February 1972

Memorandum to: Recipients of 3420 Component Release for Control
Program - 67/Cambridge Monitor System (CP-67/CMS)
360D-05.2.005

Subject: Transmittal of CP-67/CMS Support for 3420 Magnetic
Tape Units and Dual Density Features of 360D-05.2.005

Enclosed with this memorandum are the program materials you have
ordered.

The Basic program materials of the Component Release consist of:

One 9-track, 800 bpi 2400 foot reel of Magnetic Tape or 1600
bpi Distribution Tape Reel (DTR) consisting of a CMS tape dump
of updated source, object, and listings for only those modules
changed to support the new features; the updates themselves are
also included.

Technical Newsletters (TNL's) for the following manuals:

GN20-2498 to CP-67/CMS User's Guide (GH20-0859-1)
GN20-2501 to CP-67/CMS Installation Guide (GH20-0857-1)
GN20-2499 to CP-67/CMS Operator's Guide (GH20-0856-1)
GN20-2497 to CP-67/CMS Hardware Maintainability Guide (GH20-0858-1)
Revised Application Directory which contains the system prose for
the 3420 Component Release. It lists the APAR corrections
which are prerequisites and discusses the installation of
this component release with CP-67/CMS Version 3 Modification
Level 1.

Please contact your local IBM representative to discuss the
standard programming error reporting (APAR) procedure.

This component release and CP-67/CMS are both assigned Programming
Service Classification A. If, in the future, a new release is made
available for CP-67/CMS, the contents of the component release will
be incorporated into the new release of CP-67/CMS and the period
that Version 3, Modification Level 1 and the component release will
remain "current" for Programming Service purposes will be specified
at the time of the new release.

Any discrepancy between the material received and the material
ordered, or any errors in reproduction, should be reported to the
Manager of the Program Library providing your programming systems.

CP-67/CMS

(Control Program-67/Cambridge Monitor System)

360D - 05.2.005

Version 3 Level 1

With IBM 3420 Component Release 1 (CR1)

Application Directory

This directory describes the documentation available for the system, other manuals referenced in the documentation, as well as the format of the basic program material and optional program material tapes. The minimum machine configuration is described along with additional supported devices. Engineering change levels required are also noted.

Table of Contents

I. Program Documentation

The following is a complete list of documents available
for CP-67/CMS Version 3 Level 1. A list of technical
newsletters (TNLs) applicable to component releases
appears at the end of this section.

1) CP-67/CMS System Description Manual   (GH20-0802-2)

This manual provides an overview of the features
available in the CP-67/CMS system.

2) CP-67/CMS User's Guide   (GH20-0859-1)

CP-67/CMS is a general purpose time-sharing system
developed for the IBM System 360 Model 67. This guide
describes the facilities of CP-67/CMS and provides
detailed information about the user commands available
and their usage.

3) CP-67 Operator's Guide (GH20-0856-1)

This publication is intended to present to the
operations staff responsible for the operation of CP-67
the facilities and responsibilities of the systems
operator and administrator; it is divided into two
basic parts: (1) the operator's guide including
instructions for system startup, shutdown and emergency
recovery procedures; and (2) instructions on the
utilities included with the system, including device
formatting, allocation and user definition.

4) CP-67 Program Logic Manual   (GY20-0590-1)

This publication describes the internal logic of the CP
(Control Program) system. This manual is directed to
personnel who will be responsible for the maintenance
and modification of CP.

5) CMS Program Logic Manual   (GY20-0591-1)

This manual describes the internal logic of the
Cambridge Monitor System. This manual is directed to
personnel who will be responsible for the maintenance
and modification of CMS.

6) CP-67/CMS Installation Guide   (GH20-0857-1)

The purpose of this document is to provide the
installation with instructions on creating a runnable
CP-67/CMS system tailored to his configuration. There
are also considerations for tuning the system as well
as maintaining both CP-67 and CMS. This manual must be
read thoroughly before installing the system, as the
procedures necessary for installing CP-67 have changed
from prior releases.

7) SCRIPT User's Manual   (GH20-0860-0)

This manual introduces you to the SCRIPT manuscript
facility that operates under CMS. SCRIPT enables you to
type in a manuscript, correct it, examine your
corrections, and print it out - all at a typewriter
terminal - with spacing and other page planning
features performed automatically by the system.

Sample documents are provided for practice in creating,
editing, and printing a SCRIPT file.

The procedure for logging in from CP-67 (the Control
Program) to CMS, and document maintenance within CMS
are explained.

The Edit facility in CMS is described in some detail.

8) CP-67/CMS Hardware Maintainability Guide (GH20-0858-1)

The Hardware Maintainability Guide describes the
running of Customer Engineering diagnostics under CP-67
and the error recording facility in CP-67. Topics
discussed under diagnostics include limitations under
CP-67, conventions for running diagnostics under CP-67,
and instructions for running diagnostics under CP-67
control. Sample terminal sessions for running DME and
FRIEND are included. Topics discussed under CP-67
Error Recording Facility include the CP-67 error
recording mechanism, conditions and devices involved in
recording, and instructions for retrieval of I/O error
and machine check information.

9) CP-67: Operating Systems in a Virtual Machine
    (GH20-1029-0)

General guidelines for running Operating Systems under
CP/67 control, in particular OS/360, are given. This

document is directed toward system programmers, and assumes knowledge of OS/360.

10) TNLs for Component Releases:

Document Title	Order Number	TNL Number
Hardware Maintainability Guide	GH20-0858-1	GN20-2497
User's Guide	GH20-0859-1	GN20-2498
CP-67 Operator's Guide	GH20-0856-1	GN20-2499
System Description Manual	GH20-0802-2	GN20-2500
Installation Guide	GH20-0857-1	GN20-2501
CP-67 Program Logic Manual	GY20-0590-1	GN20-2502
CMS Program Logic Manual	GY20-0591-1	GN20-2503

II. Microfiche

Microfiche are available from the IBM Distribution Center, Mechanicsburg as three separately ordered sets.

Microfiche listings for the 3420 Component Release will be separately ordered as form number GYB0-0789-0, availability to be announced in a future publications release letter. These listings are to be used in conjunction with the CP-67 and CMS microfiche listed below.

The CP-67 listings are form number GYB0-0592-1 and the CMS listings are form number GYB0-0593-1.

The listings are the equivalent of output listings produced by assembling the source files.

III. Reference Material

The following is a list of documents referenced throughout the CP-67/CMS documentation.

