OVERVIEW

OPERATION

ADMINISTRATION

HARDWARE

DEVELOPMENT

QUALIFICATION

SyCOS Global Glossary

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2. A

ADI
' Alarm Destination Index

alarm
An exceptional condition on an *' MFC* (e.g.: a measurement value exceeding its low or high boundary as defined in the *' process database*, a system error or a programmed exception from an *' EXTOL* program) is processed as an alarm. Most such conditions have one or more (up to 16) associated *' alarm destination*s, to which the alarm message will be dispatched. An alarm alarm destination may be a *' console*, an *' alarm typer*, an *' alarm log file*, the *' pager* or the *' batch history file*. Alarms with no or invalid alarm destinations are silently discarded.

alarm destination
The system device to which an alarm is directed is called an alarm destination. An alarm alarm destination may be a *' console*, an *' alarm typer*, an *' alarm log file*, the *' pager* or the *' batch history file*. All alarm destinations are configured in the *' configuration* file.

Alarm Destination Index
Internally an *' alarm destination* is represented by a unique integer ranging from 1 to 254. This integer is called the alarm destination index or ADI. The special ADI's 253 and 254 are used to direct alarms to the pager or batch history file, respectivly. The other 252 alarm destinations can be configured in the *' configuration* file. Each *' alarm* may be sent to a maximum of 16 ADI's simultaneously.

alarm display
' alarm summary display

alarm log file
One possible *' alarm destination* are alarm log files. An alarm log file resides on the *' disk* of a *' PIC* or *' File Server*. The *' configuration* specifies the name, location and ADI of the alarm log file.

We need to specify the closing/reuse of alarm log files!!

alarm typer
One possible *' alarm destination* is an alarm typer. An alarm typer is a hardcopy device connected to a *' PIC* or *' File Server*. *' alarm* messages sent to an alarm typer are printed on the hardcopy device associated with the alarm typer through the *' configuration*.

alarm summary display
One possible *' alarm destination* is an alarm summary display on a *' console*. The alarm summary display provides an on-line display of *' alarm* conditions: Alarms are inserted into the alarm display in chronological order and updated/removed when the alarm condition no longer exists or when the alarm has been acknowledged by the operator. Active alarms are displayed as blinking buttons. Clicking on a blinking alarm button acknowledges the alarm. Acknowledged alarms are shown in steady colors until the alarm condition has gone away (*' latched alarm*).

analog
In SyCOS *' process variable*s which represent continuously varying quantities (e.g. temperature) are considered analog variables even though they are digitized for representation in the computer. They are processed by the *' CCEX* software package in an *' MFC*.

annunciator
When a *' console* is specified as an *' alarm destination* and the annunciate field is set for the alarm an audible tone, called an annunciator, is sounded at the console. The *' alarm summary display* has a button labelled 'Annunciator' in its menu which when pressed will turn the audible signal off.

application programmer
Responsible for the writing of *' EXTOL* programs for process control from designs provided by an *' automation engineer*.

asdt
The name of the *' alarm summary display* program.

authentication
In SyCOS a user performing actions must usually identify herself to the system by giving her name and her password. The process of identification is called authentication and is performed through a system application on the *' console*. All actions performed after an authentication has taken place are recorded in the *' batch history file* with the name of the person that performed the action (*' operator tracking*). The

authentication information is also used to validate access permissions (' *authorization*) for the user.

authorization Whenever an action is performed on behalf of a user at a ' *console* the required action must be authorized. In SyCOS authorization is specified in the authorization database. Authorization determines the validity of a request an ' *operator* has made by consulting this authorization database. In order to pass the authorization test a user must first be authenticated (' *authentication*). If a user is not authorized the requested action is not performed.

automation engineer Responsible for many aspects of process control engineering and may also have the role of ' *application programmer*. He is responsible in SyCOS for defining the ' *configuration* of the system and associated I/O.

B

batch history file The batch history file is an ' *alarm destination* that can be managed from an ' *EXTOL* application. It is normally used to document the progress of a ' *batch* produced under SyCOS control for later perusal by analysts or the FDA. Contents of the batch history file include ' *alarm* messages, and messages from ' *EXTOL* inserted by dedicated EXTOL ' *statement*s.

batch A batch is the technical term for the production of one lot of one or more products in a chemical plant.

batch processing Batch processing refers to the use of ' *CGS* to produce discrete lots of one or more products by performing a specified sequence of operations. Batch processing in SyCOS is handled by the extended operations environment ' *EXTOL*. The ' *recipe* capability of ' *EXTOL* is especially well suited to batch processing.

