# **9** software

**Natural Engineer** 

**Application Management for Windows** 

Version 9.1

February 2019

**ADABAS & NATURAL** 

# Manual Order Number: NEE91-020WIN

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Specifications contained herein are subject to change, and these changes will be reported in subsequent revisions or editions.

Readers' comments are welcomed. Comments may be addressed to the Documentation Department at the address on the back cover. Internet users may send comments to the following e-mail address:

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# ABOUT THIS MANUAL

# Purpose of this manual

This manual covers the Application Management for Natural Engineer.

It describes the various processes available that enable you to create and manage Natural applications within Natural Engineer.

The topics covered include:

- How to create new applications, open existing applications and delete applications.
- Customizing the control of the application by setting preferences.
- Field level interrogation using the Field Viewer option.
- Object Level interrogation using the Object Viewer options.
- JCL object level interrogation using the JCL Viewer options.
- Complexity interrogation using the Application Metrics options.
- An overview of the Object Quality reports available.

# Target Audience

The target audience for this manual is intended to be any User of Natural Engineer at any level of experience.

# Typographical Conventions used in this manual

UPPERCASE TIMES	Commands, statements, names of programs and utilities referred to in text paragraphs appear in normal (Times) uppercase.	
UPPERCASE BOLD COURIER	In illustrations or examples of commands, items in uppercase bold courier must be typed in as they appear.	
<>	Items in angled brackets are placeholders for user-supplied information. For example, if asked to enter <file number="">, you must type the number of the required file.</file>	
Underlined	Underlined parts of text are hyperlinks to other parts within the online source manual. This manual was written in MS-Word 97 using the "hyperlink" feature.	

The following conventions are used throughout this manual:

The following symbols are used for instructions:

$\Rightarrow$	Marks the beginning of an instruction set.
	Indicates that the instruction set consists of a single step.
1.	Indicates the first of a number of steps.

About this manual

# How this manual is organized

This manual is organized to reflect all the Application Management options of Natural Engineer in the following chapters:

Chapter	Contents		
1	Describes the Natural Engineer window.		
2	Describes the various extract and load processes available within Natural Engineer that allow you to load your applications into the Repository.		
3	Describes the various application management options available to maintain and review your loaded applications. For example:		
	• Field reviewing option, which provides the facility to review objects within applications loaded into the Repository at field level. This allows you to see the use of a field across the whole application as well as its use between objects.		
	<ul> <li>Object reviewing options, which provide the facility to review objects within each application loaded into the Repository at object level. This allows you to review the inventory, structures, relationships, objects and source code within an application.</li> </ul>		
	<ul> <li>Object Documentation option which allows you to specify comments for each object within an application on the Repository. This complements the object source code information already stored in the Repository.</li> </ul>		
	<ul> <li>Cobol Links option to specify Cobol modules within a Cobol linked program executed from a JCL.</li> </ul>		
	<ul> <li>JCL reviewing options, which provide the facility to review JCL objects within applications loaded into the Repository. The JCL options review the JCL objects, data sets, DDMs and Natural programs within an application</li> </ul>		
4	Provides an overview of the reporting options available for the topics covered in this manual.		
5	Describes the various Application Metrics options, which provide summary and detailed information about the application, objects and source code, for the purpose of providing structural statistics and complexity information.		
6	Describes the various management options available to maintain and review the Data Definition modules within your Repository.		
7	Describes the various management options available to maintain and review the JCL within your Repository.		
8	Describes the various management options available to maintain and review the CICS Regions within your Repository.		

- 9 Describes the various management options available to maintain and review the SQL Tables within your Repository.
- 10 Describes the various management options available to maintain and review the Services within your Repository.
- 11 Describes the various management options available to maintain and review the Predict User Views within your Repository.

About this manual

# Terminology

This section offers some of the terms that are specific to the Natural Engineer product.

Note: Familiarity is assumed with the general terminology of Natural, Adabas, Microsoft and Mainframe operating systems.

### Analysis

The Analysis process of Natural Engineer searches application data within the Natural Engineer Repository, according to specified Search Criteria and generates reports on the search results.

### Application

An Application is a library or group of related libraries, which define a complete Application. In Natural Engineer, the Application can have a one-to-one relationship with a single library of the same name, or a library of a different name, as well as related steplibs. The Application refers to all the source code from these libraries, which Natural Engineer loads into the Repository.

### Browser

An Internet Browser such as Microsoft Internet Explorer or Netscape.

# Category

Categories in Natural Engineer specify whether and how a Modification is applied to the Natural code. Valid categories are: Automatic change, Manual change, Reject the default Modification, No change to the data item, and the data item is in Generated Code.

A category is further broken down according to type of change (for example: Keyword, Literal, Data Item, Database Access, and Definition).

# Cobol

Abbreviation of Common Business Orientated Language. A programming language.

### **Cobol Link**

A Cobol Link is the link between the individual Cobol modules and the executable Cobol program referenced in the JCL object.

# Consistency

An option in the Analysis process that causes Natural Engineer to trace an Impact through the code, using left and right argument resolution to identify further code impacted by the code found.

### **Database Access Definition**

A collective term used to identify DDMs, SQL Tables or Predict User Views.

### Data Item

A collective term used for any data fields within a programming object. These can be user-defined variables, DDM fields or System Variables. It is inter-changeable with the term 'variable'.

### Environment

The Environment process is the means by which Natural Engineer generates a structured view of the application code in the Natural Engineer Repository. This provides application analysis reports and inventory information on the application and is used as the basis for Impact Analysis.

### Exception

An Exception is an Item identified as impacted that does not require a Modification. Where there are a few similar Exception Items, they can be treated as Exceptions, and rejected in the Modification review process. Where there are many similar (therefore not Exceptions), consideration should be given to changing the Search Criteria so they are not identified as impacted in the first place.

### **Generated Code**

This is code which has been generated by a Natural code generator, such as Construct, and which is not normally modified directly in the Natural editor.

### Impact

An Impact is an instance of a Natural code Item; e.g., data item or statement (a "hit" scored by the Analysis process) that matches the defined Search Criteria used in the Analysis process.

### Iteration

An Iteration is one examination cycle of a field identified according to the specified Search Criteria. For example, one Iteration is reading the field right to left. Multiple Iterations are performed when the option of 'Consistency' or Multi Search is requested for Analysis, and Natural Engineer performs as many Iterations as necessary to exhaust all possibilities of expressing and tracing the field, and can be limited by a setting in the NATENG.INI file.

# JCL

Job Control Language.

### JCL object

A JCL object is a collection of Job Control statements in the order which they are to be executed in a mainframe batch environment. Commonly referred to as JCL.

# Library

A single library of source code, which exists in the Natural system file.

### Modification

A Modification is a change suggested or made to an object or data item resulting in the required compliance of that object or data item. Modifications in Natural Engineer are classified according to Category and Type.

### Refactoring

Improving a computer program by reorganizing its internal structure without altering its external behavior.

### Soft Link

A Soft Link is where a link between two objects has been defined using an alphanumeric variable rather than a literal constant.

# About this manual

# TLM

Text Logic Members are used to contain the code required to support inclusion of common code into the application. An example of this is the code to include into an application before updating a database.

# Туре

The Type of Modification available, for example: Data Item, Keyword and Literal.

### Variable

A collective term used for any data fields within a programming object. These can be user-defined variables, DDM fields or System Variables. It is inter-changeable with the term 'data item'.

# **Related Literature**

The complete set of Natural Engineer manuals consists of:

### 1 Natural Engineer Concepts and Facilities (NEE91-006ALL)

The Concepts and Facilities manual describes the many application systems problems and solutions offered by Natural Engineer, providing some guidelines and usage that can be applied to Natural applications.

2 Natural Engineer Release Notes (NEE91-008ALL)

The Release Notes describe all the information relating to the new features, upgrades to existing functions and documentation updates that have been applied to Natural Engineer.

3 Natural Engineer Installation Guide for Windows (NEE91-010WIN) Natural Engineer Installation Guide for Mainframes(NEE91-010MFR) Natural Engineer Installation Guide for Unix (NEE91-010UNX)

The Installation Guide provides information on how to install Natural Engineer on PC, Unix and mainframe platforms.

4 Natural Engineer Administration Guide (NEE91-040WIN) Natural Engineer Administration Guide (NEE91-040MFR) Natural Engineer Administration Guide (NEE91-040UNX)

The Administration Guide provides information on all the various control settings available to control the usage of the different functions within Natural Engineer.

5 Natural Engineer Application Management (NEE91-020WIN) Natural Engineer Application Management (NEE91-020MFR) Natural Engineer Application Management (NEE91-020UNX)

The Application Management manual describes all the functions required to add Natural applications into the Repository.

6 Natural Engineer Application Documentation (NEE91-022WIN) Natural Engineer Application Documentation (NEE91-022MFR) Natural Engineer Application Documentation (NEE91-022UNX)

The Application Documentation manual describes all the available functions to document a Natural application within the Repository. These functions will help enhance / supplement any existing systems documentation such as BSD / CSD / Specifications etc.

About this manual

# 7 Natural Engineer Application Analysis and Modification (NEE91-023WIN) Natural Engineer Application Analysis and Modification (NEE91-023MFR) Natural Engineer Application Analysis and Modification (NEE91-023UNX)

The Application Analysis and Modification manual describes all the available functions to carry out analysis of Natural applications; including basic keyword searches. The modification process is described and detailed to show how it can be applied to modify single selected objects within a Natural application, or the entire Natural application in one single execution.

### 8 Natural Engineer Application Restructuring (NEE91-024WIN) Natural Engineer Application Restructuring (NEE91-024MFR) Natural Engineer Application Restructuring (NEE91-024UNX)

The Application Restructuring manual describes the analysis and modification functionality required to carryout some of the more sophisticated functions such as Object Builder.

# 9 Natural Engineer Utilities (NEE91-080WIN) Natural Engineer Utilities (NEE91-080MFR) Natural Engineer Utilities (NEE91-080UNX)

The Utilities manual describes all the available utilities found within Natural Engineer and, when and how they should be used.

### 10 Natural Engineer Reporting (NEE91-025ALL)

The Reporting manual describes each of the reports available in detail, providing report layouts, how to trigger the report and when the report data becomes available. The various report-producing mediums within Natural Engineer are also described.

# 11 Natural Engineer Batch Processing [Mainframes] (NEE91-026MFR) Natural Engineer Batch Processing [Unix] (NEE91-026UNX)

The Batch Processing manual describes the various batch jobs (JCL/Scripts) and their functionality.

### 12 Natural Engineer Messages and Codes (NEE91-060ALL)

The Messages and Codes manual describes the various messages and codes produced by Natural Engineer.

13 Natural Engineer Web Interface Installation and Configuration Guide(NEA84-010ALL) The Web Interface Installation and Configuration Guide provides information on how to install and configure the Natural Engineer Web Interface.

# 14 Natural Engineer Advanced Services (NEE91-017WIN) Natural Engineer Advanced Services (NEE91-017MFR) Natural Engineer Advanced Services (NEE91-017UNX)

The Advanced Services manual describes various advanced options such as the Refactoring of Natural application source code with Natural Engineer, conversion of applications for Natural for Ajax, Business Rule processing and Data Masking.

# 1

# THE NATURAL ENGINEER WINDOW

# Chapter Overview

This chapter provides a basic overview of the Natural Engineer user interface - the Natural Engineer window.

# Natural Engineer Window

Natural Engineer is an MDI application, that is, it utilizes the MDI concept of an MDI frame and client window. The client window hosts MDI child windows, allowing multiple windows to be displayed at the same time.

Note: MDI stands for Multiple Document Interface. This is a common term for windows applications that show multiple documents in the same window.

All the Natural Engineer functions will open as MDI child windows. These can be either modal or non-modal windows.

A modal window is a window that needs to be completed first before any other window can be accessed.

Natural Engineer uses modal windows for any functions that affect the display of an already open window. For example: selecting reporting options or setting filter criteria to change the content of a list.

Non-modal windows have no restrictions, and can be opened continuously within the MDI child workspace.

The Natural Engineer window is displayed when Natural Engineer is started.

The main components of the Natural Engineer window are the site workspace and the MDI child workspace.

Natural Engineer functions can be accessed from the main menu bar and from context menus attached to the various nodes in the site workspace.

The Natural Engineer Window



The following Figure 1-1 illustrates the Natural Engineer window.

N Na	atural Engi	neer						
File	Options	Analysis	Modification	Utilities	Advanced Services	Task Help	Windows	Help
	Site	Cations COBJCLNT Program: Subprog Function Copycod Helprout Dialogs Maps LDAs GDAs Cobol Lir Cobol So Cobol Ca SQL Tab JCL Men JCL Proc JCL Inclu Definition M Control Lang ices bases Tables ict User View Regions	s rams s hes les ines nies nies nies nies nies nies ni					

Figure 1-1 Natural Engineer window



1

# MENUITEMS DESCRIPTION

File	Exit options from Natural Engineer.			
Options	Administrative options.			
Analysis	Analysis options			
Modification	Modification options.			
Utilities	Utility options.			
Advanced Services	Advanced Services options. NB: This may not be available depending on your Natural Engineer Licenses.			
Task Help	Task Help options.			
Windows	Standard Windows options.			
Help	Help options.			

# SCREEN ITEMS DESCRIPTION

Site Workspace	This is a tree view window and is used to manage the various nodes within Natural Engineer. These comprise:				
	Application N	Application Node			
	The application fields for each	The application node displays the applications, object types, objects and fields for each application loaded into the Repository.			
	The application node is a hierarchical structured display controlled by four nodes:				
	NODE	DESCRIPTION			
	Application	Each application is listed at this level. Applications can be expanded and collapsed by clicking on the plus or minus signs in front of the application node. If no plus sign is present, then the application has not been loaded into the Repository.			
	Object Type	Each object type present within an application is listed.			

# **The Natural Engineer Window**

# 1

# SCREEN ITEMS DESCRIPTION Object Each object present within an application is listed. There is no expand/collapse functionality for this node. Field Each field present within an application is listed. There is no expand/collapse functionality for this node. **Data Definition Module Node** The Data Definition Module node displays the DDMs loaded into the Repository. The Data Definition Modules node is a hierarchical structured display controlled by one node: NODE DESCRIPTION Data Each Data Definition Module is listed at this level. Definition Modules Services Node The Services node displays the Services loaded into the Repository. The Services node is a hierarchical structured display controlled by one node:

NODE DESCRIPTION

Services Each Service is listed at this level.

# **Database Node**

The Database node displays the Databases, file numbers, DDMs and applications for each Database loaded into the Repository. This is based on the information in each DDM loaded in the repository.

The Databases node is a hierarchical structured display controlled by four nodes:

NODE	DESCRIPTION	
Databases	Each Database is listed at this level.	
File Number	Each File Number is listed at this level.	
DDM Name	Each DDM Name is listed at this level.	
Application Name	Each Application Name is listed at this level.	



# SCREEN ITEMS DESCRIPTION

### Job Control Language Node

The Job Control Language node displays the JCL Objects that have been loaded into the Repository at a global level.

The Job Control Language node is a hierarchical structured display controlled by two nodes:

NODE	DESCRIPTION
JCL Object Types	Each type of JCL Object is listed at this level.
JCL Object Name	Each JCL Object name present within a JCL Object Type is listed at this level.

# **CICS Region Node**

The CICS Region node displays the CICS Regions that have been loaded into the Repository.

The CICS Region node is a hierarchical structured display controlled by one node:

NODE	DESCRIPTION	
CICS Regions	Each type of CICS Region is listed at this level.	

### **Data Definition Module Node**

The Data Definition Module node displays the DDMs loaded into the Repository.

The Data Definition Modules node is a hierarchical structured display controlled by one node:

Data	Each Data Definition Module is listed at this level.
Definition	
Modules	



# SCREEN ITEMS DESCRIPTION

### Predict User Views Node

The Predict User Views node displays the Predict User Views (PUVs) loaded into the Repository.

The Predict User Views node is a hierarchical structured display controlled by one node:

**Predict User** Each Predict User View is listed at this level. **Views** 

### **SQL** Tables Node

The SQL Tables node displays the SQL Tables e.g., DB2 that have been loaded into the Repository.

The SQL Tables node is a hierarchical structured display controlled by one node:

# NODE DESCRIPTION

SQL Tables Each type of SQL Tables is listed at this level.

The number of items in the nodes, object types, objects and fields lists can be controlled by the LISTBOXMAX parameter in the NATENG.INI file.

If the number of items in a list exceeds the LISTBOXMAX parameter value, then the lists become scrollable via prev and more icons. The prev icon will scroll the list to the previous page, and, the more icon will scroll the list forward one page.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

Context menus are available for the various nodes to provide the Natural Engineer functions available for the selected node.

Note: For more information on the context menus refer to the section <u>Context Menus</u>.

1

# SCREEN ITEMS DESCRIPTION

MDI Child	All MDI child windows are displayed here.	
Workspace	The display can be controlled by using standard windows options, for example: cascade or tile the displayed windows. These options are available in the Windows menu in the menu bar.	

# TAB NAMEDESCRIPTION

The site workspace can list either objects or fields. This display is controlled by the tabs at the foot of the site workspace.

Objects	Switch the site workspace to show objects.
Fields	Switch the site workspace to show fields.

# STATUS BAR ITEM DESCRIPTION

The Natural Engineer window status bar is divided into 4 individual panes.		
Pane 1	The runtime environment being used. For example: Local or Remote.	
Pane 2	The Userid of the current User.	
Pane 3	Name of the currently selected application.	
Pane 4	Any Natural Engineer processing messages.	

The Natural Engineer Window

# **Example Natural Engineer Window Screenshots**

The following Figure 1-2 illustrates the Natural Engineer window displaying fields.



Figure 1-2 Natural Engineer window displaying fields

# **Context Menus**

Context menus are available to the various nodes within the site workspace. These provide the Natural Engineer functions available at the selected node level.

For example, at the application node level, the context menu will show the functions that relate to an application at application level.

To invoke a context menu:

- Select the node for which you want to invoke the context menu for.
- Single click with the right hand mouse button.
- The context menu will appear, choose the option you require.

Note: Some context menu options may expand to further sub-menu options. This will be denoted in the context menu with a solid arrow triangle to the right most extreme of the option. Depending on what type of object you have loaded into the repository the functions available via the context menus may differ.

# 2

# MANAGING APPLICATIONS

# **Chapter Overview**

This chapter describes how to select and manage applications for processing in Natural Engineer.

In the context of Natural Engineer, 'Application' is as described in the Terminology section and is the name Natural Engineer uses to describe a library or set of related libraries.

An Application is a library or group of related libraries that define a complete Application. In Natural Engineer, the Application can have a one-to-one relationship with a single library of the same name, or a library of a different name, as well as related steplibs. The Application refers to all the source code from these libraries, which Natural Engineer loads into the Repository.



# Open an Application

Applications can be opened by selecting them from the site workspace.

Applications can be expanded and collapsed by clicking on the plus or minus signs in front of the application node.

If an application node is not displaying a plus sign in front of it, this indicates that the application has not yet been loaded into the Repository.

# How to Create New Applications

New applications can be created by using the following site workspace navigation:

- Select the top level applications node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: New.

This will present the New Application screen where the new Application Name may be entered or selected from a list of existing Natural libraries.

Once the new Application Name has been entered or selected the <u>Application Properties</u> screen will be displayed to allow the definition of specific Application information.

Note: User Exit NEEUEX5 has to be available in the SYSNEE library in order for new application names to be created. This user exit may be modified if you wish to generate application names automatically. If it is not present in the SYSNEE library then NEEUEX5X needs to be renamed to NEEUEX5.

Managing Applications

# **Application Filter**

The list of applications displayed in the site workspace can be tailored to your requirements by using the Application Filter option.

# How to Invoke the Application Filter

Use the following navigation in the site workspace:

- Select the top level applications node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Application Filter.

# **Specifying Application Filter**

FILTER	OPTION	DESCRIPTION

Application Filter	Reposition the list of applications to start from a particular application name. The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard. Possible reposition values are:		
	Value	Result	
	ʻʻ(blank)	Reposition to the top of the application list.	
	*	Reposition to the top of the application list.	
	ABC*	Only show applications that are prefixed by 'ABC'.	
	XYZ	Reposition to the first application that either matches or is greater than 'XYZ' and then continue the application list from that point.	



# **Display Filter**

The list of objects and fields displayed in the site workspace can be tailored to your requirements by using the Display Filter option.

# How to Invoke the Display Filter

Use the following navigation in the site workspace:

- Select the application required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Display Filter**.

# **Specifying Display Filter**

FILTER OPTION	DESCRIPTION		
The following options a	The following options are available when the site workplace Objects tab is active:		
Language	Allows you to select the programming language of the objects to be displayed.		
	Available selections are:		
	• All		
	▪ Cobol ■ Natural		
	• JCL		
Object Name	Reposition the list of objects to start from a particular object name.		
	The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard. Possible reposition values are:		
	Value	Result	
	ʻʻ(blank)	Reposition to the top of the object list.	
	*	Reposition to the top of the object list.	
	ABC*	Only show objects that are prefixed by 'ABC'.	
	XYZ	Reposition to the first object that either matches or is greater than 'XYZ' and then continue the object list from that point.	

Managing Applications

# 2

# FILTER OPTION DESCRIPTION

The following optic	ons are available when the s	site workplace Fields tab is active:		
Language	Allows you to select the programming language of the fields to be displayed.			
	Available selections are:			
	<ul> <li>All</li> <li>Cobol</li> <li>Natural</li> <li>JCL</li> </ul>			
Field Types	Allows you to select t are: All Fields Non-DDM Fields DDM Fields System Variabl	the types of fields to be listed. Available selections ls es		
Field Name	Reposition the list of fields to start from a particular field name.			
	The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard. Possible reposition values are:			
	Value	Pocult		
	value	Kesuit		
	''(blank)	Reposition to the top of the field list.		
	*	Reposition to the top of the field list.		
	ABC*	Only show fields that are prefixed by 'ABC'.		
	XYZ	Reposition to the first field that either matches or is greater than 'XYZ' and then continue the field list from that point.		
	The following reposition values are for System Variables only:			
	**	Reposition to the top of system variable list.		
	*CURS	Reposition to the first system variable that either matches or is greater than '*CURS' and then continue the system variable list from that point.		
	*DAT*	Only show system variables that are prefixed by '*DAT'.		



# **Refresh Application**

This option will refresh the list of objects in the site workplace for the selected application.

It can be used when you have a large application being loaded into the Repository, as it allows you to start reviewing the objects as soon as they have been loaded, rather than having to wait until the Load process has completed.

Note: In order to use this option, the Load process must be executing in asynchronous mode. This is controlled by the NATENG.INI file parameter ASYNC. For more information refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

# How to Invoke the Refresh Application

Applications can be refreshed by using the following site workplace navigation:

- Select the application required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Refresh Application**.

**Managing Applications** 

2

# Delete Object

Individual objects can be deleted by using the following site workplace navigation:

- Select the object to be deleted.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Delete Object.

The deletion will remove all Application, Impact Analysis and Modification data for the object.

*Note: If the object is to be deleted permanently from the application Repository, you must also delete it from the source library, so that it is not re-extracted by error in the future.* 



# **Application Properties**

The Application Properties option provides details about an application that help to identify it within Natural Engineer.

The Application Properties option provides the facility to define application specific characteristics to be applied during the Extract and Modification processes within Natural Engineer.

Application Properties includes:

- Application description, owner name and contact details.
- Steplib information. This may be applicable where applications make use of standard routines which are held on a separate library rather than including them within the application library.
- The 'real' library name if different to the application name used within Natural Engineer.
- Modification library and Modify to Steplib library.
- File suffixes for Cobol and JCL objects, used to provide selective Extract information.

Managing Applications

2

# How to Invoke the Application Properties Option

Use the following navigation in the site workplace:

- Select the application required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Application Properties.

The Application Properties screen is also automatically presented when a new application is defined.

# **Application Properties Window**

The Application Properties option uses a multi-purpose 'tabbed' screen to control all of the property settings available. Selecting the required tab will result in the display of the appropriate screen content for the properties required.

There are five tab options available:

- 1. General
- 2. Natural
- 3. <u>Cobol</u>
- 4. <u>JCL</u>
- 5. <u>CICS</u>



# **General Tab Screen**

The General tab screen provides the facility to specify and review any general information about an application.

The following Figure 2-1 illustrates the Application Properties: General tab screen.

R Application Properties - HOSPITAL	P	×
General Natural Cobol JCL CICS		
Application Description		
Owner Name Contact Details		
Master Application Clear		
Character Assignments		
Decimal Character 🚬 🗾 Input Delimiter , 👻		
Source		-1
Extract Environment Windows XP		
OK Cancel		Apply
		460

Figure 2-1 Application Properties: General tab screen
2

Application Details group:		
Application Description	The application description.	
	For example: The HOSPITAL application is used to administer patient details.	
	This needs to be input manually up to a maximum of 253 characters.	
Owner Name	The name of the owner of the application.	
	For example: department name, manager's name, project team.	
	This needs to be input manually up to a maximum of 65 characters.	
<b>Contact Details</b>	The contact details of the application.	
	For example: telephone number, email address.	
	This needs to be input manually up to a maximum of 65 characters.	
Master Application	If a Master Application is selected then all Application Properties definitions e.g., Steplibs, Source Library and settings will be copied from the Master Application to this application.	
Character Assignments	group:	
Note: These options are	used during the Extract process.	
Decimal Character	The decimal character used by the application.	
	For new applications, the default value will be based on the Natural environment settings in use.	
	Selection is from the available list only.	
Input Delimiter	The input data delimiter used by the application.	
	For new applications, the default value will be based on the Natural environment settings in use.	
	Selection is from the available list or a value can be typed in.	

#### SCREEN ITEMS DESCRIPTION

Source group:

SCREEN ITEMS	DESCRIPTION
Extract Environment	This is a documentation facility used by Natural Engineer's Reengineering functions. Specifies the application environment from which the Natural source code comes. Available selections are:
	Windows 7 Windows Vista Windows 2000 Windows XP Windows 2003 Server Windows 2008 Server z/OS Unix VMS BS2000 VSE

#### **BUTTON NAME** DESCRIPTION

p:		
Invokes the General Selection screen, listing all Natural Engineer Applications in the repository.		
Clears the Master Application selection.		
Application Properties screen:		
Save changes and close the current screen.		
Cancel the Application Properties process and return back to the main Natural Engineer screen.		
Save changes and retain the current screen. Note: This button is only enabled if any changes have been made.		

2

# **Natural Tab Screen**

The Natural tab screen provides the facility to specify and review any settings for the Natural objects within an application.

The following Figure 2-2 illustrates the Application Properties: Natural tab screen.

Seneral Natural Cobol	
Several Cobor	
Library	Sve File Aliae
PAC	
PAC Status	
Modification	
Library	Sys File Alias 🗸 🗸
	Modify to Steplib? N 👻
Steplibs	Svs File Alias
*STEPLIB	
1	••••
2	·····
3	
4	····
5	
6	
7	
8	
Delete Up	Down
	OK Cancel Appl

Figure 2-2 Application Properties: Natural tab screen

#### SCREEN ITEMS DESCRIPTION

Source group:	
Library	If the Natural Engineer Application name is to be different from the library name in the FUSER, specify the actual FUSER library name here. If a Natural Library is not specified, Natural Engineer assumes that the application name is the same as the FUSER library name.
	Note: If a PAC application is selected, then Source Library selection is not available.
Sys File Alias	The alias for the particular database number/file number combination where the Natural System File for the source library is located.
PAC	The name of the PAC application.
PAC Status	The name of the PAC status related to the PAC application. If no status is selected then Natural Engineer will select the latest version of the objects from the PAC application regardless of status.
	Note: These PAC options are only available if Natural Engineer is executing in a remote development environment and PAC version 2.4.2 or above is installed on the mainframe.
	Note: When Natural Engineer extracts objects from a PAC Application it uses the PAC Used Objects list to determine what objects and versions to extract. If PAC is out of step with the source code then Natural Engineer may not be able to identify all relevant objects.
Modification group:	
Modification	Used to specify a library that the modified code will be written to.
Library	If a Modification Library is not specified Natural Engineer places all modified code in a library name with an 'X' as the last character of the application name. If the name is already 8 characters long, the last character is removed and replaced with the 'X'.
	The Modification Library name can be the same as the base Natural Library name. This allows any modified objects from the modification process to be applied to the base Natural Library. If this is set, a warning message is produced to highlight that the base Natural Library will be updated.
	Note: If a PAC application is selected, then the Modification Library will default to the first maintenance library found within the PAC application.
Sys File Alias	The alias for the particular database number/file number combination where the Natural System File for the modification library is located.
	Note: The aliases shown are those that are identified as Modifiable in Global Properties.

2

Modify to Steplib?	This option allows you to specify where objects that are on steplib libraries are to be modified, either to the Steplib library or the application Modification library.		
	N Modify a	l objects to the application Modification library.	
	Y Modify st	eplib objects in the application to the steplib library.	
Steplibs group:			
*STEPLIB	The master steplib library name assigned to the Natural system variable *STEPLIB. This is normally set to SYSTEM.		
Steplibs	This option allows you to define multiple Steplib libraries from which Natural Engineer can retrieve objects referenced from the primary Natural library. You can define up to 8 steplib Natural library names that Natural Engineer will search for the application code.		
	Steplib library names can be typed in or retrieved by using the Steplib Selection [] button.		
	Note: A steplib library name cannot be the same as the Application name, the *STEPLIB name, the Source library name or the Modification library unless different system file aliases are defined.		
	Natural Enginee they do not exis	er will search the steplib chain for the following items if t on the base library:	
	Data Areas	(LDAs, PDAs GDAs)	
	Copycode		
	Subprograms	(invoked via CALLNAT)	
	Programs	(invoked via FETCH/FETCH RETURN/FETCH REPEAT)	
	Maps	(invoked by INPUT USING MAP/WRITE USING FORM)	
	Helproutines	(invoked via HE=)	
	Objects	(invoked via STACK TOP COMMAND/STACK COMMAND)	
	DDMs		
	Note: For the S determine if the It does this by it commands that	TACK command, Natural Engineer will attempt to command that is being stacked is an actual object or not. nterrogating an exclude table that lists common are not objects e.g. STOW, EDIT.	
Sve Filo Alioe	The alias for the	particular database number/file number combination	

SCREEN ITEMS DESCRIPTION

Sys File AliasThe alias for the particular database number/file number combination<br/>where the Natural System File for the steplib libraries are located.



Note: Please see the Global Properties section of the Natural Engineer Administration Manual for further information on setting System File aliases.

BUTTON NAME	DESCRIPTION	
Source group:		
Source Library Selection []	Invokes the General Selection screen, listing all the Natural Libraries.	
Source PAC Selection []	Invokes the General Selection screen, listing all the PAC Applications.	
Source PAC Status Selection []	Invokes the General Selection screen, listing all the PAC Status for a PAC Application	
	Note: These PAC options are only available if Natural Engineer is executing in a remote development environment and PAC version 2.4.2 or above is installed on the mainframe.	
Modification group:		
Modification Library Selection []	Invokes the General Selection screen, listing all the Natural Libraries.	
Steplibs group:		
*STEPLIB Selection []	Invokes the General Selection screen, listing all the Natural Libraries.	
Steplib Selection []	Invokes the General Selection screen, listing all the Natural Libraries.	
Delete	Deletes the currently selected Steplibs library name.	
Up	Moves the currently selected Steplib library name up the list order.	
Down	Moves the currently selected Steplib library name down the list order.	
Application Properties s	creen:	
OK	Save changes and close the current screen.	
Cancel	Cancel the Application Properties process and return back to the main Natural Engineer screen.	
Apply	Save changes and retain the current screen. Note: This button is only enabled if any changes have been made.	

Note: For more information on the General Selection screen refer to Chapter 2 in the Concepts and Facilities manual.

2

#### **Cobol Tab Screen**

IL

The Cobol tab screen provides the facility to specify and review any settings for the Cobol objects within an application.

N Application P	roperties - HOSPITAL	ि X
General Natura	I Cobol JCL CICS	
Source		
Library	Maintain PDS	
Cobol Type	z/OS 🔹	
-File Suffixes		_
Source		
Copy Book		
Мар		
	Steplibs       1        2        3        4        5        6        7        8        Delete     Up     Down	
	OK Cancel	Apply

The following Figure 2-3 illustrates the Application Properties: Cobol tab screen.

Figure 2-3 Application Properties: Cobol tab screen

the Natural Engineer Application name is to be different from the imary Cobol library name, specify the actual Cobol library name here. a Cobol library is not specified, Natural Engineer assumes that the oplication name is the same as the Cobol library name.
pens up the <u>Maintain PDS</u> Screen that allows for the definition of ource, Steplib and Map PDS names for Cobol. If PDS names have been becified then an asterisk ('*') will be displayed on the button name. The stract process will search for the objects in the order that they are becified. B: This is only available if Natural Engineer is running on the PC in a PoD environment against a mainframe server.
he type or version of the Cobol programming language used by the oplication.
ffixes can be specified for each group type. The file suffixes can be fixes pop-up window. For more information refer to section <u>File</u>
ne file suffixes to be included during the Extract process for source ojects.
he file suffixes to be included during the Extract process for source ojects. he file suffixes to be included during the Extract process for copybook ojects.
the file suffixes to be included during the Extract process for source ojects. The file suffixes to be included during the Extract process for copybook ojects. The file suffixes to be included during the Extract process for map ojects.
the file suffixes to be included during the Extract process for source ojects. The file suffixes to be included during the Extract process for copybook ojects. The file suffixes to be included during the Extract process for map ojects.
he file suffixes to be included during the Extract process for source ojects. he file suffixes to be included during the Extract process for copybook ojects. he file suffixes to be included during the Extract process for map ojects. his option allows you to define multiple Steplib libraries from which atural Engineer can retrieve objects referenced from the primary Cobol orary. You can define up to 8 steplib Cobol library names that Natural ngineer will search for the application code. he plib library names can be typed in or retrieved by using the Steplib election [] button.

# SCREEN ITEMS DESCRIPTION

2

Source group:		
Source Library Selection []	Invokes the General Selection screen, listing all the Cobol Libraries.	
File Suffixes group:		
Source Selection []	Invokes the General Selection screen, listing all the Cobol Libraries.	
Copy Book Selection []	Invokes the General Selection screen, listing all the Cobol Libraries.	
Map Selection []	Invokes the General Selection screen, listing all the Cobol Libraries.	
Steplibs group:		
Steplib Selection []	Invokes the General Selection screen, listing all the Cobol Libraries.	
Delete	Deletes the currently selected Steplibs library name.	
Up	Moves the currently selected Steplib library name up the list order.	
Down	Moves the currently selected Steplib library name down the list order.	
Application Properties screen:		
ОК	Save changes and close the current screen.	
Cancel	Cancel the Application Properties process and return back to the main Natural Engineer screen.	
Apply	Save changes and retain the current screen.	
	Note: This button is only enabled if any changes have been made.	

#### BUTTON NAME DESCRIPTION

Note: For more information on the General Selection screen refer to Chapter 2 in the Concepts and Facilities manual.

#### **Maintain PDS - Cobol**

The Maintain PDS screen is invoked from the Maintain PDS button on the Cobol tab of the Application Properties when Natural Engineer is running in a SPoD environment against a mainframe server.

The following Figure 2-3-1 illustrates the Maintain PDS screen when called from the Cobol tab.

Maintain PDS		
Cobol Source		
PDS Alias	PDS Name	
1 COBJCLNT	NATENG.COBOL.COBJCLNT.SOURCE	
2		
3	1	
4		
5		
Delete Up Dow	n	
Cobol Steplibs		
PDS Alias	PDS Name	
1		
2		
3		
4		
5		
6		
8		
Delete Up Dow	n	
Cobol Maps		
PDS Alias	PDS Name	
1		
		OK Cancel

Figure 2-3-1 Maintain PDS - Cobol screen

2

#### SCREEN ITEMS DESCRIPTION

Cobol Source group:	
PDS Alias	The alias for the Source PDS.
PDS Name	The name of the PDS containing the Cobol objects.
Cobol Steplibs group:	
PDS Alias	The alias for the Steplib PDS.
PDS Name	The name of the PDS containing the Cobol steplib objects.
Cobol Maps group:	
PDS Alias	The alias for the Map PDS.
PDS Name	The name of the PDS containing the Cobol Map objects.

# BUTTON NAME DESCRIPTION

PDS Alias and Name Selection []	Invokes the General Selection screen to allow the user to select from the list of predefined COBOL PDS Aliases if required. The aliases are specified in Global Properties.		
Cobol Source group:			
Delete	Deletes the currently selected Source PDS name.		
Up	Moves the currently selected Source PDS name up the list order.		
Down	Moves the currently selected Source PDS name down the list order.		
Cobol Steplib group:			
Delete	Deletes the currently selected Steplib PDS name.		
Up	Moves the currently selected Steplib PDS name up the list order.		
Down	Moves the currently selected Steplib PDS name down the list order.		
Maintain PDS screen:			
OK	Save changes and close the current screen.		
Cancel	Cancel the Maintain PDS process and return back to the Application Properties screen.		



## JCL Tab Screen

The JCL tab screen provides the facility to specify and review any settings for the JCL objects within an application.

The following Figure 2-4 illustrates the Application Properties: JCL tab screen.

P Application P	roperties - HOSPITAL	8 X
General Natura	al Cobol JCL CICS	
Source	Maintain PDS	
JCL Type	z/0S 🔹	
- File Suffixes		_
Source		
Proclib		
Steplibs	Steplibs         1         2         3         4         5         6         7         8         Delete       Up         Down	
	OK Cancel	Apply

Figure 2-4 Application Properties: JCL tab screen

2

#### SCREEN ITEMS DESCRIPTION

Source group:			
Source Library	If the Natural Engineer Application name is to be different from the primary JCL library name, specify the actual JCL library name here. If a JCL library is not specified, Natural Engineer assumes that the applicati name is the same as the JCL library name.		
Maintain PDS	Opens up the <u>Maintain PDS</u> Screen that allows for the definition of Source and Procedure Steplib PDS names for JCL. If PDS names have been specified then an asterisk ('*') will be displayed on the button name. The extract process will search for the objects in the order that they are specified.		
	NB: This is only available if Natural Engineer is running on the PC in a SPoD environment against a mainframe server.		
JCL Type	The type or version of the JCL language used by the application.		
File Suffixes group:			
Note: A maximum of 10 specified using the File . <u>Suffixes</u> .	suffixes can be specified for each group type. The file suffixes can be Suffixes pop-up window. For more information refer to section <u>File</u>		
Source	The file suffixes to be included during the Extract process for source objects.		
Proclib	The file suffixes to be included during the Extract process for proclib objects.		
Steplibs group:			
Steplibs	This option allows you to define multiple Steplib libraries from which Natural Engineer can retrieve objects referenced from the primary JCL library. You can define up to 8 steplib JCL library names that Natural Engineer will search for the application code.		
	Steplib library names can be typed in or retrieved by using the Steplib Selection [] button.		

Note: A steplib library name cannot be the same as the Application name.

#### BUTTON NAME DESCRIPTION

Source group:		
Source Library Selection []	Invokes the General Selection screen, listing all the JCL Libraries.	
File Suffixes group:		
Source Selection []	Invokes the File Suffixes screen.	
Proclib Selection []	Invokes the File Suffixes screen.	
Steplibs group:		
Steplib Selection []	Invokes the General Selection screen, listing all the JCL Libraries.	
Delete	Deletes the currently selected Steplibs library name.	
Up	Moves the currently selected Steplib library name up the list order.	
Down	Moves the currently selected Steplib library name down the list order.	
Application Properties s	creen:	
ОК	Save changes and close the current screen.	
Cancel	Cancel the Application Properties process and return back to the main Natural Engineer screen.	
Apply	Save changes and retain the current screen.	
	Note: This button is only enabled if any changes have been made.	

Note: For more information on the General Selection screen refer to Chapter 2 in the Concepts and Facilities manual.

2

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# **Maintain PDS - JCL**

The Maintain PDS screen is invoked from the Maintain PDS button on the JCL tab of the Application Properties when Natural Engineer is running in a SPoD environment against a mainframe server.

The following Figure 2-4-1 illustrates the Maintain PDS screen when called from the JCL tab.

Maintain PDS		×
JCL Members Source		
PDS Alias	PDS Name	
1 JCLSRC1	PRD.SOURCE.JCLLIB	
2		
3		
4		
5		
Delete Un Dowr		
	•	
Procedure Steplibs PDS Alias	PDS Name	
	PRD.SOURCE.PRDLIB1	
2 JCLPRD2	PRD.SOURCE.PRDLIB1	
		- 8
Delete Up Down		
	ОК	Cancel

Figure 2-4-1 Maintain PDS - JCL screen

#### SCREEN ITEMS DESCRIPTION

JCL Members Source group:				
PDS Alias	The alias for the Source PDS.			
PDS Name	The name of the PDS containing the JCL objects.			
JCL Procedure Steplibs group:				
PDS Alias	The alias for the Steplib PDS.			
PDS Name	The name of the PDS containing the JCL steplib objects.			

#### BUTTON NAME DESCRIPTION

PDS Alias and Name Selection []	Invokes the General Selection screen to allow the user to select from the list of predefined JCL PDS Aliases if required. The aliases are specified in Global Properties.			
JCL Members Source gr	roup:			
Delete	Deletes the currently selected Source PDS name.			
Up	Moves the currently selected Source PDS name up the list order.			
Down	Moves the currently selected Source PDS name down the list order.			
JCL Procedure Steplibs	group:			
Delete	Deletes the currently selected Steplib PDS name.			
Up	Moves the currently selected Steplib PDS name up the list order.			
Down	Moves the currently selected Steplib PDS name down the list order.			
Maintain PDS screen:				
ОК	Save changes and close the current screen.			
Cancel	Cancel the Maintain PDS process and return back to the Application Properties screen.			

2

# **CICS Tab Screen**

The CICS tab screen provides the facility to link an application to a particular CICS Region and Transaction.

TT1 . C. 1	1	<b>F</b> '	0 4 0	111	(1. A.	1	D	4	araa	4 . 1.	
I DE TOL	$1 \cap W^{1} \cap \sigma$	FIGHTE	1-4-1	illigrates	the An	nucation	Proper	TIPC		ran.	screen
110101	10 Willig	Inguio		mustiates	une rup	pheation	1 I Uper	ues.	CICD	uuu	Sercen.
	<u> </u>	<u> </u>									

CICS 15	00515	-RES	
CICS15       Image: DADA       Image: DaDA         Image: Im	CICS15	 -STA	
	CICS15	 DADA	
		l	

Figure 2-4-2 Application Properties: CICS tab screen

#### SCREEN ITEMS DESCRIPTION

CICS Region	The name of the CICS Region that is associated with the application.
Transaction	The name of the CICS Transaction that is associated with the application

#### BUTTON NAME DESCRIPTION

CICS Region Selection []	Invokes the General Selection screen, listing all the CICS Regions loaded into Natural Engineer.
Transaction Selection []	Invokes the General Selection screen, listing all the CICS Transactions loaded into Natural Engineer.
ОК	Save changes and close the current screen.
Cancel	Cancel the Application Properties process and return back to the main Natural Engineer screen.
Apply	Save changes and retain the current screen.
	Note: This button is only enabled if any changes have been made.

Note: For more information on the General Selection screen refer to Chapter 2 in the Concepts and Facilities manual.

# **File Suffixes**

The File suffixes used by the Application Properties process can be specified using the File Suffixes pop-up window. These will be used during the Extract process to extract only the objects that have the specified suffix as part of their file name.

Note: The file suffixes equate to the standard Windows file extensions that may be being used as part of the object file name.

The File Suffixes pop-up window is invoked by using the selection button adjacent to the File Suffixes group of items on the Application Properties window.

The following Figure 2-5 illustrates the File Suffixes screen.

File Sut	ffixes
- Cobol So	urce
ОК	Cancel

Figure 2-5 File Suffixes screen

#### SCREEN ITEMS DESCRIPTION

#### Source group:

Note: The Source group heading will reflect the name of the item for which the File Suffixes popup window was invoked. For example Cobol Source, JCL Proclib etc.

Suffix

The suffix to be used during the Extract process. The name can be typed in using any characters except the following: " \* : | <> ? /Duplicate entries are not permitted within the same File Suffix group item.

#### BUTTON NAME DESCRIPTION

File Suffixes screen:	
ОК	Save changes and close the current screen.
Cancel	Cancel the File Suffixes process and return back to the Application Properties screen.

# Extract and Load Selection Criteria

You use this option to select one or more objects from the Natural System File and/or Cobol source and copybook locations or JCL for extraction. This function is optional; it allows you to include selected objects that may have changed as a result of maintenance.

You can specify individual objects, select several objects using wildcards, and ranges of objects using the Extract and Load Selection Criteria screen illustrated below or override default Load settings.

The default for Extract and Load Selection Criteria is to extract all objects from the Natural application library specified in application properties.

It is possible to specify objects or a range of objects to be excluded from the extract process. However if there are data areas, copycodes or DDMs that match the exclusion criteria but are used by another object then they will still be extracted as they are critical to the internal processing of the application.

*Note: Refer to the section <u>Application Properties</u> in Chapter 2 for more information on application properties.* 

# How to Invoke the Extract and Load Selection Criteria Option

Use the following navigation in the site workplace:

- Select the application required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Extract & Load**. This will open a sub-menu of further options.
- Select the option: Extract and Load Selection Criteria.

# **Extract and Load Selection Criteria Window**

The Extract and Load Selection Criteria window controls all the settings required for this option. It comprises a main window with general settings for language selection and load and tabbed in-set windows for specifying each individual language extract criteria. Not all settings are available for each language.

The following Figure 2-6 illustrates the Extract and Load Selection Criteria screen showing the Natural tab.

Natural Cobol JCL		
Includes Excludes	Valid Missing Objects	
Object Ranges		Object Types
Start	End	All Objects
		Synchronize Source
		Extract all objects required for compilation
		Extract all called objects
		Include Called External Objects
	Prev More	
User Defined Input	t File	
File Name		Go
- Entry Point from B	ase Library COBBASE	
Object	Number	of levels

Figure 2-6 Extract and Load Selection Criteria: NATURAL Tab

2

The following Figure 2-6-1 illustrates the Extract and Load Selection Criteria screen showing the Cobol tab.

tract & Load Selectio	on Criteria - COBJCLNT		
ract			
anguage Selection			
Natural	Cobol 🔽 JCL		
	7		
atural Cobol JCL			
Includes Excludes	Valid Missing Objects		
Object Ranges			
Start	End	Synchronize Source	
ż		]	
	Î	11	
	Î	11	
	Ī	]	
	ĺ	1	
	Î	1	
	Î	]	
	Prev More	]	
User Defined Input F	File		
File Name			Go
Entry Point			
Object	Number	of levels 0	
00,000	Humber		
d			
Calculate Metrics	Force Replace	Validate Objects	

Figure 2-6-1 Extract and Load Selection Criteria: Cobol Tab

The following Figure 2-6-2 illustrates the Extract and Load Selection Criteria screen showing the JCL tab.

