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Programming Announcement

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Manual Text in Appropriate
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**IBM 5280-3270 EMULATION (5708-EM1)
ANNOUNCED**

A new licensed program, IBM 5280-3270 Emulation (5708-EM1) allows the 5280 Distributed Data System to appear as selected 3270 Control Units and devices. The operating environments supported are:

- *3270 Device Emulation under System Network Architecture/Synchronous Data Link Control (SNA/SDLC) and Binary Synchronous Communications (BSC)*

The 3270 Device Emulation Utility allows the 5280 to appear as selected 3270 control units and devices to existing host applications.

- *3270 Batch Transfer—BSC*

Using this utility program, the 5280 user can transmit and receive batch data over a 3270 BSC network using 3270 line protocols. An appropriate user-written program is required at the host. Only graphic data (hex characters '40'-'FF') can be transmitted.

- *3270 Program Interface—BSC*

This provides an interface for a user-written program in the 5280, written in DE/PRG or COBOL, to exchange records with a user-written program in a host system using 3270 BSC protocols. Only graphic data can be transmitted.

Highlights

3270 Device Emulation

Control Unit

- The 5280 appears to the host as a 3274 Model 1C Control Unit under SNA/SDLC or as a 3271 Model 2 Control Unit under BSC.

Display/Keyboard

- The 1920-character 5281 Data Station (attached to a 5288 Programmable Control Unit) and the 1920-character 5285 Programmable Data Station appear to a host system as a 3277 Model 2 Display Station with selected features.
- Typewriter, data entry, and data entry with proof arrangement keyboards are supported. 3270 Program Function keys are supported.
- The Local Print Key function is supported in SNA/SDLC and BSC.

Printer

- The 3270 Printer Emulation Utility allows the 5222, 5225, and 5256 Printers to appear as the 3284-2, 3286-2, or 3288-2 Printer in BSC, or the 3287 Model 1 and 2 Printer in SNA/SDLC.

3270 BSC Batch Transfer Utility Program

- Data on a 5280 diskette can be sent to (or received from) an appropriately written host application program. Only graphic data can be transmitted.
- This utility is designed for batch transfer and limits the interference to other interactive sessions on the line. As a result, transfer of a data set can take more time than a normal batch transfer operation.
- The transmission and reception of multivolume diskette data sets is supported.
- Unsolicited host operator messages are handled by the 5280 display while the utility program is in operation.
- Logon to an interactive host is allowed prior to starting Batch Transfer.
- The use of a user-provided record identifying character in the data stream permits distinguishing user data from system messages.
- Fixed length, blocked or unblocked records up to 1918 bytes are supported.

3270 BSC Program Interface

- Read/write level of interface on a logical record basis is available in an interactive mode using DE/RPG and COBOL.
- The DE/RPG or COBOL application program provides a 1920-character Device (Image) Buffer and a 4096-character, or less, Data Stream Buffer.
- User-written programs must be provided at both ends of the communications link with careful consideration given to the application design and the characteristics of the communications subsystem.

General Description

The 5280-3270 Emulation licensed program consists of the following five basic parts:

- 3270 Device Emulation Program—BSC and SNA/SDLC
- 3270 Batch Transfer Utility—BSC
- 3270 Program Interface—BSC
- Communications Access Method—BSC
- Communications Access Method—SNA/SDLC

The user describes, through parameters, the actual operating environment.

3270 Device Emulation Program—BSC and SNA/SDLC

Host system communication subsystems that are supported are: System/370 IMS/VS, CICS/VS, TSO, and System/3 Model 15D CCP.

Control Unit

The 3270 Device Emulation Program allows the 5280 to appear to a host system as a 3274 Model 1C (SNA/SDLC) or a 3271 Model 2 (BSC) Control Unit.

Device emulation of the 3270 allows the 5280 to reside on the same communications link that supports a 3274 Model 1C or 3271 Model 2 Control Unit. Since this program provides data stream translation, host application programs will generally require little or no changes to support the 5280 as a 3270. Performance, however, may be degraded.

Display/Keyboard

The 1920-character 5281 Data Station (attached to a 5288 Programmable Control Unit) and the 1920-character 5285 Programmable Data Station appear to a host system as a 3277 Model 2 Display Station with selected features. Features not supported include: ASCII, Magnetic Stripe Reader, Light Pen, and the Copy Command (from the host).

