Laser-Scan Ltd.

FLOWLINE

Flowline Control System Definition and Operation Package

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Add some missing '_' characters, remove some excess '_'.

Bring the database definitions in Appendix A up to date.

Explain authorisations more formally.

Amend the prompts in the Task Status menu.

Correct the Element Definition form.

Document new 'GOLD N' (rename job) sequence in the Job Status menu and Job Statistics menu.

Amend doumentation of FLOWLINEINI and logical names.

Version 2.2 16-Apr-1992 John Cadogan

Amend the prompts in the Task Request menu.

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Add messages to the title page which indicate the progress of operator and workstation authorisation.

Add the /FAST_AUTHORISE qualifier which provides the ability for LAMPSCONTROL to skip the operator and workstation authorisation checks for second and subsequent invocations of LAMPSCONTROL within a single process session.

PREFACE

Intended audience

This manual is intended for all users of the Laser-Scan FLOWLINE package running under the VAX/VMS operating system. It is particularly geared towards a flowline system **manager** who requires to setup and maintain a flowine system.

Structure of this document

This document is composed of two main sections.

This first section comprises of four chapters which serve as a guide in the definition and control of a flowline system.

Chapter 5 is a reference guide to the LAMPSCONTROL program. It contains a description of the program, command line qualifiers, and a detailed description of each form and menu used.

Chapter 6 contains a description of flowline library messages.

Conventions used in this document

Convention	Meaning
<CR>	The user should press the carriage return key on the terminal
<CTRL/x>	The phrase <CTRL/x> indicates that the user must press the key labelled CTRL while simultaneously pressing another key, for example, <CTRL/Z>.
$**LAMPSCONTROL/MANAGE**	Command examples show all user entered commands in **bold** type.
file-spec...	Horizontal elipsis indicates that additional parameters, values or information can be entered.
[logical-name]	Square brackets indicate that the enclosed item is optional. (Square brackets are not, however, optional in the syntax of a directory name in a file-specification, or in the syntax of a substring specification in a VMS assignment statement).
'integer'	An integer number is expected in the specified input or output field.

CHAPTER 1

INTRODUCTION

INTRODUCTION

FLOWLINE is the Laser-Scan flowline database and control package and provides a flexible system for the management of a computer based flowline. Flowline operations are carried out by means of DCL command procedures. These command procedures are created independently from flowline database definition. Thus the system is not restricted to a specific application, and indeed may be used to manage more than one flowline simultaneously. The system is designed for the implementation of flowlines using Laser-Scan LAMPS mapping software, but is sufficiently general to control any flowline driven using DCL command procedures.

FLOWLINE - FEATURES

The FLOWLINE package consists of the the relational database FLOWLINE and the module LAMPSCONTROL. All management and operator interaction with the database may be achieved using LAMPSCONTROL. The following features are offered:

- automatic recording of the start and completion of flowline operations
- operator selection from available flowline tasks
- extensive flowline management facilities
- full reporting facilities of flowline status and performance
- menu and command qualifier input
- VMS format messages referenced using 32 bit condition code symbols
- assured database integrity, in the event of a system crash
- A DCL command file structure which enables the creation of flowlines which minimise the need for interactive operator input of information such as data file names, and program command line qualifiers.
- error recovery procedures
- flexible operator and workstation authorisation facilities

FLOWLINE and VAX Rdb/VMS

The system runs under the VAX/VMS operating system and uses the DEC relational database system VAX/Rdb. On system installation an Rdb FLOWLINE database is created to store all flowline specific information. The database consists of two files, the main database (FLOWLINE.RDB) and the snapshot file (FLOWLINE.SNP) which is used to increase the speed of read-only operations. Both these files are by default resident in the same directory but optionally may be placed on separate disks to reduce potential access conflict.

Check that these files exist by giving the command:

$ **DIRECTORY LSL$SITE_ROOT:[FLOWLINE.GENERAL.DATABASE]<CR>**

If the files do not exist then they may be created by issuing the command:-

$ **@LSL$COM:FLOWLINE_DB_CREATE<CR>**

which will create an empty database, and authorise the current operator and workstation to use it. The logical name LSL$FLN_WORKSTATION must be defined as the name of the workstation to authorise before executing the command file.

Rdb may operate in a VAX cluster environment. This has the obvious advantage to the FLOWLINE system of allowing operators working on different nodes of the cluster to access the same copy of the flowline database.

Screen menus and forms are used which make use of the form management system VAX/FMS.

Getting started with FLOWLINE

Once logged in the user must give two commands to initialise the FLOWLINE package. Before the FLOWLINE package can be used DCL symbols and logical names must be assigned to enable the user to operate the system. This is done using a command procedure LSL$COM:FLOWLINEINI.COM which is supplied as part of the FLOWLINE package. FLOWLINEINI should be invoked thus: (see the PREFACE for explanation of presentation conventions)

$ **@LSL$COM:FLOWLINEINI root customer flowline...<CR>**

The FLOWLINEINI command file expects at least 3 parameters.

1. 'root' specifies the name of the directory structure in which the read-only flowline command files are found - it will usually be either PUBLIC or SITE.

2. 'customer' specifies the names of directories specific to this installation of the flowline package - it will be the name of the customer site.

3. 'flowline' is the name of a particular flowline within the system - it is used in some logical names and directory names. Up to 6 'flowline' parameters may be given.

The FLOWLINEINI command procedure defines a DCL symbol (the module name) for the LAMPSCONTROL module. After using FLOWLINEINI the user need only type the symbol name to activate the LAMPSCONTROL module.

The command file also sets up various logical names, that are used within the system to reference the various files, as follows: -

```
$ DEFINE LSL$FLN_DATABASE -
      LSL$SITE_ROOT:[FLOWLINE.'customer'.DATABASE]
$ DEFINE LSL$FLN_WORK -
      LSL$SITE_ROOT:[FLOWLINE.'customer'.WORK]
$ DEFINE LSL$FLN_LOG -
      LSL$SITE_ROOT:[FLOWLINE.'customer'.LOG]
$ DEFINE LSL$FLN_PROJECT -
      LSL$SITE_ROOT:[FLOWLINE.'customer'.PROJECT]
$ DEFINE LSL$FLN_LOGIN -
      LSL$SITE_ROOT:[FLOWLINE.'customer'.LOGIN]
$ DEFINE LSL$FLN_JACKET -
      LSL$SITE_ROOT:[FLOWLINE.'customer'.JACKET]
```

The FLOWLINEINI command file will fail if these directories have not previously been created.

For each of the (1 to 6) flowline names given, logical names will be defined to reflect a directory structure for the particular flowline, e.g. :-

$ **FLOWLINEINI root customer DIGITISE<CR>**

carries out the following logical name assignments: -

```
$ DEFINE LSL$FLN_DIGITISE_SITE -
      LSL$SITE_ROOT:['customer'.FLOWLINE.DIGITISE.SITE]
$ DEFINE LSL$FLN_DIGITISE_ELEMENT -
      LSL$'root'_ROOT:['customer'.FLOWLINE.DIGITISE.ELEMENT]
$ DEFINE LSL$FLN_DIGITISE_PROCEDURE -
      LSL$'root'_ROOT:['customer'.FLOWLINE.DIGITISE.PROCEDURE]
$ DEFINE LSL$FLN_DIGITISE_JOB -
      LSL$SITE_ROOT:['customer'.FLOWLINE.DIGITISE.JOB], -
      LSL$'root'_ROOT:['customer'.FLOWLINE.DIGITISE.JOB]
```

The logical name LSL$FLN_DIGITISE_COM is defined as a search list which points to all four directories. These directories may be used to store the relevant command files for a specific flowline. FLOWLINEINI requires that these directories are created for the logical name definition to succeed.

The intention of this directory structure is that the directories LSL$'root'_ROOT:['customer'.FLOWLINE.'flowline_name'...] contain the definition of the flowline, and may be protected aginst write access. (These files may well be on LSL$PUBLIC_ROOT if the flowline has been

designed and supplied by Laser-Scan, rather than by the customer.) The other directories are written to during day-to-day use of the flowline, and should not be protected.

As an alternative to explicitly typing the FLOWLINEINI command each time the user wishes to use the FLOWLINE package, the FLOWLINEINI command may be placed in the users login file, or in the site dependent default login file.

Once the flowline system has been established on your site, an operator's LOGIN.COM file is normally be set up to loop continually to run the LAMPSCONTROL program. Thus, for example the operator on login, will be presented immediately with a list of tasks which he may immediately perform on the system. Once his session is complete, LAMPSCONTROL is again invoked to offer more tasks which may be carried out. The LAMPSCONTROL program itself offers the option of logging out of the system.

More on the various DCL command files associated with the FLOWLINE system is contained in chapter 4.

FLOWLINE and Laser-Scan Mapping Systems

Because flowline operations are carried out by manager designed command procedures, there is no restriction on the type of application which may be carried out using the system.

Laser-Scan mapping software (LAMPS) is however, particularly suitable for integration into a well defined flowline for applications such as map digitising and editing or digital terrain modelling.

All examples in this document refer to mapping applications.

CHAPTER 2

DATABASE CONCEPTS AND DEFINITION

DATABASE CONCEPTS AND DEFINITION

Introduction

The flowline control system utilises Digital Equipment Corporation's relational database system VAX Rdb/VMS. Flowline information is stored in a FLOWLINE database which is created on system installation. This database is situated in the directory referenced by the logical name LSL$FLN_DATABASE

Operators and managers interact with the database using the LAMPSCONTROL program, which is described in Chapter 5.

The design of a production flowline is by nature a complex process. Very often several design iterations will be required to produce the final result. Even when a flowline has been established in production, it may be required to be modified in the light of changing circumstances, such as increased operator proficiency, or differing requirements.

It is beyond the scope of this document to describe the methodology of flowline design. This chapter describes the concepts necessary for a flowline, once designed, to be defined in the FLOWLINE database and manipulated by the LAMPSCONTROL program.

Throughout this document various terms are used to describe types of information stored in the database. These are defined in detail below with reference to the example DIGITISE flowline (Figure 2.1) which represents a simple map digitising process. Words in bold type reference terms defined elsewhere. A full list of the information stored in the database relations is given in Appendix A.

The final section of this chapter describes general flowline definition procedures.

Flowline

A flowline is a well defined, independent sequence of operations which is designed to perform a **job** a number of times on different datasets. Figure 2.1 represents an entire flowline designed for map digitising. Each flowline is built from a series of **elements** which are connected together by **wire**s. Associated with each flowline is a DCL command procedure. When a job is launched on the flowline, the flowline command procedure is used to create the job command procedure, which is used throughout the duration of the job's existence.

More than one flowline may be defined on the database at one time. Each flowline is identified by a unique user defined 20 character identifier.

Element

An element is a single operation within a **flowline**. In Figure 2.1 each individual box represents an element. Defined with each element are its conditions for starting which determine when it may be performed on a **job**. The conditions are specified by a logical expression defined in terms of **wire**s which require to be active before the element may be carried out. In the example in figure 2.1 for element EDIT, the conditions are:

"3 AND 4"

This specifies that both wires 3 and 4 require to be active before the job may be performed on the element. The logical operators "OR" and "NOT" and up to 8 levels of brackets may also be used in the definition of the conditions.

Each element may have a number of different possible numeric outcomes. These define which wires become active when the element is completed on the job. An outcome may reference more than one wire, while more than one outcome may reference the same wire. In figure 2.1 element CHECK has 2 outcomes. Outcome 1 activates wire 9, while outcome 2 activates wire 8. These outcomes and wires are tabulated in Table 2.1

The actual execution of the element is carried out by the defined element command procedure, and optionally the associated **procedure** command file. The element command procedure is responsible for passing valid outcomes to the LAMPSCONTROL program.

Each element is identified by 20 character identifier which is unique to the flowline of which it forms a part.

Job

A job is a unit of work passed through a **flowline**. A job is created on a specified flowline, and for a specified **project**. In the DIGITISE flowline in Figure 2.1 a job would be a specific map sheet which is to be digitised. When a job is created a DCL command procedure is created which contains job-specific information, and which is executed before the job passes through an element. A job is started after this initial command procedure has been created, and is complete when the last **element** of the flowline has been reached. More than one job may be active on the flowline at a given time.

Associated with each job is a status value, which may take the value "Created", "Active" or "Held". At any time a job may be held to prevent temporarily further activity taking place, while the "Created" status indicates a job which has been created by the manager, but has not yet been launched on the system. Start and finish dates and times are also recorded for each job.

On job-completion the main record for the job is deleted from the database. A history record is created which holds all information about the job and which may be used for subsequent reporting

operations.

A job is given a 20 character identifier, which is unique to the job running on the specified project.

Task

A task is the piece of work which is required to be performed by an operator or sequence of operators to complete an **element** for a particular **job**. Tasks are created on the system as flowline activity takes place.

When a task is complete, a series of **wires** become active depending on the outcome of the task. Each element at the end of the probed wires is then tested to determine if conditions are such that subsequent tasks may be created. In this way a job progresses through a **flowline**.

Status values are associated with each task to show: -

1. Activity status - "Active", "Inactive", "Offline" or "Held". A task may become held as a result of an error in task execution, or by the intervention of the manager. Only "Inactive" tasks are available for all operators to perform. An offline task is one which is not performed on the computer system. It may only be completed by the operator who started it.

2. Progress status - "Started" or "Not Started". This is used to record whether any work has been carried out on the task. This information is passed to the element command procedure by LAMPSCONTROL.

As tasks are completed records are deleted from the database and history records are created for subsequent reporting operations.

Session

A session is a period of database work on a task. When an **operator** starts a task a session record is created in the database. More than one session may be required to complete a specific task.

Stored in each session record is the operator, **workstation**, timing information, and completion status.

The session completion status returned to the LAMPSCONTROL program by the element command procedure determines whether the task may be completed at the end of a session. The status takes the following values: -

1. Hold status means that an error has occurred which requires that the task is given "Held" status, and requires management intervention.

2. Continue status indicates that the task has not been completed, and that further work is required.

3. Restart status means that the work done on the task has been abandoned. Subsequent sessions will begin the task from scratch.

4. Complete status indicates that the task has been completed.

5. Sub-flowline status indicates that jobs have been launched on a **sub-flowline** on this task.

When a task is completed all associated session records are copied to the historical record which may then be used for reporting purposes.

Wire

Wires link the **flowline elements** together, and are used in two ways:-

1. As tasks are completed wires become "active" depending on the **task outcome** passed to the LAMPSCONTROL program from the element command procedure. These wires remain active until the **job** is completed, unless the job loops back to repeat an earlier element (or is moved back manually). In this case, wires activated by the elements which are moved back over are de-activated again.

2. On a specific task completion the element at the end of each wire probed is tested to determine whether the **conditions** are such that a task may be completed. The conditions may be fulfilled both by wires activated by the current task completion, or wires activated previously. These wires need not be defined to end on the element in question - they may indicate something that did, or did not, happen at an earlier stage in the flowline.

Each wire is identified by a 20 character identifier which is unique to a specific flowline. The identifier need not be a number, although the use of numbers is traditional in some flowlines.

The "activity" of a wire is related specifically to a job. Hence there is no danger of one job influencing the progress of another.

Project

A project is a set of inter-relating jobs. It need not be confined to one **flowline**. A DCL command procedure is created for a project, which is executed prior to any task running on a job in the project.

In the mapping example a project may be particular set of map sheets which require to be digitised for a particular purpose.

Associated with each project is a status which may either be "Active" or "Held". Thus a manager may temporarily suspend work on a project by setting the status to "Held".

A project is identified by a single 20 character identifier which is unique to the entire database.

Procedure

A procedure is closely associated with an **element**, but differs in that it need not be restricted to a single position within a flowline. Thus procedures are associated with specific operations which are used repeatedly either within one flowline or on different flowlines. The command procedure used to execute a procedure will usually only contain the necessary commands to run a particular program or simple sequence of programs.

An element specification may optionally include a reference to a procedure, but alternatively, all element processing may be carried out by the element command file alone.

A procedure is identified by a single 20 character identifier which is unique to the entire database.

Operator

An operator is a person who is authorised to work on the flowline system.

Operators may be authorised to work on **projects**, **jobs**, **flowlines**, **elements**, **procedures** or to make use of facilities within the LAMPSCONTROL program.

Each operator may have associated a number of authorisation records of the form:-

operator authorisation_type Allowed Identifier

The authorisation type defines which type of database entity is being authorised. It is specified by the following two character codes:-

"EL" - element

"DB" - access to the flowline database by means of the LAMPSCONTROL program

"FL" - flowline

"JB" - job

"PC" - procedure

"PJ" - project

The identifier denotes which specific flowline entity is being authorised. For all but the "DB" authorisation type the identifier may be any entity stored in the database - for example element MERGE

in the example DIGITISE flowline. The "DB" type my only take the following identifiers, which relate to facilities available with the LAMPSCONTROL program:-

"MENU" - for use of LAMPSCONTROL's menu facilities

"REQUEST" - to request tasks from the database

"MANAGE" - to perform management functions

"REPORT" - to perform reporting functions

The "Allowed" (Yes/No/Everything) field indicates whether an operator is being authorised to use or prevented from using a particular database entity or LAMPSCONTROL facility. "Everything" indicates the operator is authorised to work on all of the database entities with the specified authorisation type, and hence the Identifier is not required for such records. Note that operators who are authorised for "Everything" for a particular type, may also have negative records for the same type to prevent work on specific entities.

The following is an example authorisation record.

```
Operator = "JOHN"
Authorisation_type = "Element"
Allowed = "Yes"   (ie. positive)
Entity Identifier = "EDIT"
```

This record authorises an operator to perform work on element "EDIT".

The following rules are used for authorisation types. Each rule is applied in turn, stopping once a decision is reached.

1. If the operator has an explicit "Yes" for the entity in question, then authorised.

2. If the operator has an explicit "No" for the entity in question, then not authorised.

3. If the operator has an "Everything" record for the particular authorisation type, then authorised.

4. If the operator has one or more "Yes" records for other entities of the same authorisation type, then not authorised.

5. If one or more other operators has an explicit "Yes" record for the entity in question, then not authorised.

6. If none of the above apply, then authorised.

To summarise the rules less formally:

1. The absence of any positive authorisation records for a particular type implies that an operator is authorised for **all** the entities of that type except for any negative records which are present (but see 3 below).

2. The presence of any positive authorisation records of a particular type implies that an operator is not authorised for any non-present entities of that type.

3. The presence of a positive operator authorisation for a particular entity implies that other operators are not authorised for that entity unless they have a specific positive authorisations for the entity or an "Everything" "Allowed" field for the relevant authorisation type.

In practice these seemingly complex rules lead to a simple method of authorisation. If for example, an operator is to be authorised to work on only a few elements, then positive records should be used. If he is to be authorised on all elements except for a few, then negative records should be used.

An explicit authorisation for an operator to work on a particular element implicitly de-authorises all other operators from work on that element. This mechanism is useful if a certain operator (or group of operators) is the only person who may carry out a particular element. Specific records are therefore not required to de-authorise other operators from carrying out the element. If implicit de-authorisations are not desirable for an operator working on elements, then "Everything" in the "Allowed" field should be specified for the "EL" authorisation type. Alternatively the operator may be specifically authorised to also work on the element.

The following are examples of authorisations which may be set up using the example flowline.

1. DAVID may work on anything except LASERTRAK.

2. JANE is the only person who may work on LASERTRAK

3. JIMMY may work on anything in PROJECT "BEN_NEVIS"

4. JOAN may work on the "BEN_NEVIS" and "SOUTH_COAST" projects doing plot checking, and Map editing.

5. Mr_SMITH may perform management, request, and report functions.

Also recorded with each operator is the project, job, and element on which he last worked. This information is used by the LAMPSCONTROL program to indicate the preferred task when he next logs into the system.

An operator is identified by a 20 character name which should be unique to the flowline database.

Workstation

A workstation is a terminal device which is authorised to be used by the flowline system.

Workstations may be authorised for use on **projects, jobs, flowlines, elements, or procedures**. Using the map digitising example, non-graphics terminals could be prevented from being used for map editing. Authorisation records may be both positive - to allow a workstation to be used for something, or negative - to prevent something being done, or "Everything" to allow workstations to do all entities. They are defined analagously to operator authorisation (see previous section).

A workstation is identified by a 20 character name which should be unique to the flowline database.

Static and Dynamic Database Entities

Some of the database entities described above can be described as static, because they are defined at the flowline definition phase, while others are dynamic because the information stored is in a constant state of flux during flowline activity.

Static entities are **Flowlines, Elements, Procedures and Wires**. Dynamic entities are **Projects, Jobs, Tasks, Sessions and wire activity**. **Operators and Workstations** are a mixture of the two - some operator information such as his name is static, while the record of the current job, project and element is dynamic.

These concepts apply to the associated command files also. Flowline, element and procedure command files are static because they are written during database definition. Project and job command files are dynamic because they are created automatically when jobs and projects are launched on the system.

Historical Information

Historical information is stored in the database for jobs, tasks and sessions. Whenever a job completes, the main job database record is deleted and historical record is created. Similarly when a task completes, the task and associated session records are also archived.

The historical information is maintained for use by the various reporting facilities of LAMPSCONTROL.

Priorities

Priority values may be associated with **flowlines, elements, procedures, projects and jobs**. The LAMPSCONTROL program makes use of these priorities to determine the order in which projects, jobs and tasks are offered to the operator. Larger priority values indicate greater priority.

Priorities are specified as integer values between 1 and 16. Each task has an implicit priority related to its creation time. Thus a task gains priority, the longer it remains on the system.

Priorities themselves have the following order of precedence:

Project
Flowline
Job
Element
Task

Thus for example, if for example all elements have the same priority, then tasks are listed only in order of task priority.

The record of the current project, job and element for a particular operator takes precedence over all the above priorities.

It should be noted that the priorities normally only affect the order in which information is presented to the operator. Provided the default /MENU qualifier is specified with the LAMPSCONTROL program, then at any time he may carry out any of the tasks for which he is authorised, on his current workstation.

Sub-flowlines

A sub-flowline is effectively a sub-routine which may be called from a single element of the main flowline. The sub-flowline itself is defined in the same way as a normal flowline. The specified element to run the sub-flowline may start a variable number of sub-jobs on the sub-flowline. Only when all these jobs are complete is the task on the calling element complete.

An example mapping application for sub-flowlines would be if a map sheet was required to be split into smaller sections for digitising, and post processing. Figure 2.2 shows this sub-flowline which could be inserted in element DIG_CONT in Figure 2.1. This would also require a further element in the DIGITISE flowline to merge all the sections together. Only when all the sections of the map are complete is the main job free to proceed.

The relevant element command procedure is responsible for starting jobs on a sub-flowline. Chapter 4 contains further information on all flowline command files.

Parameters

One of the important features of the FLOWLINE package is that information which is relevant to a particular job may be made available to tasks by means DCL symbols assigned values in the job command procedure for that job. (see Chapter 4 for a full description of command file creation). This information is normally entered when the flowline manager launches a job on the system.

In some cases, however, it may be necessary for particular tasks to pass information either to immediately succeeding tasks, or to any subsequent tasks in the job for which it may be required. The flowline database holds such information as **Parameters** of which there are three types:- .

1. A **global parameter** which has been set up by a task is available for use in any subsequent tasks in the job.

2. A **local parameter** is passed to all immediately succeeding tasks in the job. (ie. tasks on those elements joined by a single wire to the element which creates the parameter). Local parameters may also be used to pass information from session to session within a task.

3. An **external parameter** is used to pass information from a sub-job to the enclosing outer-job. When a sub-job completes, any external parameters are translated into local parameters in the outer task.

Parameters should be valid DCL statements and will normally be symbol assignments. LAMPSCONTROL ensures that the DCL statements are executed prior to the carrying out of the relevant tasks in the job.

Chapter 5 describes the methods by which parameters may be set up in element command files.

Flowline Definition

The definition of a flowline database may be carried out using the appropriate options on the top-level LAMPSCONTROL management menu. Screen forms are provided for the interactive input of the static flowline, element, wire and procedure information all of which is required for complete flowline definition.

If a flow diagram has not been created during the flowline design phase, then it is essential that one should be prepared before definition in the database, for all but the simplest applications. The flow diagram, not only facilitates the definition procedure, but also, with careful annotation, serves as a record of the flowline as it is stored in the database. It will also prove valuable as a "debugging" tool.

A flow diagram for the database definition has slightly different conventions from usual. The flow diagram structure should be composed entirely of elements and linking wires. Decision boxes are generally incorporated within elements, which may be defined to have different outcomes which in turn affect the outgoing wires.

