

UNISYS

A Series

CANDE

**Configuration
Reference Manual**

Release 3.9.0

September 1991

Priced Item

U S America
8600 1344-000

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About This Manual

Purpose

This manual describes the commands used to perform Command and Edit (CANDE) control functions and data communications network control functions. It also describes how to configure CANDE to meet the resource requirements of an installation.

The CANDE language, which is described in the *A Series CANDE Operations Reference Manual*, allows generalized file preparation and updating capabilities in an interactive, terminal-oriented environment.

Scope

This manual covers the CANDE control operations and commands used to facilitate user interaction in a data communication network.

Audience

This manual is designed for CANDE users who desire information about CANDE configuration, installation, and control operations.

Prerequisites

Familiarity with the CANDE language used on the A Series systems is recommended.

How to Use This Manual

As a reference tool, this manual can be read in any order. The table of contents and the index provide quick page references to specific information.

Other documents that provide additional information about using CANDE are listed under "Related Product Information" at the end of this preface. All documents referred to in this manual are for A Series systems, unless otherwise noted.

Appendix A, "Understanding Railroad Diagrams," contains an explanation of the railroad diagrams used in this manual.

The Glossary defines terminology related to CANDE. Acronyms used in this manual are spelled out in the Glossary.

The Bibliography contains a list of the documents that are referred to in this manual.

Organization

This manual is divided into three major sections and an appendix, which are described in the following paragraphs. A glossary, a bibliography, and an index appear at the end of this manual.

Section 1. General Information

This section provides general information about user interaction in the data communication environment. The method used to initialize control stations required to establish a data communication network is explained. This explanation covers designating data comm stations, setting attributes for station operations, designing the data communication network to maximize station usability, interpreting CANDE error messages and faults, and establishing communication between CANDE and data comm files.

Section 2. Network Control Commands

This section provides specific information about the CANDE control commands used in the data communication network. The syntax structure of each command is illustrated using railroad diagrams. The commands are listed alphabetically for easy reference.

Section 3. Operational Characteristics

This section provides specific information about CANDE and the operating environment. It explains how CANDE is initiated, how compile-time options are set to invoke a diagnostic or standard (nondiagnostic) version of CANDE, and how CANDE operates in the system environment.

Appendix A. Understanding Railroad Diagrams

This appendix explains how to read the railroad diagrams used in this manual.

Related Product Information

A Series CANDE Operations Reference Manual (form 8600 1500)

This manual describes how CANDE operates to allow generalized file preparation and updating in an interactive, terminal-oriented environment. This manual is written for a wide range of computer users who work with text and program files.

A Series System Commands Operations Reference Manual (form 8600 0395)

This manual gives a complete description of the system commands used to control system resources and work flow. This manual is written for systems operators and administrators.

A Series Work Flow Language (WFL) Programming Reference Manual (form 8600 1047)

This manual presents the complete syntax and semantics of WFL. This language is used to construct jobs that compile or run programs written in other languages and that perform library maintenance such as copying files. This manual is written for individuals who have some experience with programming in a block-structured language such as ALGOL and who know how to create and edit files using CANDE or the Editor.

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Section 1

General Information

In a data communication environment where many users interact with the system, information about the current status of any or all users being serviced is necessary. Also required is the ability to do the following:

- Recover a user whose station or line has encountered error situations and subsequently been made NOT READY.
- Dynamically alter the logical data comm subsystem to accommodate new requirements.

Network Control Commands

Commands to accomplish CANDE control functions can be exercised by a station with CONTROL status. CONTROL status is recommended for selected stations that act as network commanders, that is, stations that monitor or regulate the activity of the CANDE Message Control System (MCS) and its users. Network control commands can also be entered through the Operator Display Terminal (ODT) using the SM (Send to MCS) system command.

Stations can be marked as control stations through an existing control station (see the ?CONTROL command in the "Network Control Commands" section), or by setting the NDII option SPO to TRUE for a station, or by setting the USERDATAFILE option CANDECONTROL to TRUE for a user. Pseudostations can be marked as control stations by the Communications Management System (COMS). See the NOCOMSCTRL option of the ?OP command in Section 2, "Network Control Commands."

The initiator of a network control command is notified of the successful or unsuccessful completion of the command. If a command results in an error termination, the requesting station receives an appropriate message describing the problem.

A network control command must be preceded by the control character defined for the station, which is normally a question mark (?). All commands described in this manual are network control commands unless otherwise specified.

Station Identification

Many commands require the initiator to designate a station; stations can be specified in one of three ways: DLS number and DL number, or Logical Station Number (LSN), or station name.

DLS Number and DL Number

The DLS number identifies a station by the relative network support processor (NSP) number, the line number, and the relative station number within the line. The line protocols, including station names, for the line to which a station is assigned is specified in the Network Definition Language II (NDLII) definition for that line.

Syntax

<dls>

—<integer1>— : —<integer2>— : —<integer3>—

<dl>

—<integer1>— : —<integer2>—

Explanation

Integer1, integer2, and integer3 represent the relative NSP, line, and station numbers, respectively. All three must be specified to identify one station on a multidrop line. The <dl> form, where : <integer3> is omitted, can be used in place of DLS when designating a line with only one station or for reconfiguration situations when all stations on a line are to be designated.

To determine the DLS or DL number for a given station, the following information is required:

- The relative NSP number.
- The line number is computed by multiplying the relative Line Support Processor (LSP) number by 16 and then adding the adaptor number.
- Station numbers on a line are numbered 0 through n-1, where n is the number of stations assigned to the line.

Example

Assume the following NDLII description for a line:

LINE L00:

STATION = TC5AA;

LINE L04:

STATION = TC5BB, TC5CC;

NSP 109:

LSP 113: ADAPTOR 0: L00;

LSP 114: ADAPTOR 4: L04;

The DLS for station TC5CC is computed as follows:

- The relative NSP number for NSP 109 is 0.
- The relative LSP number for LSP 114 is 1; 1 multiplied by 16 plus the adaptor number of 4 equals 20.
- Station numbers start at 0; thus TC5CC has DLS 0:20:1.

LSN (Logical Station Number)

The LSN is a unique integer assigned by NDII to each station defined for a network. LSN stands for Logical Station Number. Designation of a station by LSN is the most efficient method of station designation.

<lsn>

—<integer>—————|

LSN Range

An LSN range refers to a group of one or more LSNs. If a range is defined, the lower LSN must precede the higher LSN.

<lsn range>

—<lsn> [—<lsn>]—————|

Station Name

The station name is a unique identifier chosen by the installation for each station that is a member of the network. Station names in NDII follow the same syntactic conventions as file titles within the system, because any station can be assigned to a REMOTE file.

<station name>

— [←/13\ — / —] <identifier> —————|

Station Handling

Stations in the data communication network can have one or more special attributes. CANDE treats each station differently depending on these attributes. Special handling is given to stations with the following attributes: LOGIN, CONTROL, LOG, and BORROWED.

LOGIN Stations

A CANDE station is a LOGIN station when it meets one of the following conditions:

- ALLLOGIN is set for the CANDE station.
- The CANDE station is a switched station and DIALLOGIN is set.
- LOGIN is set to TRUE for the CANDE station.

DIALLOGIN and ALLLOGIN are CANDE operator options that can be set using the ?OP network control command. LOGIN is an NDLII station attribute.

A LOGIN station requires a user to be logged on before any REMOTE file can be opened. In addition, CANDE requests a usercode of any LOGIN station whenever communication is established between CANDE and the station. CANDE disconnects a switched single-station LOGIN line if log on is not completed within two to three minutes. The specification can be made by classification at run time or by specification for individual stations (or station defaults) in NDLII.

The effect of the DIALLOGIN or ALLLOGIN is apparent only when stations are initialized by CANDE. This process takes place at the following times:

- At CANDE initialization for stations assigned to lines and controlled by CANDE
- When a station is received by transfer from another MCS
- When a station saved (using the ?SAVE network control command) by the operator or a station inhibited by errors is made READY by a ?READY network control command

Control Stations

A control station is one authorized for entry of CANDE network control commands. The ODT, through the SM (Send to MCS) system command, is effectively a control station. Any control station can designate any other station as a control station through the ?CONTROL network control command. Stations with SPO set to TRUE in the DATACOMINFO file are control stations.

Stations logged on under a usercode in which the CANDECONTROL option is set to TRUE in the USERDATAFILE are control stations. Stations that are pseudostations under the control of COMS can be marked as control stations. For additional information, see the NOCOMSCTRL option of the ?OP command in Section 2, "Network Control Commands."

CANDE Log Stations

A CANDE log station is a station that receives CANDE log messages and (if LGSPO is enabled) receives messages directed to the ODT by means of the ?SS network control command (using the form ?SS SPO). Any control station can designate a log station by entry of a ?LGSTA network control command; a ?DSLSTA network control command cancels the log station. Up to 30 stations can be designated as CANDE log stations,

each with all or its own subset of possible logging functions set. Three network control commands (?LGSTA, ?DSLGSTA, and ?LGOP) initiate, terminate, interrogate, or change the logging functions of a designated station. The syntax, explanation, and examples of these commands are given in Section 2, "Network Control Commands." The SM (Send to MCS) system command can also be used to cancel a log station. Refer to the *A Series System Commands Operations Reference Manual* for further information.

On systems where the CLASS security option is set to anything other than UNSPECIFIED, log station activity is logged in the system log file, including initiation, termination, and option changes. Refer to the discussion about the system summary log (SUMLOG) in the *A Series System Software Support Reference Manual* for additional information. Refer to the *A Series Security Administration Guide* for additional information about security options.

On systems where the CLASS security option is set to anything other than UNSPECIFIED, a station must be logged in to be able to use the ?LGSTA, ?DSLGSTA, or ?LGOP log station commands.

If a log station exists, it is noted in the tankfile. CANDE attempts to re-establish the log station from the tankfile at initialization time.

Typical information directed to a log station includes the following:

- Station attachment.
- Security errors. The display indicates whether LOGONCHECK (an entry in the SECURITYSUPPORT library) is going to clear, save, or disconnect a station where a security violation attempt has occurred. Violations can be the result of an invalid attempt at logging on, changing an accesscode, or changing a password.
- Station log on.
- Station log off.
- Stations where the data comm error retry limit is exhausted.
- Network changes resulting from reconfiguration requests.
- User messages sent to the ODT by means of the ?SS network control command (using the form ?SS SPO) if the option LGSPO is set. Otherwise, a log station is addressed and identified by its LSN when the log station sends messages.
- Information about the initiation, termination, or change of logging options for log stations.

Log information is identified by a hyphen (-) as the first message character followed by the time of day, LSN, usercode (where applicable), and a descriptive message of the activity being reported, such as the following:

```
-10:17:31(15) MPS LOGGED ON.
```

```
-9:14:02(3) RETRY LIMIT EXCEEDED.
```

Borrowed Stations

CANDE recognizes that a station is *borrowed*, meaning that the station was declared in the DATACOMINFO file as belonging to some other MCS. CANDE transfers such a station to its declared owner when a user session is terminated through a BYE or station disconnect or when CANDE service is terminated by a ?QUIT or ?ABORT network control command. (The KEEPSTA option can be used to defeat this action. Refer to the ?OP command in Section 2, "Network Control Commands.")

Pseudostations and COMS Window Dialogs

The Communications Management System (COMS) MCS is a Unisys product that, among other features, provides multiple logical connections between CANDE and a single physical station. CANDE treats each logical connection as an individual station (implemented as a data comm pseudostation). COMS calls each connection a dialog of the CANDE window.

CANDE treats these pseudostations (which are also used for stations transferred from a foreign host across a BNA network) almost identically to physical stations. However, because all input to and output from such stations is filtered through another MCS (for example, COMS), there can be differences in behavior. In particular, commands intended for CANDE might instead be intercepted and acted upon by COMS, and output for the station might be queued by COMS, which can alter the usual pattern of flow control. For example, this might nullify the tanking specifications for the remote file. Refer to the *A Series I/O Subsystem Programming Guide* for a discussion of tanking.

If any control commands do not yield normal results when entered from a COMS window dialog, the problem can be resolved by using an extra control character (usually a question mark [?]). For example, COMS intercepts a ?WRU command, but entering ??WRU directs the command to CANDE. Sometimes abbreviating the command can be helpful because COMS does not recognize abbreviations. For example, a ?PURGE command will go to COMS, but ?PURG will go to CANDE.

When a dialog of the CANDE window is opened, COMS notifies CANDE of the usercode and whether privileged status should be suppressed or control status should apply. If the usercode does not require that a chargecode or accesscode be entered, CANDE then automatically logs on the user in a new session. The CANDE command HELLO can be used to change to a different usercode.

Security Features

There are four CANDE security options available to restrict the use of privileged user status. Privileged user status means that security checking is not done for a particular usercode.

The restriction of privileged user status is based on the types of stations available to users (that is, dial-in stations, COMS pseudostations, and non-COMS pseudostations). The following options allow a site to prevent a usercode from assuming privileged status, even though the usercode is marked as privileged in the USERDATAFILE:

CANDE Security Option	Function
SECALL	Denies privileged user status to all users on all stations.
SECDIALIN	Denies privileged user status to all users on dial-in stations.
SECPSEUDO	Denies privileged user status to all users on pseudostations.
USECOMSPRIV	Bases privileged user status on the COMS station configuration setting. (USECOMSPRIV overrides SECALL and SECPSEUDO settings.)

Each of the four security features is an option of the CANDE ?OP network control command. For a more complete discussion of these options, refer to the CANDE ?OP network control command in this manual. In addition, there is an option that prevents CANDE from using the control status as passed by COMS. For additional information, see the NOCOMSCONTROL option of the ?OP command in Section 2, "Network Control Commands."

Data Comm Errors

Data comm error recovery in CANDE is designed to maintain maximum usability of the station while avoiding the overhead of processing many error results from useless stations. Some error results, such as break-on-output or switched-line-disconnect, are unequivocal and cause unconditional recovery or unconditional session termination. Other errors indicate that something is amiss with the data communication network and require a more heuristic recovery approach.

If four errors occur within approximately two minutes with no intervening valid input, CANDE marks an active station as no longer usable and aborts any session. For an inactive station, four errors over any time period render the station unusable. If, when inactive, an unusable station produces no additional errors, it remains READY so that subsequent valid input is detected without operator intervention.

For example, a direct-wire, current-loop circuit for a teletype or similar device generates errors if the circuit is open when CANDE attempts to send an initial identification message. Once CANDE recalls the outstanding messages and sends no additional messages, the station remains quiet. Completing the circuit and sending input from the terminal then causes the station to become usable.

If errors persist on the unused station at a rate greater than approximately two per minute, the station is left NOT READY. It cannot be used until the problem has been corrected and the operator has explicitly readied the station with a ?READY or ?CLEAR network control command. (This situation is typical of polled lines where the modem is not connected to the system.)

If CANDE is taking action as a result of errors on a line containing more than one station, the action is taken for all stations on that line under CANDE control. The line is always left READY unless CANDE receives an error notice for a station that has been left NOT READY.

Data comm errors are displayed on a CANDE log station (if it is active and has the LGERROR log option set) and are recorded in the system summary log. This logging

General Information

occurs only for the first of a group of consecutive errors except when a string of errors causes an active station to be aborted; in this case, the last error is also logged. When the station is active, an error occurring more than five minutes after the previous one begins a new sequence.

Dynamic Data Comm Changes

If the Interactive Datacomm Configurator (IDC) is used to change attributes for a station while it is logged on to CANDE, the new values for the changed attributes are immediately reflected in the system data comm files. However, CANDE is not aware of the changes until the station signs off and then signs on.

If IDC is used to move a station that is logged on to CANDE to another line, the station is logged off during the move.

Faults and CANDE Errors

When a fault or error is detected, CANDE attempts to minimize its effect. If the problem can be ascribed to a particular user, that user is notified and the current operation terminated, while service to other users continues. (In some cases, it is impossible or unsafe to continue processing, and CANDE must terminate.) In the current context, a *fault* is defined as an illegal situation detected by the hardware, such as indexing outside the bounds of an array. An *error* is defined as an illegal situation detected by the CANDE MCS, such as a violation of buffer-allocation protocol.

Faults and errors are handled alike except for the messages reporting them:

FAULT MESSAGE: #CANDE FAULT FF @LLLLLLLL

ERROR MESSAGE: #CANDE ER:EEEEEE@LLLLLLLL

FF represents a two-digit fault code, EEEEEEE an error literal, and LLLLLLLL a line number in CANDE. These cryptic messages refer to problems in CANDE only, not a user program. (If lineinfo is unavailable, the LLLLLLLL is replaced by an address, AA:AAA:A.)

Recovery from a fault or error condition generally proceeds as follows. The message is displayed on the central operator console. A program dump and other diagnostic information is written from the CANDE stack encountering trouble; this procedure might be seen as a pause in CANDE response. If the problem can be associated with a user station, the message is sent there; the message is also sent to any CANDE log stations that are active and have LGFAULT set. The interrupted operation is terminated, and the appropriate housekeeping functions are performed to return to a neutral state.

Faults

Faults are trapped by *on anyfault* statements in the outer blocks of each CANDE stack, as well as in certain special environments. (Some procedures contain ON statements for

selected faults that can arise due to excessive input data. These faults are treated as normal user errors rather than as CANDE problems.)

Table 1-1 lists faults by fault number, with a corresponding description. Except as noted, these faults can occur when executing any program. Note that the meaning of each fault number is standardized, regardless of which program is executing or on what type of A Series machine it is running.