	Cobol 🛛 JCL		
Natural Cobol JCL	Velid Mineire Obierte		
-Object Ranges	Valid Missing Objects		
Start	End	Synchronize Source	
÷			
<del> </del>		-	
	ĺ		
		_	
	l		
	Prev More		
User Defined Input	File		
File Name			. Go
·			
oad	Earce Daplace	Validata Objecta	

Figure 2-6-2 Extract and Load Selection Criteria: JCL Tab

2

#### SCREEN ITEMS DESCRIPTION

Extract & Load Criteria	a Screen:
Extract Section:	
Language	<ul> <li>Allows you to select the programming language of the objects to be extracted.</li> <li>Available selections are: <ul> <li>Natural</li> <li>Cobol</li> <li>JCL</li> </ul> </li> </ul>
	Note: Extract and load of COBOL and JCL source code is not available for z/VSE or BS2000 mainframe environments.
Load Section:	
Force Replace	If checked this will force the Load process to reload from the start. If unchecked, the Load process will check the time stamps of each object, and if the same, will not load that object. The default values for this are defined by the REPLACE= setting in the [LOAD] section of the NATENG.INI file.
Validate Objects	If checked this will run the Validate Objects process following a successful Load. The default values for this are defined by the VALIDATE= setting in the
	[LOAD] section of the NATENG.INI file.
Calculate Metrics	If checked the metrics data will be generated during the Load process. If unchecked the metrics data will not be generated during the Load process. The default values for this are defined by the METRICS= setting in the [LOAD] section of the NATENG.INI file.
Extract Tab:	
Includes Tab:	
Start Object	The name of the first object to be extracted. This can be a single object name or part of a range of objects if End Object has been specified. <i>Note: Refer to the section <u>Specifying Object Names</u> below for more information on how to specify object names and ranges.</i>
End Object	The name of the last object to be extracted. This is only valid if a Start Object has been specified. <i>Note: Refer to the section <u>Specifying Object Names</u> below for more information on how to specify object names and ranges</i>

SCREEN ITEMS	DESCRIPTION
Object Types	You can use the drop-down box to limit the objects selected to one, all or multiple object types. Available selections are:
	<ul> <li>All Objects</li> <li>Classes</li> <li>Copycodes</li> <li>Dialogs</li> <li>Functions</li> <li>Global Data Areas</li> <li>Helproutines</li> <li>Local Data Areas</li> <li>Maps</li> <li>Parameter Data Areas</li> <li>Programs</li> <li>Subprograms</li> <li>Subprograms</li> <li>Multiple Object Types can be selected by using the Natural Object Type Selection button [1]</li> </ul>
	NB: This is valid for Natural Objects only.
Synchronize Source	When this option is selected, Natural Engineer compares each object's saved date in the Repository with the saved date of the object in the Natural System File or in the Cobol or JCL dataset where applicable. If the base object has been saved more recently than that in the Repository, Natural Engineer will re-extract that object into the Repository and overwrite the existing object.
Extract All Objects Required for Compilation	When this option is selected, Natural Engineer will extract all objects specified by the criteria. In addition it will extract any other objects, including those that do not match the criteria, that are required by the objects to compile in Natural. <i>NB: This is valid for Natural Objects only.</i>
Extract All Called Objects	When this option is selected, Natural Engineer will extract all objects specified by the criteria. In addition it will extract any other objects, including those that do not match the criteria, that are called by the objects to be extracted.
	NB: This may be set on Natural Tab only.

2

Berezeit	
Include Called External Objects	This is a sub-option of Extract All Called Objects. When this option is selected, Natural Engineer will additionally extract all external objects e.g., COBOL objects, that are called by the objects to be extracted.
	If any restrictions are to be applied to the COBOL objects identified to be extracted then these need to be set on the COBOL tab. The only applicable settings on the COBOL tab are Valid Missing Objects, Exclusions and User-defined Exclusion file.
	If this option is selected then only a Natural Language extract may be performed.
	NB: This may be set on Natural Tab only.
Entry Point	Specifying an entry point allows a sub-set of an application to be extracted. All objects that the entry point includes/calls are extracted recursively until the number of nested levels is reached.
	The object name can be typed in or selected by using the Entry Point Selection button []. <i>NB: This button is only available for Natural objects.</i>
	Natural Entry Points
	If a Natural entry point is specified then the language can only be Natural and all Object Types must be selected. No other extract criteria are valid except Synchronize (NB: Extract all objects required for compilation and Extract all called objects are automatically selected). If Synchronize is set on, Force Replace must be off to ensure only changed objects within the entry point path are reloaded.
	Optionally the Include Called External Objects flag may be set. If this is selected then any COBOL objects that are called by objects will also be extracted, The nested level setting from the Natural Tab will be applied to the COBOL objects as well as any Natural Objects.
	COBOL Entry Points
	If a COBOL entry point is specified then no other extract criteria are valid except Synchronize.
Number of Levels	Used in conjunction with the Entry Point setting. Specifies how many levels the extract process will identify included/called objects.

# SCREEN ITEMS DESCRIPTION

SCREEN ITENIS	DESCRIPTION
User Defined Input File	This allows the user to specify a file containing the names of the objects to be extracted. The file should be in the format:
	Bytes 1-8 – Natural Engineer Application Name Bytes 9-16 –Object Name
	For example to extract only XX001P01 and XX021P01 from HOSPITAL, the file would contain:
	HOSPITALXX001P01 HOSPITALXX021P01
	The file name can be typed in or selected by using the User Defined Input File Selection button [].
	Natural Tab
	If a User Defined Input File is specified then no object ranges or specific object types may be selected. No other extract criteria are valid except Synchronize, Extract all objects required for compilation or Extract all Called Objects/Include Called External Objects.
	COBOL Tab
	If a User Defined Input File is specified then no other extract criteria are valid except Synchronize.
Excludes Tab:	
Start Object	The name of the first object to be excluded from the extract. This can be a single object name or part of a range of objects if End Object has been specified.
	Note: Refer to the section <u>Specifying Object Names</u> below for more information on how to specify object names and ranges.
End Object	The name of the last object to be excluded from the extract. This is only valid if a Start Object has been specified.
	Note: Refer to the section <u>Specifying Object Names</u> below for more information on how to specify object names and ranges.

#### SCREEN ITEMS DESCRIPTION -

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User Defined Exclude File	This allows the user to specify a file containing the names of the objects to be excluded from the extract. The file should be in the format: Bytes 1-8 – Natural Engineer Application Name Bytes 9-16 – Natural Object Name
	For example to exclude only XX002P01 and XX022P01 from HOSPITAL, the file would contain: HOSPITALXX002P01 HOSPITALXX022P01
	The file name can be typed in or selected by using the User Defined Input File Selection button [].
	Natural Tab
	If a User Defined Exclude File is specified then the language can only be Natural and all Object Types must be selected. No other extract criteria are valid except Synchronize, Extract all objects required for compilation or Extract all Called Objects/Extract Called External Objects.
	COBOL Tab
	If a User Defined Exclude File is specified no other extract criteria are valid except Synchronize.
Valid Missing Objects	Tab:
Valid Missing Objects	Specify objects that are validly missing from the application, such as System and Construct objects.
	Note: Refer to the section <u>Valid Missing Objects</u> for more information on this option.

SCREEN ITEMS DESCRIPTION

Note: For more information on the NATENG.INI file parameters refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

#### BUTTON NAME DESCRIPTION

Includes Tab:		
Object Types group:		
Object Types []	Invokes an Object Type Selection screen, listing all the objects types available for selection.	
	Note: This is only enabled for Natural Objects.	
Entry Point group:		
Entry Point Selection []	Invokes the General Selection screen, listing all the objects available for the currently selected application.	
	Note: This is only enabled for Natural Objects.	
	Note: For more information on the General Selection screen refer to Chapter 2 in the Concepts and Facilities manual.	
User Defined Input File	e group:	
User Defined Input File Selection []	Invokes the standard Windows 'Open File' dialog, where the User Defined Input File can be selected.	
Go	Will open the specified file using the appropriate program associated with the file extension of the document.	
	For example XX001P01_Spec.doc would be opened by MS Word.	
	Note: This button is only enabled if a specified file is present.	
Extract & Load Selection	on Screen:	
ОК	Save changes and close the current screen.	
Cancel	Cancel the Extract and Load Selection Criteria process and close the current screen.	
Apply	Save changes and retain the current screen.	

Note: This button is only enabled if any changes have been made.

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 Excludes Tab:

 User Defined Exclude File group:

 User Defined Exclude File group:

 Defined Exclude File group:

 Defined Exclude File group:

 Vill open the standard Windows 'Open File' dialog, where the User Defined Exclude File can be selected.

 Selection [...]

 Go

 Will open the specified file using the appropriate program associated with the file extension of the document.

 For example XX001P01\_Spec.doc would be opened by MS Word.

 Note: This button is only enabled if a specified file is present.

#### STATUS BAR ITEM DESCRIPTION

Pane

Any Extract and Load Selection Criteria processing messages.

# **Specifying Object Names**

The object names specified in the Start Object and End Object columns on the Extract and Load Selection Criteria screen use the following standard conventions. These apply to both Included and Excluded objects:

#### Single Object Name

Enter full object names in Start Object list.

#### **Multiple Object Group**

Enter partial object name in Start Object list, with an asterisk (\*). This will allow you to process all objects starting with the values before the asterisk.

#### **Multiple Object Range**

Enter a Start Object name and an End Object name in the same row. This will process all objects in alphanumeric order starting from the Start Object and ending with the End Object.

#### **Combination Selection Types**

You can enter multiple rows with different criteria, including multiple single objects, groups and ranges.

#### **Examples:**

Start Object	End Object	Result
*		Process all objects.
XX021P01		Process single object 'XX021P01'.
XX001*		Processes all objects with names prefixed with 'XX001'.
XX001L01	XX001P01	Processes all objects in the alphabetic range starting from 'XX001L01' and ending at 'XX001P01'.
XX001.01		Processes all objects matching the mask where a period (.) is 'any digit'. So, in this case, XX001L01, XX001M01 and XX00P01 would be extracted. <i>NB: Valid on PC and Mainframe platforms only</i> .

# Valid Missing Objects

It is possible to enter a list of object names with wildcards, to a maximum of 10 that will not be marked as missing during the Extract process.

The Valid Missing Objects option is accessed from the Extract and Load Selection Criteria screen by selecting the Valid Missing Objects Tab from the specific language tab.

The following Figure 2-7 illustrates the Valid Missing Objects screen from the Natural language tab.

xtract			
Language Selection			
Vatural	Cobol JCL		
Natural Cobol JCL	- Valid Missing Objects		
Includes   Excludes			
Objects			
1			
oad			
oad Calculate Metrics	Force Replace	Validate Objects	
oad ▼ Calculate Metrics	Force Replace	Validate Objects	

Figure 2-7 Valid Missing Objects

2

#### SCREEN ITEMS DESCRIPTION

Object Name	The object name The object name using an '*' (aste For example:	e object name to be marked as a valid missing object. e object name can be input using either a complete name or part name ing an '*' (asterisk) wildcard. r example:	
	XX003P01	Object 'XX003P01' would be marked as a valid missing object.	
	XX001*	Any objects prefixed with 'XX001' would be marked as valid missing objects.	

# **Extract Source Code**

This is the first real processing step in creating the Natural Engineer Repository and extracts the Natural source code for the defined application.

Natural Engineer reads the application code and creates a "neutral" view of the code that is irrespective of the Natural version or the mode used (structured or reporting).

The Extract process writes out files that contain the neutral application records, as well as an error file. If you are executing multiple Extract processes it is advisable to make a copy of the current error file so that is always available. The structure of the file name in the DATA directory, is *'application-name*. EEX'. Save this file as another name.

The Extract function also performs a basic quality check, which identifies any invalid statements or syntax within the objects. If any errors are found, they are logged and displayed on completion of the Extract process.

If a Natural Engineer Extract does not end cleanly because of logic errors or invalid response codes from Natural or Adabas it will issue a return code of 255. If the extract identifies missing objects only then a return code of 254 is returned.

# How to Invoke the Extract Source Code Option

Use the following navigation in the site workplace:

- Select the application required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Extract & Load. This will open a sub-menu of further options.
- Select the option: **Extract Source Code**.

# **Related Processes**

The Extract process allows you to correct errors before building the Repository. It also allows you to include identified missing objects, such as DDMs, Data Areas and Copycode before further processing. Missing objects can be seen in the Missing Objects report, which can be accessed via the Quality Logs option.

Note: For more information on the Missing Objects Report refer to Chapter 3 in the Natural Engineer Reporting manual.

After Extract has executed, any errors can be seen in the Extract Source Code option, which can be accessed via the Quality Logs option.

*Note: For more information on the Extract Source Code error log refer to Chapter 3 in the Natural Engineer Reporting manual.* 

Objects that are no longer required in the Repository are best removed from the source library. If the Repository has been loaded, these can also be selectively deleted from the Repository using the Delete Object option.

Note: See the section **Delete Object** in Chapter 1 of this manual for more information.

If you require to extract and load multiple applications at the same time then the <u>Bulk</u> <u>Extract & Load</u> facility is available.
## Load Application

The next step after Extracting the source code is to Load Natural Engineer's Repository from the output file of the Extract process. All information, cross-references, and relationships are built into the Repository for interrogation, reporting, diagramming and further processing.

### How to Invoke the Load Application Option

Use the following navigation in the site workplace:

- Select the application required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Extract & Load**. This will open a sub-menu of further options.
- Select the option: Load Application.

### **Related Processes**

After loading of the Repository, check the Missing Objects Report option and selectively Extract and Load those objects after adding them to the application library. Alternatively you can execute the Extract Missing Object option after adding them to the appropriate library.

The Missing Objects report is accessed via the Quality Logs option. You may add new or changed objects to the loaded Repository using the Load Repository option.

2

**Natural Engineer Application Management** 

## **Extract Missing Objects**

The Extract Missing Objects option extracts the missing called objects as identified in the Missing Objects report. If an object is a data area or copycode, it will also extract the calling object (unless it has been extracted in the same execution).

Note:

- A maximum of 1000 missing objects will be extracted using this process.
- Missing DDMs will not be extracted using this process.

The process to follow for extracting the most complete application is:

- 1. Extract and Load an application into Natural Engineer.
- 2. Check the Missing Objects report to identify any missing objects.
- Copy those missing objects to the Natural library or Steplib library defined to Natural Engineer.
- 4. Run the Extract Missing objects option.

If an object is displayed on the Missing Objects report but not copied as part of step 3, then the Extract process will identify this as an error with the message:

NO SUCH OBJECT EXISTS IN DIRECTORY

If a DDM is identified as missing then the DDM should be located and copied to the application library, a defined steplib or the SYSTEM library. All objects that reference the missing DDM need to be re-extracted. Either identify the missing object by running the DDMs Referenced by Objects report, or selectively extract and load those objects, or re-execute the Extract and Load processes for all objects in the application.

2

## Bulk Extract and Load

Multiple applications may be extracted and loaded using the Bulk Extract and Load function. When running in a pure PC or Windows server environment then the relevant batch files for the extract and load processes need to be configured. These are located in the BAT directory of your Natural Engineer installation.

- Select the main application node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Bulk Extract & Load**.

The following Figure 2-7-1 illustrates the Bulk Extract & Load screen.

Bulk Application Extract & Load		V X
All Applications - [HOSP*]		Selected Applications
HOSPKEY *	>>>	HOSPITAL
HOSPNLIN HOSPSUB	>>	HOSPSET
HOSPSXP	$\rightarrow$	
	<	
	<<	
	<<<	
Prev More		Prev More
Synchronize source override		Execute Cancel

Figure 2-7-1 Bulk Extract & Load

SCREEN ITEMS	DESCRIPTION
All Applications	List of Applications within the Natural Engineer repository. Note: an '*' (asterisk) next to an application name indicates that the
Selected Applications	List of selected Applications to be extracted and loaded.
Synchronize source override	This will set all selected applications to be extracted with the synchronize source option.
	When this option is selected, Natural Engineer compares each object's saved date in the Repository with the saved date of the object in the Natural System File. If the object in the System File has been saved more recently than that in the Repository, Natural Engineer will re-extract that object into the Repository and overwrite the existing object.

2

### BUTTON NAME DESCRIPTION

All Applications group:	
Prev	Scrolls the Application list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the Application list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Selection / De-selection	buttons:
>>>	Select all Applications in the Application list (when more than one page is available, as set by the LISTBOXMAX parameter in the NATENG.INI file).
>>	Select all Applications on the current page in the Applications list.
>	Select all selected Applications in the Applications list.
<	De-select all selected Applications in the selected list.
<<	De-select all Applications on the current page in the selected list.
<<<	De-select all Applications in the selected list (when more than one page is available, as set by the LISTBOXMAX parameter in the NATENG.INI file).
Selected Applications g	roup:
Prev	Scrolls the selected list to previous page.
	This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the selected list forward one page.
	This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Bulk Application Extrac	ct & Load screen:
Execute	Will run the extract & load process for the selected applications.
Cancel	Cancel the Bulk Extract & Load process.



## **Application Maintenance**

The Application Maintenance option contains all the functions that maintain and augment the application information within the repository.

These include:

- Delete Application
- <u>Delete Selected Objects</u>
- <u>Soft Link Maintenance</u>
- Cobol Link Maintenance
- JCL Analysis
- Validate Objects
- <u>Generate Application Metrics</u>

2

## Delete an Application

Applications can be deleted by using the following site workplace navigation:

- Select the application to be deleted.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Application Maintenance**. This will open a sub-menu of further options.
- Select the option: **Delete Application**.

All application data will be removed from the Natural Engineer Repository. This deletes all Application, Analysis and Modification information.



## **Delete Selected Objects**

Objects can be deleted by using the following site workplace navigation:

- Select the application to be deleted.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Application Maintenance**. This will open a sub-menu of further options.
- Select the option: **Delete Selected Objects**.

A further dialog will be presented which allows the user to select one or more objects to be deleted from the repository.

## Soft Links

The Soft Links option allows you to manually update the Repository with information regarding the linking between objects. A Soft Link is one where a link between two objects has been defined using an alphanumeric variable rather than a literal constant.

For example:

1) A link to a subprogram using a literal constant: -

0090 CALLNAT 'SUBPROG1' #PARAMETER-GROUP

2) A link to a subprogram using an alphanumeric variable: -0250 MOVE 'SUBPROG1' TO #CALL-NAME

#### 0260 CALLNAT #CALL-NAME #PARAMETER-GROUP

This is what Natural Engineer recognizes as a Soft Link.

Natural Engineer will provide a list of objects within an application that contain Soft Links statements. Only objects containing Soft Links will be available for selection from the Soft Link Maintenance screen. That is to say, any objects that use literal constants only will not be shown in the object list on this screen.

A single object may contain one or more Soft Link statements. Each statement can be selected to specify the object name reference for the Soft Link. Up to a maximum of 1008 object names may be specified per statement.

Once all the Soft Links have been specified, they will provide the cross-reference information into the inter-object tracing function within the Analysis process.

Soft Links can be saved / opened using a PC text format file enabling common Soft Links to be applied to a complete application as one single operation. Soft Links can be easily removed either from the complete application, a range of objects, one single object or from a single statement line.

A Soft Links report is available to view instantly all the details of which Soft Links have been specified, for each statement line within each object, within the application.

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**Natural Engineer Application Management** 

### How to Invoke the Soft Link Maintenance Option

Use the following navigation in the site workplace:

- Select the application required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Application Maintenance**. This will open a sub-menu of further options.
- Select the option: Soft Link Maintenance.

### Soft Link Maintenance Window

The Soft Link Maintenance screen is accessed by placing the cursor on any of the applications displayed in the site workplace and using the right hand mouse button with a single click to view the context menu.

The following Figure 2-8 illustrates the Soft Link Maintenance screen.

Soft Link Maintenance for SOFT	LIB		- • •
Object Filtering Options			
Object Types All Objects	•	Language Natural	•
Soft Links	Soft Link Statements		
SFTLKP16 *	* 0120 FETCH RE	#PROGRAM-NAME	
SFTLKP17 *	* 0190 FETCH	#PROGRAM-NAME	
SFTLKP18 *	* 0300 CALLNAT	#PROGRAM_NAME	
SFTLKP19 *	0000 0/12210/1	arrestre arrestre	
SFILKP20 *			
SEINKC01 *			
SLINKH01 *			
SLINKM03			
SLINKN02 *			
SLINKP01 *			
SOFTLN1S *			
SOFTLP1S *			
SOFTLP2S *			
Prev More			
Open S	Delete	Er Er	ror Log

Figure 2-8 Soft Link Maintenance screen

2

<b>Object Types</b>	Allows you	u to select the types of object to be listed.	
	Available	selections are:	
	<ul> <li>All O</li> </ul>	bjects	
	Progr	rams	
	Subp	rograms	
	<ul> <li>Func</li> <li>Subr</li> </ul>	tions	
	- Subi	rodes	
	<ul> <li>Helpi</li> </ul>	routines	
	<ul> <li>Maps</li> </ul>	3	
Language	Allows you	u to select the programming language of the objects to be listed.	
Object List	List of all t Natural En	List of all the objects used by the currently selected application, where Natural Engineer has recognized that they contain Soft Links.	
	The list of available in can be mad from the co	objects can be tailored to your requirements using the options n the Object Types and Language menus. Further refinement de using the option 'Change Start Position of Object List' ontext menu.	
	The Objec	t List title reflects the Object Types being listed and will v reposition values that may have been specified.	
	Objects that an '*' (aste	at have had Soft Links specified for them will be indicated with erisk) to the right hand side of the Object name.	
Soft Link Statements	Displays a Links exist	ll the statements within the selected object, for which Soft t.	
	Column	Description	
	1	Statement Soft Link indicator showing whether a Soft Link has been specified for this statement line. Possible values:	
		'' (blank) No Soft Links specified.	
		<b>'*'</b> (asterisk) Soft Links specified.	
	3-10	The statement line number.	
	12-21	The Natural call type. For example: CALLNAT.	
	23-54	The name of the alphanumeric variable used to make the call. For example: #CALL-PGM-NAME.	
	56-63	The external object name. If the link statement is held in another physical object, for example: Copycode, then the object name of the Copycode is shown here.	
	71-76	Sequence number used by Natural Engineer.	

## SCREEN ITEMS DESCRIPTION

#### BUTTON NAME DESCRIPTION

Prev	Scrolls the object list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the object list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Open	Open and read in an existing Soft Link file. These files will have file extension of '.SFT' and will contain previously saved/modified Soft Link records. When opened, they will apply the contents to the current application.
Save As	Save the current set of Soft Links specified for the current application. The file is saved with a file extension of '.SFT'. By default, this file will be saved to the data folder where Natural Engineer is installed.
Delete	Deletes all Soft Links for the objects available in the Objects list box. The list of objects is controlled by the Object Types menu option.
	For example: If objects of type 'Program' are listed, then all the Soft Links for program objects only within the application will be deleted. Any copycodes, helproutines, maps, subprograms or subroutines will not have their Soft Links deleted.
Import	Will search the currently selected application for literal string values that could potentially be used as Soft Links. These will be added to all the objects listed.
	Use of this option will result in the deletion of any existing Soft Links previously specified.
	Note: For more information refer to the section <u>Importing Soft Links</u> .
Error Log	This reports any errors that may have occurred when using the Open Soft Link File option. The details shown will be for the last use of this option for the application.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

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### Soft Link Maintenance Context Menu

The Soft Link Maintenance context menu is invoked by placing the cursor on any of the items listed in the Object list and using the right hand mouse button with a single click.

CONTEXT MENU ITEM	DESCRIPT	TION
Change Start Position of Object List	Reposition th name.	e list of objects to start from a particular object
	The repositio name or part	n value can be input using either a complete name using an '*' (asterisk) wildcard.
	The reposition value is appended to the object list title to highlight the type of repositioning being applied.	
	Possible reposition values are:	
	Value	Result
	ʻʻ(blank)	Reposition to the top of the object list.
	*	Reposition to the top of the object list.
	ABC*	Only show objects that are prefixed by 'ABC'.
	XYZ	Reposition to the first object that either matches or is greater than 'XYZ' and then continue the object list from that point.

## 2

Natural Engineer Application Management

### Add Soft Links Window

To specify the Soft Links for a statement line within an object simply select the statement line from the Soft Link Maintenance screen and the Add Soft Links screen will be presented. On this screen it is possible to specify up to 1008 individual Soft Link names per statement line.

The following Figure 2-9 illustrates the Add Soft Links screen.

Add Soft Links			
Call Details			
Applic	ation : SOFTLI	в	
Object N	lame : SOFTLI	P1S	
Statemen	t No. : 120		
Call N	lame : #PROG	RAM-NAME	
Soft Links			
SOFTLN1S	SOFTLP2S	SOFTLP3S	
	-	-	
			Prev More
Number	of Links : 3		View: 1 to 48
Delete All	Import		OK Cancel Apply

Figure 2-9 Add Soft Links screen

2

# SCREEN ITEMS DESCRIPTION

Call Details	Application	The name of the application being processed.
	Object Name	The name of the object currently selected.
	Statement No.	The statement line number.
	Call Name	The name of the alphanumeric variable used to make the call. For example: #CALL-PGM-NAME.
Soft Links	This section of the screen allows for the specification of the Soft Links names to be used for a statement line.	
	Soft Links	Soft Link Names can be specified as required. Each page view caters for up to 48 entries, with a maximum of 1008 entries per statement allowed.
	Number of Links	Shows the number of Soft Link names specified for the current statement line.
	View	Shows the range of Soft Link names being displayed. For example: View: 1 to 48 indicates that you are looking at Soft Links 1 to 48.

#### BUTTON NAME DESCRIPTION

Prev	Scrolls the Soft Link list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file and the amount of soft links added.
More	Scrolls the Soft Link list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file and the amount of soft links added.
Delete All	Deletes all the Soft Links for the current statement line number.
Import	Will search the currently selected object for literal string values that could potentially be used as Soft Links. Any duplicates will be suppressed. The names can be further refined by selecting any of the displayed names and removing them.
	Note: For more information refer to the section <u>Importing Soft Links</u> .

BUTTON NAME	DESCRIPTION
ОК	Save changes and close the current screen.
Cancel	Exit the Add Soft Links screen and return back to the Soft Link Maintenance screen.
Apply	Save changes and retain the current screen. Note: This button is only enabled if any changes have been made.

### STATUS BAR ITEM DESCRIPTION

Pane

Any Add Soft Links processing messages.

### Add Soft Links Context Menu

The Add Soft Links context menu is invoked by placing the cursor on any of the Soft Link listed and using the right hand mouse button with a single click.

CONTEXT MENU ITEM	DESCRIPTION
Search Soft Links	Will search the soft link list for the supplied soft link and reposition the list to it. <i>NB: This is an absolute soft link name</i> ,
	no wildcard searches are allowed.

### **Importing Soft Links**

To assist with specifying the Soft Links for a statement line within an object or within all objects an Import Soft Link facility is available. This is available from the Import button on the main Soft Link Maintenance screen which will identify potential soft links for all or a selection of objects or from the Import button on the Add Soft Links screen for a particular object/statement combination. Potential Soft Link names within the objects that apply to the alphanumeric variable being used may be imported.



For example:

```
0100 IF #OPTION = 1
0110 MOVE 'PGM1' TO #CALL-NAME
0120 ELSE
0130 MOVE 'PGM2' TO #CALL-NAME
0140 END-IF
0150 FETCH #CALL-NAME
```

The Soft Link **#CALL-NAME** at statement line number 0110 (or 0130) would display the Soft Link names **PGM1** and **PGM2**.

## **Importing Soft Links Window**

Importing softlinks from the main Soft Link Maintenance screen will present a screen where objects to be processed during the import may be specified.

The following Figure 2-10 illustrates the Importing Soft Links screen.

Object Types All Objects	•	Language Natural 🔻
All Objects		Selected
CALL1R-P*	>>>	CALL2R-P
FET1R-P * MAP1R-P *	>>	
MAP2R-P *		
	<	
	<<	
Prev More	<<<	Prev More
All Objects		Add any additional Soft Links
Unprocessed Objects		Replace all existing Soft Links for object

Figure 2-10 Importing Soft Links screen



#### SCREEN ITEMS DESCRIPTION

All Objects List	List all the objects that are available for the currently selected application.				
	The list of objects can be tailored to your requirements using the options 'Change Start Position of Object List' from the Object List context menu and 'Unprocessed Objects' button.				
	The Object List title reflects the objects being listed and will append any reposition values that may have been specified.				
	Oobjects can be selected by using a double click with the left hand mouse button.				
	Note: Any objects listed that have already been processed will have an '*' (asterisk) appended to the right hand side of the object name.				
Selected	List all the objects that have been selected for the Import Soft Links processing.				
	Note: At least one object must be selected to run the import.				
	Objects can be de-selected by using a double click with the left hand mouse button.				

### BUTTON NAME DESCRIPTION

All Objects group:	
Prev	Scrolls the object list to previous page.
	This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the object list forward one page.
	This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
All Objects	Change the list of objects displayed in the list.
	If selected, then all processed and unprocessed objects are listed.
Unprocessed	Change the list of objects displayed in the list.
Objects	If selected, then only the objects that have not yet been processed are listed.

Selection / De-selection buttons:

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>>>	Select all objects in the list (when more than one page is available, as set by the LISTBOXMAX parameter in the NATENG.INI file).	
>>	Select all objects on the current page in the list.	
>	Select all selected objects in the list.	
<	De-select all selected objects in the selected list.	
<<	De-select all objects on the current page in the selected list.	
<<<	De-select all objects in the selected list (when more than one page is available, as set by the LISTBOXMAX parameter in the NATENG.INI file).	
Selected group:		
Prev	Scrolls the selected list to previous page.	
	This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.	
All Objects	Change the list of objects displayed in the list.	
	If selected, then all processed and unprocessed objects are listed.	
Add any additional Soft Links	If selected, then only when the import process is executed only softlinks that have not currently been specified will be imported.	
Replace all existing Soft Links for object	If selected, then all existing softlinks for an object will be deleted and then any new softlinks identified will be imported.	
Import Softlinks screen:		
Exe Batch All	Will submit the batch Import Soft Links process for all objects.	
Objects	This is only available in a SPod environment when running against a mainframe server.	
Exe Batch	Will submit the batch Import Soft Links process for the selected objects. This is only available in a SPod environment when running against a mainframe server.	
Execute	Invoke the Import Softlinks process for the selected objects.	
	Note: This button is only enabled if any changes have been made.	
Cancel	Cancel any object selection and close the current screen.	

### BUTTON NAME DESCRIPTION

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

### Soft Link File

It is possible to re-use a set of Soft Links across more than one application. This level of flexibility allows quick and easy Soft Links specification, if 'call' processing is common across several applications.

In order to achieve this, Soft Links can be saved to a PC file with a file extension of '.SFT'. By default this file will be saved to the data folder where Natural Engineer is installed.

Once a Soft Link file has been saved it can be modified outside of Natural Engineer and re-used as desired. This can be done using a common text editor such as Notepad.

Each record in the Soft Link PC file is a total of 74 bytes in length. A record is written for each Soft Link name entered per statement number per object selected. To illustrate this, lets assume an application has 2 Soft Link call statements at lines 0230 and 0990 in one single object. If you set up 10 Soft Link objects per statement and then save the Soft Link PC file, you will have 20 records (1 object x 2 statement lines x 10 Soft Link names).

The record format used in the Soft Links PC file:

Field Name	Format / Length	Description
Record Option	A1	Option dictates whether the Soft Link Data for this record is to be added or deleted. Valid values are:
Object Name	A8	Name of the object containing the Soft Link call(s). Valid values are:
		Full object name up to 8 bytes.
		If the object name is less than 8 bytes then the outstanding bytes must be padded out with spaces to maintain position within the record.
		Wildcard '*' (asterisk)
		Indicate that this Soft Link record can be applied to all objects. This must be padded out with 7 spaces to

Field Name	Format / Length	Description
		maintain position within the record.
Object Type	A1	The object type of the calling object. Valid values are:
		P Programs
		M Maps
		C Copycodes
		N Subprograms
		S Subroutines
		H Helproutines
		* Wildcard for ALL object types.
External Object name	A8	The external object name. If the Soft Link call statement is held in another physical object. For Example: Copycode, then the object name of the Copycode is shown here.
		Valid values are:
		Full external object name up to 8 bytes.
		If the external object name is less than 8 bytes then the outstanding bytes must be padded out with spaces to maintain position within the record.
		Wildcard '*' (asterisk)
		Indicate that this Soft Link Record can be applied to all external objects. This must be padded out with 7 spaces to maintain position within the record.
Statement Number	A8	The statement line number using leading zeroes to pad the number out to 8 bytes.
		Valid values are:
		00000010, 00000130, 00002345 etc.
		This will apply to the exact statement number specified.
		Wildcard '*' (asterisk)
		Indicate that this Soft Link Record can be applied to all statement numbers. This must be padded out with 7 spaces to maintain position within the record.
Sequence Number	A8	Sequence number used by Natural Engineer.
		Valid values are:
		00000002, 00000022 etc.
		This will apply to data matching the sequence number within the Repository. If specified it must be padded

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Field Name	Format / Length	Description
		with zeroes to the full 8 byte length.
		Wildcard '*' (asterisk)
		Indicate that this Soft Link Record can be applied to all sequence numbers. This must be padded out with 7 spaces to maintain position within the record.
Call Variable name	A32	The name of the alphanumeric variable used to make the call. For Example: #CALL-PGM-NAME.
		Valid values are:
		#CALL-PGM-NAME, #PROGRAM etc
		If the call variable name is less than 32 bytes then the outstanding bytes must be padded out with spaces to maintain position within the record.
		Wildcard '*' (asterisk)
		Indicate that this Soft Link Record can be applied to all call variable names. This must be padded out with 31 spaces to maintain position within the record.
Soft Link name	A8	The Soft Link name of the called object. This must be the actual object name up to 8 bytes long.
		Wildcard '*' (asterisk)
		This can be only be used for a record option of 'D' (delete) and will delete all Soft Link object names.

### Examples of modified Soft Links PC files and what actions they will perform.

The following examples illustrate the contents of a single Soft Link PC file record required to carry out each requirement.

1. Add the Soft Link object name SOFTLN2S to object SOFTLN1S, which has an object type of subprogram, a Soft Link call at statement line number 0230, sequence number of 21 and uses the alphanumeric variable #PGM in the Soft Link call.

Soft Link File record:

ASOFTLN1SN 000002300000021#PGM	SOFTLN2S
--------------------------------	----------

2. Add the Soft Link object name SOFTLN2S to all objects, which have an object type of subprogram, a Soft Link call at statement line number 0230, any sequence number and uses the alphanumeric variable #PGM in the Soft Link call.

S	Soft Link F	file record:		
A*	N	00000230*	#PGM	SOFTLN2S

3. Add the Soft Link object name SOFTX to all objects, all object types, Soft Link calls at any statement line number, any sequence number and any alphanumeric variable in the Soft Link call. Basically, add Soft Link object name to all identified Soft Link objects within the application.

Soft Link File record:

4. Delete the Soft Link object name SOFTLN2S from object SOFTLN1S, which has an object type of subprogram, a Soft Link call at statement line number 0230, sequence number of 21 and uses the alphanumeric variable #CALL-PROGRAM-NAME in the Soft Link call.

Soft Link File record:

DSOFTLN1SN	000002300000021#CALL-PROGRAM-NAME	SOFTLN2S

5. Delete all Soft Links from the application.

Soft Link File record:

D\* \*\* \* \* \* \*

### Soft Link Error Log

This is available when using the Error Log button on the Soft Link Maintenance screen. When the Open Soft Link PC file is used, it reads in the Soft Link records and applies the Soft Link data to the application. This may be adding Soft Links, deleting Soft Links, or a combination of both.

If the Soft Link process experiences any anomalies within the Soft Link records, it writes out entries to the Soft Link Error Log for each erroneous Soft Link record, and continues with the next one until it gets to the end of the file.

The error log details are written to a work file saved in the data folder where Natural Engineer is installed.

The file name is aaaaaaaa.ESL, where 'aaaaaaaaa' is the application name.

Upon completion a pop-up window shows the status of the Soft Link PC file processing that has just been completed.

Processing information message	Shows the processing that has been carried out using the Open Soft File option. It consists of three components:	
	Lines:	Shows the number of Soft Link records processed from the opened Soft Link PC file. For example:
		If the Soft Link contains 20 records then 'Lines: 20' would be displayed.
	Errors:	Shows the number of Soft Link records that are in error. These records will not apply any processing to the application data during the process.
	Modifications:	Shows the number of Soft Link records that have successfully been applied to the application.
	The number of Lines = number of Errors + number of Modifications	

#### SCREEN ITEMS DESCRIPTION

#### BUTTON NAME DESCRIPTION

OKThis button is used to escape the Soft Link PC file processing information<br/>screen and will result in one of two actions:If No Errors have occurred, i.e., Errors: 0, then the Objects Soft Link<br/>Maintenance screen is displayed with the Object List refreshed.If Errors have occurred, then the Soft Links Log screen will be displayed<br/>showing the details for each error.

The Soft Link Error Log file can be viewed using the Soft Links Log screen accessed from the Soft Link Maintenance screen using menu option View  $\rightarrow$  Soft Link Error Log.

This screen is automatically presented immediately after an Open Soft Link file run has been executed if there were any errors present, i.e., when '**OK**' button is used from the Soft Link PC file information pop-up screen.

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The following Figure 2-12 illustrates the Soft Links Log screen showing the Soft Link PC File errors.



Figure 2-12 Soft Links Log screen showing the Soft Link PC File errors

SCREEN ITEMS	DESCRIPTION
Error details	For each record found to be in error, a two-line entry will be shown in the Soft Links Log error details.

<b>BUTTON NAME</b>	DESCRIPTION
Cancel	Exit the Soft Links Log screen and return back to the Soft Link Maintenance screen.
Notepad	Opens the text editor NOTEPAD using the Soft Link error file aaaaaaaa.ELS, where 'aaaaaaaa' is the application name. From here it is possible to print the error log.



#### **Soft Link Error Types**

There are 5 types of error that can occur during the Open Soft Link File option:

#### 1. Undefined option

This error is produced when an invalid Soft Link record option has been specified. Only 'A' (add) or 'D' (delete) are allowed.

Example: A Soft Link record has been detected where the record option is set to 'Y' (OPT=Y).

USER: SFT ERR: **OPT=Y** APP=SOFTLINK OBJ=SOFTLP1S TYP=P XOB= STT=00000190 SEQ=00000014

VAR=#PROGRAM-NAME SFT=SOFTLP3S **ERR=Undefined Option** LNO=3

#### 2. Cannot add \* as a Softlink

This error is produced when a wildcard '\*' (asterisk) has been specified for the Soft Link name, when the Soft Link record option is set to 'A' (add).

Example: A Soft Link record has been detected where the record option is set to 'A' (OPT=A) and the Soft Link name is set to '\*' (SFT=\*).

USER: SFT ERR: OPT=A APP=SOFTLINK OBJ=SOFTLP1S TYP=P XOB= STT=00000120 SEQ=00000007

VAR=#PROGRAM-NAME SFT=\* ERR=Cannot add \* as a Softlink LNO=2

#### 3. Soft Link already in Repository

This error is produced when a Soft Link name is being added when it already exists on the Repository.

Example: A Soft Link record has been detected where the Soft Link name is set to 'SOFTLN2S' (SFT=SOFTLN2S), for object SOFTLN1S (OBJ=SOFTLN1S), an object type of 'N' (TYPE=N), at statement line number 00000230 (STT=00000230) and with sequence number 00000021 (SEQ=00000021). On the Repository the Soft Link name SOFTLN2S already exists for this criteria.

USER: SFT ERR: OPT=A APP=SOFTLINK OBJ=SOFTLN1S TYP=N XOB= STT=00000230 SEQ=00000021

VAR=#PGM SFT=SOFTLN2S ERR=Soft Link already in Repository <code>LNO=1</code>

#### 4. Soft Link Not in Repository

This error is produced when a Soft Link name is being deleted, and the Soft Link object is not found in the Repository. This indicates that either no Soft Link name has been specified for the object, object type, statement number, Soft Link variable name in the Soft Link record, or a Soft Link name has been found but does not match the one on the Soft Link record.

Example: A Soft Link record has been detected to delete a Soft Link, where the Soft Link name is set to 'SOFTLN1S' (SFT=SOFTLN1S), for object SOFTLP1S (OBJ=SOFTLP1S), an object type of 'P' (TYP=P), at statement line number 00000300 (STT=00000300) and with sequence number 00000027 (SEQ=00000027). On the Repository the Soft Link name SOFTLN1S does not exist for this criteria.

USER: SFT ERR: OPT=D APP=SOFTLINK OBJ=SOFTLP1S TYP=P XOB= STT=00000300 SEQ=00000027 VAR=#PROGRAM-NAME SFT=SOFTLN1S ERR=Soft Link Not in Repository LNO=4

5. Object Not Found

This error is produced when an object name has been specified for the Soft Link, which does not exist in the Repository for the specified application.

Example: A Soft Link record has been detected where the object 'SOFTLXXX' (OBJ=SOFTLXXX) has been specified to add a Soft Link name of 'SOFTLN2S' (SFT=SOFTLN2S). The application name used is 'SOFTLINK' (APP=SOFTLINK). Object SOFTLXXX does not exist in this application.

USER: SFT ERR: OPT=A APP=SOFTLINK OBJ=SOFTLXXX TYP=P XOB= STT=00000100 SEQ=00000006

VAR=#PROGRAM-NAME SFT=SOFTLN2S ERR=Object Not Found LNO=5



## Cobol Links

Cobol Links provides the facility to manually update the Repository with information regarding the Cobol modules that form the linked Cobol program being executed at run time within a JCL.

Batch Cobol programs may consist of more than one module. All the relevant modules are combined into a single executable Cobol program, known as a "Linked Cobol Program".

At batch run time the JCL used to invoke the batch Cobol processing will execute the Linked Cobol Program.

After the Extract and Load processes have been run, the Repository will have the JCL and Cobol modules loaded, but will not have any information available regarding the Linked Cobol Program and the Cobol modules. This information can be specified using the Cobol Links option.

For example:

An application contains JCL object JCLCOB10 which executes the Linked Cobol Program COB10.

Cobol Modules COB10P01, COB10P02 and COB10P03 have been loaded into the Repository.

The Repository will have all the Cobol modules loaded but will not know which modules form the Cobol program. For the Linked Cobol Program COB10, you would need to specify the Cobol modules COB10P01, COB10P02 and COB10P03.

This will provide the cross-reference information between the JCL and Cobol modules.

2

### How to Invoke the Cobol Link Maintenance Option

Use the following navigation in the site workplace:

- Select the application required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Application Maintenance**. This will open a sub-menu of further options
- Select the option: Cobol Link Maintenance.

### **Cobol Link Maintenance Window**

The Cobol Link Maintenance window controls all the settings required for this option. The following Figure 2-13 illustrates the Cobol Link Maintenance screen.

Cobol Link Maintenance for COBJCLNT	
Linked Objects	Cobol Source
COB10 COB44	COB10P01 * COB10P02 COB10P03 COB10P04 COB10P05 COB10P06 COB10P07 COB10P08 COB10P09
Prev More	* Entry Name Prev More
Delete Add	Delete All Update Cancel

Figure 2-13 Cobol Link Maintenance screen

SCREEN ITEMS	DESCRIPTION	
Linked Object List	List all the linked objects that have been specified for the currently selected application.	
	The list of linked objects can be tailored to your requirements using the option 'Change Start Position of Linked Object List' from the Linked Object List context menu.	
	The Linked Object List title reflects the linked objects being listed and will append any reposition values that may have been specified.	
Cobol Source List	List all the Cobol Source that have been specified for the selected Linked Object. If a Cobol Source has a * next to it then it has been specified as the entry name for the linked object. This may be specified on the <u>Add</u> <u>Cobol Links Window</u> .	

#### BUTTON NAME DESCRIPTION

Linked Object group:	
Prev	Scrolls the linked object list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the linked object list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Cobol Module group:	
Prev	Scrolls the Cobol module list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the Cobol module list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Cobol Link Maintenance	e screen:
Delete	Deletes the currently selected Linked Object.
Add	Add Cobol Links.
	Note: For more information refer to the section <u>Add Cobol Links Window</u> .
Delete All	Deletes all the Cobol links on the current page in the Linked Objects list box.

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BUTTON NAME	DESCRIPTION	
Update	Update existing Cobol Links.	
	Note: For more information refer to the section <u>Add Cobol Links Window</u> .	
Cancel	Cancel the Cobol Link Maintenance process and close the current screen.	

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

### **Cobol Link Maintenance Context Menu**

-

The Cobol Link Maintenance context menu is invoked by placing the cursor on any of the items listed in the Linked Object list and using the right hand mouse button with a single click.

CONTEXT MENU ITEM	DESCRIPTION	
Delete Linked Object	Deletes the currently selected Linked Object.	
Change Start Position of Linked Object List	Reposition the list of linked objects to start from a particular linked object name.	
	The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard.	
	The reposition value is appended to the linked object list title to highlight the type of repositioning being applied.	
	Possible reposition values are:	
	Value	Result
	ʻʻ(blank)	Reposition to the top of the linked object list.
	*	Reposition to the top of the linked object list.
	ABC*	Only show linked objects that are prefixed by 'ABC'.
	XYZ	Reposition to the first linked object that either matches or is greater than 'XYZ' and then continue the linked object list from that point.

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### Add Cobol Links Window

The Add Cobol Links screen is accessed from the Cobol Link Maintenance screen by using either the 'Add' or 'Update' buttons.

The Add Cobol Links screen is a dual purpose screen that can be used to add new or update existing Cobol Links.

The following Figure 2-14 illustrates the Add Cobol Links screen.

Add Cobol Links for COE	BJCLNT		×
COB10	Entry Name	COB10P01	
Cobol Source CNVACC CNVACCT COB10P10 COB44P01 COBSQL01 ODOCXP1S PJNCOBP1	>>> >>> < < < < < < < < < <	Selected COB10P01 COB10P02 COB10P03 COB10P04 COB10P05 COB10P06 COB10P07 COB10P08 COB10P09 OK	Prev More Cancel Apply

Figure 2-14 Add Cobol Links screen

MENU ITEMS	OPTIONS	DESCRIPTION
File	Exit	Exit the Add Cobol Links screen and return back to the Cobol Link Maintenance screen.
View	Change Start Position of	Reposition the list of Cobol sources to start from a particular Cobol source name.
	List	The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard.

2

MENU ITEMS	OPTIONS	DESCRIPTION	
		The reposition value is appended to the Cobol source list title to highlight the type of repositioning being applied.	
		Possible repo	sition values are:
		Value	Result
		''(blank)	Reposition to the top of the Cobol source list.
		*	Reposition to the top of the Cobol source list.
		ABC*	Only show Cobol source that are prefixed by 'ABC'.
		XYZ	Reposition to the first Cobol source that either matches or is greater than 'XYZ' and then continue the Cobol source list from that point.
Help	Invoke the Add Co	bol Links help.	

#### SCREEN ITEMS DESCRIPTION

Linked Object	The name of the Linked Object.		
	This will be enabled / disabled depending on the option selected in the Cobol Link Maintenance screen.		
	For 'Add', the input will be enabled and a new Linked Object name can be typed in.		
	For ' <b>Update</b> ', the input will be disabled and only Cobol source can be selected / de-selected.		
Entry Name	The name of the source that is to be specified as the entry point for the Linked Cobol Object. The source name may be typed in directly or by the context menu option, Set as Entry Name which is invoked by a click on the right-hand mouse button when on a source name. This will be enabled / disabled depending on the option selected in the Cobol Link Maintenance screen.		

SCREEN ITEMS	DESCRIPTION
--------------	-------------

Cobol Source List	List all the Cobol source that are available for the currently selected application. Cobol source can be selected / de-selected by using a double click with the <b>left hand mouse button</b> .
Selected	List all the Cobol source that have been selected for the Linked Object.
	Cobol source can be de-selected by using a double click with the <b>left</b> hand mouse button.

### BUTTON NAME DESCRIPTION

Cobol Source group:		
Prev	Scrolls the Cobol source list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.	
More	Scrolls the Cobol source list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.	
Selection / De-selection buttons:		
>>>	Select all Cobol source in the Cobol source list (when more than one page is available, as set by the LISTBOXMAX parameter in the NATENG.INI file).	
>>	Select all Cobol source on the current page in the Cobol Source list.	
>	Select all selected Cobol source in the Cobol Source list.	
<	De-select all selected Cobol source in the selected list.	
<<	De-select all Cobol source on the current page in the selected list.	
<<<	De-select all Cobol source in the selected list (when more than one page is available, as set by the LISTBOXMAX parameter in the NATENG.INI file).	
Selected group:		
Prev	Scrolls the selected list to previous page.	
	This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.	

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More	Scrolls the selected list forward one page.	
	This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.	
Add Cobol Links screen:		
ОК	Save the specified Cobol Links and close the current screen.	
	Note: This button is only enabled if any changes have been made.	
Cancel	Cancel the Add Cobol Links process and return back to the Cobol Link Maintenance screen.	
Apply	Save specified Cobol Links and retain the current screen. Note: This button is only enabled if any changes have been made.	

## BUTTON NAME DESCRIPTION

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.



## JCL Analysis

The JCL Analysis option provides the facility to generate cross-reference data for work file and database access record layouts, for any JCL objects executing Natural or COBOL programs.

The JCL Analysis process will analyze all the work file and database accesses within the objects, starting from the program referenced in the JCL. If the JCL contains a LOGON to a Natural library that is different from the Natural Engineer Application library then if the Natural object is not found in the LOGON library it will be assumed that it resides in the base Natural Engineer Application library.

Note: The JCL Analysis process duration depends on the complexity of the objects involved. For high levels of complexity, this may take a while to complete.