Each flowline should have a single start and single ending element, which is used by LAMPSCONTROL for job launch and completion respectively. In the example DIGITISE flowline in figure 2.1 these are START_DIG and END_DIG. Clearly the start element does not require initial conditions, and will only have one outcome which should have a value of 1. Similarly, the final element has no outcome.

Once the flow diagram has been constructed, each of the wires and elements should be labelled with unique identifiers. Each wire is also directional, therefore an element has both incoming wires and outgoing wires. For each element it is necessary to tabulate the initial conditions, and the outcomes, along with the wires which are affected. This is done for the example flowlines in Tables 2.1 and 2.2.

Once a flowline has been entered into the system the various parameters may be examined either on a terminal screen or printed using the reporting facilities of the LAMPSCONTROL program. The various static command files which are required should then be designed. Chapter 4 contains information on command file creation.

Table 2.1

FLOWLINE DIGITISE

Element	Procedure	Conditions	Outcomes	Wires	Command_file
START_DIG	-	-	1	1, 2	-
DIG_CONT	LASERTRAK	1	1	3	DIG_CONT.COM
DIG_SPOT	LITESDIG	2	1	4	DIG_SPOT.COM
EDIT	LITES2EDT	(3 AND 4) OR 9	1	6	EDIT.COM
			2	5	
PLOT	FPP	6	1	7	PLOT.COM
CHECK	CHECK_IT	7	1	8	CHECK.COM
			2	9	
MERGE	IMERGE	5 OR 8	1	10	MERGE.COM
END_DIG	-	10	-	-	-

Table 2.2

FLOWLINE SUB

Element	Procedure	Conditions	Outcomes	Wires	Command_file
START_SUB	-	-	1	1	-
DIG	LASERTRAK	1	1	2	DIG.COM
POST_PROC	LAPROCESS	2	1	3	POST_PROC.COM
END_SUB	-	3	-	-	-

CHAPTER 3

SYSTEM OPERATION AND MANAGEMENT

System Operation and Management

Introduction

The flowline system, once operating, requires day to day management to resolve problems which may occur and monitor performance.

This chapter describes generally flowline operation, and describes trouble shooting methods. Precise instructions of how to carry out the procedures described are to be found in chapter 5, which provides detailed documentation on the LAMPSCONTROL program.

General System Operation

Flowline operations are carried out by DCL command files, while interaction with the database is achieved using the LAMPSCONTROL program. Command files may be generated by the LAMPSCONTROl program, and may call LAMPSCONTROL to notify the database of flowline events.

In the normal mode of operation the use of LAMPSCONTROL/REQUEST enables an operator to select a task to execute, in a specified job and project. The program generates a command file from database information, which contains the necessary DCL commands to perform the task. This "jacket command procedure" contains references to project, job, element and procedure command files. Information is passed to these command files by means of DCL symbols set up at the start of the jacket command procedure. Near the end of the file is a call to LAMPSCONTROL/NOTIFY to indicate to the database that a session has been completed. Information regarding session status and timing statistics is transferred using subsidiary qualifiers to LAMPSCONTROL/NOTIFY. Further information on command files is contained in chapter 4.

The operator may choose a project, job and task to perform from a hierarchy of menus. By default, on invocation of the LAMPSCONTROL/REQUEST program, the operator is first presented with a choice of tasks in the job and project on which he last worked. If there are no tasks available the job selection menu is displayed, and if there are no jobs then the project selection menu is shown. The menus offer the options to select a project, job or task and also to move up to a higher level menu or log out of the system. If LAMPSCONTROL/REQUEST/NOMENU is specified then task selection takes place automatically.

Management options to create both jobs and projects, which are present on the LAMPSCONTROL management menu, operate in a similar way to task selection. Once the manager has entered the relevant information for a job to be created, LAMPSCONTROL generates a jacket command file which is used to create the job specific command file. This command file is generated using the flowline command file which interrogates the manager for various job-specific data. The jacket command file for this operation also contains a call to LAMPSCONTROL/NOTIFY to indicate that the job may be started on the system.

Monitoring System Status

Monitoring of the FLOWLINE system is achieved through use of the reporting options of the LAMPSCONTROL program. The status of all the current projects, jobs, tasks, and sessions may be examined using the appropriate reporting option. The manager may therefore view what work is currently being carried out, by whom, and on which workstation. The "Inactive" tasks which are waiting to be done as soon as authorised operators selects them are also shown. Tasks which are "Held" are those which have been held by the manager explicitly, or those tasks which have been attempted by an operator, but which have failed in some way, and require manager investigation.

Information is also available on a per-operator and per-workstation basis. Thus the manager can find what any operator is doing, or for what a particular workstation is currently being used.

Using these functions a manager may very quickly gain an appreciation of the current state of the system, and may use the information to exploit manpower and workstation resources to the full.

LAMPSCONTROL also allows a log file to be specified with the /LOG qualifier. All messages output by LAMPSCONTROL are also written to this file, and hence it provides a record of system activity. Log files may be common to a single operator or may be shared by a group of operators. It is recommended that log files are regularly deleted to save on disk space and to improve program efficiency.

Flowline Control and Management Procedures

The flowline manager may control flow of work carried out on the system by the following methods:

1. *Holding projects, jobs or tasks* to prevent further work being carried out on them. They may subsequently be released. Selection of the Status modification option on the menu allows both holding and release to be performed. If a project is held then no jobs or tasks in that project will be performed. If a job is held then no tasks in the job are carried out. If a job or project which contains active tasks is held, then they may complete, but no further tasks are offered for operators to carry out. An active task may not, however be held.

   It is useful to be able to hold projects or jobs if a problem occurs in the flowline which requires time to diagnose the fault before further work is carried out.

2. *Altering the priority of various flowline entities.* The status modification option on the management menu allows the project, and job priorities to be altered, while the flowline definition option allows flowline, element, and procedure priorities to be changed. Chapter 2 describes how the various priorities are used. The list of tasks, jobs and projects as offered to an operator to perform are always presented in decreasing order of priority (but see (3)

below). The flowline manager should therefore encourage operators to choose the first item in the list to ensure the priority system has maximum effect. Job and Project menus operate similarly. If the /NOMENU qualifier is specified with LAMPSCONTROL/REQUEST then automatic selection of the highest priority task takes place.

3. *Changing the record of the current project, job, and element* for a particular operator using the operator authorisation option. The current project, job, and element always takes precedence over any other priorities as described above. Thus it is possible to schedule a particular task to be carried out by an operator, provided he is authorised to do so on his current workstation, that a suitable task exists on the specified element, and that he chooses the first option on the list of tasks when he next uses the system.

4. *Authorising the operators and workstations* for work on projects, jobs, flowlines, elements and procedures. Chapter 2 outlines the form of of authorisation records. The main management menu offers the facilities for changing the records for a single operator or workstation.

Task Errors

Flowline tasks may fail for a number of reasons. The database is notified of a task failure by the call to LAMPSCONTROL/NOTIFY in the jacket command file. The error return status is set up in the element command procedure. Normally element command procedures should only return the error status, if the error is serious enough to require management investigation before the task may proceed. On receiving this status LAMPSCONTROL sets the task status value to "Held". In addition more information regarding the nature of the error may be ascertained by looking in the LAMPSCONTROL log file. Once the problem has been solved, the task may be released by use of the Status Modification option in the main LAMPSCONTROL management menu. The task may either be "restarted" or "continued" depending on the nature of the error.

System Crashes

In the event of a computer crash all sessions on the system remain active in the FLOWLINE database. On system startup these sessions are still present even although clearly no operators are working on the flowline. The manager must therefore notify the database of their completion. This may be done using the notify option on the main LAMPSCONTROL management menu. The associated tasks may be restarted or continued depending on whether pre-crash work may be salvaged or whether the task requires to be done again from scratch.

The actual database integrity is always ensured for a system crash because database updates are carried out in a single transaction, which is rolled back by Rdb recovery procedures.

Resetting a Job

A manager may decide that some work done on a job may be invalid. If for example a task was carried out on an element near the beginning of the flowline, and it was later discovered that the output files produced were corrupt, then subsequent tasks using these files will also have produced spurious results. To deal with the situation a job may be reset in the flowline using the appropriate option of the Job-status modification menu. The manager may select one or more elements of the flowline back to which the job is to be repositioned. All tasks and active wires which emanate from these elements are deleted.

A job which is reset is automatically "Held" by the database. It must subsequently be released once it has been ensured that correct resetting has taken place.

Note that is not possible to jump down a flowline and reset a job on an element which has not previously had a task run on it. It is however possible, though not advisable, to skip a task on a job using the skip task option of the task-status modification menu. This facility should only be used with care, because any output files that will normally be generated by the task will not be produced.

Deleting Projects and Jobs

The status modification option of the main management menu allows both tasks and jobs to be deleted from the system.

Project deletion results in the deletion of all history records for jobs, tasks, and sessions within it. These records are used for statistical reporting purposes, and so it is recommended that this option is not used unless it is necessary to reduce the size of the database. This is the only method by which the database historical records may be erased. Project deletion is invalid if any jobs are currently present within it.

Job deletion results in the deletion of all tasks that currently exist within it. The option is invalid if there are currently any active tasks in the job.

Reporting on Flowline Performance

LAMPSCONTROL /REPORT offers facilities for reporting on the performance of the database. The database stores historical information on jobs, tasks, and sessions. This information may be used to:

1. analyse on a per-flowline and per-element basis to determine which parts of a flowline are taking a long time and using up system resources.

2. gauge operator and workstation performance

3. analyse statistics on a per-project, per-job, per-task and per-session basis to enable performance trends to be identified.

Output of the reported information may be directed to line printer for more detailed analysis.

Batch Jobs

One of the strengths of the FLOWLINE system is in the handling of tasks that are normally carried out as computer batch jobs. It is possible to set up a batch queue as a pseudo-flowline operator. A captive command file which runs the LAMPSCONTROL system may be set up to run as a batch job. The pseudo-operator may be authorised to perform tasks which may be run in batch. As soon as such a task becomes available on the system the batch job will automatically start doing it. Several such batch queues may be set up if there is a high proportion of batch-job work in the system.

LAMPSCONTROL/REQUEST/NOMENU should be used in the batch job command file to ensure automatic task selection. The example controlling command file LSL$PUBLIC_ROOT:[FLOWLINE.EXAMPLES]CONTROL_EXAMPLE.COM offers a control mode for operating in batch.

CHAPTER 4

FLOWLINE COMMAND FILES

FLOWLINE COMMAND FILES

Introduction

The flowline control system relies on DCL Command procedures (Command Files) to carry out flowline operations. Their development is by far the most onerous job in the creation of a working flowline. Bugs in command files are notoriously difficult to trace, and so it is essential that a systematic approach is adopted in order to reduce programming errors to a minimum.

One of the main requirements of the design of the command file structure is that operator input of information such as filenames, program command line information should be reduced to a minimum, thereby reducing the possibility of production errors caused by operator mistakes. This may be achieved by ascertaining the information which is constant to a project or job. For example in a map digitising flowline, a job may consist of digitising map sheet NORTHWEST1 with geographical boundaries defined by the coordinates SW(100,100) NE(500,500). This information is constant for the entire job and may be entered by the manager when the job is created on the system. File names for this job could contain references to NORTHWEST1 while programs which require the geographical information may use the pre-determined values. Element command procedures may make use of this job-specific information rather than interrogating the operator.

The following are the main classes of command file which exist in the flowline system.

1. Operator Login and Control Command Files

2. Flowline System Command File

3. Flowline Command files

4. Element Command Files

5. Procedure Command Files

6. Project Command Files

7. Job command files

8. Jacket Command Files

Some of these command files are created by the system manager, some are generated by the LAMPSCONTROL program, while some are produced by others. Each of these categories is now considered in detail.

It is assumed that the reader is familiar with DCL (Digital Command Language) procedures. The DEC manual "Guide to Using DCL and Command Procedures on VAX/VMS" provides further information.

Examples of the various types of command procedure are held in the directory LSL$PUBLIC_ROOT:[FLOWLINE.EXAMPLES].

Operator Login and Control Command Files

The login command file sets up various DCL symbols and logical names which may be used at a later stage. This includes the workstation type and the operators identity as well as common logical names. The command file should then call LAMPSCONTROL with the appropriate qualifiers, thus immediately presenting the operator with a menu of options to carry out on the system. Following the call to LAMPSCONTROL the jacket command command procedure created by the program should be invoked to carry out the option selected by the operator. A subsequent loop back to the LAMPSCONTROL invocation statement in the command file ensures that the operator never exits the captive login command file until the exit option is selected in the program.

The actual call to LAMPSCONTROL will vary depending on the type of operator and workstation. (see chapter 5). The example file CONTROL_EXAMPLE.COM is a general purpose FLOWLINE controlling command file which takes parameters according to the type of operator and mode of operation. This file could be called from within an operator's login command file. Such generally used login command files should be stored in the directory LSL$FLN_LOGIN.

Flowline System Command File

The flowline system command file is executed by the system manager at the start of any project. It asks for information relevant to the project as a whole such as file extensions to be used for both the command procedures written and for the job in its various stages in the flowline.

The information gathered by the system command file is written to another command file (the project command file) which is executed before any element so that any part of the flowline can have access to this information. The name of the project command file to be constructed can be built up from the project name which is passed to the system command procedure (see chapter 5 on LAMPSCONTROL variables) although it may be wise to give the system manager an opportunity to change it. It should be noted that this filename should be unique throughout the system. As with all command procedures relevant information such as the name of the command procedure written and the program status on completion (e.g.'error' or 'complete') be returned to LAMPSCONTROL via the system variables.

Normally one system command file will be required to be written for the FLOWLINE system to operate, and will be stored in the directory LSL$FLN_PROJECT. The file may be edited using the appropriate option on the LAMPSCONTROL Flowline System Definition Menu.

Flowline Command Files

This command file is run by the system manager at the start of a job. It performs a similar task to the system command file in that it writes information to a command file for execution before an element is started. This command file gathers information relevant to a particular job such as a map name, control points and possibly the names of other files to be called later in the flowline.

The name of the job is passed to this flowline command file by LAMPSCONTROL so a unique command file name can be constructed from this. The name of the job command procedure written, together with the status of the job creation process (e.g.'error' or 'complete') should be passed back to LAMPSCONTROL via the system variables described in chapter 5.

Normally flowline command files are stored in the directory LSL$FLN_"flowline_name"_JOB, which is a search list of a directory on LSL$SITE_ROOT for transient and locally edited files, and another directory for more permanent files. A flowline command file may be edited using the appropriate option on the LAMPSCONTROL Flowline System Definition Menu. Care should be taken that the edited version goes into the intended directory.

Element Command Files

The element command files, when called, perform a task on a job. The element may contain interactive or non-interactive functions which form an identifiable unit. The units should be kept relatively small to fully utilise the potential of the system for data integrity. It is suggested that no more than one call to an interactive program is made within a procedure so that the data can be saved immediately before any more processing is carried out. It is however sensible to group calls to automatic functions together in one element to make the execution more efficient. In general the major functions of an element command file are to set up various symbols and then call the procedure command file.

It is advised that symbols for all input and output files which are to be used in the element or the procedure command file are set up here. The symbols set up by the project and job command files may be used to build the filename. For example if the symbol JOB_NAME is set up in the job command file and PROJECT_PREFIX, EDIT_PREFIX and EDIT_SUFFIX are set up in the project command file to identify a project and task, then a symbol can be set up in the element file in the following way.

$ INPUT_FILE = EDIT_PREFIX + JOB_PREFIX + JOB_NAME + EDIT_SUFFIX

The symbol INPUT_FILE can then be used in the element, or the procedure command file it calls, as a unique identifier for a job at a particular stage in the flowline. This is important as it means that a uniquely named copy of the file remains in situ after each element has executed. The element can therefore be rerun with the same initial data in the event of a problem. The database also requires other symbols indicating the status of the element to be set up and these are detailed in chapter 5.

In general the element will pass control to the procedure command procedure for the actual processing but if only trivial user interaction is required then the element could do this itself. Although an element must be unique and each element may have only one procedure a procedure may be shared by several elements. The database sets up a symbol 'FLN_PROCEDURE_COMPROC' containing the name of the procedure to be called. This allows for more flexibility in the system and is explained more fully in chapter 5 (Lampscontrol).

Normally element command files are stored in the directory LSL$FLN_"flowline_name"_ELEMENT, but locally edited copies may be in the directory LSL$FLN_"flowline_name"_SITE. For this reason, element command files should usually be referred to by the search list LSL$FLN_"flowline_name"_COM, which includes both of the above directories. An element command file may be edited using the appropriate option on the LAMPSCONTROL Flowline System Definition Menu. Care should be taken that the edited version goes into the intended directory.

Procedure Command Files

The procedure command procedures are called by the element to do the actual work in calling programs and interfacing with the user. All of the files that it uses have already been set up as symbols by the element. As has been mentioned above it is important that the procedure creates a new uniquely named file if any changes are to be made to the input file. This ensures that in the event of a problem in the job, it may be restarted at any point in the flowline with the original data.

In some cases a program started up by the command file expects all input to come from the file, this is not always what is required and the command 'DEFINE/USER SYS$INPUT SYS$COMMAND' will inform the program to expect any input to come from user.

The database requires various symbols to be set up to give the status of the element. As much of the processing within an element is done by this procedure, responsibility for maintaining these variables is also assumed. The symbols are explained fully in chapter 5 and include, for example, flags to show whether the element is complete or if the operator just wanted to end a session. The operator may have to be asked questions at the end of a session to determine what is happening.

Normally procedure command files are stored in the directory LSL$FLN_"flowline_name"_PROCEDURE, but locally edited copies may be in the directory LSL$FLN_"flowline_name"_SITE. For this reason, procedure command files should usually be referred to by the search list LSL$FLN_"flowline_name"_COM, which includes both of the above directories. A procedure command file may be edited using the appropriate option on the LAMPSCONTROL Flowline System Definition Menu. Care should be taken that the edited version goes into the intended directory.

Project Command Files

These are written by the system command files (see above) and contain information such as file extensions and work directories that are unique to a particular project. The project command file is executed before any element is called and the information contained within it can therefore be referenced by any element executed.

Normally project command files are stored in the directory LSL$FLN_PROJECT. They may be edited using the LAMPSCONTROL Project Status Modification Menu.

Job Command Files

The job command files are written by the flowline command files (see above). They are executed, together with the project command file, whenever an element is run. This file sets up information related to a particular job for example the map scale or corner points could be set up here and then referenced by any element in the flowline or any sub-flowlines beneath it. Normally job command files are stored in the directory LSL$FLN_"flowline_name"_JOB. They may be edited using the LAMPSCONTROL Job Status Modification Menu.

Jacket Command Files

The jacket command procedure is written by LAMPSCONTROL. It sets up the system variables used in the other command procedures such as FLN_PROCEDURE_COMPROC which tells an element which procedure command procedure it should call. The jacket command file also calls the project and job command files to set up related symbols before calling the element. Normally jacket command files are placed in the directory LSL$FLN_JACKET.

Sub-flowlines

In addition to the main flowline sub-flowlines may exist. These have the same structure as the main flowline and should be able to be run as standalone flowlines. This is particularly important for testing and debugging purposes. A sub-flowline is used when a job becomes subdivided and several tasks are required to be done. For example a flowline may be the preparation of a digital map, if the map has to be split into segments for digitising and processing then a sub-flowline would be constructed for this and the segments would be submitted as separate jobs. When all of these are complete then the main flowline job may proceed.

The command file for an element which calls a sub-flowline is fairly complex. For each sub-job to be launched, LAMPSCONTROL/CREATE_JOB = "sub-job-name" should be invoked. Thus a looping structure is required.

The flowline command file for the sub-flowline is invoked within the jacket command procedure generated by the LAMPSCONTROL job creation operation. The jacket command file should also be called within the element command procedure loop. The sub-flowline command file will therefore be invoked for each of the sub-jobs. Clearly this will involve duplication of operator input, because much sub-job information will be constant for all the sub-jobs. For this reason it is better to set up such information in the calling job. This may be done by setting up symbols outside the job-creation loop in the calling element command procedure or in the job command file of the calling job. In order to allow the sub-flowline to be run standalone, if necessary, the flowline command procedure should test that these symbols are null before prompting the user for their values.

A simpler, though not as flexible solution is to test the values of system variables such as "FLN_OUTER_JOB_NAME" from within the flowline command file. If this symbol is null then the flowline is being run standalone and should gather all the relevant information itself. Otherwise it should assume that the calling element has set up the relevant symbols.

The elements and procedure command procedures within a sub-flowline are exactly the same as those in a flowline.

CHAPTER 5

MODULE LAMPSCONTROL

Module **LAMPSCONTROL**

Replaces LAMPSCONTROL is a new utility

Function

The LAMPSCONTROL utility allows a flowline system manager to define a flowline system containing one or more flowlines, to create projects to use the flowline system, and to launch jobs on selected flowlines. The manager is able to edit any command procedures associated with the operation of the system from within LAMPSCONTROL.

LAMPSCONTROL examines and updates a relational database containing information about the definitions of various flowlines, the progress of projects and jobs on those flowlines, and the details of the various operators and workstations using the flowline control system.

The flowline system manager may use LAMPSCONTROL to authorise operators and workstations to access specified components of the system.

In a different mode of operation, LAMPSCONTROL allows the selection of tasks to perform by ordinary operators according to a priority scheme. It ensures that tasks are correctly sequenced with reference to the definitions of flowlines, elements and wires.

Reports may be obtained using LAMPSCONTROL on the system definition, the status of projects and jobs in the system, and the historical statistics of the system and those who are using it.

If required, LAMPSCONTROL will generate a command procedure file (known as the 'jacket command procedure') to execute existing command procedures which will perform any operations, such as file manipulations and calls to other utilities, necessary to create projects, to launch jobs and to carry out tasks defined by flowline elements.

Format

$ LAMPSCONTROL

Command qualifiers	**Defaults**
/[NO]COMMAND_FILE=file-spec	/COMMAND_FILE= LSL$FLN_JACKET:FLN_JACKET.COM
/[NO]CPU=cpu-time	/NOCPU
/[NO]CREATE_JOB=job-name	/NOCREATE_JOB
/[NO]CREATION_RESULT=creation-result	/NOCREATION_RESULT
/[NO]FAST_AUTHORISE	/NOFAST_AUTHORISE
/[NO]FLOWLINE_ID=flowline-id	/NOFLOWLINE_ID
/[NO]JOB_ID=job-id	/NOJOB_ID
/[NO]LOG=file-spec	/LOG=LSL$FLN_LOG:FLN.LOG
/[NO]LOGOFF	/LOGOFF
/[NO]MANAGE	/NOMANAGE
/[NO]MENU	/MENU
/[NO]NEW_COMMAND_PROCEDURE=file-spec	/NONEW_COMMAND_PROCEDURE
/[NO]NOTIFY	/NONOTIFY
/[NO]OUTCOME=integer	/NOOUTCOME
/[NO]OUTER_TASK_ID=task-id	/NOOUTER_TASK_ID
/[NO]PARAMETERS	/NOPARAMETERS
/[NO]PRIORITY=integer	/NOPRIORITY
/[NO]PROBLEM=problem-descriptor	/NOPROBLEM
/[NO]PROJECT_ID=project-id	/NOPROJECT_ID
/[NO]REPORT	/NOREPORT
/[NO]REQUEST	/NOREQUEST
/[NO]SESSION_ID=session-id	/NOSESSION_ID
/[NO]SESSION_RESULT=task-state	/NOSESSION_RESULT
/[NO]WAIT_TIME=delta-time	/NOWAIT_TIME

The LAMPSCONTROL utility also interacts with the user and with user defined command procedures by the following methods:

1. Screen menus and forms.

2. Command driven task/session parameter definition.

3. DCL symbols for interfacing between the jacket command procedures generated by LAMPSCONTROL and user defined command procedures.

Restrictions on Use of Command Qualifiers

The following restrictions exist on the combinations of command qualifiers which can be used with LAMPSCONTROL:

1. No two from /REQUEST, /REPORT, /NOTIFY or /MANAGE may appear on the same command line.

2. /NOTIFY must appear with one, and one only, of /SESSION_ID, /JOB_ID, or /PROJECT_ID.

3. /SESSION_ID must appear with /SESSION_RESULT, /OUTCOME and /CPU; and these qualifiers may only be present if /SESSION_ID is present.

4. /PARAMETERS may only be present with /SESSION_ID.

5. /JOB_ID may only be present with /NOTIFY if /NEW_COMMAND_PROCEDURE is also present.

6. /PROJECT_ID may only be present with /NOTIFY if /NEW_COMMAND_PROCEDURE is also present.