Fortran   -   OS/360 Fortran IV Language, Form
                   GC28-6515

             -     System/360 Basic Fortran IV Language
                   GC28-6629

             -     System/360 Fortran IV Library Subprograms,

          Form GC28-6596

     -    OS/360 Fortran IV (G and H) Programmer's Guide,
          Form GC28-6817

PL/I   -   OS/360 PL/I (F) Programmer's Guide, Form
               GC28-6594

          -    OS/360 PL/I Subroutine Library Computational
               Subroutines GC28-6590

          -    A PL/I Primer, Form GC28-6808

Assembler -   OS/360 Assembler Language, Form GC28-6514

          -    OS/360 Assembler (F) Programmer's Guide,
               Form GC26-3756

          -    OS/360 Supervisor & Data Management
               Macro-Instructions, Form GC28-6647

SCRIPT   -   CMS Script User's Manual GH20-0860-0

SNOBOL   -   CMS SNOBOL User's Manual, Type III Documentation,
               Program 360D-03.2.016, IBM Corporation, DP Program
               Information Department, 40 Saw Mill River Road,
               Hawthorne, New York, October, 1970.

          -    SPL/1: A String Processing Language, Form
               320-2005, IBM Cambridge Scientific
               Center

Scientific Subroutine Package - Scientific Subroutine Package -
               Version II Programmer's Manual, Form GH20-0205

BRUIN   -   CMS BRUIN User's Manual, Type III Documentation,
               Program 360D-03.3.013, IBM Corporation, DP Program
               Information Department, 40 Saw Mill River Road,
               Hawthorne, New York, October, 1970.

Miscellaneous - System/360 Model 67: Functional Character-
               istics, Form A27-2719

          -    System/360 Principles of Operation, Form
               GA22-6821

          -    OS/360 Systems Programmer's Guide, Form

GC28-6550

- IBM 2740/2741 Communications Terminal Operator's
  Guide, Form GA27-3001

- System/360, Operating System: System Generation,
  Form GC28-6554

- System/360, Operating System: Storage Estimates,
  Form GC28-6551

- System/360, Operating System, ISAM Program Logic
  Manual, Form GY28-6618

- System/360, Operating System, Supervisor & Data Management
  Macro-Instructions, Form GC28-6647

- IBM Control Program-67, Online COBOL Symbolic Debug:
  Application Description, Form GH20-0920

IV. Magnetic Tape Keys

1) CP-67 Tape Key (Basic Program Material)

Tape Name: CP-67 Version 3, Level 1

This volume contains seven (7) separate files with
eight (8) tape marks as shown. Density is 800 or 1600
BPI, 9-track EBCDIC, odd parity. Reel length is 2400
feet. Tape is produced by the CMS TAPE DUMP command.
Each physical record is 805 bytes in length. Total
number of records is 6,656.

File 01 - all SYSIN files for CP-67 Version 3 Level 1
T/M
File 02 - all TEXT files for CP-67 Version 3 Level 1
T/M
File 03 - all MACLIB, ASP360, and COPY files for CP-67
          Version 3 Level 1
T/M
File 04 - all LOADER, SAMPLE, EXEC, and MODULE
          files for CP-67 Version 3 Level 1
T/M
File 05 - all files necessary for hardware serviceability
          aids.
T/M
File 06 - SYSIN and TEXT files for certain serviceability aids
T/M
File 07 - source files for CPDMPRST and MINIDASD utilities
T/M

- 7 -

T/M

2) CMS System Disk Tape Key (Basic Program Material)

Tape Name: CMS Version 3, Level 1 System Disk

This volume contains four (4) files and five (5) tape
marks as shown. Density is 800 or 1600 BPI, 9-track
EBCDIC, odd parity. Reel length is 2400 feet. Tape is
produced by the CMS DUMPREST program and by the CMS
TAPE DUMP program. Total number of records is 15,969.

File 01 - IPLable dump/restore program - 4,548 bytes
T/M
File 02 - dump/restore of the CMS System Disk - 8100
          records, 829 bytes each
T/M
File 03 - tape dump of all files on the CMS System
          Disk, which includes all MODULE and TEXT
          files for the CMS nucleus and commands as
          well as EXEC, MACLIB, TXTLIB, and nucleus
          files.
T/M
File 04 - Tape dump of three PTFs to be added to the
CMS system.
T/M
T/M

3) CMS Source Disk Tape Key (Basic Program Material)

Tape Name: CMS Version 3 Level 1 Source Disk

This volume contains nine (9) files with ten (10)
tapemarks as shown. Density is 800 or 1600 BPI, 9-track
EBCDIC, odd parity. Reel length is 2400 feet. Tape is
produced by the CMS TAPE DUMP command. Each physical
record is 805 bytes in length. Total number of records
is 11,104.

File 01 - tape dump of SOURCE.1 EXEC, which lists all
          files in file 02.
T/M
File 02 - tape dump of CMS source disk, which contains
          SYSIN files for all of CMS (excluding OS/360
          language processors and libraries) plus
          ASP360 and EXEC files
T/M
File 03 - tape dump of SAMPLE FORTRAN, which is a
          sample FORTRAN program to test CMS

- 8 -

sample FORTRAN program to test CMS

T/M
File 04 - tape dump of PRCCLIST EXEC, which is a list
           of files in Files 05-09
T/M
File 05 - tape dump of OS/360 Release 20 Assembler TEXT
          files
T/M
File 06 - tape dump of OS/360 Release 20 FORTRAN (G)
           compiler TEXT files
T/M
File 07 - tape dump of OS/360 Release 20 `FORTRAN
           Library TEXT files
T/M
File 08 - tape dump of OS/360 Release 20 PL/I F
           compiler TEXT files
T/M
File 09 - tape dump of OS/360 PL/I Library TEXT files
T/M
T/M

4) CP-67 Listings (Optional Material - OPT1)

OPT1 consists of two tape volumes. Each volume contains
two (2) files and three (3) tape marks. Density is 800
or 1600 BPI, 9-track EBCDIC, odd parity. Reel length is
2400 feet. Tape is produced by the CMS tape dump
command. Each physical record is 805 bytes in length.
Total number of records on Tape 1 is 15,947; total
number of records on Tape 2 is 6,428.

Tape 1
File 01   - tape dump of CPLIST1 EXEC, which lists all
            files in file 02.
T/M
File 02 - tape dump of the first half of the CP-67
           listings.
T/M
T/M

Tape 2
File 01 - tape dump of CPLIST2 EXEC, which lists all
           files in file 02.
T/M
File 02 - tape dump of the rest of the CP-67 listings.
T/M
T/M

5) CMS Listings (Optional Material - OPT2)

OPT2 consists of two tape volumes. Each volume contains
two tapes each having two (2) files and three (3) tape
marks. Density is 800 or 1600 BPI, 9-track EBCDIC, odd
parity. Reel length is 2400 feet. Tape is produced by
the CMS tape dump command. Each physical record is 805
bytes in length. Total number of records on Tape 1 is
15,378; total number of records on Tape 2 is 7,308.