Table 1-1. Fault Descriptions

Fault Number	Fault	Description
01	DIVIDEBYZERO	The program attempted an arithmetic division value of 0 (zero).†
02	EXPOVERFLOW	An arithmetic evaluation resulted in an exponent too large to fit in the exponent field.
03	EXPUNDERFLOW	An arithmetic evaluation resulted in an exponent too small to fit in the exponent field.
04	INVALIDINDEX	An attempt was made to index out of the bounds of an array.
05	INTEGEROVERFLOW	An attempt was made to use an integer value not in the range $\{-2^{39}+1$ to $2^{39}-1\}$ for single-precision values or $\{-2^{78}+1$ to $2^{78}-1\}$ for double-precision values.
06	INACTIVEQ	An attempt was made to perform an operation requiring an active queue.‡
08	INVALIDOP	The tag of a word does not match its attempted use. In the majority of cases, this is caused by attempting to use a pointer variable without first having initialized it to point somewhere.
09	LOOP	This hardware-detected fault indicates the processor is in an infinite loop while executing an operator.
10	MEMORYPARITY	An uncorrectable memory error occurred.
11	SCANPARITY	This generally indicates a problem with some component of the system software or hardware, not with the user's program or the CANDE MCS.
12	INVALIDADDRESS	This generally indicates a problem with some component of the system software or hardware, not with the user's program or the CANDE MCS.

† CANDE deliberately causes this fault when an internal error is detected. (See the "Errors" discussion in this section.)

continued

‡ This fault can occur only when executing a program written in DCALGOL.

General Information

Table 1-1. Fault Descriptions (cont.)

Fault Number	Fault	Description
14	STRINGPROTECT	An attempt was made to skip or scan a pointer out of the bounds of the array to which it points.
15	PROGRAMMEDOP	This generally indicates a problem with some component of the system software or hardware, not with the user's program or the CANDE MCS.
18	INVALIDPCW	This generally indicates a problem with some component of the system software or hardware, not with the user's program or the CANDE MCS.

Boolean variables are used in all stacks to prevent recursive fault situations or inhibit recovery action at critical points. Faults at such times cause normal or abnormal termination of the GRIND stacks, and normal termination of the primary stack, so that data comm activity restarts CANDE.

The program dumps and other diagnostic data from recoverable faults and errors can be suppressed by using the *?OP-DUMPOK* form of the *?OP* network control command; they can be reinstated with the *?OP+DUMPOK* command form. Installations are urged to run with the option set (by default) because the remaining CANDE problems are likely to be elusive and difficult to reproduce. A potential problem with fault recovery is that trouble spots become tolerated annoyances and go unreported (and hence, uncorrected).

Errors

CANDE errors are transformed into faults; the EBCDIC string representing the error literal is divided by zero. Thus, the literal appears just below the divide-by-zero interrupt in the program dump. In some cases, a second parameter appears just below the literal. The errors defined in CANDE are listed in Table 1-2, along with brief descriptions of the problems.

Table 1-2. CANDE Error Descriptions

Error	Description
BADLSN	An interstack (CANDE internal) message contained an invalid LSN.
BUFCNT	The buffer counter for the primary stack is nonzero after all buffers have been deallocated.
CHAIN	Blocks in the tankfile are incorrectly chained.

continued

Table 1-2. CANDE Error Descriptions (cont.)

Error	Description
CHAOS	An attempt was made to access a tankfile block that is already in use.
COMS M	The CONTROLLER is sending COMS mode messages to CANDE. This might indicate a problem with some other piece of system software.
CTF=0	The control information describing changes to the workfile appears to have a null entry. The second parameter is an index into the control block.
DIDDLE	A bad file/directory manipulation request was generated.
DIOERR	An unexpected direct-I/O error was reported. The second parameter is the value of the IOERRORTYPE attribute.
DISCER	An invalid switched line state was reported during initialization.
ENTERF	An error other than duplicate file occurred when CANDE tried to enter the schedule output file in the directory.
MIXUP	The Station Table Locator (STL) is invalid.
NOBUF	The tank buffer pool is exhausted (in spite of a discipline that assures this situation cannot occur).
NO STL	A message was received from a line that CANDE does not know about.
NOTSCH	A nonschedule station logged on as a schedule station.
ORPHAN	On completion of an operation, not all buffers were returned to the pool.
QTYPE	An invalid request was placed in the worker queue.
RECVTP	An attempt was made to assign an invalid value to the RECVTYPE index.
SCHEDQ	A message from SCHEDQ indicates a CANDE error.
SCH HG	A hung schedule session was detected. Recovery action on the session commences after the dump.
SCHLSN	A message was received from an unscheduled LSN.
SCHNAM	An error was detected in the schedule file name built by CANDE.
SCHST	An invalid station scheduled state exists.
SCHSTA	A bad message was received from a schedule station.
STACNT	The count of active stations is incorrect.
STAHG	CANDE could not clear all of its stations following the entry of a ?QUIT or ?ABORT command, or the termination of data comm.
STATE	A switched GO TO statement on the station state failed.
STAX=0	A message was received in a state that normally cannot occur.

continued

General Information

Table 1-2. CANDE Error Descriptions (cont.)

Error	Description
SWAPPER	STACKSWAPPER reported an error; the second parameter is the error code.
TANK	The tankfile data for recovery is unusable.
TODOX	TODD INDEX is out of range.
USURP	A reference was made to a buffer not acquired by that stack or worker.
VERBSW	The verb type is out of range.
XSBUF	A given stack or worker acquired more than two buffers.
1	An error occurred during workfile recovery.

The following error messages were originally devised to notify the user of an internal CANDE problem but are, in fact, caused by inconsistent software levels or improper user input:

Error Message	Description
FILE LABEL EQUATION ERROR (previously FILECD)	An error was detected in the file cards built by CANDE for user task or compiler initiation.
FILEKIND OF WORKFILE INCOMPATIBLE WITH THIS MCP (previously UTLTSK)	An error was detected in the file cards built by CANDE for utility task initiation.
TERMINAL ATTRIBUTE MAXINPUT OR MAXOUTPUT IS TOO LARGE, MAXIMUM VALUE ALLOWED IS 3018 CHARACTERS	An error was detected for the values of the terminal attributes MAXINPUT and MAXOUTPUT. CANDE disregards the station that is signing on if its terminal attributes are declared with a value greater than 3018.

USERDATAFILE

CANDE obtains certain default settings from the USERDATAFILE at log-on time. (Refer to the discussion about the MAKEUSER utility in the *Security Administration Guide*.) Some of these USERDATAFILE settings can be changed by the user of a CANDE station for a particular session by entering CANDE commands.

When beginning a new CANDE session, CANDE initializes these features from the USERDATAFILE settings. A couple of CANDE commands can actually alter the USERDATAFILE. Table 1-3 lists the USERDATAFILE settings that can be altered or temporarily overridden by CANDE commands.

Table 1-3. USERDATAFILE Setting Descriptions

USERDATAFILE Setting	Description
PASSWORD	Contains the password used to log on to CANDE. The PASSWORD command alters the USERDATAFILE password list for the user who invokes the command.
ACCESSCODE	Contains the accesscodes and corresponding accesscode passwords for each user. The APASSWORD command alters the USERDATAFILE setting for each accesscode password for a particular user.
USEDEFAULTCHARGE	Contains an instruction to automatically invoke a particular chargecode for a particular user at log-on time. This default chargecode may, however, be overridden if the user invokes the CHARGE command after logging on and specifies that a different chargecode be assigned to the session.
ACCESSCODENEDED	Requires that an accesscode be specified at log-on time. This setting can be overridden by the ACCESS command after logging on. The ACCESS command allows the user to assign a null accesscode to the session.
CANDEGETMSG	Contains the default setting for the message option. This setting can be altered for a particular session by the CANDE commands SO and RO (also available as ?SO and ?RO).
CANDEQWAIT	Contains the default setting for the QWAIT option. This setting can be altered for a particular session by the CANDE commands SO and RO (also available as ?SO and ?RO).
CANDECONTCHAR	Contains the default continuation character. This setting can be altered for a particular session by the CANDE command CONTINUE.
CANDECONTROL	Any station logged on under this usercode is a control station.
CANDEDESTNAME	Contains the default DESTNAME. This setting can be altered for a particular session by the CANDE command DESTNAME, or for a particular task by the CANDE commands RUN, EXECUTE, UTILITY, COMPILE, BIND, LFILES, DCSTATUS, LOG, and BACKUPPROCESS.
CANDEAUTORECOVER	Contains the default settings for the AUTORECOVER option. This setting can be altered for a particular session by the CANDE commands SO and RO (also available as ?SO and ?RO).
FAMILY	Contains the default family specification. This setting can be altered for a particular session by the CANDE command FAMILY.

continued

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Table 1-3. USERDATAFILE Setting Descriptions (cont.)

USERDATAFILE Setting	Description
PRINTDEFAULTS	Contains the default PRINTDEFAULTS attributes. This setting can be altered for a particular session by the CANDE command PDEF, or for a particular task by the CANDE commands RUN, EXECUTE, UTILITY, COMPILE, BIND, LFILES, DCSTATUS, LOG, and BACKUPPROCESS.

Remote Files

Remote files are files with `KIND = REMOTE` that permit programs to communicate with data comm stations. A station can be a member of more than one file; a file can comprise more than one station. Only one file at a CANDE station can be capable of input (`MYUSE = IN` or `IO`); CANDE allows a station to be assigned to as many as 100 files at one time.

When a program opens a file, the MCS is informed and must respond before the program can read from or write to the station. Among the possible responses are the following:

- Allow the request (assign the station to the file).
- Deny the request.
- Postpone the request (with allowance or denial to come later).

CANDE always allows assignment to files from tasks run by CANDE from the terminal (by means of such CANDE commands as `RUN`, `COMPILE`, or `LFILES`) unless the limits on the number of files have been exceeded or the session has been aborted. These tasks are all characterized by having the CANDE session as their job number.

Tasks that are not of this session are considered *foreign*; they might come from Work Flow Language (WFL) jobs or from CANDE sessions at other stations. Foreign files are subject to special treatment when the installation option is selected. For example, they might be announced at the station by identifying messages, they might be limited to a single job at a time (for all stations or for logged-on stations), or a logged-on user might be asked for permission to assign his station to the file. These options are selected by the value of `LAISSEZFILE`. (Refer to the `LAISSEZFILE` command in Section 2, "Network Control Commands.") Possible values for `LAISSEZFILE` are the following:

Value	Announce with Message	Limit to One Job	Permission to Assign Station
0	Announce	Limit all stations	Ask logged-on stations
1	Announce	Limit logged-on stations	Ask logged-on stations
2	Announce	Limit all stations	Do not ask

continued

continued

Value	Announce with Message	Limit to One Job	Permission to Assign Station
3	Announce	Limit logged-on stations	Do not ask
4	Do not announce	Limit all stations	Do not ask
5	Do not announce	Limit logged-on stations	Do not ask
6	Do not announce	Do not limit	Do not ask

LAISSEZFILE = 1 provides full limiting on logged-on stations but permits multiple jobs to have output on a common station that is not logged on. A message appears at the station announcing that a task is opening the station; if a user is logged on at the station, the user is asked to OK or DENY the request.

LAISSEZFILE = 0 provides the same capabilities as LAISSEZFILE = 1 but limits the use of all stations to a single task at a time.

LAISSEZFILE = 6 eliminates all postponement; therefore, multiple tasks can open any station without asking permission or announcing the open.

Foreign files are announced with messages such as the following:

```
#FILE REM OPEN: USER=ZERO PROG=THUNDER/BOLT.
```

```
#OUTPUT FILE CHIT/CHAT OPEN: PROG=DISCOURSE.
```

The message displays the word OUTPUT (for an output-only file), the file name, the usercode (if any), and the name of the program opening the file. The file name is the title attribute unless it is too long or is identical to the station name. In those cases, the INTNAME attribute is shown. When a file that has been announced is subsequently closed, a message, such as "#FILE REM CLOSED", is sent unless the file has been explicitly denied by the terminal user.

When limiting is selected, the station can be assigned to files from only one job at a time. If the station is busy processing a CANDE command or a file from one job is already open and allowed, files from any other job are postponed. An attempt to read from a file that has all its stations postponed causes the program to wait indefinitely unless a timeout has been specified for the read. An attempt to write to a postponed station causes end of file (EOF) action. The program can discover the reason for the EOF action by examining the disposition attribute or field [24:8] of either the WRITE value or the STATE file attribute. For more information, refer to the *I/O Subsystem Programming Guide*.

Before assigning a logged-in station to a foreign file, CANDE can ask permission of the user by sending a file-open announcement followed by the following message:

```
#RESPOND 'OK' OR 'DENY'
```

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If OK is transmitted, the assignment is allowed and usually the message “#?” (for an input or I/O file) is returned, or an output line from the program is displayed. If “DENY” is the response, the assignment is denied and a “#” acknowledgement is sent. If any other response is entered, the RESPOND message is repeated and the input ignored. Once a file from a job has been allowed or denied, other files from the same job are also allowed or denied without further interaction as long as any file from that job remains open. Files being automatically allowed are announced; those being automatically denied are not.

When the station has been assigned to any foreign file, normal CANDE functions are unavailable. Input goes to the input file if one is assigned; if only output files are assigned, the input is rejected with a “#STATION ASSIGNED TO FILE” message.

An MCS can deny assignment to a file at any time. CANDE does so under certain circumstances:

- The ?DENY network control command denies all files currently open at the station (including postponed files not yet announced).
- The ?END network control command denies the current input file, if any.
- All files are denied at the termination of a session.

A schedule session is run with a dummy data comm station provided for that purpose; the schedule station behaves programmatically like a real station for most purposes. Specifically, any tasks processed from the schedule session have their REMOTE files associated with the schedule station by default. As with any session, this linkage is accomplished through the STATION task attribute; it can be overridden by explicit user action. By setting STATION to a valid LSN, or by setting it to 0 (zero) and equating the file TITLE appropriately, a task of a schedule session can attempt to open a file on a genuine data comm station, subject to the same constraints as any other foreign user of a station. On the other hand, only tasks of the particular schedule session can open REMOTE files to a schedule station.

Tankfile

CANDE maintains a file called TANKFILE/SYSTEM/CANDE for halt/load recovery purposes. This file contains option settings, configuration information, and workfile recovery information. The tankfile resides on the same family as the CANDE CODE file.

The format of the tankfile has changed for the Mark 3.9 release of CANDE. The Mark 3.9 CANDE has a session recovery feature that maintains the last command that CANDE processed before the session was interrupted. When the same user completes the log-on process to the same station, the unfinished task, such as a RUN, UTILITY, or COMPILE, is restarted if the recovery option is configured. A command that manipulates work files, such as REPLACE, MOVE, INSERT, is not restarted but is displayed when the user enters a ?SHOW command.

During global initialization, CANDE will accept and use an old tankfile (one that was created before the Mark 3.9 release of CANDE). The old tankfile is copied and locked as TANKFILE/SYSTEM/CANDE/BACKUP38. The option settings and configuration information from the old tankfile are transferred to a new tankfile.

Station recovery files that are created during CANDE initialization in which conversion of the tankfile is performed have the old format; however, these recovery files, like recovery files that were created before the Mark 3.9 release of CANDE, can be processed by the Mark 3.9 CANDE. Because the last command for a given session is not preserved in the older versions of CANDE, that command is not available in the recovery file.

Recovery Files

When a workfile has been updated, its data reside in a TEXT file. A compiled workfile object exists as a CODE file. All other information about an active workfile, including any changes since the last update, are kept in the tankfile. A recovery file is created by transcribing from the tankfile the information that pertains to the station whose session was aborted. This transcription is performed immediately if CANDE was functioning at the time of the abort (station disconnect, operator ?QUIT network control command, and so forth). In a catastrophe (external DS of CANDE, system halt/load), the tankfile data are transcribed when CANDE is next initiated.

The workfile title is CANDE/TEXT <recovery number>; the workfile object code has the title CANDE/CODE <recovery number>. The recovery number to be used at any session is determined at the beginning of the session, and this number is suffixed to the TEXT and CODE files created by updating and compiling the workfile. The most commonly encountered recovery file has the title CANDE/RECV <recovery number>. In the following discussion, the term *recovery file* refers to the CANDE/RECV <recovery number> file. The recovery number consists of the logical station number (in decimal notation) followed by one digit to distinguish multiple recovery files from the same station.

The scheme imposes a limit of ten recovery files from the same station and a total of 25 recovery files under any one usercode. (The second limit is an arbitrary define, MAXRECFILES, that the installation can modify by compiling CANDE; its upper bound is 149.) If 25 or more recovery files exist, only the first 25 are listed at log-on time or by the RECOVER command, and any attempt to get or make another workfile is rejected with the message:

```
#RECOVER OR DISCARD A WORKFILE.
```

For example, if 10 recovery files exist for LSN 23, any GET or MAKE or an attempt to recover a file created from another station is rejected with a message such as the following:

```
#RECOVER OR DISCARD A WORKFILE IN THE RANGE 230-239
```

If one or more recovery files exist and the AUTORECOVER option of the USERDATAFILE file attribute is set to TRUE, then recovery file names are not displayed when the user logs on. The AUTORECOVER option causes an automatic attempt to recover recovery files created under the user's usercode and station.

A high level of consistency checking is applied to recovery files to screen out files harmful to CANDE. When an invalid recovery file is detected, the following actions are taken. The contents of the recovery file are listed in the tankfile to permit diagnosis of the

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failure. The file is then purged. If a TEXT workfile exists (that is, if the file was updated since a GET or MAKE command), then that file is recovered. The result of such a recovery is as follows:

```
#WORKFILE IS NOT NAMED:  ALGOL, 347 RECORDS
```

If no text existed or if its recovery failed, the message is

```
#INVALID RECOVERY FILE; NAME AND ANY CHANGES WERE LOST
```

If a CANDE fault or error occurs in a workfile editing or output operation (a CANDE WORKER), the following actions are taken to invoke the consistency checking of CANDE workfile recovery:

- The tankfile data are saved in a recovery file as though the station has disconnected.
- CANDE displays “#AUTORECOVERY INITIATED”.
- The action of a RECOVER command is taken using the appropriate recovery file.

If the consistency checking fails, normal invalid recovery file action follows.

Recovery information consists of one to three files. A RECOVERY file contains any workfile changes since the last update, plus the title and other attributes of the workfile. If the workfile has been updated but not yet saved, a TEXT file results. If the workfile has been compiled but not yet saved, a CODE file results. A TEXT or CODE file is generated at update or compilation time and is written on the workfile family.