The cross-reference data is used in the JCL Diagram, where work files and database access definitions (e.g., DDMs, SQL Tables or Predict User Views) can be selected and their respective record layouts viewed.

### How to Invoke the JCL Analysis Option

Use the following navigation in the site workplace:

- Select the application required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Application Maintenance.
- Select the option: JCL Analysis.

Note: The JCL Analysis option is only available for applications with JCL objects loaded in the Repository.
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## JCL Analysis Window

The JCL Analysis window controls all the settings required for this option. It is accessed from the JCL Analysis option of the Application Maintenance menu.

The following Figure 2-15 illustrates the JCL Analysis screen.

All JCLs	Selected
NCJCL10 *	>>> JCLCOB10
NCJCLDD *	>>
INCNATDD * JCLDSN44 *	>
JCLINC10 *	
JCLINCDD *	<
JCLMISPR *	< <li>&lt;</li>
Prev More	CCC Prev More
All JCL's	Object Call Level Limit
Unprocessed JCL's	Limit (0=unlimited)
	View Log Execute Cancel

Figure 2-15 JCL Analysis screen

#### SCREEN ITEMS DESCRIPTION

JCL List	List all the JCL objects that are available for the currently selected application.
	The list of JCL objects can be tailored to your requirements using the options 'Change Start Position of JCL List' and 'View Unprocessed JCLs Only' from the JCL List context menu.
	The JCL List title reflects the JCL objects being listed and will append any reposition values that may have been specified.
	JCL objects can be selected by using a double click with the <b>left hand mouse button</b> .
	Note: Any JCL objects listed that have already been processed will have an '*' (asterisk) appended to the right hand side of the JCL object name.

SCREEN ITEMS	DESCRIPTION
Selected	List all the JCL objects that have been selected for JCL Analysis processing.
	Note: At least one JCL object must be selected to run the analysis.
	JCL objects can be de-selected by using a double click with the <b>left</b> hand mouse button.
Object Call Level Limit	Specifies the amount of levels to be checked by the JCL Analysis process. Setting this value to 0 (default) will mean no level limit will be used.
	The default value may be changed by setting the value in the ANALYSIS-LEVEL-LIMIT parameter in the JCL section of the NATENG.INI file.

#### **BUTTON NAME DESCRIPTION**

JCL List group:	
Prev	Scrolls the JCL object list to previous page.
	This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the JCL object list forward one page.
	This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
All JCL's	Change the list of JCL objects displayed in the JCL List.
	If selected, then all processed and unprocessed JCL objects are listed.
Unprocessed JCL's	Change the list of JCL objects displayed in the JCL List.
	If selected, then only the JCL objects that have not yet been processed are listed.
Selection / De-selection	buttons:
>>>	Select all JCL objects in the JCL list (when more than one page is available, as set by the LISTBOXMAX parameter in the NATENG.INI file).
>>	Select all JCL objects on the current page in the JCL list.
>	Select all selected JCL objects in the JCL list.
<	De-select all selected JCL objects in the selected list.
<<	De-select all JCL objects on the current page in the selected list.

2

<<<	De-select all JCL objects in the selected list (when more than one page is available, as set by the LISTBOXMAX parameter in the NATENG.INI file).
Selected group:	
Prev	Scrolls the selected list to previous page.
	This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the selected list forward one page.
	This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
JCL Analysis screen:	
Exe Batch	Will submit the batch JCL Analysis process for the selected JCL objects. This is only available in a SPod environment when running against a mainframe server.
	Note: This button is only enabled if any changes have been made.
View Log	Will show the JCL Analysis Log File which details the Jobs and Steps that have been processed along with any exception messages.
Execute	Invoke the JCL Analysis process for the selected JCL objects.
	Note: This button is only enabled if any changes have been made.
Cancel	Cancel any JCL object selection and close the current screen.

#### BUTTON NAME DESCRIPTION

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.



## Validate Objects

The Validate Objects option allows you to validate the objects loaded in the Repository against the objects in the application library.

Application objects that are no longer present on the application library can be selected and removed from the Repository. This results in a synchronized Repository and application library, providing a correct up to date view of the application.

#### How to Invoke the Validate Objects

Use the following navigation in the site workplace:

- Select the application required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Application Maintenance**. This will open a sub-menu of further options.
- Select the option: Validate Objects.

NB: The Validate Objects option may be run automatically after the load process by specifying VALIDATE=Y in the [LOAD] section of the NATENG.INI file or by checking the Validate Objects box in the <u>Extract & Load Selection Criteria</u> window for a selected application.

Note: For more information on the NATENG.INI file parameter VALIDATE refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

## Validate Objects Window

For the selected application, a list of the objects not found in the application library is displayed in the object list box.

From the Validate Objects screen, objects can be selected and deleted from the Repository.

The following Figure 2-17 illustrates the Validate Objects screen.

Validate Objects for HOSPITAL		8 ×
File View Help		
Object Filtering Options Object Type All Objects	✓ Language	All
All Objects	Selected	Objects
XX021P01		
	>>>	
	<	
	<<	
Prev More	<<<	Prev More
		Delete
1 Object retrieved.		

Figure 2-17 Validate Objects screen

MENU ITEMS	OPTIONS	DESCRIPTION
File	Exit	Exit the Validate Objects screen and return back to the main Natural Engineer screen.
View Change Start Position of Object List	Reposition the list of objects to start from a particular object name.	
	List	The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard.

MENU ITEMS	OPTIONS	DESCRIPTIO	ON
		The reposition v to highlight the Possible reposit	value is appended to the object list title type of repositioning being applied. ion values are:
		Value	Result
		' ' (blank)	Reposition to the top of the object list.
		*	Reposition to the top of the object list.
		ABC*	Only show objects that are prefixed by 'ABC'.
		XYZ	Reposition to the first object that either matches or is greater than 'XYZ' and then continue the object list from that point.
Help	Invoke the Validate	Objects help.	

SCREEN ITEMS DESCRIPTION

Allows you to select the types of object to be listed. Available selections are:
All Objects
<ul> <li>Programs</li> </ul>
<ul> <li>Classes</li> </ul>
<ul> <li>Subprograms</li> </ul>
<ul> <li>Functions</li> </ul>
<ul> <li>Subroutines</li> </ul>
Copycodes
Helproutines
<ul> <li>Dialogs</li> </ul>
<ul> <li>Maps</li> </ul>
Local Data Areas
<ul> <li>Global Data Areas</li> </ul>
Parameter Data Areas
<ul> <li>Adapters</li> </ul>

2

Language	<ul> <li>Allows you to select the programming language of the objects to be listed.</li> <li>Available selections are: <ul> <li>All</li> <li>Natural</li> <li>Cobol</li> <li>JCL</li> </ul> </li> </ul>
Object List	List of all the objects used by the currently selected application. The list of objects can be tailored to your requirements using the options available in the Object Types and Language menus. Further refinement can be made using the option 'Change Start Position of Object List' from the View menu.
	The Object List title reflects the Object Types being listed and will append any reposition values that may have been specified. Objects can be selected by using a double click with the <b>left hand mouse button</b> .
Selected Objects	Lists all the objects that have been selected for the current function. Objects can be de-selected by using a double click with the <b>left hand</b> <b>mouse button</b> .

## SCREEN ITEMS DESCRIPTION

#### **BUTTON NAME DESCRIPTION**

Object List group:		
Prev	Scrolls the object list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.	
More	Scrolls the object list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.	
Selection / De-selection buttons:		
>>>	Select all objects in the object list (when more than one page is available, as set by the LISTBOXMAX parameter in the NATENG.INI file).	
>>	Select all objects on the current page in the object list.	
>	Select all selected objects in the object list.	
<	De-select all selected objects in the selected list.	
<<	De-select all objects on the current page in the selected list.	
> < <<	Select all selected objects in the object list. De-select all selected objects in the selected list. De-select all objects on the current page in the selected list.	

<b>BUTTON NAME</b>	DESCRIPTION
<<<	De-select all objects in the selected list (when more than one page is available, as set by the LISTBOXMAX parameter in the NATENG.INI file).
Selected group:	
Prev	Scrolls the object list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the object list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Validate Objects screen	n:
Delete	Deletes the selected objects from the Repository.
	Note: This button is only enabled if any selections have been made.
Cancel	Cancel the Validate Objects process and return back to the main Natural Engineer screen.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

#### STATUS BAR ITEM DESCRIPTION

Pane

Any Validate Objects processing messages.

## Generate Application Metrics

The Generate Application Metrics option allows you to generate missing metrics data for your application without the need to rerun the Load process.

The Load process will generate the metrics data as the application is loaded into the Repository. This can be controlled by the value specified in the METRICS parameter in the NATENG.INI file. If the METRICS parameter has been set to "N", then no metrics data will be generated during the Load process.

Note: Setting the METRICS parameter to "N" can be used to improve the performance of the Load process for a large application. For more information on the NATENG.INI file parameter METRICS refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

#### How to Invoke the Generate Application Metrics

Use the following navigation in the site workplace:

- Select the application required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Application Maintenance**. This will open a sub-menu of further options.
- Select the option: Generate Application Metrics.

#### **Related Processes**

The metrics data is used by the Application Metrics report: Object Statistics, which provides structural statistics for an application. For example, Halstead and McCabe.

Note: For more information on the Object Statistics report refer to Chapter 3 in the Natural Engineer Reporting manual.

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**Natural Engineer Application Management** 

## **Decision Table Analysis**

The Decision Tables Analysis option provides the facility to generate cross-reference data for conditional statements e.g. IF and DECIDE, for any Natural or COBOL objects and the actions that are dependent on the conditions.

Note: The Decision Table Analysis process duration depends on the complexity of the objects involved. For high levels of complexity, this may take a while to complete.

The cross-reference data is used in the <u>Decision Tables</u> options. If you have any User Defined Condition or Action Codes set then running the Decision Table Analysis process will delete any existing values. NB. This also affects any <u>ARIS Source Code User Values</u> if they have been defined.

#### How to Invoke the Decision Table Analysis Option

Use the following navigation in the site workplace:

- Select the application required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Application Maintenance.
- Select the option: Decision Table Analysis.

## **Decision Table Analysis Window**

The Decision Table Analysis window controls all the settings required for this option. It is accessed from the Decision Table Analysis option of the Application Maintenance menu.

The following Figure 2-18 illustrates the Decision Table Analysis screen.

Objects	Selected
XX001P01 XX002P01 XX021M01 XX021P01 XX022P01 XX022P01 XX023P01 XX024P01 XX025P01 Prev More	>>>
<ul> <li>All Objects</li> <li>Unprocessed Objects</li> </ul>	

Figure 2-18 Decision Table Analysis screen

SCREEN ITEMS	DESCRIPTION

Object List	List all the objects that are available for the currently selected application.
	The list of objects can be tailored to your requirements using the options 'Change Start Position of Object List from the Object List context menu.
	The Object List title reflects the objects being listed and will append any reposition values that may have been specified.
	Objects can be selected by using a double click with the <b>left hand mouse button</b> .
	Note: Any objects listed that have already been processed will have an '*' (asterisk) appended to the right hand side of the object name.

SCREEN ITEMS	DESCRIPTION
Selected	List all the objects that have been selected for Decision Table Analysis processing.
	Note: At least one object must be selected to run the analysis.
	Objects can be de-selected by using a double click with the <b>left hand mouse button</b> .

#### BUTTON NAME DESCRIPTION

Object List group:	
Prev	Scrolls the object list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the object list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
All Objects	Change the list of objects displayed in the Object List. If selected, then all processed and unprocessed objects are listed.
Unprocessed Objects	Change the list of objects displayed in the Object List. If selected, then only the objects that have not yet been processed are listed.
Selection / De-selection	1 buttons:
>>>	Select all objects in the object list (when more than one page is available, as set by the LISTBOXMAX parameter in the NATENG.INI file).
>>	Select all objects on the current page in the object list.
>	Select all selected objects in the object list.
<	De-select all selected objects in the selected list.
<<	De-select all objects on the current page in the selected list.

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<<<	De-select all objects in the selected list (when more than one page is available, as set by the LISTBOXMAX parameter in the NATENG.INI file).
Selected group:	
Prev	Scrolls the selected list to previous page.
	This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the selected list forward one page.
	This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Decision Table Analysi	s screen:
View Log	Will show the Decision Table Analysis Log File which details the objects that have been processed along with any exception messages.
Execute	Invoke the Decision Table Analysis process for the selected objects.
	Note: This button is only enabled if any changes have been made.
Cancel	Cancel any object selection and close the current screen.

#### BUTTON NAME DESCRIPTION

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

# 3

## APPLICATION MANAGEMENT

## Chapter Overview

This chapter describes the Application Management options available to review and manage your applications, once they are loaded into the Repository.



## Field Viewer

The Field Viewer option allows you to select and review information for individual data items within an object.

The data items can be listed in the site workplace by selecting the Fields tab. This will list all the data items available within each application loaded into the Repository.

#### How to Invoke the Field Viewer Option

Use the following navigation in the site workplace:

- Select the fields tab in the site workplace.
- Select the field required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Field Viewer.

#### **Field Viewer Window**

For the selected data item, a list of the objects referencing the selected data item is displayed in the object list box.

If you select one of the objects, all the statement details for the selected data item are displayed in the source code list box. The context of the selected data item within the data definition of the selected object and the relative offsets are displayed in the context list box.

3

biect Type Filter	All Object	ts	-	Languag	e Filter Natural		
bjeet type t met				Lunguug	Naturai	•	
Object		Object Ty	pe	Line	Attribute	Ext. Object	Steplib
XX021P01		Program		0180	N7		
XX022P01		Program		0150	N7		
start XX022001	ield () All	Objects					
ntext - XX022P01 ine Sta	ield ⊚ All	Objects	Field Nar	me		Attribute	
ntext - XX022P01 .ine Sta	rt End	Level 1	Field Nar #P-PATIE	me ENT-ID		Attribute N7	

The following Figure 3-1 illustrates the Field Viewer screen

Figure 3-1 Field Viewer screen

SCREEN ITEMS	DESCRIPTIO	DN
Object Types	Allows you to se Available selecti All Objects Programs Classes Subprogram Functions Subroutine Copycodes Helproutin Dialogs Maps Local Data Global Dat Parameter DDMs Adaptors	lect the types of object to be listed. ons are: ms s es Areas a Areas Data Areas
Language	Allows you to se Available selecti	elect the programming language of the objects to be listed.
Object List	Lists all the object The list of object available in the C can be made usin from the View m The Object List t append any report A context menu and the Object V Source Code opt object. The columns ava	cts referencing the selected field. ts can be tailored to your requirements using the options Dbject Types and Language menus. Further refinement ag the option 'Change Start Position of Object List' thenu. title reflects the Object Types being listed and will sition values that may have been specified. is available to navigate between the Field Viewer screen 'iewer or Object Documentation screens, or use the View ion by using the <b>right hand mouse button</b> on a selected silable are:
	Object	The name of the object referencing the selected data item.
	Object Type	The type of object, for example Map, Program, Local Data Area.
	Line	The statement line number fo the data item within the selected object.

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SCREEN ITEMS	DESCRIPTION						
	Attribute	The format and length of the dat	a item.				
	Ext. Object	The name of the object that contains the definition if the data item is defined externally, such as in a GDA or an LDA.					
	Steplib	The steplib library name of the o if the object referencing the data library.	bject. Only applicable item is on a steplib				
Context List	Displays the context of the selected data item within the data definition of the selected object and the relative offsets if applicable.						
	If the selected d displayed.	ata item is a literal string, then no	context details will be				
	If the selected da then the context higher in relation	ata item is part of a view definition list will show data items one lev n to the selected data item.	n, group or redefinition, el lower and one level				
	Some examples	based on the following data definit	ion:				
	0020 01 #GROU 0030 02 #AJ 0040 02 REJ 0050 03 ;	JP LPHA (A10) DEFINE #ALPHA #NUMERIC (N6)					
	For data item #C	ROUP, the context list will show:					
	0020	01 #GROUP	G				
	0030 1 3	LO 02 #ALPHA	A10				
	For data item #A	LPHA, the context list will show:					
	0020	01 #GROUP	G				
	0030 1 1	LU U2 #ALPHA 02 REDEFINE #ALPHA	A10				
	0050 1	6 03 #NUMERIC	N6				
	For data item #N	UMERIC, the context list will sho	W:				
	0030 1 : 0040	LO 02 #ALPHA 02 REDEFINE #ALPHA	A10				
	0050 1	6 03 #NUMERIC	N6				
Source Code	Displays all the including the ob-	statement references for the selecte ject, the line number and the line or	d data item and object f code.				

*Note: For more information on the Object List context menu, refer to section <u>Field Viewer</u> <u>Context Menu.</u>* 

#### SCREEN ITEMS DESCRIPTION

BUTTON NAME	DESCRI	PTION			
Objects Using Field/All Objects	This option provides additional refinement of the objects listed in the Object List box.				
	All Objects	The default for the screen is to list all objects that the field is in whether they are used in the object or defined only.			
	Objects Using Field	Only objects that actually use the field as part of a programming statement are shown.			
Prev	Scrolls the available/u LISTBOXI	Scrolls the object list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.			
More	Scrolls the available/u LISTBOXI	object list forward one page. This button will be navailable depending on the value specified in the MAX parameter in the NATENG.INI file.			

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

#### **Field Viewer Context Menu**

The Field Viewer context menu is invoked by placing the cursor on any of the items listed in the Object List box and using the right hand mouse button with a single click.

#### **Object List Context Menu**

The Object List context menu allows you to navigate between the Field Viewer screen and the Object Viewer or Object Documentation screens, or use the View Source Code option.

Note: The Object List context menu is not available when displaying DDM objects.

The following Figure 3-2 illustrates the Object List context menu

Object Type Filt	er /	All Object	s	•	Languag	e Filter All	-		
Object			Object Ty	pe	Line	Attribute	Ext. Object	Steplib	
XX000G00			Global Da	ita Area	0003	A70			ſ
XX001P01			Program		0003	A70	XX000G00		
XX002P01			Program		0003	A70	XX000G00		
XX021A01			Adapter		0380	A70			
XX021M01			Мар		0170	A70			
XX021P01			Program		0000		1997000000		
XX022A01			Adapter		Object	Viewer			
XX022M01			Мар		Object	Documentation	1		
Objects Usir	ng Fiek	d 💿 All	Objects		Change	e Start Position	of Object List	F	More
					View So	ource Code			

Figure 3-2 Object List context menu

CONTEXT WIENU ITEM	DESCRIPT	ION		
Object Viewer	Invoke the Ob	ject Viewer screen.		
<b>Object Documentation</b>	Invoke the Ob	ject Documentation screen.		
Change Start Position of Object List	Reposition the list of objects to start from a particular object name.			
	The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard.			
	The reposition value is appended to the object list title to highlight the type of repositioning being applied.			
	Possible repos	ition values are:		
	Value	Result		
	Value ''(blank)	Result Reposition to the top of the object list.		
	Value ' ' (blank) *	Result         Reposition to the top of the object list.         Reposition to the top of the object list.		
	Value ' ' (blank) * ABC*	ResultReposition to the top of the object list.Reposition to the top of the object list.Only show objects that are prefixed by 'ABC'.		
	Value '' (blank) * ABC* XYZ	ResultReposition to the top of the object list.Reposition to the top of the object list.Only show objects that are prefixed by 'ABC'.Reposition to the first object that either matches or is greater than 'XYZ' and then continue the object list from that point.		
View Source Code	Value ' ' (blank) * ABC* XYZ Display the se	ResultReposition to the top of the object list.Reposition to the top of the object list.Only show objects that are prefixed by 'ABC'.Reposition to the first object that either matches or is greater than 'XYZ' and then continue the object list from that point.lected object source code in a browser.		

## **Object Viewer**

The Object Viewer option allows you to select and review data item information for individual objects. Information will be displayed to show the data items referenced within the object and the statements using those data items.

The information is presented on screen and GenTree is utilized to provide a diagrammatic tree view of the objects referenced by the selected object (object structure). If any Object Documentation is present for a particular object then the Object Title will be displayed next to the Object Name within the GenTree diagram.

#### How to Invoke the Object Viewer Option

Use the following navigation in the site workplace:

- Select the object required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Object Viewer.

#### **Object Viewer Window**

For the selected object, a list of the data items referenced by the object is listed in the field list box.

If you select one of the data items, all the statement details for the selected data item are displayed in the source code list box. The context of the selected data item within the data definition of the selected object is displayed in the context list box.

The GenTree Structure Analyzer will display the object structure for the selected object.

Note: GenTree is not available if the Object is a Predict User View.

*Note: For more information on GenTree Structure Analyzer refer to section <u>Object Viewer</u> <u>GenTree Structure Analyzer</u>.* 

The following Figure 3-3 illustrates the Object Viewer screen.

line	Name	Attribute	External Object	^
0100	#C-GROUP.#C-RELEASED	С		
080	#C-GROUP.#C-SURNAME	С		
0003	#G-MESSAGE	A70	XX000G00	=
0002	#G-SELECTED-OPTION	A1	XX000G00	
0150	#P-PATIENT-ID	N7		
0011	PATIENT.#V-DOB	A6	XX021L01	
0018	PATIENT.#V-DUE-FOR-SURGERY-NUM.	N6	XX021L01	-

Figure 3-3 Object Viewer screen

#### SCREEN ITEMS DESCRIPTION

Field List Lists all the fields referenced by the selected object. The list of fields can be tailored to your requirements using the option 'Change Start Position of Field List ... ' from the context menu. The Field List title reflects the Field Types being listed and will append any reposition values that may have been specified. A context menu is available to navigate between the Object Viewer screen and the Field Viewer screen by using the right hand mouse button on a selected data item. If the selected item is a DDM Field than it is also possible to navigate to the Database Field Access (CRUD) by Object or Predict Field Information screens. If the selected item is not a system variable or a DDM then it is also possible to display the Field Tracking diagram for the item. Note: The Predict Field Information option is only available if Natural Engineer is executing in a remote development environment, Natural version 4.2 or above is installed on the mainframe and the Predict file is mapped in the remote environment setting. The columns available are: Line The statement line number for the data item within the selected object. Name The name of the data item. Attribute The format and length of the data item. External. The name of the object that contains the definition if the Object data item is defined externally, such as in a GDA or an LDA. Note: This column is not displayed for DDM objects. The following columns are only displayed for DDM objects:

Short Name The Adabas short name for the DDM field.

SCREEN ITEMS	DESCRIPTI	ION	
	Туре	The type of DDM field. May be:  Descriptor Super Descriptor Phonetic Descriptor Hyper Descriptor Non Descriptor And/or Periodic Croup	
		<ul><li>Multiple Value field</li></ul>	
		And/or	
		<ul><li>Long Alpha</li><li>Large Object</li></ul>	
Context ListDisplays the context of the selected data item within the data the selected object and the relative offsets where applicable.If the selected data item is a literal string, then no context d displayed.If the selected data item is part of a view definition, group or then the context list will show data items one level lower a higher in relation to the selected data item.		ontext of the selected data item within the data definition of ject and the relative offsets where applicable.	of
		data item is a literal string, then no context details will b	)e
		data item is part of a view definition, group or redefinition xt list will show data items one level lower and one leve on to the selected data item.	n, el
	Some examples 0020 01 #GRC 0030 02 #A 0040 02 RE 0050 03	s based on the following data definition: OUP ALPHA (A10) EDEFINE #ALPHA #NUMERIC (N6)	
	For data item #0	GROUP, the context list will show:	
	0020	01 #GROUP G	
	Eor data item #	10 02 #ALPHA AI0	
	0020	01 #GROUP G	
	0030 1	10 02 #ALPHA A10	
	0040 0050 1	02 REDEFINE #ALPHA 6 03 #NUMERIC N6	
	For data item #1	NUMERIC, the context list will show:	
	0030 1	10 02 #ALPHA A10	
	0040 0050 1	02 REDEFINE #ALPHA 6 03 #NUMERIC N6	

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Source Code / Object List	Displays all the statement references for the selected data item including the object, the line number and the line of code.
	For DDM objects, displays a list of objects that reference the selected DDM field.
	Note: Source Code is not available if the object is a Predict User View.

#### SCREEN ITEMS DESCRIPTION

*Note: For more information on the Field List context menu, refer to section <u>Object Viewer</u> <u>Context Menus</u>.* 

Only Fields Used/All Fields	This option provides additional refinement of the fields listed in the Field List box.		
	All Fields	The default for the screen is to list all fields whether they are used in the object or defined only.	
	Only Fields Used	Only fields that are actually used within the object as part of a programming statement are shown.	
	NB: This option is unavailable if the object is a DDM or a Data Area.		
Prev	Scrolls the field list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.		
More	Scrolls the field list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.		

#### **BUTTON NAME DESCRIPTION**

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

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**Natural Engineer Application Management** 

#### **Object Viewer Context Menu**

The Object Viewer context menu is invoked by placing the cursor on any of the items listed in the Field list and using the right hand mouse button with a single click.

#### **Field List Context Menu**

The Field List context menu allows you to navigate between the Object Viewer screen, the <u>Field Viewer</u> screen, the <u>Field Tracking Diagram</u> or the <u>Database Access (CRUD) by</u> <u>Object</u> or <u>Predict Field Information</u> screens if a DDM field has been selected. For a DDM or Predict User View if the field is a descriptor then there is also the option to view the <u>Database Key Usage</u> for that field. It also provides an option to reposition the field list.

The following Figure 3-4 illustrates the Field List context menu for a DDM.

	Name		Attribute	Short Name	Туре	1
0170	CONTROL-DETA	ILS.OPID-ADDED	A8	AL		
0180	CONTROL-DETA	ILS.OPID-AMENDED	A8	AM		
0050	PATIENT-ID		M7	~~	Descriptor	
0130	RELEASED		Field Viewe	er		
0200	S1-PDFS-SURNAME S2-SURNAME-PATIENT-ID		Database Field Access (CRUD) by Object Database Key Usage			
0240						
0070	SURNAME		Channe Sh			
		Change Start Position of Field List				
•						



CONTEXT MENU ITEM	DESCRIPTION		
Field Viewer	Invoke the Field Viewer screen.		
Field Tracking			
	Forward	Invoke the <u>Field Tracking</u> Diagram for the selected item showing details that the item is moved to.	
	Backward	Invoke the <u>Field Tracking</u> Diagram for the selected item showing details that gets moved to the item.	
	NB: Field Tracking is not available for DDMs or System Variables.		
Database Access (CRUD) by Object	Invoke the <u>Database Access (CRUD) by Object</u> screen for the selected DDM/DDM field combination.		
	Note: This is only available if the field is a DDM Field		
Predict Field Information	Invoke the <u>Predict Field Information</u> screen for the selected DDM/DDM Field combination.		
	Note: This is only available for a DDM/Predict User View and if Natural Engineer is executing in a remote development environment, Natural version 4.2 or above is installed on the mainframe and the Predict file is mapped in the remote environment setting.		
Database Key Usage	Invoke the Database Key Usage screen for the selected key.		
	<i>Note: This is only available for a DDM/Predict User View and the field has to be a key e.g., Descriptor/Super-Descriptor</i>		
Change Start Position of Field List	Reposition the list of fields to start from a particular field name.		
	The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard.		
	The repositi highlight the	on value is appended to the field list title to e type of repositioning being applied.	
	Possible rep	osition values are:	
	Value	Result	
	''(blank)	Reposition to the top of the field list.	
	*	Reposition to the top of the field list.	
	ABC*	Only show fields that are prefixed by 'ABC'.	

CONTEXT MENU ITEM	DESCRIPTION	
	XYZ	Reposition to the first field that either matches or is greater than 'XYZ' and then continue the field list from that point.
	The follow	ing reposition values are for System Variables only:
	**	Reposition to the top of system variable list.
	*CURS	Reposition to the first system variable that either matches or is greater than '*CURS' and then continue the system variable list from that point.
	*DAT*	Only show system variables that are prefixed by '*DAT'.
Edit Object 'object-name'	<b>t-name'</b> Closes Natural Engineer, logs onto the application opens the appropriate Natural editor for the select	
	The 'object the site wor	-name' will be the object that has been selected in rkplace.
	This is not	available for a DDM.

#### **Object Viewer GenTree Structure Analyzer**

Object Viewer makes use of the GenTree Structure Analyzer to display all the object references within a selected object. The GenTree Structure Analyzer is automatically invoked when the Object Viewer screen is displayed.

For DDMs, GenTree will display all the objects that reference the selected DDM and list the type of access being made (e.g., READ, DELETE, STORE).

For DDM fields, GenTree will display all the objects that reference the selected DDM field, list the type of access (and the key being used if applicable) and the view names being used.

Note: A DDM (data definition module) is a set of field definitions for a database file. A DDM can be created from a database file or from other DDMs. DDMs are used to describe any type of database file, and are not restricted to Adabas database files.

Note: The amount of DDMs shown may be limited by the DDM-OBJECT-LIMIT setting in the [TREEVIEW] section of the NATENG.INI file.

For all other objects, GenTree displays the information on external references within the object selected, including data areas, include code, maps, Natural interfaces and subroutines.

If any Object Documentation is present for a particular object then the Object Title will be displayed next to the Object Name within the GenTree diagram.

Note: For more information on GenTree Structure Analyzer refer to Chapter 2 in the Natural Engineer Reporting manual.

The following Figure 3-5 illustrates a sample Object Viewer GenTree Structure Analyzer diagram for an object.



Figure 3-5 Object Viewer GenTree Structure Analyzer diagram for an object

The following Figure 3-6 illustrates a sample Object Viewer GenTree Structure Analyzer diagram for a DDM.



Figure 3-6 Object Viewer GenTree Structure Analyzer diagram for a DDM

The following Figure 3-7 illustrates a sample Object Viewer GenTree Structure Analyzer diagram for a DDM field.



Figure 3-7 Object Viewer GenTree Structure Analyzer diagram for a DDM field



## **Object Reference**

The Object Reference option allows you to review the relationships between objects, both those used by the object and those using the object.

## How to Invoke the Object Reference Option

Use the following navigation in the site workplace:

- Select the object required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Object Reference**.

## **Object Reference Window**

For the selected object, the Object Reference window displays a list of objects used by the selected objects, and, a list of objects using the selected objects.

Further object references can be reviewed by selecting objects within the used by and using lists.

CX000G00 CX001L01 CX001M01 CXEXIT	Global Data Area Local Data Area Map		
CX001L01 CX001M01 CXEXIT	Local Data Area Map		
CX001M01 CXEXIT	Map		
OXEXIT	Subroutine		
	Subroutine	XXEXIT	
CX002P01	Program		
CX003P01	(Missing)		
lame	Object Type	External Object	Library
(X002P01	Program		-
01002101	rrogram		
	001P01	XX003P01 (Missing) vard 001P01 lame Object Type XX002P01 Program	XX003P01 (Missing) vard 001P01 lame Object Type External Object XX002P01 Program

The following Figure 3-8 illustrates the Object Reference screen.

Figure 3-8 Object Reference screen

SCREEN ITEMS	DESCRIPTION		
Objects Used by List	Displays all the objects that are used by the selected object. For example Maps, Programs, Subprograms.		
	The columns available are:		
	Line	The statement line number for the referenced by/ referencing object.	
	Name	The name of the object referenced by/referencing.	
	Object Type	The type of object referenced by/referencing.	
	External Object	If the call name is contained in another physical object then the name of that object is also listed. For example, the PERFORM statement can have a name up to 32 bytes long and the code can exist in an external object that has a name of only 8 bytes, i.e., a Natural programming object in its own right.	
	Library	The name of the actual library that the object resides in.	
Objects Using List	Displays all the objects that use the selected object. For example Maps, Programs, Subprograms.		
	The columns available are:		
	Line	The statement line number for the referenced by/ referencing object.	
	Name	The name of the object referenced by/referencing.	
	Object Type	The type of object referenced by/referencing.	
	External Object	If the call name is contained in another physical object then the name of that object is also listed. For example, the PERFORM statement can have a name up to 32 bytes long and the code can exist in an external object that has a name of only 8 bytes, i.e., a Natural programming object in its own right.	
	Library	The name of the actual library that the object resides in.	
3

#### BUTTON NAME DESCRIPTION

Objects Used by List group:

Back	Scrolls the objects used list to previous object selection. This button will be available/unavailable depending on whether any selections have been made from the object reference list.
Forward	Scrolls the objects used list to the next object selection. This button will be available/unavailable depending on whether any selections have been made from the object reference list.
Prev	Scrolls the objects used list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the objects used list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Objects Using List grou	p:
Back	Scrolls the objects using list to previous object selection. This button will be available/unavailable depending on whether any selections have been made from the object reference list.
Forward	Scrolls the objects using list to the next object selection. This button will be available/unavailable depending on whether any selections have been made from the object reference list.
Prev	Scrolls the objects using list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the objects using list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.



# **Object Overview**

The Object Overview option allows you to view a concise overview of the major characteristics of an object.

The characteristics can be viewed using PDF, HTML (browser), a spreadsheet e.g., Excel or Word, where the Object Overview can be obtained in hardcopy format.

## **Object Overview**

## How to Invoke the Object Overview Option

There are two methods of invoking the Object Overview.

#### For a Single Object

Use the following navigation in the site workplace:

- Select the object required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Object Overview**.

#### For an Application

Use the following navigation in the site workplace:

- Select the application required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Reports**. This will open a sub-menu of further options.
- Select the option: **Object Overview**.

3

## **Object Overview Reports Window**

The Object Overview Reports window allows you to select objects and object characteristics for multiple objects within an application to be reviewed using any one of four reporting options. If the Object Overview option has been invoked for a single object the object name will be prefilled with the selected object name.

Object Overview Report for HOSPITA	
Object Name XX021P01	Report Characteristics           Image: Object Documentation           Image: Object Metrics
All Objects 💌	<ul> <li>Data Item Definition</li> <li>VO</li> </ul>
All 🗸	Literals Assoc. with Variables     Image: Constraint of the second se
Display Options       PDF	<ul> <li>External Calls</li> <li>Internal Subroutines</li> <li>Processing Rules</li> </ul>
	Construct Details
-10	OK Cancel

The following Figure 3-10 illustrates the Object Overview Reports screen.

Figure 3-10 Object Overview Reports screen



## SCREEN ITEMS DESCRIPTION

Object Name	The name of the	object to be used in the report.
	The object name Selection button	can be typed in or selected by using the Object Name [].
	A group of objec (asterisk) wildca prefixed with 'XX	ts can be selected by typing in a part name using an '*' rd. For example 'XX001*' will include all objects that are X001'.
	All Objects can b	be selected by typing in a single '*' (asterisk).
Object Type	Allows you to se	lect the types of object to be listed.
	Available selecti	ons are:
	<ul> <li>All Objects</li> <li>Programs</li> <li>Classes</li> <li>Subprograms</li> <li>Functions</li> <li>Subroutine</li> <li>Copycodes</li> <li>Helproutine</li> <li>Dialogs</li> <li>Maps</li> <li>Local Data</li> <li>Global Data</li> <li>Parameter</li> <li>Adapters</li> </ul>	ms rs es Areas a Areas Data Areas
Language	Allows you to se	elect the programming language of the objects to be listed.
	Available selecti     All     Cobol     JCL     Natural	ons are:
Display Options	HTML	Display the report for the selected object(s) using a browser.
	Spreadsheet	Display the report for the selected object(s) using a spreadsheet.
	Word	Display the report for the selected object(s) using Word.
	PDF	Display the report for the selected object(s) using PDF.

#### Report Characteristics

Allows you to select, which sections are to be displayed in the reports. Sections that are displayed are indicated by a 'tick' mark. There are some system defaults which will override any user selection:

- 1. Header Details are always shown.
- 2. Data Area and Text objects will show header details only.
- 3. Processing Rules will be shown on Map objects only.
- 4. Construct Details will be shown for objects generated using Natural Construct only.

#### Available sections are:

#### **Object Documentation**

User specified comments for an object created via the Object Documentation option. If no User specified comments are present in the repository then any comments at the top of the object will be shown directly from the source.

For Natural Objects this will be until the first programming statement is encountered.

Note: Natural Construct 'control' statements prefixed \*\*SAG are ignored. Natural Map Objects are also not processed.

For COBOL Objects comments are read until the ENVIRONMENT DIVISION statement is encountered.

Note: COBOL Copybooks are not processed.

No JCL Members or Procedures are processed.

Note: For more information on the Object Documentation option, refer to Chapter 3 in the Natural Engineer Application Management for Windows manual.

#### **Object Metrics**

Shows Application metrics e.g., Halstead and McCabe as shown in the Application Metrics, Object Statistics Report.

*Note: If no Metrics have been generated this will be shown as "Not Available".* 

*Note: For more information on the Object Statistics report refer to Chapter 3 in the Natural Engineer Reporting manual.* 

# 3

#### **Data Item Definitions**

Globals; Independents; Parameters and Locals for Natural Objects. *Note: Where parameters are within a PDA the PDA will be expanded to show all parameter definitions.* 

Linkage Section and Copybook Usage for COBOL Objects.

Note: Copybooks are expanded for COBOL Objects and Copybooks are sorted into their location e.g., Working Storage Division or Linkage Section.

#### I/O

All input and output type statements.

#### Literals Assoc. with Variables

Shows data items that are used that have literals moved to them.

If this option is selected and a single object name is shown then a further screen will be presented allowing the selection of fields to filter the resulting output. If no fields are selected then all parameter data that have literals associated with them will be shown.

Note: The heading in the report may change depending on the type of selection. For example when showing parameters and the object is COBOL then the heading in the report will be changed to Literals Associated with Linkage Section Variables.

Note: This option is not selected as default.

#### **Database Access**

All statements related to database access.

#### **External Calls**

Any statements that result in processing to be invoked in objects outside the current object. Also COBOL copybooks in the Procedure division and Natural copycodes are listed.

#### **Internal Subroutines**

Any statements that invoke internal subroutines within an object.

#### **Processing Rules**

Processing rules within a map.

#### **Construct Details**

Any Construct Model and User Exit details.

#### **Class Interface**

Any Class Property and Method details.

**Pin/Unpin** If 'pinned' then the dialog will stay on the Natural Engineer workspace following the invocation of the report to allow for further selection. If 'unpinned' then the dialog will exit after the report is invoked.

3

#### BUTTON NAME DESCRIPTION

Object Name Selection []	Invokes the General Selection screen, listing all the objects available for the currently selected application.
	Note: For more information on the General Selection screen refer to Chapter 2 in the Concepts and Facilities manual.
ОК	Accept the selections made and invoke the Object Overview report process.
	If the dialog is 'pinned' then it will stay on the Natural Engineer workspace following the invocation of the report to allow for further selection. If 'unpinned' then the dialog will exit after the report is invoked.
Cancel	Cancel the Object Overview report process and close the current screen regardless of pin state.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.



## **Object Header Details Overview**

This will show the object header details for the selected object. This information is always shown on every report.

The details shown are:

- Application.
- Object Name.
- Object Language.
- Object Type.
- Object Mode. (only for Natural objects)
- Object Save Date. (only for Natural objects)
- Object Catalog Date. (only for Natural objects)
- Total Statement Lines.
- Total Comment Lines.
- Code Generated by: Construct. (only for Natural Construct objects):

## **Object Characteristic Details Overview**

The object characteristics that are displayed fall into three main categories:

#### 1. Object Documentation.

Object Documentation	This section will always be shown for each object. It will detail any comments that have been specified using the Object Documentation function in Natural Engineer.
	For example:
	Object Documentation
	Title: XX001P01 – HOSPITAL system main menu
	Comments : This program is the main executable for the HOSPITAL system. It will display the main menu showing the main functions available.
	If no Object Documentation has been defined within Natural Engineer for an object then comments will be shown directly from the source up to the first programming statement.
	Note: For more information on the Object Documentation option, refer to Chapter 4 in the Natural Engineer Application Management for Windows manual.

3

Object Metrics	Shows Application metrics e.g., Halstead and McCabe as shown in the Application Metrics, Object Statistics Report. Note: If no Metrics have been generated this will be shown as "Not Available". Note: For more information on the Object Statistics report refer to Chapter 3 in the Natural Engineer Reporting manual.	
	Object Metrics	
	• HalLen: 51	
	• HalVoc: 26	
	• HalDiff: 12.47	
	• HalVol: 239.72	
	• HalLvl: 0.08	
	• HalEff: 2988.54	
	• HalTime: 166.03	
	• McCabe: 2	

## 2. Data Item Definition.

## For Natural Objects

Globals	All external Global Data Area (GDA) objects used within the selected object will be listed. No individual global data items are shown. For example: DEFINE DATA GLOBAL USING XX000G00. Would be displayed as: Globals
	XX000G00
Independents	All Application Independent Variables (AIV) will be shown. These will be the actual data items that have been defined using the INDEPENDENT clause. For example: DEFINE DATA INDEPENDENT 01 +AIV-NAME (A25). Would be displayed as: Independents
	+AIV-NAME

Parameters	Both the external Parameter Data Area (PDA) objects and/or any internally defined parameter data items specified in an object under the PARAMETER clause. The external PDA objects will be expanded to show the fields and their definitions.
	For example:
	DEFINE DATA
	PARAMETER USING XXCONPDA
	PARAMETER
	01 #EXTRA-PARM1 (A10)
	Would be displayed as:
	Parameters
	Using XXCONPDA
01 #P-CONFIRM-UPDATE (A1)	
	01 #P-OPTION (A1)
	01 #EXTRA-PARM(A10)
Local Using	All external Local Area (LDA) objects used within the selected object will be listed. No individual local data items are shown. For example:
	DEFINE DATA
	LOCAL USING XX001L01.
	Would be displayed as:
	Local Using
	XX001L01

## For COBOL Objects

Linkage Section	All parameter data defined within the Linkage Section is shown. For example:
	Linkage Section
	01 TWA
	05 TWA-1ST-WORD PIC S9(8)
	05 TWA-2ND-WORD PIC S9(8)
	05 TWA-3RD-WORD PIC S9(8)
	05 TWA-4TH-WORD PIC S9(8)
	05 TWA-5TH-WORD PIC S9(8)
	05 TWA-6TH-WORD PIC S9(8)

3

Copybook Usage	All external copybook objects used within the working storage section and the linkage section within the selected object will be listed.
	For example:
	1
	Copybook Usage
	Working-Storage Section
	COPYB1
	Linkage Section
	COPYB2

## 3. Object Procedural code details.

1/0	All input and output statements are reported. For example:
1/0	An input and output statements are reported. For example.
	0020 INPUT #PARM-1 #PARM-2
	0100 INPUT USING MAP 'XX021M01'
	0190 REINPUT 'PLEASE ENTER A VALID ID'
	<b>0330 WRITE 'FINANCIAL REPORT'</b>
	0340 DISPLAY #EXPENDITURE 15T #TAX-VAL
	0590 PRINT 'END OF BATCH RUN'
Literals Assoc. with Variables	All data items are shown if they have literals moved to them.
	For example:
	Literals Associated with Variables
	• #P-NUMBER
	0250 MOVE 00000 TO #D NUMBED
	0330 MOVE I TO #P-NUMBER
	If this option is selected and a single object name is shown then a further screen will be presented allowing the selection of fields to filter the resulting output. If no fields are selected then all parameter data that have literals associated with them will be shown
	Note: The heading in the report may change depending on the type of selection. For example when showing parameters and the object is COBOL then the heading in the report will be changed to Literals Associated with Linkage Section Variables.
	Note: This option is not selected as default.

Database Access	All database access statements are reported. The order is by ascending statement line number within each view name. The primary key used will also be shown. For example:
	Database Access
	EMP1 at 0520 by FIND (Key=NAME)(EMPLOYEES)
	EMP2 at 0990 by UPDATE (EMPLOYEES)
	VEH1 at 0700 by STORE (VEHICLES)
	VEH1 at 0740 by FIND (Key=PERSONNEL-ID) (VEHICLES)
	VEH1 at 0810 by READ (VEHICLES)
	VEH1 at 0840 by GET (VEHICLES)
External Calls	All references to external objects, such as programs, subprograms and subroutines. Also COBOL copybooks in the Procedure division and Natural copycodes are listed.
	The order is by ascending statement line number within each external object. For example:
	External Calls
	XX002P01 by FETCH at 1100
	XX002P01 by FETCH at 1980
	XXVALCC by INCLUDE at 2170
Internal Subroutines	Any references to internal subroutines within an object. The order is by ascending statement line number for each internal subroutine. For example:
	Internal Subroutines
	##DATE-FORMAT by PERFORM at 0550
	##DATE-FORMAT by PERFORM at 1020
	##TAX-CALC by PERFORM at 0700
Processing Rules	Any processing rules found within maps. Both 'Free' and 'Automatic' rules are catered for. For example:
	Processing Rules
	Automatic Rule Rank 1 PERSONNEL-ID
	Automatic Rule Rank 1 BIRTH
	Free Rule Rank 0 *PF-KEY
	Free Rule Rank 0 #INPUT-NAME

Construct Details	This section is only available for objects that have been generated using CONSTRUCT. It will show any Construct Model and User Exi information. For example: <b>Construct Details</b>				
	Model: XX-BROWSE				
	User Exit LOCAL-DATA from 0300 to 0500				
	User Exit START-OF-PROGRAM from 0750 to 1000 User Exit SET-PF-KEYS from 1995 to 2115				
Class Interfaces	This section is only available for objects that are Natural class modules. It will show any Class Property and Method information. For example:				
	Class Interfaces				
	Property O_APPLICATION				
	Property O_OBJECT				
	Method GET_OBJECT_PROPERTIES is C-GT011N				
	Method GET_OBJECT_DEFINITIONS is C-GT012N				

# Steplib Object Usage

The Steplib Object Usage option provides the facility to review object usage from steplibs across all applications loaded in the Repository.

This can be used to highlight the repercussions if you plan to modify any objects from steplibs.

For example, changing some business logic within a sub-program to suit one business application might have an adverse affect on a different business application, if the sub-program is on a steplib library and utilized by both business applications.

The Steplib Object Usage option is only available for objects that are located on a steplib library. It will be available from an application library using the steplib library and the steplib library itself, if it has been loaded into the Repository.

The Steplib Object Reference report gives more comprehensive details on where an object on a steplib has been used. This is available from the object node of an object that resides on a steplib application.

Note: When dealing with steplibbed applications, any steplib library objects referenced by the application will be automatically extracted and loaded for that application. To ensure that the Repository has a more complete picture of all your applications the steplib library should be extracted and loaded either before or after the steplibbed application.

## How to Invoke the Steplib Object Usage Option

Use the following navigation in the site workplace:

- Select the object required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Steplib Object Usage.

3

# Steplib Object Usage Window

For the selected object, the Steplib Object Usage window displays a list of applications that use the selected steplib library object

💦 Steplib Object	Usage			
Applications Usin	g XX003P01 [Steplib: HOSF	PSTEP]		
HOSPSET	User Acceptance Ver	sion of HOSPITAL		
Prev More				

The following Figure 3-16 illustrates the Steplib Object Usage screen.

Figure 3-16 Steplib Object Usage screen

#### SCREEN ITEMS DESCRIPTION

Application List	The name of the application using the selected steplib library object.
Description List	The application description.
	Note: The application description will appear only if it has been specified in the <u>Application Properties</u> screen. For more information refer to Chapter 2 in the Natural Engineer Application Management for windows manual.

BUTTON NAME	DESCRIPTION

Prev	Scrolls the application list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the application list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

# Entry Point Structure Diagram

The Entry Point Structure Diagram option will draw a structured diagram of an application.

This diagram will provide a pictorial view of an application showing the various interobject activity, adding value to existing systems documentation for both development and production support tasks.

The process is initiated by defining entry points into an application, or into a technical or business function within an application, for documentation purposes, that will then be graphed in either a GenTree tree view structure, Visio or a spreadsheet e.g., EXCEL when executed.

## **Tree View Graphing in GenTree**

The diagram starts with the entry point object and displays all other objects referenced by that object, and the objects referenced by those, and so on. The expansion of the object levels is controlled by using interactive expand [+] and collapse [-] icons on the diagram. The number of object levels is infinite.

Once an object has already been processed for an entry point and the same object is found within other entry point chains, then no further processing will be made for that object. The diagram will show the object name and be suffixed with a comment of '(Recursive)'.

Any missing objects (i.e., objects not loaded into the Repository) are shown in red with a suffix comment of '(Missing)' for Natural objects or '(Non-Natural Objects Missing)' for non-Natural objects.

Any objects that are from a steplib library are shown with a suffix comment of '(Steplib: "steplib library name")'.