Tape 1
File 01 - tape dump of CMSLIST1 EXEC, which lists all files
          in file 02.
T/M
File 02 - tape dump of CMS listings from A through O.
T/M
T/M

Tape 2
File 01 - tape dump of CMSLIST2 EXEC, which lists all files
          in file 02.
T/M
File 02 - tape dump of CMS listings from P through W.
T/M
T/M

6) CP-67/CMS Update Tape Key (Optional Material - OPT 3)

This volume contains many of the applicable update
files used to take the system from Version 3, Level 0
to Version 3, Level 1. These updates have already been
applied to CP and CMS.

Note: This information is intended for historical
purposes only, and is to be used only as a reference.
It is not for upgrading Version 3 Level 0 to Version 3
Level 1. The object decks distributed on the basic
program material tape for CP-67/CMS must be used in
order to have Version 3 Level 1.

This volume contains four (4) files and five (5)
tapemarks. Density is 800 or 1600 BPI, 9-track EBCDIC,
odd parity. The tape is a Distribution Tape Reel (DTR)
and is produced by the CMS TAPE DUMP command. Each
physical record is 805 bytes in length. Total number of
records is 2,949.

File 01 - tape dump of UPLIST EXEC file containing
          alphabetized list of CMS UPDATE files
T/M
File 02 - tape dump of CMS UPDATE files
T/M

File 03 - tape dump of CPUPDT EXEC file containing
           alphabetized list of CP UPDATE files
T/M
File 04 - tape dump of CP UPDATE files
T/M
T/M

7) CP-67/CMS 3420 Component Release 1 (CR1)

CR1 contains eleven (11) separate files with 12 tape
marks as shown. Density is 800 or 1600 BPI, 9-track
EBCDIC, odd parity. Reel length is 2400 feet, tape is
produced by the CMS TAPE DUMP command, each physical
record is 805 bytes in length, total number of records
is 7,030.

File 01 - tape dump of replacement SYSIN files for CP-67
T/M
File 02 - tape dump of replacement TEXT files for CP-67
T/M
File 03 - tape dump of MACLIB, ASP360, and COPY files
           for CP-67
T/M
File 04 - tape dump of SYSIN, TEXT, and MODULE files
           used by the customer engineer for hardware
           error analysis
T/M
File 05 - update files used to create files 1, 2, and 7
T/M
File 06 - tape dump of AP31XXCA EXEC file used for
           CP-67 update procedure
T/M
File 07 - tape dump of LISTING files associated with the
           replacement SYSIN and TEXT files for CP-67
T/M
File 08 - tape dump of replacement SYSIN files for CMS
T/M
File 09 - tape dump of replacement TEXT files for CMS
T/M
File 10 - tape dump of LISTING files associated with
           replacement SYSIN and TEXT files for CMS
T/M
File 11 - tape dump of update files used to create
           files 8, 9, and 10
T/M
T/M

V. Programming Systems

The CP-67/CMS system is written in Assembler language.
There is no need for any Type I Programming System, as
the entire system is maintained under CMS.

VI. Machine Configurations

CP-67 is structured to run on an IBM System/360 Model
67. CMS, if used independently, requires an IBM
System/360 Model 40 H and above. Note that CMS is
considered practical only in a virtual machine
environment as it is a single user operating system.

CP-67 Minimum Configuration

2067-1 or 2067-2 Processing Unit
    Recommended feature:
    #4434 floating storage addressing (model 1 only)

2365 Core Storage Unit
1052 Printer-Keyboard Model 7
1403 Printer
2540 Card Read Punch
Three 2311 Disk Storage Drives or
  2314 Direct Access Storage Facility
    (2 disk storage modules minimum)
2400 Series Nine-Track Magnetic Tape Unit, 800 or 1600 BPI or
  3420 Magnetic Tape Unit
2860 Selector Channel
2870 Multiplexor Channel
2702 or 2703 Transmission Control or
  2701 Data Adapter Unit (2701 Data Adapter Unit can
  only be used with TELETYPE (c) compatible terminals.*)
2741 Communications Terminal or 1050/1052
Data Communications System Terminal or TELETYPE (c)
  Compatible Terminal *

c = Trademark of TELETYPE Corporation

Terminals Supported By CP-67 As
  Machine Operator's Console

1051/1052 Model 2 Data Communication System
    Features and Specifications:
    Data Set Attachment (#9114)
    IBM Line Adapter (#4647)
    Receive Interrupt (#6100 or RPQ E27428) required
    Transmit Interrupt (#7900 or RPQ E26903) required
    Text Time-out Suppression (#9698) required

Note: The following 1050 components, though not specifically supported under CP-67, may work due to the general nature of the teleprocessing programming used. No error recovery is attempted, however, for any of these auxiliary devices.

    1053 Printer Model 1
    1054 Paper Tape Reader Model 1
    1055 Paper Tape Punch Model 1
    1056 Card Reader Model 3
    1058 Printing Card Punch Model 2

2741 Communications Terminals (both EBCDIC and correspondence keyboards are supported)
    Features and Specifications:
    Data Set Attachment (#9114)
    Data Set Attachment (#9115)
    IBM Line Adapter (#4635, #4647)
    Dial-Up (#3255)
    Receive Interrupt (#4708) required
    Transmit Interrupt (#7900) or Transmit
       Interrupt Control (RPQ E40681) required
    Print Inhibit (#5501) desirable
    Red Ribbon Control (RPQ No. 868019) optional

Line control for teletypewriter terminals * compatible with the IBM Telegraph Control Type II Adapter (8-level ASCII code at 110 bps)

*   The customer is responsible for terminal compatibility with this program. IBM assumes no responsibility for the impact that any changes to the IBM supplied products or programs may have on terminals provided by others.

Transmission Control Units Supported
            by CP-67

2701 Data Adapter Unit

Terminals	2701 Adapter
8-level ASCII, 110 bps *	7885

2702 Transmission Control

Terminals	Terminal Control Base	Terminal Control	Line Adapter

| 2741s, 1050 | 9696 or 7935 | 4615, 9684, 8200** | 3233 |
| 8-level ASCII 110 bps * | 9697 or 7935 | 7912 | 3233 |

** Feature 8200 on the 2702 is equivalent to the 2741 Break feature #8055 and the Type I Break RPQ E46765 on the 2702.

2703 Transmission Control

Terminals	Line Speed Option	Line Set	Terminal Control	Line Bases
2741s, 1050	4878	3205/6	4619, 4969, 8200***	7505
8-level ASCII 110 bps *	4877	3205/6	7905, 7912	7505

*** Feature 8200 on the 2703 is equivalent to the 2741 Break feature #8055 and the Type I Break RPQ E53715 on the 2703.

Additional Devices Utilized by CP-67

2301 Drum Storage
2303 Drum Storage

2870 Multiplexor Channel with
    #6990, #6991, #6992 1, 2, 3 Selector Sub-Channels

Devices Used Only by an Operating
System in a Virtual Machine and
            not by CP-67

2321 Data Cell Drive
2400 Series Magnetic Tape Units
3420 Magnetic Tape Units
2250 Display Unit
2260 Display Station
2860 Selector Channel with
    #1850 Channel to Channel Adapter
2780 Data Transmission Terminal
1130 Computing System

Devices Supported by CMS

Core Size: Minimum 80K and up in multiples of 8K
            (up to 16M Virtual)
1052 printer-keyboard
Six 2311 Disk Storage Drives or 2314 Direct Access
 Storage Facility (2 disk storage modules minimum)
2540 Card Read Punch
1403 Printer
Two 2400 series tape drives, nine or seven tracks
     200, 556, 800 or 1600 BPI (one 9-track, 800
     or 1600 BPI required for installation)
Note: 3420 Magnetic Tape Units may be used in lieu
     of 2400 series tape units.