The recovery file is generated if the session is aborted. The file can be written in either of the following two places:

- If possible, on the default workfile family (defined as the workfile family established at log-on time by any USERDATA family specifications)
- If the workfile family is not available, on the family containing the CANDE CODE file

The RECOVER command displays and recovers recovery files in up to three places in the following order of precedence: the USERDATA default workfile family, the CANDE CODE file family, and the current workfile family. The DISCARD command removes recovery, TEXT, and CODE files with the specified number or numbers from all three of these families.

A recovery-data display is grouped according to the family containing the recovery files. If a recovery file pertains to a workfile on a different family, the phrase *ON <family>* appears in the display.

If the file part of a recovered workfile is not present, the recovery action is aborted with an appropriate message, but the recovery file is not purged. The missing file can be made present and the recovery attempted again.

Recovering a workfile sets the session specifications for LANGUAGE, CONVENTION, and PRINTDEFAULTS to those that were in effect when the workfile was saved. The

new specifications are displayed only if they are different from those that were in effect before recovery.

Depending on the setting of the CANDE configuration attribute RECOVERSESSION and the session attribute AUTORECOVER, the recovery file can be recovered automatically once the user has successfully logged on. When the automatic recovery is enabled, CANDE searches for the most recent recovery file for the user on that station. If CANDE finds a recovery file and that recovery file allows autorecovery, then the RECOVER <recovery number> command is automatically initiated and the following message is displayed:

```
#AUTORECOVER <recovery number>
```

If the last command entered by the user in the previous session was a process-type command, such as RUN, UTILITY, or COMPILE, and was active at the time the session was interrupted, then the command is restarted.

When AUTORECOVER is enabled, the criteria used to determine whether to create a recovery file are expanded. If a task is active when the session is aborted, CANDE creates a recovery file. Both the recovery file and the workfile with unsaved changes are present.

Reconfiguration Commands

Reconfiguration commands update the tables that belong to the NSP and the data comm controller both in memory and in the DATACOMINFO file on disk. Thus, reinitialization of the data comm system following successful completion of a reconfiguration request reflects the new configuration. Reconfiguration commands are the ?ADD, ?MOVE, ?SUBTRACT, ?SWAP, and ?TRANSFER network control commands. For all reconfiguration commands, "#RECONFIGURATION SCHEDULED" is printed at initiation of the reconfiguration. At the conclusion of the reconfiguration, a message informing the user of the result of the reconfiguration is printed.

Section 2

Network Control Commands

This section describes the network control commands that can be used to alter or determine the status of the CANDE network. The commands are valid only when entered from a control station or from the ODT by means of the SM (Send to MCS) system command. Exceptions are noted in the appropriate places. The syntax diagrams use a question mark (?) to represent the current control character for the station.

?ABORT and ?QUIT

Syntax

```
-- ? [ ABORT ] [ QUIT ] <mcs name>
```

Explanation

The ?ABORT and ?QUIT commands cause termination of the CANDE MCS.

The <mcs name> is the name of the CODE file for the CANDE MCS, excluding the *SYSTEM/* prefix. Normally, the CANDE CODE file is called *SYSTEM/CANDE* and the <mcs name> is CANDE. However, if the CODE file is called *SYSTEM/CANDE23*, then the <mcs name> is CANDE23. CANDE displays its <mcs name> following the system type in response to the ?WRU command. Refer to the ?WRU command in the *CANDE Operations Reference Manual* for additional information.

These commands cause CANDE to do the following:

- Stop all worker activity.
- Discontinue all tasks.
- Update all user tankfiles for later recovery.
- Log off all users.
- Abort all schedule sessions.
- Terminate.

If ?ABORT is specified, all CANDE stacks do a program dump before terminating, and CANDE will not be automatically initiated in response to normal data comm activity. (It must then be explicitly run to be restarted.)

A system running with the system security option set to anything other than UNSPECIFIED causes CANDE to log the execution of all network control commands.

Examples

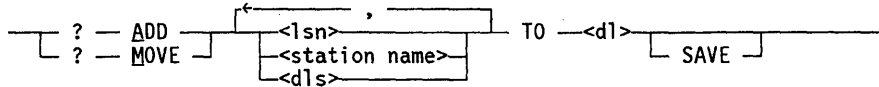
```
?ABORT CANDE  
#CANDE WILL ABORT
```

```
?QUIT CANDE  
#CANDE WILL QUIT
```

```
?QUIT  
#"CANDE" EXPECTED
```

?ADD and ?MOVE

Syntax



Explanation

The ?ADD and ?MOVE commands allow a user to add one or more stations that previously had no line assignment to a line or to move one or more stations from one line to another. The designated stations must be attached to the CANDE MCS, or the ?ADD or ?MOVE command cannot be honored.

The SAVE option causes the stations that are added or moved to be left NOT READY after the request has been satisfied.

A system running with the system security option set to anything other than UNSPECIFIED causes CANDE to log the execution of all network control commands.

Example

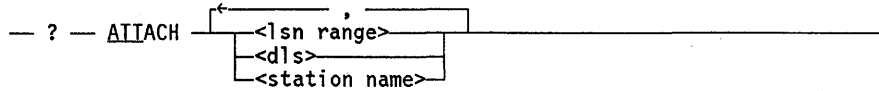
```
?STATUS 5
TTY3(3)NOLINE UNRDY ENAB ATT
```

```
?ADD 5 TO 0:12
#RECONFIGURATION SCHEDULED
#MOVE LINE OK.
```

```
?STATUS 5
TTY3(5)=0:12:0 RDY ENAB ATT
```

?ATTACH

Syntax



Explanation

The ?ATTACH command allows the CANDE MCS to gain control of a new station, provided that CANDE has been defined as the controlling MCS for the station in the NDLI definition. The attachment is a logical one only; no attempt is made to dial out to a station to which dial-out is possible. The state of the station is left unaltered.

A system running with the system security option set to anything other than UNSPECIFIED causes CANDE to log the execution of all network control commands.

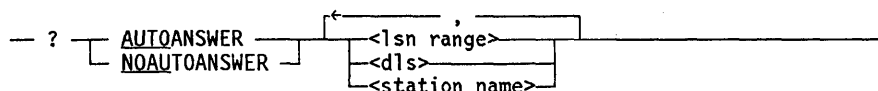
Examples

```
?ATTA 3:0:1, M336
```

```
?ATTACH BIDS01, 15
```


?AUTOANSWER and ?NOAUTOANSWER

Syntax



Explanation

These commands allow the setting or resetting of AUTOANSWER for lines declared as dial-in in the NDLII.

If AUTOANSWER is specified, the data comm subsystem will answer the telephone for all dial-in lines.

If NOAUTOANSWER is specified, the data comm subsystem will not answer the telephone.

For additional information, refer to the "ANSWER THE PHONE" and "SET/RESET AUTO-ANSWER" DCWRITE messages in the *A Series DCALGOL Programming Reference Manual*, and the DISCONNECTACTION LINE structure variable in the *A Series Network Definition Language II (NDLII) Programming Reference Manual*.

A system running with the system security option set to anything other than UNSPECIFIED causes CANDE to log the execution of all network control commands.

Examples

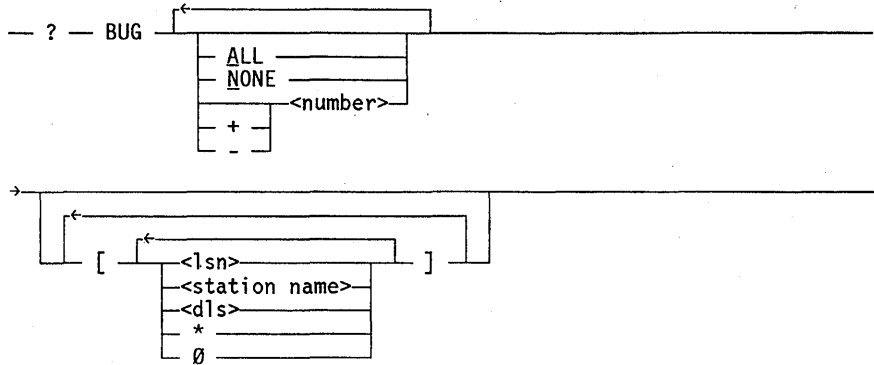
```
?AUTOANSWER 15
```

```
?NOAUTOANSWER TD65
```

```
?AUTO 0:5:0
```

?BUG

Syntax



Explanation

The ?BUG command allows different activities within CANDE to be monitored to an output file.

This command can be used only if the \$DEBUG option is compiled into CANDE. (This version of CANDE is supplied by Unisys as SYSTEM/CANDE/DIAGNOSTICS.)

If no input specifications are provided, the hexadecimal representation of the word containing the current BUG option is printed.

The option ALL sets the option word to all 1s and resets to 0 (zero) any following options. NONE resets the option word to all zeros and any following options to 1s. The <number> option can be any value in the range 0 (zero) through 47 and when used, resets the option word to all zeros and sets the specified numbered options. The + <number> option sets and the - <number> option resets the specified numbered options.

A station list specifying either an LSN, a station name, or a DLS can be supplied in square brackets. An asterisk (*) indicates that the BUG applies to the originating station. The 0 (zero) option specifies the global BUG option word. (This word is used when no station determination can be made.)

?BUG NONE (or any combination that results in a zero option word) closes the printer file of monitor data. The file can then be printed.

A monitor output listing of the internal activities of CANDE as it is being initiated can be obtained by initiating CANDE with a VALUE task modifier, as follows:

```
VALUE = <debug value>
```

The <debug value> is interpreted by CANDE as a REAL variable. This variable and the sign bit of the word (bit 46) are evaluated as follows:

- If bit [46:1] equals 1, the BUG option word is set equal to NOT (<debug value>).
- If bit [46:1] equals 0 (zero), the BUG option word is set equal to <debug value>.

For example, a <debug value> of -0 is equivalent to ?BUG ALL 46.

The negative sign causes bit 46 of the variable to be turned ON. The word is interpreted as NOT(<debug value>); since only bit 46 of the variable is ON, only BUG option 46 is OFF. Since all other bits of the variable are OFF, the corresponding BUG options are ON. BUG options in the range 0 (zero) through 45 and BUG option 47 are ON, and BUG option 46 is OFF.

A <debug value> of 3 is equivalent to ?BUG 0 1.

The value of 3 causes bit 0 (zero) and bit 1 of the variable to be ON. The negative sign is not present; therefore, bit 46 is OFF. The word is interpreted as <debug value>; no "NOT" is done. This means that BUG options 0 (zero) and 1 are ON, and BUG options in the range 2 through 47 are OFF.

Table 2-1 lists the BUG option values and their meanings.

Table 2-1. BUG Option Values

Value	Meaning
0	Write and read blocknumbers
1	Dump of output messages for DCWRITE and INTERCOMQ insertion
2	Dump of input from PRIMARYQUEUE, HOLDQ, DCWRITE-return messages
3	Dump of disk reads and writes
4	Notable occurrences – log-in, verb
5	Buffer locks and allocations
6	Block locks, allocations, and returns
7	Get all good results
8	GRIND flow
9	GRIND disk I/O
10	GRIND file allocations
11	GRIND file setups
12	Line-by-line: GETSEQ, GETLINE, make line
13	GRIND sequence-number finding
14	Task control
15	Interstack messages

continued

Network Control Commands

Table 2-1. BUG Option Values (cont.)

Value	Meaning
16	GRINDSETUP and UPDATER details
17	STL changes
18	Scanners
19	Recovery reads, recovery writes, GETSTATUS results, and block table
20	HOLDQ insertions
21	Contents of TSK. HISTORY
22	Logging info
23	Identify change of worker
24	Time interval processing
25	File open/close bookkeeping
26	DIDDLE (directory manipulations) CHGSECURITY (change security attributes of files)
27	FILER'S GETSTATUS calls
28	Stack control (STKINFO)
29	Work control (TODO)
30	SCHEDULER I/O
31	SCHEDULER insertions to PRIMARYQUEUE
32	SCHEDULER removals from SCHEDQ
33	SCHEDULER I/O contents
34	Schedule doings (miscellaneous)
35	SCHEDULER control values (as message is removed from SCHEDQ)
36	Trace information (stack, procedure entry/exit)
37	Monitor
38	Message to CONTROLLER
46	Error-messages program dump

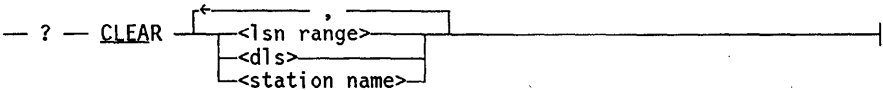
Examples

```
?BUG ALL 46 3  
#BUGWORDS=BFFFFFFFFF7
```

```
?BUG 20 27 [*]  
#BUGWORD[17]=000008100000
```

?CLEAR

Syntax



Explanation

The ?CLEAR command causes CANDE to discard the indicated station.

This command causes the station to be made NOT READY and outstanding messages for the station to be recalled. For a switched line, CANDE disconnects the line only if the line has room for no more than one station. The state of the line for the specified station remains unchanged.

The action of this command is identical to the effect of the BYE command in CANDE; that is, a session is terminated. Active tasks initiated from the station are discontinued. Remote files open to the station are closed.

A system running with the system security option set to anything other than UNSPECIFIED causes CANDE to log the execution of all network control commands.

Examples

```
?CLEAR CONBF, TC5DD, 12
```

```
?CLEAR 10, 13, 17
```

?COMPILESPERCENT

Syntax

— ? — `COMPILESPERCENT` = `<integer>`

Explanation

The ?COMPILESPERCENT command, if an integer is specified, defines the percentage of the maximum number of CANDE tasks that can be compiler tasks. If an integer is not specified, the current percentage is displayed. The integer must be greater than or equal to 0 (zero) and less than or equal to 100. The default value is 100.

If the number of active CANDE tasks is greater than or equal to MAXTASKS, or if the number of CANDE compile tasks is greater than or equal to the COMPILESPERCENT of the MAXTASKS when CANDE is asked to compile a task, then CANDE displays the message “#WAITING FOR AVAILABLE COMPILE TASK”.

The value for COMPILESPERCENT saved in the tankfile is preserved over a halt/load. When a new tankfile is created, the default value is 100.

Examples

```
? COMP
#COMPILESPERCENT = 100 %
```

```
? COMP 25
#COMPILESPERCENT = 25
```

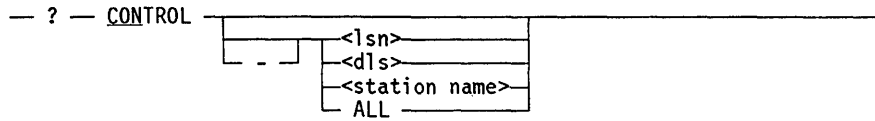
In the following example, the number of compiles exceeds the COMPILESPERCENT of MAXTASKS.

```
?COUNT
#29 TASKS (15 COMPILES), 6 WORKERS; 62 STATIONS ACTIVE, 191 ATTACHED

E
#UPDATING
#WAITING FOR AVAILABLE COMPILE TASK
#COMPILING 8796
#ET=37.8 PT=16.0 IO=6.2
#WAITING FOR AVAILABLE TASK
#RUNNING 8807
#ET=12.4 PT=5.1 IO=9.1
```

?CONTROL

Syntax



Explanation

The ?CONTROL command designates a new control station or removes control status from a station.

CONTROL status can be granted to an attached station by another control station. This status is maintained during the current execution of CANDE; it is lost when CANDE is terminated (that is, discontinued, stopped as a result of a halt/load, and so forth).

Entering ?CONTROL by itself displays all control stations in a list.

The ?CONTROL - syntax removes control status from a specified station. When no minus sign (-) is present and a station is specified, control status is granted to that station. A station can be specified by its LSN, its DLS, or its station name.

The ?CONTROL ALL syntax indicates that all terminals have control status; this command is primarily used for CANDE testing and is not appropriate for normal usage.

A system running with the system security option set to anything other than UNSPECIFIED causes CANDE to log the execution of all network control commands.

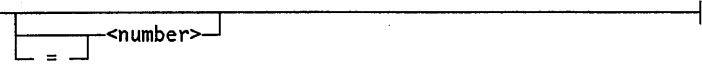
Examples

?CON M331

?CONTROL ALL

?DEPTH

Syntax

-- ? -- DEPTH 

Explanation

The operator can set the depth of the saved text queue from 0 (zero) to 20 by means of the ?DEPTH command. If no number is specified, then the value of the saved text depth is displayed; otherwise, it is changed. The saved text depth is saved in the tankfile and preserved over a halt/load. When creating a new tankfile, the default value for the saved text depth is 0 (zero).

Example

```
?DEPTH
#SAVED TEXT DEPTH = 7
```


?DISABLE

Syntax

```

— ? — DISABLE <lsn range>
                <dls>
                <station name>
    
```

Explanation

The ?DISABLE command causes the NSP to ignore input from the indicated station. A disabled station is not polled.

The station must be ATTACHED for the ?DISABLE command to be effective.

The ?DISABLE syntax is rejected with a “#STATION IN USE” message if the station is active with a user logged on or logging on or an OBJECT file open.

Note that the ?DISABLE command affects only the receiving of input from a station. A disabled station can still have an output-only remote file assigned to it.

A system running with the system security option set to anything other than UNSPECIFIED causes CANDE to log the execution of all network control commands.

Example

```

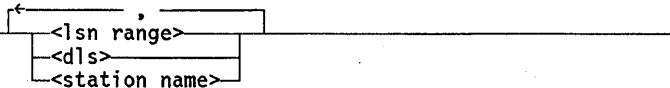
?STATUS 5
TTY3(5)=0:12:0 RDY ENAB ATT

?DISABLE 5
#

?STATUS 5
TTY3(5)=0:12:0 RDY DISABL ATT
    
```

?ENABLE

Syntax

— ? — ENABLE — 

Explanation

The ?ENABLE command causes the NSP to accept input from the indicated station. Polling of the station begins where appropriate. The frequency is set to the NDLII declared value.