BHF Abbreviation for ' *batch history file*.

blank SyCOS utility for the creation of an empty ' *process database*.

block ' *record*

C

calc block Shorthand for ' *calculation block*.

calculation block The calculation block in the ' *process database* provides general purpose calculation and logic functions. It may be considered a ' *control block* or a ' *logic block*, and therefore may be associated with ' *sensor* or ' *device* blocks for processing by ' *CCEX* or ' *DCEX*.

cascade The cascade construct in the ' *process database* simulates the action of a cascade terminal block in hardware. It provides the capability of opening or closing a connection from a control loop to associated I/O. ' *control*

The cascade block is a ' *control block* providing the capability to open or close a connection from a control loop to associated I/O.

CCEX The **C**ontinuous **C**ontrol **EX**ecutive runs in the ' *MFC* and handles. ' *process database* points called ' *sensor*s which represent continuously varying process variables. ' *control*, ' *data acquisition*

cfgcc Program used to translate the system ' *configuration* file into an internal representation used by SyCOS. ' *CGS utilities*

chemical engineer Designs the architecture of the chemical plant from chemical engineering components using the requirements and design of the ' *chemist*. Will manage the con-

struction of the engineering components. Will also document the actions required to be performed on the components in order to manufacture the product, i.e. the operating procedures. Will work closely with the *' plant engineer* to implement the process using SyCOS.

chemist Specifies the chemistry required to make a chemical product.

SyCOSNET This term is used to designate the 10 MBit *' Ethernet* network connecting all the *' node*s in SyCOS.

SyCOS Syte control system, or any portion of the system, is called SyCOS.

SyCOS utilities The term SyCOS utilities refers to the programs used by engineers to perform a wide vatiety of configuration and monitoring functions in SyCOS. A SyCOS utility usually runs as *' task* on a *' PIC* or *' FS*. Among the SyCOS utilities are *' cfgcc*, *' dbb*, *' fig*, *' gedit* and many others.

configuration Configuration is a very broad term in the context of SyCOS. The modularity and flexibility of the SyCOS system provides a wide variety of useful combinations of *' processing unit*s and various system *' device*s. The term configuration is sometimes used to include virtually all work performed on a SyCOS system prior to the actual process operation. Depending on context, configuration may refer to some subset of this work. Commonly, the term is used to mean the SyCOS System Level Configuration, which includes the definition of *' node* names, node and/or device numbers, locations and type of *' processing unit* and *' alarm typer*s. *' CGS utilities*.

console *' operator console*

console display The console display, often just called display, is a CRT screen which provides the primary output device for the operator. The console display produces standard displays and *' custom display*s.

continuous control The term continuous control is often used to refer to the steady-state control portion of the *' MFC* software. In some contexts, it may refer only to the analog steady-state software package called *' CCEX*. *' control*, *' process database*

continuous control database *' process database*

continuous control executive *' CCEX*

control The control portion of SyCOS includes the set of software, running in an *' MFC*, which generates outputs to directly modify the process operation. This includes the steady-state control system, i.e. *' CCEX* and *' DCEX* driven by the *' process database*, plus any operations written by the user in *' EXTOL*. *' continuous control*, *' discrete control*

control block The term control block is used for any block in the *' process database* which can be associated with a *' sensor* block for processing by *' CCEX*. This includes *' calculation block*s, *' dead time block*s, *' lead/lag block*s, *' PID block*s, *' signal selector block*s and others.

CPU *' processor*

custom display SyCOS provides *' standard display*s for visualisation and modification of process data. In addition to the standard displays the customer has the capability to create new custom displays specific to an application. Custom displays are usually created with the *' graphic editor*. Custom displays will be presented on the console display and may include graphic and/or textual information. The data presented may be static, or may depend on *' process database* or *' unit database* elements. The displays may include the capability for the operator to modify process parameters.

custom graphic A *' custom display* created with the *' graphic editor*.

D

data acquisition Data acquisition in SyCOS is performed in an ' *MFC* by ' *scanner*s that retrieve the raw data from process inputs and further data processing by the ' *control* packages ' *CCEX* and ' *DCEX*. The ' *process database* is used to configure all data acquisition activities.

database ' *process database*, ' *unit database*

dbb Dbb is the **D**ata **B**ase **B**uilder program. This program, together with other ' *CGS utilities* (' *blank*, ' *fig*), allows the construction and maintenance of the ' *process database*.