Representative Configuration

512K, two Selector Channels, one Multiplexor Channel, one
or two 2301 Drum Storage Units, one or two 2314 Direct
Access Storage Facilities, 1403 Printer, 2540 Card Read Punch,
2702 or 2703 Transmission Control Unit, 2400 Series Tape
Drives (9-track).

VII. CP-67/CMS Core Requirements

CMS:

The CMS nucleus, transient area, and loader tables
require 80K bytes of virtual memory. The rest of core
storage is available to user programs unless CMS
requires additional free storage, in which case it is
taken as needed.

CP:

CP-67 does not page itself, as it is all core resident.
The CP system takes approximately 80K bytes of core
storage plus additional pages for free storage areas or
work areas. For a 256K Model 67, 24K bytes of free
storage are used; for each additional 256K of physical
core storage, an additional 24K bytes of free storage
areas are needed. Therefore, if the physical machine
is 512K, 80K bytes are required by the CP system and an
additional 48K bytes are required for work areas, or a
total of approximately 128K. All core storage above
that used for CP-67 residence and free storage areas is

used for paging virtual machines, unless CP requires
additional free storage, in which case it takes 4K
bytes at a time.

VIII. Engineering Change Level Requirements

The following engineering change levels are a requisite
for correct operation of CP-67/CMS:

Unit	ECA Level
2067-1,2	89
2365A-12	34
2365-12	85
2365A-2	19
2365-2	65
2846	6
2860	81
2870	42
2870A	39
2167	N/A

The following are engineering changes required to run
the CMS FORTRAN 20 Library:

Machine Type	EC Requirements	Release No.	Comments
2040	255293	18 FORTRAN	ECA 240
2050	258430, 258545	18 FORTRAN	ECA's 196,197
2067	705322, 705344	18 FORTRAN	ECA's 52,56
2075	705848	18 FORTRAN	ECA 103

Devices Supported by CMS

Core Size: Minimum 80K and up in multiples of 8K
                (up to 16M Virtual)
1052 printer-keyboard
Six 2311 Disk Storage Drives or 2314 Direct Access
 Storage Facility (2 disk storage modules minimum)
2540 Card Read Punch
1403 Printer
Two 2400 series tape drives, nine or seven tracks
     200, 556, 800 or 1600 BPI (one 9-track, 800
     or 1600 BPI required for installation)
Note: 3420 Magnetic Tape Units may be used in lieu
     of 2400 series tape units.

Representative Configuration

512K, two Selector Channels, one Multiplexor Channel, one
or two 2301 Drum Storage Units, one or two 2314 Direct
Access Storage Facilities, 1403 Printer, 2540 Card Read Punch,
2702 or 2703 Transmission Control Unit, 2400 Series Tape
Drives (9-track).

VII. CP-67/CMS Core Requirements

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storage is available to user programs unless CMS
requires additional free storage, in which case it is
taken as needed.

CP:

CP-67 does not page itself, as it is all core resident.
The CP system takes approximately 80K bytes of core
storage plus additional pages for free storage areas or
work areas. For a 256K Model 67, 24K bytes of free
storage are used; for each additional 256K of physical
core storage, an additional 24K bytes of free storage
areas are needed. Therefore, if the physical machine
is 512K, 80K bytes are required by the CP system and an
additional 48K bytes are required for work areas, or a
total of approximately 128K. All core storage above
that used for CP-67 residence and free storage areas is

used for paging virtual machines, unless CP requires
additional free storage, in which case it takes 4K
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2365-12	85
2365A-2	19
2365-2	65
2846	6
2860	81
2870	42
2870A	39
2167	N/A

The following are engineering changes required to run
the CMS FORTRAN 20 Library:

Machine Type	EC Requirements	Release No.	Comments
2040	255293	18 FORTRAN	ECA 240
2050	258430, 258545	18 FORTRAN	ECA's 196,197
2067	705322, 705344	18 FORTRAN	ECA's 52,56
2075	705848	18 FORTRAN	ECA 103

IX. Program Maintenance Considerations

This program will be maintained through the use of serially numbered modification letters. The initial availability of the program is Version 3 Modification level 0. Each subsequent modification raises the modification level by one.

Modification Letters and machine-readable changes are made available in one of two ways:

(1) The correction is sent automatically by the Program Information Department (PID) to all users, or
(2) A Memo to Users is sent by PID to all users informing them of the availability of the correction and providing ordering instructions.

To report any difficulties encountered in the use of this program, and to obtain a correction, an Authorized Program Analysis Report (APAR) should be submitted. This program has Programming Service Classification A. Customers should contact Field Engineering on error conditions associated with the program and for the submission of APAR's. The APAR should be addressed to APAR Processing, IBM CP-67/CMS Development Group, 545 Technology Square, Cambridge, Massachusetts, 02139.

APAR fixes will be distributed in source code. The source code for Version 3 Level 1 is included on the Basic Material tapes.

This component release and CP-67/CMS are both assigned Programming Service Classification A. If, in the future, a new release is made available for CP-67/CMS, the contents of the component release will be incorporated into the new release of CP-67/CMS and the period that Version 3, Modification Level 1 and the component release will remain "current" for Programming Service purposes will be specified at the time of the new release.

APAR Supporting Material. When an APAR is submitted, the following information and material should be supplied: complete description of the error, failure symptom, conditions required to produce failure, logic leading to failure, terminal sheet, CP operator's logsheet, core dump of real memory if CP problem, core dump of CMS virtual memory if CMS problem, printout of files concerned with problem, load map of CP or CMS, printout of real machine configuration deck, configuration of virtual machines, and options chosen at CP sysgen time. If the operating system causing the problem in the virtual machine is one other than CMS, state whether that operating system has been run succcessfully on a real machine.