The station must be READY and ATTACHED for the ?ENABLE command to be effective.

Note that the ?ENABLE command affects the receiving of input from a station. It does not have any effect on output-only remote files, which can be assigned to a station.

A system running with the system security option set to anything other than UNSPECIFIED causes CANDE to log the execution of all network control commands.

Example

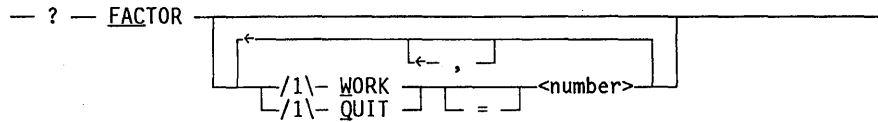
```
?STATUS 5  
TTY3(5)=0:12:0 RDY DISABL ATT
```

```
?ENABLE 5  
#
```

```
?STATUS 5  
TTY3(5)=0:12:0 RDY ENAB ATT
```

?FACTOR

Syntax



Explanation

The ?FACTOR command allows the operator to examine or dynamically change the criteria by which CANDE determines the following:

- That another GRIND stack is necessary to handle the available work (WORK FACTOR)
- That one of the GRIND stacks presently running is no longer necessary to perform the available work (QUIT FACTOR)

When the amount of work to do equals or exceeds the present capacity of the number of working GRIND stacks multiplied by the WORK FACTOR (given as a percentage), CANDE processes another GRIND stack if one is available.

When the amount of work to do falls below the capacity of the number of working GRIND stacks minus one, multiplied by the QUIT FACTOR (given as a percentage), CANDE eliminates one of the working GRIND stacks.

Once activated, GRIND stacks do not terminate unless the LOWMEMORY option is set, regardless of the value of QUIT FACTOR.

The values for the WORK and QUIT FACTORs are saved in the tankfile and preserved over CANDE termination. The default values for the WORK and QUIT FACTORs used when creating a new tankfile are 80 and 25, respectively.

Example

```
?FACTOR
#WORK = 85, QUIT = 40
```

?GRINDLIMIT

Syntax

```
-- ? -- GRINDLIMIT = <number>
```

Explanation

The ?GRINDLIMIT command allows the operator to limit the number of GRIND stacks used. This value must be between 1 and the value of MAXGRINDS. This command is immediately effective and does not require CANDE termination. The value for GRINDLIMIT is saved in the tankfile and is preserved over CANDE termination. When CANDE creates a new tankfile, the default value for GRINDLIMIT is 1. If a number is not specified, the current value of GRINDLIMIT is displayed.

Once activated, GRIND stacks do not terminate unless the LOWMEMORY option is set. Refer to the ?OP command in Section 2, "Network Control Commands" for additional information.

Example

```
?GR  
#GRINDLIMIT = 2
```

?INFO

Syntax

— ? — INFO —————|

Explanation

The ?INFO command causes the current settings of CANDE options and parameters to be displayed.

Example

```
?INFO

#A15:503 CANDE 37.143 AT OURHOST      3:28 PM FRIDAY, NOVEMBER 14, 1986
#OPTIONS SET: DUMPOK DOSWAPTO DOWAITGO DIALLOGIN ALLMSG
#OPTIONS RESET: KEEPSTA ALLLOGIN CATDEFAULT CATALOGOK SECDIALIN
  SECPSEUDO SECALL USECOMSPRIV LOWMEMORY NOCOMSCTRL
#THERE ARE NO LOGSTATIONS
#MAXSTATIONS=120; MAXTASKS=50; COMPILESPERCENT=100%
  MAXGRINDS=13; GRINDLIMIT=5; FACTORS - WORK=80, QUIT=19; SAVED
  TEXT DEPTH=10; LAISSEZFILE=1; TANKING=ASYN
#CANDE NEWSFILE IS (ERA)NEWS.
#HEADLINE:
  (7/12)GENERAL MEETING; 10AM CONFERENCE ROOM; PLANNING
#SCHEDULE LIMIT=5 NO USERLIMIT
```

If the LOGONCHECK entry point to the SECURITY SUPPORT library is enabled, the following message is displayed:

```
#WILL USE LOGONCHECK ENTRY POINT IN SECURITY SUPPORT LIBRARY
```

?LAISSEZFILE

Syntax

— ? — LAISSEZFILE <number>

Explanation

The ?LAISSEZFILE command allows a control station to regulate how remote files of programs that originate outside a session interact with remote stations in the network, as follows:

- Announced (identified) at the terminal.
- Limited to one job at a time.
 - For all stations.
 - For all stations logged on.
- Subject to OK/DENY response by logged-in user.

On systems where the CLASS security option is set to anything other than UNSPECIFIED, the LAISSEZFILE setting cannot be changed through CANDE. The SECOPT (Security Options) system command must be used instead. Refer to the *Security Administration Guide* for additional information.

A system running with the system security option set to anything other than UNSPECIFIED causes CANDE to log the execution of all network control commands.

If a number is not specified, the current setting for LAISSEZFILE is displayed. The value of <number> must be in the range 0 (zero) through 6. Meanings for LAISSEZFILE values are the following:

Value	Meaning
0	Announce; limit all stations; ask logged-on stations
1	Announce; limit logged-on stations; ask logged-on stations
2	Announce; limit all stations; do not ask
3	Announce; limit logged-on stations; do not ask
4	Do not announce; limit all stations; do not ask
5	Do not announce; limit logged-on stations; do not ask
6	Do not announce; do not limit; do not ask

Refer to the discussion about REMOTE files in Section 1, “General Information.”

Example

```
?LAISSEZFILE  
#LAISSEZFILE = 0
```

?LGSTA and ?DSLGSTA and ?LGOP

Syntax

— ? — **LGSTA** <station list> : ALL <option list>

— ? — **DSLGSTA** <station list>
ALL

— ? — **LGOP** + <station list> : <option list>
- -
ALL

<station list>

<station name>
<lsn>
<dls>

<option list>

LGATTACH
LGON
LGOFF
LGCHARGE
LGERROR
LGBOT
LGEOT
LGSECURE
LGFAULT
LGUNABLE
LGSABORT
AUTOINFO
LGSPO
LGLQSTA

Explanation

The ?LGSTA, ?DSLGSTA, and ?LGOP control commands are used to make CANDE log stations, terminate log stations, and interrogate the logging options of log stations, respectively. These control commands and options are described in the following paragraphs.

The ?LGSTA Command

The ?LGSTA command is used to make the designated stations into CANDE log stations.

?LGSTA

?LGSTA : ALL

?LGSTA : <option list>

These forms of the ?LGSTA command are valid only from a control station; they are not valid from the ODT. They cause the station from which the message originates to

be designated a CANDE log station. If the station is already a log station, the error message “# <lsn> ALREADY A LOGSTATION” is returned. If the ?LGSTA command is used, all options are reset. If the ?LGSTA : ALL command is used, the logging bits for all options specified in the option list are set. If the ?LGSTA : <option list> command is used, the logging bits for the specified option or options are set.

?LGSTA <station list>
?LGSTA <station list> : ALL
?LGSTA <station list> : <option list>

These forms of the ?LGSTA command are valid both from a control station and from the ODT. They cause the station or stations specified to be made log stations. If no such station exists or the station is already a log station, an error message is returned. If the ?LGSTA <station list> command is used, all options are reset. If the ?LGSTA : ALL command is used, the logging bits for all the options specified in the option list are set. If the ?LGSTA : <option list> command is used, the logging bits for the specified option or options are set.

The ?DSLGSTA Command

The ?DSLGSTA command causes termination of the designated station or stations as log stations.

?DSLGSTA

The ?DSLGSTA command is valid from a control station only; it is not valid from the ODT. It terminates the station from which the message originates as a log station. If the originating station is not a log station, an error message is returned.

?DSLGSTA <station list>

The ?DSLGSTA <station list> command is valid from a control station and from the ODT. It terminates the designated stations as CANDE log stations.

?DSLGSTA ALL

The ?DSLGSTA ALL command is valid from a control station and from the ODT. It terminates all CANDE log stations as log stations.

The ?LGOP Command

The ?LGOP command is used to furnish the capability of interrogating the setting or resetting of any or all of the logging options for the specified log stations. Options can be independently specified for each log station.

Network Control Commands

?LGOP
?LGOP +
?LGOP -
?LGOP : <option list>

These forms of the ?LGOP command interrogate the logging functions of the station from which the message originates. These commands must be used from a log station. None are valid from the ODT. The ?LGOP command displays the complete list of logging functions with their current values (for example, SET or RESET). The ?LGOP + and ?LGOP - commands display the list of set and reset options, respectively. The ?LGOP : <option list> command displays the current settings for the options specified in the <option list>.

?LGOP + <station list>
?LGOP - <station list>
?LGOP <station list>
?LGOP <station list> : <option list>

These forms of the ?LGOP command interrogate the logging functions of the stations specified by <station list>. These commands are valid from a control station and from the ODT. In each case, if any station specified is not a log station, an error message is displayed. The ?LGOP + <station list> and ?LGOP - <station list> commands display the list of set and reset options, respectively, for the stations specified. The ?LGOP <station list> command displays the complete list of logging functions with their current values for the stations specified. The ?LGOP <station list> : <option list> command displays the current setting of the options specified by <option list> for the stations specified.

?LGOP + <station list> : <option list>
?LGOP - <station list> : <option list>

These forms of the ?LGOP command are used to set or reset a list of options for the stations specified by <station list>. These commands are valid from a control station and from the ODT. If the specified station is not a log station, an error message is displayed. If a + is entered, the specified options are set. If a - is entered, the specified options are reset.

?LGOP + : <option list>
?LGOP - : <option list>

These forms of the ?LGOP command are used to set or reset a list of options for the station from which the command is entered. These commands are valid from a control station only; they are not valid from the ODT. If the specified station is not a log station, an error message is displayed. If a + is entered, the specified options are set. If a - is entered, the specified options are reset.

?LGOP + ALL
 ?LGOP - ALL
 ?LGOP ALL
 ?LGOP ALL : <option list>

These forms of the ?LGOP command interrogate all CANDE log stations. These commands are valid from a control station and from the ODT. If a + is entered, only the set options are displayed for all log stations. If a - is entered, only the reset options are displayed for all log stations. The ?LGOP : <option list> command causes only the specified options to be displayed.

?LGOP + ALL : <option list>
 ?LGOP - ALL : <option list>

These forms of the ?LGOP command are valid from a control station and from the ODT. If no log stations exist, an error message is displayed. The commands cause the specified options to be set (+) or reset (-) for all CANDE log stations.

The log station options and their associated events are defined in the following list:

Option	Event
LGATTACH	Station attachment
LGON	User log on
LGOFF	User log off
LGCHARGE	Chargecode change
LGERROR	Data comm error
LGBOT	Beginning of user task
LGEOT	End of user task
LGSECURE	Security violation
LGFAULT	CANDE fault
LGUNABLE	CANDE service unavailable
LGSABORT	Abnormal termination of a CANDE SCHEDULE session
AUTOINFO	Display of various CANDE options on the CANDE ODT at initialization time (refer to the ?INFO command in this section)
LGSP0	"?SS" messages addressed to the ODT
LGLOGSTA	Change of logging status for any log station

If the ?LGSTA command is used to initiate logging on a station that had been a log station when it was disconnected from CANDE, and no options are specified in the command, then log options for that station are restored to what they were previously, rather than to default values.

When designating a station as a log station and choosing the logging options, the type of terminal and system load should be considered. If the terminal is not one that is appropriate for logging functions (for example, a terminal that might be placed in local or off-line mode, such as a screen or a slow printer), and the system load and selected

Network Control Commands

options result in a large amount of log messages being directed to the station, then serious system degradation could result from a backlog of undelivered output in save memory. (Note that this is not a problem for pseudostations with a fully participating MCS that performs flow control.)

CANDE monitors the level of undelivered log messages and suspends logging for stations that exceed a limit. In addition, it discards all pending output for those stations, including output from remote files or any other sources. BREAK notification is sent to remote files. If a suspended log station is later enabled to receive output, the station is sent a warning message noting the suspension, and logging is resumed. Discarded messages are not sent again.

Installation managers are cautioned against relying on this log suspension as flow control for inappropriate terminals. The margin that CANDE assumes for unknown circumstances, and the fact that only a control station (or the ODT) can initiate logging, means that CANDE can allow a backlog of log messages that could cumulatively have a serious effect on overall system performance.

CANDE allows a maximum of 30 stations to be designated as log stations.

Only a control station can create a CANDE log station; however, the station being made a log station need not be a control station. A noncontrol CANDE log station cannot terminate itself as a log station.

The ?WHERE and ?WHO network control commands can be used to report whether a station is a control or a log station. (For further information, see the ?WHERE and ?WHO commands in this section.)

The input to the ?LGSTA, ?DSLGSTA and ?LGOP commands can specify an LSN, station name, or DLS. However, the information returned from these commands is always prefaced by a station name or station names.

Examples

For the following examples, station name T17 is the same as LSN 13; station name T12 is the same as LSN 8.

```
?LGSTA
```

```
#T17 LG OPTIONS: ==LGLOGSTA ==AUTOINFO ==LGFAULT ==LGSABORT
==LGUNABLE ==LGSP0 ==LGSECURE ==LGEOT ==LGBOT ==LGERROR
==LGCHARGE ==LGOFF ==LGON ==LGATTACH
```

```
?LGSTA
```

```
#13 ALREADY A LOG STATION
```

?LGSTA:LGON,LGOFF,LGCHARGE

#T17 LG OPTIONS: ==LGLOGSTA ==AUTOINFO ==LGFAULT ==LGSABORT
==LGUNABLE ==LGSP0 ==LGSECURE ==LGEOT ==LGBOT ==LGERROR
+=LGCHARGE +=LGOFF +=LGON ==LGATTACH

?LGSTA T17,8

#T17 LG OPTIONS: ==LGLOGSTA ==AUTOINFO ==LGFAULT ==LGSABORT
==LGUNABLE ==LGSP0 ==LGSECURE ==LGEOT ==LGBOT ==LGERROR
+=LGCHARGE +=LGOFF +=LGON ==LGATTACH
#T12 LG OPTIONS: ==LGLOGSTA ==AUTOINFO ==LGFAULT ==LGSABORT
==LGUNABLE ==LGSP0 ==LGSECURE ==LGEOT ==LGBOT ==LGERROR
==LGCHARGE ==LGOFF ==LGON ==LGATTACH

?LGSTA T17:LGERROR,LGFAULT

#T17 LG OPTIONS: ==LGLOGSTA ==AUTOINFO +=LGFAULT ==LGSABORT
==LGUNABLE ==LGSP0 ==LGSECURE ==LGEOT ==LGBOT +=LGERROR
+=LGCHARGE +=LGOFF +=LGON ==LGATTACH

?LGSTA:ALL

#T17 LG OPTIONS: +=LGLOGSTA +=AUTOINFO +=LGFAULT +=LGSABORT
+=LGUNABLE +=LGSP0 +=LGSECURE +=LGEOT +=LGBOT +=LGERROR
+=LGCHARGE

?DSLSTA 8,13

#T12(8) DISCONTINUED AS LOGSTATION
#T17(13) DISCONTINUED AS LOGSTATION

?DSLSTA ALL

#ALL LOGSTATIONS DISCONTINUED

?DSLSTA

#T17(13) DISCONTINUED AS LOGSTATION.