7. /NEW_COMMAND_PROCEDURE may only be present if one of /JOB_ID or /PROJECT_ID is present with /NOTIFY.

8. /JOB_ID and /PROJECT_ID may not be present together.

9. /CREATE_JOB should be present with /FLOWLINE_ID, /PROJECT_ID and /OUTER_TASK_ID; and only if /MANAGE is also present.

10. /PRIORITY may only be present with /CREATE_JOB.

11. /WAIT_TIME should only be used with /REQUEST and /NOMENU, that is, when performing non-interactive task requesting.

12. It is advisable that /MANAGE is not used without /MENU unless /CREATE_JOB is used.

13. It is advisable that /REPORT is not used without /MENU.

14. It is advisable the /NOTIFY qualifier is not used with /MENU.

Suggested Command Lines

The following are suggested command line templates for performing the most commonly required operations of LAMPSCONTROL:

```
$     LAMPSCONTROL
```
This may be used to obtain the 'Overall Control Menu'.

```
$     LAMPSCONTROL /REQUEST /MENU /COMMAND_FILE=file-spec
```
This may be used to access the request menus.

```
$     LAMPSCONTROL /REQUEST /NOMENU /COMMAND_FILE=file-spec
```
This may be used for automatic (non-interactive) task requesting.

```
$     LAMPSCONTROL /MANAGE /MENU /COMMAND_FILE=file-spec
```
This may be used to obtain the 'Main Management Menu'.

```
$     LAMPSCONTROL /MANAGE /NOMENU /COMMAND_FILE=file-spec  -
                   /CREATE_JOB=job-name  -
                   /FLOWLINE_ID=flowline-id  -
                   /PROJECT_ID=project-id  -
                   /OUTER_TASK_ID=task-id  -
                   /PRIORITY=integer
```
This may be used for non-interactive job launching.

```
$     LAMPSCONTROL /REPORT /MENU /NOCOMMAND_FILE
```
This may be used to obtain the 'Main Report Menu'.

```
$     LAMPSCONTROL /NOTIFY /NOMENU /NOCOMMAND_FILE  -
                   /PROJECT_ID=project-id  -
                   /CREATION_RESULT=creation-result
                   /NEW_COMMAND_PROCEDURE=file-spec
```
This may be used for notification of a successful project creation.

```
$     LAMPSCONTROL /NOTIFY /NOMENU /NOCOMMAND_FILE  -
                   /JOB_ID=job-id  -
                   /CREATION_RESULT=creation-result
                   /NEW_COMMAND_PROCEDURE=file-spec
```
This may be used for notification of a successful job launch.

```
$     LAMPSCONTROL /NOTIFY /NOMENU /NOCOMMAND_FILE  -
                   /SESSION_ID=session-id  -
                   /SESSION_RESULT=task-state  -
                   /OUTCOME=integer  -
                   /PROBLEM=problem-descriptor  -
                   /CPU=cpu-time
```

This may be used for notification of a session termination.

Commands for Parameter Definition

The following commands are available in the command driven mode of operation of LAMPSCONTROL used for defining local, global and external parameters for passing between sessions and tasks:

EXIT
EXTERNAL string-list
GLOBAL string-list
LOCAL string-list

< and **>** to delimit DCL symbols for substitution within 'string-list' arguments.

For information on how to define parameters from within user command procedures, refer to the DCL symbols FLN_LOCAL_PARAM, FLN_GLOBAL_PARAM and FLN_EXTERNAL_PARAM.

DCL Symbols

The following DCL symbols are used to interface between the user defined command procedures and the jacket command procedures generated by LAMPSCONTROL:

FLN_CREATION_RESULT
FLN_ELEMENT_COMPROC
FLN_ELEMENT_ID
FLN_EXTERNAL_PARAM
FLN_FLOWLINE_COMPROC
FLN_FLOWLINE_ID
FLN_GLOBAL_PARAM
FLN_INT
FLN_JACKET_COMPROC
FLN_JACKET_TYPE
FLN_JOB_COMPROC
FLN_JOB_ID
FLN_JOB_NAME
FLN_LOCAL_PARAM
FLN_MODE
FLN_OPERATOR
FLN_OUTER_ELEMENT_COMPROC
FLN_OUTER_ELEMENT_ID
FLN_OUTER_FLOWLINE_COMPROC
FLN_OUTER_FLOWLINE_ID
FLN_OUTER_JOB_COMPROC
FLN_OUTER_JOB_NAME
FLN_OUTER_PROC_COMPROC
FLN_OUTER_PROC_ID
FLN_OUTER_PROJECT_COMPROC
FLN_OUTER_PROJECT_ID
FLN_OUTCOME
FLN_PROBLEM
FLN_PROCEDURE_COMPROC
FLN_PROJECT_COMPROC
FLN_PROJECT_ID
FLN_RESULT
FLN_SESSION_ID
FLN_SESSION_STATUS
FLN_SYSTEM_COMPROC
FLN_TASK_ID
FLN_TASK_STATUS
FLN_WORKSTATION

Menus and Forms

The user may control the operation of the LAMPSCONTROL utility by means of the following screen menus:

Overall Control Menu

Main Management Menu

Project and Job Creation Menu

Project Status Modification Menu
- Job Status Modification Menu
- Element Selection for Job Movement Menu
- Task Status Modification Menu

Project, Job and Session Notification Menu
- Project Notification Menu
- Job Notification Menu
- Session Notification Menu

Flowline System Definition Menu

Operator and Workstation Authorisation Menu

Main Report Menu

System Definition Report Menu
- Flowline Request Menu

Current System Status Report Menu

System Statistics Report Menu

- Project Statistics Menu
- Job Statistics Menu
- Task Statistics Menu

- Flowline Statistics Menu
- Element Statistics Menu
- Specific Element Statistics Menu

- Operator Statistics Menu
- Specific Operator Statistics Menu

- Workstation Statistics Menu
- Specific Workstation Statistics Menu

Project Request Menu
Job Request Menu
Task Request Menu

The names in bold type indicate the menus which may be the first thing seen by the user on entry to LAMPSCONTROL.

The user may create or modify the system's definition or status by means of the following screen data entry forms:

Project Creation Form
Job Launching Form
Session Finished Form
Local Parameters Form
Global Parameters Form
External Parameters Form
System Command Procedure Form
Flowline Definition Form
Element Definition Form
Procedure Definition Form
Wire Definition Form
Operator Authorisation Form
Workstation Authorisation Form

There are also a number of help forms which contain information on the use of LAMPSCONTROL. These forms may be accessed from most of the above forms and menus using the PF2 key, as described below.

Command Qualifiers

/COMMAND_FILE=file-spec (default, value=LSL$FLN_JACKET:FLN_JACKET.COM)
/NOCOMMAND_FILE

- If present, /COMMAND_FILE specifies that a jacket command procedure, which will carry out the operations requested from LAMPSCONTROL by the user, is to be created . The default file specification, from which any missing part the file specification on the command line is taken, is 'LSL$FLN_JACKET:FLN_JACKET.COM'.

/CPU=cpu-time
/NOCPU (default)

- The /CPU qualifier should be used with /NOTIFY, /SESSION_ID, /SESSION_RESULT and /OUTCOME to inform LAMPSCONTROL of the termination of a session. /CPU is used to specify the CPU time, in integer hundredths of seconds, used in performing the session.

/CREATE_JOB=job-name
/NOCREATE_JOB (default)

- The /CREATE_JOB qualifier is used with /MANAGE, /OUTER_TASK_ID, /FLOWLINE_ID, and /PROJECT_ID to indicate that a job with the specified name (a character string) be launched on the indicated flowline, as part of the specified project. This qualifier will generally be used with calls of LAMPSCONTROL from element command procedures for elements which enclose subflowlines. The /OUTER_TASK_ID is used to specify the task executing the element command procedure. The job creation in this case is done without menus, and the /NOMENU qualifier is advisable with /CREATE_JOB.

/CREATION_RESULT=creation-result
/NOCREATION_RESULT (default)

- The /CREATION_RESULT qualifier is used with /NOTIFY and /JOB_ID or /PROJECT_ID to inform LAMPSCONTROL of the outcome of an attempt to initiate a job or project. The job or project will have been previously created using an appropriate LAMPSCONTROL management operation. The 'creation-result' is one of the following keywords:

  SUCCESS The job or project initiation has finished successfully.
  FAILURE The job or project initiation has failed.

/FAST_AUTHORISE (default)
/NOFAST_AUTHORISE

- When the qualifier /FAST_AUTHORISE is used the operator and workstation authorisation checks are skipped on the second and subsequent invocations of LAMPSCONTROL within a single session. This can give substantial speed improvements for certain flowline sequences.

/FLOWLINE_ID=flowline-id
/NOFLOWLINE_ID (default)

- The qualifier /FLOWLINE_ID is used with /CREATE_JOB to specify the flowline on which a job is to be launched. The 'flowline-id' is a character string.

/JOB_ID=job-id
/NOJOB_ID (default)

- The /JOB_ID qualifier is used with /NOTIFY to indicate that a job launching operation, previously requested from the management menus or with the /MANAGE and /CREATE_JOB qualifiers, has been completed successfully. The 'job-id' is an integer, its value will be given by the DCL symbol 'FLN_JOB_ID' defined in the jacket command procedure setup by LAMPSCONTROL when the job launching operation was requested.

/LOG=file-spec (default, value = LSL$FLN_LOG:FLN.LOG)
/NOLOG

- If the /LOG qualifier is present on the command line, then LAMPSCONTROL will write details of any error encountered during its operations to the specified text file. If the file already exists, the details will be appended to it. If the file does not exist, it will be created. This allows the flowline system manager to study an operator's log file to find details of any errors which have occurred. A log file could be unique to an operator, or shared by a number of operators.
  In the case of a shared file, details of all the errors encountered by the operators will be appended to the same file. If a group of operators is to have a shared log file, then the same file should be specified with this qualifier in the command line which they use to call LAMPSCONTROL. If a number of operators attempt to write to the log file at the same time, then one or more of the messages may be lost. This avoids an operator being held up for a long time while LAMPSCONTROL waits for the log file to become available for it to write to.
  A log file should not be allowed to become too large (more than a few hundred blocks). The larger a log file becomes, the longer LAMPSCONTROL requires to write a message to it.

/LOGOFF (default)
/NOLOGOFF

- The /LOGOFF qualifier is used to specify that, when the user selects the 'Exit from LAMPSCONTROL' option on LAMPSCONTROL'S current top level menu, the command procedure created by LAMPSCONTROL will logoff the user from his current terminal session.

  If /NOLOGOFF is specified, a null command procedure, which will do nothing, is created.

  In either case, LAMPSCONTROL will finish executing after creating the command procedure. If /NOCOMMAND_FILE was specified, in the command line, no command procedure will be created, regardless of whether /LOGOFF or /NOLOGOFF was used.

/MANAGE
/NOMANAGE (default)

- The /MANAGE qualifier is used to specify that a management operation is required of LAMPSCONTROL. If this qualifier is used without /CREATE_JOB, LAMPSCONTROL will enter the 'Main Management Menu' when it begins to operate, providing the user is authorised to access this menu. If the /CREATE_JOB qualifier is used with /MANAGE, then job launching will be initiated without passing through any menus.

/MENU (default)
/NOMENU

- If the /MENU qualifier is specified, then LAMPSCONTROL will function in its interactive mode. If /NOMENU is used on the command line, then LAMPSCONTROL will function non-interactively. These two modes of operation may or may not be sensible, depending on the other qualifiers used on the command line.

/NEW_COMMAND_PROCEDURE=file-spec
/NONEW_COMMAND_PROCEDURE (default)

- The /NEW_COMMAND_PROCEDURE qualifier specifies a project or job wide command procedure which has just been created as part of the project or job initiation procedure. /NEW_COMMAND_PROCEDURE should be used in combination with /NOTIFY and either /PROJECT_ID or /JOB_ID to indicate the successful creation of a project or job command procedure file by the system or flowline command procedures respectively.

/NOTIFY
/NONOTIFY (default)

- The /NOTIFY qualifier specifies that a notification operation is required of LAMPSCONTROL. /NOTIFY should be used with /SESSION_ID, /PROJECT_ID or /PROJECT_ID to specify the termination of a session, the start of a project or the start of a job, respectively.

/OUTCOME=integer
/NOOUTCOME (default)

- The /OUTCOME qualifier is used in conjunction with /NOTIFY and /SESSION_ID to specify the termination of a session. When a task completes successfully, the outcome is looked up in the element definition, and the appropriate wires are activated. Any values specified should correspond to one in the definition for the element related to the task just completed.

/OUTER_TASK_ID=task-id
/NOOUTER_TASK_ID (default)

- The /OUTER_TASK_ID qualifier is used with /MANAGE and /CREATE_JOB to launch a job non-interactively. The 'task-id' is an integer which specifies the enclosing task if the job is to be launched on a subflowline. If the job is being launched on a main flowline, which is not enclosed by an element in another flowline, the 'task-id' should be 0.

/PARAMETERS
/NOPARAMETERS (default)

- If the /PARAMETERS qualifier is used with the /NOTIFY and /SESSION_ID qualifiers when performing session termination notification, then, when LAMPSCONTROL begins execution, a command driven mode will be entered which allows the user to enter (directly, or through a command file) local, global and external parameters (see Chapter 2) for passing to other sessions or tasks.
  The commands available in this command driven mode are described below in the section 'Defining Local, Global and External Parameters'.
  The parameters are generally defined within element and procedure command procedures, called from task jacket command procedures, by setting up appropriate DCL symbols to be interpreted by the task jacket command procedure. These DCL symbols are described below in the section 'Jacket Command Procedures and DCL Symbols'.

/PRIORITY=integer
/NOPRIORITY (default)

- The /PRIORITY qualifier is used in conjunction with the /CREATE_JOB qualifier when non-interactive job launching is being performed. The /PRIORITY qualifier is used to specify the numeric priority (between 1 and 16) of the job to be launched.

/PROBLEM=problem-descriptor
/NOPROBLEM (default)

- The /PROBLEM qualifier is used with /NOTIFY and /SESSION_ID to pass a character 'problem-descriptor' to LAMPSCONTROL in cases where a session has terminated in with an 'ERROR' or 'RESTART' result. The 'problem-descriptor' gives brief details of the cause of the problem, for example the name of the utility during the execution of which an error occurred.

/PROJECT_ID=project-id
/NOPROJECT_ID (default)

- The /PROJECT_ID qualifier, when used with /MANAGE and /CREATE_JOB, specifies the 'project-id', the character identifier, of the project in which the job launched is to be included.
  When /PROJECT_ID is used with /NOTIFY, it specifies a project which has been successfully started.

/REPORT
/NOREPORT (default)

- If used, /REPORT specifies that a report operation is required from LAMPSCONTROL. When it begins to execute, LAMPSCONTROL will go directly to the 'Main Report Menu', from which the user may select the required operation.

/REQUEST
/NOREQUEST (default)

- If used, /REQUEST specifies that a task request operation is required from LAMPSCONTROL. When used with /NOMENU, LAMPSCONTROL will select the highest priority project, job and task available to the user, and create an appropriate jacket command procedure. When used with /MENU, LAMPSCONTROL will enter the 'Project Request Menu', the 'Job Request Menu' or the 'Task Request Menu', as appropriate (see the main 'Description' section below), to allow the next task to be chosen.

/SESSION_ID=session-id
/NOSESSION_ID (default)

- The /SESSION_ID qualifier is used with /NOTIFY to indicate the termination of a session. The 'session-id' is an integer value, which will assigned to the DCL symbol 'FLN_SESSION_ID' by the jacket command procedure created by LAMPSCONTROL to carry out the session just terminated.

/SESSION_RESULT=task-state
/NOSESSION_RESULT (default)

- The /SESSION_RESULT qualifier is used with /NOTIFY to inform LAMPSCONTROL of the result of a session. The 'task-state' is one of the following keywords:

COMPLETE	The session and task have finished successfully.
CONTINUE	The session has finished successfully, but the task is not complete. At least one more session will be required to complete the task.
RESTART	The session has terminated with some sort of problem, which can be rectified by restarting the task.
ERROR	The session has terminated with a problem which can only be corrected with the intervention of a system manager.
OFFLINE	The session is continuing with offline operations.
SUBFLOWLINE	The session has launched a number of jobs on a subflowline. The task will not be complete until those jobs are complete.

/WAIT_TIME=delta-time
/NOWAIT_TIME (default)

- This qualifier should only be used with /REQUEST and /NOMENU during non-interactive task requesting. It is used to specify the duration of the wait performed by a wait jacket command procedure when no task can be found to perform. The value associated with the qualifier is a standard DEC delta-time, with the usual format 'DDDD HH:MM:SS.CC' (where DDDD = Number of days; HH = Number of hours; MM = Number of minutes; SS = Number of seconds; CC = Decimal fraction of seconds). The default time, if none is specified, is 1 minute.

Description

To get the most out of the LAMPSCONTROL documentation, the reader should be familiar with the concept of flowline systems as described in earlier chapters of this manual. In order to set up a full system including the command procedure files to perform the operations required for project creation (the 'System' command procedure), job launching (the 'Flowline' command procedures), elements and procedures, the user must be fully versed in the Digital Command Language (DCL) as described in the DEC 'VAX/VMS DCL Concepts Manual', 'Guide to Using DCL and Command Procedures on VAX/VMS', and 'VAX/VMS DCL Dictionary'. To edit these command procedures from within LAMPSCONTROL using the EDT editor, the user should also be familiar with its operation as described in the 'VAX/VMS EDT Reference Manual'.

LAMPSCONTROL is a utility to allow the creation, modification and utilisation of a flowline system containing one or more flowlines. LAMPSCONTROL may operate in several modes, determined by the command qualifiers used, and by the operations which the user and his current workstation are authorised to perform. It may be used both interactively and non-interactively.

LAMPSCONTROL maintains a relational database containing information on the current status and history of use of the flowline system. Using this it ensures the correct sequencing of tasks performed by operators according to the defined flowlines.

If LAMPSCONTROL is used with the /MENU qualifier, then it will operate in its interactive mode. When LAMPSCONTROL starts to execute it will first display a title page. As the title page is being displayed operator and workstation authorisation will be taking place and progress messages indicating this will appear. Then one of the following will occur, as determined by the other qualifiers on the command line:

1. When /NOTIFY is used, the notification function specified by the other qualifiers present will be performed. This is essentially non-interactive and will be completed without use of menus or forms.

2. When /MANAGE is specified without /CREATE_JOB in the interactive mode, LAMPSCONTROL will display the 'Main Management Menu'. The user may then select one of the options. If /CREATE_JOB is also used, a job will be created as specified without interaction with the user.

3. When /REPORT is specified in the interactive mode, the 'Main Report Menu', allowing the user to select a report operation, is displayed.

4. When /REQUEST is used with LAMPSCONTROL in the interactive mode, one of the 'Project Request', 'Job Request' or 'Task Request' menus is displayed. The user may then select a task, in a chosen job and project, to perform.

5. When LAMPSCONTROL is used without any of /MANAGE, /NOTIFY, /REPORT or /REQUEST, the 'Overall Control Menu' will be displayed, allowing the user to opt to access one of the main management, reporting or request menus for which he is authorised.

In interactive mode LAMPSCONTROL is menu and form driven, using the DEC Form Management System (FMS). A detailed description of each menu and form is given below in the section on 'Command Menus and Data Entry Forms'.

If LAMPSCONTROL is used with the /NOMENU qualifier option, no title page, menu pages or forms are displayed, and the program operates in its non-interactive mode. In this mode, LAMPSCONTROL will act in one of the following ways:

1. If /NOTIFY is specified, there is little difference between the interactive and non-interactive operation of LAMPSCONTROL. In the non-interactive mode no title page is displayed. If the /PARAMETERS qualifier is used on the command line, LAMPSCONTROL will enter a command driven mode to allow the definition of local, global and external parameters. The definition of such parameters is described below in the section 'Defining Local, Global and External Parameters'.

2. If /REQUEST is used with LAMPSCONTROL in the non-interactive mode, the highest priority task, if any are available, for which the user on his current workstation is authorised, will be selected. A corresponding task jacket command procedure will be created, and LAMPSCONTROL will finish executing. The user may then call the jacket command procedure to perform the task. The non-interactive requesting and performing of tasks may be done by a command procedure, executing in a batch job, authorised to carry out only non-interactive elements. Appropriate non-interactive tasks could then be completed, without the intervention of any operators, whenever such tasks became available.

3. /MANAGE should generally only be used in the interactive mode of operation unless /CREATE_JOB is also specified. If /CREATE_JOB is present with /MANAGE then no user interaction is required to create the specified job, and the operation of LAMPSCONTROL will proceed as in the interactive mode, but without the display of any title page.

4. /REPORT should not be used in the non-interactive mode.

5. LAMPSCONTROL should not be used without any of the /NOTIFY, /MANAGE or /REQUEST qualifiers in the non-interactive mode.

LAMPSCONTROL stores the file specifications of any command procedures relating to project creation (the 'System' command procedure), job launching (the 'Flowline' command procedures), elements, procedures, projects and jobs. The manager is able to edit any such command procedures from LAMPSCONTROL with the EDT editor, which he may opt to use when creating or editing the system component definitions with the

appropriate data entry forms, or when modifying or examining the statuses of the projects and jobs from the appropriate menus.

When LAMPSCONTROL is used with the /COMMAND_FILE qualifier, a file containing a DCL command procedure, known as a 'jacket command procedure', will be generated.

It is recommended that every operator use a different jacket command procedure specification. This avoids the confusion which can arise if two operators create and then attempt to execute jacket command procedures with the same specification. If the jacket command procedure name is constructed from the operator's process name and the name of the cluster node for his current session, then a unique jacket command procedure file specification will be ensured cluster wide. This is because the process name must be unique on its node, and the node name must be different from all other node names on the cluster.

More details about the jacket command procedures written by LAMPSCONTROL are given in the section 'Jacket Command Procedures and DCL Symbols'.

When using LAMPSCONTROL interactively with the /REQUEST qualifier, to select the next task to perform, the user will have access to the three request menus, the 'Project Request Menu', the 'Job Request Menu' and the 'Task Request Menu'. The first menu displayed for user interaction, when LAMPSCONTROL begins to execute, is determined by the last project, job and task on which the user worked.

If the user's last project and job are still active, then the user will be presented with a task menu for that job, with the last task worked on, if it has not been completed, as the first option. If the user's last project is active, but the last job worked on is not, then the job menu for that project will be displayed. If the last project worked on by the user is no longer active then the project menu will presented by LAMPSCONTROL.

Regardless of which of the three request menus is entered when LAMPSCONTROL begins to execute, the user will be free to move up and down the hierarchical project, job and task request menus by selecting the appropriate options. Further details of these menus are given in the section 'Command Menus and Data Entry Forms'.

Use of LAMPSCONTROL by Ordinary Operators

It is not intended that the ordinary 'operators', whose job it is to carry out the menial, repetitive operations associated with completing individual elements in a flowline should have access to the full functionality of LAMPSCONTROL. Allowing this would defeat the whole purpose of LAMPSCONTROL, which is to ensure that well defined elements in a flowline are carried out in a particular sequence and on the required datasets. If an ordinary operator were allowed access to, say, the management menus, then he could, through ignorance or mischievousness, interfere with the sequencing of tasks or even with the definition of the system.

Instead, the operator should only be allowed access to the project, job and task request menus. This can be achieved by authorising the operator, with a given username, to perform only the 'Request' and 'Notify' operations on the database. That is, the operator will be authorised to use only the /REQUEST and /NOTIFY command qualifiers with LAMPSCONTROL. Furthermore, the operator should always access the system through a captive command procedure, ideally part of, or called by, his login command procedure. This would call LAMPSCONTROL with the /REQUEST qualifier, taking the operator directly to a project, job or task request menu. The captive command procedure would then execute any jacket command procedure generated by LAMPSCONTROL, and would loop for the next call of LAMPSCONTROL with /REQUEST. The operator could exit from the system by selecting the 'Exit from LAMPSCONTROL' option on the 'Project Request Menu'.

Workstation Identification

Access to LAMPSCONTROL is authorised in terms of both the name of the user and the identity of the workstation involved. LAMPSCONTROL expects the logical name LSL$FLN_WORKSTATION to be defined to give the identity of the current workstation.

This may be done at any time before LAMPSCONTROL is called. For ordinary operators, it is advised that the definition occurs in some form of captive login command procedure which subsequently executes LAMPSCONTROL. This prevents the definition of LSL$FLN_WORKSTATION being altered by the operator.

If no translation for LSL$FLN_WORKSTATION is found, LAMPSCONTROL will terminate its execution after displaying a suitable message.