CP-67/CMS SYSTEM PROSE

VERSION 3 LEVEL 1

The following are temporary restrictions:

APAR REF.   RESTRICTION

DPA 2174   No provision is made for sysgen/sysres addresses for right half of a duplex system.

DPA 0796   Sense type commands (SENSE, RESERVE, RELEASE) if command chained, must be chained to a SEEK for virtual mini-disk devices.

DPA 2172   OS ISAM operations on CP-67 mini-disks are restricted to those mini-disks which are located starting on real cylinder zero (0).

New permanent restrictions are as follows:

1. DOS CCBOL-D (Releases 21, 22, 23) may abnormally terminate with an addressing exception by attempting to address beyond the limits of virtual core. This is caused by model dependent code in DOS which viclates Model 65 and 67 hardware restrictions.

2. OS with PCI fetch will not improve Fetch Times due to CP-67 not presenting the PCI until channel end time. Such systems will, however, execute successfully.

3. The PL/I subroutine library (PL/I release 20) is incompatible with programs compiled on CMS Version 3.0 which utilized PL/I Release 15/16. If this subroutine library is to be used, user programs must be re-compiled.

4. MACLIBs created on systems previous to 3.1 must be compacted on 3.1, using the MACLIB command, specifying the COMP option.

5. The following PL/I functions are not implemented:

   SNAP, TASKING, DELAY, EVENT I/O, ATTACH, VARIABLE BLOCKED SPANNED RECORDS, INDEX SEQUENTIAL, TELEPROCESSING FILES.

6. The release 3.1 simulation routines do not keep separate READ and WRITE pointers. If, for example, the user issues three READs and then a WRITE, he will write the fourth record in the file, not the first as he would have done in Release 3.0 of CMS. This change is to make the simulation routines compatible with OS.

7. In release 3.1 of CMS, when a disk file is first OPENed, the READ and WRITE pointers will be set at the start of the file rather than the READ pointer being at the start of the file and the WRITE pointer being at the end as they were in Release 3.0 of CMS.

   If a user wants the READ and WRITE pointers to point to the end of the file at OPEN time, he must issue a FILEDEF command specifying the DISP MOD option.

8. In release 3.1 of CMS, if a user wishes to reference a file using the BDAM access method, he must first issue a FILEDEF command specifying the XTENT option and giving the maximum number of

records that will be in the file. Otherwise, he will not be able to reference past record 50.

9. CMS Load MODULE generated under release 3.0 might be incompatible under release 3.1, and will have to be regenerated by LOADing the TEXT file and GENMODing a new MODULE.

   The positions of the fields remain unchanged from Version 3 Level 0. The contents of the INFO and VALUE fields have been standardized to eliminate dynamic modification of the format during execution. The standardized format is shown on the following chart.

   Because of this modification, any MODULE that makes use of its individual LOAD MAP (e.g., in the sequence: LOADMOD file, START file) the MODULE must be regenerated to obtain a 3.1 formatted LOAD MAP.

Symbol Type	INFO Field	VALUE Field
SD (CSECT or START)	Relocation-factor	Absolute Address
LD (ENTRY)	zero	Absolute Address
CM (COMMON)	Length (max)	Absolute Address
PR (Pseudo-Register)	Length (e.g. 4)	Assigned Value (starting from 0)
PC (private Code)	Relocation-factor	Absolute Address

10. The method in which files, created by OS access methods, are stored on disk was changed in Release 3.1 of CMS to make the OS created files accessible by the CMS utilities (i.e., EDIT, OFFLINE, etc.).

    Data sets produced by OS problem programs (language processors are considered problem programs), with a filemode number of "1" are stored on disk unblocked and without block descriptor words or record descriptor words. Once a "1" file is created with a particular DCBLRECL value, it must always be referenced using that same value. The Unblocking

done by CMS is transparent to the user and will not affect him unless he tries to reference a blocked or variable length disk file created under Release 3.0 of CMS. To reference this type of file, the user must issue a FILEDEF command specifying a filemode number of "4", and have altered the file's mode number from "1" to "4". Such data sets are maintained in OS-type format superimposed upon the standard physical CMS format (i.e., 800-byte blocks).

The following table may be used to determine the differences between Release 3.0 and Release 3.1 files; the values are used merely as examples!

```
-----------------------------------------------------------------------
|      | F   | D    | D    | D    | C  | C   |        |      | C  |
| R    | I   | C    | C    | C    | M  | M   |      S |      | O  |
| E    | L N | B    | B    | B    | S  | S   |      U | A B M|
| L    | E U | R    | B    | B    | R  | L   |      P | C Y M|
| E    | M M | E    | L    | L    | E  | R   |      P | C A  |
| A    | O B | C    | K    | E    | C  | E   |C B R O | E C N|
| S    | D E | F    | S    | C    | F  | C   |M D D R | S M D|
| E    | E R | M    | I    | L    | M  | L   |S W W T | S S S|
-----------------------------------------------------------------------
| 3.0  | 1   | F    | 800  | 800  | F  | 800 |  N/A   | YES  |
| 3.1  | 4,1 |      |      |      |    |     |        |      |
-----------------------------------------------------------------------
| 3.0  | 1   | FB   | 800  | 80   | F  | 800 |  N/A   | NO   |
| 3.1  | 4   |      |      |      |    |     |        |      |
-----------------------------------------------------------------------
| 3.0  | 1   | V    | 124  | 120  | V  | 124 |  YES   | NO   |
| 3.1  | 4   |      |      |      |    |     |        |      |
-----------------------------------------------------------------------
| 3.0  | 1   | U    | MAX  | 100  | V  | 100 |  N/A   | YES  |
| 3.1  | 4,1 |      |      |      |    |     |        |      |
-----------------------------------------------------------------------
| 3.1  | 1   | FB   | 400  | 80   | F  | 80  |  N/A   | YES  |
-----------------------------------------------------------------------
| 3.1  | 1   | V    | 124  | 120  | V  | 116 |  NO    | YES  |
-----------------------------------------------------------------------
| 3.1  | 1   | VB   | 244  | 120  | V  | 116 |  NO    | YES  |
-----------------------------------------------------------------------
```

11. Source program incompatibilities exist between FORTRAN releases 14 and 20, and PL/I releases 15/16 and 20. Because of this, some changes might be necessary to update source code if compilation is to be done under CMS Version 3.1.

12. If any FORTRAN MODULE refers to Data Set Reference Numbers (DSRN) 5, 6, 11, 12, the MODULE must be regenerated with the Version 3.1 FORTRAN library, SYSLIB TXTLIB. Regeneration is necessary to

include the default FILEDEF calls that defines the DSRN device types: 5 - console read, 6 - console write, 11 - tape one, 12 tape two.