DCEX The **D**iscrete **C**ontrol **EX**ecutive runs in the ' *MFC* and handles ' *process database* points called ' *device*s, which represent digital process variables. ' *data acquisition*, ' *control*

dead time block The dead time block in the ' *process database* provides a variable dead-time calculation for process simulation and feedforward control. It is a ' *control block* which may be associated with ' *sensor* blocks for processing by ' *CCEX*.

detail display One of the ' *standard display*s available for the operator is the detail display which provides a wide variety of information about a single loop or ' *device* in the ' *process database*.

Do we really have this?

device controller ' *DCEX*

device The ' *process database* records which represent digital process variables are called ' *device*s. The term is frequently extended to include any associated logic blocks which are associated with the parent device block. ' *control*, ' *DCEX*

digital In SyCOS process variables which represent discrete states are considered digital variables. They are processed by the ' *DCEX* software package in the ' *MFC*. ' *control*

discrete control ' *DCEX*.

disk The disk storage subsystem is standard for ' *PIC*. It provides mass storage for system loading and archiving purposes.

display ' *console display*

E

EC Abbreviation for ' *engineer console*.

ELT Abbreviation for ' *external loop tag*.

engineer console The system interface device used by engineers to configure the system. ' *configuration*

Ethernet The type of local area network used for ' *SyCOSNET*.

external loop tag An **E**xternal **L**oop **T**ag (ELT or TAG) is a system wide unique name for a ' *device* or a ' *sensor* block. It it used to reference that ' *block* and its associated ' *loop* in the ' *process database* and from ' *EXTOL*.

EXTOL The **EXT**ended **O**perations **L**anguage is a flexible high-level language provided with SyCOS. It allows the ' *application programmer* to write ' *statement*s and group them into ' *step*s. The steps written in EXTOL are then grouped to form ' *operation*s.

The term EXTOL, depending on context, may refer to the language, the development facility (a set of ' *CGS utilities* running on a ' *WS*), or the run-time environment running in the ' *MFC*.

EXTOL statement ' *statement*

EXTOL variable ' *unit variable*

F

faceplate display ' *group display*

field The ' *process database* records are subdivided into fields which are the smallest addressable items in the database.

file I/O The ' *EXTOL* capability to read and write to the filesystem is often called file I/O.

filesystem The filesystem is an organizational layer used by SyCOS to provide access to the disk storage subsystems.

File Server The file server communicates with the rest of the SyCOS system over ' *SyCOSNET*. It provides system generation and maintenance, process definition and monitoring. Several functions are shared with the ' *PIC*, including the use of DBB, ' *EXTOL*, and other ' *CGS utilities*. ' *configuration*, ' *console*, ' *processing unit*

FS Abbreviation for ' *File Server*

G

gedit Abbreviation for ' *graphic editor*.

graphic editor The graphic editor is used to construct ' *custom display*s. In the generation of graphic images, symbols constructed using the symbol editor may be included.

graphics ' *custom display*

group ' *group display*

group display One of the ' *standard display*s available for the operator is the group display which provides the appearance of a traditional control instrument faceplate for each of ten ' *sensor*s and/or ' *device*s in the ' *process database*.

H

Hardware Safety State This state is entered as last resort when normal operation of a plant can no longer proceed. The hardware safety state is defined by the proper design of the plant's hardware and is independent of SyCOS. ' *Software Safety State*, ' *watchdog*

historical trend The ' *PIC* facility for preserving information about several ' *process database* variables (fields) and displaying that information at a later time is known as the historical trend facility.

hold step Hold steps provide an alternate thread of execution of steps within ' *operation*s in the ' *EXTOL* environment. ' *main step*

host This term generally designates a machine running (also: hosting) application specific services. Within SyCOS the term is most frequently used to designate a ' *PIC* or a ' *FS*.

HP-UX The ' *operating system* used on the ' *PIC*'s and ' *FS*'s in SyCOS. HP-UX is the UNIX® Implementation for Hewlett-Packard's 9000 Series Hardware.