Any objects referenced by objects using alphanumeric variables rather then a literal constant (known as Soft Links) are shown with a suffix comment depending on the value of the SOFTLINK-DETS setting in the TREEVIEW section of the NATENG.INI file. If set to 'Y' detailed information will be shown e.g., '(\*\*Softlink\*\* "variable-name")'. If set to 'N' concise information will be shown e.g., (SL).

Any objects controlled by language code functionality are shown with a suffix comment of '(\*\*Language Obj\*\*"variable-name").

Any external subroutines are shown with a suffix comment of the actual subroutine name used by the PERFORM statement.

It is possible to specify exclusions to prevent expansion of specified objects. Exclusions can be specified at object name and/or object type levels. Any object matching the exclusion criteria specified will be shown in red with a suffix comment of '(Excluded Object)' for object name exclusions, and '(Excluded Object Type)' for object type exclusions. Excluded objects will show no further entry point chains.

Further viewing refinements are available to display or omit any Object Documentation object titles and whether exclusions are to be displayed or omitted from the diagram.

For each Entry Point Structure Diagram, a legend of the selected options used for the diagram is shown at the top.

The Entry Point Structure Diagrams can be saved, retaining any expansions as they are being displayed at the time the save is issued. The saved diagrams can be opened in GenTree and the diagram will appear the same as it was when it was saved, with all the interactive expand and collapse options once again available.

The Entry Point Structure Diagrams can be printed and provide a 'what you see is what you get' image of what is being displayed in GenTree at the time of the print.

The complete details for an Entry Point Structure Diagram may be exported to a spreadsheet e.g., Microsoft Excel by selecting the 'Export' button.

Note: For more information on GenTree refer to Chapter 2 in the Natural Engineer Reporting manual.

## **Graphing in Visio**

The Entry Point Structure Diagram may be displayed in a structured format in Microsoft Visio. The diagram starts with the entry point object and displays all other objects referenced by that object, and the objects referenced by those, and so on up to the number of levels specified..

If the number of levels has been reached but an object has further references then the relevant box on the diagram will be shown in blue.

# 3

Once an object has already been processed for an entry point and the same object is found within other entry point chains, then no further processing will be made for that object. The diagram will show the object name and be suffixed with a comment of '(Recursive)'.

Any missing objects (i.e., objects not loaded into the Repository) are shown in red with a suffix comment of '(Missing)'.

Any objects that are from a steplib library are shown with a suffix comment of '(Steplib: "steplib library name")'.

Any objects referenced by objects using alphanumeric variables rather then a literal constant (known as Soft Links) are shown e.g., SL: "variable-name")'.

Any objects controlled by language code functionality are shown with a suffix comment of '(Lang Obj:"variable-name").

Any external subroutines are shown with a suffix comment of the actual subroutine name used by the PERFORM statement.

Double clicking on a box will activate GenSource to display the actual source code for the object selected alongside the diagram.

It is possible to specify exclusions to prevent the further display of specified objects. Exclusions can be specified at object name and/or object type levels. Any object matching the exclusion criteria specified will not be shown on the diagram.

When graphing to VISIO there is a maximum amount of 1000 objects that may be displayed.

Note: For more information on GenSource refer to Chapter 2 in the Natural Engineer Reporting manual.

## **Graphing in a Spreadsheet**

The Entry Point Structure Diagram may be displayed in a comma delimited format ina spreadsheet e.g., Microsoft EXCEL or OpenOffice Calc. The output starts with the entry point object and displays all other objects referenced by that object, and the objects referenced by those, and so on up to the number of levels specified.

Once an object has already been processed for an entry point and the same object is found within other entry point chains, then no further processing will be made for that object. The diagram will show the object name and be suffixed with a comment of '(Recursive)'.

Any missing objects (i.e., objects not loaded into the Repository) are shown with a suffix comment of '(Missing)'.

Any objects that are from a steplib library are shown with a comment of '(Steplib: "steplib library name")'.

Any objects referenced by objects using alphanumeric variables rather then a literal constant (known as Soft Links) are shown e.g., SL: "variable-name")'.

Any objects controlled by language code functionality are shown with a comment of '(Lang Obj:"variable-name").

Any external subroutines are shown with a comment of the actual subroutine name used by the PERFORM statement.

It is possible to specify exclusions to prevent the further display of specified objects. Exclusions can be specified at object name and/or object type levels. Any object matching the exclusion criteria specified will not be shown on the diagram.

## How to Invoke the Entry Point Structure Diagram

The Entry Point Structure Diagram can be invoked in different ways:

#### 1. Application Level or main JCL node

Use the following navigation in the site workplace:

- Select the application or main JCL node required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Entry Point Structure Diagram.

*Note: This will display the Entry Point Structure Diagram window where refinement options may be entered.* 

#### 2. Object or JCL Object Level

Use the following navigation in the site workplace:

- Select the application object or JCL object required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Entry Point Structure Diagram.
- Choose the output destination: Tree View, Visio or Spreadsheet.

Note: This will result in the immediate display of the Entry Point Structure Diagram for the selected object. It will bypass the Entry Point Structure Diagram window.

#### 3. Other Options

The Entry Point Structure Diagram may also be invoked from the following Natural Engineer options:

- <u>JCL Viewer</u>
- <u>Global Object Usage</u>.
- Service Viewer.

# **Entry Point Structure Diagram Window**

The Entry Point Structure Diagram window allows you to select the main entry points within an application.

The following Figure 3-17 illustrates the Entry Point Structure Diagram screen.

Object Filtering Options		Exclusio	ns	
Object Types All Objects	Language	•	Object Name	Object Types
All Objects AX021P01 AXC0B BX021P01 XX001P01 XX002P01 XX002P01 XX022P01 XX022P01 XX022P01 XX025P01 XX025P01 XX025P01 XX025P01 CPrev More	Selected XX021P01	1 2 3 4 5 6 7 8 9		V None Programs Classes Subprograms Functions Helproutines Dialogs Maps Cobol Source JCL Members
<ul> <li>What I Call</li> </ul>	Show Object Titles	10		JCL Procedu
What Calls Me	Show Full Soft Link Details Show Excluded			Delete Row
Output Tree View Spreadsheet Visio	Number of Levels	0		
D-1				Cancel

Figure 3-17 Entry Point Structure Diagram screen

# 3

## SCREEN ITEMS DESCRIPTION

Object Filtering group:	
Object Types	Allows you to select the types of object to be listed. Available selections are:
	<ul> <li>All Objects</li> <li>Programs</li> <li>Subprograms</li> <li>Functions</li> <li>Subroutines</li> <li>Dialogs</li> </ul>
Language	<ul> <li>Allows you to select the programming language of the objects to be listed.</li> <li>Available selections are: <ul> <li>All</li> <li>Cobol</li> <li>JCL</li> <li>Natural</li> </ul> </li> </ul>
Object Selection group:	
Object List	List of all the objects used by the currently selected application.
	Note: Only object types of Dialog, Function, Program, Subprogram, and Subroutine will be displayed.
	The list of objects can be tailored to your requirements using the options available in the Object Types and Language menus. Further refinement can be made using the option 'Change Start Position of Object List' from the Object List context menu.
	The Object List title reflects the Object Types being listed and will append any reposition values that may have been specified.
	Objects can be selected by using a double click with the <b>left hand mouse button</b> .
Selected	Lists all the objects that have been selected as entry points.
	Note: There is a maximum limit of 29 objects allowed.
	Objects can be de-selected by using a double click with the <b>left hand mouse button</b> .
Criteria Options group:	
What I Call	Will display all objects that the selected entry points reference.
What Calls Me	Will display all objects that reference the selected entry points.
Show Object Titles	Controls the display of Object Documentation object titles. Available selections are:

SCREEN ITEMS	DESCRIPTION		
	'Tick'	Will display any available Object Documentation object title for each object.	
		Note: Will not display if it is the default value of object name. For more information refer to Chapter 3 in the Natural Engineer Application Management manual	
	د د	The Object Documentation object title will not appear on the diagram.	
Show Full Soft Link Details	Controls th present. Available s	e detail of Softlink Information to be displayed if softlinks are elections are:	
	'Tick'	Will display (**Softlink** "variable-name") if the object is a soft link.	
	د د	Will display (SL) if the object is a soft link.	
Show Excluded	Controls th Available s	e display of Entry Point Structure Diagram exclusions. elections are:	
	'Tick'	Will display the excluded object on the diagram but no further relationship chain information for that object will be displayed. The object will be marked as '(Excluded Object)' for object name exclusions, and '(Excluded Object Type)' for object type exclusions.	
		The excluded object will not appear on the diagram.	
	Note: This	option is only available if exclusions have been specified.	
Note: The criteria opti	ons are only d	available if the output destination is Treeview or Spreadsheet.	
Output group:			
Tree View	Will display the report in GenTree structure.		
Visio	Will display the report in Microsoft Visio.		
Spreadsheet	Will display the report in a spreadsheet.		
Number of Levels	If the selected output destination is Visio or Spreadsheet then the amount of levels displayed will be limited by this setting.		
Exclusions group:			
Object Name	The object 10 objects	name to be marked for exclusion. There is a maximum limit of allowed (part names using wildcards count as 1 object).	
	The object using an '*'	name can be input using either a complete name or part name (asterisk) wildcard. For example:	

3

SCREEN ITEMS	DESCRIPTION		
	XX021P01	Object 'XX021P01' will be excluded. The diagram would show 'XX021P01 (Excluded Object)' and be highlighted in red.	
	XX001*	Any objects prefixed with 'XX001' will be excluded. The diagram would show the object name followed by the '(Excluded Object)' suffix and be highlighted in red.	
Object Types	Allows you to select the types of object to be excluded.		
	Object type exclusions will exclude all objects for a selected object type. Selections are made using the Exclude Object Types drop-menu on the Entry Point Exclusions screen. For example:		
	If object type <b>Maps</b> has been selected, then any map objects found in the entry point chain will show the map object name followed by the '(Excluded Object Type)' suffix and be highlighted in red.		
	Note: Objects that are excluded can be displayed or omitted from the Entry Point Structure Diagram using the 'Show Excluded' option on the Entry Points screen.		
	Available selections are:		
	<ul> <li>None</li> <li>Programs</li> <li>Classes</li> <li>Subprogr</li> <li>Functions</li> <li>Subroutin</li> <li>Helprouti</li> <li>Dialogs</li> <li>Maps</li> <li>Cobol Sou</li> <li>JCL Men</li> <li>LCL Proc</li> </ul>	3 *ams 5 nes ines urce nbers *edures	
Entry Point Structure I	Diagram Screen:		
Pin/Unpin	If 'pinned' then	n the dialog will stay on the Natural Engineer workspace	

following the invocation of the report to allow for further selection. If 'unpinned' then the dialog will exit after the report is invoked.

#### BUTTON NAME DESCRIPTION

Object List group:

Prev	Scrolls the object list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the object list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Selection / De-selection	buttons:
>>	Select all objects on the current page in the object list.
>	Select all selected objects in the object list.
<	De-select all selected objects in the selected list.
<<	De-select all objects on the current page in the selected list.
Exclusions group:	
Delete Row	Delete the object name from the selected row.
Entry Point Structure Di	agram screen:
	6
OK	Save the selections made and invoke the Entry Point Structure Diagram process.
OK	Save the selections made and invoke the Entry Point Structure Diagram process. If the dialog is 'pinned' then it will stay on the Natural Engineer workspace following the invocation of the report to allow for further selection. If 'unpinned' then the dialog will exit after the report is invoked.
OK Cancel	Save the selections made and invoke the Entry Point Structure Diagram process. If the dialog is 'pinned' then it will stay on the Natural Engineer workspace following the invocation of the report to allow for further selection. If 'unpinned' then the dialog will exit after the report is invoked. Cancel the Entry Point Structure Diagram process and close the current screen regardless of pin state.
OK Cancel Apply	Save the selections made and invoke the Entry Point Structure Diagram process. If the dialog is 'pinned' then it will stay on the Natural Engineer workspace following the invocation of the report to allow for further selection. If 'unpinned' then the dialog will exit after the report is invoked. Cancel the Entry Point Structure Diagram process and close the current screen regardless of pin state. Save the selections made and retain the current screen. The Entry Point Structure Diagram process is not invoked.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

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# **Entry Point Structure Diagram Context Menu**

The Entry Point Structure Diagram context menu is invoked by placing the cursor on any of the items listed in the Object list and using the right hand mouse button with a single click.

CONTEXT MENU ITEM	DESCRIPTION		
Change Start Position of Object List	Reposition the list of objects to start from a particular object name.		
	The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard.		
	The reposition value is appended to the object list title to highlight the type of repositioning being applied.		
	Possible reposition values are:		
	Value	Result	
	ʻʻ(blank)	Reposition to the top of the object list.	
	*	Reposition to the top of the object list.	
	ABC*	Only show objects that are prefixed by 'ABC'.	
	XYZ	Reposition to the first object that either matches or is greater than 'XYZ' and then continue the object list from that point.	

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# **Object Cross Reference Diagram**

The Object Cross Reference Diagram option provides a mechanism to draw a structured diagram representing the relationships between objects, both those used by the object and those using the object.

The process is initiated by selecting an object within an application. All references of external objects are shown on the Object Cross Reference Diagram, these can include data areas, copycodes, maps, helproutines, programs, subprograms, external subroutines and dialogs. A link chain is used within the diagram to map the inter-object relationships.

The complexity of the diagram can be controlled by specifying the number of levels to be applied and/or specifying objects to be excluded.

The Object Cross Reference Diagrams are drawn and displayed using Microsoft Visio. From the diagram it is possible to view the source code of any object on the diagram using GenSource. This is invoked by simply selecting any object on the diagram.

Note: For more information on GenSource refer to Chapter 2 in the Natural Engineer Reporting manual.

The diagrams can be printed and/or saved using the functions found within Microsoft Visio, providing useful additional systems documentation that will complement existing systems specifications.

## **Object Cross Reference Diagram Filter Options**

There are three main controlling options that will determine the content and complexity of the Object Cross Reference Diagram produced for a selected object.

## 1. Type of Object Relationship

There are two types of object relationship available:

#### 1. Objects Referenced by the Object

This will start at the selected object and shows all the objects referenced by that object, and the objects referenced by those, and so on. This can be said to represent the 'Forward' relationship chain for an object

#### 2. Objects Referencing the Object

This will start at the selected object and shows all the objects referencing that object and any respective inter-object relationship links. This can be said to represent the 'Reverse' relationship chain for an object.

Note: This relationship view will only show objects that issue calls to other objects, *i.e.*, no data areas will be shown (unless they are the selected starting object).

#### 2. The Number of Processing Levels

The number of processing levels will control the 'Forward' or 'Reverse' relationship chains for each object included in the diagram. The process is limited to a range of 1 to 9 levels.

To help illustrate this, the following 4 objects show their inter-object relationships within their source code.

PROG1	PROG2	PROG3	PROG4
:::: 0100 FETCH 'PROG2' :::: 0300 FETCH 'PROG3 	:::: 0100 FETCH 'PROG4' ::::	:::: 0100 WRITE 'HELLO WORLD' ::::	:::: 0100 FETCH 'PROG1' ::::

Using PROG1 as the starting object, the 4 objects have the following processing levels:

Level 0	PROG1
Level 1	PROG2 (called by PROG1) + PROG3 (called by PROG1)
Level 2	PROG4 (called by PROG2)

Based on this information, the Object Cross Reference Diagram content can be controlled by setting the number of levels.

The following Figure 3-18 illustrates the Object Cross Reference Diagram starting at object PROG1 with number of levels set to 1.



Figure 3-18 Object Cross Reference Diagram with number of levels set to 1

The Object Cross Reference Diagram shows the inter-object relationships between PROG1, PROG2 and PROG3. PROG4 is not shown as it is at the next processing level (level 2).

The following Figure 3-19 illustrates the Object Cross Reference Diagram starting at object PROG1 with number of levels set to 2.



Figure 3-19 Object Cross Reference Diagram with number of levels set to 2

The Object Cross Reference Diagram shows the same inter-object relationships between PROG1, PROG2 and PROG3 as Figure 3-18. Additionally, PROG4 is now shown which also includes the relationship between PROG4 and PROG1.

## 3. Excluding objects

Objects can be excluded from the Object Cross Reference Diagram to help reduce the complexity and remove any inter-object relationships that may not be of any interest for the diagram being requested.

The following Figure 3-20 illustrates the Object Cross Reference Diagram starting at object PROG1 with number of levels set to 2 and Object PROG2 marked as excluded.



Figure 3-20 Object Cross Reference Diagram with object PROG2 marked as excluded

The Object Cross Reference Diagram does not show any processing levels from PROG2 as this has been marked for exclusion.

3

3

## How to Invoke the Object Cross Reference Diagram

The Object Cross Reference Diagram can be invoked in two different ways:

#### 1. Application Level

Use the following navigation in the site workplace:

- Select the application required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Object Cross Reference Diagram.

#### 2. Object Level

Use the following navigation in the site workplace:

- Select the object required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Object Cross Reference Diagram.

Note: This will result in the immediate display of the Object Cross Reference Diagram for the selected object. It will bypass the Object Cross Reference Diagram window.

## **Object Cross Reference Diagram Window**

This will invoke the Object Cross Reference Diagram screen, which controls all the diagram selection options.

The following Figure 3-21 illustrates the Object Cross Reference Diagram screen.

Object Types All Objects	Langua	ge All 🔻
All Objects - [XX]	Exclusions	
××××××××××××××××××××××××××××××××××××××		Object Name
XX001A01 XX001L01	1	
XX001M01 XX001P01	2	
XX002A01	3	
XX002L01 XX002M01	4	
XX002P01 -	5	
Prev More	6	
	7	
Number of levels 1	8	
Referenced by <	9	
Referencing	10	
Show Excluded		Delete Row
		Delete Norr

Figure 3-21 Object Cross Reference Diagram screen

Any objects prefixed with 'XX001' will be excluded.

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Object Filtering Options	s group:		
<b>Object Types</b>	Allows you to select the types of object to be listed.		
Language	<ul> <li>Allows you to select the programming language of the objects to be listed.</li> <li>Available selections are: <ul> <li>All</li> <li>Cobol</li> <li>JCL</li> <li>Natural</li> </ul> </li> </ul>		
Object Selection group:			
Object List	List of all the objects used by the currently selected application. The list of objects can be tailored to your requirements using the options available in the Object Types and Language menus. Further refinement can be made using the option 'Change Start Position of Object List' from the Object List context menu.		
	The Object List title reflects the Object Types being listed and will append any reposition values that may have been specified.		
Exclusions group:			
Object Name	The object name to be marked for exclusion. The object name can be input using either a complete name or part name using an '*' (asterisk) wildcard. For example: XX003P01 Object 'XX003P01' will be excluded.		

## SCREEN ITEMS DESCRIPTION

XX001\*

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Diagram Filter Options group:

Number of levels	This will set to 9.	the number of levels to be processed. Valid selections are 1		
Referenced by	This will produce a diagram displaying a forward relationship chain of all the objects being referenced starting from the selected object. The number of forward relationships is controlled by the Number of levels value.			
	Note: This option is not available for object types Global Data Areas, Local Data Areas and Parameter Data Areas.			
Referencing	This will produce a diagram displaying a reverse relationship chain of all the objects referencing the selected object and their respective inter-object relationship links. The number of reverse relationships is controlled by the Number of levels value.			
Show Excluded	Controls the display of Object Cross Reference Exclusions. Valid selections in the check box are:			
	'Tick'	Display the excluded object on the diagram but no further relationship chain information for that object will be displayed. The object will be marked as '(Excluded)'.		
		The excluded object will not appear on the diagram.		
	Note: This option is only available if exclusions have been specified.			
Object Cross Reference	Diagram Scre	en:		
	TCC : 12.4			

**Pin/Unpin** If 'pinned' then the dialog will stay on the Natural Engineer workspace following the invocation of the report to allow for further selection. If 'unpinned' then the dialog will exit after the report is invoked.
3

Object List group:		
Prev	Scrolls the object list to previous page.	
	This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.	
More	Scrolls the object list forward one page.	
	This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.	
Exclusions group:		
Delete Row	Delete the object name from the selected row.	
Object Cross Reference Diagram screen:		
ОК	Save the selections made and invoke the Object Cross Reference Diagram process.	
Cancel	Cancel the Object Cross Reference Diagram process and close the current screen.	
Apply	Save the selections made and retain the current screen. The Object Cross Reference Diagram process is not invoked.	
	Note: This button is only enabled if any changes have been made.	

#### BUTTON NAME DESCRIPTION

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

3

Natural Engineer Application Management

# **Object Cross Reference Diagram Context Menu**

The Object Cross Reference Diagram context menu is invoked by placing the cursor on any of the items listed in the Object list and using the right hand mouse button with a single click.

CONTEXT MENU ITEM	DESCRIPT	ION	
Change Start Position of Object List	Reposition the name.	list of objects to start from a particular object	
	The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard.		
	The reposition highlight the ty	value is appended to the object list title to ype of repositioning being applied.	
	Possible repos	ition values are:	
	Value	Result	
	ʻʻ(blank)	Reposition to the top of the object list.	
	*	Reposition to the top of the object list.	
	ABC*	Only show objects that are prefixed by 'ABC'.	
	XYZ	Reposition to the first object that either matches or is greater than 'XYZ' and then continue the object list from that point.	

3

## **Example Object Cross Reference Diagram**

The following Figure 3-22 illustrates the Object Cross Reference Diagram for object XX001P01 from the HOSPITAL system.



Figure 3-22 Object Cross Reference Diagram

The Object Cross Reference Diagram shows the objects referenced by object, starting from object XX001P01 for 3 levels. To the left of the diagram is the GenFlow.vss stencil showing all the shapes available for each object within a diagram.

The GenFlow.vss stencil can be located in the DATA\VSD folder of the Natural Engineer installation.

The source code for an object can be viewed using GenSource, which is invoked by selecting any object on the diagram and using a double-click of the left-hand mouse button.

Note: For complex diagrams where link lines and object texts are difficult to distinguish, the diagrams can be re-organized by dragging and dropping selected objects.

3

# Internal Object Logic (JSP) Diagram

The Internal Object Logic (JSP) Diagram option provides a mechanism to document the internal processing logic of an object in a structured diagram.

The diagrams produced can provide useful additional systems documentation that will complement existing systems specifications and can be viewed either on-line or as hardcopy by printing the diagrams.

The Internal Object Logic (JSP) Diagram option uses the standards laid down by the Jackson Structured Programming technique (JSP) to handle the three main processing constructs within a programming object:

#### 1. Sequential

Standard statements that can stand alone within an object. Examples of these for Natural would be:

MOVE #A TO #B RESET #CALL-PROGRAM MULTIPLY #NET-AMOUNT BY #TAX-RATE GIVING #GROSS-AMOUNT

#### 2. Conditional

Conditional statements that will execute sequential statements based on the condition controlling them. Examples of these for Natural would be:

IF / END-IF AND IF / ELSE blocks DECIDE ON FIRST/EVERY CONDITION DECIDE FOR FIRST/EVERY VALUE

#### 3. Iteration

Repeating statements that are in a controlled loop and execute until the loop control condition has been satisfied. Examples of these for Natural would be:

READ, FIND, HISTOGRAM REPEAT WHILE / UNTIL FOR /END-FOR statement blocks

The Internal Object Logic (JSP) Diagrams are drawn and displayed using Microsoft Visio. When the diagram has been completed, GenSource is activated to display the actual source code for the object alongside the diagram.

There is a Navigation link between the Internal Object Logic (JSP) Diagram and the source code shown in GenSource, whereby selecting any box within the diagram will position at the respective source code within GenSource. Alternatively, selecting any source code line within GenSource will position you to the respective box within the Internal Object Logic (JSP) Diagram. This assists in maintaining position within either a simple or complex diagram far more productive and makes the understanding of the logic flow easier to follow.

# Note: For more information on GenSource refer to Chapter 2 in the Natural Engineer Reporting manual.

Within the Microsoft Visio, a page can be found for the object that has been selected and drawn. The object name will be shown in a tab at the foot of the page. If the selected object uses any internal subroutines or paragraphs, then a page for each internal subroutine/paragraph referenced will also be drawn. For these, the name placed in the tab will be the name referenced within the object prefixed by 'SR:' for a section or 'PR:' for a paragraph.

3

# How to Invoke the Internal Object Logic (JSP) Diagram

The Internal Object Logic (JSP) Diagram can be invoked in two different ways:

### 1. Application Level

Use the following navigation in the site workplace:

- Select the application required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Internal Object Logic (JSP) Diagram.

### 2. Object Level

Use the following navigation in the site workplace:

- Select the object required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Internal Object Logic (JSP) Diagram.

Note: This will result in the immediate display of the Internal Object Logic (JSP) Diagram for the selected object. It will bypass the Internal Object Logic (JSP) Diagram window.

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# Internal Object Logic (JSP) Diagram Window

This will invoke the Internal Object Logic (JSP) Diagram screen, which controls all the diagram selection options.

The following Figure 3-23 illustrates the Internal Object Logic (JSP) Diagram screen.

💉 Internal Object	t Logic for 👝 😐 💌
Object Filtering	Options
Object Type	All Objects 👻
Language	Natural 🗸
All Objects	
XX001P01 XX002P01 XX022P01 XX022P01 XX023P01 XX024P01 XX025P01 XXC0NUPD XXEXIT XXGETID XXTIDYUP	
	Prev More
	OK Cancel

Figure 3-23 Internal Object Logic (JSP) Diagram screen

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Object Filtering group:	
Object Types	Allows you to select the types of object to be listed. Available selections are:
	<ul> <li>All Objects</li> <li>Programs</li> <li>Subprograms</li> <li>Functions</li> <li>Subroutines</li> <li>Helproutines</li> <li>Dialogs</li> </ul>
Language	<ul> <li>Allows you to select the programming language of the objects to be listed.</li> <li>Available selections are: <ul> <li>All</li> <li>Cobol</li> <li>Natural</li> </ul> </li> </ul>
Object Selection group	
Object List	List of all the objects used by the currently selected application. <i>Note: Only object types of Dialog, Helproutine, Program, Subprogram,</i> <i>and Subroutine will be displayed.</i> The list of objects can be tailored to your requirements using the options available in the Object Types and Language menus. Further refinement can be made using the option 'Change Start Position of Object List' from the Object List context menu. The Object List title reflects the Object Types being listed and will

### SCREEN ITEMS DESCRIPTION

The Object List title reflects the Object Types being listed and will append any reposition values that may have been specified.

### BUTTON NAME DESCRIPTION

Object Selection group:

Prev	Scrolls the object list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.		
More	Scrolls the object list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.		
Internal Object Logic (JSP) Diagram screen:			
ОК	Accept the selections made and invoke the Internal Object Logic (JSP) Diagram process.		
Cancel	Cancel the Internal Object Logic (JSP) Diagram process and close the current screen.		

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

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# Internal Object Logic (JSP) Diagram Context Menu

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The Internal Object Logic (JSP) Diagram context menu is invoked by placing the cursor on any of the items listed in the Object list and using the right hand mouse button with a single click.

CONTEXT MENU ITEM	DESCRIPT	ION	
Change Start Position of Object List	Reposition the list of objects to start from a particular object name.		
	The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard.		
	The reposition value is appended to the object list title to highlight the type of repositioning being applied.		
	Possible repos	ition values are:	
	Value	Result	
	ʻʻ(blank)	Reposition to the top of the object list.	
	*	Reposition to the top of the object list.	
	ABC*	Only show objects that are prefixed by 'ABC'.	
	XYZ	Reposition to the first object that either	

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# Viewing the Internal Object Logic (JSP) Diagram

Once an object has been selected from the Internal Object Logic (JSP) Diagram screen, Natural Engineer will proceed to invoke Microsoft Visio. A progress status window will open to show how Natural Engineer is progressing in creating the diagram. Once completed, the diagram will appear as a page in Microsoft Visio and the source code for the object will be displayed in a GenSource window.

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The following Figure 3-25 illustrates the completed Internal Object Logic (JSP) Diagram in Microsoft Visio and the source code in GenSource window.



Figure 3-25 Completed Internal Object Logic (JSP) Diagram and GenSource window

## **Stencils and Shapes**

The Internal Object Logic (JSP) Diagram is drawn in Microsoft Visio using the shapes found in the GenJSP.vss stencil. This can be located in the DATA\VSD folder of the Natural Engineer installation.

Each shape depicts the JSP standard representation for the main processing constructs within a programming object.

The following describes the shapes used based on the three main processing constructs.

#### 1. Sequential

Sequential statements that can stand alone within an object use a rectangle shape.

Example statement:

MOVE #A TO #B

The following Figure 3-26 illustrates the shape used for sequential code.



Figure 3-26 Shape for sequential code

#### 2. Conditional

Conditional statements will execute sequential statements based on the condition controlling them. These will use a series of shapes to show the conditional statement and the conditional branches (TRUE for when the condition has been matched and FALSE for when the condition has not been matched). A diamond shape is used for the conditional statement. A blue rectangle shape is shown for the TRUE branch and a blue rectangle shape with a logical not symbol ( $\neg$ ) is shown for the FALSE branch. Both blue rectangles will have a circle in top right hand corner.

Example statements:

IF #OPTION = 1

### DECIDE ON FIRST VALUE OF #OPTION

The following Figure 3-27 illustrates the shape used for the conditional statement.



Figure 3-27 Shape for conditional statement

The following Figure 3-28 illustrates the shape used for the TRUE branch of a conditional statement.



Figure 3-28 Shape for TRUE branch of a conditional statement

The following Figure 3-29 illustrates the shape used for the FALSE branch of a conditional statement.



Figure 3-29 Shape for FALSE branch of a conditional statement

#### 3. Iteration

Repeating statements that are in a controlled loop use a red rectangle and will have an asterisk in top right hand corner.

Example statements:



**REPEAT UNTIL #INDEX GT 99** 

READ EMPLOYEES

FOR #LOOP-START EQ 1 TO 10

The following Figure 3-30 illustrates the shape used for iteration statements.



Figure 3-30 Shape for iteration statements

# **Object Documentation**

The Object Documentation option allows users to specify and save information on each object within an Application. This provides useful system documentation within Natural Engineer, complementing the source code information stored on the Repository. The information that can be stored for each object falls into three main categories:

#### 1. Object Title

An object title can be specified. The default is the object name and in the case of CONSTRUCT or PREDICT generated objects, an indication of the code generator. The input is in free format style allowing a maximum of 70 characters to be input. Standard PC Copy, Paste and Cut functions are available.

#### 2. Comments

These comments can be specified as required to provide detailed information on the object, such as: the function or functions performed, any database or flat file access, runtime considerations etc. The input is in free format style allowing a maximum of 250 lines of 70 characters per line. It is possible to import the 'real' object comments found at the top of an object (i.e., or Natural Objects before the first Natural statement or for COBOL Objects before the Environment Division). Standard PC Copy, Paste and Cut functions are available.

#### 3. Extended Documentation

External documents can be attached to an object to provide further information on the object. This is done by specifying the path name for the document. The path name may point to an external file or a URL (if prefixed by http://).

It is also possible to specify a default common path name within Global Properties. This may be of unlimited length and may be referenced by \$DP\$.

Keywords can be added to each object, to help group related objects together, providing easier reviewing and maintenance. For example: the program, map and subprogram used for adding an employee record could all have the keywords ADD EMPLOYEE specified. A search with these keywords would result in the 3 objects being listed together.

The Object Documentation for each object within an Application is stored on the Repository. It is also possible to save the Object Documentation as a PC text format file, enabling common Object Documentation to be applied across many Applications using the same objects, or re-applied in the event of a re-extract and re-load of an Application.

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### **Natural Engineer Application Management**

Object Documentation can be removed from the complete Application, a range of objects or a single object.

There are two versions of the Object Documentation window available:

#### **1. Application level**

This version of the Object Documentation window handles all the objects within an application.

#### 2. Object level

This version of the Object Documentation window handles one single object within an application.

## **Application Level Object Documentation Window**

### How to Invoke the Application Level Object Documentation Window

Use the following navigation in the site workplace:

- Select the application required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Object Documentation**.

3

# **Application Level Object Documentation Window**

All the available Object Documentation functions are controlled from the Object Documentation screen.

The following Figure 3-37 illustrates the app	plication level Object Documentation screen.
---	--

Not the second s	HOSPITAL XX001P01	- • •
Object Filtering Options		
Object Types All Ob	ojects   Language Natural	
Search Keyword	Search	Keyword Catalogue
All Objects - [P]	Object Title	
PATIENT XX000G00	XX001P01 - HOSPITAL Main Menu	
XX001A01 XX001L01	Keywords	
XX001M01 * XX001P01 *		Maintain Keywords
XX002A01 XX002L01	Comments	
XX002M01 * XX002P01 XX021A01 XX021L01 XX021L02 XX021L02 XX021P01 XX022P01 XX022M01 * XX022M01 *	<ul> <li>* Author: A Coder</li> <li>* Program: XX001P01</li> <li>* Function: This is the main menu or the HOSPITAL system</li> </ul>	•
XX023A01 XX023M01 *	Extended Documentation	
	C:\HOSPITAL\XX001P01.DOC	Go
Both Prev More	SDPS\	Go
Import/Export	Delete OK C	ancel Apply
Import Single From File	. Import Multiple From File Export Single	To File
Import Single From Source	Export Multiple From Source Export Multiple	To File
	Delete Multiple Object Documentation	

Figure 3-37 Application level Object Documentation screen

SCREEN ITEMS DESCRIPTION

Object Types	Allows you to select the types of object to be listed.
Language	Allows you to select the programming language of the objects to be listed. Available selections are:
	<ul> <li>All</li> <li>Cobol</li> <li>JCL</li> <li>Natural</li> </ul>
Search Keyword	Allows you to input search keywords to refine the list of objects displayed in the Object list.
	The search keywords associated with an object need to be manually added by using the Maintain Keywords button.
Object List	List of all the objects used by the currently selected application.
	The list of objects can be tailored to your requirements using the options available in the Object Types and Language menus. Further refinement can be made using the option 'Change Start Position of Object List' from the View menu and the Search Keyword function found in the Object Filtering Options group.
	The Object List title reflects the Object Types being listed and will append any reposition values that may have been specified.
	It is possible to navigate between the Object Documentation screen and the Object Viewer or Object Reference screens by using the <b>right hand</b> <b>mouse button</b> on a selected object.
	Any objects that have search keywords specified will have an asterisk (*) after the object name.
Object Title	Provides the input of an object title. The default is the object name and in the case of CONSTRUCT or PREDICT generated objects, an indication of the code generator. The input is in free format style allowing a maximum of 70 characters to be input. Standard PC Copy, Paste and Cut functions are available. Some examples:
	XX001P01
	CON001P1 (Generated by Construct)
	PREDP01 (Generated by Predict)
	ABC00G01 – Global Data Area

3

Keywords	List of search keywords that have been specified for the object.
	Up to 20 search keywords may be added by using the Maintain Keywords button.
	NB: When Object Documentation is saved a default *ALL* keyword is added. This allows any 'orphaned' documentation to be identified by using the Keyword Catalogue.
Comments	Provides the ability to input any required object comments to document the object. The input is in free format style allowing a maximum of 250 lines, each of which can have a maximum of 70 characters to be input. Standard PC Copy, Paste and Cut functions are available. For example:
	This program calculates the Tax value required for each sale based on a table of tax rates. The base rate is 12.25%.
Extended Documentation	Provides the ability to specify a location of any supporting documentation that you wish to associate with the object. For example: Program specification, execution instructions.
	The location can be typed in, or selected by the Extended Description Selection button []. It may point to a file or a URL (if prefixed by http://).
	Specifying \$DP\$ will substitute the value of the Object Documentation Common Path which may be specified in Global Properties.

# SCREEN ITEMS DESCRIPTION

### **BUTTON NAME DESCRIPTION**

Object Filter group:	
Search	Invoke a search of all the objects within the selected application to find any objects that have matching search keywords.
Keyword Catalogue	Invokes the Keyword Catalogue screen to search for related objects. Note: For more information on the Keyword Catalogue refer to Chapter 6 in the Natural Engineer Utilities for Windows manual.
Keywords group:	
Maintain Keywords	Invokes a screen to add/maintain up to 20 search keywords. These keywords may be used to group related objects which can then be identified via the Keyword Catalogue.

	JTTON NAME DESCRIPTIC	)N
--	-----------------------	----

Object List group:	
Both	This button enables the object list to be refined to either show all objects whether they have Object Documentation saved or not. The default for the screen is 'Both'. Once selected it rotates through the next 2 options described below.
N Doc	The object list shows only the objects that have no Object Documentation saved.
Doc O	The object list shows only the objects that have Object Documentation saved.
Prev	Scrolls the object list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the object list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.

Extended Description group:		
Extended Documentation Selection []	Invokes the standard Windows 'Open File' dialog, where the documentation can be selected.	
Go	Will open the specified file using the appropriate program associated with the file extension of the document.	
	For example XX001P01_Spec.doc would be opened by MS Word.	
	Note: This button is only enabled if a specified file is present.	
Object Documentation s	screen:	
Data Model Relationships	Will invoke the <u>Data Model Relationships</u> screen to allow the definition of relationships between DDMs.	
	Note: This is only available if a DDM has been selected.	
Delete	Delete the Object Documentation comments for the current selected object only.	
OK	Save changes and close the current screen.	
Cancel	Cancel the Object Documentation process and close the current screen.	
Apply	Save changes and retain the current screen.	
	Note: This button is only enabled if any changes have been made.	
Import/Export group:		
Import Single from File	Any previously saved Object Documentation comments held in PC text format files with file extension .CMT that can be imported for the currently selected object. This option will only perform the import for one single object and is only available when an object has been selected.	
Import Single from Source	Provides the ability to import the object comments from the selected object source code. The object comments are for Natural Objects any comments found before the first Natural statement within an object and for COBOL Objects any comments found before the Environment Division. This option will only perform the import for one single object and is only available when an object has been selected.	
Import Multiple from File	Provides the same function as Import Single from File, except that it can be applied to a range of selected objects.	
Import Multiple from Source	Provides the same function as Import Single from Object Source, except that it can be applied to a range of selected objects.	
Delete Multiple Object Documentation	Delete multiple Object Documentation comments from within an application. Objects can be selected as required and deletion is executed in a single operation.	

Export Single to File	Provides the ability to export (save) Object Documentation comments to a PC text format file with a file extension of .CMT. This option will only perform the export for one single object.
Export Multiple to File	Provides the same function as Export Single to File, except that it can be applied to a range of selected objects.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

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### **Application Level Object Documentation Context Menus**

The context menus are invoked by placing the cursor within the Object list, Object Title or Comments screen items and using the right hand mouse button with a single click.

CONTEXT MENUITEM	DESCRIPTI	ION		
Object List:				
Object Reference	Invoke the Ob	Invoke the Object Reference screen.		
Object Viewer	Invoke the Object Viewer screen.			
Change Start Position of Object List	Reposition the list of objects to start from a particular object name.			
	The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard.			
	The reposition highlight the ty	value is appended to the object list title to ype of repositioning being applied.		
	Possible repos	ition values are:		
	Value	Result		
	ʻʻ(blank)	Reposition to the top of the object list.		
	*	Reposition to the top of the object list.		
	ABC*	Only show objects that are prefixed by 'ABC'.		
	XYZ	Reposition to the first object that either matches or is greater than 'XYZ' and then continue the object list from that point.		
Object Title / Comments group:				
Undo	Undo last action.			
Cut	Copy the selected data to the clipboard.			
Сору	'Cut' out selected data (delete) to the clipboard.			
Paste	Paste clipboard data to selected input position.			
Delete	Delete selected data.			
Select All	Select all the available data.			

#### CONTEXT MENU ITEM DESCRIPTION

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**Natural Engineer Application Management** 

# **Object Level Object Documentation Window**

### How to Invoke the Object Level Object Documentation Window

Use the following navigation in the site workplace:

- Select the object required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Object Documentation**.

### **Object Level Object Documentation Window**

All the available Object Documentation functions are controlled from the Object Documentation screen.

The following Figure 3-38 illustrates the object level Object Documentation screen.

N Object Documentation for HOSPITAL XX001P01	
Object Title	
XX001P01 - HOSPITAL Main Menu	
Keywords	
Maintain Keywords	Import From File
Comments	
	Import From Source
* Author: A Coder * Program: XX001P01	Export To File
* Function: This is the main menu or the HOSPITAL system	
· · · · · · · · · · · · · · · · · · ·	
Extended Documentation	
C:\HOSPITAL\XX001P01.DOC	
Delete OK Cancel Apply	
	,

Figure 3-38 Object level Object Documentation screen

#### SCREEN ITEMS **Object Title** Provides the input of an object title. The default is the object name and in the case of CONSTRUCT or PREDICT generated objects, an indication of the code generator. The input is in free format style allowing a maximum of 70 characters to be input. Standard PC Copy, Paste and Cut functions are available. Some examples: XX001P01 **CON001P1** (Generated by Construct) PREDP01 (Generated by Predict) ABC00G01 - Global Data Area List of search keywords that have been specified for the object. Keywords The search keywords need to be input manually by using the Maintain Keywords button. Comments Provides the ability to input any required object comments to document the object. The input is in free format style allowing a maximum of 250 lines, each of which can have a maximum of 70 characters to be input. Standard PC Copy, Paste and Cut functions are available. For example: This program calculates the Tax value required for each sale based on a table of tax rates. The base rate is 12.25%. Extended Provides the ability to specify a location of any supporting documentation Documentation that you wish to associate with the object. For example: Program specification, execution instructions. The location can be typed in, or selected by the Extended Description Selection button [....]. Specifying \$DP\$ will substitute the value of the Object Documentation Common Path which may be specified in Global Properties.

DESCRIPTION

## BUTTON NAME DESCRIPTION

Extended Documentation group:		
Extended Documentation Selection []	Invokes the standard Windows 'Open File' dialog, where the documentation can be selected.	
Go	Will open the specified file using the appropriate program associated with the file extension of the document.	
	For example XX001P01_Spec.doc would be opened by MS Word.	
	Note: This button is only enabled if a specified file is present.	
Keywords group:		
Maintain Keywords	Invokes a screen to add/maintain up to 20 search keywords. These keywords may be used to group related entities which can then be identified via the Keyword Catalogue.	
	NB: For further information on the Keyword Catalogue please refer to Chapter 6 of the Natural Engineer Utilities Manual.	
Object Documentation s	creen:	
Data Model Relationships	Will invoke the <u>Data Model Relationships</u> screen to allow the definition of relationships between DDMs.	
	Note: This is only available if a DDM has been selected.	
Delete	Delete the Object Documentation comments for the current selected object only.	
ОК	Save changes and close the current screen.	
Cancel	Cancel the Object Documentation process and close the current screen.	
Apply	Save changes and retain the current screen.	
	Note: This button is only enabled if any changes have been made.	
Import / Export group:		
Import from File	Any previously saved Object Documentation comments held in PC text format files with file extension .CMT that can be imported for the currently selected object. This option will only perform the import for one single object and is only available when an object has been selected.	
Import from Source	Provides the ability to import the object comments from the selected object source code. The object comments are for Natural Objects any comments found before the first Natural statement within an object or for COBOL Objects any comments found before the Environment Division. This option will only perform the import for one single object and is only available when an object has been selected.	

# BUTTON NAME DESCRIPTION

**Export to File...** Provides the ability to export (save) Object Documentation comments to a PC text format file with a file extension of .CMT. This option will only perform the export for one single object.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

### **Object Level Object Documentation Context Menus**

The context menus are invoked by placing the cursor within the Object Title or Comments screen items and using the right hand mouse button with a single click.

#### CONTEXT MENU ITEM DESCRIPTION

Object Title / Comments group:	
Undo	Undo last action.
Cut	Copy the selected data to the clipboard.
Сору	'Cut' out selected data (delete) to the clipboard.
Paste	Paste clipboard data to selected input position.
Delete	Delete selected data.
Select All	Select all the available data.

3

#### **Natural Engineer Application Management**

### **Multiple Object Selection Window**

The Multiple Object Selection screen is a common screen that is presented whenever an option is selected for Multiple objects. It provides the facility to select the objects required for the desired function.

The options that invoke the Multiple Object Selection screen are:

- Import Multiple from File.
- Import Multiple from Source.
- Export Multiple to File.
- Delete Multiple Object Documentation.

The only variation to this screen is the title displayed in the title bar, which will contain reference to the option that has invoked this screen. All screen functionality is identical for all options.

One of the variations of the Multiple Object Selection screen is now illustrated. The subsequent screen description is only shown once, but equally applies to all variations.

The following Figure 3-39 illustrates the Multiple Object Selection screen for the Import Multiple from File option.

N Import Multip	ple from File	-			×
Object Filtering	Options				
Object Types	All Objects 👻	La	anguage	Natural 🔹	
All Objects			Selected		
PATIENT		>>>	XX001L01		
XX000G00 XX001A01	=	>>	XX002L01		
XX001M01 XX001P01					
XX002A01					
XX002P01		<			
XX021A01 XX021L01	-	<<			
L	Prev More	<<<		Prev	More
			View	Log Execute	Cancel

Figure 3-39 Multiple Object Selection screen for Import Multiple from File option

3

Object Types	Allows you to select the types of object to be listed. The list will be tailored depending on what type of object is in your application. Possible selections are:
	<ul> <li>All Objects</li> <li>Programs</li> <li>Classes</li> <li>Subprograms</li> <li>Functions</li> <li>Subroutines</li> <li>Copycodes</li> <li>Helproutines</li> <li>Dialogs</li> <li>Maps</li> <li>Local Data Areas</li> <li>Global Data Areas</li> <li>Global Data Areas</li> <li>Parameter Data Areas</li> <li>Adapters</li> <li>Cobol Source</li> <li>Cobol Copybooks</li> <li>JCL Members</li> <li>JCL Procedures</li> <li>JCL Includes</li> </ul>
Language	Allows you to select the programming language of the objects to be listed. The list will be tailored depending on what type of language the objects are in your application.
	Possible selections are: <ul> <li>All</li> <li>Natural</li> <li>Cobol</li> <li>JCL</li> </ul>
Object List	List of all the objects used by the currently selected application. The list of objects can be tailored to your requirements using the options available in the Object Types and Language menus. Further refinement can be made using the option 'Change Start Position of Object List' from the View menu. The Object List title reflects the Object Types being listed and will append any reposition values that may have been specified. Objects can be selected by using a double click with the <b>left hand mouse button</b> .

### SCREEN ITEMS DESCRIPTION

### SCREEN ITEMS DESCRIPTION

 Selected
 Lists all the objects that have been selected for the current function.

 Objects can be de-selected by using a double click with the left hand mouse button.

### CONTEXT MENU ITEM DESCRIPTION

Change Start Position of Object List	Reposition the list of objects to start from a particular object name.			
	The repositio name or part	n value can be input using either a complete name using an '*' (asterisk) wildcard.		
	The repositio highlight the	n value is appended to the object list title to type of repositioning being applied.		
	Possible repo	sition values are:		
	Value	Result		
	ʻʻ(blank)	Reposition to the top of the object list.		
	' ' (blank) *	Reposition to the top of the object list. Reposition to the top of the object list.		
	' ' (blank) * ABC*	Reposition to the top of the object list. Reposition to the top of the object list. Only show objects that are prefixed by 'ABC'.		

### BUTTON NAME DESCRIPTION

Object List group:	
Prev	Scrolls the object list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the object list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Selection / De-selection	buttons:
>>>	Select all objects in the object list (when more than one page is available, as set by the LISTBOXMAX parameter in the NATENG.INI file).

3

>>	Select all objects on the current page in the object list.
>	Select all selected objects in the object list.
<	De-select all selected objects in the selected list.
<<	De-select all objects on the current page in the selected list.
<<<	De-select all objects in the selected list (when more than one page is available, as set by the LISTBOXMAX parameter in the NATENG.INI file).
Selected group:	
Prev	Scrolls the object list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the object list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Multiple Object Selection	on screen:
Exe Batch	Will submit the batch import process for the selected objects. This is only available for Import Multiple from Source in a SPod environment when running against a server. When running in a Windows server environment then the relevant batch file for the bulk import object documentation process needs to be configured. This is located in the BAT directory of your Natural Engineer installation.
	Note: This button is only enabled if any changes have been made.
View Log	Will show the Object Documentation Log File which details the Objects that have been processed along with any exception messages.
Execute	Invoke the process for the selected objects.
	Note: This button is only enabled if any changes have been made.
Cancel	Cancel any object selection and close the current screen.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

### STATUS BAR ITEM DESCRIPTION

Pane

Any Multiple Object Selection processing messages.