Certain keys are in different locations on the 5280 keyboards. The EBCDIC typewriter, data entry, and data entry with proof arrangement keyboards and the EBCDIC transmission codes are supported. Function keys on the 3277 will be mapped onto the 5280 keyboard to provide for equivalent function: i.e., Field Mark, Erase Input, PA, and PF keys. Up to 24 PF keys are supported. The host initiated local copy (print) is supported for SNA/SDLC. The local print key function is supported for SNA/SDLC and BSC.

Printer

The 3270 Printer Emulation Utility provides to the 5280 user a method of using a 5280 printer as if it were a 3270 printer. The data to be printed is transmitted from the host system. The 3270 printers emulated are 3284-2, 3286-2, and 3288-2 in BSC. The 3287 Printer (Models 1 and 2) is supported in SNA/SDLC. Special features available on these printers are not supported.

The 5280 printers supported are the 5222, 5225, and 5256. The 5280 printers will print characters that match 3270 printer characters where it is physically possible. Characters that do not match will print a standard default character. Users that must print all characters

exactly as on a 3270 printer can do so by using a printer with the multinational character set. Upper and lower case printing is supported on all printers and vertical forms control is supported as on the 3287 and 3288 Printers.

The Printer Emulation Utility operates in either a foreground or background partition, and a maximum of five printer emulations may be active at one time.

The printers may operate in local mode, systems mode (entirely under host control) or shared mode. In SNA, the printer is shared between brackets, and in BSC it is shared between EOTs.

Data that is transmitted from the host will be supported in one of three formats:

- BSC—3270 (DSC) data stream compatible
- SNA/SDLC LU1 (SCS) SNA character string
- SNA/SDLC LU3 (DSC) data stream compatible

When the Printer Emulation Utility receives an SNA LU1 data stream, it will use the SCS control codes to format the printed page.

3270 Batch Transfer—BSC

The 3270 Batch Transfer Emulation Utility will enable the user to transmit and receive batch data when communicating with a host system via 3270 BSC. Record lengths can be a maximum of 1918 bytes. Transaction IDs and how they are to be used during transmission may be specified. It is possible to transmit and receive single or multiple volume data sets containing graphic text (hex characters '40'-'FF') only. Unsolicited messages and interactive logon/logoff can also be handled. The utility executes in a foreground partition. A user program is required at the host to send or receive batch data.

3270 Program Interface—BSC

This function provides the 5280 user with a program-to-program interface that uses 3270 BSC protocols. The 5280 application program that uses this function appears to the host system as a 3271 Model 2 device. Up to seven concurrent sessions are supported. Each session represents a different 3270 device address.

The user application interface for this function is through DE/RPG and COBOL. The DE/RPG support for the 3270 program interface will provide a new parameter on the DEVICE keyword. The user will specify 'COMM3270' as the device type. A file defined with this device code may be accessed from the calculation specifications using READ, WRITE, OPEN, and CLOSE operations.

The COBOL support is implemented by use of the COBOL CALL routines. A COBOL program interfaces to the 3270 CAM through library routines. Communications are initiated by activating the CALL verbs that open and close data sets and read or write records.

The user is responsible for providing the programs at both ends of the communication link. Careful design of

these programs is necessary with a full understanding of 3270 BSC protocol and the host communications subsystem.

BSC Considerations

For BSC, the 5280-3270 Emulation licensed program emulates the following devices: 3271 Model 2 Control Unit, 3277 Model 2 (1920 character) Display Station, and 3284-2, 3286-2, and 3288-2 Printers. The maximum receive buffer size supported is 4096 bytes. This includes 3270 line control characters.

BSC error status to the host may be generated under somewhat different conditions than the 3271. User host programs dependent upon specific link level 3270 BSC error status may require modification.

Primary operation is on nonswitched multipoint communications facilities. Switched network back-up (SNBU) may be utilized if the associated modems and application programs support this capability.