Jacket Command Procedures and DCL Symbols

LAMPSCONTROL may generate one of a number of DCL command files, referred to as 'jacket command procedures', to perform the actions relating to an operation requested from it. These jacket command procedures will access or assign a number of DCL symbols.

When LAMPSCONTROL is used with the /COMMAND_FILE qualifier, a file containing a DCL command procedure will be generated. This command procedure may carry out the following functions, depending on the command qualifiers and menu options selected by the user :

1. **Project Creation Jacket Command Procedure**
   When the 'Create a project' option is selected from the 'Project and Job Creation Menu', a 'Project creation' jacket command procedure to execute the 'System' command procedure is created. The system command procedure will perform the operations necessary for creating a new project, including creating a 'Project' command procedure specific to that project. When the 'System' command procedure has finished executing, the jacket command procedure will call LAMPSCONTROL with the /NOTIFY, /PROJECT_ID, /CREATION_RESULT and /NEW_COMMAND_PROCEDURE qualifiers to indicate the successful initiation of a project and inform the flowline control system of the specification of the project specific command procedure.

2. **Job Launching Jacket Command Procedure**
   When the 'Create a job' option is selected from the 'Project and Job Creation Menu', or when the /MANAGE and /CREATE_JOB qualifiers are used, a 'Job launching' jacket command procedure to execute a 'Flowline' command procedure, specific to a flowline, is created. The flowline command procedure will perform the operations necessary for launching a job on the flowline, including creating a 'Job' command procedure specific to that job. When the flowline command procedure has finished executing, the jacket command procedure will call LAMPSCONTROL with the /NOTIFY, /JOB_ID, /CREATION_RESULT and /NEW_COMMAND_PROCEDURE qualifiers to indicate the successful initiation of a job.

3. **Task Jacket Command Procedure**
   When the user requests a task to perform, either using the non-interactive automatic task selection option (/REQUEST with /NOMENU), or by choosing one from the 'Task Request Menu', then LAMPSCONTROL will create a 'Task' jacket command procedure. The task jacket command procedure will execute the relevant project, job and element command procedures and will then call LAMPSCONTROL with the /NOTIFY, /SESSION_ID, /SESSION_RESULT, /PROBLEM, /OUTCOME and /CPU qualifiers to inform the flowline control system of the result of the session.

4. **Wait Jacket Command Procedure**
   If the user makes a non-interactive task selection request, using the /REQUEST and /NOMENU qualifiers together, and no tasks are currently available, then LAMPSCONTROL will set up a 'Wait' jacket

command procedure which will wait for a delta-time defined using the /WAIT_TIME command qualifier (defaulting to 1 minute). This allows non-interactive task selection requests to LAMPSCONTROL to be made from a command procedure in a continuous loop, which will execute any jacket command procedure created. If no task is available, it will execute the 'Wait' command procedure and then retry the non-interactive task selection. The use of a 'Wait' jacket command procedure avoids fruitless non-interactive task requests being repeated too frequently, which would waste computer resources.

5. **Null Jacket Command Procedure**
   If the user wishes to request an operation, or series of operations, which requires nothing external to LAMPSCONTROL to complete it, or if the user specifies the /NOLOGOFF qualifier in the LAMPSCONTROL command line and selects the 'Exit from LAMPSCONTROL' option on the current top level menu, then a 'Null' jacket command procedure is created. This command procedure does nothing, except set up the FLN_JACKET_TYPE symbol and delete itself, when executed.

6. **Error Jacket Command Procedure**
   If LAMPSCONTROL encounters an error while attempting to provide a service to the user then an 'Error' command procedure is generated. When executed this will advise the user that there is a problem.

7. **Logoff Jacket Command Procedure**
   If the 'Exit from LAMPSCONTROL' option is selected from a LAMPSCONTROL menu, and the /LOGOFF qualifier was used in the original LAMPSCONTROL command line, then a 'Logoff' jacket command procedure will be created which, when executed, will terminate the user's current terminal session.

The user should generally specify the /COMMAND_FILE qualifier so that LAMPSCONTROL creates a command procedure, even if it is often a null command procedure. Then, when LAMPSCONTROL finishes executing, the user should call the command procedure which has been created. A good way to do this is to write a command procedure to call LAMPSCONTROL with a command line containing a /COMMAND_FILE qualifier specifying a particular command filename unique to the current user and process, and to follow it with a line to execute the command procedure just generated. For example, an extract from a suitable command procedure might be:

```
$!
$! Request non-interactive task selection by LAMPSCONTROL
$!
$       LAMPSCONTROL -
                /REQUEST -
                /NOMENU -
                /COMMAND_FILE = JON_JACKET.COM
$!
$! Now execute the jacket command procedure written by
LAMPSCONTROL
$!
$       @JON1_JACKET.COM
```

The jacket command procedures written by LAMPSCONTROL will delete themselves once they have performed their operations.

It is advised that each user has a unique jacket command procedure specification to avoid the possibility of one user executing or deleting another user's jacket command procedure. For more information on this, refer to the 'Description' section above.

For those functions of LAMPSCONTROL which involve the execution of a non-null jacket command procedure, it can be seen that there are two calls made on LAMPSCONTROL. The first call, by the user, causes LAMPSCONTROL to create a jacket command procedure to carry out an operation. LAMPSCONTROL will ensure that the current user is authorised to carry out the requested operation, and will then create a jacket command procedure. The user then executes the jacket command procedure. The jacket command procedure performs the necessary operations, and calls LAMPSCONTROL again, with the /NOTIFY qualifier, to indicate the outcome of the operation. Thus, in the case of task command procedures, LAMPSCONTROL will store the outcome of a particular task in the flowline system database, and, depending on that outcome, may schedule any subsequent tasks.

Any DCL symbols to be examined by jacket command procedures should be globally assigned, either before the jacket command procedure is executed, or by command procedures called from the jacket command procedure. For example, a jacket command procedure to perform a task will expect the element and procedure command procedures which it calls to set up the FLN_RETURN, FLN_OUTCOME and FLN_PROBLEM symbols to indicate the termination status of the session.

Any symbols set up by the jacket command procedures will be globally assigned, and may be accessed by other command procedures called from them or after them, for example system, flowline, project, job, element or procedure command procedures. An element command procedure, say, should obtain the file specification for its procedure command procedure from the symbol FLN_PROCEDURE_COMPROC.

No DCL symbols starting with the characters 'FLN_' should be used in the user defined command procedures to be called from the jacket command procedure, apart from those described below. This ensures that no name clashes occur with symbols used internally by the jacket command procedures.

The global DCL symbols involved are listed and described below:

FLN_CREATION_RESULT

This symbol contains a string keyword, which should be assigned in the 'System' (project creation) or 'Flowline' (job launching) command procedure, and should indicate the success or otherwise of the procedure.
The FLN_CREATION_RESULT symbol is used in constructing a project or job creation jacket command procedure LAMPSCONTROL notification command line. Its value is supplied to the /CREATION_RESULT (q.v.) qualifier. FLN_CREATION_RESULT should be assigned a string containing one of the keywords associated with /CREATION_RESULT, that is one of the following:

SUCCESS
FAILURE

FLN_ELEMENT_COMPROC

This is assigned by a task jacket command procedure to be a string containing the specification of the element command procedure associated with the task. The jacket command procedure will call the element command procedure using the command line:

```
$     @'FLN_ELEMENT_COMPROC'
```

FLN_ELEMENT_ID

This is assigned by a task jacket command procedure to be a string containing the identifier of the element corresponding to that task.

FLN_FLOWLINE_COMPROC

This is assigned by a job launching jacket command procedure to be a string holding the file specification of the flowline command procedure which it will call to launch the job.

FLN_FLOWLINE_ID

This is assigned by a job launching jacket command procedure to be a string holding the identifier of the flowline on which the job is being launched.
A task jacket command procedure assigns this symbol the identifier of the flowline containing the element corresponding to the task being performed.

FLN_INT

If this has a DCL 'TRUE' value (ie if it starts with 'Y','y','T' or 't') then the jacket command procedure is being executed interactively.
This symbol should be set up before the jacket command procedure is executed. If the jacket command procedure finds it is not defined, its value will be determined with the DCL lexical function call, F$GETJPI("","MODE").

FLN_JACKET_COMPROC

This is assigned a string value in the jacket command procedure. It holds the file specification of the jacket command procedure.

FLN_JACKET_TYPE

This is assigned a string keyword value by all the jacket command procedures. The value assigned depends on the type of the jacket command procedure:

ERROR	'error' jacket command procedure
JOB	'job launching' jacket command procedure
LOGOFF	'logoff' jacket command procedure
NULL	'null' jacket command procedure
PROJECT	'project creation' jacket command procedure
TASK	'task' jacket command procedure
WAIT	'wait' jacket command procedure

FLN_JOB_COMPROC

The FLN_JOB_COMPROC symbol is assigned, as a string, the file specification of the current job's command procedure.
When job launching occurs, the flowline command procedure should determine the job command procedure specification by interaction with the user, and should assign it to this symbol; the jacket command procedure may then use it in constructing its LAMPSCONTROL notification command line, with the /NEW_COMMAND_PROCEDURE qualifier.
A task jacket command procedure assigns the command procedure specification for the job containing the current task to this symbol.

FLN_JOB_ID

This contains a string value representing the integer identifier of the current job. It is assigned by the task jacket command procedure.

FLN_JOB_NAME

This is assigned a string value representing the character job name of the current job.
This symbol is set up by the job launching and task jacket command procedures.

FLN_LOCAL_PARAM	local parameter list
FLN_GLOBAL_PARAM	global parameter list
FLN_EXTERNAL_PARAM	external parameter list

These symbols can be assigned string values by any command procedures executed during the performance of a session within a task, for example, they may be set up by element or procedure command procedures.
The values assigned to these symbols will be lists of local, global or external parameters for passing between tasks or sessions (see Chapter 2).
These symbols will be used by the task jacket command procedure to construct the parameter definition commands (see the section 'Defining Local, Global and External Parameters' below) as follows:

```
PARAMETER> LOCAL <FLN_LOCAL_PARAM>
PARAMETER> GLOBAL <FLN_GLOBAL_PARAM>
PARAMETER> EXTERNAL <FLN_EXTERNAL_PARAM>
```

As an illustration of how to set up these symbols, consider the requirement to set up the following local parameters (which will all be valid DCL statements) for inclusion in the next task jacket command procedure:

```
L1 = 1
L2 = "local2"
@plot
```

To specify these local parameters, the procedure or element command procedure should globally assign the symbol FLN_LOCAL_PARAM as follows:

```
FLN_LOCAL_PARAM == """L1 = 1"",""L2 = """""local2""""""",""@plot"""
```

This would result in the command, after substitution of the symbol FLN_LOCAL_PARAM:

```
PARAMETER> LOCAL "L1 = 1","L2 = ""local2""","@plot"
```

The use of pairs of double quotes, within strings delimited by double quotes, to signify single double quotes, should be noted.

FLN_MODE

This should assigned a keyword string value before LAMPSCONTROL is executed to create a jacket command procedure. Its value indicates the mode of operation of LAMPSCONTROL:

BATCH	non-interactive operation (task request, job launching)
CONTROL	entry through 'Overall Control Menu'
MANAGE	entry through 'Main Management Menu'
OPERATE	entry through 'Request Menus'
REPORT	entry through 'Main Report Menu'
SLAVE	operating interactively, but not from terminal session

The final 'SLAVE' mode of operation occurs if LAMPSCONTROL executes in a subprocess or from a batch job, but with input and output through a VT220 compatible device.
If FLN_MODE is not set up before a jacket command procedure is executed, then that jacket command procedure will assign it a default value, either 'OPERATE' or 'BATCH' depending on whether the value of FLN_INT is TRUE or FALSE respectively.

FLN_OPERATOR

This contains, as a string value, the username of the current operator. It is assigned by task jacket command procedure.

FLN_OUTER_ELEMENT_COMPROC
FLN_OUTER_ELEMENT_ID
FLN_OUTER_FLOWLINE_COMPROC
FLN_OUTER_FLOWLINE_ID
FLN_OUTER_JOB_COMPROC
FLN_OUTER_JOB_NAME
FLN_OUTER_PROC_COMPROC
FLN_OUTER_PROC_ID
FLN_OUTER_PROJECT_COMPROC
FLN_OUTER_PROJECT_ID

These symbols are assigned string values by the job launching jacket command procedure.
For jobs which are to be launched on subflowlines, these symbols contain the element, flowline, procedure, and project identifiers and command procedure specifications, and the job name and command procedure specification for the element, flowline, procedure, project and job enclosing the subflowline on which the job is to be launched.
For jobs which are to be launched on ordinary flowlines, these symbols will be assigned null string values.
It is thus possible to write a flowline command procedure which, by checking if these symbols have null values, can carry out different operations for launching jobs on its flowline as a full flowline or as a subflowline.

FLN_OUTCOME

This symbol should be assigned a string representation of the integer outcome value of a completed task. The assignment should be carried out by the element or procedure command procedures. The FLN_OUTCOME symbol will be used by the task jacket command procedure in constructing the LAMPSCONTROL command line to notify a session termination.

FLN_PROBLEM

This symbol should be assigned a string containing a brief description of the nature of the problem when a session terminates in 'ERROR' or 'RESTART' conditions. The assignment should be carried out by the element or procedure command procedure. The symbol will be used by the task jacket command procedure in constructing the LAMPSCONTROL command line to notify a session termination.

FLN_PROJECT_COMPROC

The FLN_PROJECT_COMPROC symbol will hold, as a string, the file specification of the current project's command procedure. When project creation occurs, the system command procedure should determine the project command procedure specification by interaction with the user, and should assign it to this symbol; the jacket command procedure may then use it in constructing its LAMPSCONTROL notification command line.

FLN_PROCEDURE_COMPROC

This symbol is assigned the file specification of the procedure command procedure required for the current task by a task jacket command procedure. The element command procedure should call the procedure command procedure named by this symbol.

FLN_PROJECT_ID

This symbol holds the string identifier of the current project.

FLN_RESULT

This symbol is used in constructing a task jacket command procedure's LAMPSCONTROL notification command line. Its value is supplied to the /SESSION_RESULT (q.v.) qualifier. FLN_RESULT should be assigned a string containing one of the keywords associated with /SESSION_RESULT, that is one of the following :

COMPLETE
CONTINUE
RESTART
ERROR
OFFLINE
SUBFLOWLINE

This assignment should occur in the element or procedure command procedure, and should indicate the termination status of the session.

FLN_SESSION_ID

This symbol is assigned a string value by a task jacket command procedure. It contains the integer session identifier unique to the current session.

FLN_SESSION_STATUS

This symbol is assigned a string by value by the task jacket command procedure indicating whether the session is a new session, or the online resumption of a session which has just completed an offline phase. Its possible values are:

NEW	This is a new session.
OFFLINE	This is the online resumption of an existing session.

FLN_SYSTEM_COMPROC

This symbol is assigned a string holding the file specification of the system command procedure. It is set up by the project creation jacket command procedure.

FLN_TASK_ID

This symbol is assigned, by the task jacket command procedure, a string representation of the integer task identifier of the current task.

FLN_TASK_STATUS

This symbol is assigned, by the task jacket command procedure, a string indicating the initial task status. That is, whether the task is being freshly started, or whether one or more sessions have been performed as part of it. The possible values are:

NEW	This is the first session connected with this task.
STARTED	One or more sessions have been performed already for this task.

FLN_WORKSTATION

This symbol is assigned a string, by the task jacket command procedure, containing the name of the user's current workstation.

Defining Local, Global and External Parameters

If the /PARAMETERS qualifier is used in the command line for session termination notification, then LAMPSCONTROL will, when it begins to execute, enter a command driven mode to allow the definition of up to 16 of each (48 in total) of the 3 types of session/task parameters (local, global and external).

For more information on the nature and usage of local, global and external parameters, refer to Chapter 2.

The commands available in this mode are:

EXIT

If this command is used, the command driven mode will be terminated, and LAMPSCONTROL will continue with its execution to carry out the notification of the end of the session.

EXTERNAL string-list

This command is used to specify a list of external parameters.

GLOBAL string-list

This command is used to specify a list of global parameters.

LOCAL string-list

This command is used to specify a list of local parameters.

The 'string-list' argument for the above commands consists of a list of strings separated by spaces or commas. If any string contains a space or a comma, it must be delimited by double quotes ("). If a double quote is required in any string delimited by double quotes, that double quote should be represented a pair of double quotes. Each item in the 'string-list' will become a parameter, and should thus constitute a valid DCL statement.

It is possible to achieve the substitution of the value of a DCL symbol for part or all of the 'string-list' argument. If the DCL symbol name should be included in the required position in the argument, delimited by '<' at the start, and '>' at the end, of the name.

EXAMPLES:

```
PARAMETER> LOCAL "L1 = 1","L2 = ""hello""",@PLOT_POINTS
PARAMETER> EXIT
```

This command specifies the local parameters:

```
L1 = 1
L2 = "hello"
@PLOT_POINTS
```

```
$ FLN_GLOBAL_PARAMETER == """g1 = 1"",""g2 = 2"""
```

If LAMPSCONTROL is then executed with /PARAMETERS in the command line:

```
PARAMETER> GLOBAL <FLN_GLOBAL_PARAM>
PARAMETER> EXIT
```

This command will cause the following global parameters to be defined:

```
g1 = 1
g2 = 2
```

Command Menus and Data Entry Forms

LAMPSCONTROL, when operating interactively, allows the user to choose the next operation to perform and to enter any relevant data by means of a number of FMS screen menus and forms.

Note that the dashed lines delimiting the form and menu examples below do not appear in the actual screen forms and menus.

The 'current' option on a menu is understood to be the option on the line on which the cursor is positioned. That is, the line currently highlighted in reverse video.

The following keys may be used to select options on menus:

Return Selects the current option. This will be the option on the line on which the cursor is currently positioned.

Up arrow Moves to the option above the current one. Moving up from the top item will jump to the bottom item.

Down arrow Moves to the option below the current one. Moving down from the bottom item on the menu will jump to the top item.

PF2 This is the help key. For most menus, pressing the help key will cause a help form to be displayed on the screen. Frequently, there is more help text than can be fitted onto a single form, so it is broken up into a number of forms which may be viewed consecutively. The user may move from one help form to the next by pressing the help key. The user may return to the original menu, from any of the help forms, by pressing the ENTER key.

CTRL W Refreshes (i.e. redisplays) the current menu.

Each menu will consist of one or more options. These may be divided into two categories, options which are specific to a particular menu, and the 'standard' options common to most of the menus used by LAMPSCONTROL. These generally applicable standard options are:

1. **Move up to 'higher level' menu**
   This option would be found on menus which were displayed as a result of selecting an option on another menu. It can be used to move up through a hierarchy of menus. The phrase 'higher level' will usually be replaced on the menu option with the name, or a description of, the menu which would be displayed by selecting it. This option will not be found on the top level menu for the current activation of LAMPSCONTROL (see description of 'Jump to

top level menu' option).

2. **Jump to top level menu**
   This option is present on most menus. Selecting it causes the menu at the top of the hierarchy of menus, through which the current menu was reached, to be displayed.
   Exactly which menu this is depends on the combination of command qualifiers used with LAMPSCONTROL.
   If /MANAGE was used, the 'Main Management Menu' is the top level menu.
   If /REPORT was used, the 'Main Report Menu' is the top level menu.
   If /REQUEST was used, the 'Project Request Menu' is the top level menu.
   If none of /REQUEST, /REPORT or /MANAGE was used, the 'Overall Control Menu' is the top level menu.
   This option is omitted from a menu if the effect of selecting it would be the same as that of selecting the 'Move up to higher level menu' option, or, obviously, if the menu is the top level menu.

3. **Exit from LAMPSCONTROL**
   This option is present on the LAMPSCONTROL top level menu (see the previous item). Selecting it causes LAMPSCONTROL to create a suitable command procedure ('logoff' if /LOGOFF was used or 'null' if /NOLOGOFF was used), and then to finish executing.

4. **Move to next page of options**
   On particularly long menus, when all the options cannot be displayed in a single screenful, this option will be displayed. By selecting it the user can move forwards through the list of menu options, to examine a fresh page of alternatives. If the current menu page represents the end of the option list, this option will not be displayed.

5. **Move to previous page of options**
   On particularly long menus, when all the options cannot be displayed in a single screenful, this option will be displayed. By selecting it the user can move backwards through the list of menu options, to examine a fresh page of alternatives. If the current menu page represents the start of the option list, this option will not be displayed.

The standard options above will not be described in the individual sections below relating to particular menus.

Any user able to access a particular menu will be authorised to select or perform all the options displayed on it.

In each example of the forms below, the presence of underline characters, '_', indicates an area into which the user is expected to type a field value. This is also true of the forms displayed on the screen. On the screen, the field into which any character typed will be placed is indicated by the position of the cursor and will appear

in reverse video.

The following keys may be used to control movement between, and entry of data into, forms and fields:

Tabulate Advances the cursor to the next field in the form. Attempting to advance forward from the last field on a form will result in the message **'No next field on form'** being displayed.

Back Space Moves the cursor back to the previous field on the form. If an attempt is made to move back from the first field on a form, the message **'No previous field on form'** is displayed.

Line Feed Deletes the contents of the current field.

Return Exits from a form. Any data entered will be acted on by LAMPSCONTROL. It is not possible to exit from a form unless data for all mandatory fields have been entered.

GOLD(PF1) 7 On the data entry forms, this command discards any data entered already, and returns the user to the menu from which the form was selected. No check is made on whether data for mandatory fields have been entered.

PF2 This is the help key. For most fields on the data entry forms, pressing the key once will cause details of the format and type of data required for that field to be displayed on the bottom line of the screen.
For most forms, pressing the help key twice, over any field, will cause a help form to be displayed on the screen. Frequently, there is more help text than can be fitted onto a single form, so it is broken up into a number of forms which may be viewed consecutively. The user may move from one help form to the next by pressing the help key. The user may return to the original form, from any of the help forms, by pressing the ENTER key.

PF3 Switch on the overstrike mode for entering characters in fields. In overstrike mode, any character typed will replace the character over which the cursor is positioned.

GOLD PF3 Switch on the insert mode for entering characters in fields. In insert mode, the character typed will be inserted before the character over which the cursor is currently positioned.

CTRL W Refreshes (i.e. redisplays) the current form.

Some forms contain 'scrolled areas'. These areas consist of a number of identical and consecutive lines on the form, containing one or more fields, which can be scrolled to allow the user to enter a 'table' of data of virtually unlimited length. Movement between fields on the same line of the scrolled area is controlled in the same way as movement between fields on ordinary areas of the form (with 'tabulate' and 'back space'). The user will enter the scrolled area by moving forwards as normal from the field immediately preceding the area. Movement out of the scrolled areas, and between lines of the scrolled area is controlled using the following key sequences:

GOLD Up arrow Moves the cursor to the field preceding the scrolled area.

GOLD Down arrow Moves the cursor to the field following the scrolled area.

Up arrow Moves the cursor to the line of the scrolled area preceding the current one.

Down arrow Moves the cursor to the line of the scrolled area following the current one.

Movement within a field, for editing purposes, is controlled by the back arrow (to move to the right) and forward arrow (to move to the left) keys.

On some forms, default values will initially appear in some of the fields. These may be edited as required by the user.

On certain menus and forms, certain 'GOLD sequences' - that is pressing the GOLD (PF1) key followed by some other key - have special uses. Details of these are given in individual menu and form descriptions.

Overall Control Menu

LAMPSCONTROL Overall Control Menu

Menu to select overall operation required

Operations for which operator authorised:

Management Menu
Report Menu
Project, Job and Task Request Menus
Exit from LAMPSCONTROL

DESCRIPTION:

This is the first menu to be displayed when LAMPSCONTROL is executed without any of the qualifiers /NOTIFY, /MANAGE, /REPORT or /REQUEST.

The options displayed on the 'Overall Control Menu' allow access to whichever of the categories of menu (management, report or request) for which the user on his current workstation is authorised.

For example, a user authorised only for the request menus, would be presented with only one option, in addition to the 'Exit from LAMPSCONTROL' option, namely 'Project, Job and Task Request Menu'.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

Management Menu
The 'Main Management Menu' will be displayed.

Report Menu
The 'Main Report Menu' will be displayed.

Project, Job and Task Request Menu
One out of the 'Project Request', 'Job Request' or 'Task Request' menus will be displayed. Which menu is displayed will be determined by LAMPSCONTROL by examination of the last project, job and task worked on by the user, using the same rules applied when LAMPSCONTROL is used with the /REQUEST qualifier to enter the request menus directly. For more details on the determination of the first request menu displayed, refer to the main LAMPSCONTROL description section.