13. When a SVC instruction is executed, a save area is provided by INTSVC routine. In previous versions, the slots for the old SVC PSW, "PSWSVCO", and the floating point register zero, "FPRO", were interchanged. In version 3.1, this interchange does not occur. Therefore, any assembly language programs that make use of the PSWSVCO and FPRO must be modified to reflect the change.

14. SLT Simulation

CP-67 version 3.1 has deleted all use of the SLT instruction in the nucleus code. Since the instruction has been delted from use, operation exceptions will not occur on CPU's not equipped with the feature. For this reason, the SLTSIM (SLT simulation) routine in version 3.0 has been deleted. Users that have CP-67 nucleus modifications that use the SLT instruction will function on CPU's equipped with the feature but will fail with an operation exception on CPU's not equipped with SLT.

The restrictions removed in this release are:

1. Previously, the CMS loader would not correctly load
    multiple CSECTs that occur within the same text
    deck. Example:

```
LDRBUG      START
            USING  *,15
            L      1,=V(ALPHA)
ALPHA       CSECT
            DC     F'1'
            BR     14
            END
```

The standard CMS loader (LDR) has been modified to remove
this restriction.

The following information is incorrectly documented:

1.   The CMS PLM and the CP-67/CMS USERS GUIDE both
     contain an incorrect format for the save area
     labeled CMSAVE. The correct format is as follows:

Location (HEX)	Name	Contents
0	JSIND	OVERRIDE INDICATOR
1	OSFLAG	SVC TYPE
2	CHWORD	- NOT USED -
4	CALLER	ADDRESS OF CALLER'S SVC
8	CALLEE	NAME OF CALLED ROUTINE
10	OLDPSW	SVC OLD PSW
18	NRMRET	ADDRESS FOR NORMAL RETURN
1C	ERRET	ADDRESS FOR ERROR RETURN
20	GPRS	GENERAL REGISTERS 0-15 AT ENTRY TO SVC
60	FPRS	FLOATING POINT REGISTERS 0-6 AT ENTRY TO SVC
80	NGPRS	GENERAL REGISTERS 0-15 UPON RETURN
C0	NFPRS	FLOATING POINT REGISTERS 0-6 UPON RETURN

NOTE   Areas NGPRS and NFPRS also used as Scratch Areas.

To make the filenames of CMS source routines more meaningful, certain filenames have been changed.

The following is a list of these filenames:

Old Filename	New Filename		Old Filename	New Filename
ABSTD	SOABEND		GETSYM	LDRSYM
ASMAFIND	ASSEMBLE	*	IPLDISK	INITIPL
ASMA01	"	*	JASOVER	OVERSUB
ASMA02	"	*	LAST	INITIPL
ASMA03	"	*	LINKAGE	SOLINKS
ASMREAL	"	*	NTPT	SOCNTRL
ATTN	CONATTN		NUCONTS	NUCON
BARE67	INITB67		OPEN	SOOPCL
CHECK	SOCNTRL		PRINTR	PRINTIO
CMSEXTIT	INTEXT		RDWR	SOBSAM
CMSFREE	FREESYS		STORAGE	SOMAIN
CMSIOIT	INTIO		SVCCARE	SOSVCTR
CMSPRGIT	INTPROG			SOSVCT2
CMSSVCIT	INTSVC		SYSGEN	INITSYS
CONSI	CONINT		TYPLIN	CONWRITE
CVTFV	CNVTFV		WAITRD	CONREAD
DIO	DISKI			
DIOSECT	DISKINT		FOR A COMPLETE LIST OF	
FORTDIRT	FORDIRT		CMS FILENAMES AND THEIR	
FORTIO	FORTRAN	*	FUNCTIONS, REFER TO THE CMS	
GET	SOQSAM		PLM FORM NO. GY20-0591	

*

The function(s) performed by the routine listed under "Old Filename" is (are) now performed by the routine listed under "New Filename". In these cases, the "New Filename" already exists in CMS version 3, level 0.

The following APAR's have been corrected in this release:

CP-67 APARS

APAR NO.	MODULE	DESCRIPTION
DPA-P302	STCONS	Terminal error message abends System
DPA-P303	CPINIT	Force explicit LOGON for operator if not 1052
DPA-P304	DISPATCH	Dispatch time accounting error
DPA-P305	IOINT	Ignore Unit Check From Shared Devices with asynchronous interrupt
DPA-P306	UNTRANS	UNTRANS - Incorrect CSW address Translation for CP CD
DPA-P307	CPINIT	HIO to 270X devices after restart
DPA-P308	PAGTRANS-PAGEGET	Page de-allocation while page in transit
DPA-P309	LOGON	Defer execution for "FREE" page extension
DPA-P310	CCWTRAN	ISAM restart sequence with "ACNT" command
DPA-0787	PAGTRANS	Pagewait after LOGOUT
DPA-0788	CCWTRANS	DOS/COBOL abend - Removes Restriction
DPA-0790	CPIOEREP-CPMCEREP	CPIOEREP/CPMCEREP seek checks
DPA-0791	DIAL	"DIAL" error message format
DPA-0792	IOINT	TIO loop to 270X after abend/restart
DPA-0793	PROGINT	Virtual ISK/SSK in non-extended mode
DPA-0794	MVIOEXEC	Invalid printer op-codes
DPA-0795	CFSTACH	"ATTACH" device not available
DPA-0796	CCWTRAN	corrects "SENSE" CCWTRAN handling
DPA-0797	CCWTRAN	Virtual 270X disable/enable chained
DPA-0798	CONSINT-LOGON-ADCONS	Editing userid at LOGON time

DPA-0799	CCWTRAN	Tape read backward error
DPA-0800	CCWTRAN	ISAM fix to PTF AP3106CA
DPA-1681	PAGEGET	Incorrect page record allocation in multi-drum environment
DPA-1683	CCWTRAN	CCW found with zero byte count
DPA-1694	CCWTRAN	ISAM channel loop
DPA-1695	IOINT	Incorrect handling of shared DASD interrupts
DPA-1699	CFSSPL	No "START" to dedicated U/R devices
DPA-1707	MRIOEXEC	Incorrect punch error recovery
DPA-1715	CFSTACH	"DETACH" message format
DPA-1717	LOGON	LOGON failing in some initialization
DPA-1718	EXTEND	EXTEND sizes for 7 and 8 core boxes
DPA-1719	MRIOEXEC	"RESTART" punching cards on two punches
DPA-1720	WRTCONS	TTY output message processing
DPA-1921	DISPATCH	Failure in "ALTERNATE" console handling
DPA-1922	CFSCOM	Failure for operator "DISCONNECT"
DPA-1924	DEDICATE-MRIOEXEC	"RESTART" to dedicated U/R devices
DPA-1925	RECFREE-CPINIT	Warm start after "spool space" abend
DPA-1927	PAGEGET	PAGEGET program check
DPA-1928	DISPATCH-EXTEND	Corrects accounting during EXTEND
DPA-1930	CCWTRAN	CSW error in ISAM processing
DPA-1931	CCWTRAN	Shared DASD ISAM error
DPA-1935	MRIOEXEC	Punch recovery for accounting cards
DPA-1936	CFSCOM	"READY" to Virtual 1052 error
DPA-1937	WRTCONS	Disconnected user "hung" from WRTCONS
DPA-1942	PAGTRANS	Virtual timer processing during paging
DPA-1943	MVIOEXEC	Sequence error