The following BSC host system support is provided for 5280-3270 Device Emulation:

- IMS/VS with BTAM under OS/VS1 or OS/VS2 (MVS)
- IMS/VS with ACF/VTAM under OS/VS1 or OS/VS2 (MVS)
- CICS/VS with BTAM under OS/VS1 or OS/VS2 (MVS)
- CICS/VS with ACF/TCAM under OS/VS1 or OS/VS2 (MVS)
- CICS/VS with BTAM under DOS/VSE or DOS/VS
- CICS/VS with ACF/VTAM under OS/VS1 or OS/VS2 (MVS)
- TSO* with ACF/VTAM under OS/VS2 (MVS)
- System/3 Model 15D under CCP

Note: All of the above systems (except System/3) are also supported when under control of VM/370.

SNA/SDLC Considerations

For SNA/SDLC, the 5280-3270 Emulation licensed program emulates the following devices: 3274 Model 1C Control Unit as an LU2 device, the 1920-character 3277 Model 2 Display Station, and the 3287 Printer (Models 1 and 2).

Operation is on point to point switched as well as nonswitched point to point or multipoint communications facilities. The point to point switched capability is a function of the 5280-3270 Emulation licensed program (not a function of the 3274).

The following SNA/SDLC host system support is provided for 5280-3270 Device Emulation:

- IMS/VS with ACF/VTAM under OS/VS1 or OS/VS2 (MVS)
- CICS/VS with ACF/VTAM under OS/VS1 or OS/VS2 (MVS)
- CICS/VS with ACF/TCAM under OS/VS1 or OS/VS2 (MVS)

- CICS/VS with ACF/VTAM under DOS/VS or DOS/VSE
- TSO* with ACF/VTAM under OS/VS2 (MVS)

Specified Operating Environment

System Requirements

The minimum 5280 system configuration required to support the 5280-3270 Device Emulation capabilities is:

- A 5285 with 64K** bytes of main storage capacity, the 3270 Emulation Communications Adapter (#3270)***, and Optional 1920-Character Display Size (#3505). SNA support requires, in addition, either the Elapsed Time Counter (#3610), or the Magnetic Stripe Reader Adapter/Elapsed Time Counter (#4960).

or

- A 5288 with 64K** bytes of main storage capacity, the 3270 Emulation Communications Adapter (#3270)***, and a 5281 Data Station with a display size of 1920 characters. SNA support requires, in addition, either the Elapsed Time Counter (#3610) or the Magnetic Stripe Reader Adapter/Elapsed Time Counter (#4955).

Refer to the *IBM 5280-3270 Emulation Reference Manual* (availability to be announced in a future PRL) for required main storage requirements of other functions.

Programming Requirements

The then current release of 5280 System Control Programming (5708-SC1)

and

the then current release of 5280 Communications Utilities (5708-DC1)

5280 Communications Support Compatibility

The 5280-3270 Emulation licensed program can coexist on a 5280 system with other non-communicating programs. Running a 3270 Emulation program concurrently with Transcriptive (i.e. high keying rate) Key Entry (TKE) may degrade TKE performance. No other 5280 communications programs can run concurrently.

Scheduled availability from PLO: June, 1981

Educational Allowance

The Standard Educational Allowance Plan applies.

Customer Responsibilities

IBM may provide marketing assistance, in accordance with the Marketing and Service Guidelines in the GI Section of the *GSD Sales Manual*, in the installation of IBM Licensed Programs. However, the responsibility of providing accurate ordering information, personnel selection and training, installation, and continued day-to-day operation lies solely with the customer.

Installation of 5280 Distributed Data System Licensed Programs is a customer responsibility.

* TSO does not support printers

** 96K if a printer is used in conjunction with the keyboard/display

***See Product Announcement 681-11

Program Use During Customer Preinstallation Testing

The 5280-3270 Emulation (5708-EM1) Licensed Program will be available to customers for preinstallation testing on IBM Test Center Systems in accordance with IBM's Program Testing Policy.

Programming RPQs

PRPQs will not be accepted at this time.

Sales Compensation Plan

Normal provisions apply.

**Marketing Publications
(Available from Mechanicsburg)**

IBM 5280-3270 Emulation Licensed Program Design Objectives, GC34-0383.

Sales Manual Text

See interim *GSD Sales Manual* pages.

Note: See Marketing Announcement 681-6 for prices.

Ordering Information: Detailed ordering information is attached.