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?LGOP

#T17 LG OPTIONS: +=LGLOGSTA +=AUTOINFO +=LGFAULT +=LGSABORT
+=LGUNABLE +=LGSP0 +=LGSECURE +=LGEOT +=LGBOT +=LGERROR
+=LGCHARGE +=LGOFF +=LGON +=LGATTACH

?LGOP:LGFAULT

#T17 LG OPTIONS: +=LGFAULT

?LGOP -

#T17 LG OPTIONS RESET: [NONE]

?LGOP +

#T17 LG OPTIONS SET: LGLOGSTA AUTOINFO LGFAULT LGSABORT
LGUNABLE LGSP0 LGSECURE LGEOT LGBOT LGERROR LGCHARGE
LGOFF LGON LGATTACH

?LGOP-:LGBOT

#T17 LG OPTIONS RESET: LGBOT

?LGOP

#T17 LG OPTIONS: +=LGLOGSTA +=AUTOINFO +=LGFAULT +=LGSABORT
+=LGUNABLE +=LGSP0 +=LGSECURE +=LGEOT -=LGBOT +=LGERROR
+=LGCHARGE +=LGOFF +=LGON +=LGATTACH

?LGOP+:LGBOT

#T17 LG OPTIONS SET:LGBOT

?LGOP T12

#T12 LG OPTIONS: -=LGLOGSTA +=AUTOINFO -=LGFAULT +=LGSABORT
-=LGUNABLE +=LGSP0 -=LGSECURE +=LGEOT +=LGBOT -=LGERROR
-=LGCHARGE -=LGOFF -=LGON +=LGATTACH

?LGOP T17:LGON

#T17 LG OPTIONS: -=LGON

?LGOP-T12

#T12 LG OPTIONS RESET: LGLOGSTA LGFAULT LGUNABLE LGSECURE
LGERROR LGCHARGE LGOFF LGON

?LGOP+T12

#T12 LG OPTIONS SET: AUTOINFO LGSABORT LGSPO LGEOT LGBOT
LGATTACH

?LGOP T17

#T17 LG OPTIONS: +=LGLOGSTA +=AUTOINFO -=LGFAULT +=LGSABORT
-=LGUNABLE +=LGSPO -=LGSECURE +=LGEOT +=LGBOT -=LGERROR
-=LGCHARGE -=LGOFF -=LGON +=LGATTACH

?LGOP-T17:LGSP0

#T17 LG OPTIONS RESET: LGSP0

?LGOP T17

#T17 LG OPTIONS: +=LGLOGSTA +=AUTOINFO -=LGFAULT +=LGSABORT
-=LGUNABLE -=LGSPO -=LGSECURE +=LGEOT +=LGBOT -=LGERROR
-=LGCHARGE -=LGOFF -=LGON +=LGATTACH

?LGOP+T17: LGSP0

#T17 LG OPTIONS SET: LGSP0

?LGOP T17

#T17 LG OPTIONS: +=LGLOGSTA +=AUTOINFO -=LGFAULT +=LGSABORT
-=LGUNABLE +=LGSPO -=LGSECURE +=LGEOT +=LGBOT -=LGERROR

Network Control Commands

--LGCHARGE --LGOFF --LGON +=LGATTACH

?LGOP ALL

#T17 LG OPTIONS: +=LGLOGSTA +=AUTOINFO --LGFAULT +=LGSABORT
--LGUNABLE +=LGSP0 --LGSECURE +=LGEOT +=LGBOT --LGERROR
--LGCHARGE --LGOFF --LGON +=LGATTACH
#T12 LG OPTIONS: --LGLOGSTA +=AUTOINFO --LGFAULT +=LGSABORT
--LGUNABLE +=LGSP0 --LGSECURE +=LGEOT +=LGBOT --LGERROR
--LGCHARGE --LGOFF --LGON +=LGATTACH

?LGOP - ALL

#T17 LG OPTIONS RESET: LGFAULT LGUNABLE LGSECURE LGERROR
LGCHARGE LGOFF LGON
#T12 LG OPTIONS RESET: LGLOGSTA LGFAULT LGUNABLE LGSECURE
LGERROR LGCHARGE LGOFF LGON

?LGOP-ALL:AUTOINFO,LGSP0

#T17 LG OPTIONS RESET: AUTOINFO LGSP0
#T12 LG OPTIONS RESET: AUTOINFO LGSP0

?LGOP ALL

#T17 LG OPTIONS: +=LGLOGSTA --AUTOINFO --LGFAULT +=LGSABORT
--LGUNABLE --LGSP0 --LGSECURE --LGEOT --LGBOT --LGERROR
--LGCHARGE --LGOFF --LGON +=LGATTACH
#T12 LG OPTIONS: --LGLOGSTA --AUTOINFO --LGFAULT +=LGSABORT
=LGUNABLE --LGSP0 --LGSECURE --LGEOT --LGBOT --LGERROR
--LGCHARGE --LGOFF --LGON +=LGATTACH

?MAXGRINDS

Syntax

```
— ? — MAXGRINDS [ = ] <number>
```

Explanation

The ?MAXGRINDS command allows the operator to set the maximum number of GRIND stacks to be used the next time CANDE is initialized with the current tankfile. The minimum value for MAXGRINDS is 1 and the maximum is 13. Changes made to the MAXGRINDS value are not effective until CANDE is terminated and reinitialized.

The default value for MAXGRINDS when CANDE creates a new tankfile is 1. If a number is not specified, CANDE displays the current value of MAXGRINDS.

For more information about GRIND stacks, refer to the ?GRINDLIMIT command in Section 2, “Network Control Commands.”

Example

```
?MAXG = 4  
#MAXGRINDS = 5, NEW VALUE = 4
```

?MAXSTATIONS

Syntax

— ? — MAXSTATIONS

Explanation

The ?MAXSTATIONS command allows the maximum number of stations that CANDE simultaneously supports to be changed dynamically. If a number is not specified, CANDE displays the current value of MAXSTATIONS.

The new value of MAXSTATIONS is saved in the CANDE tankfile and becomes the value for MAXSTATIONS the next time CANDE is initialized with that tankfile.

When the tankfile is lost or CANDE is moved to a different disk family, CANDE initializes with 25 as the value for MAXSTATIONS. If a different value is desired, the operator must change MAXSTATIONS to the desired value and enter the command ?QUIT CANDE.

MAXSTATIONS can have a value between 1 and 255, inclusive.

Example

```
?MAXSTATIONS = 30  
#MAXSTATIONS = 25, NEW VALUE = 30
```

?MAXTASKS

Syntax

```
— ? — MAXTASKS [ = ] <number>
```

Explanation

The maximum number of tasks that can occur simultaneously is specified as MAXTASKS. The value of this variable is controlled by the ?MAXTASKS command.

If a number is not specified, CANDE displays the current value of MAXTASKS. If a number is specified, CANDE replaces the current value of MAXTASKS with the specified number if that number is an allowed value for MAXTASKS. The default value of MAXTASKS is the maximum number of stations CANDE can service (MAXSTATIONS). MAXTASKS cannot exceed MAXSTATIONS.

If CANDE is asked to process a task, and the number of active CANDE tasks is presently greater than or equal to MAXTASKS, the message “#WAITING FOR AVAILABLE TASK” is displayed. CANDE processes the task when a task is available. The value for MAXTASKS is saved in the tankfile and is preserved over a halt/load. The default value when creating a new tankfile is 25. (This is also the default for MAXSTATIONS when a new tankfile is created.)

Example

```
?MAXT  
#MAXTASKS = 25
```

?NEWS

Syntax

```
-- ? -- NEWS _____  
|_____|  
|_____| <file title> |  
|_____|
```

Explanation

The ?NEWS command is used to enable, disable, or interrogate the NEWS facility.

The ?NEWS command causes CANDE to reaccess a previously named news file and read its headline. This command can be used to make CANDE update the news file headline image if the news file has been altered or replaced by another file of the same name. If no news file title has been specified or if the news file is not available, an error message is generated and the NEWS feature is turned off.

The ?NEWS - command causes the NEWS feature to be turned off and the news file title to become undefined.

The ?NEWS = <file title> and ?NEWS <file title> commands indicate that a news file exists and has the specified file title. CANDE finds the file and reads its first record as the headline. CANDE retains both the file name and the headline in its tankfile; the file is not accessed again except to service user NEWS commands. If the named news file is not available, an error message is generated and the NEWS feature is turned off. The file title can take any valid form; an asterisk (*) or a usercode prefix and an ON <family> suffix are optional. If the ?NEWS command is entered through a station that is logged on, the usercode and any family substitution specification are used in locating the file. The news file must have security attributes of PUBLIC I/O or PUBLIC IN.

The news file can be of any type recognized by CANDE. SEQDATA is the most appropriate if 72-character terminals, such as teletypes, are present on the network, since the full text of each line can be transmitted without folding. On networks that have only wider terminals, a wider text field might be desired; JOBSYMBOL could be used.

If the NEWS feature is active and the headline is not entirely blank, the headline is transmitted to each user logging on to the system. No identification or embellishment is provided by CANDE; the headline in the news file should be self-contained. The mode of a news file must be EBCDIC.

The NEWS feature can be used in any fashion found convenient; one suggestion follows. The headline should show some identification, the date and time at which the news file was last updated, and a brief indication of the most important item. The remainder of the file should contain the text of the message. Earlier messages (with their headlines) can be retained in the file as long as they remain useful; they should appear in order of increasing age, so that a user can break the listing when all the messages that are new have been read.

Example

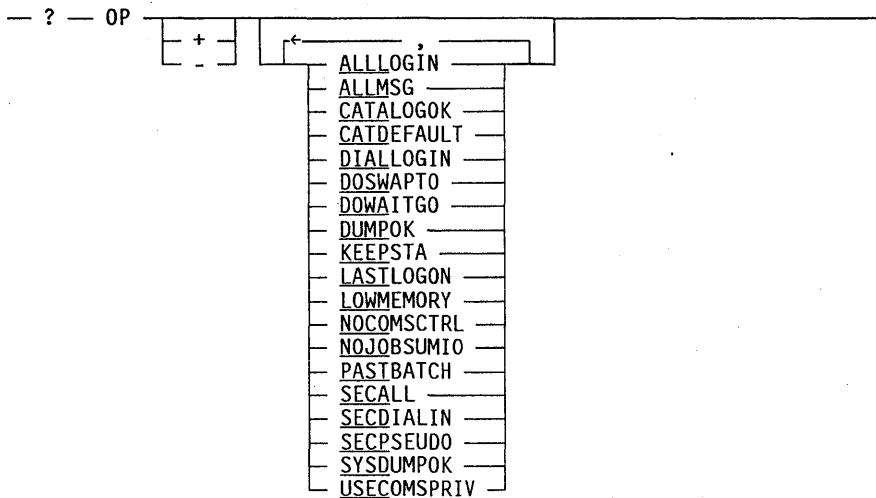
```
MAKE NEWS
#WORKFILE NEWS: SEQ
 100 CANDE NEWS (WED 9/17 1430): NEW HOURS NEXT WEEK
 200 EFFECTIVE MONDAY SEPTEMBER 22, 1975 THE TIMESHARING SERVICE
 300 WILL BE AVAILABLE BETWEEN ...
....
```

```
SAVE
#WORKSOURCE NEWS SAVED

?NEWS=(JER)NEWS ON SYSPACK
#CANDE NEWS FILE IS (JER)NEWS ON SYSPACK.
#HEADLINE:
  CANDE NEWS (WED 9/17 1430): NEW HOURS NEXT WEEK
```

?OP

Syntax



Explanation

The ?OP command allows interrogation, setting, or resetting of any or all CANDE options.

- ?OP
- ?OP +
- ?OP -

These forms of the ?OP command are valid from a control station and from the ODT. The ?OP command displays a complete list of the CANDE options with their current settings. The ?OP + and ?OP - commands display the current list of set and reset options, respectively.

- ?OP + <option list>
- ?OP - <option list>

These forms of the ?OP command are valid from a control station and from the ODT. The ?OP + <option list> and ?OP - <option list> commands set or reset, respectively, the options specified in the option list.

On systems where the CLASS security option is set to anything other than UNSPECIFIED, the security options cannot be changed through CANDE. These options can be set only by the SECOPT (Security Options) system command. The options affected are ALLLOGIN, DIALLOGIN, SECALL, SECIALIN, SECPSEUDO; and USECOMSPRIV. Refer to the *Security Administration Guide* for additional information on the SECOPT command.

A system running with the system security option set to anything other than UNSPECIFIED causes CANDE to log the execution of all network control commands.

Table 2-2 lists and describes all of the CANDE options.

Table 2-2. CANDE Options

Option	Description
ALLLOGIN	When this option is set, foreign remote files are allowed only on stations that are logged on.
ALLMSG	When this option is set, a user can receive messages from his or her batch job even if he or she is not on the same LSN that started the job. However, the user only receives messages that he or she has specifically requested through job query commands (for example, ?J and ?MSG), and then only from tasks running under the usercode on which he or she is currently logged. The user will not receive messages spontaneously generated by jobs (for example, DISPLAYS) without requesting them in this manner.
CATALOGOK	When this option is set, files that are created can be cataloged if desired.
CATDEFAULT	This option signifies that saved files are cataloged.
DIALLOGIN	When this option is set, foreign remote files are not allowed on dial-in stations that are not currently logged on.
DOSWAPTO	This internal debugging option, which should not be set during normal operation, is defined only when CANDE is compiled with the \$DEBUG option.
DOWAITGO	This internal debugging option, which should not be set during normal operation, is defined only when CANDE is compiled with the \$DEBUG option.
DUMPOK	When this option is set, CANDE causes a program dump on an internal fault.
KEEPSTA	When this option is set, a station released to CANDE stays with CANDE until a halt/load or until it is released.
LASTLOGON	When this option is set, CANDE enables the display of information from the last log-on session during the log-on sequence.
LOWMEMORY	When this option is set, CANDE marks critical arrays as overlayable and allows GRIND stacks to terminate. When this option is reset, CANDE marks critical arrays as nonoverlayable and prevents GRIND stacks from terminating, once activated. This option takes effect when set or reset. It is reset by default. The effect of having the option reset is to increase CANDE throughput by utilizing additional system memory.

continued

Table 2-2. CANDE Options (cont.)

Option	Description
NOCOMSCTRL	<p>When this option is set, a station initiated from COMS does not inherit COMS-specified CONTROL capability in CANDE.</p> <p>A station can be made CONTROL capable in CANDE by using the NDII option SPO, the CANDE command CONTROL, or the USERDATAFILE option CANDECONTROL. Otherwise, if a station using the CANDE window of COMS is COMS CONTROL capable, it is also CANDE CONTROL capable, unless the NOCOMSCTRL option is set.</p> <p>This option has no effect on systems where the SECURITY option is set to anything other than UNSPECIFIED. On these systems, CANDE runs as if the option were set.</p> <p>This option is reset by default.</p>
NOJOBSUMIO	<p>When this option is set, job log entries for SYSTEM/CANDE are not written to its job log. However, they are still written to the system log. This option can be set and reset as desired while CANDE is running. Setting this option can result in performance benefits for CANDE.</p> <p>This option affects only the job summary for the CANDE job itself; user summaries are not affected.</p>
PASTBATCH	<p>When this option is set, CANDE enables the display of information from the last batch during the log-on sequence.</p>
SECALL	<p>When this option is set, no user logged on to CANDE is recognized as a privileged user unless all of the following conditions are met:</p> <ul style="list-style-type: none"> • The user is using a COMS window. • The USECOMSPRIV option is set. • The user's COMS station is configured in COMS as having privileged access. • The user's usercode is marked as privileged in the SYSTEM/USERDATAFILE.
SECIALIN	<p>When this option is set, users of dial-in stations do not have privileged user status, even if the user logs on with a usercode marked as privileged in the SYSTEM/USERDATAFILE.</p>

continued

Table 2-2. CANDE Options (cont.)

Option	Description
SECPSEUDO	When this option is set, a user of a pseudostation does not have privileged user status unless all of the following conditions are met: <ul style="list-style-type: none"> • The user is using a COMS window. • The USECOMSPRIV option is set. • The user's COMS station is configured in COMS as having privileged access. • The user's usercode is marked as privileged in the SYSTEM/USERDATAFILE.
SYSDUMPOK	This internal debugging option, which should not be set during normal operation, is defined only when CANDE is compiled with the \$DEBUG option.
USECOMSPRIV	When this option is set, CANDE uses the COMS station configuration setting to determine whether or not users of a COMS window to CANDE have privileged user status. This overrides the SECPSEUDO and SECALL option settings.

Examples

```
?OP
#OPTIONS: +=DUMPOK +=DOSWAPTO +=DOWAITGO
--KEEPSTA --DIALLOGIN --ALLOGIN --CATDEFAULT
```

```
?OP+
#OPTIONS SET: DUMPOK DOSWAPTO DOWAITGO
```

```
?OP-
#OPTIONS RESET: KEEPSTA DIALLOGIN ALLOGIN CATDEFAULT
```

```
?OP+KEEPSTA
#OPTIONS SET: KEEPSTA
```

```
?OP+
#OPTIONS SET: DUMPOK DOSWAPTO DOWAITGO KEEPSTA
```

```
?OP-DUMPOK
#OPTIONS RESET: DUMPOK
```

Network Control Commands

?OP-

#OPTIONS RESET: DIALLOGIN ALLOGIN CATDEFAULT DUMPOK

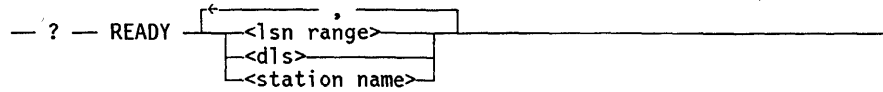
?OP

#OPTIONS: -=DUMPOK +=DOSWAPTO +=DOWAITGO

+=KEEPSTA -=DIALLOGIN -=ALLOGIN -=CATDEFAULT

?READY

Syntax



Explanation

The ?READY command is used to reinitialize stations whose NDII algorithm terminated with an error, causing the station, and possibly the line, to be made NOT READY. The ?READY command also restores a station that has been saved.

A system running with the system security option set to anything other than UNSPECIFIED causes CANDE to log the execution of all network control commands.

Example

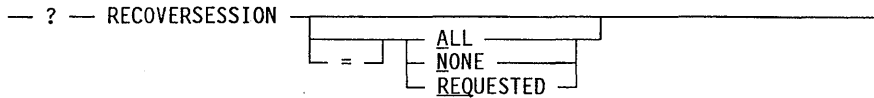
```
?STATUS 5
TTY3(5)=0:12:0 UNRDY ENAB ATT
```

```
?READY 5
#
```

```
?STATUS 5
TTY3(5)=0:12:0 RDY ENAB ATT
```

?RECOVERSESSION

Syntax



Explanation

The ?RECOVERSESSION command is used by a control station to control whether or not a recovery file will be automatically recovered when a user successfully logs on.

The ?RECOVERSESSION ALL command initiates the automatic recovery of recovery files for all sessions. After searching for available recovery files, CANDE recovers the most recent recovery file for the station name queuing the CANDE command RECOVER <recovery number>. CANDE displays the following message when the RECOVER command is performed:

```
#AUTORECOVER <recovery number>
```

As part of the recovery process, the last command from the previous session is restored as the most recent command for this new session. If the command is a task-type command, such as RUN, UTILITY, or COMPILE, and was active but not completed when the recovery file was created, then that command is repeated. That is, the interrupted task-type command is automatically queued for reprocessing. An automatic recovery has the same result as that of a user entering RECOVER <recovery number> and then the last command from the previous session.

The ?RECOVERSESSION NONE command disables the automatic recovery of the most recent recovery file. Existing recovery files are listed for the user.

The ?RECOVERSESSION REQUESTED command recovers the most recent recovery file for the station name when the USERDATAFILE file attribute AUTORECOVER is set to TRUE. A recovery file is recovered in the same manner as by the ?RECOVERSESSION ALL command.

If the ?RECOVERSESSION REQUESTED command is used when the USERDATAFILE file attribute AUTORECOVER is set to FALSE, then the recovery file is not automatically retrieved, but CANDE does display the name of the recovery file.

The default option is REQUESTED.