DPA-1944	CONSINT	TTY character translation
DPA-1947	CFSDBG	DMCP command addressing error
DPA-1948	CCWTRAN	CP control CCW count greater than 8
DPA-2171	DMA/EXEC-DME/EXEC-FRIEND/EXEC	Missing serviceability EXEC files
DPA-2171	CCWTRAN	Loop in channel program using O/S ISAM
DPA-2176	CFSMAIN-CFSCOM-CFSTACH	Incorrect test in CFSMAIN for console function
DPA-2177	VIOEXEC	Extra PCI interrupt if CP retrys channel program
DPA-2178	IOINT	Incorrect CSW for CP generated chained CCW's
DPA-2179	CONSINT	1052 cancel key does not clear read buffer
DPA-2181	PAGTRANS	System locked page count for shared pages
DPA-2182	MVIOEXEC	Command reject loop in MRIOEXEC
DPA-2187	CONSINT	User lost to system if line drops during login
DPA-2194	CCWTRAN	CCW with zero byte count generates invalid CCWS-CCWTRAN
DPA-2197	PAGTRANS	SVC 0 issued in pagetrans due to error 4
DPA-2198	PAGTRANS	SVC 0 issued in pagetrans due to an error 2
DPA-2199	CFSTACH	Incomplete search for IOTASK when "DETACH" issued
DPA-2200	ACNTOFF	Punch accounting card for dedicated devices
DPA-2305	FORTRAN	PID distributed sysin and text decks incompatible
DPA-2308	PLILIB	PLILIB TXTLIB dictionary invalid on PID distributed system
DPA-2310	ASSEMBLER (F)	Assembler Rel. 9 improperly flagging

literals as errors

APAR NO.	MODULE	DESCRIPTION
DPA-2823	PAGTRANS	Page swap timing problem causes program checks
DPA-2824	MVIOEXEC	Invalid data address in virtual 1052 CCW - CP abends
DPA-2826	-DOC-	SRL correction for sizes in EXTEND module
DPA-2829	MVIOEXEC	Free storage chain pointer destroyed- Prog. check results
DPA-2831	MVIOEXEC	Real timer not interrupting
DPA-2835	CCWTRAN	Corrects PTF 360D-A2171-6CA (C/S ISAM)
DPA-2842	CONVRT	Program check converting decimal number higher than 2**31-1
DPA-2843	CCWTRAN	ISAM CCW's not checked for crossing page boundary
DPA-2844	IOINT	Virtual I/O exceeds virtual storage - CP may abend

CMS APAR's table:

APAR NO.	MODULE	DESCRIPTION
DPA-0433	TXTLIB	Unpredictable results using PLILIB from PID
DPA-0437	WRBUF-FINIS	FORTRAN - User's P-list included as source to the compiler
DPA-0438	INITSUB	Loops on TIO to T-disk if on bare machine
DPA-1962	LINKAGE	Abnormal termination if module which was loaded by external reference has no internal reference
DPA-1968	CEDIT	File command after retype - carriage return sequence loses data
DPA-1969	MODMAP-LINKAGE-LDR-LDRIO-GENMOD	VCONS incorrectly resolved in multi-csect text decks
DPA-1970	LINKAGE	Using both READ and WRITE statements in PL/I causes specification exception
DPA-3211	MACLIB	REP command does not allow multiple replaces on same command line
DPA-2312	FORTRAN	FORTRAN-CPNMON subroutine does not handle entries on more than one line
DPA-2313	EXECTOR	Initiation of user keyword to BLANK results in "INVALID CMS COMMAND"
DPA-2316	FORTRAN	Program check during compile if format spelled with a 0 (zero)
DPA-2318	IPL	CMS gets IPL'ed rather than named system if KX command issued
DPA-2320	FORTRAN	Text and listing files not necessarily being put on disk from which source came
DPA-2862	TPCOPY	File count and summary parameters invalidated when tapes are specified by *'s

DPA-2863	MACLIB	MACLIB directory destroyed follow-ing message "INPUT FILE NOT IN CORRECT MACRO FORMAT"
DPA-2864	FORTRAN	FORTRAN compiler enters DEBUG with specification exception
DPA-2866	FORTRAN	FORTRAN compiler produced bad RLD cards
DPA-2867	PL/I	PL/I compiler looped on invalid source data

The following PTF's are permanently fixed in this release:

CP-67 PTF's

AP3026CA	A16816CA	A19216CA	A28296CA
AP3036CA	A16836CA	A19356CA	A28356CA
AP3046CA	A16866CA	A19266CA	A28436CA
AP3056CA	A16946CA	A19276CA	A28446CA
AP3066CA	A16956CA	A19426CA	
AP3076CA	A16996CA	A19436CA	
AP3086CA	A17076CA	A19446CA	
AP3096CA	A17156CA	A19476CA	
AP3106CA	A17176CA	A19486CA	
A07906CA	A17186CA	A21716CA	
A07916CA	A17196CA	A21716CA	
A07926CA	A17206CA	A21766CA	
A07936CA	A19216CA	A21776CA	
A07946CA	A19226CA	A21786CA	
A07956CA	A19246CA	A21796CA	
A07966CA	A19256CA	A21826CA	
A07976CA	A19276CA	A21876CA	
A07996CA	A19286CA	A21946CA	
A08006CA	A19306CA	A21996CA	

CMS PTF's

A04336CA	A19626CA	A23136CA
A04376CA	A19686CA	A28636CA

The following PTF's should be re-applied to this release:

A23126CA

CP-67/CMS SYSTEM PROSE
IBM 3420 Component Release 1 (CR1)
for
CP-67/CMS Version 3 Level 1

Installation of Component Release 1 for
IBM 3420 Magnetic Tape Units with
CP-67/CMS Version 3 Level 1.

The component release is distributed in a CMS TAPE DUMP
format and contains 3420 support in two forms: 1) complete
replacements for files distributed with the basic materials
for Version 3 Level 1. 2) Updates to be applied to several
CP-67 modules and macros as well as CMS EXEC procedures and
SYSIN files to support the installation. The files should
be TAPE LOADed on to the CMS P-disk of the user performing
CP-67 maintenance. Once the files have been loaded on to
the disk the following steps should be taken to complete the
installation of the 3420 component release. (Appendix A is a
list of all the CP-67 files affected or provided by this
component release. Appendix B is a list of all CMS files
affected by this component release.)

