory entry	
0014	Attempt to redefine an existing connection number (CN) directory entry	
0015	Attempt to remove a non-existent DN directory entry	
0016	Attempt to remove a non-existent source node (SN) directory entry	
0017	Attempt to remove a non-existent CN directory entry	
0018	Real time clock lost count	
0019	Illegal point of interface (POI) key	
001A	Attempted to add zero connection number (CN) to directories	
001B	Program selected to run is not in core memory	
001C	Monitor did not run for specified (B2TIME/2) seconds	
001D	Service module called with worklist empty	
001E	Service module work code out of range	
001F	Multiplex loop interface adapter (MLIA) failure	

TABLE 2-3. HALT CODES (CONTD)

Halt Code	Description	Remarks
0020	Pointer to read next loop cell from circular input buffer (CIB) exceeded present line frame pointer	
0021 0022 0023 0024 0025 0026 0027	Reserved for firmware use	
0028	Coupler alarm condition	Coupler detected memory parity error or program protect bit error during data transfer.
0029	No queue control block	
002A	Bad line number from TIP	
002B	Unknown TASKNR selected	Detected by Mode 4 TIP
002C	Unknown block/CMD received	Detected by Mode 4 TIP
002D	Improper multiplex subsystem operation	Detected by Mode 4 TIP
002E	Improper Mode 4 TIP operation	Non-acceptable tasks
002F	Control for disabled Mode 4 line	TIP attempting to run on disabled line
0030	Reserved for Mode 4 TIP	Not a valid halt
0031	Error in upline block handler (PNHDRBLD)	
0032	Not used	
0033	Illegal line status detected by CLA status handler (PTCLAS)	

TABLE 2-3. HALT CODES (CONTD)

Halt Code	Description	Remarks
0034	Illegal call to put n segments in queue (PBPTNSEG) or get n segments from queue (PTGTNSEG) where queue pointer type from TCB indicates data list queue	
0035	Attempt to queue output to NPU console in system without console	
0036	Directory change attempted with DN too large	

CUT ALONG DOTTED LINE

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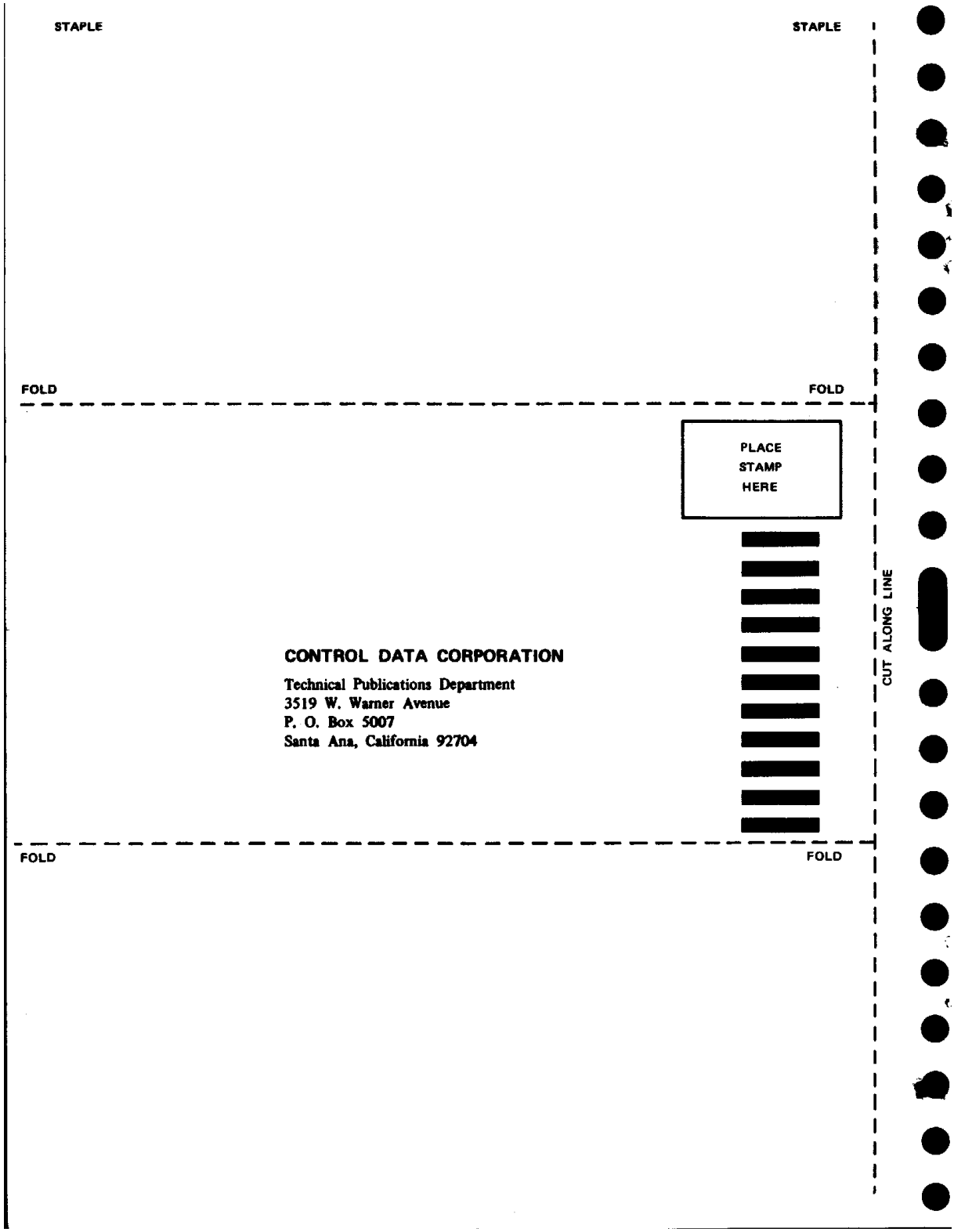
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