Filing Instructions—GSD Sales Manual

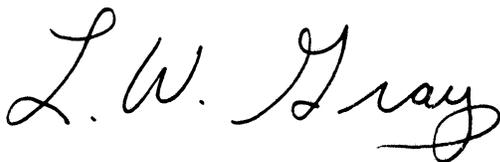
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File

Volume 3 (Programming)

- Programming Section
(No Removals)

January 81,
(Interim Page) Vol 3
pgs. 5280 2.10.1 through
5280 2.10.3



L. W. Gray
Vice President—Marketing

**ORDERING INFORMATION FOR IBM
5280-3270 EMULATION**

Type	Model	Scheduling	Stackable
5708	EM1	Normal	No

To become a licensed user, select the feature number of the desired license type:

Feature Number	License Type
9510	Basic
9511	Distributed Systems License Option (DSLO)

BASIC MATERIAL

(Must be ordered with #9510; not available with #9511 (DSLO))

Licensed Basic Machine-Readable Material:

Distribution of the basic machine-readable material (object code) requires entry of the following feature number:

Feature Number	Distribution Medium	Diskette Requirement
2924 (9510 is prerequisite)	Diskette 1@ 256 bytes/ sector	None*

* Diskettes are supplied by IBM and remain the property of IBM.

The basic machine-readable material will be shipped only to customer locations ordering the basic license (Feature #9510). Code updates will be shipped (on IBM-supplied diskettes) only to locations which have the basic license.

Documentation

Memo, Program Directory, and one copy of each document listed will be supplied automatically with the basic machine-readable material to locations which have the basic license.

Unlicensed Documentation

IBM 5280-3270 Emulation Licensed Program Specifications

RELATED OPTIONAL MATERIAL

(One copy available at no additional charge to users with the Basic License).

Licensed Documentation (Order by feature number)**

Feature Number	Description
7040	IBM 5280-3270 Emulation Program Logic Manual
7050	IBM 5280-3270 Emulation Assembly Listings (Microfiche)

** Form numbers, feature numbers and prices for additional copies will be announced in a future PRL.

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**IBM 5280—3270 EMULATION (5708-EM1)**

IBM 5280—3270 Emulation allows the 5280 Distributed Data System to appear as selected 3270 control units and devices. The operating environments supported are:

- 3270 Device Emulation under System Network Architecture/Synchronous Data Link Control (SNA/SDLC) and Binary Synchronous Communications (BSC). The 3270 Device Emulation Utility allows the 5280 to appear as selected 3270 control units and devices to existing host applications.
- 3270 Batch Transfer—BSC. Using this utility program, the 5280 user can transmit and receive batch data over a 3270 BSC network using 3270 line protocols. An appropriate user-written program is required at the host. Only graphic data (hex characters '40'-'FF') can be transmitted.
- 3270 Program Interface—BSC. This provides an interface for a user-written program in the 5280, written in DE/RPG or COBOL, to exchange records with a user-written program in a host system using 3270 BSC protocols. Only graphic data can be transmitted.

Highlights**3270 Device Emulation****Control Unit:**

- The 5280 appears to the host as a 3274 Model 1C Control Unit under SNA/SDLC or as a 3271 Model 2 Control Unit under BSC.

Display/Keyboard:

- The 1920-character 5281 Data Station (attached to a 5288 Programmable Control Unit) and the 1920-character 5285 Programmable Data Station appear to a host system as a 3277 Model 2 Display Station with selected features.
- Typewriter, data entry, and data entry with proof arrangement keyboards are supported. 3270 Program Function keys are supported.
- The Local Print Key function is supported in SNA/SDLC and BSC.

Printer:

- The 3270 Printer Emulation Utility allows the 5222, 5225, and 5256 Printers to appear as the 3284 Model 2, 3286 Model 2, or 3288 Model 2 Printer in BSC, or the 3287 Model 1 and 2 Printer in SNA/SDLC.

3270 BSC Batch Transfer Utility Program

- Data on a 5280 diskette can be sent to (or received from) an appropriately written host application program. Only graphic data can be transmitted.
- This utility is designed for batch transfer and limits the interference to other interactive sessions on the line. As a result, transfer of a data set can take more time than a normal batch transfer operation.
- The transmission and reception of multivolume diskette data sets is supported.
- Unsolicited host operator messages are handled by the 5280 display while the utility program is in operation.
- Logon to an interactive host is allowed prior to starting Batch Transfer.