Example

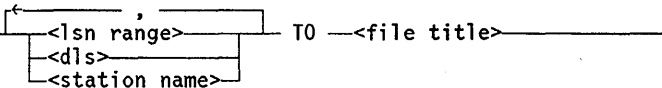
```
?RECOVERSESSION  
#RECOVERSESSION = REQUESTED
```

```
?RECOVERSESSION = NONE  
#RECOVERSESSION = NONE
```

```
?RECOVERSESSION ALL  
#RECOVERSESSION = ALL
```

?RELEASE

Syntax

— ? — RELEASE —  TO —<file title> —

Explanation

The ?RELEASE command causes control of a station to be passed to another MCS, which is designated by <file title>. The MCS does not have to be running before issuance of this instruction but must be present on disk, and it must not have previously terminated abnormally. CANDE activity cannot continue on the station following completion of this command until the station is passed back to CANDE for control.

The ?RELEASE command is rejected with a “#STATION IN USE” message if the station is active and a user is logged on or is logging on, or an OBJECT file is open.

A system running with the system security option set to anything other than UNSPECIFIED causes CANDE to log the execution of all network control commands.

Examples

```
?STA 5
TTY3(5)=0:12:0 RDY ENAB ATT

?RELEASE 5 TO SYSTEM/DIAGNOSTICMCS ON PACK
#

?STA 5
TTY3(5)=0:12:0 RDY ENAB ATT[SYSTEM/DIAGNOSTICMCS ON PACK]
```

?SAVE

Syntax

```

-- ? -- SAVE --> [ <lsn range> ]
                  [ <station name> ]
                  [ <dls> ]

```

Explanation

The ?SAVE command causes the indicated station to be made NOT READY. All inputs from the station are ignored; polling ceases for a polled station.

The ?SAVE command can be entered at any time to make the station NOT READY. However, if the station is active with a user logged on or logging on, or an OBJECT file is open, CANDE responds with a “#STATION IN USE” message (as a warning) and does not abort the session or OBJECT file at the affected stations. A ?READY command then causes the session or file activity to be resumed from the point of interruption. If the station is inactive, the ?SAVE command causes CANDE to record the station as unusable.

A system running with the system security option set to anything other than UNSPECIFIED causes CANDE to log the execution of all network control commands.

Example

```

?STATUS 5
TTY3(5)=0:12:0 RDY ENAB ATT

?SAVE 5
#

?STA 5
TTY3(5)=0:12:0 UNRDY ENAB ATT

```


The FIND syntax causes CANDE to search for any schedule input files and enter them into the schedule. This function is performed automatically when the schedule facility is initialized; it can be performed manually if schedule files have been entered by library maintenance.

Caution

Copying of old schedule input files might cause overwriting of new files with the same schedule number.

If <user limit> is specified, it must be a nonzero, unsigned integer. It can be larger than <limit>; however, if it is larger than the maximum number of schedule stations that CANDE can service, CANDE lowers the <user limit> accordingly. Specifying a USERLIMIT other than NONE prevents CANDE from starting a schedule session for any user who already has <user limit> or more schedule sessions currently active. Schedule sessions in excess of the <user limit> remain scheduled until a current session for that user finishes or until the operator raises the value of USERLIMIT.

When USERLIMIT is set to NONE, CANDE starts schedule sessions in the order scheduled without regard to the number of schedule sessions already running for any user. (This procedure is the manner in which schedule sessions were started prior to the Mark 3.0 release of CANDE.)

The value of USERLIMIT is saved in the CANDE tankfile and preserved over a halt/load. NONE is the default setting for USERLIMIT when creating a new tankfile or using a tankfile created by a pre-Mark 3.0 CANDE.

The ?WHERE network control command returns the same information for schedule sessions as for interactive sessions.

The ?STATUS <lsn> control command returns relevant data about schedule stations; the schedule stations have aliases, such as SCHED#002. (For further information, refer to the ?STATUS control command in the *CANDE Operations Reference Manual*.)

Any other station-oriented control command is rejected if it specifies the LSN of a schedule station.

Schedule sessions generate the same messages on a CANDE log station that an interactive session generates: LOGOFF, BOT, EOT, and so forth.

The ?QUIT and ?ABORT network control commands terminate all schedule sessions as well as all interactive sessions.

Termination of an NSP causes the termination of any active schedule sessions as well as all interactive sessions. (CANDE cannot continue processing because it is no longer marked as an MCS.)

Network Control Commands

Schedule input files reside on the same family as the CANDE CODE file and tankfile. Their names are generated by appending the MCS name and the < schednum > to *SCHEDULE, for example,

```
*SCHEDULE/SYSTEM/CANDE/00031 ON DISK.
```

The < schednum > assignment starts at 1 whenever CANDE is initiated with no schedule input files present, or if it exceeds 65,535. No new input file gets the same < schednum > as an existing file on the CANDE family.

SYSTEM/CANDE is released with the capability to handle up to 10 schedule stations at a time. This limit can be changed by recompilation of CANDE.

The MCP reserves a certain number of LSNs beyond those established in the DATACOMINFO file for schedule stations. The default number is 10. Any MCS, such as SYSTEM/CANDE, can request that a schedule station be assigned to it; the requests are honored as long as schedule stations are available. The total number of schedule stations available can be changed by recompiling the MCP. The MCS can release schedule stations to the MCP, which returns them to the available pool.

Examples

```
?SCHEDULE
#SCHEDULE LIMIT=5 NO USERLIMIT

?SCH USERLIMIT = 1
#USERLIMIT=1

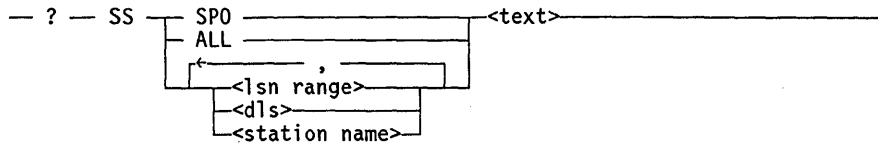
?SCH
#SCHEDULE LIMIT=5 USERLIMIT=1

?SCH
#SCHEDULE LIMIT=5 USERLIMIT=1 ACTIVE=3 READY=3

?SCH ALL
#00054 SN=3884 USERA
#00060 SN=4217 USERB
#00059 SN=4197 USERC
#00055 WAITING USERA
#00056 WAITING USERA
#00057 WAITING USERA
#SCHEDULE LIMIT=5 USERLIMIT=1 ACTIVE=3 READY=3
```

?SS

Syntax



Explanation

The ?SS command provides the capability for transmitting a message to a designated station or to all active attached stations (by means of the option ALL).

The message received as the result of the ?SS command is

```
#<time> FROM <usercode> ON <lsn>:<text>
```

The <lsn> syntax identifies the sending station. Messages from the ODT (sent by means of the SM system command) are identified by SPO rather than <lsn>. Messages from the MCP (such as automatic power-off warnings) are identified by MCP rather than <lsn>.

All messages originating from a log station say "FROM <user> ON <lsn>", exactly like messages from all other stations. If a message is sent to a log station, the <lsn> of that station must be specified. Log stations can receive messages sent to the SPO when LGSPO (an option of the ?LGSTA and ?LGOP CANDE commands) is set.

If the destination <lsn> is 1, then the message goes to the system ODT by means of a DISPLAY action.

If the ?SS ALL option is specified, a system running with the system security option set to anything other than UNSPECIFIED causes CANDE to log the execution of all network control commands.

Examples

```
?SS 3:5:2 HI
```

```
?SS 5 PLEASE LOG OFF
```

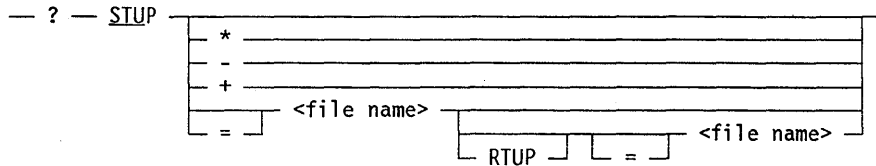
```
?SS ALL 5 MINS LEFT TO USE CANDE
```

The output at a receiver's terminal of the previous example follows. In this message, OPS is a usercode and 252 is an LSN.

```
#14:23 FROM OPS ON 252: 5 MINS LEFT TO USE CANDE
```

?STUP

Syntax



Explanation

The ?STUP command displays the current state of the startup facility. If the startup facility is enabled, it shows the current startup directory. When this command is entered from a control station or the ODT, it optionally changes the state of the startup facility or startup file name.

The ?STUP * command resets the startup facility to its default state, which is enabled, with CANDE/STARTUP as the startup file name and CANDE/STARTUP/RESTART as the restart file name.

The ?STUP - command disables the startup facility.

The ?STUP + command enables the startup facility with the previous value of the startup file name.

The ?STUP <file name> command enables the startup facility and changes the startup file name to the specified file name and the restart file name to <startup file name>/RESTART.

The ?STUP <file name> RTUP <file name> command enables the startup facility and sets the startup file name to the specified file name and the restart file name to the specified file name.

If CANDE discovers a recovery file after a user has successfully logged on, CANDE processes the file using the restart file name instead of the startup file name. However, if the startup facility is not enabled, then the restart file is not processed.

Note that if the specified file name contains a prefix (* or usercode) or a family (ON <pack>), then CANDE searches for startup files under the supplied prefix or on the specified family. For example, if the startup file name is set to CANDE STARTUP ON SYSPK, then all startup files must reside on SYSPK. If the startup file name is set to *THE/STARTUP ON PACK, then all users must use that file.

If the startup file name does not contain either a prefix or a family (as in the default value), all users have the option of using their own files.

The startup file name must be a valid file title. Examples of invalid startup file names follow:

CANDE/STARTUP=

CANDE/STARTUP ON MYPACK OTHERWISE YOURPACK

(XYZ)=

A system running with the system security option set to anything other than UNSPECIFIED causes CANDE to log the execution of all network control commands.

For additional information about startup files, refer to both the "User Identification and Logging On" discussion and the DO command discussion in the *CANDE Operations Reference Manual*.

Examples

?STUP

#STARTUP NAME: CANDE/STARTUP; RESTART NAME: CANDE/STARTUP/RESTART

?STUP -

#STARTUP FILES WILL NOT BE DONE AT LOGIN

?STUP = DO/SESSIONSTARTER

#STARTUP NAME: DO/SESSIONSTARTER; RESTART NAME: DO/SESSIONSTARTER/
RESTART

?STUP (FORCED)STARTUP/FILE ON PAYABLES

#WARNING: SPECIFYING A PREFIX PREVENTS FINDING USER'S
STARTUP FILES

#WARNING: SPECIFYING A FAMILY PREVENTS FINDING STARTUP
FILES ON OTHER FAMILIES

#STARTUP NAME: (FORCED)STARTUP/FILE ON PAYABLES; RESTART NAME:
(FORCED)STARTUP/FILE/RESTART ON PAYABLES

?STUP DO/SESSIONSTARTER DO/SESSIONRESTARTER

#STARTUP NAME: DO/SESSIONSTARTER; RESTART NAME: DO/SESSIONRESTARTER

?STUP *

#STARTUP NAME: CANDE/STARTUP; RESTART NAME: CANDE/STARTUP/RESTART

?SUBTRACT

Syntax

```
-- ? -- SUBTRACT [ <lsn range> [ <dls> [ <station name> ] ] ]
```

Explanation

The ?SUBTRACT command provides a user with the ability to remove a station or group of stations from a line. The station is left NOT READY.

A system running with the system security option set to anything other than UNSPECIFIED causes CANDE to log the execution of all network control commands.

Example

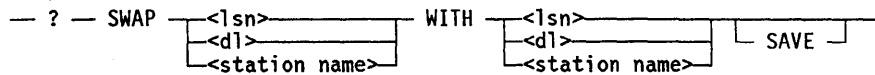
```
?STATUS SHERRI
SHERRI(16)=0:10:1 RDY ENAB ATT

?SUBTRACT SHERRI
#RECONFIGURATION SCHEDULED
#MOVE LINE OK.

?STATUS SHERRI
SHERRI(16)NOLINE UNRDY ENAB ATT
```

?SWAP

Syntax



Explanation

The ?SWAP command allows two lines to be logically swapped.

Even though the <lsn> and <station name> forms are valid, the line to which the station belongs is being swapped and not the station. If a <station name> is specified and more than one station is on the line, all stations are swapped. The SAVE option causes the lines to be left NOT READY after completion of the SWAP.

A system running with the system security option set to anything other than UNSPECIFIED causes CANDE to log the execution of all network control commands.

Example

```

?STATUS 4,5
COMPUTER/ROOM(4)=0:11:0 RDY ENAB ATT
TTY3(5)=0:12:0 RDY ENAB ATT

```

```

?SWAP 4 WITH 5
#RECONFIGURATION SCHEDULED
#LINE SWAP OK.

```

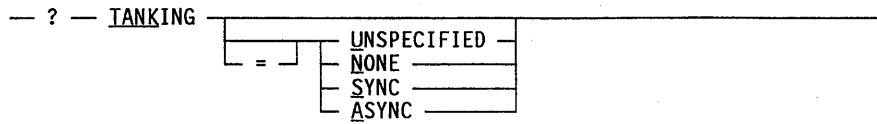
```

?STATUS 4,5
COMPUTER/ROOM(4)=0:12:0 RDY ENAB ATT
TTY3(5)=0:11:0 RDY ENAB ATT

```

?TANKING

Syntax



Explanation

The TANKING attribute controls whether a tankfile is created for a given remote file and the manner in which it is created. Refer to the *A Series File Attributes Programming Reference Manual* for a description of the TANKING file attribute.

For REMOTE files with a TANKING attribute value of UNSPECIFIED, CANDE can assign a value for the TANKING attribute. This command allows the installation to specify which value CANDE assigns by default for the TANKING attribute.

TANKING Option	Function
UNSPECIFIED	No value is assigned to the attribute.
NONE	No tanking is done.
SYNC	All tanked output must be sent before closing the file.
ASYNC	All tanked output need not be sent before closing the file.

Example

```
?TANKING
#TANKING = NONE
```


?TRANSFER

Syntax

```

— ? — TRANSFER —<number1> , — : —<number2> — SAVE —

```

Explanation

This command causes the CANDE MCS to attempt to transfer control of any or all of the LSPs currently being controlled by an NSP. Control of an LSP is transferred to one of the NSPs in the <LSP alternates> definition declared for that LSP in the NDLII source. (Refer to the *NDLII Reference Manual* for a definition of <LSP alternates>.) The <number2> construct is the relative number of the LSP on that NSP. If <number2> is omitted, CANDE attempts to transfer all of the LSPs controlled by the designated NSP; otherwise, only the specified LSP is transferred. In either case, transfer of an individual LSP will not succeed if an <LSP alternates> definition does not exist or if none of the NSPs in the <LSP alternates> definition has a path to the LSP.

The SAVE option causes lines on the transferred cluster or LSP to be left NOT READY. The default (when SAVE is omitted) is to leave the lines READY after reconfiguration is completed.

A system running with the system security option set to anything other than UNSPECIFIED causes CANDE to log the execution of all network control commands.

Examples

```
?TRAN 3:2, 3:3, 2
```

```
?TRANSFER 7
```

```
?TRAN 3:Ø SAVE
```

?WHERE

Syntax

— ? — WHERE —————|

Explanation

The ?WHERE command provides information about all stations currently logged on to CANDE. The general form of the information provided in response to this command is as follows:

```
C L <session #> <station activity> + <usercode> ON <station name> <lsn>
      >n
      <n
      <command name>
      <mix number>
```

As shown in this command format, information about one or more of the following can be listed in the position after the session number:

- The station activity
- The number of minutes the station was inactive (> n)
- The number of minutes the station was busy last (< n)
- The name of the processing CANDE command
- The mix number

Item	Description
C	Indicates that the station is a control station.
L	Indicates that the station is a log station.
<session #>	The session number for a logged-on station. If the station has not yet logged on, there is no session number.
<station activity>	The type of activity at the station. I/O indicates that the station is assigned to a REMOTE file of a job other than that session's; this situation might arise whether or not the station is logged on. LOGON indicates that the station is in the log-on sequence but is not yet logged on.
>n	It has been more than n minutes since the station was busy. (Because the timing facility is limited to 15 minutes, n is less than or equal to 14.)
<n	It has been less than n minutes since the station was busy (where n is less than or equal to 15).
<command name>	The name of a CANDE command the station is processing, or the word BUSY (also indicating a CANDE command is being processed).
<mix number>	The mix number of a CANDE-processed task.
+	Indicates that workfile changes for that station have been entered but are not yet recorded in the tankfile.

continued

continued

Item	Description
<usercode>	The usercode of the station.
<station name>	The station name.
<lsn>	The LSN of the station, in parentheses.

A system running with the system security option set to anything other than UNSPECIFIED causes CANDE to log the execution of all network control commands.

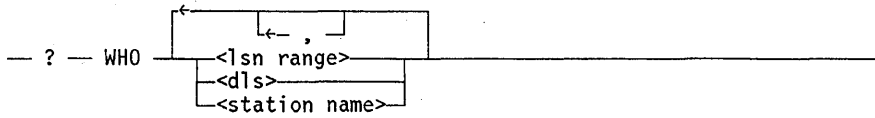
Example

?WHERE

```
1234 <1      AX41J ON TTY7(2)
1247 1406    PAYROLL ON TA123/CANDE/1 (513)
C L 1308 LIST PAYABLE ON TB789/CANDE/3 (646)
.... LOGON ON CD143/CANDE/1 (12)
1193 I/O    GL ON CD145/CANDE/5 (519)
C 1168 >14  GL ON CD178/CANDE/4 (19)
4732 <4     PAYABLE ON TA342/CANDE/3 (323)
```

?WHO

Syntax



Explanation

The ?WHO command allows an operator to easily determine the user of a particular station. If the station being queried is in use, the information returned is in the same format as returned for a ?WHERE network control command. If that station is not active, a message to that effect is returned. The ?WHO command is valid only from a control station or from the ODT.

A system running with the system security option set to anything other than UNSPECIFIED causes CANDE to log the execution of all network control commands.

Example

```
?WHO 15, 100  
#15 NOT ON  
1998:LIST JONES ON TTY23(100)
```

Section 3

Operational Characteristics

To efficiently utilize CANDE, an installation manager must understand the effect and response of CANDE in the system operating environment and the system and operational functions required by CANDE. These features and requirements are presented in this section.