### Saving Object Documentation Comments to a PC text format file

It is possible to save any Object Documentation comments to a PC text format file. These files can then be used to 'import' the comments, updating the objects within an application in a single operation.

This can be used where common objects span across many applications and the Object Documentation comments only need to be specified once, saved and then reused using either the Import Single from File or Import Multiple from File options from the Options drop-menu on the Object Documentation screen.

Alternatively, comments can be saved for an application and then imported after any subsequent re-extract and load executions applied to the same application.

The saved files are located by default, in the Natural Engineer Data folder.

The PC text format file holds records of up to 71 bytes in length for each of the Object Title and Comments detail lines present per object. The Format of each record is:

Byte 1	One-byte control character indicating the type of record. Valid values are:
	<ul> <li>H Header information. This will be the Object name. There will be one header per object.</li> </ul>
	<b>T</b> The data present in the Object Title line. There will be 1 per object.
	C The data present in the Comments lines. There can be 1-50 of these per object.
	<b>K</b> The data present in the Keywords line. There will be 1 per object.
	<b>E</b> The data present in the Extended Documentation line. There will be 1 per object.
	2 The data present in the Second Extended Documentation line. There will be 1 per object.
Bytes 2-71	Contains the free format text input on the Object Documentation screen.

When the file is saved, a file extension of .CMT is used. The file name defaults to one of two formats, depending on whether the data is being saved for a single object or multiple objects. The default formats are:

#### 1. Export Single to File.

Default file name of **aaaaaaaa\_ooooooo.CMT** is presented, where **aaaaaaaa** is the application name, and **oooooooo** is the single object that has been selected.

For Example:

From the **HOSPITAL** application, object **XX001P01** has had the following comments specified:

Object Title = XX001P01

Keywords = MAIN MENU

Comments =

Author : A. Coder Date created : 01/02/2001 Function : Main Menu Program for the HOSPITAL system.

Extended Documentation = C:\HOSPITAL\XX001P01\_Spec.doc

These are to be saved to file.

The default file name will be HOSPITAL\_XX001P01.CMT.

The following Figure 3-43 illustrates the save file screen for Export Single to File function.



Figure 3-43 Save file screen for Export Single to File function.

### The HOSPITAL\_XX001P01.CMT records are:

3
# 3

# 2. Export Multiple to File.

Default file name of **aaaaaaaa.CMT** is presented, where **aaaaaaaa** is the application name.

For Example:

From the **HOSPITAL** application, objects **XX001L01**, **XX00M01** and **XX001P01** have had the following comments specified:

#### Object Title = XX001L01

#### Object Title = XX001M01

# Object Title = XX001P01

These are to be saved to file.

The default file name will be **HOSPITAL.CMT**.

3

The following Figure 3-44 illustrates the save file screen for Export Multiple to File function.

Select file to Export C	mments from			×
💭 🖓 🖉 🖉 Natu	al Engineer 🕨 DATA 🕨	• <del>*</del> j	Search DATA	٩
Organize 🔻 New	older		- 	• 0
☆ Favorites	▲ Name		Date modified	Туре
📃 Desktop	XALA 🏭		24/04/2012 13:27	File folder
🚺 Downloads	🔄 🕛 HTML		01/10/2013 10:48	File folder
🖳 Recent Places	📕 🔑 XLS		10/06/2013 11:43	File folder
	📕 \mu XML		31/10/2013 10:14	File folder
🧮 Desktop	_			
🥽 Libraries				
Documents				
Downloads				
🌙 Music				
Pictures				
🛃 Videos	▼ <			P.
File name:	OSPITAL.CMT			-
Save as type:	/IT Files (*.cmt)			•
Alide Folders			Save	Cancel

Figure 3-44 Save file screen for Export Multiple to File function.

The HOSPITAL.CMT records are:

```
HXX001P01
TXX001P01
CAuthor
       : A. Coder
CDate created : 01/02/2001
CFunction : Main Menu Program for the HOSPITAL system.
HXX001M01
TXX001M01
CAuthor
      : A. Coder
CDate created : 01/02/2001
CFunction
       : Main Menu Map for the HOSPITAL system.
HXX001L01
TXX001L01
CAuthor
      : A. Coder
CDate created : 01/02/2001
CFunction
      : Main Menu Local Data Area for the HOSPITAL system.
```

In each of these two cases, the file name may be overwritten to meet individual site standards, but the file extension must not be changed from .CMT, otherwise the Object Documentation import function will not locate the file.

# **Object Documentation Log Files**

Several of the Object Documentation functions provide log files detailing the processing that has been executed for that function. These Log files are available to view immediately after the function has completed.

Alternatively they may be viewed outside of Natural Engineer as they are saved in the Data folder.

The file is saved with a file extension of .LOG. The file name defaults to one of four formats depending on the Object Documentation option used to generate them. These are described below.

#### 1. Import Multiple from File.

The log file name used for this option is **aaaaaaaa\_IMP\_FIL.LOG**, where **aaaaaaaa** is the application name. This file will contain information on the import of multiple object comments for an application, from a .CMT file.

For Example:

From the **HOSPITAL** application, the Import Multiple from File option is used to import Object Documentation comments using a saved file: HOSPITAL.CMT. This file contains the following records:

```
HXX001P01
TXX001P01
CAuthor
     : A. Coder
CDate created : 01/02/2001
CFunction : Main Menu Program for the HOSPITAL system.
HXX001M01
TXX001M01
: A. Coder
CAuthor
      : 01/02/2001
CDate created
      : Main Menu Map for the HOSPITAL system.
CFunction
HXX001L01
TXX001L01
CAuthor
      : A. Coder
CDate created : 01/02/2001
CFunction
       : Main Menu Local Data Area for the HOSPITAL system.
```

The objects **XX001L01**, **XX001M01** and **XX001P01** are selected using the Multiple Object Selection screen.

After the import has completed, the log file **HOSPITAL\_IMP\_FIL.LOG** will contain the following:

```
Mass Import from -
D:\PROGRAMDATA\Software AG\NATURAL ENGINEER\DATA\Hospital.cmt
01/02/2001 12:45:22 - XX001L01 imported
01/02/2001 12:45:22 - XX001M01 imported
01/02/2001 12:45:22 - XX001P01 imported
```

## 2. Import Multiple from Object Source

The log file name used for this option is **aaaaaaaa\_IMP\_OBJ.LOG**, where **aaaaaaaa** is the application name. This file will contain information on the import of multiple object comments from the Object source.

For Example:

From the **HOSPITAL** application, program objects **XX021P01**, **XX023P01**, **XX024P01** and **XX025P01** are selected to import multiple comments from object source. Using the menu option Options →Import Object Comments →Import Multiple form Object Source.

After the import has completed, the log file **HOSPITAL\_IMP\_OBJ.LOG** will contain the following:

Multiple Import from Object 01/02/2001 12:55:07 - XX021P01 saved 01/02/2001 12:55:07 - XX023P01 saved 01/02/2001 12:55:07 - XX024P01 saved 01/02/2001 12:55:07 - XX025P01 saved

## 3. Export Multiple to File.

The log file name used for this option is **aaaaaaaa\_EXP\_FIL.LOG**, where **aaaaaaaa** is the application name. This file will contain information on the export of multiple object comments to a .CMT file.

# 3

## **Natural Engineer Application Management**

# For Example:

From the **HOSPITAL** application, objects **XX001L01**, **XX001M01** and **XX001P01** have had the following comments specified:

## Object Title = XX001L01

#### Comments =

* * * * * * * * * * * * * * * * *	*;	* * * * * *	* * * * *	* * * * * * *	* * * * * *	* * * * * *	****	****	*****	****	****	****
Author	:	A. Co	oder									
Date created	:	01/02	2/200	1								
Function	:	Main	Menu	Local	Data	Area	for	the	HOSP	TAL	syste	em.
*****	*;	*****	* * * * *	* * * * * * *	*****	* * * * * *	****	****	*****	****	* * * * *	* * * *

#### Object Title = XX001M01

#### Comments =

* * * * * * * * * * * * * * * * * *	***************************************
Author	: A. Coder
Date created	: 01/02/2001
Function	: Main Menu Map for the HOSPITAL system.
* * * * * * * * * * * * * * * *	***************************************

## Object Title = XX001P01

After the import has completed, the log file **HOSPITAL\_EXP\_FIL.LOG** will contain the following:

```
Mass Export to -
D:\PROGRAMDATA\Software AG\NATURAL ENGINEER\DATA\Hospital.cmt
01/02/2001 12:58:37 - XX001L01 exported
01/02/2001 12:58:37 - XX001M01 exported
01/02/2001 12:58:37 - XX001P01 exported
```

# 4. Delete Multiple Object Documentation

The log file name used for this option is **aaaaaaaa\_DEL.LOG**, where **aaaaaaaa** is the application name. This file will contain information on the deletion of Object Documentation comments for an application.

For Example:

From the **HOSPITAL** application, objects **XX001L01**, **XX00M01** and **XX001P01** all have Object Documentation comments saved for them. These comments will be deleted using Options → Delete Multiple Object Documentation.

The objects **XX001L01**, **XX001M01** and **XX001P01** are selected using the Multiple Object Selection screen.

After the import has completed, the log file **HOSPITAL\_DEL.LOG** will contain the following:

```
Delete Multiple Object Documentation
01/02/2001 13:05:40 - XX001L01 comments deleted
01/02/2001 13:05:40 - XX001M01 comments deleted
01/02/2001 13:05:40 - XX001P01 comments deleted
```



# JCL Viewer

The JCL Viewer option allows you to select and review the JCL steps and data sets within individual JCL objects. Information will be displayed to show the data sets used by each of the JCL steps along with the actual JCL source code for each step.

The information is presented on a single screen and a diagramming tool e.g., Microsoft Visio can be utilized to provide a diagrammatic view of the relationship between the JCL steps, data sets, database access definitions (e.g. DDMs, SQL Tables or Predict User Views) and executable batch programs within a single JCL object.

The JCL Viewer screen is accessed by placing the cursor on any of the JCL objects displayed in the site workplace and using the right hand mouse button with a single click to view the context menu.

# How to Invoke the JCL Viewer Option

Use the following navigation in the site workplace:

- Select the JCL Object required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: JCL Viewer.

Note: The JCL Viewer option is only available for applications with JCL objects loaded in the Repository.

3

# **JCL Viewer Window**

For the selected JCL object, a list of the JCL steps referenced by the JCL object is displayed in JCL step list box.

If you select one of the JCL steps, all the statement details for the selected JCL step are displayed in the source code list box. The data sets used by the selected JCL step are displayed in the data set list box as well as the Disposition (DISP=) keyword settings.

The following Figure 3-48 illustrates the JCL Viewer screen.

Line	Step Name	Program	Natural Program	Exe Library	External Object
0006	DELEDSN	IEFBR14			
0014	NATBATCH	NATBAT41	NATBATCH	COBJCLNT	
					Prev More
ata Sal	Stap NATRATCH				
ala Se	IS - STEP NATUATOR				
DDCar	d Name			DISP	
CMSY	NIN {In-Stream D	ata}			
DDCA	RD {In-Stream D	ata}			
STEPL	IB PPEX.NATUR	RAL.LOAD		SHR	
STEPL	IB RZDBA.DB1	77.LOAD		SHR	
STEPL	IB RZDBA.DB1	77.NEWLOAD		SHR	
CMWK	F01 XGSLPN.NA	T01.FILE01.DATAF		,CAT	LG
				Vie	w Database Accesse
ource	Code				
CLNAT	01 00000014 //	NATBATCH EXEC P	GM=NATBAT41, REGIO	N=8M,	
CLNAT	00000015 //	/ PARM=('PROF	ILE=NEE53N41')		
CLNAT	01 00000016 //	STEPLIE DD DSN / DD DSN	=RZDBA.DB177.NEWL =RZDBA DB177 LOAD	DISP=SHR	Ľ
CLNAT	01 00000018 //	DD DSN	=PPEX.NATURAL.LOA	D, DISP=SHR	
	01 00000019 //	SYSOUT DD SYS	OUT=*	-	
CLNAT					

Figure 3-48 JCL Viewer screen

If you select one of the JCL steps that executes a program which uses a Database Access Definition then the "View Database Accesses" button is available. Selecting this will show all the corresponding Database accesses used by the program.

The following Figure 3-48-1 illustrates the JCL Viewer screen showing a Natural Program that uses Data Definition Modules.

	-					
Line	Step Name	Pro	ogram	Natural Program	Natural Library	External Object
0006	DELEDSN	IEF	BR14			
0014	NATBATCH	NA	TBAT41	NATBATCH	COBJCLNT	
						Prev More
)ata Def Name	inition Modules -	Step NATBATC	н	DBID File Nbr	Create Read	Update Delete
Data Def Name EMPLO	inition Modules - YEES	Step NATBATC	H	DBID File Nbr 12 11	Create Read Y	Update Delete
Data Def Name EMPLO	inition Modules - YEES	Step NATBATC	Н	DBID File Nbr 12 11	Create Read Y	Update Delete
Data Def Name EMPLO	inition Modules - YEES	Step NATBATC	H	DBID File Nbr 12 11	Create Read Y	Update Delete View Data Sets
Data Def Name EMPLO	inition Modules - YEES	Step NATBATC	H	DBID File Nbr 12 11	Create Read Y	Update Delete View Data Sets
Data Def Name EMPLO Source (	inition Modules - YEES	Step NATBATC	H EXEC PO	DBID File Nbr 12 11 2M=NATBAT41. REGIO	Create Read Y	Update Delete View Data Sets
Data Def Name EMPLO Source ( JCLNAT	inition Modules - YEES Code 01 00000014 01 0000015	Step NATBATC	H I EXEC PC I= ("PROF]	DBID File Nbr 12 11 EM=NATBAT41, REGIO ILE=NEES3N41')	Create Read Y N=8M,	Update Delete View Data Sets
Data Def Name EMPLO Source ( JCLNAT JCLNAT	inition Modules - YEES Code 01 00000014 01 00000015 01 00000016	Step NATBATC	H I EXEC P( f=('PROF) DD DSN-	DBID File Nbr 12 11 EM=NATBAT41, REGIO ILE=NEE53N41') RZDBA.DB177.NEWL	Create Read Y N=8M, OAD, DISP=SHR	Update Delete
Data Def Name EMPLO Source ( JCLNAT JCLNAT JCLNAT	inition Modules - YEES Code 01 0000014 01 0000016 01 0000016 01 0000017	Step NATBATC	H H EXEC P( f=('PROF) DD DSN= DD DSN=	DBID         File Nbr           12         11           SM=NATBAT41, REGIO:         11           EM=NATBAT41, REGIO:         11           JE2DBA.DB177, NEML         RZDBA.DB177, LOAD	Create Read Y N=8M, OAD, DISP=SHR , DISP=SHR	Update Delete View Data Sets
Oata Def Name EMPLO Source O JCLNAT JCLNAT JCLNAT JCLNAT	inition Modules - YEES Code 01 00000014 01 0000015 01 0000015 01 00000017 01 0000017	Step NATBATC //NATBATCF // PARM //STEPLIB //	H I EXEC P( f=('PROF) DD DSN- DD DSN- DD DSN-	DBID File Nbr 12 11 EM=NATBAT41, REGIO ILE=NEE53N41') =RZDBA.DB177.LOAD =PPEX.NATURAL.LOA	Create Read Y N=8M, OAD, DISP=SHR , DISP=SHR D, DISP=SHR	Update Delete
Source C JCLNAT JCLNAT JCLNAT JCLNAT	inition Modules - YEES Code 01 0000014 01 0000015 01 0000015 01 0000016 01 0000018 01 0000019	Step NATBATC	H I EXEC P( = ('PROF) DD DSN= DD DSN= DD DSN= DD SYS(	DBID File Nbr 12 11 2M=NATBAT41, REGIO ILE=NEE53N41*) =RZDBA.DB177.LOAD =PPEX.NATURAL.LOA DUT=*	Create Read Y N=8M, OAD, DISP=SHR D, DISP=SHR D, DISP=SHR	Update Delete
Source C CLNAT JCLNAT JCLNAT JCLNAT JCLNAT JCLNAT	inition Modules - YEES Code 01 00000014 01 0000015 01 0000015 01 0000018 01 0000018 01 0000019 01 00000019	Step NATBATC //NATBATCH // PARA //STEPLIB // //SYSOUT //CMPRINT	H I EXEC P( I= ('PROF) DD DSN= DD DSN= DD SYS( DD SYS( DD SYS(	DBID File Nbr 12 11 EM=NATBAT41, REGIO ILE=NEE53N41') =R2DBA.DB177.NEWL =R2DBA.DB177.LOAD =PPEX.NATURAL.LOA DUT=* DUT=*	Create Read Y N=8M, OAD, DISP=SHR D, DISP=SHR D, DISP=SHR	Update Delete

Figure 3-48-1 Data Definition Modules on JCL Viewer screen

3

If you select a Data Set that is used as a work file, the "View Work File layout" button is available. Selecting this will show all the Offset Mapping for Work Files details. See <u>Offset Mapping for Work Files</u> for further information.

The following Figure 3-48-2 illustrates the JCL Viewer screen showing the Work File Layout details.

JCL Vie JCL Ster	werfo os	r COBJCLN	T JCLNA	T01			
Line	Cton	Nama		Dream	Natural Dragram	Evalibrary	External Object
Line	Step	vame		Program	Natural Program	ExelLibrary	External Object
0006	DELE	DSN		IEFBR14			
0014	NATE	ATCH		NATBAT41	NATBATCH	COBJCLNT	
							Prev More
Data Set	s - Ste	D NATBATCH	1				
DDCard	d	Name				DISP	
CMSYN	NIN	{In-Stream	Data}				
DDCAF	RD	{In-Stream	Data}				
STEPLI	в	PPEX.NATU	RAL.LOA	AD		SHR	
STEPLI	в	RZDBA.DB	177.LOA	D		SHR	
STEPLI	в	RZDBA.DB	177.NEW	LOAD		SHR	
CMWK	F01	XGSLPN.N/	AT01.FILE	01.DATAF		,CAT	LG
L							
						Vie	w Database Accesses
Work File	e Layou	ıt					
OBJECT	: NAT	ТВАТСН -	0430 W	RITE WORK	01		
Sta	rt	End	Level	Field Nam	e		Format
	1	80	1	#FILE01-R	ECORD		A80
	1	в	1 2	#F01-RECN	#FILE01-RECORD 0		NB
	9	80	2	#F01-FILL	ER-BYTES		A1(1:72)
Europ	•						View Source Code

Figure 3-48-2 Work File Layout on JCL Viewer screen

#### SCREEN ITEMS DESCRIPTION

JCL Step List	Lists all the J	CL steps referenced by the selected JCL object.
	A context mer and the Object Object Docum Maintenance Objects, or us <b>button</b> on a s The columns	nu is available to navigate between the JCL Viewer screen t Viewer, Object Reference, Entry Point Structure Diagram, nentation for Natural or COBOL Objects, Cobol Link or Object Reference, Object Documentation for JCL e the View Source Code by using the <b>right hand mouse</b> elected JCL step. available are:
	Line	The statement line number of the JCL step.
	Step Name	The name of the JCL step.
	Program	The executable program name for the JCL step.
	Natural Program	The name of the Natural program to be executed for the JCL step.
		<i>Note: Only available for JCL steps that are running batch Natural.</i>
	External Object	The name of the JCL object that contains the JCL statements, if the JCL step references external sets of JCL statements, for example, INCLUDES or PROCS.

The Data Set list box is a multi-purpose list box used to display, either the Data Set or Database Accesses information for the selected item. The display is controlled by the View Database Accesses/View Data Sets button.

The default display is Data Sets.

Data Sets	Displays the data sets used within the selected JCL Step. The associated 'ddname' for each data set is also displayed and the disposition(DISP=) keyword
	A context menu is available to navigate between the JCL Viewer screen and the JCL Data Set Viewer screen by using the <b>right hand mouse</b> <b>button</b> on a selected data set.
Database Accesses	Displays all the database access definitions used by the Object executed by the selected JCL step.
	A context menu is available to view the source code (if the object is a DDM) or display the Database Access (CRUD) screen for the particular Job step by using the <b>right hand mouse button</b> on a selected object.

3

#### SCREEN ITEMS DESCRIPTION

The Source Code box is a multi-purpose list box used to display, either the Source Code or the Work File Layout information for the selected item. The display is controlled by the View Work File Layout/View Source Code button.

The default display is Source Code.

#### **Source Code** Displays all the JCL statement references for the selected JCL step.

Work File Layout Displays the start and end byte positions of each field within a record layout, for work files. See <u>Offset Mapping for Work Files</u> for further details.

Note: For more information on the JCL Step and Data Set List context menus, refer to section <u>JCL Viewer Context Menus</u>.

#### **BUTTON NAME DESCRIPTION**

JCL Step List group:	
Prev	Scrolls the JCL step list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the JCL step list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Data Sets List group:	
View Database Accesses	Displays all the database access definitions used by the Object executed by the selected JCL step. This button will alternate with the View Data Sets button depending on what option is currently being shown.
View Data Sets	Displays the data sets used within the selected JCL Step. This button wil alternate with the View Database Accesses button depending on what option is currently being shown
Source Code List group	:
View Work File Layout	Displays the record layout of the selected work file. This button will alternate with the View Source Code button depending on what option is currently being shown.
View Source Code	Displays all the JCL statement references for the selected JCL step. This button will alternate with the View Work File Layout button depending on what option is currently being shown.

# BUTTON NAME DESCRIPTION Export Allows the work file layout to be exported to a spreadsheet e.g., Microsoft Excel. Note: This is only visible when a Work File Layout is being displayed.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

3

# **JCL Viewer Context Menus**

The JCL Viewer context menus are invoked by placing the cursor on any of the items listed in the JCL Step or Data Set lists and using the right hand mouse button with a single click.

# JCL Step List Context Menu

The JCL Step list context menu allows you to navigate between the JCL Viewer screen and the Object Viewer, Object Reference, Entry Point Structure Diagram, Object Documentation for Natural or COBOL Objects, Cobol Link Maintenance or Object Reference, Object Documentation for JCL Objects, or use the View Source Code option.

*Note: The JCL Step List context menu is not available for any steps that are not executing either COBOL or Natural programs. For example z/OS Utilities.* 

SE Step	18						1		
Line	Step 1	lame	Program	Na	tural P	rogram	Exe Librar	У	External Object
0006	DELEC	DSN	IEFBR14						
0014	N	Object Viewer Object Referer	ice		BAT	СН	COBJCLN	Т	
		Object Entry P	oint Diagram	•		Tree View		1	
		Object Docum	entation			Spreadsheet	:		
		Cobol Link Ma	intenance		_	Visio			
		JCL Object Ref	erence						Prev More
ata Set	s -	JCL Object Do	cumentation						
DDCar	d	View Source C	ode					DISP	
CMSYN	NIN	View JCL Sour	e Code						

The following Figure 3-49 illustrates the JCL Step List context menu

Figure 3-49 JCL Step List context menu

2

CONTEXT MENU ITEM	DESCRIPTION
Object Viewer	Invoke the Object Viewer screen for the Natural or COBOL Program selected.
Object Reference	Invoke the Object Reference screen for the Natural or COBOL Program selected.
Object Entry Point Diagram	Invoke the Entry Point Structure Diagram for the Natural or COBOL Program selected.
Object Documentation	Invoke the Object Documentation screen for the Natural or COBOL Program selected.
Cobol Link Maintenance	Invoke the Cobol Link Maintenance screen.
	Note: Only available if the JCL step is executing a Cobol program and Cobol Links have been specified.
JCL Object Reference	Invoke the Object Reference screen for the JCL Object selected.
JCL Object Documentation	Invoke the Object Documentation screen for the JCL Object selected.
View Source Code	Display the selected Natural or COBOL object source code in a browser.
View JCL Source Code	Display the selected JCL object source code in a browser.

# Data Set List Context Menu

The Data Set list context menu allows you to navigate between the JCL Viewer screen and the JCL Data Set Viewer screen or if showing Data Definition Modules, view the DDM Source Code or display the Database Access (CRUD) screen for the particular Job step.

The following Figure 3-50 illustrates the Data Set List context menu when showing Data Sets.

CL Steps					
Line Ste	p Name	Program	Natural Program	Natural Library	External Object
0006 DEI	LEDSN	IEFBR14			
0014 NA	TBATCH	NATBAT41	NATBATCH	COBJCLNT	
ata Sets - S	tep NATBATCH				Prev More
ata Sets - S DDCard	tep NATBATCH Name			DISP	Prev More
)ata Sets - S DDCard CMSYNIN	tep NATBATCH Name {In-Stream Data}			DISP	Prev More
)ata Sets - S DDCard CMSYNIN DDCARD	tep NATBATCH Name {In-Stream Data} {In-Stream Data}			DISP	Prev More
Data Sets - S DDCard CMSYNIN DDCARD STEPLIB	tep NATBATCH Name {In-Stream Data} {In-Stream Data} PPEX.NATURAL.LOAI	D		DISP	Prev More

Figure 3-50 Data Set List context menu when showing Data Sets

CONTEXT MENU ITEM	DESCRIPTION
JCL Data Set Viewer	Invoke the JCL Data Set Viewer screen. Only active when Data Sets are being displayed.
View DDM Source Code	Views the DDM Source Code. Only active when Data Definition Modules are being displayed.
Database Access (CRUD) for Job Step	Invoke the Database Access (CRUD) screen for the particular DDM/ Job Step. Only active when Data Definition Modules are being displayed.

3

**Natural Engineer Application Management** 

# JCL Data Set Viewer

The JCL Data Set Viewer option allows you to review the data sets being used within an application. Information will be displayed to show the JCL objects and steps using the data sets along with the actual JCL source code for each step.

The information is presented on a single screen.

# How to Invoke the JCL Data Set Viewer Option

Use the following navigation in the site workplace:

- Select the JCL Object required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: JCL Data Set Viewer.

Note: The JCL Data Set Viewer option is only available for applications with JCL objects loaded in the Repository.

3

# JCL Data Set Viewer Window

The data sets used by JCL objects within an application that has been loaded into the Repository are listed in the Data Set list box. If you select a data set, a list of the JCL steps referencing the data set is displayed in JCL step list box.

If you select one of the JCL steps, all the statement details for the selected JCL step are displayed in the source code list box.

The following Figure 3-51 illustrates the JCL Data Set Viewer screen.

JCL D	ata Set Viewe	r for COBJCLNT XG	LPN.NAT01.F	ILE01.DATAF					
Data Se	ets [XGSLPN.N	AT01.FILE01.DATAF]							
XGSL	PN.NAT01.FILE	01.DATAF							
								Prev M	ore
ICL Sta									
JUL SIE	:µs		1						
Line	JCL	Step Name	Program	DD Card	DISP	Natural Pgm	Natural Lib	Ext. Object	-
0004	INCNATED	DELEDSN	IEFBR14	CMWKF01	MOD, DELETE				
0006	JCLNAT01	DELEDSN	IEFBR14	CMWKF01	MOD, DELETE				=
0014	JCLNAT01	NATBATCH	NATBAT41	CMWKF01	,CATLG	NATBATCH	COBJCLNT		
0006	JCLNAT02	DELEDSN	IEFBR14	CMWKF01	MOD, DELETE				
0014	JCLNAT02	NATBATCH	NATBAT41	CMWKF01	,CATLG				
0006	JCLNATEX	DELEDSN	IEFBR14	CMWKF01	MOD, DELETE			INCNATED	
0010	ICI MATEY	NATRATEV DOON	NATRAT#1	CMM/KE01	CATLO	NATRATCH	COBICINT	DDOMATEY	
								Prev	ore
Source	Code - JCLNA	T01/NATBATCH							
JCLNA	T01 000000	14 //NATBATCH E	XEC PGM=NA	TBAT41,REG	SION=8M,				
JCLNA	T01 000000	15 // PARM=(	'PROFILE=N	EE53N41')					=
JCLNA	T01 000000	16 //STEPLIB D	D DSN=RZDB	A.DB177.NE	WLOAD, DISP=	SHR			
JCLNA:	T01 000000 T01 000000	17// D	D DSN=RZDB	NATURAL I	AD, DISP=SHR	D			
JCLNA	T01 000000	19 //SYSOUT D	D SYSOUT=*		IORD, 013F-31				
TOTATA	T01 000000	20 // משטראיד ה	D SVSOTT=*						Ŧ
							_		

Figure 3-51 JCL Data Set Viewer screen

If a Work File is selected in the JCL Steps List box the option to view the record layout of the work file is available by selecting the View Work File Layout button. Selecting this will show all the Offset Mapping for Work Files details. See <u>Offset Mapping for Work Files</u> for further information.

The following Figure 3-51-1 illustrates the JCL Data Set Viewer screen showing the Work File Layout details.

JCL Data Se	ata Set Viewe ts [XGSLPN.N	r for COBJCLNT XGS AT01.FILE01.DATAF]	LPN.NAT01.F	ILE01.DATAF				- 8	X
XGSLF	PN.NATUT.FILE	UT.DAIAF							
									_
								Prev	ore
JCL Ste	ps				1	1			
Line	JCL	Step Name	Program	DD Card	DISP	Natural Pgm	Natural Lib	Ext. Object	-
0004	INCNATED	DELEDSN	IEFBR14	CMWKF01	MOD, DELETE				
0006	JCLNAT01	DELEDSN	IEFBR14	CMWKF01	MOD, DELETE				=
0014	JCLNAT01	NATBATCH	NATBAT41	CMWKF01	,CATLG	NATBATCH	COBJCLNT		
0006	JCLNAT02	DELEDSN	IEFBR14	CMWKF01	MOD, DELETE				
0014	JCLNAT02	NATBATCH	NATBAT41	CMWKF01	,CATLG				
0006	JCLNATEX	DELEDSN	IEFBR14	CMWKF01	MOD, DELETE			INCNATED	
0010	ICI NATEV	NATRATEV DOCM	NATRAT/1	CMW/KE01	CATLO	NATRATCH	COBICINE	DDOMATEY	*
								Prev	ore
Work Fil	le Layout - JCl	NAT01/NATBATCH							
OBJECT	T: NATBATC	H - 0430 WRITE (	WORK 01						
						<b>F</b>			
558	art 1	na Level Field	d Name			Forma			=
	1 80 1 #FILE01-RECORD A80								
		1 REDE	FINE #FILE	01-RECORD					-
	1	8 2 #101-				NR			
Export								View Source C	ode
<u> </u>									

Figure 3-51-1 Work File Layout on JCL Data Set Viewer screen

3

Data Set List	List of all the d	lata sets used by the currently selected application.				
	The list of data 'Change Start F menu.	sets can be tailored to your requirements using the option Position of Data Set List' from the Data Set context				
	The Data Set L been specified.	ist title will append any reposition values that may have				
JCL Step List	Lists all the JCL steps referencing the selected data set.					
	A context menu is available to navigate between the JCL Data Set screen and the Object Viewer, Object Reference or Object Documentation, JCL Viewer, JCL Natural Program Viewer or Col Maintenance screens, or use the View Source Code option by usin <b>right hand mouse button</b> on a selected object. The columns available are:					
	The columns a	vailable are:				
	Line	The statement line number of the JCL step.				
	JCL	The name of the JCL object.				
	Step Name	The name of the JCL step.				
	Program	The executable program name for the JCL step.				
	DD Card	The DD Card.				
	DISP	The Disposition keyword.				
	Natural Program	The name of the Natural program to be executed for the JCL step.				
		Note: Only available for JCL steps that are running batch Natural.				
	External Object	The name of the JCL object that contains the JCL statements, if the JCL step references external sets of JCL statements, for example, INCLUDES or PROCS.				

SCREEN ITEMS DESCRIPTION

The Source Code box is a multi-purpose list box used to display, either the Source Code or the Work File Layout information for the selected item. The display is controlled by the View Work File Layout/View Source Code button. The default display is Source Code.

Source CodeDisplays all the JCL statement references for the selected JCL step.Work File LayoutDisplays the start and end byte positions of each field within a record<br/>layout, for work files. See Offset Mapping for Work Files for further<br/>details.

Note: For more information on the Data Set and JCL Step context menus, refer to section JCL Data Set Viewer Context Menus.

Data Set List group:	
Prev	Scrolls the data set list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the data set list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
JCL Step List group:	
Prev	Scrolls the JCL step list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the JCL step list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Source Code List group	:
View Work File Layout	Displays the record layout of the selected work file. This button will alternate with the View Source Code button depending on what option is currently being shown.
View Source Code	Displays all the JCL statement references for the selected JCL step. This button will alternate with the View Work File Layout button depending on what option is currently being shown.
Export	Allows the work file layout to be exported to a spreadsheet e.g., Microsoft Excel.
	Note: This is only visible when a Work File Layout is being displayed.

## BUTTON NAME DESCRIPTION

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

# 3

# JCL Data Set Viewer Context Menus

The JCL Data Set Viewer context menus are invoked by placing the cursor on any of the items listed in the Data Set or JCL Step lists and using the right hand mouse button with a single click.

# Data Set List Context Menu

The Data Set list context menu allows you to reposition the list of data sets to start from a particular data set name.

The following Figure 3-52 illustrates the Data Set List context menu

JCL Data Set Viewer for COBJCLNT XGSLPN.NA	T01.FILE01.DATAF		- • •
Data Sets			
PJN.PRCEX.INOUT.FILE01.DATAV			
PJN.PRCEX.INOUT.FILE02.DATAF			
PJN.PRCEX.INOUT.FILE03.DATAF			
PJN.PRCIN.INOUT.FILE01.DATAV			
PJN.PRCIN.INOUT.FILE02.DATAF			
PJN.PRCIN.INOUT.FILE03.DATAF			
PPEX.NATURAL.LOAD			=
RZDBA.DB177.LOAD			-
RZDBA.DB177.NEWLOAD			
XGSLPN.NAT01.FILE01.DATAF			▼
	Change Position of Data Set List	ſ	Dray Mara
			More More

Figure 3-52 Data Set List context menu

CONTEXT MENU ITEM	DESCRIPT	ION
Change Start Position of Data Set List	Reposition the name.	list of data sets to start from a particular data set
	The reposition name or part n	value can be input using either a complete ame using an '*' (asterisk) wildcard.
	The reposition highlight the t	value is appended to the data set list title to ype of repositioning being applied.
	Possible repos	ition values are:
	Value	Result
	''(blank)	Reposition to the top of the data set list.
	*	Reposition to the top of the data set list.
	ABC*	Only show data sets that are prefixed by 'ABC'.
	XYZ	Reposition to the first data set that either matches or is greater than 'XYZ' and then continue the data set list from that point.

# JCL Step List Context Menu

The JCL Step List context menu allows you to navigate between the JCL Data Set Viewer screen and the Object Viewer, Object Reference, Object Documentation for Natural Objects, Cobol Link Maintenance or Object Viewer, Object Reference, Object Documentation for JCL Objects, or use the View Source Code option for Natural or JCL objects.

Note: The JCL Step List context menu is not available for any steps that are not executing either Cobol or Natural programs. For example z/OS Utilities.

The following Figure 3-53 illustrates the JCL Step List context menu

Data Sets [XGSLPN.NAT01.FILE01.DATAF]       XGSLPN.NAT01.FILE01.DATAF       YGSLPN.NAT01.FILE01.DATAF       Prev         JCL Steps         Line     JCL       Step Name     Program       DD Card     DISP       Natural Pgm     Natural Lib       EX. Obj       0004     INCNATDD       DELEDSN     IEFBR14       CMWKF01     MOD,DELETE       0006     JCLNAT01       DELEDSN     IEFBR14       CMWKF01     MOD,DELETE       0006     JCLNAT01       DELEDSN     IEFBR14       CMWKF01     MOD,DELETE       D014     NATBATCH	More
XGSLPN.NAT01.FILE01.DATAF         Prev         JCL Steps         Line       JCL         Step Name       Program         DD Card       DISP         Natural Pgm       Natural Lib         EX. Obj       EFBR14         O004       INCNATDD         DELEDSN       IEFBR14         CMWKF01       MOD,DELETE         O006       JCLNAT01         DELEDSN       IEFBR14         CMWKF01       MOD,DELETE         O014       INATBATCH         MATBATCH       CMWKF01         MATBATCH       CMWKF01	More
Display         Prev           JCL Steps         Line         JCL         Step Name         Program         DD Card         DISP         Natural Pgm         Natural Lib         Ext. Obj           0004         NICNATDD         DELEDSN         IEFBR14         CMWKF01         MOD,DELETE         DISP         DISP         Natural Pgm         Natural Lib         Ext. Obj           0006         JCLNAT01         DELEDSN         IEFBR14         CMWKF01         MOD,DELETE         DISP	More
Display         Prev           JCL Steps         Line         JCL         Step Name         Program         DD Card         DISP         Natural Pgm         Natural Lib         Ext. Obj           0004         NICNATDD         DELEDSN         IEFBR14         CMWKF01         MOD,DELETE         DOUBLEDSN         IEFBR14         CMWKF01         MOD,DELETE         DOUBLETE         DOUBLETE <td< td=""><td>More</td></td<>	More
Display         Prev           JCL Steps         Line         JCL         Step Name         Program         DD Card         DISP         Natural Pgm         Natural Lib         Ext. Obj           0004         INCNATDD         DELEDSN         IEFBR14         CMWKF01         MOD,DELETE         DISP         DISP         Natural Pgm         Natural Lib         Ext. Obj           0006         JCLNAT01         DELEDSN         IEFBR14         CMWKF01         MOD,DELETE         DISP	More
DCL Steps         Prev           Line         JCL         Step Name         Program         DD Card         DISP         Natural Pgm         Natural Lib         Ext. Ob,           0004         INCNATDD         DELEDSN         IEFBR14         CMWKF01         MOD,DELETE         DISP         DISP         Natural Pgm         Natural Lib         Ext. Ob,           0006         JCLNAT01         DELEDSN         IEFBR14         CMWKF01         MOD,DELETE         DISP         NATBATCH         ONTRATCH         NATBATCH         CATURE         DATBATCH         CATURE         DISP         NATBATCH         CATURE         DISP         DISP         DISP         DISP	More
JCL Steps         Prev           Line         JCL         Step Name         Program         DD Card         DISP         Natural Pgm         Natural Lib         Ext. Ob,           0004         INCNATDD         DELEDSN         IEFBR14         CMWKF01         MOD,DELETE         DISP         IEFBR14         CMWKF01         NATBATCH         CMWKF01         MOD,DELETE         DISP         IEFBR14         CMWKF01         IEFBR14         IEFBR14 <td>More</td>	More
JCL Steps         Prev           Line         JCL         Step Name         Program         DD Card         DISP         Natural Pgm         Natural Lib         Ext. Obj           0004         INCNATDD         DELEDSN         IEFBR14         CMWKF01         MOD,DELETE         DISP         Interaction         DISP         Interaction         Interaction         DISP         Natural Pgm         Natural Lib         Ext. Obj         Ext. Obj         Interaction         Interaction	More
JCL Steps         Prev           Line         JCL         Step Name         Program         DD Card         DISP         Natural Pgm         Natural Lib         Ext. Obj           0004         INCNATDD         DELEDSN         IEFBR14         CMWKF01         MOD,DELETE         DISP         NATBATCH         MATBATCH         CMWKF01         MOD,DELETE         DISP         NATBATCH         COBJICI NT	More
JCL Steps  Line JCL Step Name Program DD Card DISP Natural Pgm Natural Lib Ext. Ob, 0004 INCNATDD DELEDSN IEFBR14 CMWKF01 MOD,DELETE 0006 JCLNAT01 DELEDSN IEFBR14 CMWKF01 MOD,DELETE 0014 JCLNAT01 NATBATCH NATBATCH CMWKF01 CATLG	More
JCL Steps           Line         JCL         Step Name         Program         DD Card         DISP         Natural Pgm         Natural Lib         Ext. Ob           0004         INCNATDD         DELEDSN         IEFBR14         CMWKF01         MOD,DELETE         0006         JCLNAT01         DELEDSN         IEFBR14         CMWKF01         MOD,DELETE         0014         JCLNAT01         NATBATCH         MATBATCH         CMWKF01         MOD,DELETE         0014         JCLNAT01         DELEDSN         IEFBR14         DELEDSN <td>·</td>	·
Line         JCL         Step Name         Program         DD Card         DISP         Natural Pgm         Natural Lib         Ext. Ob           0004         INCNATDD         DELEDSN         IEFBR14         CMWKF01         MOD,DELETE         E         E           0006         JCLNAT01         DELEDSN         IEFBR14         CMWKF01         MOD,DELETE         E         E           0014         JCLNAT01         NATBATCH         MATBAT41         CMWKF01         MOD,DELETE         E         E	
0004         INCNATDD         DELEDSN         IEFBR14         CMWKF01         MOD,DELETE           0006         JCLNAT01         DELEDSN         IEFBR14         CMWKF01         MOD,DELETE           0014         JCLNAT01         DELEDSN         IEFBR14         CMWKF01         MOD,DELETE           0014         JCLNAT01         NATBATCH         MATBATCH         CATURED         NATBATCH         COBJICI NT	ject 📩
0006 JCLNAT01 DELEDSN IEFBR14 CMWKF01 MOD,DELETE	
0014 JCINAT01 NATBATCH NATBATCH CMWKE01 CATLO NATBATCH COBJCINT	=
0006 JCLNAT02 DELEDSN Object Viewer	
0014 JCLNAT02 NATBATCH Object Reference	
0006 JCLNATEX DELEDSN Object Documentation TE INCNAT	DD
JCL Viewer Prev	More
Source Code JCL Object Reference	
JCL Object Documentation	
View Course Colda	
view source code	
View JCL Source Code	
View Work	

Figure 3-53 JCL Step List context menu

3

CONTEXT MENUITEM	DESCRIPTION
Object Viewer	Invoke the Object Viewer screen for the program selected.
Object Reference	Invoke the Object Reference screen for the program selected.
Object Documentation	Invoke the Object Documentation screen for the program selected.
Cobol Link Maintenance	Invoke the Cobol Link Maintenance screen.
	Note: Only available if the JCL step is executing a Cobol program and Cobol Links have been specified.
JCL Viewer	Invoke the JCL Viewer.
JCL Object Reference	Invoke the Object Reference screen for the JCL Object selected.
JCL Object Documentation	Invoke the Object Documentation screen for the JCL Object selected.
View Source Code	Display the selected Natural or COBOL object source code in a browser.
View JCL Source Code	Display the selected JCL object source code in a browser.

# CONTEXT MENU ITEM DESCRIPTION

# JCL Diagram

The JCL Diagram option provides a mechanism to diagrammatically illustrate the relationship within JCL objects between the JCL steps, datasets, database access definitions (e.g. DDMs, SQL Tables or Predict User Views) and executable batch programs.

The JCL Diagram option is accessed by placing the cursor on any of the JCL objects displayed in the site workplace and using the right hand mouse button with a single click to view the context menu.

The JCL Diagram will consist of individual pages, a header page for the JCL object, a summary page of all the JCL steps available and a separate page for each JCL step.

Each JCL step detail page will show the steplib, database access definition, program, data set and print file references available for that step.

The JCL Diagrams are drawn and displayed using Microsoft Visio. From the diagram it is possible to view the source code of the JCL object, the program, database access definition or data sets using GenSource. This is invoked by simply selecting the respective object on the diagram.

Note: For more information on GenSource refer to Chapter 2 in the Natural Engineer Reporting manual.

The diagrams can be printed and/or saved using the functions found within Microsoft Visio, providing useful additional systems documentation that will complement existing systems specifications.

The following Figure 3-54 illustrates the JCL Diagram for JCL object JCLNAT01 step NATBATCH



Figure 3-54 JCL Diagram for JCL Object JCLNAT01 step NATBATCH

The JCL Diagram shows the JCL step NATBATCH within JCL object JCLNAT01. For this step all the steplib, database access definition, program, data set and print file information is displayed.

To the left of the diagram is the GenJCL.vss stencil showing all the shapes available within the diagrams.

The source code for the database access definition, JCL step, program and data set can be viewed using GenSource, which is invoked by selecting the respective shape on the diagram and using a double-click of the left hand mouse button.

Note: For complex diagrams where link lines and object items are difficult to distinguish, the diagrams can be re-organized by dragging and dropping selected items.



# How to Invoke the JCL Diagram Option

Use the following navigation in the site workplace:

- Select the JCL Object required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: JCL Diagram.

Note: The JCL Diagram option is only available for applications with JCL objects loaded in the Repository.

# **Stencils and Shapes**

The JCL Diagram is drawn using Microsoft Visio using the shapes found in the GenJCL.vss stencil. This can be located in the DATA\VSD folder of the Natural Engineer installation.

The following describes the shapes used on the JCL diagram.

# JCL Object

This shape is used to represent the JCL object containing the JCL statements.

The title section of the shape will always show 'JCL'.

The detail section of the shape will show the name of the JCL object.

GenSource is not available for this shape.

The following Figure 3-55 illustrates the shape used for JCL objects.



Figure 3-55 Shape used for JCL objects

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# **JCL Step**

This shape is used to represent the JCL step.

The title section of the shape will show the JCL step name.

The detail section of the shape will show any program and parameter data.

GenSource is available for this shape and will display the JCL object source code.

The following Figure 3-56 illustrates the shape used for JCL steps.



Figure 3-56 Shape used for JCL steps

# Steplib

This shape is used to represent the steplib references within a JCL step. Steplibs are the load libraries where the executable batch programs and databases are located.

The title section of the shape will always show 'STEPLIB'.

The detail section of the shape will show the name of the steplib data set.

GenSource is not available for this shape.

The following Figure 3-57 illustrates the shape used for Steplibs.



Figure 3-57 Shape used for Steplibs



# **Natural Program**

This shape is used to represent the Natural program references within a JCL step. This is only available if the JCL step is executing batch Natural objects.

The title section of the shape will always show 'NATURAL PROGRAM'.

The detail section of the shape will show the name of the Natural program.

GenSource is available for this shape and will display the Natural program source code.

The following Figure 3-58 illustrates the shape used for Natural Programs.



Figure 3-58 Shape used for Natural Programs

#### **COBOL Program**

This shape is used to represent the COBOL program references within a JCL step. This is only available if the JCL step is executing batch COBOL objects.

The title section of the shape will always show 'COBOL PROGRAM'.

The detail section of the shape will show the name of the COBOL program.

GenSource is available for this shape and will display the COBOL program source code.

The following Figure 3-58-1 illustrates the shape used for COBOL Programs.



Figure 3-58-1 Shape used for COBOL Programs

## **COBOL Link**

This shape is used to represent the <u>COBOL Link</u> references within a JCL step. This is only available if the JCL step is executing a COBOL Link objects.

The title section of the shape will always show 'COBOL Link.

The detail section of the shape will show the name of the COBOL Link.

GenSource is available for this shape and will display the COBOL objects that are contained within the COBOL Link.

The following Figure 3-58-2 illustrates the shape used for COBOL Links.



Figure 3-58-2 Shape used for COBOL Links

# **Print Files**

This shape is used to represent the print file references within a JCL step.

The detail section of the shape will show the name and destination of the print file.

GenSource is not available for this shape.

The following Figure 3-60 illustrates the shape used for print files.



Figure 3-60 Shape used for print files



# **Data Sets**

This shape is used to represent the data set references within a JCL step.

The detail section of the shape will show the name of the data set.

GenSource is available for this shape and will display the data set record layout used by the batch program.

If the data set is a Work File used by Natural programming objects, then GenSource will display the Offset Mapping details for that file.

*Note: For more information on Offset Mapping refer to the section <u>Offset Mapping for</u> <u>Work Files.</u>* 

The following Figure 3-59 illustrates the shape used for data sets.



Figure 3-59 Shape used for data sets

Note: The JCL Analysis process needs to be processed first, in order for the necessary work file and cross-reference record layout data to be available. For more information on JCL Analysis refer to Chapter 3 in the Natural Engineer Application Management for Windows manual.

## **DDMs**

This shape is used to represent the DDM references within a JCL step.

The detail section of the shape will show the name of the DDM.

GenSource is available for this shape and will display the DDM record layout used by the batch program.

The following Figure 3-61 illustrates the shape used for DDMs.



Figure 3-61 Shape used for DDMs

# **SQL** Tables

This shape is used to represent the SQL Table references within a JCL step.

The detail section of the shape will show the name of the SQL Table.

GenSource is available for this shape and will display the SQL Table record layout used by the batch program. The SQL table has to be loaded into the Global SQL Node.