Exit from LAMPSCONTROL
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

None specific to this menu.

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Main Management Menu

Main Management Menu

Selection of management operations

The following management options are available :

Creation (project, job)
Status modification (project, job, task)
Notification (project, job, session)
Definition (system, flowline, element, wire, procedure)
Authorisation (operator, workstation)
Move up to overall control menu

DESCRIPTION:

This menu is displayed directly after the title page when LAMPSCONTROL is executed with the /MANAGE and /MENU qualifiers, or after the 'Management Menu' option on the 'Overall Control Menu' is selected.

The 'Main Management Menu' allows a flowline control system manager to select the general management operation which he wishes to perform. Generally, each option will result in the display of another menu, allowing the selection of a more specific operation.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

Creation (project, job)
The 'Project and Job Creation Menu' will be displayed.

Status modification (project, job, task)
The 'Project Status Modification Menu' will be displayed.

Notification (project, job, session)
The 'Project, Job and Session Notification Menu' will be displayed.

Definition (system, flowline, element, wire, procedure)
The 'Flowline System Definition Menu' will be displayed.

Authorisation (operator, workstation)
The 'Operator and Workstation Authorisation Menu' will be displayed.

Move up to overall control menu
Exit from LAMPSCONTROL
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

None specific to this menu.

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Project and Job Creation Menu

Project and Job Creation Menu

Selection of creation operations

The following options are available :

Create a project
Create a job
Move up to main management menu
Jump to top level menu

DESCRIPTION:

This menu will be displayed if the user selects the 'Creation (project, job)' option on the 'Main Management Menu'.

The 'Project and Job Creation Menu' allows the user to opt to create either a new job or a new project, using the relevant forms.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

Create a project
The 'Project Creation Form' will be displayed.

Create a job
The 'Job Launching Form' will be displayed.

Move up to main management menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

None specific to this menu.

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Project Status Modification Menu

Project Status Modification Menu

Project status modification options :

Project Id	Status	Priority
COAST	Active	6
OCEAN	Held	4
DESERT	Active	3

Move up to main management menu
Jump to top level menu

DESCRIPTION:

This menu will be displayed if the user selects the 'Status modification (project, job, task)' option on the 'Main Management Menu'

The 'Project Status Modification Menu' allows the user to modify the status or priority of a chosen project. The menu also allows the user to select a particular project, and modify the statuses of its current jobs.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

One of the Projects
If RETURN is pressed, then the 'Job Status Modification Menu' will be displayed for the jobs in the project selected. The key sequences described below may be used to modify the attributes of the current project, that is the project on the line on which the cursor is positioned.

Move up to main management menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

The following GOLD (PF1) key sequences may be typed to modify the status or priority of the project on the line on which the cursor is currently positioned:

GOLD D - delete the project
Typing 'GOLD D' will cause the user to be prompted to make sure that this operation is really required. If the response is 'Y' for 'Yes', the project will be deleted. That is, all the data about the project's history, including the histories of the jobs and tasks which it contained, which is used in preparing reports about the system, will be deleted from the database. This option can only be applied to projects containing no incomplete jobs.

GOLD E - edit project command procedure file
Typing 'GOLD E' will cause the EDT editor to be started, with the project command procedure as the file for editing. If the file does not exist, then EDT may be used to create it.

GOLD H - change the status of the project to 'Held'
Typing 'GOLD H' will change the status of the current project to 'Held'. This will allow any current sessions for any tasks in any jobs in this project to be completed, but will prevent any further sessions or tasks being started in the project. The user may proceed to modify the statuses of any jobs or tasks in the project.
This key sequence has no effect if the project status is already 'Held'.

GOLD P - alter the priority of a project
Typing 'GOLD P' will cause the user to be prompted for a new priority for the project.

GOLD R - change the status of the project to 'Active
Typing 'GOLD R' will release the current project, changing its status to 'Active'. Any tasks in any jobs in the project will be able to proceed, with new sessions being started as normal.
This key sequence has no effect if the project status is already 'Active'.

PROMPTS:

The following prompts for additional user input, which appear at the bottom of the screen, are associated with this menu:

Are you sure (Y/N) ?
This appears when the user opts to delete a project with the 'GOLD D' key sequence. The user should respond by typing 'Y' for 'Yes' or 'N' for 'No', followed by RETURN. The default is 'N'.

New priority (1-16) :
This appears when the user opts to change the priority of a project with the 'GOLD P' key sequence. The user should enter the required project priority, an integer between 1 and 16, and then press RETURN.

MESSAGES:

The following messages are associated with this menu:

Illegal priority
The user has entered, in response to the prompt to enter a new priority, a value which is not an integer between 1 and 16. The user should re-enter the priority, ensuring that it is between 1 and 16 inclusive.

Attempt to delete project containing current jobs
The user has attempted, using the 'GOLD D' sequence, to delete a project containing jobs which have not yet completed. If the user wishes to delete this project, he must either allow the jobs to complete, or first delete the individual jobs.

Job Status Modification Menu

Job Status Modification Menu

Project COAST

Job Name	Status	Priority
NORTH	Active	4
CENTRAL	Held	4
SOUTH	Active	4

Move up to project status modification menu
Jump to top level menu

DESCRIPTION:

This menu will be displayed if the user selects a project in the 'Project Status Modification Menu' by pressing RETURN when the cursor is positioned on the project's line on the menu.

The jobs displayed on the 'Job Status Modification Menu' will be all the current, incomplete jobs in the project selected.

The user may either modify the status or priority of a job, or select a job and examine and modify the tasks in it using the 'Task Status Modification Menu'.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

One of the Jobs
If one of the jobs is selected, then the 'Task Status Modification Menu' will be displayed for the tasks in that job. The key sequences described below may be used to modify the attributes of the current job, that is the job on the line on which the cursor is positioned.

Move up to project status modification menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

The following GOLD (PF1) key sequences may be typed to modify the status or priority of the job on the line of the screen on which the cursor is currently positioned:

GOLD D - delete the job
Typing 'GOLD D' will cause the user to be prompted to make sure that this operation is really required. If the response is 'Y' for 'Yes', the job will be deleted. That is, all references to the job, including the tasks which it contains, will be removed from the area of the database dealing with current jobs. Information about the history of the job will be retained. This option can only be applied to jobs containing no active tasks. Note that if the job is being deleted because it is intended to re-launch it, then it is advisable to rename it using 'GOLD N' first, otherwise a different name will be needed for the new job.

GOLD E - edit job command procedure file
Typing 'GOLD E' will cause the EDT editor to be started, with the job command procedure as the file for editing. If the file does not exist, then EDT may be used to create it.

GOLD H - change the status of the job to 'Held'
Typing 'GOLD H' will change the status of the current job to 'Held'. This will allow any current sessions for any tasks in this job to be completed, but will prevent any further sessions or tasks being started in the job. The user may proceed to modify the statuses of tasks in the job.
This key sequence has no effect if the job status is already 'Held'.

GOLD M - move a job backwards in its flowline
Typing 'GOLD M' will cause the 'Element Selection for Job Movement Menu' to be displayed. The user may use this to move the current position of a job in the flowline back to one or more of the elements through which it has passed. This will allow a job to be restarted at a particular stage in the flowline, for example, after an error has occurred.
This option automatically causes a job to be 'Held'. It will require releasing, after moving, before any tasks can be performed as part of it.

GOLD P - alter the priority of a job
Typing 'GOLD P' will cause the user to be prompted for a new priority for the job.

GOLD N - alter the name of a job
Typing 'GOLD N' will cause the user to be prompted for a new name for the job. This is only recommended if the job is about to be deleted so that another with the same name can be launched. If the name is not changed, then the presence of a job history record for the old job will prevent the new one from being launched. For a job which has already been completed or deleted, the Job Statistics Menu allows the name to be changed.

GOLD R - change the status of the job to 'Active'
Typing 'GOLD R' will release the current job, changing its status to 'Active'. Any tasks in the job will be able to proceed, with new sessions being started as normal.
This key sequence has no effect if the job status is already 'Active'.

PROMPTS:

The following prompts for additional user input, which appear at the bottom of the screen, are associated with this menu:

Are you sure (Y/N) ?
This appears when the user opts to delete a job with the 'GOLD D' key sequence. The user should respond by typing 'Y' for 'Yes' or 'N' for 'No', followed by RETURN. The default is 'N'.

New job name :
This appears when the user opts to change the name of a job with the 'GOLD N' key sequence. The user should enter the required job name, and then press RETURN.

New priority (1-16) :
This appears when the user opts to change the priority of a job with the 'GOLD P' key sequence. The user should enter the required job priority, an integer between 1 and 16, and then press RETURN.

MESSAGES:

The following messages are associated with this menu:

Illegal job name
The user has entered, in response to the prompt to enter a new job name, a blank line, or a name containing spaces. The user should re-enter the job name.

Illegal priority
The user has entered, in response to the prompt to enter a new priority, a value which is not an integer between 1 and 16. The user should re-enter the priority, ensuring that it is between 1 and 16 inclusive.

Duplicate job name
The user has attempted to change a job name to the same name as an existing (or historical) job in this project. The user should re-enter the job name, ensuring that it is not identical to an existing job identifier.

Attempt to delete job containing active tasks
The user has attempted, using the 'GOLD D' sequence, to delete a job containing tasks which are active. If the user wishes to delete this job, he must allow the current sessions in these active tasks to terminate.

Element Selection for Job Movement Menu

Element Selection For Job Movement Menu

Selection of legal elements to which to move job

The following options are available :

```
LITES2_DIGITISE              Selected
LAPROCESS                    Selected
LTK_POINT
LTK_LINE
LTK_AREA
Move up to job status modification menu
Jump to top level menu
```

DESCRIPTION:

This menu is entered after a job has been selected, for moving backwards in its flowline, on the 'Job Status Modification Menu'.

The options on the 'Element Selection for Job Movement Menu' consist of elements through which the job has already passed. The user may select one or more of the elements and attempt to have the job moved back to them.

Moving a job backwards can be used, for example, to attempt to correct an error which has occurred in the job's processing by repositioning it at an earlier stage in the flowline than that which caused the error.

More than one element can be selected to allow for repositioning in flowlines containing several parallel paths.

When one or more elements have been selected, and the user types 'GOLD M', LAMPSCONTROL will attempt to move the job to the chosen elements. If this attempt fails, for example because an impossible combination of elements has been selected, the user will have an opportunity to alter the selection and try again.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

One of the elements
This will have no effect.

Move up to job status modification menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

The following key sequences may be used to control the selection of elements and movement of the job with this menu:

GOLD S - Select current element
This causes the current element, that is the one on the same line as the cursor, to be selected. If the element has already been selected, this key sequence has no effect.

GOLD D - Deselect current element
Typing this sequence causes the current element to be deselected. If it had not been selected, this key sequence has no effect.

GOLD M - Attempt to move job to selected elements
Typing 'GOLD M' causes LAMPSCONTROL to attempt to move the job to the currently selected elements. If the attempt succeeds, the user will be returned to the 'Job Status Modification Menu'. If the attempt fails, the user will be informed with the message described below, and will be able to select and deselect further elements. The user may then attempt to move the job again.

PROMPTS:

None specific to this menu.

MESSAGES:

The following messages, which will appear on the bottom two lines of the screen, are associated with this menu:

Attempt to move job has failed - illegal combination of elements
The attempt to move the job to the selected elements has failed because the combination of elements chosen is not sensible. This usually means that two or more of the chosen elements lie on the same possible path through the flowline. The user should deselect and select appropriate elements, and then retry the move operation.

Task Status Modification Menu

```
--------------------------------------------------------------------------------
                          Task Status Modification Menu

          Project COAST                 Job NORTH

          Element Id                Task Status

          LITES2_EDIT               Inactive
          DIGSPOT                   Active
          Move up to job status modification menu
          Jump to top level menu
```

DESCRIPTION:

This menu will be displayed if the user selects a job in the 'Job Status Modification Menu' by pressing RETURN when the cursor is positioned on the same line of the menu as the job.

The tasks displayed on the 'Task Status Modification Menu' will be all the current, incomplete tasks in the job selected. The tasks will be either 'Active', 'Inactive' or 'Held'.

The user may modify the status of any of the inactive or held tasks, but not of any active tasks. This is because, if a task is active, someone is working on it at present.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

One of the tasks
Selecting one of the tasks by moving the cursor to it and typing RETURN will have no effect.

Move up to the job status modification menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

The following key sequences are associated with this menu:

GOLD H - change the status of the current task to 'Held'
When 'GOLD H' is typed and the cursor is currently positioned on the same line of the menu as a task with 'Inactive' status in the menu, the status of that task will be changed to 'Held'.
If the status of the task is already 'Held' this key sequence has no effect.
If the status of the task is 'Active', a message will be displayed and the status will not be changed.

GOLD R - change the status of the current task to 'Inactive'
If 'GOLD R' is typed when the cursor is positioned on a task with 'Held' status, the user will be prompted to determine if the task should be restarted as if none of it had been done before, or whether it should be continued from the stage which it had reached before being transferred to 'Held' status. The prompt used is described below. The task's status will then be changed to 'Inactive', and it will be restarted or continued as appropriate.
If typed when the current task is not 'Held', then 'GOLD R' has no effect.

GOLD S - skip the current task
If 'GOLD S' is typed when the cursor is positioned on the same line as a task with 'Inactive' status, then the task will be skipped, being marked in the database as if it had completed successfully. The user will be prompted for the outcome value of the task, so that an appropriate subsequent task can be initiated. The user will also be prompted to determine if parameters are to be entered. If required, th local, global and external parameters forms will be displayed to allow the user to enter the parameters associated with the completion of the task. The prompts used are described below.

PROMPTS:

The following prompts for additional user input, which appear at the bottom of the screen, are associated with this menu:

Treat task as if no sessions have been performed on it (Y/N) ?
This appears when the user opts to release a task with the 'GOLD R' key sequence. It allows the user to specify whether the task should be continued from the point which it had reached when it was 'Held', or whether it should be completely restarted. Answering 'Y' for 'Yes' causes the task to be restarted, while answering 'N' for 'No' causes it to be continued. The default response is 'N'.

Task outcome (RETURN to abort) :
This appears when the user opts to skip a task. The value entered should be one of the possible integers which would have been returned by the relevant element command procedure (in FLN_OUTCOME) had the task been executed and completed successfully. The outcome value determines which of the possible following tasks will be initiated. If RETURN is pressed without entering a number, then the task is not skipped.

Enter parameters (Y/N) ?
This prompt appears after the task outcome prompt above, during a task skipping operation. It allows the user to choose whether to enter any local, global or external parameters associated with the task. If the user replies 'Y' for 'Yes', the 'Local Parameters', 'Global Parameters' and 'External Parameters' forms will be displayed in that order. The user may then enter any parameters required. If the user replies 'N' for 'No' in response to the prompt, the task skipping will be performed with no parameters.

MESSAGES:

The following messages are associated with this menu:

Unable to change 'Active' task to 'Held'
The user has attempted, by typing 'GOLD H' to change the status of an 'Active' task to 'Held'. This is not possible, since, if a task is active, a session associated with it will be in progress. If the user wants to alter the task to 'Held', the termination of this session, but not of the task, with result 'CONTINUE', should first be indicated to LAMPSCONTROL using the 'Session Notification Menu'. The task status will then become 'Inactive', and the user may return to this menu to change the task status to 'Held'.

Not a legal response (Integer or RETURN)
This message is displayed if the user types anything but an integer or just RETURN (for abort) in response to the task outcome prompt during task skipping.

Project, Job and Session Notification Menu

Project, Job and Session Notification Menu

Selection of notification operation

The following options are available :

Notify project started
Notify job started
Notify session terminated
Move up to main management menu
Jump to top level menu

DESCRIPTION:

This menu will be displayed following the selection of the 'Notification (project, job, session)' option on the 'Main Management Menu'.

The 'Project, Job and Session Notification Menu' allows the user to select which sort of notification operation he wishes to carry out. The three available options reflect the three forms of the use of LAMPSCONTROL with the /NOTIFY command qualifier, that is to notify the termination of a session, the start of a project or the start of a job.

This menu will be generally be used by the manager to simulate a notify operation which should have been carried out by a LAMPSCONTROL created jacket command procedure, but which was prevented by some system malfunction, for example a computer crash.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

Notify project started
Selecting this option will cause the 'Project Notification Menu' to be displayed, allowing the user to select a created project for starting.

Notify job started
Selecting this option will cause the 'Job Notification Menu' to be displayed, allowing the user to select a created job for starting.

Notify session terminated
Selecting this option will cause the 'Session Notification Menu' to be displayed, allowing the user to select an active session for termination.

Move up to main management menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

None specific to this menu.

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Project Notification Menu

Project Notification Menu

Selection of created project for starting

The following options are available :

INDIA
AFRICA
Move up to project, job and session notification menu
Jump to top level menu

DESCRIPTION:

This menu is displayed when the 'Notify project started' option on the 'Project, Job and Session Notification Menu' is selected.

The 'Project Notification Menu' allows the user to select one of the projects with status 'Created' for starting. This notification process would generally be carried out automatically by the project creation jacket command procedure using LAMPSCONTROL with the /NOTIFY command qualifier.

The project options listed are all the projects in the system with status 'Created'.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

One of the created projects
The status of the project will be changed from 'Created' to 'Active'. This will allow jobs to be launched as part of this project. When a project has been selected, the user will be prompted for the corresponding project command procedure file specification.

Move up to project, job and session notification menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

None specific to this menu.

PROMPTS:

The following prompts are associated with this menu:

Command Procedure Spec :
When the user has selected a project for starting, LAMPSCONTROL will prompt for the command procedure specification corresponding to the project started. The user should enter the required file specification, ending it by typing RETURN. The user will then be returned to the 'Project, Job and Session Notification Menu'.

MESSAGES:

None specific to this menu.

Job Notification Menu

```
--------------------------------------------------------------------------------
                              Job Notification Menu

          Selection of created job for starting

          Job Name                  Project Id

          NORTH                     SHETLANDS
          NORTH                     GREENLAND
          CENTRAL                   ICELAND
          Move up to project, job and session notification menu
          Jump to top level menu
```

DESCRIPTION:

This menu is displayed when the 'Notify job started' option on the 'Project, Job and Session Notification Menu' is selected.

The 'Job Notification Menu' allows the user to select one of the jobs with status 'Created' for starting. This notification process would generally be carried out automatically by the job launching jacket command procedure using LAMPSCONTROL with the /NOTIFY command qualifier.

The job options listed are all the jobs in the system with status 'Created'.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

One of the created jobs
The status of the job will be changed from 'Created' to 'Active'. This will allow the tasks in the job to be initiated. When a job has been selected, the user will be prompted for the specification of its command procedure as described below.

Move up to project, job and session notification menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

None specific to this menu.

PROMPTS:

The following prompts are associated with this menu:

Command Procedure Spec :
When the user has selected a project for starting, LAMPSCONTROL will prompt for the command procedure specification corresponding to the project started. The user should enter the required file specification, ending it by typing RETURN. The user will then be returned to the 'Project, Job and Session Notification Menu'.

MESSAGES:

None specific to this menu.

Session Notification Menu

```
--------------------------------------------------------------------------------
                        Session Notification Menu

          Selection of active session for termination

          Element Id          Operator Id         Job Name

          LITES2_EDIT         TOM                 SUTHERLAND
          DIGSPOT             DICK                SKYE
          LTK_CONT            HARRY               AONACH_MOR
          Move up to project, job and session notification menu
          Jump to top level menu
```

DESCRIPTION:

This menu is displayed when the 'Notify session terminated' option on the 'Project, Job and Session Notification Menu' is selected.

The 'Session Notification Menu' allows the user to select one of the current unfinished sessions for termination. This notification process would generally be carried out automatically by the task jacket command procedure using LAMPSCONTROL with the /NOTIFY command qualifier.

The options listed are all the sessions in the system with status 'Active', with the identifier of the operator who started the session next to the name of the element relevant to the task of which the session is part.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

One of the active sessions
The 'Session Finished Form' will be displayed. This allows the user to specify the required result and outcome of the session selected. This will determine which task will be executed next.

Move up to project, job and session notification menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

None specific to this menu.

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Flowline System Definition Menu

Flowline System Definition Menu

Selection of static system component to define

The following options are available :

System command procedure definition
Flowline definition
Element definition
Wire definition
Procedure definition
Move up to main management menu
Jump to top level menu

DESCRIPTION:

This menu is displayed after the 'Definition (system, flowline, element, wire, procedure)' option on the 'Main Management Menu' is selected.

The 'Flowline System Definition Menu' allows the user to select options to define the various static components of the flowline system.

Each of the definition options on this menu, when selected, will result in a form being displayed into which the user may enter details of the required system component. These forms will also allow the user to opt to edit any command procedures associated with the static components of the flowline system.

When the user has completed the selected form, this menu will be redisplayed.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

System command procedure definition
Selecting this option will result in the 'System Command Procedure Form' being displayed.

Flowline definition
Selecting this option will result in the 'Flowline Definition Form' being displayed.

Element definition
Selecting this option will result in the 'Element Definition Form' being displayed.

Wire definition
Selecting this option will result in the 'Wire Definition Form' being displayed.

Procedure definition
Selecting this option will result in the 'Procedure Definition Form' being displayed.

Move up to main management menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

None specific to this menu.

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Operator and Workstation Authorisation Menu

Operator and Workstation Authorisation Menu

Operator and workstation authorisation

The following options are available :

Operator authorisation
Workstation authorisation
Move up to main management menu
Jump to top level menu

DESCRIPTION:

This menu will be displayed when the user selects the 'Authorisation (operator, workstation)' option on the 'Main Management Menu'.

The 'Operator and Workstation Authorisation Menu' allows the user to opt to authorise a new operator or workstation to use various parts of the flowline control system and to access selected projects, jobs, flowlines, elements or procedures. The user may also modify the authorisations of existing operators or workstations.

When the user has finished entering the details for each operator or workstation on the relevant form, the 'Operator and Workstation Authorisation Menu' will be redisplayed.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

Operator authorisation
This causes the 'Operator Authorisation Form' to be displayed. The user can enter or modify new or existing operator authorisations with this form.

Workstation authorisation
Selecting this option causes the 'Workstation Authorisation Form' to be displayed. The user may enter or modify new or existing workstation authorisations with this form.

Move up to main management menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

None specific to this menu.

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Main Report Menu

Main Report Menu

Selection of report operations

The following report options are available :

System definition
System status
System statistics
Move up to overall control menu

DESCRIPTION:

This menu is displayed when the 'Report Menu' option on the 'Overall Control Menu' is selected, or when LAMPSCONTROL is executed with the /REPORT (and /MENU) command qualifier.

The options on the 'Main Report Menu' allow the user to access further menus of reporting options for more specific areas of the flowline system. These areas are related to the system definition (the static components), the system status (the dynamic components) and the system statistics (the history of the system components).

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

System definition
Selecting this option will cause the 'System Definition Report Menu' to be displayed.

System status
Selecting this option will cause the 'Current System Status Report Menu' to be displayed.

System statistics
Selecting this option will cause the 'System Statistics Report Menu' to be displayed.

Move up to overall control menu
Exit from LAMPSCONTROL
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

None specific to this menu.

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

System Definition Report Menu

System Definition Report Menu

Selection of system definition report operations

The following options are available:

Flowline definition report
Element definition report
Wire definition report
Procedure definition report
Move up to main report menu
Jump to top level menu

DESCRIPTION:

This menu is displayed after the 'System definition' option on the 'Main Report Menu' has been selected.

The 'System Definition Report Menu' allows the user to obtain reports on the static components of the flowline control system. The static components are the flowlines, elements, wires and procedures.

Each of these reports can be listed either on the terminal screen (SYS$OUTPUT), or, optionally, on the current default printer (SYS$PRINT).