- The use of a user-provided record identifying character in the data stream permits distinguishing user data from system messages.
- Fixed length, blocked or unblocked records up to 1918 bytes are supported.

3270 BSC Program Interface

- Read/write level of interface on a logical record basis is available in an interactive mode using DE/RPG and COBOL.
- The DE/RPG or COBOL application program provides a 1920-character Device (Image) Buffer and 4096-character, or less, Data Stream Buffer.
- User-written programs must be provided at both ends of the communications link with careful consideration given to the application design and the characteristics of the communications subsystem.

Description

The 5280—3270 Emulation licensed program consists of the following five basic parts:

- 3270 Device Emulation Program—BSC and SNA/SDLC
- 3270 Batch Transfer Utility—BSC
- 3270 Program Interface—BSC
- Communications Access Method—BSC
- Communications Access Method—SNA/SDLC

3270 Device Emulation Program—BSC and SNA/SDLC

Host system communication subsystems that are supported are: System/370 IMS/VS, CICS/VS, TSO, and System/3 Model 15D CCP.

Control Unit:

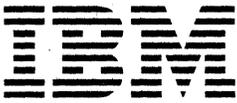
The 3270 Device Emulation Program allows the 5280 to appear to a host system as a 3274 Model 1C (SNA/SDLC) or a 3271 Model 2 (BSC) Control Unit.

Device emulation of the 3270 allows the 5280 to reside on the same communications link that supports a 3274 Model 1C or 3271 Model 2 Control Unit. Since this program provides data stream translation, host application programs will generally require little or no changes to support the 5280 as a 3270. Performance, however, may be degraded.

Display/Keyboard:

The 1920-character 5281 Data Station (attached to a 5288 Programmable Control Unit) and the 1920-character 5285 Programmable Data Station appear to a host system as a 3277 Model 2 Display Station with selected features. Features not supported include: ASCII, Magnetic Stripe Reader, Light Pen, and the Copy Command (from the host).

Certain keys are in different locations on the 5280 keyboards. The EBCDIC typewriter, data entry, and data entry with proof arrangement keyboards and the EBCDIC transmission codes are supported. Function keys on the 3277 will be mapped onto the 5280 keyboard to provide for equivalent function: i.e., Field Mark, Erase Input, PA, and PF keys. Up to 24 PF keys are supported. The host initiated local copy (print) is supported for SNA/SDLC. The local print key function is supported for SNA/SDLC and BSC. The magnetic stripe reader and the light pen are not supported.

**Printer:**

The 3270 Printer Emulation Utility provides to the 5280 user a method of using a 5280 printer as if it were a 3270 printer. The data to be printed is transmitted from the host system. The 3270 printers emulated are 3284 Model 2, 3286 Model 2, and 3288 Model 2 in BSC. The 3287 Printer (Models 1 and 2) is supported in SNA/SDLC. Special features available on these printers are not supported.

The 5280 printers supported are the 5222, 5225, and 5256. They will print characters that match 3270 printer characters where it is physically possible. Characters that do not match will print a standard default character. Users that must print all characters exactly as on a 3270 printer can do so by using a printer with the multinational character set. Upper and lower case printing is supported on all printers and vertical forms control is supported as on the 3287 and 3288 Printers.

The Printer Emulation Utility operates in either a foreground or background partition, and a maximum of five printer emulations may be active at one time.

The printers may operate in local mode, systems mode (entirely under host control) or shared mode.

3270 Batch Transfer—BSC

The 3270 Batch Transfer Emulation Utility will enable the user to transmit and receive batch data when communicating with a host system via 3270 BSC. Record lengths can be a maximum of 1918 bytes. Transaction IDs and how they are to be used during transmission may be specified. It is possible to transmit and receive single or multiple volume data sets containing graphic text (hex characters '40'-'FF') only. Unsolicited messages and interactive logon/logoff can also be handled. The utility executes in a foreground partition. A user program is required at the host to send or receive batch data.