The following Figure 3-61-1 illustrates the shape used for SQL Tables.



Figure 3-61-1 Shape used for SQL Tables



# **Predict User Views**

This shape is used to represent the Predict User View references within a JCL step.

The detail section of the shape will show the name of the Predict User View.

GenSource is available for this shape and will display the Predict User View record layout used by the batch program.

The following Figure 3-61-2 illustrates the shape used for Predict User Views.



Figure 3-61-2 Shape used for Predict User Views

Note: For Database Access Definitions (i.e., DDMS, SQL Tables and Predict User Views) the JCL Analysis process needs to be processed first, in order for the necessary work file and cross-reference record layout data to be available. For more information on JCL Analysis refer to Chapter 3 in the Natural Engineer Application Management for Windows manual.

# **Offset Mapping for Work Files**

The Offset Mapping for Work Files provides the facility to review the start and end byte positions of each field within a record layout, for work files referenced by Natural or COBOL programming objects.

The start and end values span the whole record layout, starting from the first byte of the record and ending at the last byte of the record.

The Offset Mapping details can be viewed using the GenSource option from the JCL Diagram, by selecting a dataset that is being accessed by a programming object or by selecting a dataset that contains a work file from the JCL Viewer or by selecting a dataset on the JCL Viewer or JCL Dataset Viewer and selecting the View Work File Layout button. In these cases the Offset Mapping Details will be shown in the bottom section of the window.

The following Figure 3-62 illustrates the Offset Mapping for Work Files in GenSource.

	GenSourd	e: Source	Code fo	r JCLNAT01		_ 🗆 🗵
Eile	Options	First Ba	ck Fo <u>r</u> wa	rd Last Preview <b>About</b>		
ова	ECT: NA	TBATCH -	0430 🚺	RITE WORK 1		
	START	END	LEVEL	FIELD NAME	FORMAT	
	l	80	1	#FILEO1-RECORD REDEFINE #FILEO1-RECORD	880	
	1	8	2	#F01-RECNO	NS	
	9	80	2	#F01-FILLER-BYTES	Al(1:72)	

Figure 3-62 Offset Mapping for Work Files in GenSource.

The name of the programming object, the statement line number and the statement keywords of the Work File access statement will be shown, followed by the record layout and offset mapping information.



# Objects Referenced in JCL Steps

The Objects Referenced in JCL Steps option shows all Objects, COBOL or Natural, that have been referenced in the steps of the JCL objects and steps. Information will be displayed to show the JCL steps that each Object is referenced in along with the actual JCL source code for each step.

The information is presented on a single screen.

# How to Invoke the Objects Referenced in JCL Steps Option

Use the following navigation in the site workplace:

- Select the application required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Objects Referenced in JCL Steps.
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## **Objects Referenced in JCL Steps Window**

For the selected Object, a list of the JCL objects and steps that reference the Object are displayed in JCL steps list box.

If you select one of the JCL steps, all the statement details for the selected JCL step are displayed in the source code list box.

The following Figure 3-63 illustrates the Objects Referenced in JCL Steps screen.

bject Filtering	Options						
Object Types	All Objects		•	•	Language All	-	·
bjects							
Name		Library	у	Call Ty	pe		
COB10P07		COBJCLNT		Cobol	Program		
COB10P08		COBJCLNT		Cobol	Program		
COB10P09		COBJO	CLNT	Cobol	Program		
COB10P10		COBJO	CLNT	Cobol	Program		
COBSQL01		COBJO	CLNT	Cobol	Program		
NATBATCH		COBJO	CLNT	Execut	te		-
CL Steps - NA	TBATCH/COBJCLNT					<b>5</b> 13	5
CL Steps - NA	TBATCH/COBJCLNT Step Name	Li	ine P	Program	Natural Program	Exe Library	External Object
CL Steps - NA ICL ICLNAT01	TBATCH/COBJCLNT Step Name NATBATCH	Li	.ine P 0014 N	Program NATBAT41	Natural Program	Exe Library COBJCLNT	External Object
CL Steps - NA JCL JCLNAT01 JCLNATEX	TBATCH/COBJCLNT Step Name NATBATCH NATBATEX.PRCNA	Li O TEX O	.ine P 0014 N 0010 N	Program NATBAT41 NATBAT41	Natural Program NATBATCH NATBATCH	Exe Library COBJCLNT COBJCLNT	External Object PRCNATEX
CL Steps - NA ICL ICLNAT01 ICLNATEX ICLSETNT	TBATCH/COBJCLNT Step Name NATBATCH NATBATEX.PRCNAT NATBATCH	Li O TEX O O	ine P 014 N 010 N 025 N	Program NATBAT41 NATBAT41 NATBAT41	Natural Program NATBATCH NATBATCH NATBATCH	Exe Library COBJCLNT COBJCLNT COBJCLNT	External Object PRCNATEX
CL Steps - NA JCL JCLNAT01 JCLNATEX JCLSETNT PRCNATEX	TBATCH/COBJCLNT Step Name NATBATCH NATBATEX.PRCNAT NATBATCH PRCNATEX	Li 01 TEX 01 01	ine P 014 N 010 N 025 N 006 N	Program NATBAT41 NATBAT41 NATBAT41 NATBAT41	Natural Program NATBATCH NATBATCH NATBATCH NATBATCH	Exe Library COBJCLNT COBJCLNT COBJCLNT COBJCLNT	External Object PRCNATEX
CL Steps - NA JCL JCLNAT01 JCLNATEX JCLSETNT PRCNATEX	TBATCH/COBJCLNT Step Name NATBATCH NATBATEX.PRCNAT NATBATCH PRCNATEX	TEX 00	ine P 014 N 010 N 025 N 0006 N	Program NATBAT41 NATBAT41 NATBAT41 NATBAT41	Natural Program NATBATCH NATBATCH NATBATCH NATBATCH	Exe Library COBJCLNT COBJCLNT COBJCLNT COBJCLNT	External Object PRCNATEX
CL Steps - NA ICL ICLNAT01 ICLNATEX ICLSETNT PRCNATEX	TBATCH/COBJCLNT Step Name NATBATCH NATBATEX.PRCNA <sup>T</sup> NATBATCH PRCNATEX	Li 01 TEX 01 01	ine P 1014 N 1010 N 1025 N 1006 N	Program VATBAT41 VATBAT41 VATBAT41 VATBAT41	Natural Program NATBATCH NATBATCH NATBATCH NATBATCH	Exe Library COBJCLNT COBJCLNT COBJCLNT COBJCLNT	External Object PRCNATEX
CL Steps - NA JCL JCLNAT01 JCLNATEX JCLSETNT PRCNATEX	TBATCH/COBJCLNT Step Name NATBATCH NATBATEX.PRCNAT NATBATCH PRCNATEX	Li 01 TEX 01 01	ine P 0014 N 0010 N 0025 N 0006 N	Program NATBAT41 NATBAT41 NATBAT41 NATBAT41	Natural Program NATBATCH NATBATCH NATBATCH NATBATCH	Exe Library COBJCLNT COBJCLNT COBJCLNT COBJCLNT	PRCNATEX Prev More
CL Steps - NA JCL JCLNAT01 JCLNATEX JCLSETNT PRCNATEX	TBATCH/COBJCLNT Step Name NATBATCH NATBATEX.PRCNAT NATBATCH PRCNATEX JCLNAT01/NATBATC	Li O TEX O O O	ine P 1014 N 1010 N 1025 N 1006 N	Program VATBAT41 VATBAT41 VATBAT41 VATBAT41 VATBAT41	Natural Program NATBATCH NATBATCH NATBATCH NATBATCH	Exe Library COBJCLNT COBJCLNT COBJCLNT COBJCLNT	PRCNATEX Prev More
CL Steps - NA JCL JCLNAT01 JCLNAT01 JCLNATEX JCLSETNT PRCNATEX DURCE Code - JCLNAT01	TBATCH/COBJCLNT Step Name NATBATCH NATBATCH NATBATCH PRCNATEX JCLNAT01/NATBATC	CH	Line P 0014 N 0010 N 0025 N 0006 N	Program VATBAT41 VATBAT41 VATBAT41 VATBAT41 VATBAT41	Natural Program NATBATCH NATBATCH NATBATCH NATBATCH 141, REGION=8M,	Exe Library COBJCLNT COBJCLNT COBJCLNT COBJCLNT	External Object PRCNATEX Prev More
CL Steps - NA JCL JCLNAT01 JCLNAT01 JCLNATEX JCLSETNT PRCNATEX ource Code - JCLNAT01 JCLNAT01	TBATCH/COBJCLNT Step Name NATBATCH NATBATCH NATBATCH PRCNATEX JCLNAT01/NATBATC 00000014 //NATB	CH	EXEC	Program VATBAT41 VATBAT41 VATBAT41 VATBAT41 VATBAT41 PGM=NATBA PFILE=NEES	Natural Program NATBATCH NATBATCH NATBATCH NATBATCH NATBATCH	Exe Library COBJCLNT COBJCLNT COBJCLNT COBJCLNT	External Object PRCNATEX Prev More
CL Steps - NA JCL JCLNAT01 JCLNAT01 JCLNAT01 JCLNAT01 JCLNAT01 JCLNAT01	TBATCH/COBJCLNT Step Name NATBATCH NATBATCH NATBATCH PRCNATEX JCLNAT01/NATBATC 00000014 //NATBATC 00000015 // 00000015 //STEI	CH BATCH PARM= PLIB	ine P 1014 N 1010 N 1025 N 1006 N EXEC = ('PRO DD DS DD DS	Program VATBAT41 VATBAT41 VATBAT41 VATBAT41 VATBAT41 VATBAT41 VATBAT41 VATBAT41 VATBAT41 VATBAT41	Natural Program NATBATCH NATBATCH NATBATCH NATBATCH 141, REGION=8M, 3N41') B177, NEWLOAD, DISP	Exe Library COBJCLNT COBJCLNT COBJCLNT COBJCLNT ISP=SHR =SHR	External Object PRCNATEX Prev More
CL Steps - NA JCL JCLNAT01 JCLNATEX JCLSETNT PRCNATEX OURCE Code - JCLNAT01 JCLNAT01 JCLNAT01	TBATCH/COBJCLNT Step Name NATBATCH NATBATCH NATBATCH PRCNATEX JCLNAT01/NATBATCC 00000014 //NATI 00000015 // 00000016 //STEI 00000017 //	CH BATCH PARM= PLIB	ine P 1014 N 1010 N 1025 N 1006 N EXEC = ('PRO DD DS DD DS DD DS	Program VATBAT41 VATBAT41 VATBAT41 VATBAT41 VATBAT41 VATBAT41 PILE=NE5 SN=RZDBA.D SN=RZDBA.D SN=RZDBA.V	Natural Program NATBATCH NATBATCH NATBATCH NATBATCH NATBATCH 141, REGION=8M, 3N41') B177. NEWLOAD, DISP TURAL. LOAD, DISP TURAL. LOAD, DISP	Exe Library COBJCLNT COBJCLNT COBJCLNT COBJCLNT COBJCLNT ISP=SHR =SHR P=SHR	External Object PRCNATEX Prev More
CL Steps - NA JCL JCLNAT01 JCLNATEX JCLSETNT PRCNATEX DURCE Code - JCLNAT01 JCLNAT01 JCLNAT01 JCLNAT01 JCLNAT01	TBATCH/COBJCLNT Step Name NATBATCH NATBATCH NATBATCH PRCNATEX JCLNAT01/NATBATCH 00000014 //NATBATCH 00000015 // 00000015 // 00000015 // 00000018 // 00000019 //SYSG	Li OITEX OI OI OI CH BATCH PARM= PLIB OUT	ine P 0014 N 0010 N 0025 N 0006 N 0006 N 0006 N 0006 N 0006 N 0006 N 000 S 00 DS 00 DS 00 DS 00 SY	Program VATBAT41 VATBAT41 VATBAT41 VATBAT41 VATBAT41 VATBAT41 DFILE=NEES SN=RZDBA.D SN=RZDBA.D SN=PPEX.NA (SOUT=+	Natural Program NATBATCH NATBATCH NATBATCH NATBATCH NATBATCH 141, REGION=8M, 3N41') B177. NEWLOAD, DI B177. LOAD, DISP TURAL. LOAD, DISP	Exe Library COBJCLNT COBJCLNT COBJCLNT COBJCLNT SP=SHR SHR P=SHR	PRCNATEX Prev More

Figure 3-63 Objects Referenced in JCL Steps screen

#### SCREEN ITEMS DESCRIPTION

Object Filtering group:					
Object Types	Allows you to select the types of object to be listed. The selections are dependent on the objects identified.				
Language	Allows you to select the programming language of the objects to be listed.				
Objects group:					
Objects List	Lists all the Objects and respective libraries referenced by the JCL Objects loaded into the repository.				
	The list of Objects can be tailored to your requirements using the option 'Change Start Position of Object List' from the Objects context menu.				
	The Objects List title specified.	will append any reposition values that may have been			
	The columns available	e are:			
	Name	The name of the Object.			
	Library	The name of the Library.			
	Call Type	The type of call invoking the Object.			

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JCL group:							
JCL Step List	Lists all the JCL steps referencing the selected Objects.						
	A context menu is available to navigate between the Objects Referenced in JCL Steps screen and the Object Viewer, Object Reference, Object Documentation for Natural or COBOL Objects, Cobol Link Maintenance or Object Viewer, Object Reference, Object Documentation for JCL Objects, or use the View Source Code option by using the <b>right hand mouse button</b> on a selected object						
	The columns available are:						
	JCL	The name of the JCL object.					
		If a JCL Object name is followed by a * then this indicates that the JCL Object has been loaded as Global JCL.					
	Step Name	The name of the JCL step.					
	Line	The statement line number of the JCL step.					
	Program	The executable program name for the JCL step.					
	Natural Program	The name of the Natural Object.					
	Natural Library	The name of the Natural Library.					
	External Object	The name of the JCL object that contains the JCL statements, if the JCL step references external sets of JCL statements, for example, INCLUDES or PROCS.					
Source Code group:							

Source Code

Displays all the JCL statement references for the selected JCL step.

Note: For more information on the Object and JCL Steps List context menus, refer to section <u>Objects Referenced in JCL Steps Context Menus</u>.

Objects List group:	
Prev	Scrolls the Objects list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the Objects list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
JCL Step List group:	
Prev	Scrolls the JCL step list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the JCL step list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.

# BUTTON NAME DESCRIPTION

## **Objects Referenced in JCL Steps Context Menus**

The Objects Referenced in JCL Steps context menus are invoked by placing the cursor on any of the items listed in the Objects or JCL Step lists and using the right hand mouse button with a single click.

#### **Objects List Context Menu**

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The Objects context menu is invoked by placing the cursor on any of the items listed in the Objects list and using the right hand mouse button with a single click.

CONTEXT MENU ITEM	DESCRIPT	FION				
Change Start Position of Object List	Reposition the list of objects to start from a particular object name.					
	The repositio name or part	The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard.				
	The reposition value is appended to the Objects list title to highlight the type of repositioning being applied.					
	Possible reposition values are:					
	Value	Result				
	''(blank)	Reposition to the top of the object list.				
	*	Reposition to the top of the object list.				
	ABC*	Only show objects that are prefixed by 'ABC'.				
	XYZ	Reposition to the first object that either matches or is greater than 'XYZ' and then continue the object list from that point.				

The following Figure 3-64 illustrates the Object List context menu

.

Object Types All Objec	•		
bjects			
Name	Library	Call Type	
COB10P07	COBJCINT	Cohol Program	
COB10P08	совјс С	Change Start Position of Object List	
COB10P09	COBJCLNT	Cobol Program	_
COB10P10	COBJCLNT	Cobol Program	
COBSQL01	COBJCLNT	Cobol Program	
NATBATCH	COBJCLNT	Execute	

Figure 3-64 Objects List context menu

\_\_\_\_

#### JCL Step List Context Menu

The JCL Steps List context menu allows you to navigate between the Objects Referenced in JCL Steps screen and the Object Viewer, Object Reference, Object Documentation for Natural or COBOL Objects, Cobol Link Maintenance or Object Viewer, Object Reference, Object Documentation for JCL Objects, or use the View Source Code option.

Note: The JCL Step List context menu is not available for any steps that are not executing either COBOL or Natural programs. For example z/OS Utilities.

aja at i mornig	g Options		_			_
Object Types	All Objects 🔹			Language All		•
bjects						
Name		Library	Call Ty	уре		
COB10P07		COBJCLNT	Cobol	Program		
COB10P08		COBJCLNT	Cobol	Program		
COB10P09		COBJCLNT	Cobol	Program		
COB10P10		COBJCLNT	Cobol	Program		
COBSQL01		COBJCLNT	Cobol	Program		
NATBATCH		COBJCLNT	Execu	ite		
L Steps - N	ATBATCH/COBJ	CLNT				Prev Mor
CL Steps - N.	ATBATCH/COBJ Step Name	CLNT Line P	rogram	Natural Program	Exe Library	Prev Mor
CL Steps - N. ICL ICLNAT01	ATBATCH/COBJ Step Name NATBATG**	CLNT Line P	rogram	Natural Program	Exe Library COBJCLNT	Prev Mor External Object
CL Steps - N. ICL ICLNAT01 ICLNATEX	ATBATCH/COBJ Step Name NATBATC NATBATE	CLNT Line P Object Viewer	rogram	Natural Program	Exe Library COBJCLNT COBJCLNT	Prev Mor External Object PRCNATEX
CL Steps - N. ICL ICLNAT01 ICLNATEX ICLSETNT	ATBATCH/COBJ Step Name NATBATC NATBATE NATBATC	CLNT Line P Object Viewer Object Reference	rogram	Natural Program TCH TCH TCH	Exe Library COBJCLNT COBJCLNT COBJCLNT	Prev Mor External Object PRCNATEX
CL Steps - N. ICL ICLNAT01 ICLNATEX ICLSETNT PRCNATEX	ATBATCH/COBJ Step Name NATBATC NATBATC NATBATC PRCNATE	CLNT Line P Object Viewer Object Reference Object Documer	rogram e	Natural Program TCH TCH TCH TCH TCH	Exe Library COBJCLNT COBJCLNT COBJCLNT COBJCLNT	Prev Mor External Object PRCNATEX
CL Steps - N. ICL ICLNAT01 ICLNATEX ICLSETNT PRCNATEX ICLNAT01	ATBATCH/COBJ Step Name NATBATC NATBATC NATBATC PRCNATE NATBATC	CLNT Line P Object Viewer Object Reference Object Documer	rogram e itation	Natural Program TCH TCH TCH TCH TCH TCH	Exe Library COBJCLNT COBJCLNT COBJCLNT COBJCLNT COBJCLNT	Prev Mor External Object PRCNATEX
CL Steps - N ICL ICLNAT01 ICLNATEX ICLSETNT PRCNATEX ICLNAT01 ICLNAT01	ATBATCH/COBJ Step Name NATBATC NATBATC NATBATC PRCNATE NATBATC NATBATC	CLNT Line P Object Viewer Object Reference Object Documen JCL Viewer	rogram e station	Natural Program TCH TCH TCH TCH TCH TCH	Exe Library COBJCLNT COBJCLNT COBJCLNT COBJCLNT COBJCLNT	Prev Mor External Object PRCNATEX
CL Steps - N JCL JCLNAT01 JCLNATEX JCLSETNT PRCNATEX JCLNAT01	ATBATCH/COBJ Step Name NATBATC NATBATC NATBATC PRCNATE NATBATC NATBATC	CLNT Line Object Viewer Object Reference Object Documen JCL Viewer JCL Object Referen	rogram e itation ence	Natural Program CH CH CH CH CH CH CH	Exe Library COBJCLNT COBJCLNT COBJCLNT COBJCLNT COBJCLNT	Prev Mor External Object PRCNATEX
CL Steps - N JCL JCLNAT01 JCLNATEX JCLSETNT PRCNATEX JCLNAT01 ICLNAT01	ATBATCH/COBJ Step Name NATBATC NATBATC NATBATC PRCNATE NATBATC NATBATC	CLNT Line P Object Viewer Object Reference Object Documer JCL Viewer JCL Object Reference JCL Object Reference	rogram tation ence mentation	Natural Program TCH TCH TCH TCH TCH TCH	Exe Library COBJCLNT COBJCLNT COBJCLNT COBJCLNT COBJCLNT COBJCLNT	Prev Mor External Object PRCNATEX DDCNATEY Prev Mor
CL Steps - N JCL JCLNAT01 JCLNATEX JCLSETNT PRCNATEX JCLNAT01 ICLNATEY (	ATBATCH/COBJ Step Name NATBATC NATBATC NATBATC PRCNATE NATBATC NATBATC	CLNT Line P Object Viewer Object Reference Object Documer JCL Viewer JCL Object Referen JCL Object Docu	rogram tation ence mentation	Natural Program TCH TCH TCH TCH TCH TCH	Exe Library COBJCLNT COBJCLNT COBJCLNT COBJCLNT COBJCLNT COBJCLNT	Prev Mor External Object PRCNATEX DDCNATEY Prev Mor

The following Figure 3-65 illustrates the JCL Steps List context menu

Figure 3-65 JCL Steps List context menu

CONTEXT MENU ITEM	DESCRIPTION
Object Viewer	Invoke the Object Viewer screen for the Natural or COBOL Program selected.
Object Reference	Invoke the Object Reference screen for the Natural or COBOI Program selected.
Object Documentation	Invoke the Object Documentation screen for the Natural or COBOL Program selected.
JCL Viewer	Invoke the JCL Viewer.
JCL Object Reference	Invoke the Object Reference screen for the JCL Object selected.
JCL Object Documentation	Invoke the Object Documentation screen for the JCL Object selected.
View Source Code	Display the selected Natural or COBOL Object source code in a browser.
View JCL Source Code	Display the selected JCL Object source code in a browser.



## JCL Reference

The JCL Reference option shows for a selected Database Access Definition (DDM, SQL Table or Predict User View) all JCL Objects and steps that the database access definition has been referenced in. Information will be displayed to show the JCL steps that each database access definition is referenced in along with the actual JCL source code for each step.

The information is presented on a single screen.

## How to Invoke the JCL Reference Option

Use the following navigation in the site workplace:

- \* Select the Database Access Definition required.
- \* Single click with the right hand mouse button to invoke the context menu.
- \* Select the option: JCL Reference.

Note: The JCL Reference context menu is only available if the Database Access Definition has been referenced in JCL objects and JCL Analysis has been run.

#### **JCL Reference Window**

For the selected Database Access Definition, a list of the JCL objects and steps that reference the Database Access Definition are displayed in JCL steps list box.

If you select one of the JCL steps, all the statement details for the selected JCL step are displayed in the source code list box.

JCL Reference for EMPLOYEES - - -JCL Steps JCL Step Name Line Program Natural Program Natural Library External Object 0014 NATBAT41 JCLNAT01 NATBATCH NATBATCH COBJCLNT JCLNATEX NATBATEX.PRCNATEX 0010 NATBAT41 NATBATCH COBJCLNT PRCNATEX JCLSETNT NATBATCH 0025 NATBAT41 NATBATCH COBJCLNT Prev More Source Code - PRCNATEX/PRCNATEX PRCNATEX 00000006 //PRCNATEX EXEC PGM=NATBAT41,REGION=8M, . PRCNATEX 00000000 // PARM=('PROFILE=NEES3N41')
PRCNATEX 00000000 // PARM=('PROFILE=NEES3N41')
PRCNATEX 00000008 //STEPLIB DD DSN=RZDBA.DB177.NEWLOAD,DISP=SHR
PRCNATEX 00000009 // DD DSN=RZDBA.DB177.LOAD,DISP=SHR
PRCNATEX 00000010 // DD DSN=PPEX.NATURAL.LOAD,DISP=SHR = PRCNATEX 00000011 //SYSOUT DD SYSOUT=\* PRCNATEX 00000012 //CMPRINT DD SYSOUT=\* PRCNATEX 00000013 //CMPRT01 DD SYSOUT=\*

The following Figure 3-66 illustrates the JCL Reference screen.

Figure 3-66 JCL Reference screen

SCREEN ITEMS	DESCRIPTION		
JCL Step List	Lists all the JCL steps referencing the selected Database Access Definition. A context menu is available to navigate between the JCL Reference screen and the Object Viewer, Object Reference, Object Documentation for Natural or COBOL Objects, Cobol Link Maintenance or Object Viewer, Object Reference Object Documentation for JCL Objects, or use the View Source Code option by using the <b>right hand mouse button</b> on a selected object. The columns available are:		
	JCL	The name of the JCL object.	
	Step Name	The name of the JCL step.	
	Line	The statement line number of the JCL step.	
	Program	The executable program name for the JCL step.	
	Natural Program	The name of the Natural Object.	
	Natural Library	The name of the Natural Library.	
	External Object	The name of the JCL object that contains the JCL statements, if the JCL step references external sets of JCL statements, for example, INCLUDES or PROCS.	
Source Code	Displays all the JCL	statement references for the selected JCL step.	

*Note: For more information on the JCL Steps List context menus, refer to section <u>JCL</u> <u>Reference Context Menus</u>.* 

BUTTON NAME	DESCRIPTION
JCL Step List group:	
Prev	Scrolls the JCL step list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the JCL step list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

3

## **JCL Reference Context Menus**

The JCL Reference context menus are invoked by placing the cursor on any of the items listed in the JCL Step lists and using the right hand mouse button with a single click.

#### JCL Steps List Context Menu

The JCL Steps List context menu allows you to navigate between the JCL Reference screen and the Object Viewer, Object Reference, Object Documentation for Natural or COBOL Objects, Cobol Link Maintenance or Object Viewer, Object Reference, Object Documentation for JCL Objects, or use the View Source Code option.

The following Figure 3-67 illustrates the JCL Steps List context menu

JCL Referen	ce for VEHICLES						
JCL	Step Name		Line	Program	Natural Program	Natural Library	External Object
JCLNAT01	NATBATCH		0014	NATBAT41	NATBATCH	COBJCLNT	
JCLNATEX	NATBATEX.	Obje	ect View	er	н	COBJCLNT	PRCNATEX
JCLSETNT	NATBATCH	0.	at Data		н	COBJCLNT	
DECNATEY	PRONATEX	Obje	ect Kere	rence	E E	COBICINT	
FRUNAILA	FRUNAILA	Obje	ect Doci	umentation		CODJCENT	
		JCL \	Viewer				
		JCL (	Object F	Reference			
		JCL (	Object l	Documentation	י ו		
		View		Carla			Prev More
Source Code -	ICLNAT01/N4	view	Source	Code			
Source code -	JOENATOTINA	View	/ JCL So	urce Code			
JCLNAT01 0	0000014 //				,		-
JCLNAT01 0	0000015 //	PARM	= ( ' PR(	DFILE=NEE53	N41')		-
JCLNAT01 0	0000016 //STE	PLIB	DD DS	SN=RZDBA.DB	177.NEWLOAD, DIS	P=SHR	
JCLNAT01 0	000001/ //		00 00	N=RZUBA.DB	TRAL LOAD, DISP=5	ORK -CUD	
JCLNAT01 0	0000019 //979	OUT	DD S	SOUT=*	JRAD. DOAD, DISP-	-onk	
JCLNAT01 0	0000020 //CMP	RINT	DD SY	SOUT=*			
		DTOI	DD 01	COUT-+			

Figure 3-67 JCL Steps List context menu

2

CONTEXT MENU ITEM	DESCRIPTION
Object Viewer	Invoke the Object Viewer screen for the Natural or COBOL Program selected.
Object Reference	Invoke the Object Reference screen for the Natural or COBOL Program selected.
Object Documentation	Invoke the Object Documentation screen for the Natural or COBOL Program selected.
JCL Viewer	Invoke the JCL Viewer.
JCL Object Reference	Invoke the Object Reference screen for the JCL Object selected.
JCL Object Documentation	Invoke the Object Documentation screen for the JCL Object selected.
View Source Code	Display the selected Natural or COBOL Object source code in a browser.
View JCL Source Code	Display the selected JCL Object source code in a browser.

3

# Database Access in Global JCL

The Database Access in Global JCL option shows all database access definitions that have been referenced in the JCL objects and steps loaded as Global JCL. Information will be displayed to show the JCL steps that each Object is referenced in along with the actual JCL source code for each step.

The information is presented on a single screen.

## How to Invoke the Database Access in Global JCL Option

Use the following navigation in the site workplace:

- Select the Global Job Control Language node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Database Access in Global JCL.

3

## **Database Access in Global JCL Window**

For the selected database access definition a list of the JCL objects and steps that reference the database access definition are displayed in JCL steps list box.

If you select one of the JCL steps, all the statement details for the selected JCL step are displayed in the source code list box.

The following Figure 3-68 illustrates the Database Access in Global JCL screen.

50	L Tables   PUVs						
Name				Da	tabase ID	File	e Nbr
VEHICLES				12	1	12	
							Deres
							Prev More
CL Stens - F	DM VEHICLES						
ICL	Step Name	Line	Program	Natural Program	Natural Lib	orary	External Object
ICLNAT01	NATBATCH	0014	NATBAT41	NATBATCH	COBADA		
					_		
							Prev Mo
ource Code	- JCLNAT01/NATBATC	H					
CLNAT01	00000014 //NATBA	TCH EXE	C PGM=NATE	SAT41, REGION=8N	۱,		
CLNAT01 CLNAT01	00000015 // P	TR DD	ROFILE=NEE DSN=RZDBA	(53N41') DB177 NEWLOAD	DISP=SHR		
CLNAT01	00000017 //	DD	DSN=RZDBA.	DB177.LOAD, DIS	P=SHR		
CLNAT01	00000018 //	DD	DSN=PPEX.N	NATURAL.LOAD, DI	SP=SHR		
01111101							

Figure 3-68 Database Access in Global JCL screen

3

SCREEN ITEMS	DESCRIPTION			
Data Definition Module List	Lists all the DDM an JCL Objects loaded i	d their Database IDs and File Numbers referenced by the into the repository.		
	The list of DDMs ca Start Position of DD	n be tailored to your requirements using the option 'Change M List' from the Data Definition Modules context menu.		
	The Data Definition may have been speci	Modules List title will append any reposition values that fied.		
	The columns availab	le are:		
	Data Definition Module	The name of the DDM.		
	Database ID	The Database ID of the DDM.		
	File Nbr	The File Number of the DDM.		
	NB: There are sepa DDMs, SQL Tables named accordingly.	rate tabs for each type of database access definition e.g., and Predict User Views (PUVs). The headings will be		
JCL Step List	Lists all the JCL steps referencing the selected database access definition.			
	A context menu is available to navigate between the Database Access in Glob JCL screen and the Object Viewer, Object Reference, Object Documentation is Natural or COBOL Objects, or Object Viewer, Object Reference, Object Documentation for JCL Objects, or use the View Source Code option by using the <b>right hand mouse button</b> on a selected object.			
	The columns availab	le are:		
	JCL	The name of the JCL object.		
	Step Name	The name of the JCL step.		
	Line	The statement line number of the JCL step.		
	Program	The executable program name for the JCL step.		
	Natural Program	The name of the Natural Object.		
	Natural Library	The name of the Natural Library.		
	External Object	The name of the JCL object that contains the JCL statements, if the JCL step references external sets of JCL statements, for example, INCLUDES or PROCS.		
Source Code	Displays all the JCL	statement references for the selected JCL step.		

Note: For more information on the Database Access Definition and JCL Steps List context menus, refer to section <u>Database Access in Global JCL Context Menus</u>.

#### SCOFEN ITEMS DESCRIPTION

#### BUTTON NAME DESCRIPTION

Database Access Definit	tion List group:
Prev	Scrolls the list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
JCL Step List group:	
Prev	Scrolls the JCL step list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the JCL step list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.

### **Database Access in Global JCL Context Menus**

The Database Access in Global JCL context menus are invoked by placing the cursor on any of the items listed in the Database Access Definition or JCL Step lists and using the right hand mouse button with a single click.

#### **Database Access in Global JCL Context Menu**

The Database Access in Global JCL context menu is invoked by placing the cursor on any of the items listed in the Database Access Definitions list and using the right hand mouse button with a single click.

CONTEXT MENU ITEM	DESCRIPTI	ON	
Change Start Position of DDM List	Reposition the name.	list of DDMs to start from a particular DDM	
	The reposition name or part na	value can be input using either a complete ame using an '*' (asterisk) wildcard.	
	The reposition value is appended to the Data Definition Module list title to highlight the type of repositioning being applied.		
	Possible reposition values are:		
	Value Result		
	''(blank)	Reposition to the top of the DDM list.	
	*	Reposition to the top of the DDM list.	
	ABC*	Only show DDMs that are prefixed by 'ABC'.	
	XYZ	Reposition to the first DDM that either matches or is greater than 'XYZ' and then continue the DDM list from that point.	
View DDM Source Code	Display the sel	ected DDM source code in a browser.	

NB: The menu items will change according to the type of database access definition selected.

### 2

3

The following Figure 3-69 illustrates the Data Definition Module List context menu

Databa Database DDMs	e Access in JCL within Global JCL Access SQL Tables PUVs		
Name		Database ID	File Nbr
VEHIC	ES Change Start Position of DDM List View DDM Source Code	12	12
			Prev More

Figure 3-69 Data Definition Module List context menu

3

### JCL Step List Context Menu

The JCL Steps List context menu allows you to navigate between the Database Access in Global JCL screen and the Object Viewer, Object Reference, Object Documentation for Natural or COBOL Objects, Cobol Link Maintenance or Object Viewer, Object Reference, Object Documentation for JCL Objects, or use the View Source Code option.

DDMs SQ	L Tables PUVs					
Name					Database ID	File Nbr
VEHICLES					12	12
						Prev More
Cl Stees F						
CL Steps - D JCL	DDM VEHICLES Step Name	Line	Program	Natural Progra	am Library	External Object
CL Steps - E JCL JCLNAT01	DDM VEHICLES Step Name NATBATCH	Line 0014	Program Object V Object I Object I	Natural Progra Viewer Reference Documentation	am Library	External Object
CL Steps - D JCL JCLNAT01	ODM VEHICLES Step Name NATBATCH	Line 0014	Program Object I Object I JCL Viev JCL Obj JCL Obj	Natural Progra Viewer Reference Documentation wer ect Reference ect Documenta	am Library	External Object

The following Figure 3-70 illustrates the JCL Steps List context menu

Figure 3-70 JCL Steps List context menu

CONTEXT MENU ITEM	DESCRIPTION
Object Viewer	Invoke the Object Viewer screen for the Natural or COBOL Program selected.
Object Reference	Invoke the Object Reference screen for the Natural or COBOL Program selected.
Object Documentation	Invoke the Object Documentation screen for the Natural or COBOL Program selected.
JCL Viewer	Invoke the JCL Viewer.
JCL Object Reference	Invoke the Object Reference screen for the JCL Object selected.
JCL Object Documentation	Invoke the Object Documentation screen for the JCL Object selected.
View Source Code	Display the selected Natural or COBOL Object source code in a browser.
View JCL Source Code	Display the selected JCL Object source code in a browser.

# **CICS** Object Reference

The CICS Object Reference option becomes active if an application has been linked to a CICS Region/Transaction. It shows Files, CICS Transient Data Queues and CICS Temporary Storage Queues that are referenced in objects within the application.

The information is presented on a single screen.

## How to Invoke the CICS Object Reference Option

Use the following navigation in the site workplace:

- Select the application required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: CICS Object Reference.

Note: The CICS Object Reference screen only becomes active if an application has been linked to a CICS Region/Transaction via the Application Properties screen.

## **CICS Object Reference Window**

All Objects that use Files, CICS Transient Data Queues and CICS Temporary Storage Queues that are referenced in the relevant linked CICS Region are shown. It is possible to filter the list by type of CICS Object Type.

If you select one of the CICS Objects, all the statement details for the selected CICS Object Type are displayed in the source code list box.

Program	Line No	Ext. Object	Region	CICS Object	Object Type	Dataset Name
COBCBP01	00000992		CICS15	COMPFILE	File	ETS.TRADER.COMP
COBCBP02	00000467		CICS15	BATX	TSQ	n/a
CORCEP02	00000541		CICS15	CESE	IDQ	n/a
Source Code						Prev
0BCBP01 000 0BCBP01 000 0BCBP01 000 0BCBP01 000 0BCBP01 000 0BCBP01 000	000992 000993 000994 000995 000996 000997	EXE	C CICS REA INTO (CO) LENGTH (1 DATASET RIDFLD (1 KEYLENG	ADNEXT NTROL-AREA) WS-LENGTH) ('COMPFILE') TEST-KEY) TH (43)		

The following Figure 3-71 illustrates the CICS Object Reference screen.

Figure 3-71 CICS Object Reference screen

3

#### SCREEN ITEMS DESCRIPTION

CICS Object Types	Allows the user to filter the objects displayed in the CICS Objects Referenced list by File, TSQs, TSDs or All types.				
CICS Objects Referenced	Lists the statements referenced by the CICS Object type in applications that have been linked to the CICS Region.				
	A context menu is available to navigate between the CI Reference screen and the View Source screen by using <b>mouse button</b> on a selected program.				
	The columns available are:				
	<b>Program</b> The name of the program containing refe CICS Object.				
	Line No.	The statement line number for the reference within the program.			
	Ext. Object	The name of the object that contains the definition if the data item is defined externally, such as in a copybook.			
	Region	The name of the linked Region.			
	CICS Object	The name of the CICS Object.			
	Object Type	The type of the CICS Object.			
	Dataset Name	The name of the Dataset that is associated with the Object Type.			

BUTTON NAME DESCRIPTION

Prev	Scrolls the program list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the program list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.



# Database Access (CRUD)

The Database Access (CRUD) option shows all objects in the application that contain any database access, the database access definition (e.g., DDM, SQL Table or Predict User View) that is referenced and the type of access i.e., whether the file is Created, Read, Updated and/or Deleted. If the option is invoked via Object level then the report is limited to the selected object.

## How to Invoke the Database Access (CRUD) Option

The Database Access (CRUD) option can be invoked in two different ways:

#### 1. Application Level

Use the following navigation in the site workplace:

- Select the application required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Database Access (CRUD).

#### 2. Object Level

Use the following navigation in the site workplace:

- Select the object required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Database Access (CRUD).

## Database Access (CRUD) Window - Application Level

All objects that access Database files, the database access definition and the type of access is shown. Each type of Database file will be shown on a separate tab. If a particular type e.g. SQL Table is not present then the tab will not be shown.

The following Figure 3-72 illustrates the Database Access (CRUD) screen at Application Level.

S					
ojects Object Name	Data Definition Module	Create	Read	Update	Delete
XX021P01	PATIENT	Y	Y	Y	Y
XX022P01	PATIENT		Y		
XX023P01	PATIENT		Y		
XX025P01	PATIENT		Y		
XXGETID	PATIENT	Y	Y	Y	
XXTIDYUP	PATIENT		Y		

Figure 3-72 Database Access (CRUD) at Application Level

SCREEN ITEMS	DESCRIPTION

Application	The name of the Application.
Objects	Lists the objects, database access definition and type of access.
	A context menu is available to navigate between the Database Access (CRUD) screen, the View Source Code, View DDM Source Code, Object Viewer, Object Reference and the Database Access (CRUD) by Field screens or to Change the Start position of the Object List by using the <b>right hand mouse button</b> on a selected row.
	NB: View DDM Source Code is only available for Data Definition Modules.

#### SCREEN ITEMS DESCRIPTION

The columns av	vailable are:
Object Name	The name of the Object containing the access to the database access definition.
Data Definition Module/ SQL Table/ Predict User View	The name of the database access definition. NB: The heading will change depending on the database access definition shown.
Create	Will be set to Y if the field is used in a CREATE(STORE) statement in the application.
Read	Will be set to Y if the field is used in a READ(BROWSE) statement in the application.
Update	Will be set to Y if the field is used in an UPDATE statement in the application.
Delete	Will be set to Y if the field is used in a DELETE statement in the application.

#### BUTTON NAME DESCRIPTION

Prev	Scrolls the object list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the object list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Export	Allows the work file layout to be exported to a spreadsheet e.g., Microsoft Excel.

3

## Database Access (CRUD) Window – Object Level

All database access definitions accessed by the selected object and the type of access is shown.

ata Definition Modules				
Name	Create	Read	Update	Delete
VEHICLES	Y	Y	Y	

The following Figure 3-73 illustrates the Database Access (CRUD) screen at Object Level.

Figure 3-73 Database Access (CRUD) at Object Level

#### SCREEN ITEMS DESCRIPTION

Object	The name of the Object.
Data Definition Modules/SQL Tables/Predict User Views	Lists the database access definition and type of access. <i>NB: The heading will change depending on the database access definition shown.</i> A context menu is available to navigate between the Database Access (CRUD) screen, the View Source Code, View DDM Source Code, Object Viewer and the Database Access (CRUD) by Field screens or to Change the Start position of the database access definition list by using the <b>right hand mouse button</b> on a selected row. <i>NB: View DDM Source Code is only available for Data Definition</i> <i>Modules.</i>

#### SCREEN ITEMS DESCRIPTION

The columns available are:

Name	The name of the database access definition.
Create	Will be set to Y if the field is used in a CREATE(STORE) statement in the application.
Read	Will be set to Y if the field is used in a READ(BROWSE) statement in the application.
Update	Will be set to Y if the field is used in an UPDATE statement in the application.
Delete	Will be set to Y if the field is used in a DELETE statement in the application.

### BUTTON NAME DESCRIPTION

Prev	Scrolls the object list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the object list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Export	Allows the work file layout to be exported to a spreadsheet e.g., Microsoft Excel.

# Database Access (CRUD) by Object

The Database Access (CRUD) by Object option shows all objects in the application that contain any database access for a selected database access definition (e.g., DDM, SQL Table or Predict User View) and the type of access i.e., whether it is Created, Read, Updated and/or Deleted.

## How to Invoke the Database Access (CRUD) by Object Option

Use the following navigation in the site workplace:

- Select the database access definition required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Database Access (CRUD) by Object option.

The Database Access (CRUD) by Object option may also be invoked from the context menu of the Database Access (CRUD) by Application screen, the Application sub-node of the Database node or the Application sub-node of the Predict User views node.

3

**Natural Engineer Application Management** 

## Database Access (CRUD) by Object Window

All Objects that access the selected database access definition and the type of access is shown.

EMPLOYEES					
Objects					
Name	Create	Read	Update	Delete	•
SORTEX2S		Y			
SORTEX3S		Y			
SORTEX4S		Y			
STOREX1S	Y				
SYSVARP1		Y			
SYSVARP2		Y			:
UPDTEX1S		Y	Y		-
WHEREX1S		Y			Ϊ.

The following Figure 3-74 illustrates the Database Access (CRUD) by Object screen.

Figure 3-74 Database Access (CRUD) by Object screen

3

#### SCREEN ITEMS DESCRIPTION

Data Definition	The name of the	e object.			
Module/Predict User View/SQL Table	NB: The heading will change depending on the database access definition shown				
Objects	Lists the Objec	ts and type of access.			
	A context menu (CRUD) by obj Database Access of the Object L row. The columns av	a is available to navigate between the Database Access lect screen, the View Source Code, Object Viewer and the ss (CRUD) by Field screens or to Change the Start position ist by using the <b>right hand mouse button</b> on a selected vailable are:			
	Name	The name of the Object containing the access to the file.			
	Create	Will be set to Y if the field is used in a CREATE(STORE) statement in the application.			
	Read	Will be set to Y if the field is used in a READ(BROWSE) statement in the application.			
	Update	Will be set to Y if the field is used in an UPDATE statement in the application.			
	Delete	Will be set to Y if the field is used in a DELETE statement in the application.			

BUTTON NAME DESCRIPTION

Prev	Scrolls the object list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the object list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Export	Allows the work file layout to be exported to a spreadsheet e.g., Microsoft Excel.



# Database Access (CRUD) by Field

The Database Access (CRUD) by Field option shows all objects in the application that contain any database access for a selected database access definition (e.g. DDM, Predict User View or SQL Table) and the type of access i.e., whether it is Created, Read, Updated and/or Deleted.

## How to Invoke the Database Access (CRUD) by Field Option

The Database Access (CRUD) by Field option may be invoked from the context menu of the Database Access (CRUD) or Database Access (CRUD) by Object screens.

## Database Access (CRUD) by Field Window

All fields for the selected Object/database access definition combination the type of access is shown.

The following Figure 3-75 illustrates the Database Access (CRUD) by Field screen.

Application & Object HOSPITAL XXGETID					
Fields					
Name	Create	Read	Update	Delete	Key Usage
NEXT-ID-FOR-YEAR	Y	Y	Y		
PATIENT-ID	Y	Y	Y		Y
SURNAME	Y	Y	Y		
				_	

Figure 3-75 Database Access (CRUD) by Field screen

3

#### SCREEN ITEMS DESCRIPTION

Application & Object	The name of the Application and Object.		
Fields	Lists the Fields	and type of access.	
	A context menu is available to Change the Start position of the Field List by using the <b>right hand mouse button</b> on a selected row. The columns available are:		
	Name The name of the Field.		
	Create	Will be set to Y if the field is used in a CREATE(STORE) statement in the application.	
	Read	Will be set to Y if the field is used in a READ(BROWSE) statement in the application.	
Update Will be set to Y if statement in the appl		Will be set to Y if the field is used in an UPDATE statement in the application.	
	Delete	Will be set to Y if the field is used in a DELETE statement in the application.	
	Key Usage	Will be set to Y if the field is used as a key within the application.	

#### BUTTON NAME DESCRIPTION

Prev	Scrolls the field list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the field list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Export	Allows the work file layout to be exported to a spreadsheet e.g., Microsoft Excel.



# Database Field Access (CRUD) by Object

The Database Field Access (CRUD) by Object option shows all objects in the application that contain any database access for a selected DDM and DDM Field combination and the type of access i.e., whether the DDM is Created, Read, Updated and/or Deleted.

## How to Invoke the Database Field Access (CRUD) by Object Option

The Database Field Access (CRUD) by Object option may be invoked from the context menu of the Database Field Access (CRUD) by Application or Object Viewer screens. The option is only available on Object Viewer when selecting a DDM Field.

## Database Field Access (CRUD) by Object Window

All objects for the selected DDM/DDM Field combination the type of access is shown.

The following Figure 3-76 illustrates the Database Field Access (CRUD) by Object screen.

Dbjects					
Name	Create	Read	Update	Delete	Key Usage
XX021P01	Y	Y	Y	Y	Y
XX022P01		Y			Y
XX023P01		Y			Y
XX025P01		Y			
XXGETID	Y	Y	Y		Y
XXTIDYUP		Y			

Figure 3-76 Database Field Access (CRUD) by Object screen

#### SCREEN ITEMS DESCRIPTION **Data Definition** The name of the DDM and DDM Field. Module & Field Objects Lists the Objects and type of access. A context menu is available to navigate between the Database Field Access (CRUD) by Object screen and the View Source Code, Object Viewer options or to Change the Start position of the Object List by using the right hand mouse button on a selected row. The columns available are: Name The name of the Object. Create Will be set to Y if the field is used in a CREATE(STORE) statement in the application. Read Will be set to Y if the field is used in a READ(BROWSE) statement in the application. Update Will be set to Y if the field is used in an UPDATE statement in the application. Delete Will be set to Y if the field is used in a DELETE statement in the application. Key Usage Will be set to Y if the field is used as a Key within the application..

#### BUTTON NAME DESCRIPTION

Prev	Scrolls the object list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the object list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Export	Allows the work file layout to be exported to a spreadsheet e.g., Microsoft Excel.



# Database Access (CRUD) by Job Step

The Database Access (CRUD) by Job Step option shows all objects in the application that contain any database access for a selected database access definition (e.g., DDM, SQL Table or Predict User View)/Job Step combination and the type of access i.e., whether it is Created, Read, Updated and/or Deleted.

## How to Invoke the Database Access (CRUD) by Job Step Option

The Database Access (CRUD) by Job Step option may be invoked from the Data set context menu of the <u>JCL Viewer</u> screen when Database Accesses are displayed.

## Database Access (CRUD) by Job Step Window

All objects for the selected combination the type of access is shown.

The following Figure 3-76-1 illustrates the Database Access (CRUD) by Job Step screen.