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

Flowline Definition report
Selecting this option will cause a report on all the flowlines defined as part of the flowline system to be sent to the terminal screen. If 'GOLD P' is typed when the cursor is positioned on this option's line, the report will be sent to the current default printer (SYS$PRINT).
The report is a tabulated listing containing the following information for each flowline:

- **The flowline identifier**
- **The flowline priority**
- **The start element identifier**
- **The end element identifier**
- **The flowline command procedure specification**

Element report
When this option is selected, the 'Flowline Request Menu' will be displayed. The user may then select a flowline for the elements in which the report is required. When a flowline has been selected, the report will be sent to the terminal screen. If 'GOLD P' is typed when the cursor is positioned on this option's line, the 'Flowline Request Menu' will be displayed, and the report will then be sent to the current default printer (SYS$PRINT).
The report is a tabulated listing containing the following information for each element:

- **The element identifier**
- **The element priority**
- **The procedure identifier corresponding to the element**
- **The list of outcomes and wire identifier pairs**
- **The element activation conditions**
- **The element command procedure specification**

Wire report
When this option is selected, the 'Flowline Request Menu' will be displayed. The user may then select a flowline for the wires in which the report is required. When a flowline has been selected, the report will be sent to the terminal screen. If 'GOLD P' is typed when the cursor is positioned on this option's line, the 'Flowline Request Menu' will be displayed, and the report will then be sent to the current default printer (SYS$PRINT).
The report is a tabulated listing containing the following information for each wire:

- **The wire identifier**
- **The end element identifier**

Procedure report
Selecting this option will cause a report on all the procedures defined as part of the flowline system to be sent to the terminal screen. If 'GOLD P' is typed when the cursor is positioned on this option's line, the report will be sent to the current default printer (SYS$PRINT).
The report is a tabulated listing containing the following information for each procedure:

- **The procedure identifier**
- **The procedure priority**
- **The procedure command procedure**

Move up to main report menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

The following key sequences are associated with this menu:

GOLD P - print the procedure report
Typing 'GOLD P' when the cursor is positioned on the same line as the a report option option will cause the report to be sent to the current default printer (SYS$PRINT).

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Flowline Request Menu

Flowline Request Menu

Flowlines present in system are:

DFAD
DTED_DIGITISE
DTED_DTM_CREATE
DTED_DTM_MODEL
DTED_SHEET
Move up to previous menu
Jump to top level

DESCRIPTION:

This menu is displayed after the user selects either the 'Element definition report' or 'Wire definition report' options on the 'System Definition Report Menu'.

The 'Flowline Request Menu' allows the user to select the flowline for which the report on its elements or wires is required. When a flowline has been selected, the report will be generated, and the user will then be returned to the 'System Definition Report Menu'.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

Any flowline option
The report on the elements or wires in this flowline will be generated. The element report will be generated if the 'Element definition report' option on the 'System Definition Report Menu' was selected. The wire report will be produced if the 'Wire definition report option' was chosen. The report will be sent to the terminal screen or to the printer (SYS$PRINT), depending on whether the option on the 'System Definition Report Menu' was selected with 'ENTER' or 'GOLD P' respectively.

Move up to system definition report menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

None specific to this menu.

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Current System Status Report Menu

Current System Status Report Menu

Selection of system status report operations

The following options are available :

Project status report
Job status report
Task status report
Session status report
Operator status report
Workstation status report
Move up to main report menu
Jump to top level menu

DESCRIPTION:

This menu will be displayed by LAMPSCONTROL when the user selects the 'System statistics' option on the 'Main Report Menu'.

The 'Current System Status Report Menu' allows the user to select one of a number of reports on the projects, jobs, tasks, sessions, operators, and workstations which currently form the dynamic components of the flowline system. These reports can, under user control, be displayed on the terminal screen (SYS$OUTPUT) or be sent to the current printer (SYS$PRINT).

OPTIONS:

Selecting an option, by positioning the cursor on the same line as it and typing RETURN, on the menu above will have the following effects:

Project status report
Details of the projects present in the system will be listed on the terminal screen, including the following information for each project:

- **The project identifier**
- **The project status**
- **The project priority**
- **The project command procedure specification**

Job status report
Details of the jobs present in the system will be listed on the terminal screen, including the following information for each job:

- **The project identifier**
- **The flowline identifier**
- **The job name**
- **The job status**
- **The job priority**
- **The job command procedure specification**

Task status report
Details of the tasks present in the system will be listed on the terminal screen, including the following information for each task:

- **The project identifier**
- **The job name**
- **The flowline identifier**
- **The element identifier**
- **The task status**
- **The progress status of the task**

Session status report
Details of the sessions present in the system will be listed on the terminal screen, including the following information for each session:

- **The operator identifier**
- **The workstation identifier**
- **The project identifier**
- **The job name**
- **The element identifier**

Operator status report
Details of the operators present in the system will be listed on the terminal screen, including the following information for each operator:

- **The operator identifier**
- **The current workstation(s), if logged on at present**
- **The current project identifier**
- **The current job name**
- **The current element identifier**
- **The operator authorisations**

Workstation status report
Details of the workstations present in the system will be listed on the terminal screen, including the following information for each workstation:

- **The workstation identifier**
- **The current operator(s), if in use at present**
- **The workstation authorisations**

Move up to main report menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

The following key sequences are associated with this menu:

GOLD P - print selected report
If 'GOLD P' is typed when the cursor is positioned on the same line as any of the report options on this menu, the report described for that option in the 'Options' section above will be output to the current printer (SYS$PRINT).

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

System Statistics Report Menu

System Statistics Report Menu

Selection of statistical report operations

The following options are available:

Project, job, task and session statistics
Flowline and element statistics
Operator statistics
Workstation statistics
Move up to main report menu
Jump to top level menu

DESCRIPTION:

This menu will be displayed after the user has selected the 'System Statistics' option on the 'Main Report Menu'.

The 'System Statistics Report Menu' allows the user to select a specific area of the performance of the flowline and to obtain a statistical report on that area. The reports are prepared from information stored in the flowline control system's database about the history of all operations carried out by the system.

The available reports will provide a flowline system manager with information about the amount of time taken to complete particular sessions, tasks, jobs and projects; the amount of time spent performing each of the flowlines, and the elements within those flowlines; the number of sessions performed by operators and the time spent performing those sessions; and the number of sessions performed with particular workstations and the time spent performing those sessions.

OPTIONS:

Selecting an option on the menu above, by moving the cursor to it and typing RETURN, will have the following effects:

Project, job, task and session statistics
Selecting this option will cause the 'Project Statistics Menu' to be displayed.

Flowline and element statistics
Selecting this option will cause the 'Flowline Statistics Menu' to be displayed.

Operator statistics
Selecting this option will cause the 'Operator Statistics Menu' to be displayed.

Workstation statistics
Selecting this option will cause the 'Workstation Statistics Menu' to be displayed.

Move up to main report menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

None specific to this menu.

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Project Statistics Menu

Project Statistics Menu

Selection of project for statistical reports

Available options are:

NORTH
SOUTH
EAST
WEST
Display project statistics report on screen
Print project statistics report
Move up to system statistics report menu
Jump to top level menu

DESCRIPTION:

This menu will be displayed after the user selects the 'Project, job, task and session report' option on the 'System Statistics Report Menu'.

The 'Project Statistics Menu' allows the user examine the total statistics for all projects, or to select a particular project and, using other menus, go on to examine the statistics relating to individual jobs, task and sessions within the project.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

One of the projects
Selecting one of the projects will cause the 'Job Statistics Menu', containing all the jobs in that project, to be displayed. The user may proceed from the 'Job Statistics Menu' to obtain details of the task and session statistics for selected jobs.

Display project statistics report on screen
The total statistics report for all the projects currently present in the flowline control system will be output to the terminal screen (SYS$OUTPUT). The report contains the following information for each project:

- **The project identifier**
- **The start date**
- **The start time**
- **The total connect time used for all sessions in the project**
- **The total CPU time used for all sessions in the project**
- **The total number of jobs in the project**

Print project statistics report
The statistics report for all the projects, as described for the preceding option, will be output to the printer (SYS$PRINT).

Move up to system statistics report menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

None specific to this menu.

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Job Statistics Menu

Job Statistics Menu

Selection of job in project NORTH

Available options are:

N1
N2
N3
Display job statistics report on screen
Print job statistics report
Move up to project statistics menu
Jump to top level menu

DESCRIPTION:

This menu will be displayed after one of the projects listed on the 'Project Statistics Menu' is selected.

The 'Job Statistics Menu' allows the user examine the statistics for the jobs in a particular project to be examined. The user may also select a particular job and go on to examine the statistics for the tasks and sessions in that job.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

One of the jobs
Selecting one of the jobs will cause the 'Task Statistics Menu', containing all the tasks in that job, to be displayed.

Display job statistics report on screen
The total statistics report for the jobs in the selected project will be output to the terminal screen (SYS$OUTPUT). The report contains the following information for each job:

- **The job identifier**
- **The start date**
- **The start time**
- **The end date**
- **The end time**
- **The total connect time used for all sessions in the job**
- **The total CPU time used for all sessions in the job**
- **The total number of tasks in the job**

Print job statistics report
The statistics report for the jobs, as described for the preceding option, will be output to the printer (SYS$PRINT).

Move up to project statistics menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

The following GOLD (PF1) key sequence may be typed to modify the status of the job on the line of the screen on which the cursor is currently positioned:

GOLD N - alter the name of a job
Typing 'GOLD N' will cause the user to be prompted for a new name for the job. This is only permitted for historical jobs, which have been completed or deleted. This option is intended for use when the presence of a job history record for the old job is preventing a new job with the same name from being launched.

PROMPTS:

The following prompt for additional user input, which appears at the bottom of the screen, is associated with this menu:

New job name :
This appears when the user opts to change the name of a job with the 'GOLD N' key sequence. The user should enter the required job name, and then press RETURN.

MESSAGES:

The following messages are associated with this menu:

Illegal job name
The user has entered, in response to the prompt to enter a new job name, a blank line, or a name containing spaces. The user should re-enter the job name.

Duplicate job name
The user has attempted to change a job name to the same name as an existing (or historical) job in this project. The user should re-enter the job name, ensuring that it is not identical to an existing job identifier.

Can only change the name of historical jobs
The user has attempted to change the job name of a job which has not yet been completed or deleted. If this is really intended, then is is allowed in the Job Status Menu.

Task Statistics Menu

Task Statistics Menu

Project NORTH Job N1

Available options are:

LTK_AREA
LTK_LINE
LITES2_DIG
POST_DIG_PROC
MERGE
Display task statistics report on screen
Print task statistics report
Move up to job statistics menu
Jump to top level menu

DESCRIPTION:

This menu will be displayed after one of the jobs listed on the 'Job Statistics Menu' is selected.

The 'Task Statistics Menu' allows the user examine the statistics for all the tasks in the selected job, or to select a particular task and examine the statistics for all the sessions in that task.

OPTIONS:

Selecting one of the options, by moving the cursor to it and pressing RETURN, on the menu above will have the following effects:

One of the tasks
Selecting one of the tasks will cause a tabulated report of the statistics for the individual sessions performed as part of the task to be displayed on the terminal screen. The report will contain the following information for each session:

- **The task number - the same for sessions in the same task**
- **The operator identifier**
- **The workstation identifier**
- **The start date**
- **The start time**
- **The end date**
- **The end time**
- **The CPU time used in performing the session**

Display task statistics report on screen
The total statistics report for the tasks in the selected job will be output to the terminal screen (SYS$OUTPUT). The report contains the following information for each task:

- **The element identifier**
- **The start date**
- **The start time**
- **The end date**
- **The end time**
- **The total connect time used for all sessions in the task**
- **The total CPU time used for all sessions in the task**
- **The total number of sessions in the task**

Print task statistics report
The statistics report for the tasks, as described for the preceding option, will be output to the printer (SYS$PRINT).

Move up to job statistics menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

The following key sequences are associated with this menu:

GOLD P - print session statistics report
Typing 'GOLD P' when the current option is one of the tasks, will cause the session statistics report, as described above, for that task to be output to the printer (SYS$PRINT).

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Flowline Statistics Menu

Flowline Statistics Menu

Selection of flowline for statistical reports

Available options are:

DTED
SUB_DTED1
SUB_DTED2
DFAD
Display flowline statistics report on screen
Print flowline statistics report
Move up to system statistics report menu
Jump to top level menu

DESCRIPTION:

This menu will be displayed when the user selects the 'Flowline and element report' option on the 'System Statistics Report Menu'.

The 'Flowline Statistics Menu' allows the user to examine the total statistics for all flowlines defined in the system, or to select a particular flowline and examine the statistics for the elements defined as part of that flowline.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

One of the flowlines
Selecting one of the flowlines will cause the 'Element Statistics Menu', allowing access to the statistics of every element in the chosen flowline, to be displayed.

Display flowline statistics report on screen
The total statistics report for all the flowlines defined in the flowline control system will be output to the terminal screen (SYS$OUTPUT). The report contains the following information for each flowline:

- **The flowline identifier**
- **The total connect time used performing sessions in the flowline**
- **The mean connect time per job**
- **The total CPU time used performing sessions in the flowline**
- **The mean CPU time per job**
- **The number of jobs done on the flowline**

Print flowline statistics report
The statistics report for the flowlines, as described for the preceding option, will be output to the printer (SYS$PRINT).

Move up to system statistics report menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

None specific to this menu.

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Element Statistics Menu

Element Statistics Menu

Flowline DFAD

Available options are:

DIG_POINT
LTK_AREA
LTK_LINE
MERGE
Display element statistics report on screen
Print element statistics report
Move up to flowline statistics menu
Jump to top level menu

DESCRIPTION:

This menu will be displayed when the user selects one of the flowlines on the 'Flowline Statistics Menu'.

The 'Element Statistics Menu' allows the user to examine the statistics for all the elements defined as part of the selected flowline. It also allows the user to obtain the element statistics broken down by operator and workstation.

OPTIONS:

Selecting one of the options, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

One of the elements
Selecting one of the elements will cause the 'Specific Element Statistics Menu' to be displayed.

Display element statistics report on screen
The total statistics report for the elements defined as part of the selected flowline will be output to the terminal screen (SYS$OUTPUT). The report contains the following information for each element:

- **The element identifier**
- **The total connect time used performing sessions in the element**
- **The mean connect time per task**
- **The total CPU time used performing sessions in the element**
- **The mean CPU time per task**
- **The mean number of sessions per task**
- **The number of tasks done for the element**

Print element statistics report
The statistics report for the elements, as described for the preceding option, will be output to the printer (SYS$PRINT).

Move up to flowline statistics menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

None specific to this menu.

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Specific Element Statistics Menu

Specific Element Statistics Menu

Flowline DFAD Element ANY_FEATURES

The following options are available:

Statistics broken down by workstation
Statistics broken down by operator
Move up to flowline statistics menu
Jump to top level menu

DESCRIPTION:

This menu will be displayed when the user selects one of the elements on the 'Element Statistics Menu'.

The 'Specific Element Statistics Menu' allows the user to examine the statistics for the chosen element broken down in terms either of the operators who have performed, or of the workstations which have been used to perform, sessions for the element.

OPTIONS:

Selecting one of the options, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

Statistics broken down by workstation
The statistics broken down by the workstations which have been used to perform sessions for the selected element will be output to the terminal screen (SYS$OUTPUT). The tabulated report will contain the following information for each workstation:

- **The workstation identifier**
- **The total connect time used to perform sessions**
- **The mean connect time used per session**
- **The total CPU time used to perform sessions**
- **The mean CPU time used per session**
- **The number of sessions performed on the workstation**

Statistics broken down by operator
The statistics broken down by the operators who have performed sessions for the selected element will be output to the terminal screen (SYS$OUTPUT). The tabulated report will contain the following information for each operator:

- **The operator identifier**
- **The total connect time used to perform sessions**
- **The mean connect time used per session**
- **The total CPU time used to perform sessions**
- **The mean CPU time used per session**
- **The number of sessions performed by the operator**

Move up to element statistics menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

The following key sequences are associated with this menu:

GOLD P - print selected report
If 'GOLD P' is typed when the current option is either 'Statistics broken down by workstation' or 'Statistics broken down by operator', the report associated with that option (as described above) will be sent to the current printer (SYS$PRINT).

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Operator Statistics Menu

Operator Statistics Menu

Selection of operator for statistical reports

Available options are:

TOM
DICK
HARRY
Display operator statistics report
Print operator statistics report
Move up to system statistics report menu
Jump to top level menu

DESCRIPTION:

This menu will be displayed when the user selects the 'Operator statistics' option on the 'System Statistics Report Menu'.

The 'Operator Statistics Menu' allows the user to examine the total statistics for all operators known to the flowline control system. The user may also select an operator, and examine the statistics broken down by each different workstation which the operator has used and each different element for which the operator has performed a session.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

One of the operators
Selecting one of the operators will result in the 'Specific Operator Statistics Menu' for that operator being displayed.

Display operator statistics report on screen
The total statistics report for the all the operators known to the flowline control system will be output to the terminal screen (SYS$OUTPUT). The report contains the following information for each operator:

- **The operator identifier**
- **The total connect time used to perform sessions by the operator**
- **The mean connect time per session**
- **The total CPU time used to perform sessions by the operator**
- **The mean CPU time per session**
- **The number of sessions performed by the operator**

Print operator statistics report
The statistics report for the operators, as described for the preceding option, will be output to the printer (SYS$PRINT).

Move up to system statistics report menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

None specific to this menu.

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Specific Operator Statistics Menu

Specific Operator Statistics Menu

Operator JON

The following options are available:

Statistics broken down by workstation
Statistics broken down by flowline and element
Move up to operator statistics menu
Jump to top level menu

DESCRIPTION:

This menu will be displayed when the user selects one of the operators on the 'Operator Statistics Menu'.

The 'Specific Operator Statistics Menu' allows the user to examine the statistics for the chosen operator broken down in terms either of the workstations which the operator has used, or of the elements for which the operator has performed sessions.

OPTIONS:

Selecting one of the options, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

Statistics broken down by workstation
The statistics broken down by the workstations which the selected operator has used will be output to the terminal screen (SYS$OUTPUT). The tabulated report will contain the following information for each workstation:

- **The workstation identifier**
- **The total connect time used to perform sessions**
- **The mean connect time used per session**
- **The total CPU time used to perform sessions**
- **The mean CPU time used per session**
- **The number of sessions performed on the workstation**

Statistics broken down by flowline and element
The statistics broken down by the elements for which the operator has performed sessions will be output to the terminal screen (SYS$OUTPUT). The tabulated report will contain the following information for each element in each flowline:

- **The flowline identifier**
- **The element identifier**
- **The total connect time used to perform sessions**
- **The mean connect time used per session**
- **The total CPU time used to perform sessions**
- **The mean CPU time used per session**
- **The number of sessions performed by the operator**

Move up to operator statistics menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

The following key sequences are associated with this menu:

GOLD P - print selected report
If 'GOLD P' is typed when the current option is either 'Statistics broken down by workstation' or 'Statistics broken down by flowline and element', the report associated with that option (as described above) will be sent to the current printer (SYS$PRINT).

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Workstation Statistics Menu

Workstation Statistics Menu

Selection of workstation for statistical reports

Available options are:

VT220
VT320
LASERTRAK
Display workstation statistics report
Print workstation statistics report
Move up to system statistics report menu
Jump to top level menu

DESCRIPTION:

This menu will be displayed when the user selects the 'Workstation statistics' option on the 'System Statistics Report Menu'.

The 'Workstation Statistics Menu' allows the user to examine the total statistics for all workstations known to the flowline control system. The user may also select a workstation, and examine the statistics broken down by each different operator who has used the workstation and each different element for which the workstation has been used to perform a session.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

One of the workstations
Selecting one of the workstations will result in the 'Specific Workstation Statistics Menu' for that workstation being displayed.

Display workstation statistics report on screen
The total statistics report for the all the workstations known to the flowline control system will be output to the terminal screen (SYS$OUTPUT). The report contains the following information for each workstation:

- **The workstation identifier**
- **The total connect time used to perform sessions**
- **The mean connect time per session**
- **The total CPU time used to perform sessions**
- **The mean CPU time per session**
- **The number of sessions performed with the workstation**

Print workstation statistics report
The statistics report for the workstations, as described for the preceding option, will be output to the printer (SYS$PRINT).

Move up to system statistics report menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

None specific to this menu.

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Specific Workstation Statistics Menu

Specific Workstation Statistics Menu

Workstation LASERTRAK

The following options are available:

Statistics broken down by operator
Statistics broken down by flowline and element
Move up to workstation statistics menu
Jump to top level menu

DESCRIPTION:

This menu will be displayed when the user selects one of the workstations on the 'Workstation Statistics Menu'.

The 'Specific Workstation Statistics Menu' allows the user to examine the statistics for the chosen workstation broken down in terms either of the operators who have used the workstation, or of the elements for which the workstation has been used to perform sessions.

OPTIONS:

Selecting one of the options, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

Statistics broken down by operator
The statistics broken down by the operators who have used the selected workstation will be output to the terminal screen (SYS$OUTPUT). The tabulated report will contain the following information for each operator:

- **The operator identifier**
- **The total connect time used to perform sessions**
- **The mean connect time used per session**
- **The total CPU time used to perform sessions**
- **The mean CPU time used per session**
- **The number of sessions performed by the operator**

Statistics broken down by flowline and element
The statistics broken down by the elements for which the workstation has been used to perform sessions will be output to the terminal screen (SYS$OUTPUT). The tabulated report will contain the following information for each element in each flowline:

- **The flowline identifier**
- **The element identifier**
- **The total connect time used to perform sessions**
- **The mean connect time used per session**
- **The total CPU time used to perform sessions**
- **The mean CPU time used per session**
- **The number of sessions performed with the workstation**

Move up to workstation statistics menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

The following key sequences are associated with this menu:

GOLD P - print selected report
If 'GOLD P' is typed when the current option is either 'Statistics broken down by operator' or 'Statistics broken down by flowline and element', the report associated with that option (as described above) will be sent to the current printer (SYS$PRINT).

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Project Request Menu

Project Request Menu

Selection of next project

Authorised options are :

COAST
OCEAN
DESERT
Move up to overall control menu

DESCRIPTION:

The 'Project Request Menu' is one of the three request menus which an ordinary operator will use to select the next task to be performed. The other two request menus are the 'Job Request Menu' and the 'Task Request Menu'. One of the three request menus will be displayed as a result of selecting the 'Project, Job and Task Request Menus' option on the 'Overall Control Menu', or when LAMPSCONTROL is executed with a command line including the /REQUEST and /MENU qualifiers. Exactly which of the three menus will be displayed first is determined by the last project, job and task performed by the user - for more details on this, the reader should refer to the main 'Description' section earlier in this chapter.

By selecting a project with this menu, the user modifies his current project to the one selected, and will obtain access to the 'Job Request Menu' to select a job and then, from the 'Task Request Menu', a task to perform.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

One of the projects
When the user selects one of the projects from this menu, the 'Job Request Menu' containing all the jobs in that project, will be displayed.

Move up to overall control menu
Exit from LAMPSCONTROL
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

None specific to this menu.

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Job Request Menu

Job Request Menu

Project COAST

Authorised options are :

NORTH
CENTRAL
SOUTH
Move up to project request menu
Jump to top level menu

DESCRIPTION:

The 'Job Request Menu' is one of the three request menus which an ordinary operator will use to select the next task to be performed. The other two request menus are the 'Project Request Menu' and the 'Task Request Menu'. One of the three request menus will be displayed as a result of selecting the 'Project, Job and Task Request Menus' option on the 'Overall Control Menu', or when LAMPSCONTROL is executed with a command line including the /REQUEST and /MENU qualifiers. Exactly which of the three menus will be first displayed is determined by the last project, job and task performed by the user - for more details on this, the reader should refer to the main 'Description' section earlier in this chapter.

By selecting a job with this menu, the user modifies his current job to the one selected, and will obtain access to the 'Task Request Menu' to select a task to perform.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

One of the jobs
When the user selects one of the jobs from this menu, the 'Task Request Menu' containing all the available tasks in that job, will be displayed.

Move up to project request menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

None specific to this menu.

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Task Request Menu

Task Request Menu

Project COAST Job NORTH

Authorised options are :

LITES2_EDIT
DIGSPOT
Move up to job request menu
Move up to project request menu
Jump to top level menu

DESCRIPTION:

The 'Task Request Menu' is one of the three request menus which an ordinary operator will use to select the next task to be performed. The other two request menus are the 'Job Request Menu' and the 'Project Request Menu'. One of the three request menus will be displayed as a result of selecting the 'Project, Job and Task Request Menus' option on the 'Overall Control Menu', or when LAMPSCONTROL is executed with a command line include the /REQUEST and /MENU qualifiers. Exactly which of the three menus will be displayed is determined by the last project, job and task performed by the user - for more details on this, the reader should refer to the main 'Description' section earlier in this chapter.

By selecting a task with this menu, the user modifies his current project to the one selected, and causes LAMPSCONTROL to attempt to start a session as part of the task. If this attempt succeeds, a task jacket procedure, as described earlier, will be created to carry out the session for the task. If the attempt to start the session fails, the user will be returned to this menu, to allow the selection of another task.

Attempts to start sessions may fail because, between the time when the 'Task Request Menu' was displayed, and the time when the user selected a task to perform, the chosen task was selected, and a session for it started, by another user.