Organization

SYSTEM/CANDE is a DCALGOL program that contains two major functional sections referred to internally as BUMP and GRIND. BUMP is the main block of the program, and GRIND is an internal procedure that runs as an asynchronous process. Briefly, BUMP handles most of the data comm activity, initial scanning of user input, and a few CANDE functions that are normally of short duration; it completes each activity before proceeding to another. GRIND is a multiuser procedure that performs the bulk of the CANDE verbs including all activities that normally require time-consuming I/O activity. These processes relate to each other by using normal tasking and interprogram communication techniques.

CANDE can be run with more than one GRIND stack to achieve greater throughput. The maximum number of GRIND stacks is controlled by the GRINDLIMIT and MAXGRINDS variables, which can be set by the user.

If GRINDLIMIT is greater than two, one GRIND stack performs task initiation, one GRIND stack performs session log on and directory manipulation, and the rest of the GRIND stacks perform file updating chores (these are called working stacks). If GRINDLIMIT is equal to two, one GRIND stack performs task initiation, session log on, and directory manipulation; the other GRIND stack performs file updating chores. If GRINDLIMIT is equal to one, one GRIND stack performs all necessary functions.

The GRIND stacks are named CANDE/STACKxx, where xx is a number from 1 to 13. If CANDE is compiled with \$DEBUG set, this name is prefaced by the version and the date and time of compilation (for example, 29.100[07120830]/CANDE/STACKxx).

Once activated, a GRIND stack does not terminate, unless the LOWMEMORY option is set. If the option is set, GRIND stacks terminate when the work to be done falls below a certain threshold. Refer to the ?OP and ?FACTOR commands in Section 2, "Network Control Commands," for additional information.

Compile-Time Options

CANDE has two compile-time options: DEBUG and RLOPT. These options can appear on DCALGOL compiler control records to affect the compilation of CANDE. That is, they can appear on a \$SET <option>, a \$POP <option>, or a \$RESET <option> card.

Operational Characteristics

These records should precede other compiler input data. The dollar sign (\$) must appear in either column 1 or column 2 of the record. Refer to the *DCALGOL Programming Reference Manual* for additional information.

The following paragraphs describe the DEBUG and RLOPT options:

Option	Description
DEBUG	<p>When this option is SET, a diagnostic CANDE is produced. This allows use of the ?BUG command to enable trace activity. It also causes CANDE to perform additional verification on data and operations to ensure integrity and adherence to internal protocols.</p> <p>This option is RESET by default.</p> <p>Note that a diagnostic CANDE as well as a standard (nondiagnostic) CANDE is included in the CANDE software that is distributed by Unisys. The diagnostic CANDE is called SYSTEM/CANDE/DIAGNOSTICS.</p>
RLOPT	<p>When this option is SET, CANDE avoids use of the READLOCK operation where possible, and uses an equivalent expression instead. (This can result in performance improvements on B 7900 systems due to the overhead of purging cache during a READLOCK. On all other machines, the READLOCK is marginally faster than the equivalent expression.)</p> <p>When this option is RESET, CANDE uses READLOCK instead of the equivalent expression.</p> <p>This option must be explicitly SET or RESET. However, sites with B 7000 Series systems receive a compiled version of CANDE in which this option is SET. All other sites, including A 12 and A 15 sites, receive a compiled version of CANDE in which this option is RESET.</p>

Program Parameters

The operational capability and visual characteristics of CANDE are determined by several values within CANDE that specify critical parameters. These considerations are discussed in the following paragraphs.

Workers

The number of GRIND functions that can simultaneously be executed by one GRIND stack is limited by the number of workers or MAXWORKS. Increasing the number of GRIND stacks is more efficient than increasing the number of workers that a particular GRIND stack can have. Therefore, the MAXWORKS define in CANDE should not be changed. Only users currently executing a TEXT editing command or an update need a worker. Those users executing programs and those not actively requiring CANDE service to execute a command do not require a worker.

Certain activities, such as session log on, file or directory manipulations (for example, REMOVE and SECURITY), and overhead associated with initiating or terminating a user program, require a special worker. This worker, known as worker zero, is reserved for such activities; that is, it cannot be used for text editing commands or file updates.

There might be one or two worker zeros available, depending on the setting of GRINDLIMIT. However, each GRIND STACK can have only one worker zero. Because this worker is not considered a true worker, its status is not reflected in the ?COUNTS display. Refer to the ?GRINDLIMIT command in this manual and the ?COUNTS command in the *CANDE Operations Reference Manual* for more information.

Tasks

CANDE uses the tasking and interprogram communications feature of the operating system to initiate user compiles, object programs, and various internal functions (for example, LOG, DCSTATUS). The maximum number of such activities that can occur simultaneously is specified as MAXTASKS. The value of this variable is controlled by the ?MAXTASKS command.

System Environment

The following paragraphs describe the system environment in which CANDE runs.

Initiation

CANDE is a standard system MCS and, as such, can be automatically initiated by the operating system. The MCP initiates CANDE in response to any new station activity if CANDE has previously gone to a normal end of job and the system option AUTODC is SET; otherwise, CANDE must be executed by control record (for example, RUN SYSTEM/CANDE). Refer to the *System Commands Reference Manual* for information on using the OP command to set the AUTODC system option.

If CANDE must be started manually, it might be preferable to use a *primitive* system command, such as ??RUN SYSTEM/CANDE. An ODT primitive command is processed directly by the MCP, thereby avoiding the job queues. Refer to the *System Commands Reference Manual* for more information about primitive system commands.

If the site security option is set to any setting other than UNSPECIFIED, the following CANDE options are set by the security administrator SECOPT option: LAISSEZFILE, ALLLOGIN, DIALLOGIN, SECALL, SECDIALIN, SECPSEUDO, and USECOMSPRIV. If the options set by the security administrator are less secure than the options found in the CANDE tankfile at the time CANDE is initialized, a system message is generated, and CANDE waits for an ACCEPT RSVP response to be entered. Options can be left unchanged by entering an AX:OPTIONS OK response. Otherwise, the options should be changed by the security administrator, and CANDE should be resumed by entering an AX:OK response. The new options will then be stored in the CANDE tankfile, so that the next time CANDE is initialized, CANDE will not have to wait for an ACCEPT RSVP response.

Running Characteristics

The CANDE MCS runs on one stack titled SYSTEM/CANDE and usually one or more stacks titled CANDE/STACKnnn (see the "Organization" discussion at the beginning

Operational Characteristics

of this section). These programs are normal tasks in the mix competing for system resources with all other active jobs. The CANDE MCS comes packaged as a Control Program, which ensures that the CANDE stacks are never scheduled or suspended by the operating system during heavy system usage. While schedule stations are active, a CANDE stack named SCHED/CANDE remains in the mix.

System Program Requirements

Several functions performed through CANDE require the presence of other system programs. A list of these CANDE commands and the corresponding system file follows:

CANDE Command	System File
BACK	SYSTEM/PRINT/BACKUP/PROCESSOR
COMPILE	SYSTEM/<compiler name>
DCSTATUS	SYSTEM/DCSTATUS
LFILES	SYSTEM/FILEDATA
LOG	SYSTEM/LOGANALYZER
RESEQ (type BASIC files)	SYSTEM/RESEQBASIC

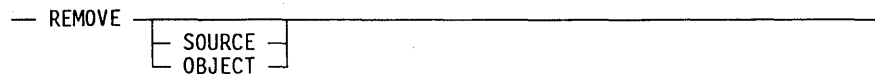
These system files should always be present when CANDE is running to provide normal user capability.

Appendix A

Understanding Railroad Diagrams

What Are Railroad Diagrams?

Railroad diagrams are diagrams that show you the rules for putting words and symbols together into commands and statements that the computer can understand. These diagrams consist of a series of paths that show the allowable structure, constants, and variables for a command or a statement. Paths show the order in which the command or statement is constructed. Paths are represented by horizontal and vertical lines. Many railroad diagrams have a number of different paths you can take to get to the end of the diagram. For example:



If you follow this railroad diagram from left to right, you will discover three acceptable commands. These commands are

- REMOVE
- REMOVE SOURCE
- REMOVE OBJECT

If all railroad diagrams were this simple, this explanation could end here. However, because the allowed ways of communicating with the computer can be complex, railroad diagrams sometimes must also be complex.

Regardless of the level of complexity, all railroad diagrams are visual representations of commands and statements. Railroad diagrams are intended to

- Show the mandatory items.
- Show the user-selected items.
- Present the order in which the items must appear.
- Show the number of times an item can be repeated.
- Show the necessary punctuation.

To familiarize you with railroad diagrams, this explanation describes the elements of the diagrams and provides examples.

Some of the actual railroad diagrams you will encounter might be more complex. However, all railroad diagrams, simple or complex, follow the same basic rules. They

Understanding Railroad Diagrams

all consist of paths that represent the allowable structure, constants, and variables for commands and statements.

By following railroad diagrams, you can easily understand the correct syntax for commands and statements. Once you become proficient in the use of railroad notation, the diagrams serve as quick references to the commands and statements.

Constants and Variables

A constant is an item that cannot be altered. You must enter the constant as it appears in the diagram, either in full or as an allowable abbreviation. If a constant is partially underlined, you can abbreviate the constant by entering only the underlined letters. In addition to the underlined letters, any of the remaining letters can be entered. If no part of the constant is underlined, the constant cannot be abbreviated. Constants can be recognized by the fact that they are never enclosed in angle brackets (< >) and are in uppercase letters.

A variable is an item that represents data. You can replace the variable with data that meets the requirements of the particular command or statement. When replacing a variable with data, you must follow the rules defined for the particular command or statement. Variables appear in railroad diagrams enclosed in angle brackets.

In the following example, BEGIN and END are constants while <statement list> is a variable. The constant BEGIN can be abbreviated since it is partially underlined. Valid abbreviations for BEGIN are BE, BEG, and BEGI.

```
— BEGIN —<statement list>— END —————|
```

Constraints

Constraints are used in a railroad diagram to control progression through the diagram. Constraints consist of symbols and unique railroad diagram line paths. They include

- Vertical bars
- Percent signs
- Right arrows
- Required items
- User-selected items
- Loops
- Bridges

A description of each item follows.

Vertical Bar

The vertical bar symbol (|) represents the end of a railroad diagram and indicates the command or statement can be followed by another command or statement.

— SECONDWORD — (—<arithmetic expression>—) —————|

Percent Sign

The percent sign (%) represents the end of a railroad diagram and indicates the command or statement must be on a line by itself.

— STOP —————|%

Right Arrow

The right arrow symbol (>) is used when the railroad diagram is too long to fit on one line and must continue on the next. A right arrow appears at the end of the first line, and another right arrow appears at the beginning of the next line.

— SCALERIGHT — (—<arithmetic expression>— , —————→
→<arithmetic expression>—) —————|

Required Items

A required item can be either a constant, a variable, or punctuation. A required item appears as a single entry, by itself or with other items, on a horizontal line. Required items can also exist on horizontal lines within alternate paths or nested (lower-level) diagrams. If the path you are following contains a required item, you must enter the item in the command or statement; the required item cannot be omitted.

In the following example, the word EVENT is a required constant and <identifier> is a required variable:

— EVENT —<identifier>—————|

User-Selected Items

User-selected items appear one below the other in a vertical list. You can choose any one of the items from the list. If the list also contains an empty path (solid line), none of the choices are required. A user-selected item can be either a constant, a variable, or punctuation. In the following railroad diagram, either the plus sign (+) or the minus sign (-) can be entered before the required variable <arithmetic expression>, or the symbols can be disregarded because the diagram also contains an empty path.

+
-

 <arithmetic expression>—————|

Understanding Railroad Diagrams

Loop

A loop represents an item or group of items that you can repeat. A loop can span all or part of a railroad diagram. It always consists of at least two horizontal lines, one below the other, connected on both sides by vertical lines. The top line is a right-to-left path that contains information about repeating the loop.

Some loops include a return character. A return character is a character — often a comma (,) or semicolon (;) — required before each repetition of a loop. If there is no return character, the items must be separated by one or more blank spaces.

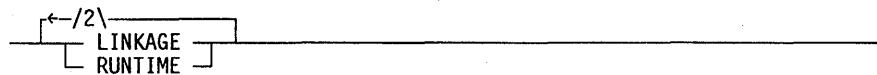


Bridge

Sometimes a loop also includes a bridge, which is used to show the maximum number of times the loop can be repeated. The bridge can precede the contents of the loop, or it can precede the return character (if any) on the upper line of the loop.

The bridge determines the number of times you can cross that point in the diagram. The bridge is an integer enclosed in sloping lines (/ \). Not all loops have bridges. Those that do not can be repeated any number of times until all valid entries have been used.

In the first bridge example, you can enter LINKAGE or RUNTIME no more than two times. In the second bridge example, you can enter LINKAGE or RUNTIME no more than three times.



In some bridges an asterisk (*) follows the number. The asterisk means that you must cross that point in the diagram at least once. The maximum number of times that you can cross that point is indicated by the number in the bridge.



In the previous bridge example, you must enter LINKAGE at least once but no more than twice, and you can enter RUNTIME any number of times.

The following figure shows the types of constraints used in railroad diagrams.


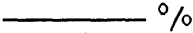
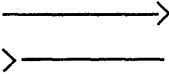
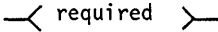
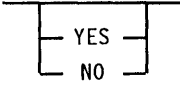
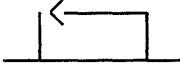
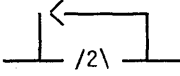
SYMBOL/PATH	EXPLANATION
	Vertical bar. Indicates that the command or statement can be followed by another command or statement.
	Percent sign. Indicates that the command or statement must be on a line by itself.
	Right arrow. Indicates that the diagram occupies more than one line.
	Required items. Indicates the constants, variables, and punctuation that must be entered in a command or statement.
	User-selected items. Indicates the items that appear one below the other in a vertical list. You select which item or items to include.
	A loop. Indicates an item or group of items that can be repeated.
	A bridge. Indicates the maximum number of times a loop can be repeated.

Figure A-1. Railroad Constraints

Following the Paths of a Railroad Diagram

The paths of a railroad diagram lead you through the command or statement from beginning to end. Some railroad diagrams have only one path, while others have several alternate paths. The following railroad diagram indicates there is only one path that requires the constant LINKAGE and the variable <linkage mnemonic>:

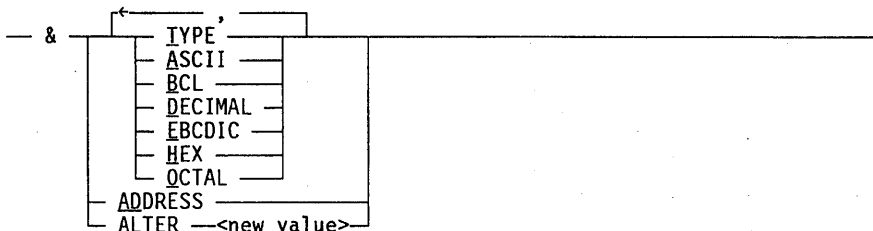
— LINKAGE —<linkage mnemonic>—————|

Alternate paths provide choices in the construction of commands and statements. Alternate paths are provided by loops, user-selected items, or a combination of both. More complex railroad diagrams can consist of many alternate paths, or nested (lower-level) diagrams, that show a further level of detail.

For example, the following railroad diagram consists of a top path and two alternate paths. The top path includes an ampersand (&) and the constants (that are

Understanding Railroad Diagrams

user-selected items) in the vertical list. These constants are within a loop that can be repeated any number of times until all options have been selected. The first alternate path requires the ampersand and the required constant ADDRESS. The second alternate path requires the ampersand followed by the required constant ALTER and the required variable <new value>.



Railroad Diagram Examples with Sample Input

The following examples show five railroad diagrams and possible command and statement constructions based on the paths of these diagrams.

Example 1

<lock statement>

— LOCK — (— <file identifier> —)

Sample Input

LOCK (FILE4)

Explanation

LOCK is a constant and cannot be altered. Because no part of the word is underlined, the entire word must be entered.

The parentheses are required punctuation, and FILE4 is a sample file identifier.

Example 2

<open statement>

— OPEN — [INQUIRY UPDATE] <database name>

Sample Input

OPEN DATABASE1

Explanation

The constant OPEN is followed by the variable DATABASE1, which is a database name.

The railroad diagram shows two user-selected items, INQUIRY and UPDATE. However, because there is an empty path (solid line), these entries are not required.

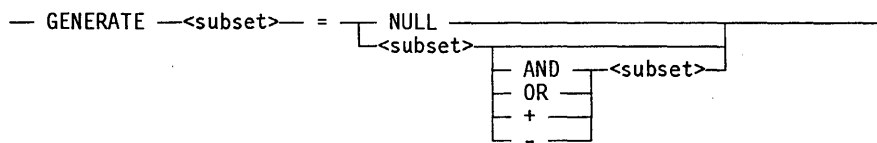
continued

continued

Sample Input	Explanation
OPEN INQUIRY DATABASE1	The constant OPEN is followed by the user-selected constant INQUIRY and the variable DATABASE1.
OPEN UPDATE DATABASE1	The constant OPEN is followed by the user-selected constant UPDATE and the variable DATABASE1.

Example 3

<generate statement>

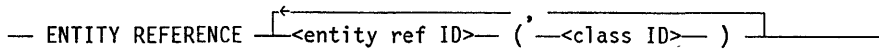


Sample Input	Explanation
GENERATE Z = NULL	The GENERATE constant is followed by the variable Z, an equal sign (=), and the user-selected constant NULL.
GENERATE Z = X	The GENERATE constant is followed by the variable Z, an equal sign, and the user-selected variable X.
GENERATE Z = X AND B	The GENERATE constant is followed by the variable Z, an equal sign, the user-selected variable X, the AND command (from the list of user-selected items in the nested path), and a third variable, B.
GENERATE Z = X + B	The GENERATE constant is followed by the variable Z, an equal sign, the user-selected variable X, the plus sign (from the list of user-selected items in the nested path), and a third variable, B.