Database Access (C	RUD) for Job Step				
Data Definition Module VEHICLES JCLNAT01 NATBATCI	e & Job Step				
Objects					
Name	Library	Create	Read	Update	Delete
NATBATCH	COBJCLNT		Y		
Export				Prev	More

Figure 3-76-1 Database Access (CRUD) by Job Step screen
3

#### SCREEN ITEMS DESCRIPTION

Data Definition	The name of the	e DDM and DDM Field.		
Module & Field	NB: This will change depending on the type of access e.g., DDM, Predict User View or SQL Table.			
Objects	Lists the Objects and type of access.			
	A context menu is available to navigate between the Database Field Access (CRUD) by Object screen and the View Source Code, Object Viewer options or to Change the Start position of the Object List by using the <b>right hand mouse button</b> on a selected row.			
	The columns available are:			
	Name	The name of the Object.		
	Create	Will be set to Y if the field is used in a CREATE(STORE) statement in the application.		
	Read	Will be set to Y if the field is used in a READ(BROWSE) statement in the application.		
	Update	Will be set to Y if the field is used in an UPDATE statement in the application.		
	Delete	Will be set to Y if the field is used in a DELETE statement in the application.		

BUTTON NAME DESCRIPTION

Prev	Scrolls the object list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the object list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Export	Allows the work file layout to be exported to a spreadsheet e.g., Microsoft Excel.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.



# **Predict Information**

The Predict Information screen shows details from Predict for the DDM/Predict User View such as whether the file is an Adabas file or an Adabas Userview, master file name, added and modified information, keywords, abstract details and description.

Note: This option is only available if Natural Engineer is executing in a remote development environment, Natural version 4.2 or above is installed on the mainframe and the Predict file is mapped in the remote environment settings

# How to Invoke the Predict Information Option

The Predict Information option is available via the context menu when selecting a DDM object from the Application Node, the Global DDM Node or by selecting a Predict User View from the Predict User View nodes.

File Type	Adabas userview	Added 2011-12-02	at 13:53:5	5 by PRD821
Master File	EMPLOYEES-FILE	Modified	at	by
Keywords				
Abstract	CONTAINS UNIQUE DESCRIPT OF EMPLOYEES OF AN INTER ENTERPRISE (COMPAR. TO S	TIONS RN. AG)		
Description	FILE ADDITIONAL DESCRIPTIC	DN		-
	DESCRIPTION OF OBJECTS (I	NOT FIELDS) CONTAINED IN TH	IE FILE	
	*			

The following Figure 3-77 illustrates the Predict Information screen.

Figure 3-77 Predict Information screen

3

#### SCREEN ITEMS DESCRIPTION

File Type	The type of the File e.g., Adabas File or Adabas userview.
Added/at/by	The date, time and user id relating to the addition of the entry into Predict.
Modified/at/by	The date, time and user id relating to the last modification of the entry in Predict.
Master File	The name of any Master File defined.
Keywords	The name of any keywords defined.
Abstract	The short comments of the object.
Description	The extended description of the object.



# Predict Field Information

The Predict Field Information screen shows details from Predict for a DDM field such as Adabas short name, format, suppression, type, level, keywords, abstract details and description.

Note: This option is only available if Natural Engineer is executing in a remote development environment, Natural version 4.2 or above is installed on the mainframe and the Predict file is mapped in the remote environment settings

# How to Invoke the Predict Field Information Option

The Predict Field Information option is available via the context menu when selecting a DDM field object from the DDM Field List or Object Viewer screens.

The following Figure 3-78 illustrates the Predict Field Information screen.

N Predict Fi	eld Information for EMPLOYEES BIRTH	- • ×
Adabas Sho	ort Name AH Level 1 Format D Null Suppression U	
Field Type	Descriptor	
Keywords		
Abstract	BIRTH-DATE (YYYY-MM-DD)	
Description		
Description	ELEM.FIELD ADDITIONAL DESCRIPTION	
	*	=
	**********	
	MEANING OF THE FIELD	
	*	
	DATE OF BIRTH	
	MUST ALWAYS BE PROVIDED FOR AN EMPLOYEE	<b>T</b>

Figure 3-78 Predict Field Information screen

3

Adabas Short Name	The Adabas short name for the DDM field.	
Level	The level number of the DDM field in the DDM.	
Format	The format and length of the data item.	
Null Suppression	The type of suppression for the DDM field.	
Field Type	The type of DDM field. May be:	
	<ul> <li>Descriptor</li> <li>Super Descriptor</li> <li>Phonetic Descriptor</li> <li>Hyper Descriptor</li> <li>Non Descriptor</li> </ul>	
	<ul><li>Periodic Group</li><li>Multiple Value field</li></ul>	
Keywords	The name of any keywords defined.	
Abstract	The short comments of the object.	
Description	The extended description of the object.	

#### SCREEN ITEMS DESCRIPTION



# Data Model Relationships

The Data Model Relationships screen allows the definition of any relationships between DDMs.

# How to Invoke the Data Model Relationships Option

The Data Model Relationships option is available from the <u>Application Level Object</u> <u>Documentation</u> or the <u>Object Level Object Documentation</u> screens when a DDM object has been selected.

The following Figure 3-79 illustrates the Data Model Relationships screen.

o Relationships		
DDM	Relationship Description	
		Draw Mara
rom Delationehine		Piev
rom Relationships	Relationship Description	Prev more
rom Relationships DDM VEHICLES	Relationship Description The Staff Number	
rom Relationships DDM VEHICLES	Relationship Description The Staff Number	
rom Relationships DDM VEHICLES	Relationship Description The Staff Number	
rom Relationships DDM VEHICLES	Relationship Description The Staff Number	
rom Relationships DDM VEHICLES	Relationship Description The Staff Number	Prev More

Figure 3-79 Data Model Relationships screen

3

To Relationships Group	
DDM	The name of the DDM that the selected DDM has a "To Relationship" with.
	Click on the DDM Name to invoke the <u>Data Model Relationships</u> <u>Maintenance</u> screen to review or modify the existing relationship.
Relationship Description	The description of the relationship.
From Relationships Gro	up:
DDM	The name of the DDM that the selected DDM has a "From Relationship" with.
	Click on the DDM Name to invoke the <u>Data Model Relationships</u> <u>Maintenance</u> screen to review or modify the existing relationship.
Relationship Description	The description of the relationship.

#### SCREEN ITEMS DESCRIPTION

#### BUTTON NAME DESCRIPTION

To/From Relationships	Group:	
Prev	Scrolls the DDM list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.	
More	Scrolls the DDM list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.	
Data Model Relationships Group:		
Add Data Model Relationship	Invokes the <u>Data Model Relationships Maintenance</u> screen to allow the definition of a new relationship for the selected DDM.	
Cancel	Exits the screen and returns to the previous Object Documentation screen.	

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

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#### **Natural Engineer Application Management**

# **Data Model Relationships Maintenance Window**

The Data Model Relationships Maintenance Window allows for the definition of a new relationship from the selected DDM or the review and modification of an existing relationship.

The following Figure 3-80 illustrates the Data Model Relationships Maintenance screen.

ields			Related to DDM
Please Select	a Field	- Ad	VEHICLES
Selected Fields	3		Key Fields
Short Name	Name	Position	AC PERSONNEL-ID
AA	PERSONNEL-NUMBER	1-8	Position within Key Field Start Position 1 End Position 8
			Relationship Type i 1:1 i 1:many many:many
			Description The Staff Number

Figure 3-80 Data Model Relationships Maintenance screen

3

Fields	Select the required DDM field for the relationship from the selected DDM from the drop-down list.
	Note: The start and end position of the field for the relationship may be changed by using the context menu on the Selected Fields list after it has been added.
Selected Fields	The list of selected fields for the relationship.
	A context menu is available to modify the start or end position of the selected field, to move the field up or down in the list or delete the field from the list by using the <b>right hand mouse button</b> on a selected field.
Related to DDM	The name of the related DDM in the relationship.
Key Fields	Select the name of the key field from the selected related DDM.
<b>Relationship</b> Type	The type of the relationship.
	Options are:
	1-1
	1-Many
	Many-Many
Description	The description of the relationship.
Position within Key Field Group:	
Start Position	The start position of the key field within the selected related DDM.
End Position	The end position of the key field within the selected related DDM.

# SCREEN ITEMS DESCRIPTION

<b>BUTTON NAME</b>	DESCRIPTION
Fields Group:	
Add	Add the selected field from the DDM to the selected fields list.
Data Model Relationshi	ps Maintenance Group:
Delete	Delete the relationship and returns to the Object Documentation Screen.
ОК	Save changes and close the current screen.
Apply	Save changes and retain the current screen. Note: This button is only enabled if any changes have been made.
Cancel	Exits the screen and returns to the Object Documentation Screen.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

# **Data Model Relationships Maintenance Context Menu**

The Data Model Relationships Maintenance context menu is invoked by placing the cursor on any of the fields listed in the Selected Fields box and using the right hand mouse button with a single click.

The following Figure 3-81 illustrates the Data Model Relationships context menu

ields Please Select	a Field	▼ [Add]	VEHICLES	DDM S		•
Selected Fields	3		Key Fields			
Short Name	Name	Position	AC PERS	SONNEL-ID		•
AA	PERSONNEL-NUMBER	Amend the Start and End P	osition	Key Field		
		Shuffle Field up list		1	End Position	8
		Shuffle Field down the list		pe		
		Remove Field				

Figure 3-81 Data Model Relationships Maintenance context menu

CONTEXT MENU ITEM	DESCRIPTION
Amend the Start and End Position	Allows the start and end position of the selected field to be modified.
Shuffle Field up list	Move the selected field up the list.
Shuffle Field down the list	Move the selected field down the list.
Remove Field	Removes the selected field from the selected field list.



# Pseudo Code

The Pseudo Code Generator takes the structural components of an object and presents it as a high level skeleton of the code in a Word Document.

The following Figure 3-83 illustrates a sample Pseudo Code Report.

Appli	cation: HOSPITAL
Ohier	t Name: XX025P01
Objec	Type: Program
Objec	a rype, riogram
0010	• TUTE DOCTOIN ITETE TUP DATISNITE OV NIMP
0280	· INTO FRANKAS DISTS IND FAILEANS DI NAME
0300	PERFORM REAL-DATA
0320 1	REPET
0370	DECIDE ON FIRST VALUE OF *PF-KEY
0390	VALUE "PF12", "PF24"
0400	PERFORM XXEXIT
0410	VALUE "PF3", "PF15"
0420	ESCAPE ROUTINE
0430	VALUE "PF8", "PF20"
0440	IF #W-END-OF-DATA
0460	ESCAPE TOP
0470	END-IF
0480	IF #W-FAGE-NUMBER = 100
0500	EBLAFE TOP
0530	PERFORM READ-DATA
0540	ESCAPE TOP
0550	VALUE "PF7", "PF19"
0570	PERFORM READ-DATA
0590	ESCAPE TOP
0600	VALUE "ENTR"
0610	PERFORM PROCESS-SELECTED
0620	NONE VALUE
0640	END-DECIDE
0660 1	END-REPEAT
0680	DEFINE SUBROUTINE READ-DATA
0730 1	READ PATIENT BY S2-SURNAME-PATIENT-ID
0750	IF #V-NUMBER = 99999
0760	ESCAPE TOP
0770	END-IF

Figure 3-83 Sample Pseudo Code Report

#### How to Invoke Pseudo Code

Use the following navigation in the application workplace:

- Select the object required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Pseudo Code**.

NB: Pseudo Code is only available for Program, Subprogram, Subroutine, Helproutine, Copycode and Function type objects.

# Field Tracking

The Field Tracking Option displays the usage of the selected item within the object where the value of the field could have been affected and then shows where the field is passed to or from, depending on whether Forward or Backward Tracking has been selected.

If the item is passed to or from another object then further usage of the passed or receiving field will be displayed.

The GenTree Structure Analyzer will display the field tracking for the selected item.

NB: System Variables cannot be tracked using these options.

The following Figure 3-84 illustrates a sample forward Field Tracking diagram.



Figure 3-84 Sample Forward Field Tracking Diagram

A context menu is available on the GenTree structure to enable further forward/backward tracking of fields displayed on the diagram.

# How to Invoke Field Tracking

Use the following navigation in the Object Viewer dialog:

- Select the item required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Field Tracking Forward/Backward.

# JCL Flow Chain

The JCL Flow Chain Option displays forward or backward tracing information on the flow of Jobs.

The information on the diagram is based on information loaded into the repository via the JCL Flow API (NEEAPI1). Attributes of each trigger e.g., colour, icon displayed are dependent on the trigger type. These are defined on the JCL Triggers tab of the Global Properties screen.

For further information on defining trigger types please see the Global Properties section of the Natural Engineer Administration Guide.

For further information on the JCL Flow API (NEEAPI1) please see the Natural Engineer Concepts & Facilities Guide.

The GenTree Structure Analyzer will display the JCL Flow for the selected JCL object.

The following Figure 3-85 illustrates a sample forward JCL Flow Chain Diagram.

Figure 3-85 Sample Forward JCL Flow Chain Diagram

The following Figure 3-86 illustrates a sample backward JCL Flow Chain Diagram.



Figure 3-86 Sample Backward JCL Flow Chain Diagram

#### How to Invoke JCL Flow Chain

Use the following navigation in the site workplace:

- Select the JCL Object required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: JCL Flow Chain Forward/Backward.



# Database Key Usage

The Database Key Usage diagram shows all references for a selected key (DDM, SQL Table or Predict User View) for all applications within the repository.

The GenTree Structure Analyzer will display the Database Key Usage for the selected item.

The following Figure 3-87 illustrates a sample Database Key Usage diagram.



Figure 3-87 Sample Database Key Usage Diagram

#### How to Invoke Database Key Usage

Use the following navigation in the <u>Object Viewer</u> dialog, from <u>Field List</u> dialog when on a DDM or Predict User View or from <u>SQL Table Viewer</u>:

- Select the field required. This must be a key e.g. Descriptor/Super-descriptor.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Database Key Usage.

# Database Key Usage Context Menu

The Database Key Usage context menu is invoked by placing the cursor on either an object name node or on a Source Code node and using the right hand mouse button with a single click.

The following Figure 3-88 illustrates the Database Key Usage context menu on an object name.



Figure 3-88 Database Key Usage (Object Node) context menu

CONTEXT MENU ITEM	DESCRIPTION
View Source Code	Invokes the View Source Code function for the selected object.
Object Viewer	Invokes the Object Viewer screen for the selected object.
Field Definitions	Invokes the <u>Field Definitions</u> screen for the key specified in the Source Code line.



# Field Definitions

3

The Field Definitions diagram shows the field definitions and off-sets for a selected view.

Field D	efinition	s for PAT	TENT-UPDATE in Object XX021	P01 (XX021L02)
Start	End	Level	Field Name	Attribute
		1	PATIENT-UPDATE	G
1	7	2	PATIENT-ID	N7
8	27	2	FIRST-NAME	A20
28	47	2	SURNAME	A20
48	53	2	DOB	N6
54	173	2	ADDRESS	A30(1:4)
174	193	2	ARRIVED	A20
194	199	2	DUE-FOR-SURGERY	A6
200	203	2	RELEASED	D

The following Figure 3-89 illustrates a sample Field Definitions diagram.

Figure 3-89 Sample Field Definitions Diagram

# How to Invoke Field Definitions

Use the following navigation in the <u>Database Key Usage</u> diagram:

- Select the source code line required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Field Definitions**.

3

# Global Object Usage

The Global Object Usage diagram shows a summary of which applications objects reside in. It is a global option and is applicable to all applications loaded into your repository.

If the application is restricted to the user via site security e.g., Natural Security or NEEUEX6 user exit then '\*\* Access Denied \*\*' will be shown next to the application name.

The information is presented on a single screen with the option to output detailed information, including where the objects are called from, to a report.

# How to Invoke the Global Object Usage Option

Use the following navigation in the site workplace:

- Select the main Applications node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Global Reports.
- Select the option: Global Object Usage.

# **Global Object Usage Window**

The Global Object Usage Window allows you to select an object or range of objects that you wish to find within all applications loaded into the repository. The summary list may be filtered by Language and/or Object Type if required.

Detailed information may be output to a standard report layout which will include where the objects are called from.

The following Figure 3-90 illustrates the Global Object Usage screen.

Object Name Language	All -	Object Type All OI	bjects	<b>▼</b> Find
All Applications				
Application	Object Name	Language	Object Type	
HOSPITAL	XX022A01	Natural	Adapter	
HOSPITAL	XX022M01	Natural	Мар	
HOSPITAL	XX022P01	Natural	Program	
HOSPITAL	XX023A01	Natural	Adapter	:
HOSPITAL	XX023M01	Natural	Мар	
HOSPITAL	XX023P01	Natural	Program	
HOSPITAL	XX024A01	Natural	Adapter	
HOSPITAL	XX024M01	Natural	Мар	
HOSPITAL	XX024P01	Natural	Program	
HOSPITAL	XX025A01	Natural	Adapter	
HOSPITAL	XX025M01	Natural	Мар	
HOSPITAL	XX025P01	Natural	Program	
HOSPITAL	XX03B02	Cobol	Cobol Source	
			Prev	More

Figure 3-90 Global Object Usage screen

3

#### SCREEN ITEMS DESCRIPTION

Object Selection Group:

Object Name	The name of the object to be used. A group of objects can be selected by typing in a part name using an '*' (asterisk) wildcard. For example 'XX001*' will include all objects that are prefixed with 'XX001'. All Objects can be selected by typing in a single '*' (asterisk).			
Object Type	Allows you to select the types of object to be listed. The Objects Types are tailored depending on the Language selected.			
Language	Allows you to select the programming language of the objects to be listed. Available selections are:			
	<ul> <li>All</li> <li>Cobol</li> <li>JCL</li> <li>Natural</li> </ul>			
Applications Group:				
Application	List of all the Applications that have objects within them as identified by the selection criteria.			
	Further refinement can be made using the option 'Change Start Position of Application List' from the Global Object Usage context menu by using the <b>right hand mouse button</b> .			
	Note: For more information on the Global Object Usage context menu, refer to section <u>Global Object Usage Context Menu</u>			
	The Applications Group list title reflects the Applications being listed and will append any reposition values that may have been specified.			
Object Name	The name of the Object.			
Language	The language of the Object.			
Object Type	The Object Type of the Object.			

BUTTON NAM	E DES	CRIPTION

Object Selection group:	
Find	Will show the Applications that the Object Names as specified by the selection criteria reside in.
Applications group:	
Prev	Scrolls the list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Global Object Usage scr	reen:
Report	Will output detailed data to one of the standard report formats.
	Note: For more information on the content of the report refer to the Global Reports section in Chapter 3 of the Natural Engineer Reporting Manual.
	Manual.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

# **Global Object Usage Context Menu**

The Global Object Usage context menu is invoked by placing the cursor on any of the items listed in the Applications lists and using the right hand mouse button with a single click. It allows you to navigate between the Global Object Usage screen and the Object Reference or Entry Point Structure Diagram or to filter the Application list. Any filtering will also be reflected in the Report if this is selected.

The following Figure 3-91 illustrates the Global Object Usage context menu

	tt Usage					X
Object Selectio	n					
Object Name	XX*					
Language	All	Object Typ	e All Ob	jects		•
					Fin	d
AllApplications						
All Applications	Object Name	Lar	guage	Object Type	2	-
All Applications Application HOSPITAL	Object Name	Lar	guage	Object Type	•	
All Applications Application HOSPITAL HOSPITAL	Object Name XX001M01 Object Reference	Lar	guage	Object Type Man		
All Applications Application HOSPITAL HOSPITAL HOSPITAL	Object Name XX001M01 Object Reference Entry Point Stucture	Lar Nat	guage ural /hat Calls	Object Type Man me		
All Applications Application HOSPITAL HOSPITAL HOSPITAL HOSPITAL	Object Name XX001M01 Object Reference Entry Point Stucture Change Start Positio	Lar Nat Diagram - W	guage ural /hat Calls	Object Type Map me	Þa	
All Applications Application HOSPITAL HOSPITAL HOSPITAL HOSPITAL	Object Name XX001M01 Object Reference Entry Point Stucture Change Start Positio	Lar Nat Diagram - W on of Applica	guage ural /hat Calls tion List	Object Type Man me	þa	

Figure 3-91 Global Object Usage context menu

CONTEXT	MENU	ITEM	DESCR

TEM DESCRIPTIO	N
----------------	---

Entry Point Structure	
Diagnam What Calls m	
Diagram – what Calls m	e

**Object Reference** 

Invokes the **Object Reference** screen for the selected object.

Invokes the Entry Point Structure Diagram in a Tree View (GenTree) using the What Calls me option for the selected object.

CONTEXT MENU ITEM	DESCRIPT	ION		
Change Start Position of Application List	Reposition the list of objects to start from a particular application name.			
	The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard.			
	The reposition value is appended to the application list title to highlight the type of repositioning being applied.			
	Possible reposition values are:			
	Value Result			
	ʻʻ(blank)	Reposition to the top of the application list.		
	*	Reposition to the top of the application list.		
	ABC*	Only show applications that are prefixed by 'ABC'.		
	XYZ	Reposition to the first application that either matches or is greater than 'XYZ' and then continue the application list from that point.		

# Global Field Usage

The Global Field Usage diagram shows a summary of which applications fields reside in. It is a global option and is applicable to all applications loaded into your repository.

If the application is restricted to the user via site security e.g., Natural Security or NEEUEX6 user exit then '\*\* Access Denied \*\*' will be shown next to the application name.

The information is presented on a single screen with the option to output detailed information, including the keyword and line number associated with the field and the attribute of the field, to a report.

# How to Invoke the Global Field Usage Option

Use the following navigation in the site workplace:

- Select the main Applications node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Global Reports.
- Select the option: Global Field Usage.

# **Global Field Usage Window**

The Global Field Usage Window allows you to select a field or range of fields that you wish to find within all applications loaded into the repository. The summary list may be filtered by Language and/or Object Type if required.

Detailed information may be output to a standard report layout which will include the attribute of the field and the keyword/line number associated with the field.

The following Figure 3-92 illustrates the Global Field Usage screen.
--

Language	All   Objee	ct Type All Objects		•	
Field Name	#M-YEAR*	Include of	ojects with definition	is only	Find
II Application	5				
Application	Field Name	Object Name	Language	Object Type	
GSLLIB	#M-YEAR	XX023M01	Natural	Мар	
GSLLIB	#M-YEAR	XX023P01	Natural	Program	
GSLLIB	#M-YEAR.#M-YEAR-ALPHA	XX023P01	Natural	Program	
GSLLIB	#M-YEAR	XX024M01	Natural	Мар	:
GSLLIB	#M-YEAR	XX024P01	Natural	Program	
GSLTEST	#M-YEAR	XX023A01	Natural	Adapter	
GSLTEST	#M-YEAR	XX024A01	Natural	Adapter	
HOSPITAL	#M-YEAR	XX023A01	Natural	Adapter	
HOSPITAL	#M-YEAR	XX023M01	Natural	Мар	
HOSPITAL	#M-YEAR	XX023P01	Natural	Program	
HOSPITAL	#M-YEAR.#M-YEAR-ALPHA	XX023P01	Natural	Program	
HOSPITAL	#M-YEAR	XX024A01	Natural	Adapter	
HOSPITAL	#M-YEAR	XX024M01	Natural	Мар	
				Brave	More

Figure 3-92 Global Field Usage screen

3

Field Selection Group:	
Field Name	The name of the field to be used. The field name can be typed in. A group of fields can be selected by typing in a part name using an '*' (asterisk) wildcard. For example '#M-YEAR*' will include all field names that begin with '#M-YEAR'. It is not possible to search for All Field using just a single '*' (asterisk).
Include objects with definitions only	If this is selected then objects will also be listed that contain the field but where the field is defined only i.e., not used within the procedural code. If this option is not selected then objects will only be shown where the field is defined and used within the object.
Object Type	Allows you to select the types of object to be listed. The Objects Types are tailored depending on the Language selected.
Language	Allows you to select the programming language of the objects to be listed. Available selections are: All Cobol JCL Natural
Applications Group:	
Application	List of all the Applications that have the Field Names within them as identified by the selection criteria. Further refinement can be made using the option 'Change Start Position of Application List' from the Global Field Usage context menu by using the <b>right hand mouse button</b> . Note: For more information on the Global Field Usage context menu, refer to section Global Field Usage Context Menu The Applications Group list title reflects the Applications being listed and will append any reposition values that may have been specified
<b>T' 11 X</b>	
Field Name	The name of the Field.
Object Name	The name of the Object.
Language	The language of the Object.
Object Type	The Object Type of the Object.

#### SCREEN ITEMS DESCRIPTION

Derreitende	
Field Selection group:	
Find	Will show the Applications that the Field Names as specified by the selection criteria reside in.
Applications group:	
Prev	Scrolls the list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Global Field Usage scre	een:
Report	Will output detailed data to one of the standard report formats.
	Note: For more information on the content of the report refer to the Global Reports section in Chapter 3 of the Natural Engineer Reporting Manual.

BUTTON NAME DESCRIPTION

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

3

# **Global Field Usage Context Menu**

The Global Field Usage context menu is invoked by placing the cursor on any of the items listed in the Applications lists and using the right hand mouse button with a single click. It allows you to filter the Application list.

Any filtering applied will also be reflected in the Report if this is selected.

The following Figure 3-93 illustrates the Global Field Usage context menu

Global Field	Usage				
Field Selection	<b>0</b> //				
Object Filterin	ig Options				
Language	All	Object Type All Objects		•	
AllApplications					
Application	Field Name	Object Name	Language	Object Type	-
GSLTEST	#M-YEAR	XX024A01	Natural	Adapter	
HOSPITAL	ANA SZEA D	3070003.4.04	Natural	Adapter	
HOSPITAL	Change Start Pos	sition of Application List	Natural	Мар	
HOSPITAL	#M-YEAR	XX023P01	Natural	Program	

Figure 3-93 Global Field Usage context menu

# 2

#### CONTEXT MENU ITEM DESCRIPTION **Change Start Position of** Reposition the list of objects to start from a particular Application List... application name. The reposition value can be input using either a complete name or part name using an '\*' (asterisk) wildcard. The reposition value is appended to the application list title to highlight the type of repositioning being applied. Possible reposition values are: Value Result ' ' (blank) Reposition to the top of the application list. Reposition to the top of the application list. \* ABC\* Only show applications that are prefixed by 'ABC'. Reposition to the first application that either XYZ matches or is greater than 'XYZ' and then continue the application list from that point.

# 3

# **Decision Tables**

A decision table is used to show conditional logic by creating a list of associated actions representing business level rules.

The information is presented on a single screen.

# How to Invoke the Decision Tables Option

Use the following navigation in the site workplace:

- Select the Object required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Decision Tables**.

#### **Decision Tables Window**

Each conditional block is shown as a separate decision table. Within each decision table there are conditions, rules and actions shown.

Due to restrictions in displaying items on an interactive screen there is a limit of 4000 Decision Tables, 100 Conditions, 100 Actions and 30 Rules. Objects with items greater than these may export the data to an EXCEL spreadsheet to see all the information.

If you select one of the conditions in the Conditions group a separate screen will be displayed showing the source code positioned at the statement number pertaining to that particular condition number.

Each Decision Table, Condition or Action may have their name changed to better reflect the business nature of the item. Please note that if the application or object is re-loaded into the repository or the <u>Decision Table Analysis</u> re-run for an object then the names will revert to their default settings.

For users of the ARIS Interface, any changes to the condition or action code will also be reflected in the <u>ARIS Source Code User Values</u> screens.

It is possible to assign Business meanings using the Business Term Definitions function from the Utilities menu to assign business meanings to a database field condition. These business meanings would then replace the conditional code within the conditions list. For example if there was a condition in the code that said IF EMPLOYEES.PERSONNEL-ID = 7777 and 7777 related to a Contractor you could use the business term definition function to assign the business term 'Contractor' to value 7777 to field PERSONNEL-ID in DDM EMPLOYEES. Within the Conditions list on the Decision Table screen you would see IF Contractor.

3

T#	Table Na	ame								-
1	Decision	1 Table 1								
ond	itions									
C#	Stt No.	Ext.Obj	Condition	Rule 1	Rule 2	Rule 3	Rule 4	Rule 5	Rule 6	
1	0170		DECIDE ON FIRST VALUE OF *PF-KEY VALUE "PF3", "PF15"	Y						
2	0190		DECIDE ON FIRST VALUE OF *PF-KEY VALUE "PF12", "PF		Y					
3	0210		DECIDE ON FIRST VALUE OF *PF-KEY VALUE "ENTR"			Y	Y	Y		
4	0230		DECIDE ON FIRST VALUE OF #M-OPTION VALUE "A"			Y				
5	0260		DECIDE ON FIRST VALUE OF #M-OPTION VALUE "M", "D"				Y			
6	0280		DECIDE ON FIRST VALUE OF #M-OPTION NONE VALUE					Y		
7	0320		DECIDE ON FIRST VALUE OF *PF-KEY NONE VALUE						Y	
ctio	ns	1		1						
A#	Stt. No.	Ext. Obj	Action	Rule 1	Rule 2	Rule 3	Rule 4	Rule 5	Rule 6	
1	0180		FETCH "XX001P01"	Y						
2	0200		PERFORM XXEXIT		Y					
3	0240		MOVE "A" TO #G-SELECTED-OPTION			Y				
4	0250		FETCH "XX021P01" /* ADD NEW PATIENT			Y				
5	0270		FETCH "XX024P01" /* MODIFY/DELETE PATIENT - TAKE T				Y			
6	0290		MOVE "INVALID OPTION SELECTED" TO #M-MESSAGE					Y		
7	0300		ESCAPE TOP					Y		
									24	

The following Figure 3-94 illustrates the Decision Tables screen.

Figure 3-94 Decision Tables screen

Decision Tables group:	
<b>T</b> #	The number of the Table.
Table Name	The name of each separate conditional block.
Conditions group:	
C#	The number of the Condition.
Stt No.	The statement number of the condition.
Ext. Obj	The name of the object that contains the statement if the statement is present in an external object e.g., a Natural copycode object or COBOL copybook.
Condition	The syntax of the conditional logic.
Rule 'n'	Will be set to 'Y' if the condition is true or 'N' if false.
Actions group:	
<b>A</b> #	The number of the Action.
Stt No.	The statement number of the action.
Ext. Obj	The name of the object that contains the statement if the statement is present in an external object e.g., a Natural copycode object or COBOL copybook.
Action	The syntax of the logic executed within the rule.
Rule 'n'	Will be set to 'Y' if the action is executed by the rule.

#### SCREEN ITEMS DESCRIPTION

BUTTON NAME DE	SCRIPTION
----------------	-----------

Export	Will export the data to an EXCEL spreadsheet.
Cancel	Will cancel the Decision Tables screen and return to the main Natural Engineer Window.

3

# **Decision Tables Context Menu**

The Decision Tables context menu is invoked by placing the cursor on any of the rows in the Decision Tables, Conditions or Actions boxes and using the right hand mouse button with a single click.

	DESCRIPTION
Decision Tables group:	
Update Table Name	Invokes a pop-up screen allowing the name of the table to be changed.
Export Table	Will export the details for the table to an EXCEL Spreadsheet.
Conditions group:	
Update Condition	Invokes a pop-up screen allowing the name of the condition to be changed.
Actions group:	
Update Action	Invokes a pop-up screen allowing the name of the action to be changed.
Delete Action	Will delete the selected action.

#### CONTEXT MENU ITEM DESCRIPTION



# ARIS Source Code User Values

ARIS Source Code Values allow for an explanative text to be applied to a line of source code. This description will be used by the XML generation process in the ARIS interface which is available from the Utilities menu to substitute the source code with the explanation given.

Any changes to source code containing conditional statements and their actions will also be reflected in the <u>Decision Tables</u> screens.

The option is only available for objects that are not data areas, DDMs or Tables or JCL.

#### How to Invoke the ARIS Source Code User Values Option

Use the following navigation in the site workplace:

- Select the Object required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: ARIS Source Code User Values.
**Application Management** 

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### **ARIS Source Code User Values Window**

The source for the selected object is displayed in the window. Only the source code following the data definitions, if present, is displayed.

A context menu is available by using the **right hand mouse button** to Add a Value or Modify/Delete a Value. Invoking these will display the <u>Maintain User Values</u> screen allowing the selected function to be performed.

Object I	Name: XX001P01 Object Type: Progr	ram	
ser Value	25		
Line	Source	User Value	
0050	ź.		
0060	SET KEY ALL		
0070	ż		
0080	REPEAT		
0090	*		
0100	INPUT USING MAP "XX001M01"	Display Main Menu	
0110	RESET #L-MESSAGE		
0120	ż		=
0130	DECIDE ON FIRST VALUE OF *PF-KEY	PF Key Usage	
0140	ż		
0150	VALUE "PF12", "PF24"	Press PF12 or 24	
0160	PERFORM XXEXIT	Confirm user wants to exit Hospital System	
0170	VALUE 'ENTR'		
0180	IF #M-OPTION = "P"	Enters 'P'	
0190	FETCH "XX002P01"	Patient Administration	
0200	END-IF		
0210	IF #M-OPTION = "S"	Enters 'S'	
0220	FETCH "XX003P01"	Surgery Administration	
0230	END-IF		
0240	MOVE "INVALID OPTION SELECTED" TO #L-MESSAGE	Show Invalid Selection message	

The following Figure 3-95 illustrates the ARIS Source Code User Values screen.

Figure 3-95 ARIS Source Code User Values screen



SCREEN ITEMS	DESCRIPTION
Object Name	The name of the Object.
Object Type	The type of the Object.
User Values group:	
Line	The line number of the source code.
Source	The source code line.
User Value	The user value that has been set, if any.

## **Maintain User Values Window**

Allows for the addition, modification or deletion of any ARIS Source Code User Value for the selected source code line.

The following Figure 3-96 illustrates the Maintain User Values screen.

Line: 0100	
User Value	
Display Main Menu	
Delete Update Ca	incel

Figure 3-95 Maintain User Values screen

#### SCREEN ITEMS DESCRIPTION

LineThe Line Number of the source code.User ValueThe ARIS Source Code User Value.

Application Management

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#### BUTTON NAME DESCRIPTION

Delete	Will delete the user value. <i>NB: This is only available if a User Value is set.</i>
Update	Will update the user value. <i>NB: This is only available if a User Value is set and has been modified.</i>
Add	Will add the user value. <i>NB: This is only available if a User Value has not been set.</i>
Cancel	Will cancel the Maintain User Values screen and return to the <u>ARIS</u> <u>Source Code User Values</u> screen.



# **Object Usage**

The Object Usage diagram shows the objects used within an application and the amount of times they are called. Selecting a particular object will show the statements where the selected object is used.

The information is presented on a single screen.

# How to Invoke the Object Usage Option

Use the following navigation in the site workplace:

- Select the Application required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Object Usage**.

**Application Management** 

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# **Object Usage Window**

The Object Usage Window allows you to select an object or range of objects that you wish to find within the selected applications. The summary list may be filtered by Language and/or Object Type if required.

Detailed information may be exported to a spreadsheet.

The following Figure 3-97 illustrates the Object Usage screen.

Object Types All Objects	Language Na	itural 👻 C	bject Name *	Refr	esh
bjects					
Object Name		Object Type	•	Usage Counter	1
XX021L01		Local Data /	Area	4	
XX021L02		Local Data	Area	1	
XX021M01		Мар		1	
XX021P01		Program		2	
XX022A01		Adapter		0	Ξ
XX022M01		Мар		1	
XX022P01		Program		0	
XX023A01		Adapter		0	
XX023M01		Мар		1	
XX023P01		Program		1	
XX024A01		Adapter		0	
bject Usage for XX021P01	Object Type	Line	Keyword	External Object	lore
XX025001	Program	1080	FETCH DETUD	N	
XX002P01	Program	0250	FETCH	•	

Figure 3-97 Object Usage screen

SCREEN ITEMS	DESCRIPTION
--------------	-------------

Object Filtering group:	
Object Name	The name of the object to be used. A group of objects can be selected by typing in a part name using an '*' (asterisk) wildcard. For example 'XX001*' will include all objects that are prefixed with 'XX001'. All Objects can be selected by typing in a single '*' (asterisk).
Object Type	Allows you to select the types of object to be listed. The Objects Types are tailored depending on the Language selected.
Language	<ul> <li>Allows you to select the programming language of the objects to be listed.</li> <li>Available selections are:</li> <li>All</li> <li>Cobol</li> <li>JCL</li> <li>Natural</li> </ul>
Objects group:	
Object Name	The name of the Object.
Object Type	The Object Type of the Object.
Usage Counter Object Usage group:	The number of times the Object is referenced within the Application.
Object Name	The name of the Object containing the reference to the Object.
Object Type	The Object Type of the Object containing the reference to the Object.
Line	The statement line number for the Object reference within the selected object.
Keyword	The syntax of the statement referencing the Object.
External Object	The name of the object that contains the statement if the statement is present in an external object e.g., a Natural copycode object or COBOL copybook.

**Application Management** 

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#### BUTTON NAME DESCRIPTION

Object Filtering group:	
Refresh	Will refresh the data in the Objects and Object Usage windows following a change in Object Name criteria.
Objects group:	
Prev	Scrolls the Objects list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the Objects list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Export	Will export the Object data to a spreadsheet.
Object Usage group:	
Prev	Scrolls the Object Usage list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the Object Usage list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Export	Will export the Object Usage data to a spreadsheet.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

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# **Object Usage Context Menu**

The Object Usage context menu is invoked by placing the cursor on any of the rows in the Objects or Object Usage boxes and using the right hand mouse button with a single click.

CONTEXT MENU ITEM	DESCRIPTION
Object Viewer	Invoke the <u>Object Viewer</u> screen for the Natural or COBOL Program selected.
	Note: Not available for JCL, SQL or COBOL Link Objects.
Object Reference	Invoke the <u>Object Reference</u> screen for the Natural or COBOL Program selected.
	Note: Not available for JCL or SQL Objects.
<b>Object Entry Point Diagram</b>	Invoke the Entry Point Structure Diagram for the Natural or COBOL Program selected.
	Note: Not available for JCL or SQL Objects.
Object Documentation	Invoke the <u>Object Documentation</u> screen for the Object selected.
JCL Viewer	Invoke the <u>JCL Viewer</u> for the selected JCL Object.
	Note: Only available for JCL Objects.
SQL Table Viewer	Invoke the <u>SQL Table Viewer</u> for the selected SQL Object.
	Note: Only available for SQL Objects.
View Source Code	Display the selected Object source code.

# APPLICATION INVENTORY

# **Chapter Overview**

This chapter provides a basic overview of the reporting available for the Applications within Natural Engineer.

Once an application has been defined and then extracted from the Natural application library and loaded into the Repository, Natural Engineer provides a series of reports that detail the structure and contents of the applications.

This chapter overviews the following Reporting options:

- 1. Quality Logs
- 2. Application Reports

Note: This chapter does not describe the individual reports available in the Quality Logs and Application Reports options from the Environment menu. For more information on these reports refer to the Natural Engineer Reporting manual.

**Natural Engineer Application Management** 

# **Quality Logs**

The Quality Logs provides information on errors that have occurred during both the Extract and Load processes, as well as any missing or unused objects from the Natural application being processed.

## How to Invoke the Quality Logs Option

Use the following navigation in the site workplace:

- \* Select the application node required.
- \* Single click with the right hand mouse button to invoke the context menu.
- \* Select the option: Quality Logs. This will open a sub-menu of further options.
- \* Select the report required.

#### **Quality Log Reports**

The following list illustrates the Quality Log reports that are available:

- Extract Source Code
- Extract Source Code Summary
- Load Repository
- Load Audit Trail
- Missing Objects
- Unused Objects

The Extract Source Code and Extract Source Code Summary quality logs relate to the Extract process and are only available if there has been a problem during the Extract execution.

The following lists the options that may trigger these quality logs:

- Extract Source Code
- Extract & Load
- Extract Missing Objects

Application Inventory

The Load Repository quality log relates to the Load process and is only available if there has been a problem during the Load execution.

The following lists the options that may trigger this quality log:

- Load Repository
- Extract & Load

The Missing Objects and Unused Objects quality logs only become available after the Load process has been executed. These quality logs rely on the Load process to generate the object information required to identify missing and unused objects.

The following lists the options that may trigger these quality logs:

- Load Repository
- Extract & Load

The Load Audit Trail quality logs only become available after the Load process has been executed and the Activate Load Audit Trail setting is selected within Global Properties. The Load Audit Trail will invoke a screen where a date range to limit the report may be applied and housekeeping to maintain the Load Audit Trail records performed.

The following lists the options that may trigger these quality logs:

Load Repository

Note: For more information on the Quality Logs refer to Chapter 3 in the Natural Engineer Reporting manual.

**Natural Engineer Application Management** 

# Load Audit Trail

The Load Audit Trail option identifies any objects that when loaded have had a different timestamp to the corresponding object within the repository.

## How to Invoke the Load Audit Trail Report

The Load Audit Trail Report is available from the Quality Logs menu when an Application has been loaded and the Activate Load Audit Trail setting is selected in Global Properties.

The following Figure 4-1 illustrates the Load Audit Trail screen.

N Load Audit	t Trail for HO	SPITAL		
Date Range				
Start	15/10/2014		End	15/10/2014
House Keep	ng			Export

Figure 4-1 Load Audit Trail

#### SCREEN ITEMS DESCRIPTION

Date Range Group:	
Start	Insert the start date for the information to be shown on the report.
End	Insert the end date for the information to be shown on the report

<b>BUTTON NAME</b>	DESCRIPTION
Housekeeping	Invoke the <u>Load Audit Trail Housekeeping</u> screen to maintain the Load Audit Trail records within the repository.
Export	Exports the report for the dates chosen to a spreadsheet e.g., Microsoft Excel.

Note: For more information on the Load Audit Trail Report refer to Chapter 3 in the Natural Engineer Reporting manual.

**Application Inventory** 

# Load Audit Trail Housekeeping

The Load Audit Trail Housekeeping allows for Load Audit Trail records to be deleted from the repository based on a date. It is invoked via the housekeeping button on the Load Audit trail report screen.

The following Figure 4-2 illustrates the Load Audit Trail Housekeeping screen.

N House Keeping for HOSPITAL
Delete Load Audit Trail Records older than:
<mark>15</mark> /10/2014
Delete

Figure 4-2 Load Audit Trail Housekeeping

#### BUTTON NAME DESCRIPTION

Delete

Will delete any Load Audit Trail records that are older than the date selected.

**Natural Engineer Application Management** 

# **Application Reports**

The Application Reports provide various levels of Analysis information on the application after it is loaded in the Repository (i.e., before Impact Analysis).

## How to Invoke the Application Reports Option

Use the following navigation in the site workplace:

- \* Select the application required.
- \* Single click with the right hand mouse button to invoke the context menu.
- \* Select the option: **Reports**. This will open a sub-menu of further options.
- \* Select the report required.

**Application Inventory** 

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## **Application Reports**

The following list illustrates the Application Reports that are available:

- Soft Links Report
- Source Code Summary
- Object Summary
- Keywords Summary
- Literals Summary
- Object Overview
- Objects Referencing Objects
- Objects Referenced by Objects
- Objects Referenced by DDM fields
- External Objects Referenced by Objects
- Construct Models Referenced by Objects
- DDMs Referenced
- DDMs Referenced by Objects
- DDMs Accessed by Objects
- Database Data Requirements
- Database Access(CRUD)
- Database Access(CRUD) by Objects
- Data Item Inventory
- Data Item Usage Inventory
- Steplib Object Reference
- View Source Code

The Application Reports option becomes available after the application has been loaded into the Repository.

Note: For more information on the Application Reports refer to Chapter 3 in the Natural Engineer Reporting manual.

# APPLICATION METRICS

# Chapter Overview

This chapter describes the various options available under the Application Metrics option found on the Environment menu.

The Application Metrics option provides summary and detailed information about the application, objects and source code, for the purpose of providing structural statistics, complexity and quality information.



# Reports

The Application Metrics Graphics option will produce graphed reports to show various measurement and complexity information on the objects within an application.

## How to Invoke the Application Metrics Option

Use the following navigation in the site workplace:

- \* Select the application required.
- \* Single click with the right hand mouse button to invoke the context menu.
- \* Select the option: Application Metrics.
- \* Select the report required.

#### **Application Metrics Reports**

The reports available are:

#### 1. Object Type Summary

The Object Type Summary graphed report will display the number of objects per object type being used within an application.

#### 2. Object Size

The Object Size graphed report will display the number of objects within specified object size ranges within an application.

#### 3. Object Usage

The Object Usage graphed report will display the number of times objects are referenced within an application.

#### 4. Object Statistics

The Object Statistics report provides summary and detailed information about the application, objects and code, for the purpose of providing structural statistics e.g., Halstead and McCabe.

*Note: For more information on the Application Metrics Graphics reports refer to Chapter 2 in the Natural Engineer Reporting manual.* 

# MANAGING DATA DEFINITION MODULES

# Chapter Overview

This chapter describes how to select and manage global Data Definition Modules for processing in Natural Engineer.

Whenever an object is loaded into the Natural Engineer repository that uses a Data Definition Module, Natural Engineer will add an entry to the relevant Data Definition Module node. This allows the user to have a global view of the DDMs and applications over their whole site.

The node is structured as follows;

- DDM Name1
  - o Application1
  - $\circ$  Application2

# Unused DDM Items

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The Unused DDM Items option provides the facility to review unused keys and fields within DDM objects, within the applications loaded into the Repository.

The queries can be run for all DDMs or for a selected DDM only. The results are displayed online using a tree view structure, and can also be printed using standard textual report display options.

It is possible to limit the output of the report by specifying an Application Filter.

#### How to Invoke the Unused DDM Items

Use the following navigation in the application workspace:

- Select the top level Data Definition Modules node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Unused DDM Items.

The Unused DDM Items screen may also be invoked from a DDM Object Sub-node of the top level Data Definition Modules node section.

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#### **Unused DDM Items Window**

The Unused DDM Items window displays all the DDMs that are loaded in the Repository. The various reviewing options are accessed from context menus attached to the various nodes in the DDM List tree view.

The following Figure 6-1 illustrates the Unused DDM Items screen.



Figure 6-1 Unused DDM Items screen

#### SCREEN ITEMS DESCRIPTION

DDM and Field Selection Workspace	This is a tree view window used to display all the DDMs loaded in the Repository and for each selected DDM, the fields and keys for that DDM Context menus are available for the various nodes to provide the reviewing options available for the selected node.		
	Note: For more information on the context menus refer to the section Unused DDM Items Context Menus.		
	The DDM and Field Selection workspace is a hierarchical structured display controlled by three nodes:		
	NODE DESCRIPTION		
	All DDMs	All the loaded DDMs are located under this node.	
I		The DDMs available can be expanded and collapsed by clicking on the plus or minus signs in front of the All DDMs node.	
		The number of DDMs shown can be controlled by the LISTBOXMAX parameter in the NATENG.INI file.	
		If the number of DDMs exceeds the LISTBOXMAX parameter value, then the list become scrollable via prev and more icons. The prev icon will scroll the list to the previous page, and, the more icon will scroll the list forward one page.	
		Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.	
	DDM	The DDM fields and keys within each DDM are listed from this node.	
		The DDM fields and keys available can be expanded and collapsed by clicking on the plus or minus signs in front of each DDM node.	
	DDM Item	The DDM fields and keys.	
		There is no expand/collapse functionality for this node.	

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#### SCREEN ITEMS DESCRIPTION

Unused Items workspace	The Unused DDM Items results can be viewed here. The Unused Items workspace utilizes a tree view structure to display the review results.
	The criteria used to produce the results are displayed at the top of the tree view structure.
	If any Application Filters have been defined these will be displayed at the top of the treeview structure as well.
Processing Status	Any Unused DDM Items processing messages.

#### BUTTON NAME DESCRIPTION

Application Filter	Invoke the Application Filter screen.	
	If any Application Filters are specified, the Application Filters button will have an '*' (asterisk) showing to the left of the button text.	
	If no Application Filter is specified then the function will run against all applications by default.	
Print	Invoke the Report Confirmation process.	
Cancel	Cancel the Unused DDM Items process and close the current screen.	

## **Unused DDM Items Context Menus**

Context menus are available to the various nodes within the DDM and Field Selection workspace. These provide the reviewing options available at the selected node level. To invoke a context menu:

- Select the node for which you want to invoke the context menu for.
- Single click with the right hand mouse button.
- The context menu will appear, choose the option you require.