OPTIONS:

Selecting an option, by moving the cursor to it and typing RETURN, on the menu above will have the following effects:

One of the tasks
When the user selects one of the tasks from this menu, LAMPSCONTROL will attempt to start a session as part of the task. If this succeeds, LAMPSCONTROL will generate a task jacket command procedure which, when executed, will allow the user to perform the session.

Move up to job request menu
Jump to top level menu
Refer to the above 'Command Menus and Data Entry Forms' section.

KEY SEQUENCES:

None specific to this menu.

PROMPTS:

None specific to this menu.

MESSAGES:

None specific to this menu.

Project Creation Form

Details of New Project to be Created

Project identifier _____

Priority of project __

DESCRIPTION:

This form will be displayed when the user selects the 'Create a project' option on the 'Project and Job Creation Menu'.

The 'Project Creation Form' allows the user to enter details of a new project to be created as part of the flowline control system. This involves specifying the project identifier and its priority (between 1 and 16).

When the user has completed entry of the project details, and exits from the form by typing RETURN, LAMPSCONTROL will generate a project creation jacket command procedure. LAMPSCONTROL will then finish executing, and the jacket command procedure may be executed.

PROMPTS:

None specific to this form.

MESSAGES:

The following messages, which will be displayed at the bottom of the terminal screen, are associated with this form:

Duplicate project identifier
The user has attempted to create a project with the same identifier as an existing project. The user should re-enter the project identifier, ensuring that it is not identical to an existing project identifier.

Illegal priority
The user has entered an illegal priority, which is not an integer between 1 and 16 inclusive. The priority should be re-entered as an integer between 1 and 16 inclusive.

Job Launching Form

Details of Job to be Launched

Flowline identifier _____

Project identifier _____

Job name _____

Job priority __

DESCRIPTION:

This form will be displayed when the user selects the 'Create a job' option on the 'Project and Job Creation Menu'.

The 'Job Launching Form' allows the user to enter details of a new job to be created as part of the specified project and launched on the specified flowline.

When the user has completed entry of the project details, and exits from the form by typing RETURN, LAMPSCONTROL will generate a job launching jacket command procedure. LAMPSCONTROL will then finish executing, and the jacket command procedure may be executed.

PROMPTS:

None specific to this form.

MESSAGES:

The following messages, which will be displayed at the bottom of the terminal screen, are associated with this form:

No such flowline
The user has entered an identifier for a flowline which does not exist. The user should re-enter the flowline identifier, ensuring that it refers to an existing flowline.

No such project
The user has entered an identifier for a project which does not exist. The user should re-enter the project identifier, ensuring that it refers to an existing project.

Duplicate job name
The user has attempted to launch a job with the same name as an existing (or hitorical) job in this project. The user should re-enter the job name, ensuring that it is not identical to an existing job identifier.

Illegal priority
The user has entered an illegal priority, which is not an integer between 1 and 16 inclusive. The priority should be re-entered as an integer between 1 and 16 inclusive.

Session Finished Form

Details of Session Termination

Result of session _____

Outcome of completed task ____

DESCRIPTION:

This will be displayed when one of the sessions on the 'Session Notification Menu' is selected.

The 'Session Finished Form' allows the user to specify the termination results of the chosen session. The required entries are the session result (COMPLETE, CONTINUE, OFFLINE, ERROR, RESTART or SUBFLOWLINE), and, if the result was 'COMPLETE', the numeric task outcome (default 1) and the estimated CPU time used (default 0).

When the user finishes entering data on this form, and exits by typing RETURN, the 'Local Parameters', 'Global Parameters' and 'External Parameters' forms will be displayed to allow the user to enter any parameters to be passed on by this session. The forms will be displayed in the order 'Local', 'Global', 'External'. When the 'External Parameters' form has been completed and exited by typing RETURN, the 'Project, Job and Session Notification Menu' will be redisplayed.

PROMPTS:

None specific to this form.

MESSAGES:

The following messages, which will be displayed at the bottom of the terminal screen, are associated with this form:

Unrecognised session return
The user has entered a session termination result which is not recognised. The user should re-enter the 'Result of session' field, ensuring that it is one of the allowed results (COMPLETE, CONTINUE, OFFLINE, ERROR, RESTART or SUBFLOWLINE).

Local, Global and External Parameters Forms

!!!!! Parameters

1	_____	1
2	_____	2
3	_____	3
4	_____	4
5	_____	5
6	_____	6
7	_____	7
8	_____	8
9	_____	9
10	_____	10
11	_____	11
12	_____	12
13	_____	13
14	_____	14
15	_____	15
16	_____	16

DESCRIPTION:

The above form will appear with the '!!!!!' in the title replaced by 'Local', 'Global' or 'External' depending on whether the form is for the entry of local, global or external parameters respectively.

These forms will be displayed whenever a session notification is performed using the 'Session Finished Form', or when requested when a task is skipped using the 'Task Status Modification Menu'.

The parameters which should be entered are equivalent to those which would be specified after the /PARAMETERS qualifier has been used on the session termination notification command line, or by means of the FLN_LOCAL_PARAM, FLN_GLOBAL_PARAM or FLN_EXTERNAL_PARAM symbols in the command procedures called during the performance of a session. Each separate parameter should be entered on a separate line of the form.

PROMPTS:

None specific to this form.

MESSAGES:

None specific to this form.

System Command Procedure Form

Details of System Command Procedure

System command procedure specification

_____

DESCRIPTION:

This form will be displayed after the user selects the 'System command procedure definition' option on the 'Flowline System Definition Menu'.

The 'System Command Procedure Form' allows the user to specify the command procedure file to be used for project creation. When the user exits from the form by typing RETURN, he may opt to edit the command procedure.

When the form is displayed, the existing system command procedure specification, if there is one, will be given in the field.

PROMPTS:

The following prompts are associated with this form:

Edit command procedure (Y/N) ?
This prompt allows the user to specify whether to edit, using the EDT editor, the command procedure specified on the form. The prompt will be displayed at the bottom of the form when the user exits from the form by typing RETURN. The user should reply by typing 'Y' for 'Yes' or 'N' for 'No', followed by RETURN. The default response is 'N'.
If the response 'Y' is given, the editor will be entered with the command procedure file as its input.

MESSAGES:

None specific to this form.

Flowline Definition Form

Details of Flowline Definition

Flowline identifier _____

Start element identifier _____

End element identifier _____

Priority of flowline __

Command procedure specification

_____

DESCRIPTION:

This form is displayed when the user selects the 'Flowline definition' option on the 'Flowline System Definition Menu'.

The 'Flowline Definition Form' allows the user to define a new flowline as part of the flowline control system, or to modify the definition or command procedure of an existing flowline.

When the user enters the flowline identifier, if a definition for that flowline already exists, it will be displayed in the remaining fields on the form.

After the user has finished entering the flowline definition, and exits from the form by typing RETURN, the prompt described below will be given.

The user may delete a flowline definition from the database by entering the identifier of the required flowline in the 'Flowline identifier' field, and typing the key sequence 'GOLD(PF1) D'. A prompt will be displayed, allowing the user to confirm that the deletion should be carried out, or to abort the deletion.

PROMPTS:

The following prompts are associated with this form:

Edit command procedure (Y/N) ?
This prompt allows the user to specify whether to edit, using the EDT editor, the command procedure specified on the form. The prompt will be displayed at the bottom of the form when the user exits from the form by typing RETURN. The user should reply by typing 'Y' for 'Yes' or 'N' for 'No', followed by RETURN. The default response is 'N'.
If the response 'Y' is given, the editor will be entered with the command procedure file as its input.

Delete flowline definition from database (Y/N) ?
This prompt is displayed after the 'GOLD D' key sequence is typed. If the user responds by entering 'Y' for 'Yes', the flowline definition will be deleted from the database. If the user responds with 'N' for 'No', the flowline definition will not be deleted.

MESSAGES:

The following messages, which will be displayed at the bottom of the terminal screen, are associated with this form:

Flowline definition exists
When the user has entered the flowline identifier in the appropriate field, if a flowline definition already exists with that identifier, the remaining fields on the form will be filled from that definition, and this message will be displayed. The user may then modify the flowline definition if required.

Illegal priority
The user has entered an illegal priority, which is not an integer between 1 and 16 inclusive. The priority should be re-entered as an integer between 1 and 16 inclusive.

No such flowline
This message will be displayed if the user attempts to delete a flowline for which there is no definition in the database.

Element Definition Form

Details of Element Definition

Flowline identifier _____
Element identifier _____
Procedure identifier _____
Priority of element __
Command procedure specification
_____
Activation Conditions
_____
_____
_____
_____

Outcome value	Activated wire identifier
____	_____
____	_____
____	_____
____	_____

DESCRIPTION:

This form is displayed when the user selects the 'Element definition' option on the 'Flowline System Definition Menu'.

The 'Element Definition Form' allows the user to define a new element as part of an existing flowline, or to modify the specification or command procedure of an existing element.

When the user has entered the element and flowline identifier, if a definition for that element already exists, it will be displayed in the remaining fields on the form.

The element's possible outcomes and the wires activated by each are entered in a scrolled area of the form. The same outcome may be specified more than once to indicate the activation of multiple wires.

After the user has finished entering the element definition, and exits from the form by typing RETURN, the prompt described below will be given.

The user may delete an element definition from the database by entering the identifier of the required flowline and element in the appropriate fields, and typing the key sequence 'GOLD(PF1) D'. A prompt will be displayed, allowing the user to confirm that the deletion should be carried out, or to abort the deletion.

PROMPTS:

The following prompts are associated with this form:

Edit command procedure (Y/N) ?
This prompt allows the user to specify whether to edit, using the EDT editor, the command procedure specified on the form. The prompt will be displayed at the bottom of the form when the user exits from the form by typing RETURN. The user should reply by typing 'Y' for 'Yes' or 'N' for 'No', followed by RETURN. The default response is 'N'.
If the response 'Y' is given, the editor will be entered with the command procedure file as its input.

Delete element definition from database (Y/N) ?
This prompt is displayed after the 'GOLD D' key sequence is typed. If the user responds by entering 'Y' for 'Yes', the element definition will be deleted from the database. If the user responds with 'N' for 'No', the flowline definition will not be deleted.

MESSAGES:

The following messages, which will be displayed at the bottom of the terminal screen, are associated with this form:

Element definition exists
When the user has entered the flowline and element identifiers in the appropriate field, if an element definition already exists with the specified identifier, the remaining fields on the form will be filled from that definition, and this message will be displayed. The user may then modify the element definition, if required.

Illegal priority
The user has entered an illegal priority, which is not an integer between 1 and 16 inclusive. The priority should be re-entered as an integer between 1 and 16 inclusive.

No such flowline
The user has entered an identifier for a flowline which does not exist. The user should re-enter the flowline identifier, ensuring that it refers to an existing flowline.

No such element
This message will be displayed if the user attempts to delete an element for which there is no definition in the database.

Wire Definition Form

Details of Wire Definition

Flowline identifier _____

Wire identifier _____

End element identifier _____

DESCRIPTION:

This form is displayed when the user selects the 'Wire definition' option on the 'Flowline System Definition Menu'.

The 'Wire Definition Form' allows the user to define a new wire as part of an existing flowline, or to modify the specification of an existing wire.

When the user has entered the wire and flowline identifiers, if a definition for that wire already exists, it will be displayed in the remaining fields of the form.

The user may delete a wire definition from the database by entering the identifier of the required flowline and wire in the appropriate fields, and typing the key sequence 'GOLD(PF1) D'. A prompt will be displayed, allowing the user to confirm that the deletion should be carried out, or to abort the deletion.

PROMPTS:

The following prompt is associated with this form:

Delete wire definition from database (Y/N) ?
This prompt is displayed after the 'GOLD D' key sequence is typed. If the user responds by entering 'Y' for 'Yes', the wire definition will be deleted from the database. If the user responds with 'N' for 'No', the wire definition will not be deleted.

MESSAGES:

The following messages, which will be displayed at the bottom of the terminal screen, are associated with this form:

Wire definition exists
When the user has entered the wire identifier in the appropriate field, if a wire definition already exists with that identifier, the remaining fields on the form will be filled from that definition, and this message will be displayed. The user may then modify the wire definition, if required.

No such flowline
The user has entered an identifier for a flowline which does not exist. The user should re-enter the flowline identifier, ensuring that it refers to an existing flowline.

No such wire
This message will be displayed if the user attempts to delete a wire for which there is no definition in the database.

Procedure Definition Form

Details of Procedure Definition

Procedure identifier _____

Priority of procedure __

Command procedure specification

_____

DESCRIPTION:

This form is displayed when the user selects the 'Procedure definition' option on the 'Flowline System Definition Menu'.

The 'Procedure Definition Form' allows the user to define a new procedure as part of the flowline control system, or to modify the definition or command procedure of an existing procedure.

When the user enters the procedure identifier, if a definition for that procedure already exists, it will be displayed in the remaining fields on the form.

After the user has finished entering the procedure definition, and exits from the form by typing RETURN, the prompt described below will be given.

The user may delete a procedure definition from the database by entering the identifier of the required procedure in the 'Procedure identifier' field, and typing the key sequence 'GOLD(PF1) D'. A prompt will be displayed, allowing the user to confirm that the deletion should be carried out, or to abort the deletion.

PROMPTS:

The following prompts are associated with this form:

Edit command procedure (Y/N) ?
This prompt allows the user to specify whether to edit, using the EDT editor, the command procedure specified on the form. The prompt will de displayed at the bottom of the form when the user exits from the form by typing RETURN. The user should reply by typing 'Y' for 'Yes' or 'N' for 'No', followed by RETURN. The default response is 'N'.
If the response 'Y' is given, the editor will be entered with the command procedure file as its input.

Delete procedure definition from database (Y/N) ?
This prompt is displayed after the 'GOLD D' key sequence is typed. If the user responds by entering 'Y' for 'Yes', the procedure definition will be deleted from the database. If the user responds with 'N' for 'No', the procedure definition will not be deleted.

MESSAGES:

The following messages, which will be displayed at the bottom of the terminal screen, are associated with this form:

Procedure definition exists
When the user has entered the procedure identifier in the appropriate field, if a procedure definition already exists with that identifier, the remaining fields on the form will be filled from that definition, and this message will be displayed. The user may then modify the procedure definition if required.

Illegal priority
The user has entered an illegal priority, which is not an integer between 1 and 16 inclusive. The priority should be re-entered as an integer between 1 and 16 inclusive.

No such procedure
This message will be displayed if the user attempts to delete a procedure for which there is no definition in the database.

Operator Authorisation Form

Details of Operator

Operator identifier _____
Current project identifier _____
Current job name _____
Current task (element) id _____

Authorisation type	Allowed (Y/N/E)	Authorisation ident
__	__	_____
__	__	_____
__	__	_____
__	__	_____
__	__	_____

DESCRIPTION:

This form will be displayed after the user selects the 'Operator authorisation' option on the 'Operator and Workstation Authorisation Menu'.

The 'Operator Authorisation Form' allows the user to authorise a new operator to use the required components of the flowline control system; or to alter the authorisations and current project, job and task of an existing operator.

When the user has entered the operator identifier, if details already exist for that operator, then they will be displayed in the remaining fields of the form.

The authorisation details are entered in a scrolled area of the form. A single authorisation record (one line of the scrolled area) may be deleted by typing the key sequence 'GOLD D' when the cursor is positioned over the record.

The user may delete all the details for a particular operator by typing 'GOLD D' when the cursor is not in the scrolled area. The user will first be prompted to confirm that the deletion is required, and then the operator whose identifier is in the 'Operator identifier' field will be deleted from the database.

More details on authorisations are given in Chapter 2 of this manual.

PROMPTS:

The following prompt is associated with this form:

Delete operator entry (Y/N) ?
This prompt appears when the user types 'GOLD D' to delete an operator from the database. If the user replies 'Y' for 'Yes', the deletion will proceed. If the user enters 'N' for 'No', the deletion will be aborted.

MESSAGES:

The following message are associated with this form:

Operator already exists
After the user has entered an identifier in the 'Operator identifier' field, if details already exist for that operator in the database, the remaining fields on the form will be filled and this message will be displayed. The user may then modify the fields if required.

Operator does not exist
This message is displayed if the user attempts to delete an operator for whom there is no entry in the database.

Workstation Authorisation Form

Details of Workstation

Workstation identifier _____

Authorisation type	Allowed (Y/N/E)	Authorisation ident
__	__	_____
__	__	_____
__	__	_____
__	__	_____

DESCRIPTION:

This form will be displayed after the user selects the 'Workstation authorisation' option on the 'Operator and Workstation Authorisation Menu'.

The 'Workstation Authorisation Form' allows the user to authorise a new workstation to use the required components of the flowline control system; or to alter the authorisations of an existing workstation.

When the user has entered the workstation identifier, if details already exist for that workstation, then they will be displayed in the remaining fields of the form.

The authorisation details are entered in a scrolled area of the form. A single authorisation record (one line of the scrolled area) may be deleted by typing the key sequence 'GOLD D' when the cursor is positioned over the record.

The user may delete all the details for a particular workstation by typing 'GOLD D' when the cursor is positioned on the 'Workstation identifier' field. The user will first be prompted to confirm that the deletion is required, and then the workstation specified by the identifier in the 'Workstation identifier' field will be deleted from the database.

More details on authorisations are given in Chapter 2 of this manual.

PROMPTS:

The following prompt is associated with this form:

Delete workstation entry (Y/N) ?
This prompt appears when the user types 'GOLD D' to delete a workstation from the database. If the user replies 'Y' for 'Yes', the deletion will proceed. If the user enters 'N' for 'No', the deletion will be aborted.

MESSAGES:

The following messages are associated with this form:

Workstation already exists
After the user has entered an identifier in the 'Workstation identifier' field, if details already exist for that workstation in the database, the remaining fields on the form will be filled and this message will be displayed. The user may then modify the fields if required.

Workstation does not exist
This message is displayed if the user attempts to delete a workstation for which there is no entry in the database.

Examples

The following example illustrates the log file which produced by LAMPSCONTROL giving details of any errors encountered by its users.

```
 LAMPSCONT-E-NOAUTH, Not authorised for current operator/workstation
Time          27-MAY-1988 15:34:23.30
User          LSLSOFT
Workstation   FADT_BATCH
Operation     Operator request
Process       LSLSOFT2


 LAMPSCONT-W-SESSERROR, Session has finished with error status
Time          27-MAY-1988 16:28:52.60
User          LSLSOFT
Workstation   FADT_BATCH
Operation     Notify session finished
Process       LSLSOFT1

Project       SUTHERLAND
Job           CENTRAL
Element       MERGE_IFF
Problem       IMERGE


 LAMPSCONT-W-SESSERROR, Session has finished with error status
Time          27-MAY-1988 17:31:53.65
User          LSLSOFT
Workstation   FADT_BATCH
Operation     Notify session finished
Process       LSLSOFT1

Project       EIRE
Job           CORK
Element       CREATE_ENTER_FADT
Problem       FADTINPUT


 LAMPSCONT-W-SESSERROR, Session has finished with error status
Time          27-MAY-1988 18:11:44.90
User          LSLSOFT
Workstation   FADT_BATCH
Operation     Notify session finished
Process       LSLSOFT2

Project       SKYE
Job           NORTH_COAST
Element       COMBINE_LINK_FIX
Problem       ILINK


 LAMPSCONT-E-INCOMLINE, Incorrect command line specification
Time          27-MAY-1988 20:29:45.30
```

```
User          LSLSOFT
Workstation   MASTER$LTXXX
Operation     Unknown
Process       LSLSOFT2


 LAMPSCONT-E-INCOMLINE, Incorrect command line specification
Time          27-MAY-1988 20:45:48.38
User          LSLSOFT
Workstation   MASTER$LTXXX
Operation     Unknown
Process       LSLSOFT2


 LAMPSCONT-E-UNFINSESS, Unable to finish session
Time          27-MAY-1988 20:51:44.85
User          LSLSOFT
Workstation   MASTER$LTXXX
Operation     Notify session finished
Process       LSLSOFT2


 FLN-W-NOACTSESS, No such active session
Time          27-MAY-1988 20:51:45.12
User          LSLSOFT
Workstation   MASTER$LTXXX
Operation     Notify session finished
Process       LSLSOFT2
```

Each entry contains the error message, time, username, workstation identifier, attempted operation and process name associated with the problem encountered. For abnormal session terminations, the project, job and element involved are also given.

MESSAGES (SUCCESS)

These messages are used to indicate that the program has succeeded in performing some action, and do not require any user action.

NORMAL, Normal successful completion

> **Explanation:** LAMPSCONTROL has finished its operations successfully and without problems.
>
> **User action:** None.

MESSAGES (INFORMATIONAL)

These messages give information only, and require no immediate action by the user. They are used to provide information on the current state of the program, or to supply explanatory information in support of a warning or error message.

CRTJCP, Creating jacket command procedure

Explanation: The jacket command procedure to perform the operation required by the user is being created.

User action: The user should wait for the completion of the jacket command procedure.

JOBFINISHED, The end of that job has been reached

Explanation: The last task in the current job has been finished or skipped.

User action: None.

JOBMOVE, Job is being moved to selected elements

Explanation: The job is being moved to the selected elements.

User action: None.

JOBSTART, Job has been successfully created and started

Explanation: A job has been successfully created and initiated.

User action: None.

PROJECTSTART, Project has been successfully created and started

Explanation: A project has been successfully created and initiated.

User action: None.

REPCOMP, Report is being compiled

Explanation: The requested report is being compiled.

User action: None.

REPPRIN, Report has been submitted to print queue

Explanation: The requested report has been completed and submitted to the print queue.

User action: None.

SESSCOMPLETE, Session has finished with COMPLETE status

Explanation: The session has finished and the task to which it relates is complete.

User action: None.

SESSCONTINUE, Session has finished with CONTINUE status

Explanation: The session has finished, but the task to which it relates is not complete.

User action: None

SESSOFFLINE, Session has finished with OFFLINE status

Explanation: The online part of the session has finished, and it is continuing offline.

User action: None.

SESSRESTART, Session has finished with task RESTART status

Explanation: The session just completed finished with task restart status.

User action: The ordinary operator should refer the problem to a system manager, who should use LAMPSCONTROL's management facilities to restart the task of which the session was part.

SESSSUBFLOWLINE, Session has finished with SUBFLOWLINE status

Explanation: The session has finished, but the task to which it relates includes a subflowline, so it will not complete until all the jobs launched on it are complete.

User action: None.

MESSAGES (WARNING)

These messages are output when an error has occurred that can be corrected immediately by the user or that the program will attempt to overcome.

BADPAR, An error has been found in the current parameter

Explanation: An error has been found in the task/session parameter just entered using LAMPSCONTROL.

User action: The user should examine any other messages produced to determine the cause of the problem, before re-entering the parameter.

BADQUOT, String delimiter (quotation mark) missing or misplaced

Explanation: An double quotation mark, used to delimit strings for input to LAMPSCONTROL has been omitted or wrongly positioned.

User action: The user should re-enter the string, ensuring that all quotation marks are correctly placed.

NOMENU, Unable to do anything because menus not requested

Explanation: The LAMPSCONTROL contained a /NOMENU command qualifier with a combination of other qualifiers specifying operations which could not be carried out without menus.

User action: The user should respecify the command line with a sensible combination of command qualifiers.

SESSERROR, Session has finished with ERROR status

Explanation: The session just completed has finished with error status.

User action: The ordinary operator should refer the problem to a system manager, who should use LAMPSCONTROL's reporting and management facilities to determine the cause of the error and then restart the job at an appropriate point in its flowline.

TOOMNYPAR, Attempt to enter too many parameters of that type

Explanation: An attempt has been made to enter more than the permitted number of one of the types (local, global or external) of task/session parameter.

User action: The user should not enter any further parameters of that type for the current task or session.

UNBEGINTASK, Unable to begin task, attempt selection of another

Explanation: The task selected using LAMPSCONTROL could not be started, probably because another operator had selected just before the current operator.

User action: The user should attempt to select another task.

MESSAGES (ERROR)

These messages indicate an error in processing which will cause the program to terminate. The most likely causes are a corrupt or otherwise invalid input file, or an error related to command line processing and file manipulation.

INCOMLINE, Incorrect command line specification

Explanation: The use called LAMPSCONTROL with an incorrect command line specification, probably due to a using a disallowed combination of command qualifiers

User action: The user should check the documentation and respecify the command line

NOAUTH, Not authorised for current operator/workstation

Explanation: The user attempted an operation for which he or she was not authorised.

User action: The user should avoid the operation which caused the error, or should ask a system manager to extend the user's authorisations.

NOMENUOPT, No options provided to put on menu

Explanation: The user attempted to access a menu for which no options to be displayed could be found.