Note: CP-67 support and CMS support are independent of each
other and may be applied in either order. However,
use of 3420 tapes by CMS is dependent on availability
of the associated CP-67 support.

Installing 3420 Support for CP-67

To install 3420 support on a basic (unmodified) CP-67
system, TAPE LOAD the first four files and proceed to step 4
of the update procedure below. If any Maintenance updates
(PTF's) or user modifications have been previously applied
to the system, use the update procedure.

CP-67 UPDATE PROCEDURE

Skip the first three files on the tape using the CMS command
TAPE SKIP 3. TAPE LOAD the next two files. Then proceed as
follows:

1.   Issue the following CMS commands:

     UPDATE RIO ASP360 RIO AP31XXCA (SEQ8 INC PERM
     UPDATE IOBLOCKS COPY IOBLOCKS AP31XXCA (SEQ8 INC PERM
     UPDATE DEVTYPES COPY DEVTYPES AP31XXCA (SEQ8 INC PERM

2.   Issue the following CMS commands:

     CPMACADD MACUP RIO

     CPMACADD MACUP IOBLOCKS
     CPMACADD MACUP DEVTYPES

3.   Issue the CMS command AP31XXCA:

     This is an EXEC procedure distributed with the
     component release that will apply the necessary updates
     to all the SYSIN files affected and assemble (using
     CPUPASM EXEC) all the updated files. In addition the
     modules that do not have updates but use the modified
     ASP360 or COPY files will be assembled. For a complete
     list of the CP-67 modules affected issue the CMS
     command:

          PRINTF AP31XXCA EXEC

     The commands in the AP31XXCA EXEC that use CPPTF have
     source code updates for the module. The commands that
     use CPUPASM do not have source updates but use the
     updated COPY and ASP360 files in the MACUP MACLIB.

4.   The installation RIO configuration module must be
     re-assembled. Issue the CMS command:

          CPUPASM RIOxxx

     where xxx is the installation name used as described in
     the CP-67 Installation Guide (GH20-0857-1).

5.   Once all the updates and assemblies have been
     completed, the CP-67 nucleus must be re-generated using
     the CPGEN EXEC procedure as described in the
     Installation Guide.

6.   Some of the files for the 3420 support apply only to
     error retrieval and maintenance. These files should be
     transferred to the 'CE' virtual machine for his use in
     maintaining the 3420 hardware. The following is a list
     of the files that should be transferred for 'CE' use:

          CPIOEREP   SYSIN
          CPIOEREP   TEXT
          CPIOEREP   MODULE
          HIST3420   SYSIN
          HIST3420   TEXT
          HIST3420   MODULE
          M3420   EXEC

7.   Customers must be notified that local modifications
     that use the RDEVBLOK in CP-67 must be reviewed and
     possibly re-assembled. The following fields in the
     RDEVBLOK have new displacements with the application of
     IBM 3420 tape support:

RDEVCTR0, RDEVCTR2, RDEVCTR3, RDEVCTR4, RDEVCTR7,
RDEVTMON, RDEVSEN

8. To obtain the LISTING files for the CP-67 TEXT files
    provided with   this component release,   issue the
    following CMS commands:

        TAPE   REWIND
        TAPE   SKIP 6
        TAPE   LOAD

Installing 3420 Support for CMS

The following PTF's must be applied prior to installing 3420
support for CMS: PTF A28626CA; PTF A28686CA; PTF A28836CA;
PTF A41556CA.

CMS 3420 support is available in two forms: 1) complete
replacement SYSIN and TEXT files. 2) update files to be
applied to the CMS Version 3 Level 1 SYSIN files.   To
perform a complete replacement, issue the following CMS
Commands:

        TAPE   REWIND
        TAPE   SKIP 7
        TAPE   LOAD (to load SYSIN files) or TAPE SKIP
        TAPE   LOAD (to load TEXT files)

This sequence will load the replacement SYSIN and TEXT files
onto the User's P-Disk. This should be done by the person
responsible for maintaining the CMS system disk. Proceed to
Step 3 of the CMS Update Procedure below.

CMS UPDATE PROCEDURE

1. Apply pre-requisite PTFs listed above.

2. Issue the following CMS commands to update the CMS
    SYSIN files:

        TAPE   REWIND
        TAPE   SKIP 5
        TAPE   SKIP 5
        TAPE   LOAD
        CMSPTF TAPE   AM31XXCA
        CMSPTF TAPEIO AM31XXCA
        CMSPTF TPCOPY AM31XXCA

NOTE: The CMS source files must be available to the user
      for updating.

3. Apply any additional PTF's   or user modifications
    required for the affected   modules (TAPE, TAPEIO,
    TPCOPY).

4. Issue the following CMS commands to update the CMS
    system disk:

        CMSGEND TAPE   0
        CMSGEND TAPEIO 0
        CMSGEND TPCOPY 0

5. To obtain the LISTING files for the replacement TEXT
    files, issue the following CMS commands:

        TAPE   REWIND
        TAPE   SKIP 9
        TAPE   LOAD

APPENDIX A

APPENDIX B

SYSIN	TEXT	LISTING	AP31XXCA
CCWTRAN	CCWTRAN	CCWTRAN	CCWTRAN
DIAGDSK	DIAGDSK	DIAGDSK	DIAGDSK
DSKDUMP	DSKDUMP	DSKDUMP	DSKDUMP
IOINT	IOINT	IOINT	IOINT
IOERROR	IOERROR	IOERROR	IOERROR
QUEVIO	QUEVIO	QUEVIO	QUEVIO
USEROFF	USEROFF	USEROFF	USEROFF
VIOEXEC	VIOEXEC	VIOEXEC	VIOEXEC
CFSQRY	CFSQRY	CFSQRY	CFSQRY
CFSSET	CFSSET	CFSSET	CFSSET
CFSTACH	CFSTACH	CFSTACH	CFSTACH
IPL	IPL	IPL	IPL
DIRECT	DIRECT	DIRECT	DIRECT
CPIOEREP	CPIOEREP	CPIOEREP	CPIOEREP
HIST3420	HIST3420	HIST3420	
			RIO
			IOBLOCKS
			DEVTYPES

ADDITIONAL MODULES

MACUP	MACLIB
RIO	ASP360
DEVTYPES	COPY
IOBLOCKS	COPY
HIST3420	MODULE
CPIOEREP	MODULE
M3420	EXEC

SYSIN	TEXT	LISTING	AM31XXCA
TAPE	TAPE	TAPE	TAPE
TAPEIO	TAPEIO	TAPEIO	TAPEIO
TPCOPY	TPCOPY	TPCOPY	TPCOPY