Understanding Railroad Diagrams

Example 4

<entity reference declaration>



Sample Input

ENTITY REFERENCE ADVISOR1 (INSTRUCTOR)

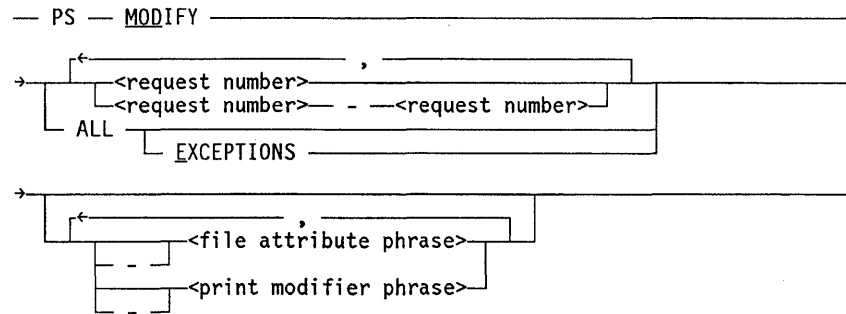
Explanation

The required item ENTITY REFERENCE is followed by the variable ADVISOR1 and the variable INSTRUCTOR. The parentheses are required.

ENTITY REFERENCE ADVISOR1 (INSTRUCTOR),
ADVISOR2 (ASST_INSTRUCTOR)

Because the diagram contains a loop, the pair of variables can be repeated any number of times.

Example 5



Sample Input

PS MODIFY 11159

Explanation

The constants PS and MODIFY are followed by the variable 11159, which is a request number.

PS MODIFY 11159,11160,11163

Because the diagram contains a loop, the variable 11159 can be followed by a comma, the variable 11160, another comma, and the final variable 11163.

PS MOD 11159-11161 DESTINATION =
"LP7"

The constants PS and MODIFY are followed by the user-selected variables 11159-11161, which are request numbers, and the user-selected variable DESTINATION = "LP7", which is a file attribute phrase. Note that the constant MODIFY has been abbreviated to its minimum allowable form.

PS MOD ALL EXCEPTIONS

The constants PS and MODIFY are followed by the user-selected constants ALL and EXCEPTIONS.

Glossary

A

accesscode

An identification code, subordinate to a usercode, which sometimes has an associated password of its own. An accesscode can be specified in the USERDATAFILE as required along with a usercode/password combination. An accesscode further establishes a user's identity, controls security, and restricts access to disk files.

address

(1) The identification of a location in storage (memory). (2) A sequence of bits, a character, or a group of characters that identifies a network station or a group of stations, a user, or an application.

asynchronous transmission

A transmission mode in which the time of the occurrence of each character or block of characters is arbitrary. The characters, or blocks of characters, are surrounded by start and stop bits, from which a receiver derives the necessary timing for sampling bits. This mode is used for low- to medium-speed transmission of character strings.

attached station

A station under the control of a message control system (MCS).

B

beginning of job (BOJ)

The start of processing of a job.

beginning of task (BOT)

The start of processing of a task.

block

A group of physically adjacent records that can be transferred to or from a physical device as a group.

BNA

The network architecture used on A Series, B 1000, and V Series systems as well as CP9500 and CP 2000 communications processors to connect multiple, independent, compatible computer systems into a network for distributed processing and resource sharing.

BOJ

See beginning of job.

Glossary

borrowed station

A station that one message control system (MCS) recognizes as belonging to another MCS.

BOT

See beginning of task.

buffer

An area in which data is stored temporarily.

BUMP

The main block of the SYSTEM/CANDE program. BUMP handles most data communications activity, the scanning of user input, and a few Command and Edit (CANDE) functions of brief duration.

C

CANDE

See Command and Edit.

CANDE/STACKxx

The name assigned to each GRIND stack initiated by SYSTEM/CANDE, where xx is a number between 1 and 13.

character

The actual or coded representation of a digit, letter, or special symbol in display form.

circuit

A transmission medium connecting two or more electronic devices. A circuit is the configuration of equipment used in transmitting data from one location to another and can involve more than one type of facility.

cluster

In BNA Version 2, a group of nodes in a network.

code file

See object code file, source file.

Command and Edit (CANDE)

A time-sharing message control system (MCS) that enables a user to create and edit files, and to develop, test, and execute programs, interactively.

compiler

A computer program that translates instructions written in a source language, such as COBOL or ALGOL, into machine-executable object code.

compiler control option

An individual compiler directive that appears in a compiler control record (CCR). Compiler control options were previously referred to as compiler dollar options or dollar options.

continuation character

(1) A character used in a line of data to indicate either that this line is continued on the following line, or that this line is a continuation of the previous line. (2) In the Command and Edit (CANDE) message control system (MCS), a character entered at the end of a line of terminal input to allow that line to be continued on the next line.

control character

(1) Any extra transmitted character used to control or facilitate data transmission over communication networks or between data terminal equipment (DTE) units. (2) A character whose occurrence in a particular context initiates, modifies, or stops a control operation. Such a character can be recorded for use in a subsequent action; it can have a graphic representation.

control command

A Command and Edit (CANDE) input message that begins with a specific character, usually a question mark (?), and is used to control or interrogate the CANDE operating environment. A control command can be entered from any attached CANDE station.

control station

In the Command and Edit (CANDE) message control system (MCS), a station that allows CANDE network control commands to be entered.

D

Data Communications ALGOL (DCALGOL)

A Unisys language based on ALGOL that contains extensions for writing message control system (MCS) programs and other specialized system programs.

DCALGOL

See Data Communications ALGOL.

dial-in

See dial-up.

dial-up

The process of, or the equipment or facilities involved in, using a dial or push-button data set (such as a telephone) to establish a temporary connection through a switched telephone network. Dial-up is also referred to as dial-in.

DLS number

A construct made up of three numbers, each separated by a colon (:). The first number is the relative network support processor (NSP) number, which was previously the data communications processor (DCP) number. The second number is the line number. The third number is the relative station number within the line.

Glossary

E

EBCDIC

Extended Binary Coded Decimal Interchange Code. An 8-bit code representing 256 graphic and control characters that are the native character set of most mainframe systems.

enabled

Referring to a station that is being polled (invited to transmit in a certain order) and that can communicate with the system.

end of file (EOF)

A code at the end of a data file that signals that the last record in the file has been processed.

end of job (EOJ)

The termination of processing of a job.

end of task (EOT)

The termination of processing of a task.

EOF

See end of file.

EOJ

See end of job.

EOT

See end of task.

F

family

(1) One or more disks logically grouped and treated as a single entity by the system. Each family has a name, and all disks in the family must have been entered into the family with the RC (Reconfigure Disk) system command. (2) The name of the disk or disk pack on which a physical file is located.

file attribute

An element that describes a characteristic of a file and provides information the system needs to handle the file. Examples of file attributes are the file title, record size, number of areas, and date of creation. For disk files, permanent file attribute values are stored in the disk file header.

G

GETSTATUS

An intrinsic available to some programming languages that can be used to obtain the status of the job or task mix, the status of peripheral and disk units, and the status of the operating system and mainframe configuration.

GRIND

An internal, multiple-user procedure in the SYSTEM/CANDE program that performs most Command and Edit (CANDE) commands, including tasks that normally require lengthy I/O activity.

GRIND stack

A stack initiated by the GRIND procedure in the SYSTEM/CANDE program. Depending on the value the user assigns to the GRINDLIMIT variable, SYSTEM/CANDE can be run with more than one GRIND stack to improve throughput. Each GRIND stack has a name of the form CANDE/STACKxx, where xx is a number in the range from 1 to 13.

GRINDLIMIT

The variable in the SYSTEM/CANDE program to which the user assigns a value to control the maximum number of GRIND stacks that can run.

H**halt/load**

A system-initialization procedure that temporarily halts the system and loads the master control program (MCP) from a disk to main memory.

I**I/O**

Input/output. An operation in which the system reads data from or writes data to a file on a peripheral device such as a disk drive.

I/O processor (IOP)

A specialized processor for moving data between system memory and the I/O subsystem.

IDC

See Interactive Datacomm Configurator.

Interactive Datacomm Configurator (IDC)

A Unisys interactive, menu-driven utility that enables the user to create, interrogate, and modify data communications network configurations.

interrupt

A disruption in the normal flow of a system or program, occurring in such a way that the flow can be resumed from that point at a later time.

J**job**

An independent process. The job of a particular task is the independent process that is the eldest ancestor of that task.

Glossary

L

line

A data transmission link between two computers or between a computer and its associated terminals.

line adapter

The device that performs physical line control, including byte assembly and disassembly, data buffering, data synchronization, and modem and autocal equipment control.

line support processor (LSP)

The data communications subsystem processor that manages communication with the host and initiates processes that control the input of messages to and the output of messages from data communications lines.

log off

The process by which a user ends the current message control system (MCS) session.

log on

The process by which a user starts a message control system (MCS) session. The user identifies himself or herself as a legitimate user of the system by entering a valid usercode/password and, in some cases, a valid chargecode and accesscode. (In addition, an accesscode can have an associated password of its own.)

log station

A Command and Edit (CANDE) station designated to receive logging information. This information can include statistics on station attachment, security errors, station log on and log off times, network changes caused by reconfiguration requests, and user messages sent to the operator display terminal (ODT).

logical station number (LSN)

(1) In the Network Definition Language II (NDLII), a unique number assigned to each station in a network. Each station has an LSN assigned according to the order in which the stations are defined in NDLII. The first defined station is 1. (2) In the Interactive Datacomm Configurator (IDC), a unique number assigned to each station structure. When IDC creates the DATACOMINFO file from the network information file II (NIFII), it assigns an LSN to each structure sequentially, beginning with the number 2. The numbers allocated by IDC are the same as those used by the operating system to identify a station.

LSN

See logical station number.

LSP

See line support processor.

M

master control program (MCP)

The central program of the A Series operating system. The term applies to any master control program that Unisys may release for A Series systems.

MAXSTATIONS

The parameter in the SYSTEM/CANDE program that determines the maximum number of stations that the Command and Edit (CANDE) message control system (MCS) can support. The value of this parameter can be changed using the CANDE ?MAXSTATIONS network control command. The default value is 25. *See also* station.

MAXTASKS

The parameter in SYSTEM/CANDE that determines the maximum number of tasks (including program executions, compilations, and various internal functions) that can be performed through the Command and Edit (CANDE) message control system (MCS) at one time. By default, the value of this parameter is the same as the value of the MAXSTATIONS parameter. The value of MAXTASKS can be changed by using the CANDE network control command, ?MAXTASKS; however, it cannot exceed the value of MAXSTATIONS.

MAXWORKS

The parameter in SYSTEM/CANDE that determines how many GRIND functions can be performed simultaneously by a single GRIND stack.

MCP

See master control program.

MCS

See message control system.

message

(1) Any combination of characters and symbols designed to communicate information from an originator to one or more destinations. (2) The text sent to the user from a program. A message can be either displayed on the screen or printed. (3) In data communications, any information-containing data unit, in an ordered format, sent by means of a communications process to a named network entity or interface. A message contains the information (text portion) and controls for routing and handling (header portion).

message control system (MCS)

A program that controls the flow of messages between terminals, application programs, and the operating system. MCS functions can include message routing, access control, audit and recovery, system management, and message formatting.

MLIP

An acronym for the obsolete term message level interface processor; *see* I/O processor.

modem

A device placed between a computer system and a telephone line to permit transmission of digital pulses. Modems permit computers to communicate with other computers, terminals, and printers over communication lines. The term *modem* is derived from *modulator-demodulator*.

N

NDLII

See Network Definition Language II.

network control command

A Command and Edit (CANDE) command that begins with the data communications control character—by default, a question mark (?)—and is used to determine or alter the status of the CANDE network. A network control command can be entered only from a CANDE control station.

Network Definition Language II (NDLII)

The Unisys language used to describe the physical, logical, and functional characteristics of the data communications subsystem to network support processors (NSPs), line support processors (LSPs), and data communications data link processors (DCDLPs).

network support processor (NSP)

A data communications subsystem processor that controls the interface between a host system and the data communications peripherals. The NSP executes the code generated by the Network Definition Language II (NDLII) compiler for line control and editor procedures. An NSP can also control line support processors (LSPs).

NSP

See network support processor.

O

object code file

A file produced by a compiler when a program is compiled successfully. The file contains instructions in machine-executable object code.

object file

See object code file.

ODT

See operator display terminal.

operator display terminal (ODT)

(1) A terminal or other device that is connected to the system in such a way that it can communicate directly with the operating system. The ODT allows operations personnel to accomplish system operations functions through either of two operating modes: system command mode or data comm mode. (2) The name given to the system control terminal (SCT) when it is used as an ODT.

P

password

A character string associated with a usercode or accesscode in the USERDATAFILE, and used to identify legitimate users of the system. When logging on to a message control system (MCS), a user must supply a usercode and a password.

polling

A communications control procedure in which a master station systematically invites tributary stations on a multipoint circuit to transmit data.

process

(1) The execution of a program or of a procedure that was initiated. The process has its own process stack and process information block (PIB). It also has a code segment dictionary, which can be shared with other processes that are executions of the same program or procedure. (2) A software application; that is, any activity or systematic sequence of operations that produces a specified result.

process stack

A memory structure that stores information about the current state of the execution of a procedure. The process stack includes activation records for all blocks that the process has entered and not yet exited. *Synonym for stack.*

pseudostation

A station created by the operating system that can be attached to, and controlled by, a message control system (MCS) like a *real* station. Unlike a real station, however, a pseudostation is not declared in the SOURCENDLII file or the DATACOMINFO file, has no line assigned, and does not need a corresponding physical terminal on the local host.

R**record**

(1) A group of logically related items of data in a file that are treated as a unit. (2) The data read from or written to a file in one execution of a read or write statement in a program.

recovery file

File used to recover a work file in the event that a Command and Edit (CANDE) session or an Editor session on a particular station is aborted.

remote file

A file with the KIND attribute specified as REMOTE. A remote file enables object programs to communicate interactively with a terminal.

S**schedule file**

A file containing all Command and Edit (CANDE) commands and programs entered for a schedule session.

schedule session

A Command and Edit (CANDE) session that runs independently of the user's session and station, and executes all CANDE commands and program input that are present in a previously specified schedule file.

Glossary

schedule station

A dummy data communications station provided by the Command and Edit (CANDE) message control system (MCS) to run schedule sessions and open remote files. The schedule station behaves programmatically like a real station for most purposes.

session

(1) The interactions between a user and a message control system (MCS) during a particular period of time that is assigned an identifying session number. Logging on initiates a new session; logging off terminates a session. Each Menu-Assisted Resource Control (MARC) or Command and Edit (CANDE) dialogue at a terminal accesses a different session. (2) In the Command and Edit (CANDE) message control system (MCS), the time measured from when a CANDE user enters a valid usercode/password combination until that user enters a CANDE *SPLIT*, *BYE*, or *HELLO* command. Each CANDE session is assigned a unique number. No output is printed until the session is ended.

source file

(1) A file in which a source program is stored. (2) A file containing instructions written in a programming language.

SPO

(1) An acronym for the obsolete term supervisory printer output; *see* operator display terminal.

stack

A region of memory used to store data items in a particular order, usually on a last-in, first-out basis. *Synonym for* process stack.

station

(1) The outer end of a communication line. A station can correspond to a single terminal connected on a single line, or several stations can be connected on a line. (2) In data communications, a data structure that relates a logical abstraction to either a physical device or a pseudostation.

switched line

In data communications, a communications link for which the physical path, established by dialing, can vary with each use.

T

tankfile

In the Command and Edit (CANDE) message control system (MCS), a file maintained to store option settings, configuration information, and work file recovery information (including all changes made since the work file was last updated). The tankfile is used for recovery if CANDE terminates abnormally.

task

(1) A dependent process. (2) Any process, whether dependent or independent. *See also* process.

terminal

An I/O device designed to receive or send source data in a network.

text field

In the Command and Edit (CANDE) message control system (MCS) and the Editor, a portion of each work file line that is defined to contain the program text or other symbolic information.

TITLE

A file attribute whose value is the external name of a file. By default, this value is the value of the INTNAME attribute. For a file whose KIND attribute is equal to DISK or PACK, the TITLE attribute can be assigned a value of the form *<file name> ON <family name>*; thus, the values of the TITLE and FILENAME attributes, both of which specify the external file name, can be different.

U**usercode**

An identification code used to establish user identity and control security, and to provide for segregation of files. Usercodes can be applied to every task, job, session, and file on the system. A valid usercode is identified by an entry in the USERDATAFILE.

USERDATAFILE

A system database that defines valid usercodes and contains various data about each user (such as accesscodes, passwords, and chargecodes) and the population of users for a particular installation.

W**WFL**

See Work Flow Language.

word

A unit of computer memory. On A Series systems, a word consists of 48 bits used for storage plus tag bits used to indicate how the word is interpreted.

work file

A file that the user accesses using the Command and Edit (CANDE) GET command or creates using the CANDE MAKE command. All editing commands entered through CANDE or the Editor can change only the current work file.

Work Flow Language (WFL)

A Unisys language used for constructing jobs that compile or run programs on A Series systems. WFL includes variables, expressions, and flow-of-control statements that offer the programmer a wide range of capabilities with regard to task control.

Glossary

worker

A GRIND stack function, which is a logical memory area allocated to a Command and Edit (CANDE) job, used to perform text editing or to update files through CANDE. The number of these functions that can be performed simultaneously is determined by the value of the MAXWORKS parameter. A worker is also referred to as a working stack.

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Cut along dotted line ✂

Tape

Please Do Not Staple

Tape

Fold Here

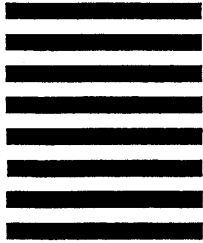


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