User action: The user should refer the problem to Laser-Scan.

UNCLOCOMFIL, Unable to close command file

Explanation: LAMPSCONTROL was unable to close the specified command file for the jacket command procedure.

User action: The user should examine the other error messages produced to determine the reason for the failure to close the command file.

UNCRTJOB, Unable to create job

Explanation: LAMPSCONTROL was unable to initiate the job specified.

User action: The user should examine the other error messages produce to determine the reason for the failure.

UNCRTPROJ, Unable to create project

Explanation: LAMPSCONTROL was unable to initiate the project specified.

User action: The user should examine the other error messages produce to determine the reason for the failure.

UNDEFELEM, Unable to enter element definition in database

Explanation: LAMPSCONTROL was unable to enter the new or modified element definition in the flowline control system database.

User action: The user should examine the other error messages produce to determine the reason for the failure.

UNDEFFLN, Unable to enter flowline definition in database

Explanation: LAMPSCONTROL was unable to enter the new or modified flowline definition in the flowline control system database.

User action: The user should examine the other error messages produce to determine the reason for the failure.

UNDEFPROC, Unable to enter procedure definition in database

Explanation: LAMPSCONTROL was unable to enter the new or modified procedure definition in the flowline control system database.

User action: The user should examine the other error messages produce to determine the reason for the failure.

UNDEFSYS, Unable to enter system definition in database

Explanation: LAMPSCONTROL was unable to enter the new or modified system definition in the flowline control system database.

User action: The user should examine the other error messages produce to determine the reason for the failure.

UNDEFWIRE, Unable to enter wire definition in database

Explanation: LAMPSCONTROL was unable to enter the new or modified wire definition in the flowline control system database.

User action: The user should examine the other error messages produce to determine the reason for the failure.

UNDELELEM, Unable to delete element definition from database

Explanation: LAMPSCONTROL was unable to delete the element definition from the flowline control system database.

User action: The user should examine the other error messages produce to determine the reason for the failure.

UNDELFLN, Unable to delete flowline definition from database

Explanation: LAMPSCONTROL was unable to delete the flowline definition from the flowline control system database.

User action: The user should examine the other error messages produce to determine the reason for the failure.

UNDELPROC, Unable to delete procedure definition from database

Explanation: LAMPSCONTROL was unable to delete the procedure definition from the flowline control system database.

User action: The user should examine the other error messages produce to determine the reason for the failure.

UNDELWIRE, Unable to delete wire definition from database

Explanation: LAMPSCONTROL was unable to delete the wire definition from the flowline control system database.

User action: The user should examine the other error messages produce to determine the reason for the failure.

UNDETOPER, Unable to determine operator identifier (username)

Explanation: LAMPSCONTROL has been unable to determine the operator identifier (username) for the current operator. Since this is required to determine whether the operator is authorised to carry out any actions using LAMPSCONTROL, the program cannot continue.

User action: The user should examine any other messages produced to determine the cause of the problem.

UNDETWKS, Unable to determine workstation identifier

Explanation: LAMPSCONTROL has been unable to determine the workstation identifier, from the logical name LSL$FLN_WORKSTATION, for the current workstation. Since this is required to determine whether the workstation is authorised to carry out any actions using LAMPSCONTROL, the program cannot continue. A common cause of this problem is the failure to define the logical name LSL$FLN_WORKSTATION accurately or at all.

User action: The user should ensure that the logical name LSL$FLN_WORKSTATION is properly defined. Any other messages produced should be examined to determine the cause of the problem.

UNFINSESS, Unable to finish session

Explanation: An error has occurred while performing a notification of the termination of a session.

User action: The user should examine the other error messages produced to determine the reason for the failure.

UNKNOWNOP, Operator not known to database

Explanation: An operator with a username not known to LAMPSCONTROL attempted to use the flowline control system.

User action: The operator should ask a system manager to set up an appropriate set of user authorisations in the database. This may done with the 'Operator Authorisation Form'.

UNKNOWNWKS, Workstation not known to database

Explanation: An attempt was made to use LAMPSCONTROL from a workstation for which no authorisations are present in the database.

User action: The operator should ask a system manager to set up an appropriate set of authorisations for the workstation. This may be done with the 'Workstation Authorisation Form'.

UNOPNCOMFIL, Unable to open command file

Explanation: LAMPSCONTROL was unable to open the specified command file for the jacket command procedure.

User action: The user should examine the other error messages produced to determine the reason for the failure to open the command file.

UNRECERR, Unrecognised error encountered

Explanation: LAMPSCONTROL has encountered an unknown Relational Database (RDB) error while accessing the database.

User action: The user should refer the problem to Laser-Scan.

UNRETCURRENT, Unable to retrieve current project and job

Explanation: LAMPSCONTROL was unable to retrieve the current project and job for the operator.

User action: The user should examine the other error messages produce to determine the reason for the failure.

UNRETELEM, Unable to retrieve list of elements

Explanation: LAMPSCONTROL was unable to retrieve a list of elements from the flowline control system database.

User action: The user should examine the other error messages produce to determine the reason for the failure.

UNRETFLN, Unable to retrieve list of flowlines

Explanation: LAMPSCONTROL was unable to retrieve a list of flowlines from the flowline control system database.

User action: The user should examine the other error messages produce to determine the reason for the failure.

UNRETJOB, Unable to retrieve list of jobs

Explanation: LAMPSCONTROL was unable to retrieve a list of jobs from the flowline control system database.

User action: The user should check that the integrity of the flowline database file has not been damaged, and examine any other error messages displayed. The user may then re-attempt the operation.

UNRETOPER, Unable to retrieve list of operators

Explanation: LAMPSCONTROL was unable to retrieve a list of operators from the flowline control system database.

User action: The user should check that the integrity of the flowline database file has not been damaged, and examine any other error messages displayed. The user may then re-attempt the operation.

UNRETPROC, Unable to retrieve list of procedures

Explanation: LAMPSCONTROL was unable to retrieve a list of procedures from the flowline control system database.

User action: The user should examine the other error messages produce to determine the reason for the failure.

UNRETPROJ, Unable to retrieve list of projects

Explanation: LAMPSCONTROL was unable to retrieve a list of projects from the flowline control system database.

User action: The user should check that the integrity of the database has not been damaged, and examine any other error messages displayed. The user may then re-attempt the operation.

UNRETSESS, Unable to retrieve list of sessions

Explanation: LAMPSCONTROL was unable to retrieve a list of sessions from the flowline control system database.

User action: The user should check that the integrity of the database has not been damaged, and examine any other error messages displayed. The user may then re-attempt the operation.

UNRETTASK, Unable to retrieve list of tasks

Explanation: LAMPSCONTROL was unable to retrieve a list of tasks from the flowline control system database.

User action: The user should check that the integrity of the database has not been damaged, and examine any other error messages displayed. The user may then re-attempt the operation.

UNRETWIRE, Unable to retrieve list of wires

Explanation: LAMPSCONTROL was unable to retrieve a list of wires from the flowline control system database.

User action: The user should examine the other error messages produce to determine the reason for the failure.

UNRETWKS, Unable to retrieve list of workstations

Explanation: LAMPSCONTROL was unable to retrieve a list of workstations from the flowline control system database.

User action: The user should check that the integrity of the flowline database file has not been damaged, and examine any other error messages displayed. The user may then re-attempt the operation.

UNSTARTJOB, Unable to start job

Explanation: An error has occurred while performing a notification of the start of a job.

User action: The user should examine the other error messages produce to determine the reason for the failure.

UNSTARTPROJ, Unable to start project

Explanation: An error has occurred while performing a notification of the start of a project.

User action: The user should examine the other error messages produce to determine the reason for the failure.

MESSAGES (OTHER)

In addition to the above messages which are generated by the program itself, other messages may be produced by the command line interpreter (CLI) and by Laser-Scan libraries. In particular, messages may be generated by the IFF library and by the Laser-Scan I/O library, LSLLIB. IFF library messages are introduced by '%IFF' and are documented in the IFF library users' guide. In most cases IFF errors will be due to a corrupt input file, and this should be the first area of investigation. If the cause of the error cannot be traced by the user, and Laser-Scan are consulted, then the output file should be preserved to facilitate diagnosis. LSLLIB messages are introduced by '%LSLLIB' and are generally self-explanatory. They are used to explain the details of program generated errors.

Messages (on Menus and Forms)

These messages appear on the last two lines of the terminal screen when a menu or form is currently displayed. They are all accompanied by an audible warning. Since they are associated with the menu mode of operation of LAMPSCONTROL, they will not occur when /NOMENU is used on the command line.

They are designed to:

- Tell the user what to do next.
- Inform the user of any invalid or potentially invalid field entries.
- Inform the user of what the LAMPSCONTROL utility is doing.
- Describe any errors which the LAMPSCONTROL utility has encountered.

The messages associated with each form have been described earlier.

Other messages are generated by FMS, the most significant being :

Numeric required
Alphabetic required
In most of the forms, there are fields, or sub-fields, which can only contain numeric characters or can only contain alphabetic characters. In such cases, an attempt to enter a character of the wrong type will result in an error message being displayed.

Field full
An attempt was made to enter more than the allowed number of characters in the current field.

Input required
An attempt was made to exit from a form using RETURN before data for a mandatory field was entered.

Full field required
An attempt was made to move onto another field before the required number of characters had been entered in the current field.

Messages (Other)

In addition to the above messages which are generated by FMS and LAMPSCONTROL itself, other messages may be produced by the command line interpreter (CLI), by the relational database system (RDB), and by Laser-Scan libraries. LSLLIB messages are introduced by '%LSLLIB' and are generally self-explanatory. They are used to explain the details of program generated errors.

CHAPTER 6

FLOWLINE LIBRARY MESSAGES

FLOWLINE library messages

The FLOWLINE package uses a library of routines to access the FLOWLINE database. These FLOWLINE library routines issue messages having the prefix 'FLN__'. The messages are as follows:

MESSAGES (INFORMATIONAL)

These messages give information only, and require no immediate action by the user. They are often used to supply explanatory information in support of a warning or error message.

NORMAL, normal successful completion

Explanation: The current FLOWLINE library routine has completed successfully. This message should not normally be seen by the user.

User action: None.

MESSAGES (WARNING)

These messages are output when an error has occurred that can be corrected immediately by the user or that the program will attempt to overcome.

BADRESET, Illegal combination of Elements

Explanation: An attempt has been made to reset a job on a flowline with an illegal combination of elements. Normally this occurs if one of the specified elements lies on the same flowline path as another. Resetting a job to these elements would result in the completion of a task activating a subsequent task which has already been done.

User action: Specify elements which are independent of one another on the flowline. They should lie on separate flowline paths.

CONDNEST, Exceeded condition nesting range

Explanation: The conditions field of an element exceeds the maximum of 8 nesting levels.

User action: Reset the conditions with fewer brackets if possible. Consult Laser-Scan if you require the limit of 8 to be increased.

DUPJOB, Duplicate job identifier

Explanation: An attempt has been made to launch a job on the flowline with a job name which already exists in the project. Job names should be unique to a project.

User action: Respecify with a unique job name.

DUPOP, Duplicate operator identifier

Explanation: An attempt has been made to create an operator with an operator identifier which already exists.

User action: Try again with a different operator identifier.

DUPPROJ, Duplicate project identifier

Explanation: An attempt has been made to create a project with a project id which already exists.

User action: Relaunch the project with a different project id.

DUPWORK, Duplicate workstation identifier

Explanation: An attempt has been made to create a workstation with a workstation identifier which already exists.

User action: Try again with a different workstation identifier.

ILLEGPRI, Illegal Priority

Explanation: An attempt has been made to setup a priority outside the legal range of 1 to 16.

User action: Try again with a legal priority.

ILLEGSPACE, Illegal spaces in identifier

Explanation: An attempt has been made to create a database identifier which contains a space.

User action: Retry using a single identifier with no spaces.

JOBCREATED, Job has created status

Explanation: An attempt has been made to alter artificially the status of a job with 'Created' Status.

User action: Use the notification procedures to start the job on the system.

JOBSPRESENT, Current jobs still present in the system.

Explanation: An attempt has been made to delete a project which still has jobs current on the system.

User action: Check that no work is being carried out in the jobs which are present in the project. Before the project may be deleted all the jobs therein must first be complete or deleted.

NOACTSESS, No such active session

Explanation: This error occurs when a session is specified which does not reference an active session in the database.

User action: Check the sessions which are active in the database and respecify if necessary.

NOPREVTASK, No Previous task

Explanation: An attempt has been made to reset a job at an element with which it had no previous associated task. This is illegal.

User action: Reset the task on an element through which the job has already passed.

NOSUCHALLOW, No such authorisation "allowed" flag

Explanation: An invalid authorisation "allowed" flag has been specified. Valid flags are "Y", "N" or "E".

User action: Respecify the "allowed" flag.

NOSUCHAUTH, No such authorisation type

Explanation: An invalid authorisation type has been specified. Valid types are "PC", "PJ", "EL", "FL", "DB", or "JB".

User action: Respecify the authorisation type.

NOSUCHELMNT, No such element with the specified identifier

Explanation: The specified element does not exist in the database.

User action: Check the existing elements in the database and respecify if necessary.

NOSUCHFLN, No such flowline with the specified identifier

Explanation: The specified flowline does not exist in the database.

User action: Check the existing flowlines in the database and respecify if necessary.

NOSUCHJOB, No Such Job

Explanation: A reference has been made to an job which is not known to the database.

User action: Check the specification of the job and respecify if necessary.

NOSUCHLMPCTRL, No such LAMPSCONTROL authorisation

Explanation: The specified LAMPSCONTROL authorisation is invalid. Valid authorisations are "Menu", "Request", "Manage", "Report".

User action: Respecify with a valid LAMPSCONTROL authorisation

NOSUCHOP, No Such Operator

Explanation: A reference has been made to an operator who is not known to the database.

User action: Check that the operator has been authorised to work on the system.

NOSUCHPROC, No such procedure with the specified identifier

Explanation: The specified procedure does not exist in the database.

User action: Check the existing procedures in the database and respecify if necessary.

NOSUCHPROJ, No Such Project

Explanation: A reference has been made to a project which is not known to the database.

User action: Check the specification of the project and respecify as necessary.

NOSUCHTASK, No Such Task

Explanation: A reference has been made to a task which is not known to the database.

User action: Check the task id and respecify if necessary.

NOSUCHWIRE, No such wire with the specified identifier.

Explanation: The specified wire does not exist in the database.

User action: Check the existing wires in the database and respecify if necessary.

NOTSKAVLBLE, No such inactive task in database

Explanation: There is no inactive task in the database that may be started with the supplied id. This error often occurs when an operator selects a task which has subsequently become unavailable due to another operator starting the task first, or the manager holding the task.

User action: Check the tasks which are ready to run in the database and reselect if necessary.

PROJCREATED, Project has created status

Explanation: An attempt has been made to alter artificially the status of a project with 'Created' Status.

User action: Use the notification procedures to start the project on the system.

TASKACTIVE, Task is active

Explanation: An attempt was made to hold a task that is already active. This is illegal. This message also occurs when there are active tasks in a job which is being deleted. To delete a job there should be no active tasks within it.

User action: Complete the task(s) using the notification procedures.

MESSAGES (ERROR)

These messages indicate an unexpected error in processing. The most likely cause is a corrupt or invalid flowline definition.

BADCOND, Error in the elements conditions field.

Explanation: An error has occurred in evaluating the conditions field for the element on which a selected task is being run.

User action: Check the syntax of the conditions field of the element in the database and correct.

INVALEND, Invalid End of flowline

Explanation: The flowline has been set up such that the flowline end element has been probed in addition to another element. An outcome that probes the end element should probe no other elements.

User action: Check the outcomes of elements which probe the last element. Ensure that the outcome which sets the wire entering the end element does not set any other wires active

MISSELMNT, Missing Element

Explanation: A Wire is specified which does not point to a valid element.

User action: Check the wires in the database reference valid wire end elements.

NOSUCHOUT, No such outcome

Explanation: An outcome value for a task completion has been supplied which is not stored in the database for the current element

User action: Check the outcomes for the element of the task being completed.

TOOMNYWIRE, Too many active wires

Explanation: There is more than one active wire with the supplied flowline,job and wire ids.

User action: This error should not normally occur and indicates a database corruption. Please submit an SPR to Laser-Scan together with a copy of the database.

APPENDIX A

DATABASE DEFINITIONS

APPENDIX A - Database Definition

The following section contain a description of the FLOWLINE relational database in terms
of the relations used in its definition. Relations comprise of a number of fields which are
first listed together with their datatype, default
missing values, and validity restrictions. The second section lists all
the FLOWLINE relations.

Fields

```
PROJECT_ID          description   : id for a project
                    datatype      : text size is 20
                    missing value : " "

FLOWLINE_ID         description   : id for a flowline
                    datatype      : text size is 20
                    missing value : " "

ELEMENT_ID          description   : id for an element
                    datatype      : text size is 20
                    missing value : " "

PROCEDURE_ID        description   : id for a procedure
                    datatype      : text size is 20
                    missing value : " "

JOB_ID              description   : id number for a job
                    datatype      : signed longword
                    missing value : -1

JOB_NAME            description   : name  for a job
                    datatype      : text size is 20
                    missing value : " "

TASK_ID             description   : id number for a task
                    datatype      : signed longword
                    missing value : -1

SESSION_ID          description   : id number for a session
                    datatype      : signed longword
                    missing value : -1

WIRE_ID             description   : id for a session
                    datatype      : text size is 20
                    missing value : " "

OPERATOR_ID         description   : operator identifier
                    datatype      : text size is 20
                    missing value : " "
```

```
WORKSTATION_ID      description   : id for a workstation
                    datatype      : text size is 20
                    missing value : " "

OUTCOME_VALUE       description   : value output by an element
                    datatype      : signed longword
                    missing value : -1

COMMAND_PROC        description   : command file specification
                    datatype      : text size is 255
                    missing value : " "

PRIORITY            description   : priority value
                    datatype      : signed longword
                    missing value : -1

CONDITIONS          description   : conditions for an element to proceed
                    datatype      : text size is 255
                    missing value : " "

START_DATE          description   : integer date field
                    datatype      : signed longword
                    missing value : -1

FINISH_DATE         description   : integer date field
                    datatype      : signed longword
                    missing value : -1

START_TIME          description   : integer time field
                    datatype      : signed longword
                    missing value : -1

FINISH_TIME         description   : integer time field
                    datatype      : signed longword
                    missing value : -1

AUTHORISATION_TYPE  description   : type of authorisation
                    datatype      : text size is 2
                    missing value : " "
                    valid values  : "PJ" "EL" "PC" "FL" "JB" "DB"

YES_NO              description   : YES or NO or EVERYTHING
                    datatype      : signed longword
                    missing value : -1
                    valid values  : 1 or 2 or 3

OUTER_TASK_ID       description   : id number for task with sub-flowline
                    datatype      : signed longword
                    missing value : 0

INITIATOR_ID        description   : id of person who starts a job/project
                    datatype      : text size is 20
                    missing value : " "

PROJECT_STATUS      description   : status of a project
                    datatype      : text size is 8
```

```
                    missing value : " "
                    valid values  : "Active" "Held" "Created" "Void"

JOB_STATUS          description   : status of a job
                    datatype      : text size is 8
                    missing value : " "
                    valid values  : "Active" "Held" "Created" "Void"

TASK_STATUS         description   : status of task
                    datatype      : text size is 8
                    missing value : " "
                    valid values  : "Active" "Held" "Inactive" "Void"
                                    "Offline"

PROGRESS_STATUS     description   : progress status of task
                    datatype      : text size is 8
                    missing value : " "
                    valid values  : "Started" "Not Started"

SESS_STATUS         description   : completion status of session
                    datatype      : text size is 8
                    missing value : " "
                    valid values  : "Restart" "Continue" "Hold"
                                    "Complete" "Sub-flow"

CPU_TIME            description   : CPU time in /100 secs
                    datatype      : signed longword
                    missing value : -1

PARAMETER_ID         description   : id number for parameter
                    datatype      : signed longword
                    missing value : -1

PARAMETER_STRING    description   : parameter specification
                    datatype      : text size is 255
                    missing value : " "

PARAMETER_TYPE      description   : type of parameter
                    datatype      : signed longword
                    missing value : -1
-------------------------------------------------------------------------
Relations

PROJECT             description   : Project Information
                    fields        : PROJECT_ID, COMMAND_PROC, PRIORITY
                                    INITIATOR_ID, START_TIME, START_DATE
                                    PROJECT_STATUS

JOB                 description   : Job Information
                    fields        : PROJECT_ID, FLOWLINE_ID, JOB_ID,
                                    JOB_NAME, INITIATOR_ID, START_TIME,
                                    START_DATE, FINISH_TIME, FINISH_DATE
                                    JOB_STATUS, COMMAND_PROC,
                                    OUTER_TASK_ID, PRIORITY

FLOWLINE            description   : Flowline  Information
```

```
                    fields       : FLOWLINE_ID,
                                   START_ELEMENT based on ELEMENT_ID
                                   END_ELEMENT based on ELEMENT_ID
                                   COMMAND_PROC,PRIORITY

ELEMENT             description  : Element Information
                    fields       : ELEMENT_ID, FLOWLINE_ID,
                                   PROCEDURE_ID,COMMAND_PROC,
                                   CONDITIONS, PRIORITY

PROCEDURE           description  : Procedure Information
                    fields       : PROCEDURE_ID, COMMAND_PROC,
                                   PRIORITY

OUTCOME             description  : Element Information
                    fields       : ELEMENT_ID, FLOWLINE_ID,
                                   OUTCOME_VALUE, WIRE_ID

WIRE                description  : Wire information
                    fields       : FLOWLINE_ID, WIRE_ID
                                   WIRE_END based on ELEMENT_ID

WIRE_ACTIVE         description  : Activted wires
                    fields       : WIRE_ID, JOB_ID, PARAMETER_ID


SESSION             description  : Operator Sessions
                    fields       : SESSION_ID, TASK_ID, OPERATOR_ID
                                   WORKSTATION_ID, START_TIME,
                                   FINISH_TIME, START_DATE, FINISH_DATE
                                   CPU_TIME, SESS_STATUS

TASK                description  : Task Information
                    fields       : TASK_ID, ELEMENT_ID, JOB_ID,
                                   PROGRESS_STATUS, TASK_STATUS,
                                   PARAMETER_ID

TASKID              description  : Latest task number
                    fields       : ID based in TASK_ID

JOBID               description  : Latest job number
                    fields       : ID based in JOB_ID

SESSIONID           description  : Latest session number
                    fields       : ID based in SESSION_ID

PARAMETERID         description  : Latest parameter number
                    fields       : ID based in PARAMETER_ID

TASK_HISTORY        description  : Task History Information
                    fields       : TASK_ID, ELEMENT_ID, JOB_ID,
                                   OUTCOME_VALUE, TASK_STATUS

SESSION_HISTORY     description  : Old Operator Sessions
                    fields       : SESSION_ID, TASK_ID, OPERATOR_ID
                                   WORKSTATION_ID, START_TIME,
```

```
                                    FINISH_TIME, START_DATE, FINISH_DATE
                                    CPU_TIME, SESS_STATUS

JOB_HISTORY           description   : Old Job Information
                      fields        : PROJECT_ID, FLOWLINE_ID, JOB_ID,
                                      JOB_NAME, INITIATOR_ID, START_TIME,
                                      START_DATE, FINISH_TIME, FINISH_DATE
                                      JOB_STATUS, OUTER_TASK_ID, PRIORITY

OPERATOR               description   : Operator Information
                       fields        : OPERATOR_ID,
                                       CURRENT_ELEMENT based on ELEMENT_ID
                                       CURRENT_PROJECT based on PROJECT_ID
                                       CURRENT_JOB  based on JOB_ID

WORKSTATION            description   : Workstation  Information
                       fields        : WORKSTATION_ID

OPERATOR_AUTHORISATION  description   : Operator authorisation
                        fields        : OPERATOR_ID, AUTHORISATION_TYPE
                                        YES_NO, ID based on PROJECT_ID

WORKSTATION_AUTHORISATION  description   : Workstation authorisation
                           fields        : WORKSTATION_ID,
                                           AUTHORISATION_TYPE
                                           YES_NO, ID based on PROJECT_ID

SYSTEM                description   : System Wide Information
                      fields        : COMMAND_PROC

PARAMETER             description   : Local parameter information
                      fields        : PARAMETER_ID,
                                      PARAMETER_STRING.

GLOBAL_PARAMETER      description   : Global parameter information
                      fields        : JOB_ID, PARAMETER_STRING,
                                    : PARAMETER_TYPE.
```

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