HSS Abbreviation for ' *Hardware Safety State*

I

J

K

L

latched alarm

A latched *' alarm* is alarm that will be displayed on the *' alarm summary display* until the alarm condition has gone away and the alarm has been acknowledged. A latched alarm that has been acknowledged but where the alarm condition still persists is shown in steady color by the alarm summary display. Latched alarms are useful to achieve a continuous display of an alarm condition when the alarm condition has only been met for a short time, which might cause the alarm to disappear from the alarm summary display before an operator has had the chance to see it.

lead/lag block

The lead/lag block in the *' process database* provides a variable lead/lag calculation functions for process simulation and feedforward control. It is a control block which may be associated with *' sensor* blocks for processing by *' CCEX*.

log

' alarm log file

logic block

The term logic block is used to include any block in the *' process database* which can be associated with a *' device* block for processing by *' DCEX*. This includes *' calculation block*s and *' signal selector block*s.

loop

The term loop is used to refer to a *' sensor* block and any associated control blocks. This normally is equivalent to a control loop formed by hardware instrumentation. Loops are processed by *' CCEX*. *' control*, *' process database*

Doesn't the term loop also designate something starting witha device block?

M

main step

Main steps form the normal thread of execution within *' operation*s in the *' EXTOL* environment. *' hold step*

maintenance engineer

Responsible for the maintenance of hardware.

memory

The term memory in the context of SyCOS usually means Random Access Memory (RAM) within a *' processing unit*. This is volatile storage and therefore must be loaded at system start-up.

memory leak

A memory leak is a system error that results in *' memory* beeing allocated to a task and not returned to the free memory pool when it is no longer needed. Memory leaks will eventually result in a system failure.

MFC

The **M**ulti **F**unction **C**ontroller is the *' real time ' processing unit* which is directly connected to the actual *' process*. It provides the basic *' data acquisition* and *' control* functions plus the run-time environment for *' EXTOL*. MFC's rely on *' PIC*s for operator interaction and on *' FS*s for persistent program and data storage but are otherwise

designed to work independent of the rest of SyCOS.

N

network ' *SyCOSNET*

node A computer plus an Ethernet connection. ' *processing unit*

node database The term node database is used to refer to the portion of the ' *process database* which is local to one ' *MFC*. ' *processing unit*

O

OC Abbreviation for ' *operator console*.

OPDEC Abbreviation for ' *operator decision*

OPENTER Abbreviation for ' *operator entry*

operating system An operating system is the layer of software that provides the basic hardware independent functionality used by SyCOS. The operating system for the ' *PIC*'s and ' *FS*'s is ' *HP-UX*, and for the ' *MFC* it is ' *VxWorks*. Both operating systems used in SyCOS are widely used industry standards.

operation The term operation refers to a logically associated set of ' *EXTOL* program steps. An operation contains pairs of ' *main step*s and ' *hold step*s which are routines made up from EXTOL ' *statement*s. An operation is associated with a ' *unit* and is loaded into the ' *memory* of the ' *MFC* where that unit is defined.

operator The operator is the person responsible for day-to-day operation of the plant.

operator action The term operator action refers to a request from an ' *EXTOL* program for operator input. The operator must answer the request via the console by calling up the operator action display and providing an appropriate response.' *operator decision*, ' *operator entry*

operator console The primary operator interface for the process operator is the console which includes a ' *console display*, a keyboard, a pointing device and an audible annunciator. Interaction with SyCOS is performed through ' *standard display*s and/or ' *custom display*s. ' *PIC*

operator decision An operator decision is a request from an ' *EXTOL* program for operator interaction. The request will be displayed by all ' *alarm summary display*s as defined in the ' *configuration*. An operator willing to answer the request selects the request by pressing the button representing the request and will then, depending his ' *authorization*, be prompted to select one of the possible answers as predefined by the EXTOL program. The selected answer is then transmitted back to the EXTOL program which can now perform the appropriate action. ' *operator entry*

operator entry An ' *EXTOL* program can reqest an operator to specify a numeric or textual input for perusal in the program. Such an ' *operator action* is requested from EXTOL by the OPENTER ' *statement*. This statement will display the request on all ' *alarm summary display*s as defined in the ' *configuration*. An operator willing to supply the required data selects the request by pressing the button representing the request and will then, depending on his ' *authorization*, be prompted to enter a value. The value entered is validated and the validated value is then sent back to the requesting EXTOL program.

operator tracking Every action performed by an operator at a ' *console* is recorded in the ' *batch history file*, along with the information identifying the person that perfomed the action. ' *authentication*

P

pager
The pager is a device connected to a ' *PIC* or ' *FS* that interfaces to special portable radio receivers. Alarms can be directed to the pager device which will result in immediate notification of the person carrying the pager receiver. SyCOS allows alarms to be sent to one or more receivers and provides an escalation mechanism when pager messages are not acknowledged within a configurable time.

parent unit
Every ' *loop* defined in the ' *process database* logically belongs to a ' *unit*. This unit is dubbed the parent unit of the loop. The parent unit of a loop contains information common to all blocks in the loop such as the ' *ADI* list needed to dispatch ' *alarm* messages originating from a block in the loop.