3270 Program Interface—BSC

This function provides the 5280 user with a program-to-program interface that uses 3270 BSC protocols. The 5280 application program that uses this function appears to the host system as a 3271 Model 2 device. Up to seven concurrent sessions are supported. Each session represents a different 3270 device address.

The user application interface for this function is through DE/RPG and COBOL. The DE/RPG support for the 3270 program interface will provide a new parameter on the DEVICE keyword. The user will specify 'COMM3270' as the device type. A file defined with this device code may be accessed from the calculation specifications using READ, WRITE, OPEN, and CLOSE operations.

The COBOL support is implemented by use of the COBOL CALL routines. A COBOL program interfaces to the 3270 CAM through library routines. Communications are initiated by activating the CALL verbs that open and close data sets and read or write records.

BSC Considerations: Primary operation is on nonswitched multipoint communications facilities. Switched network back-up (SNBU) may be utilized if the associated modems and application programs support this capability.

The following BSC host system support is provided for 5280—3270 Device Emulation:

- IMS/VS with BTAM under OS/VS1 or OS/VS2 (MVS)
- IMS/VS with ACF/VTAM under OS/VS1 or OS/VS2 (MVS)
- CICS/VS with BTAM under OS/VS1 or OS/VS2 (MVS)
- CICS/VS with ACF/TCAM under OS/VS1 or OS/VS2 (MVS)
- CICS/VS with BTAM under DOS/VSE or DOS/VS
- CICS/VS with ACF/VTAM under OS/VS1 or OS/VS2 (MVS)
- TSO with ACF/VTAM under OS/VS2 (MVS)*
- System/3 Model 15D under CCP

*TSO does not support printers.

Note: All of the above systems (except System/3) are also supported when under control of VM/370.

SNA/SDLC Considerations: Operation is on point-to-point switched as well as nonswitched point-to-point or multipoint communications facilities. The point-to-point switched capability is a function of the 5280—3270 Emulation licensed program (not a function of the 3274).

The following SNA/SDLC host system support is provided for 5280—3270 Device Emulation:

- IMS/VS with ACF/VTAM under OS/VS1 or OS/VS2 (MVS)
- CICS/VS with ACF/VTAM under OS/VS1 or OS/VS2 (MVS)
- CICS/VS with ACF/TCAM under OS/VS1 or OS/VS2 (MVS)
- CICS/VS with ACF/VTAM under DOS/VS or DOS/VSE
- TSO with ACF/VTAM under OS/VS2 (MVS)*

*TSO does not support printers.

Specified Operating Environment

System Requirements: The minimum 5280 system configuration required to support the 5280—3270 Device Emulation capabilities is:

A 5285 with 64K** bytes of main storage capacity, the 3270 Emulation Communications Adapter (#3270), and Optional 1920-Character Display Size (#3505). SNA support requires, in addition, either the Elapsed Time Counter (#3610) or the Magnetic Stripe Reader Adapter/Elapsed Time Counter (#4960).

OR

A 5288 with 64K** bytes of main storage capacity, the 3270 Emulation Communications Adapter (#3270), and a 5281 Data Station with a display size of 1920 characters. SNA support requires, in addition, either the Elapsed Time Counter (#3610) or the Magnetic Stripe Reader Adapter/Elapsed Time Counter (#4955).

Refer to the *IBM 5280—3270 Emulation Reference Manual* (availability to be announced in a future PRL) for required main storage requirements of other functions.



Programming Requirements: The current release of 5280 System Control Programming (5708-SC1) and the current release of 5280 Communications Utilities (5708-DC1)

** 96K bytes if a printer is used in conjunction with the keyboard/display

5280 Communications Support Compatibility: The 5280—3270 Emulation licensed program can coexist on a 5280 system with other non-communicating programs. Running a 3270 Emulation program concurrently with Transcriptive (i.e., high keying rate) Key Entry (TKE) may degrade TKE performance. No other 5280 communications programs can run concurrently.

Selected Publications

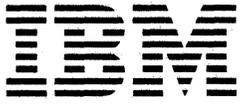
IBM 5280—3270 Emulation Licensed Program Design Objectives GC34-0383

IBM 5280—3270 Emulation Reference Manual*

Ordering Information

Refer to the *GSD Guide for Ordering Programs* ZZ60-0034.

* Availability to be announced in a future PRL.



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