PIC
The **P**rocess **I**nformation **C**enter provides process visualisation and process modification facilities. Operator and Engineering ' *console*s connected to the PIC allow plant personnel and engineers to interact with SyCOS to operate, define or modify processes through the use of ' *display*s and ' *CGS utilities*. ' *configuration*, ' *FS*

PID
Proportional Integral Derivative calculation function.

PID block
The PID block in the ' *process database* provides a proportional integral derivative calculation function for control applications. It is a control block which may be associated with a ' *sensor* block for processing by ' *CCEX*.

plant engineer
Designs the architecture of the plant to incorporate the components defined by the chemical engineer. Is responsible for deciding which materials etc. are to be used for the components.

plant manager
Responsible for the management of a whole plant. They are the end user of the plant.

printer
The term printer in SyCOS may refer to an ' *alarm typer* or a ' *screen printer*.

process
Either designates a chemical process or a currently executing program (' *task*) on a ' *host* in SyCOS, depending on the context the term is used in.

process automation
Anything to do with the control of the chemical process.

process database
The term process database is used to refer to the global data structure used for steady-state control. This includes the node database for each processing unit. This database should not be confused with the unit database for the extended operations environment (' *EXTOL*).

process engineer
The same as the ' *chemical engineer*.

process variable
The term process variable, depending on context, may mean the field in a ' *sensor* record which contains the measurement, any field in the ' *process database*, or any record in the ' *process database*.

processing unit
The term processing unit (also called control unit, control node, or simply node) is used to refer to a single computer (' *FS*, ' *PIC*, or ' *MFC*) within SyCOS.

processor
The term processor refers to the central processing unit (CPU) within a ' *processing unit*. This device provides the control and calculation capability for each computer.

prototype
The term prototype refers to a data structure used by ' *dbb* to assist the user in configuring the ' *process database* for an application. The prototype is essentially a template or data entry form for a ' *record* within the ' *process database*.

Q

R

RAM

Random access *' memory*, or RAM, is used for temporary program and data storage within all *' processing unit*s.

real time

The term real time is used to describe the all SyCOS software running on the *' MFC* and some of the software running on the *' PIC* because events happening in the process controlled must be handled under well defined timing constraints. Certain parts of SyCOS on the PIC are not real time since they perform analysis or development functions; however all *' data acquisition* and *' control* related functions (including the *' EXTOL* run-time) are inherently real time.

real time trend

The *' PIC* facility for retrieving and displaying information about several *' database* variables in *' real time* while it is gathered is known as the real time trend facility.

recipe

The term recipe refers to the mechanism within the *' EXTOL* environment for initializing a specified set of *' unit variable*s within a *' unit database*. A recipe is especially convenient in *' batch processing* where a single set of *' operation*s may be used to produce several different products. The recipe that is then loaded into memory before operation execution begins determines the product which will be manufactured.

recipe display

One of the standard displays available for the operator is the recipe display which provides a tabular display of a recipe.

Do we really have this?

record

The *' process database* is subdivided into records which contain all information about a particular item (such as a *' sensor* or a *' device*). These records are further subdivided into *' field*s.

ROM

Read-**O**nly **M**emory is used to store non volatile and unchanging data, such as the boot program, on *' MFC*'s and *' WS*'s.

S

screen printer

The screen printer is an option for the *' PIC* which provides the user with the capability of dumping a *' console display* to a hardcopy device. SyCOS installations used for application development usually have printers that can be used as screen printers. Note that *' alarm typer*s should not be used to print screen dumps or other user data, as this will interfere with their normal operation.

scanner

A scanner is the piece of software in the *' MFC* that collects the raw input data from the hardware and makes this data available to the *' process database*. Depending on the hardware connected to an MFC several scanners may be active simultaneously. The process database specifies the scanners that need to be active for a given hardware configuration.

sensor

The *' process database ' record*s which represent analog process variables are called sensors. With their associated *' control block*s, they are often called *' loop*s. *' CCEX*, *' control*

setpoint

The setpoint in a *' loop* is a *' field* containing the desired value for a *' process variable*. If the *' process database* is so configured, *' CCEX* will execute the *' control block*s in the loop driving their output so that the specified setpoint is achieved by the process variable.

signal selector block

The signal selector block in the *' process database* provides a general purpose signal

switching function. It may be considered a *' control block* or a *' logic block* and therefore may be associated with *' sensor* or *' device* blocks for processing by *' CCEX* or *' DCEX*.

site manager The same responsibilities as the *' works manager*.

SSS Abbreviation for *' Software Safety State*

Software Safety State Should the system software detect a hardware failure or should any part of the software running in a *' MFC* fail unexpectedly the software safety state is entered. The software safety state is defined by a special *' operation* written by the *' application programmer*. If no such operation was written or if the operation specified cannot be executed for any reason the is entered automatically.

standard display A standard display is a ready made and preconfigured part of the SyCOS operator interface. Standard displays allow visualisation and modification of process data by the operator. For increased flexibility the customer may create *' custom display*s. Standard displays include the *' alarm summary display*, the *' unit summary display*, the *' group display*, and the *' system status display*.

statement Statements are the *' EXTOL* language elements (i.e., source code) which are entered into the *' EXTOL* development utilities to create *' step*s.

steady state The term steady state control is often applied to the *' continuous control* portion of SyCOS. Although processes are inherently dynamic (a static process would not need a control system), a controlled process is normally attempting to achieve one of a sequence of stable states or is already in such a state. The *' continuous control* portion of SyCOS is set up to perform this type of control; the plant *' operator*, or the *' EXTOL* portion of SyCOS, provide the appropriate "target" states.

step The term step refers to a routine made up of *' EXTOL* statements. Steps are combined into operations (*' main step*, *' hold step*). A step cannot be executed directly, but execution of the *' operation* causes execution of the *' main step*s in sequence. If the operation is put on hold the *' hold step* associated with the current main step will execute.

supervisor Responsible for the operators.

system administrator Responsible for the administration procedures of the system, such as *' authentication* and *' authorization*

system manager Responsible for the management of people involved in the control system administration.

system status display The system status display is one of the *' standard display*s deliverd with the SyCOS software. It provides an overview of the status of all *' node*s in the *' network*.

T

tag *' ELT*

task A task is the term for a currently executing computer program. On any *' FS*, *' MFC* or *' PIC* many tasks may be active simultaneousy.

TCEX The timer executive software in the *' MFC* is completely driven by the *' process database*. It handles database points called *' TCEX*s which represent real time.

imer The database points which represent time as a *' process variable* are called timers. *' process database*, *' transition state*, *' MFC*

transition state The term transition state is sometimes used to refer to the process operation as it proceeds from one *' steady state* to another.

trend *' historical trend*, *' real time trend*

typer *' alarm typer*

U

unit
The term unit refers to the *' process database* block used to logically group a set of *' process database* items. In the *' EXTOL* environment, each such unit may have a *' unit database*, a set of *' operation*s, and a set of *' recipe*s.

unit database
The term unit database refers to the set of *' unit variable*s which are defined in the *' EXTOL* environment for a particular *' unit*. The unit database is loaded into the memory of the *' MFC* that the unit is resident in (designated using *' dbb*) and is independent of the *' process database*, except for the unit block.

unit summary display
One of the *' standard display*s available is the unit summary display which allows the *' operator* or engineer to inspect the information associated with a *' unit*. In addition to inspection *' operation*s may be started and *' recipe*s may be instated from the unit summary display, if the *' authorization* of the caller permits.

unit variable
The term unit variable refers to a variable defined in the *' EXTOL* environment for a *' unit*. These variables are located in the *' unit database*.

utilities
' CGS utilities.

V

VxWorks
VxWorks is the *' operating system* used on the *' MFC*'s. It is an industry standard *' real time* operating system from Wind River Data Systems.

W

watchdog
The term watchdog designates a piece of hardware or software designed to automatically watch over the correct functioning of a system. Should the watched over system fail the watchdog is said to drop, resulting in an emergency action being taken. SyCOS uses a software watchdog that watches over all system programs on the *' MFC* and can be programmed from *' EXTOL* to watch over user defined *' operation*s as well. The watchdog task pulses a digital output defined in the *' process database* to which an external hardware watchdog may be connected. If the watchdog task finds an error condition *' Software Safety State* is entered, and should that fail *' Hardware Safety State* is triggered by no longer pulsing the digital output.

works manager
Responsible for the whole works which may contain many chemical plants.

workstation
A workstation is either a *' FS* or a *' PIC*.

WS
Abbreviation for *' workstation*

Y

Z

3. Index