## All DDMs Node Context Menu

CONTEXT MENU ITEM	DESCRIPTION		
Run Key Analysis for All DDMs	Invokes the Unused DDM Items process to report on unused keys in all DDMs.		
Run Field Analysis for All DDMs	Invokes the Unused DDM Items process to report on unused fields in all DDMs.		
Run Complete Analysis for All DDMs	Invokes the Unused DDM Items process to report on unused keys and fields in all DDMs.		
Change Start Position of DDM List	Reposition the list of DDMs to start from a particular DDM name.		
	This option is not available if the screen has been invoked from a single DDM.		
	The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard.		
	The reposition value is appended to the DDM list title to highlight the type of repositioning being applied.		
	Possible repo	sition values are:	
	Value	Result	
	ʻʻ(blank)	Reposition to the top of the DDM list.	
	*	Reposition to the top of the DDM list.	
	ABC*	Only show DDMs that are prefixed by 'ABC'.	
	XYZ	Reposition to the first DDM that either matches or is greater than 'XYZ' and then continue the DDM list from that point.	

#### **DDM Node Context Menu**

CONTEXT MENU ITEM	DESCRIPTION
Run Key Analysis for Selected DDM	Invokes the Unused DDM Items process to report on unused keys for the selected DDM.
Run Field Analysis for Selected DDM	Invokes the Unused DDM Items process to report on unused fields for the selected DDM.

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#### CONTEXT MENU ITEM DESCRIPTION

Run Complete Analysis for	Invokes the Unused DDM Items process to report on unused
Selected DDM	keys and fields for the selected DDM.

#### **DDM Item Node Context Menu**

CONTEXT MENU ITEM	DESCRIPTION
Run Key Analysis for Selected Field	Invokes the Unused DDM Items process to report on unused keys for the selected field
	Note: This option is only available for fields that have been defined as keys. For example: descriptors, superdescriptors.
Run Field Analysis for Selected Field	Invokes the Unused DDM Items process to report on unused fields for the selected field.
	Note: This option is only available for non-key fields.

# **DDM** Field Usage

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The DDM Field Usage option provides the facility to show where a DDM field is used within the applications loaded into the repository.

The queries can be run for all DDMs or for a selected DDM only. The results are displayed online using a tree view structure, and can also be printed using standard textual report display options.

It is possible to limit the output of the report by specifying an Application Filter.

#### How to Invoke DDM Field Usage

Use the following navigation in the application workspace:

- Select the top level Data Definition Modules node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **DDM Field Usage**.

The DDM Field Usage screen may also be invoked from a DDM Object Sub-node of the top level Data Definition Modules node section.

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# **DDM Field Usage Window**

The DDM Field Usage window displays all the DDMs that are loaded in the Repository. The various reviewing options are accessed from context menus attached to the various nodes in the DDM List tree view.

The following Figure 6-2 illustrates the DDM Field Usage screen.



Figure 6-2 DDM Field Usage screen

#### SCREEN ITEMS DESCRIPTION

DDM and Field Selection Workspace	This is a tree vie Repository and f Context menus a reviewing option <i>Note: For more</i>	w window used to display all the DDMs loaded in the For each selected DDM, the fields and keys for that DDM. are available for the various nodes to provide the as available for the selected node. <i>information on the context menus refer to the section</i>	
	The DDM rield Usage Context Menus. The DDM and Field Selection workspace is a hierarchical structured display controlled by three nodes:		
	NODE	DESCRIPTION	
	All DDMs	All the loaded DDMs are located under this node.	
		The DDMs available can be expanded and collapsed by clicking on the plus or minus signs in front of the All DDMs node.	
		The number of DDMs shown can be controlled by the LISTBOXMAX parameter in the NATENG.INI file.	
		If the number of DDMs exceeds the LISTBOXMAX parameter value, then the list become scrollable via prev and more icons. The prev icon will scroll the list to the previous page, and, the more icon will scroll the list forward one page.	
		Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.	
	DDM	The DDM fields and keys within each DDM are listed from this node.	
		The DDM fields and keys available can be expanded and collapsed by clicking on the plus or minus signs in front of each DDM node.	
	DDM Item	The DDM fields and keys.	
		There is no expand/collapse functionality for this node.	

6

#### SCREEN ITEMS DESCRIPTION

DDM Usage workspace	The DDM Field Usage results can be viewed here. The DDM Field Usage workspace utilizes a tree view structure to display the review results.	
	The criteria used to produce the results are displayed at the top of the tree view structure.	
	If any Application Filters have been defined these will be displayed at the top of the treeview structure as well.	
Processing Status	Any DDM Field Usage processing messages.	

#### BUTTON NAME DESCRIPTION

<b>Application Filter</b>	<b>r</b> Invoke the <u>Application Filter</u> screen.		
	If any Application Filters are specified, the Application Filters button will have an '*' (asterisk) showing to the left of the button text.		
	If no Application Filter is specified then the function will run against all applications by default.		
Print	Invoke the Report Confirmation process.		
Cancel	Cancel the DDM Field Usage process and close the current screen.		

**Natural Engineer Application Management** 

## **DDM Field Usage Context Menus**

Context menus are available to the various nodes within the DDM and Field Selection workspace. These provide the reviewing options available at the selected node level. To invoke a context menu:

- Select the node for which you want to invoke the context menu for.
- Single click with the right hand mouse button.
- The context menu will appear, choose the option you require.

#### All DDMs Node Context Menu

CONTEXT MENU ITEM	DESCRIPTION		
Change Start Position of DDM List	Reposition the list of DDMs to start from a particular DDM name.		
	This option is not available if the screen has been invoked from a single DDM.		
	The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard.		
	The reposition value is appended to the DDM list title to highlight the type of repositioning being applied. Possible reposition values are:		
	Value	Result	
	ʻʻ(blank)	Reposition to the top of the DDM list.	
	*	Reposition to the top of the DDM list.	
	ABC*	Only show DDMs that are prefixed by 'ABC'.	
	XYZ	Reposition to the first DDM that either matches or is greater than 'XYZ' and then continue the DDM list from that point.	

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#### **DDM Item Node Context Menu**

#### CONTEXT MENU ITEM DESCRIPTION

**Perform Field Analysis** 

Invokes the DDM Field Usage processing to show where the DDM field is used.

## **Application Filter**

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The Application Filter screen provides a means of creating a sub-set of objects which a particular function will run against.

Applications are selected from the 'Select from' list (on left-hand side of dialog) and are transferred to the 'Selected' list (on right-hand side of dialog).

Once all selections have been made, the applications now form the Application Filter, which will be used during the execution of the function. Only applications within the Application Filter will be impacted.

If no Application Filter is set then the functions will run against all the objects in the application.

The functions that use an Application Filter include:

- <u>Unused DDM Items</u>
- DDM Field Usage

6

# **Application Filter Window**

The Application Filter screen is accessed using the 'Application Filter' button from the relevant function.

The following Figure 6-2-1 illustrates the Application Filter screen.

M Application Filter		े <b>२</b>
All Applications - [G] GENCHECK GENCHK GENEXRM GENIOR GENTEST GREEXRM GREEXSM GSLLIB GSLNCST GSLSOFT Prev More	>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	Selected Applications HOSPITAL HOSPKEY HOSPNLIN HOSPSET HOSPSUB Prev More OK Cancel Apply
20 Applications retrieved.		

Figure 6-2-1 Application Filter screen

	SCREEN ITENIS	DESCRIPTION		
	All Applications	List of all the applications in the repository.		
Selected Applications	Lists all the applications that have been selected for the current function.			
	Applications	Applications can be de-selected by using a double click with the left hand		

mouse button.

#### SCREEN ITEMS DESCRIPTION

#### BUTTON NAME DESCRIPTION

All Applications group:				
Prev	Scrolls the application list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.			
More	Scrolls the application list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.			
Selection / De-selection buttons:				
>>>	Select all applications in the application list (when more than one page is available, as set by the LISTBOXMAX parameter in the NATENG.INI file).			
>>	Select all applications on the current page in the applications list.			
>	Select all applications in the applications list.			
<	De-select all selected applications in the selected list.			
<<	De-select all applications on the current page in the selected list.			
<<<	De-select all applications in the selected list (when more than one page is available, as set by the LISTBOXMAX parameter in the NATENG.INI file).			
Selected Applications group:				
Prev	Scrolls the applications list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.			
More	Scrolls the applications list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.			
Application Filter screen:				
OK	Save the Application Filter settings.			
Cancel	Cancel the Application Filter process and return back to the previous screen.			
Apply	Save changes and retain the current screen. Note: This button is only enabled if any changes have been made.			

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#### CONTEXT MENU ITEM

#### DESCRIPTION

Change Start Position of Application List	Reposition th application na	e list of applications to start from a particular ame.		
	The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard.			
	The repositio highlight the	The reposition value is appended to the application list title to highlight the type of repositioning being applied. Possible reposition values are:		
	Possible repo			
	Value	Result		
	ʻʻ(blank)	Reposition to the top of the application list.		
	*	Reposition to the top of the application list.		
	ABC*	Only <b>show</b> applications that are prefixed by 'ABC'.		
	XYZ	Reposition to the first application that either matches or is greater than 'XYZ' and then continue the application list from that point.		

6

# Database Access (CRUD) by Application

The Database Access (CRUD) by Application option shows all applications that contain any database access for a selected DDM or Predict User View and the type of access i.e., whether it is Created, Read, Updated and/or Deleted.

#### How to Invoke the Database Access (CRUD) by Application Option

Use the following navigation in the site workplace:

- Select the DDM Object from within the top level Data Definition Modules node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Database Access (CRUD) by Application.

The Database Access (CRUD) by Application screen may also be invoked from the DDM Sub-node of the Database Node section or the Predict User View from the Predict User View file node.
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## Database Access (CRUD) by Application Window

All Applications that access the selected DDM/Predict User View name and the type of access is shown.

The following Figure 6-3 illustrates the Database Access (CRUD) by Application screen.

ALL NI					
Applications					
Name	Create	Read	Update	Delete	1
GREEXRM		Y			
GREEXSM		Y			
GSLLIB	Y	Y	Y	Y	
HOSPITAL	Y	Y	Y	Y	=
HOSPKEY	Y	Y	Y	Y	
HOSPNLIN	Y	Y	Y	Y	
HOSPSET	Y	Y	Y	Y	
HOSPSXP	Y	Y	Y		

Figure 6-3 Database Access (CRUD) by Application screen

SCREEN ITEMS	DESCRIPTION		
Data Definition Module/Predict User View	The name of the object.		
Applications	Lists the Applic	cations and type of access.	
	A context menu (CRUD) by Ap Object screen o using the <b>right</b>	is available to navigate between the Database Access plication screen and the Database Access (CRUD) by r to Change the Start position of the Application List by hand mouse button on a selected row.	
	The columns av	vailable are:	
	Name	The name of the Application containing the access to the DDM.	
	Create	Will be set to Y if the field is used in a CREATE(STORE) statement in the application.	
	Read	Will be set to Y if the field is used in a READ(BROWSE) statement in the application.	
	Update	Will be set to Y if the field is used in an UPDATE statement in the application.	
	Delete	Will be set to Y if the field is used in a DELETE statement in the application.	

#### BUTTON NAME DESCRIPTION

Prev	Scrolls the Application list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the Application list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Export	Allows the work file layout to be exported to a spreadsheet e.g., Microsoft Excel.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

6

# Database Field Access (CRUD) by Application

The Database Field Access (CRUD) by Application option shows all applications that contain any database access for a selected DDM and the type of access i.e., whether the DDM is Created, Read, Updated and/or Deleted.

# How to Invoke the Database Field Access (CRUD) by Application Option

The Database Field Access (CRUD) by Application option may be invoked from the context menu of the DDM Field List screen.

#### Database Field Access (CRUD) by Application Window

All Applications that access the selected DDM/DDM Field Name combination and the type of access is shown.

The following Figure 6-4 illustrates the Database Field Access (CRUD) by Application screen.

Applications					
Name	Create	Read	Update	Delete	Key Usage
GSLLIB		Y			Y
HOSPITAL		Y			Y
HOSPSET		Y			Y

Figure 6-4 Database Field Access (CRUD) by Application screen

#### SCREEN ITEMS DESCRIPTION

Data Definition Module & Field	The name of the DDM and DDM Field.			
Applications	Lists the Applic	cations and type of access.		
	A context menu Access (CRUD by Object scree using the <b>right</b>	ext menu is available to navigate between the Database Field (CRUD) by Application screen and the Database Access (CRUD) ext screen or to Change the Start position of the Application List by the <b>right hand mouse button</b> on a selected row.		
	The columns available are:			
	Name	The name of the Application containing the access to the DDM.		
	Create	Will be set to Y if the field is used in a CREATE(STORE) statement in the application.		
	Read	Will be set to Y if the field is used in a READ(BROWSE) statement in the application.		
	Update	Will be set to Y if the field is used in an UPDATE statement in the application.		
	<b>Delete</b> Will be set to Y if the field is used in a statement in the application.			
	Key Usage	Will be set to Y if the field is used as a key within the application.		

BUTTON NAME DESCRIPTION

Prev	Scrolls the Application list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the Application list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Export	Allows the work file layout to be exported to a spreadsheet e.g., Microsoft Excel.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

6

## Field List

The Field list option shows field information, attributes and definitions for a selected DDM or Predict User View.

## How to Invoke the Field List Option

Use the following navigation in the site workplace:

- Select the DDM Object from within the top level Data Definition Modules node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Field List.

The Field list may also be accessed from a DDM Object underneath the Databases Node or from a Predict User View underneath the Predict User view node.

#### **Field List Window**

The following Figure 6-5 illustrates the Field List screen for a DDM.

Name	Attribute	Short Name	Field Type	1
FULL-ADDRESS	G	A1		
FULL-NAME	G	AB		
INCOME	G	AQ	Periodic Group	
JOB-TITLE	A25	AP	Descriptor	
LANG	A3	AZ	Descriptor, Multiple-Value Fi	
LEAVE-BOOKED	G	AW	Periodic Group	E
LEAVE-DATA	G	A3		
LEAVE-DATA.LEAVE-DUE	N2	AU		

Figure 6-5 Field List screen for a DDM

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#### SCREEN ITEMS DESCRIPTION

Fields	Lists the Fields	i.				
	A context ment the <u>Database F</u> <u>Information</u> scr using the <b>right</b> key then it is all via the Context	u is available to navigate between the Field List screen and <u>ield Access (CRUD) by Application</u> or <u>Predict Field</u> reens or to Change the Start position of the Field List by <b>hand mouse button</b> on a selected Field. If the field is a lso possible to navigate to the <u>Database Key Usage</u> diagram menu.				
	Note: The Prea Engineer is exe version 4.2 or a mapped in the	lict Field Information option is only available if Natural ocuting in a remote development environment, Natural above is installed on the mainframe and the Predict file is remote environment settings.				
	Nomo	The name of the data item				
Attribu Short N		The formed and length of the data item.				
	Attribute	The format and length of the data item.				
	Short Name	The Adabas short name for the field.				
	Field Type	The type of field. May be:				
		<ul> <li>Descriptor</li> <li>Super Descriptor</li> <li>Phonetic Descriptor</li> <li>Hyper Descriptor</li> <li>Non Descriptor</li> </ul>				
		And/or				
		<ul><li>Periodic Group</li><li>Multiple Value field</li></ul>				
		And/or				

- •
- Long Alpha Large Object •

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# BUTTON NAME DESCRIPTION Prev Scrolls the Field list to previous page. This button will be

110	available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the Field list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.



## Data Model Perspective Documentation

The Data Model Perspective Documentation option allows you to add, select and review documentation for Data Model Perspectives. Data Model Perspectives allow the specification of a partial view of your data model.

### How to Invoke the Data Model Perspective Documentation Option

Use the following navigation in the site workplace:

- Select the top level Data Definition Modules node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Data Model Perspective Documentation

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### **Data Model Perspective Documentation Window**

A list of the Data Model Perspectives defined to Natural Engineer is listed in the Data Model Perspective list. Selecting a Data Model Perspective will display all the documentation that is associated with that Data Model Perspective. It is also possible to maintain the Data Model Perspectives from this screen by adding or deleting existing Data Model Perspectives.

ew Perspective name	Add
Search Keyword	Search Keyword Catalogue
II Data Model Perspectives	Data Model Perspective Title
CUSTOMER	Employee
DRDER	Entry Point DDM
	EMPLOYEES
	Keywords
	Maintain Keyword
	Comments
	Shows the Employee perspective of the Staffing Data Model.
Dray II	Extended Documentation
Prev	

The following Figure 6-6 illustrates the Data Model Perspective Documentation screen.

Figure 6-6 Data Model Perspective Documentation screen

SCREENTENDS	
New Perspective Name	Allows you to define the name of a new Data Model Perspective. This is only available when the ADD button has been activated to add a new Data Model Perspective.
Search Keyword	Allows you to input search keywords to refine the list of Data Model Perspectives displayed. The search keywords associated with a Data Model Perspective need to be manually added using the Maintain Keywords button.
Data Model	List of all the Data Model Perspectives defined.
Perspective List	The list of Data Model Perspectives can be tailored to your requirements using the option 'Change Start Position of Data Model Pers. List' from the context menu which is invoked by using the <b>right hand mouse button</b> on a selected Data Model Perspective.
Data Model Perspective Title	Provides the input of a Data Model Perspective Title. The default is the Data Model Perspective name. The input is in free format style allowing a maximum of 70 characters to be input. Standard PC Copy, Paste and Cut functions are available.
Keywords	List of search keywords that have been specified for the Data Model Perspective.
	Up to 20 search keywords may be added by using the Maintain Keywords button.
	NB: When Data Model Perspective Documentation is saved a default *ALL* keyword is added. This allows any 'orphaned' documentation to be identified by using the Keyword Catalogue.
Comments	Provides the ability to input any required comments to document the Data Model Perspective. The input is in free format style allowing a maximum of 250 lines, each of which can have a maximum of 70 characters to be input. Standard PC Copy, Paste and Cut functions are available.
Extended Documentation	Provides the ability to specify a location of any supporting documentation that you wish to associate with the Data Model Perspective. For example: Program specification, execution instructions.
	The location can be typed in, or selected by the Extended Description Selection button [].

SCREEN ITEMS	DESCRIPTION
	DESCRIPTION

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Delletter		
Search	Invoke a search of all the Data Model Perspectives defined to locate any that have matching search keywords.	
Add	Will allow the creation of a new Data Model Perspective.	
Keyword Catalogue	Invokes the Keyword Catalogue screen to search for related entities.	
	Note: For more information on the Keyword Catalogue refer to Chapter 6 in the Natural Engineer Utilities for Windows manual.	
Keywords group:		
Maintain Keywords	Invokes a screen to add/maintain up to 20 search keywords. These keywords may be used to group related entities which can then be identified via the Keyword Catalogue.	
Data Model Perspective	es List group:	
Prev	Scrolls the Data Model Perspectives list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.	
More	Scrolls the Data Model Perspectives list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.	
Entry Point DDM grou	p:	
Entry Point DDM Selection []	Invokes the general selection screen where the DDM name of the entry point for the Data Model Perspective can be selected.	
Extended Documentation group:		
Extended Documentation Selection []	Invokes the standard Windows 'Open File' dialog, where the documentation can be selected.	
Go	Will open the specified file using the appropriate program associated with the file extension of the document.	
	For example XX001P01_Spec.doc would be opened by MS Word.	
	Note: This button is only enabled if a specified file is present.	

#### BUTTON NAME DESCRIPTION

Data Model Perspectives Documentation screen:

Delete	Delete the Data Model Perspective Documentation comments for the current selected Data Model Perspective only.
ОК	Save changes and close the current screen.
Cancel	Cancel the Data Model Perspective Documentation process and close the current screen.
Apply	Save changes and retain the current screen.
	Note: This button is only enabled if any changes have been made.

#### **Data Model Perspective Documentation Context Menus**

The context menus are invoked by placing the cursor within the Data Model Perspectives list, Data Model Perspective Title or Comments screen items and using the right hand mouse button with a single click.

#### CONTEXT MENU ITEM DESCRIPTION

Data Model Perspectives List:			
Change Start Position of Data Model Pers. List	Reposition the list of Data Model Perspectives to start from a particular name.		
	The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard.		
	The reposition value is appended to the Data Model Perspectives list title to highlight the type of repositioning being applied.		
	Possible reposition values are:		
	Value	Result	
	ʻʻ(blank)	Reposition to the top of the Data Model Perspectives list.	
	*	Reposition to the top of the Data Model Perspectives list.	
	ABC*	Only show Data Model Perspectives that are prefixed by 'ABC'.	
	XYZ	Reposition to the first Data Model Perspective that either matches or is greater than 'XYZ' and then continue the list from that point.	

Data Model Perspective Title / Comments group:		
Undo	Undo last action.	
Cut	Copy the selected data to the clipboard.	
Сору	'Cut' out selected data (delete) to the clipboard.	
Paste	Paste clipboard data to selected input position.	
Delete	Delete selected data.	
Select All	Select all the available data.	

# 7

# MANAGING DATABASES

## Chapter Overview

This chapter describes how to select and manage global Databases for processing in Natural Engineer.

Whenever an object is loaded into the Natural Engineer repository that uses a Data Definition Module, Natural Engineer will add an entry to the relevant Database node. The information regarding Database and File Number is taken from the DDM header information. This allows the user to have a global view of the databases, file numbers, DDMs and applications over their whole site.

The node is structured as follows;

- Database Number
  - File Number1
    - DDM Name1
      - Application1
      - Application2
  - File Number2
    - DDM Name2
      - Application1
      - Application2



# **Database Options**

The Database Node has the ability to invoke various screens to show DDM and Database information.

For further details please refer to the following sections;

#### Options available from DDM Name sub-node:

DDM Field List

Database Access (CRUD) by Application

#### Options available from Application Name sub-node:

Database Access (CRUD) by Object

# 8

# MANAGING JOB CONTROL LANGUAGE

# Chapter Overview

This chapter describes how to select and manage global JCL for processing in Natural Engineer.

JCL Objects can be extracted and loaded into the repository and will then be grouped by type of JCL.

- JCL Members.
- JCL Procedures.
- JCL Includes.



## **Global JCL Properties**

The Global JCL Properties option provides details about Global JCL that help to identify it within Natural Engineer.

The Global JCL Properties option provides the facility to define specific characteristics to be applied during the Extract process within Natural Engineer for Global JCL.

Global JCL Properties includes:

- Application description, owner name and contact details.
- Directory information. To identify where the Global JCL is located.
- File suffixes to provide selective Extract information.

## How to Invoke the Global JCL Properties Option

Use the following navigation in the site workplace:

- Select the Job Control Language node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Global JCL Properties.

Managing Job Control Language

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## **Global JCL Properties Window**

The Global JCL option uses a single screen to control all of the property settings available.

The following Figure 8-1 illustrates the Global JCL Properties screen.

💦 Global JCL Pi	roperties	
Application De	tails	
Application I	Description Global JCL	
Con	tact Details	
Source		
Library	GLOBJCL	
JCL Type	z/OS 🗸	
File Suffixes		
Source		
Proclib		
Steplibs	1	
	OK	cel Apply

Figure 8-1 Global JCL Properties screen

objects.

#### SCREEN ITEMS DESCRIPTION

Application Details group	up:	
Application Description	The application description. This needs to be input manually up to a maximum of 253 characters.	
Owner Name	The name of the owner of the application. For example: department name, manager's name, project team. This needs to be input manually up to a maximum of 65 characters.	
Contact Details	The contact details of the application. For example: telephone number, email address. This needs to be input manually up to a maximum of 65 characters.	
Source group:		
Directory	The actual name of the directory where the Global JCL is located.	
JCL Type	The type or version of the JCL language used by the application.	
File Suffixes group: Note: A maximum of 10 suffixes can be specified for each group type. The file suffixes can be specified using the File Suffixes pop-up window. For more information refer to section <u>File</u> <u>Suffixes</u> .		
Source	The file suffixes to be included during the Extract process for source objects.	
Proclib	The file suffixes to be included during the Extract process for proclib	

8

Managing Job Control Language

8

Source group:	
Directory Selection []	Invokes the General Selection screen, listing all the JCL Libraries.
File Suffixes group:	
Source Selection []	Invokes the File Suffixes screen.
Proclib Selection []	Invokes the File Suffixes screen.
Global JCL Properties s	creen:
OK	Save changes and close the current screen.
Cancel	Cancel the Global JCL Properties process and return back to the main Natural Engineer screen.
Apply	Save changes and retain the current screen. Note: This button is only enabled if any changes have been made.

BUTTON NAME DESCRIPTION

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Note: For more information on the General Selection screen refer to Chapter 2 in the Concepts and Facilities manual.



## Job Control Language Options

The options for Global JCL are similar to the options available for JCL objects at an Application level. The Global JCL (Job Control Language Node) is treated as an Application. Depending on the type of JCL Object certain reports may not be available.

For further details please refer to the following sections;

#### **Options available from Job Control Language Node:**

#### **Global JCL Properties**

Extract & Load

Extract and Load Selection Criteria Extract Global JCL Load Global JCL Extract Missing Objects

Display Filter Refresh Global JCL Object Documentation Entry Point Structure Diagram Object Cross Reference Diagram Delete Global JCL Validate Objects Global JCL Analysis Global JCL Data Set Viewer Database Access in Global JCL Objects Referenced in Global JCL Managing Job Control Language

8

## **Reports**

**Options available from JCL Object Node:** 

**Object Reference** 

**Object Overview** 

**Object Documentation** 

Entry Point Structure Diagram

**Object Cross Reference** 

JCL Viewer

JCL Flow Chain

JCL Diagram

View Source

Delete Object

Reports

# 9

# MANAGING CICS REGIONS

## Chapter Overview

This chapter describes how to select and manage global CICS Regions for processing in Natural Engineer.

Natural Engineer will analyze data derived from a CICS SYSTEM DEFINITION (CSD) file, create an XML file and then load the definitions into the Repository. This information is located under the CICS Region node of the site workspace.

Information displayed includes;

- Transactions
- Programs
- Files
- Transient Data Queues (TDQs)
- Temporary Storage Queues (TSQs)

It is then possible to associate a CICS Region/Transaction combination to an application.

A CSD file may be created on the mainframe by using the CICS utility, DFHCSDUP. The output file should then be transferred to the PC for utilization by the extract CICS Regions process of Natural Engineer.

# Open a CICS Region

CICS regions can be opened by selecting them from the CICS region node in the site workspace.

CICS regions can be expanded and collapsed by clicking on the plus or minus signs in front of the CICS region node.

If a CICS region node is not displaying a plus sign in front of it, this indicates that the region has not yet been loaded into the Repository.

#### How to Create a new CICS Region

New CICS regions can be created by using the following site workspace navigation:

- Select the top level CICS region node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: New.

This will create a new CICS region with a default name, which can be renamed by over typing the default.

Managing CICS Regions

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# **CICS** Region Filter

The list of CICS regions displayed under the CICS region node may be tailored to your requirements by using the CICS Region Filter option.

## How to Invoke the CICS Region Filter

Use the following navigation in the site workspace:

- Select the top level CICS regions node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: CICS Region Filter.

## **Specifying CICS Region Filter**

FILTER OPTION	DESCRIPTION
---------------	-------------

**CICS Region Filter** Reposition the list of CICS regions to start from a particular region name. The reposition value can be input using either a complete name or part name using an '\*' (asterisk) wildcard. Possible reposition values are:

Value	Result
ʻʻ (blank)	Reposition to the top of the region list.
*	Reposition to the top of the region list.
ABC*	Only show regions that are prefixed by 'ABC'.
XYZ	Reposition to the first region that either matches or is greater than 'XYZ' and then continue the region list from that point.



## **Display Filter**

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The list of Transactions, Programs, Files, TDQs and TSQs displayed under the CICS region node can be tailored to your requirements by using the Display Filter option.

#### How to Invoke the Display Filter

Use the following navigation in the site workspace:

- Select the CICS region required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Display Filter**.

## **Specifying Display Filter**

Object Name	Reposition the list of objects to start from a particular object name. The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard. Possible reposition values are:	
	Value	Result
	ʻʻ(blank)	Reposition to the top of the object list.
	*	Reposition to the top of the object list.
	ABC*	Only show objects that are prefixed by 'ABC'.
	XYZ	Reposition to the first object that either matches or is greater than 'XYZ' and then continue the object list from that point.

#### FILTER OPTION DESCRIPTION

**Managing CICS Regions** 

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## **Refresh CICS Region**

This option will refresh the list of objects in the site workspace for the selected CICS region.

## How to Invoke the Refresh Region

CICS regions can be refreshed by using the following site workspace navigation:

- Select the CICS region required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Refresh Region

## Delete a CICS Region

CICS Regions can be deleted by using the following site workspace navigation:

- Select the CICS region to be deleted.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Delete Region**.

All region data will be removed from the Natural Engineer Repository.

Note: Cross-reference data associating the region with applications is not removed. This must be modified/remove by using the Applications Properties screen for affected applications.



# Delete CICS Object

9

Objects can be deleted by using the following site workspace navigation:

- Select the object to be deleted.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Delete CICS Object**.

The deletion will remove all data for the object.

Note: If the object is to be deleted permanently from the CICS region, you must create a new CSD extract, so that it is not re-extracted by error in the future.

Managing CICS Regions

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## **CICS** Region Properties

The CICS Region Properties option provides details about an application that help to identify it within Natural Engineer. The details specified are region description, owner name and contact details.

## How to Invoke the CICS Region Properties Option

Use the following navigation in the site workspace:

- Select the CICS region required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Region Properties**.

## **CICS Region Properties Window**

The CICS Region Properties option uses a single screen to control all of the property settings available.

The following Figure 9-1 illustrates the CICS Region Properties screen.

CICS Region Properties	for CICS15			23
Region Details				
Region Description	Sample CICS Region			
Owner Name				
Contact Details				
	[	OK Car	ncel Ap	oply

Figure 9-1 CICS Region Properties screen

#### SCREEN ITEMS DESCRIPTION

Region Details group:	
Region Description	The description of the CICS Region. This needs to be input manually up to a maximum of 253 characters.
Owner Name	The name of the owner of the CICS Region. For example: department name, manager's name, project team. This needs to be input manually up to a maximum of 65 characters.
Contact Details	The contact details of the CICS Region. For example: telephone number, email address. This needs to be input manually up to a maximum of 65 characters.

**Managing CICS Regions** 

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## Extract CICS Region Data

This process will analyze a CICS SYSTEM DEFINITION (CSD) file, creating a neutral view of the Programs, Transactions, Files, TSDs and TSQs contained within.

The CSD file may be created on the mainframe by using the CICS utility, DFHCSDUP. The output file should then be transferred to the PC. This file can then be selected by the user for utilization by the extract CICS Regions process of Natural Engineer.

The Extract process writes out a XML that contains the neutral CICS Region Data records and an error log if errors are found during the extract process.

The structure of the output file name in the DATA directory is 'DATA*application*name\_CICS.XML'.

The structure of the log file name in the DATA directory is 'DATA applicationname\_CICSLOG.LOG'.

#### How to Invoke the Extract CICS Region Option

Use the following navigation in the site workplace:

- Select the CICS Region required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Extract & Load. This will open a sub-menu of further options.
- Select the option: Extract CICS Region Data.

#### **Extract CICS Region Data Window**

This allows the user to select the location of the CSD file that is to be used during the extract process and then initiate the extract process. If an error occurs then a View Error Log button will become available.



The following Figure 9-2 illustrates the Extract CICS Region Data screen.

Extract CICS Regi	on Data From CSD File for CICS15	
Extract Details		
CSD File Location	C:\GSL\WEE\CICS\CICS15.txt	
Exclude Programs	DFH*	
		Extract Cancel

Figure 9-2 Extract CICS Region Data screen

#### SCREEN ITEMS DESCRIPTION

Extract Details group:	
CSD File Location	The location of the CSD file for extraction.
Exclude Programs	The object name to be excluded from the extract process.
	The object name can be input using either a complete name or part name using an '*' (asterisk) wildcard.
	For example:
	Object 'DFHCSDUP' would be excluded from the extract.
	Object 'DFH*' would exclude any objects prefixed with DFH. This is the default and is designed to exclude CICS system programs.

Managing CICS Regions

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#### BUTTON NAME DESCRIPTION

Source group:	
CSD File Location []	Invokes a selection screen allowing for the selection of the CSD file location.
Global CICS Region Da	ta screen:
Extract	Extract the data from the supplied CSD file.
Cancel	Cancel the Extract CICS Region Data screen and return back to the main Natural Engineer screen.
View Error Log	If the Extract process receives an error then the View Error Log button will come available allowing the user to interrogate the errors received.

Note: For more information on the General Selection screen refer to Chapter 2 in the Concepts and Facilities manual.

# Load CICS Region Data

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This process will load previously extracted CICS Region Data into the Natural Engineer Repository for a particular CICS Region.

### How to Invoke the Load CICS Region Data Option

Use the following navigation in the site workplace:

- Select the CICS Region required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Extract & Load. This will open a sub-menu of further options.
- Select the option: Load CICS Region Data.
9

# Linked Applications

The Linked Application option allows you to review all applications that have been linked to a selected CICS Region. Applications are linked to a CICS Region/Transaction via the CICS tab of the Application Properties screen.

### How to Invoke the Linked Applications Option

Use the following navigation in the site workplace:

- Select the CICS Region required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Linked Applications.

### **Linked Applications Window**

For the selected CICS Region, a list of the linked applications defined to Natural Engineer is listed in the linked application list box along with the associated CICS Transactions.

The following Figure 9-3 illustrates the Linked Applications screen.

Interview           Image         Transaction         Application Description         Loaded?           IOBCICS         DADA         Yes           IOBJCLNT         -RES         Sample NEE Application         Yes           IOBJCLNT         -STA         Sample NEE Application         Yes           IOBJCLNT         DADA         Sample NEE Application         Yes           IOBJCLNT         ABRW         Yes         Yes	ample CICS Re	gion		
Name         Transaction         Application Description         Loaded?           COBCICS         DADA         Yes           COBJCLNT         -RES         Sample NEE Application         Yes           COBJCLNT         -STA         Sample NEE Application         Yes           COBJCLNT         DADA         Sample NEE Application         Yes           COBJCLNT         ABRW         Yes         Yes	nked Applicatio	ons		
COBCICS         DADA         Yes           COBJCLNT         -RES         Sample NEE Application         Yes           COBJCLNT         -STA         Sample NEE Application         Yes           COBJCLNT         DADA         Sample NEE Application         Yes           COBJCLNT         DADA         Sample NEE Application         Yes           COBJCLNT         DADA         Sample NEE Application         Yes           IOSPITAL         ABRW         Yes         Yes	Name	Transaction	Application Description	Loaded?
COBJCLNT         -RES         Sample NEE Application         Yes           COBJCLNT         -STA         Sample NEE Application         Yes           COBJCLNT         DADA         Sample NEE Application         Yes           IOSPITAL         ABRW         Yes         Yes	COBCICS	DADA		Yes
COBJCLNT         -STA         Sample NEE Application         Yes           COBJCLNT         DADA         Sample NEE Application         Yes           IOSPITAL         ABRW         Yes	COBJCLNT	-RES	Sample NEE Application	Yes
COBJCLNT         DADA         Sample NEE Application         Yes           IOSPITAL         ABRW         Yes         Yes	COBJCLNT	-STA	Sample NEE Application	Yes
IOSPITAL ABRW Yes	COBJCLNT	DADA	Sample NEE Application	Yes
	HOSPITAL	ABRW		Yes

Figure 9-3 Linked Applications screen



#### SCREEN ITEMS DESCRIPTION

Description	The description of the CICS Region as defined in the CICS Region Properties screen.	
Linked Applications	1s Lists all the applications linked to the CICS Region. The columns available are:	
	Name	The name of the application (as defined to Natural Engineer).
	Transaction	The name of the linked transaction.
	Application Description	The description of the Application.
	Loaded?	Indicates if the application has been loaded into Natural Engineer.

#### BUTTON NAME DESCRIPTION

Prev	Scrolls the application list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the application list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.

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# DDM Usage

The DDM Usage option allows you to review all DDMS that are used by applications that have been linked to a selected CICS Region. Applications are linked to a CICS Region/Transaction via the CICS tab of the Application Properties screen.

### How to Invoke the DDM Usage Option

Use the following navigation in the site workplace:

- Select the CICS Region required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **DDM Usage**.

# **DDM Usage Window**

For the selected CICS Region, a list of the linked applications defined to Natural Engineer is listed in the linked application list box along with the associated DDM names.

The following Figure 9-4 illustrates the DDM Usage screen.

ample CICS Re	gion		
DM Usage			
Application	Name	DBID	File Nbr
COBJCLNT	EMPLOYEES	12	11
COBJCLNT	PERSONNEL	12	13
COBJCLNT	VEHICLES	12	12
HOSPITAL	PATIENT	2	118

Figure 9-4 DDM Usage screen



#### SCREEN ITEMS DESCRIPTION

Description	The description Properties scre	n of the CICS Region as defined in the CICS Region en.
DDM Usage	Lists all the DDMs used in applications linked to the CICS Region. The columns available are:	
	Application	The name of the application (as defined to Natural Engineer).
	Name	The name of the DDM.
	DBID	The database number of the DDM.
	File Nbr	The file number of the DDM.

#### BUTTON NAME DESCRIPTION

Prev	Scrolls the application list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the application list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.

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# **CICS** Transaction Viewer

The CICS Transaction Viewer option allows you to select and review information for a selected CICS Transaction. Information displayed includes the associated program and any linked applications. Applications are linked to a CICS transaction via the CICS tab of the Application Properties screen.

### How to Invoke the CICS Transaction Viewer Option

- Select the CICS Transaction required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: CICS Transaction Viewer.



9

## **CICS Transaction Viewer Window**

For the selected CICS Transaction, the associated program and any linked applications is shown.

The following Figure 9-5 illustrates the CICS Transaction Viewer screen.

RANSACTION	TO DISPLAY ADABAS GWA	
Program Invokes Al	DATEST Language ASSEMBLER	]
Description A	DABAS DISPLAY GWA PROGRAM - DISPGWA	
Inked Applicati Name	Description	Loaded?
COBCICS		Yes
COBJCLNT	Sample NEE Application	Yes

Figure 9-5 CICS Transaction Viewer screen

SCREEN ITEMS	DESCRIPTION	
Description	The description of the CICS Transaction.	
Program	Lists the name and type of program that is associated with the CICS Transaction.	
	<b>Invokes</b> The name of the program.	
	Language	The programming language that the program is written in.
	Description	The description of the program.

9

SCREEN ITEMS	DESCRIPTI	ION
Linked Applications	Lists all the applications linked to the CICS Transaction. The columns available are:	
	Name	The name of the application (as defined to Natural Engineer).
	Transaction	The name of the linked transaction.
	Application Description	The description of the Application.
	Loaded?	Indicates if the application has been loaded into Natural Engineer.

### BUTTON NAME DESCRIPTION

Prev	Scrolls the application list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the application list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

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# **CICS** Program Viewer

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The CICS Program Viewer option allows you to select and review information for a selected CICS Program. Information displayed includes the associated transaction and description.

### How to Invoke the CICS Program Viewer Option

- Select the CICS Program required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: CICS Program Viewer.

9

# **CICS Program Viewer Window**

For the selected CICS Program, the associated transaction and description is shown.

The following Figure 9-6 illustrates the CICS Program Viewer screen.

Description	
ADABAS DIS	SPLAY GWA PROGRAM - DISPGWA
Language	ASSEMBLER
Linked Trans	actions
Name	Description
DADA	TRANSACTION TO DISPLAY ADABAS GWA
	Prev

Figure 9-6 CICS Program Viewer screen

### SCREEN ITEMS DESCRIPTION

Description	The description	of the CICS Program.
Language	The programmi	ing language that the program is written in.
Linked Transactions	Lists all the associated transactions linked to the CICS program. The columns available are:	
	Name	The name of the CICS Transaction.
	Description	The description of the linked transaction.

#### BUTTON NAME DESCRIPTION

Prev	Scrolls the transaction list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the transaction list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.

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# **CICS** File Viewer

The CICS File Viewer option allows you to select and review information for a selected CICS File. Information displayed includes the associated transaction and description.

### How to Invoke the CICS File Viewer Option

- Select the CICS File required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: CICS File Viewer.

### **CICS File Viewer Window**

For the selected CICS File, the file details and the usage of the selected file within any selected linked applications is shown.

If you select one of the linked applications, all the statement details for the selected file usage are displayed in the source code list box.

The following Figure 9-7 illustrates the CICS File Viewer screen.

ata Set Nam	e ETS.TRADE	R.COMP		
Descriptio	n TRADER DE	мо		
Journa	I NO			
ile Usage in l	inked Applicatio	ons		
Application	Program	Line No	Statement	Ext. Object
COBCICS	COBCBP01	00000992	EXEC CICS READNEXT	
COBCICS	COBCBP01	00000992	EXEC CICS READNEXT	
COBCICS	COBCBP01	00000992	EXEC CICS READNEXT	
				Prev Mor
Source Code				
COBCBP01 (	0000992	I	EXEC CICS READNEXT	
COBCBP01 (	00000993		INTO (CONTROL-AREA)	
COBCBP01 (	00000995		DATASET ('COMPFILE')	
COBCBP01 (	0000996		RIDFLD (TEST-KEY)	
COBCBP01 (	00000997		KEYLENGIH(43) END-EXEC.	

Figure 9-7 CICS File Viewer screen

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Data Set Name	The name of the	he data set associated with the CICS file.	
Description	The descriptio	n of the CICS file.	
Journal	If the dataset is	s a Journal dataset or not.	
File Usage in Linked Applications	Lists the statements referenced by the selected CICS File in applications that have been linked to the CICS Region.		
	A context men screen and the <b>button</b> on a se	tu is available to navigate between the CICS File Viewer View Source screen by using the <b>right hand mouse</b> elected program.	
	The columns a	wailable are:	
	Application	The name of the linked application.	
	Program	The name of the program containing references to the selected CICS file.	
	Line No.	The statement line number for the reference within the program.	
	Statement	The statement referencing the selected CICS file.	
	Ext. Object	The name of the object that contains the definition if the data item is defined externally, such as in a copybook.	
Source Code	The Source Co	ode of the selected statement.	

### SCREEN ITEMS DESCRIPTION

#### **BUTTON NAME DESCRIPTION**

Prev	Scrolls the application list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the application list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.

# CICS Transient Data Queue Viewer

The CICS Transient Data Queue Viewer (TDQ) option allows you to select and review information for a selected CICS TDQ. Information displayed includes the description, type and usage in any linked applications.

### How to Invoke the CICS Transient Data Queue Option

- Select the CICS TDQ required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: CICS Transient Data Queue Viewer.

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### **CICS Transient Data Queue Viewer Window**

For the selected CICS TDQ, the details and the usage of the selected TDQ within any selected linked applications is shown.

If you select one of the linked applications, all the statement details for the selected TDQ usage are displayed in the source code list box.

The following Figure 9-8 illustrates the CICS Transient Data Queue Viewer screen.

Туре	EXTRA			
Queue Usage i	n Linked Applica	ations		
Application	Program	Line No	Statement	Ext. Object
COBCICS	COBCBP02	00000541	EXEC CICS WRITEQ TD	
COBCICS	COBCBP02	00000541	EXEC CICS WRITEQ TD	
			[	Prev More
Source Code				
COBCBP02 0	0000541 054	100 B	XEC CICS WRITEQ TD	
COBCBP02 0	0000542 054 0000543 054	1200 1300	QUEUE ('CESE') FROM (TS00001)	
COBCBP02 0	0000544 054	400	LENGTH (LENGTH OF TS0000	1)
COBCBP02 0	0000545 054	1500	RESP (WS-RESP)	
COBCBP02 0	0000546 054	1600 I	END-EXEC.	

Figure 9-8 CICS Transient Data Queue Viewer screen

Description	The description	of the TSQ.	
Туре	The type of the	TDQ.	
Queue Usage in Linked Applications	Lists the statements referenced by the selected TDQ in applications that have been linked to the CICS Region.		
	A context menu is available to navigate between the CICS Transient Da Queue Viewer screen and the View Source screen by using the <b>right</b> <b>hand mouse button</b> on a selected program.		
	The columns av	vailable are:	
	Application	The name of the linked application.	
	Program	The name of the program containing references to the selected CICS TDQ.	
	Line No.	The statement line number for the reference within the program.	
	Statement	The statement referencing the selected CICS TDQ.	
	Ext. Object	The name of the object that contains the definition if the data item is defined externally, such as in a copybook.	

# SCREEN ITEMS DESCRIPTION

#### BUTTON NAME DESCRIPTION

Prev	Scrolls the application list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the application list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.

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# CICS Temporary Storage Queue Viewer

The CICS Temporary Storage Queue Viewer (TSQ) option allows you to select and review information for a selected CICS TSQ. Information displayed includes the description, type and usage in any linked applications.

## How to Invoke the CICS Temporary Storage Queue Option

- Select the CICS TSQ required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: CICS Temporary Storage Queue Viewer.



### **CICS Temporary Storage Queue Viewer Window**

For the selected CICS TSQ, the details and the usage of the selected TSQ within any selected linked applications is shown.

If you select one of the linked applications, all the statement details for the selected TSQ usage are displayed in the source code list box.

The following Figure 9-9 illustrates the CICS Temporary Storage Queue Viewer screen.

Description	TRANSIDS T	THAT ARE TO	BE DISABLED	
Туре	EXTRA			
lueue Usage	in Linked Applic	ations		
Application	Program	Line No	Statement	Ext. Object
COBCICS	COBCBP02	00000467	EXEC CICS WRITEQ TS	
COBCICS	COBCBP02	00000467	EXEC CICS WRITEQ TS	
			Г	Prev More
			L	Piev More
ource Code				
OBCBP02 0 OBCBP02 0	0000467 040	6700 E 6800	WRITEQ IS	
OBCBP02 0	0000469 040	6900	QUEUE ('BATX')	
OBCBP02 0 OBCBP02 0	0000470 04'	7000 7100	FROM (COMMON-ERROR-COM LENGTH (LENGTH OF COMMON-	(AREA) -ERROR-COMMARK
OBCBP02 0	0000472 04	7200	MAIN	
OBCBP02 0	0000473 04	7300	RESP (WS-RESP)	
OBCBP02 0	0000474 04	7400 E	ND-EXEC.	

Figure 9-9 CICS Temporary Storage Queue Viewer screen

9

Description	The description	n of the TSQ.
Туре	The type of the	e TSDQ.
Queue Usage in Linked Applications	Lists the statements referenced by the selected TSQ in applications that have been linked to the CICS Region.	
	A context men Storage Queue right hand mo	u is available to navigate between the CICS Temporary Viewer screen and the View Source screen by using the <b>Duse button</b> on a selected program.
	The columns a	vailable are:
	Application	The name of the linked application.
	Program	The name of the program containing references to the selected CICS TSQ.
	Line No.	The statement line number for the reference within the program.
	Statement	The statement referencing the selected CICS TSQ.
	Ext. Object	The name of the object that contains the definition if the data item is defined externally, such as in a copybook.

### SCREEN ITEMS DESCRIPTION

#### **BUTTON NAME DESCRIPTION**

Prev	Scrolls the application list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the application list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.

# 10

# MANAGING SQL TABLES

# Chapter Overview

This chapter describes how to select and manage SQL Tables for processing in Natural Engineer.

Natural Engineer will analyze data derived from a SQL Data Definition Language (DDL) file, create an XML file and then load the SQL Table definitions into the Repository. This information is located under the SQL Tables node of the site workspace.

In order for the SQL Tables to be cross referenced with any applications that use them they should be extracted and loaded prior to the relevant application.



# SQL Tables Options

The SQL Tables nodes have the ability to invoke various screens to show related SQL Tables information or to invoke SQL Table management processes.

For further details please refer to the following sections;

#### Options available from SQL Tables node:

SQL Table Name Filter

Extract & Load

Extract Selection Criteria Extract SQL Tables Load SQL Tables

Refresh SQL Tables
Delete SQL Tables
Quality Logs

#### Options available from SQL Table sub-nodes:

SQL Table Viewer Database Access (CRUD) by Application Object Documentation Delete SQL Table

Managing SQL Tables



# SQL Table Name Filter

The list of SQL Tables displayed under the SQL Tables node may be tailored to your requirements by using the SQL Table Name Filter option.

### How to Invoke the SQL Table Name Filter

Use the following navigation in the site workspace:

- Select the top level SQL Tables node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: SQL Table Name Filter.

### Specifying SQL Table Name Filter

#### FILTER OPTION DESCRIPTION

SQL Table Name Filter	Reposition the list of SQL name.	Table Names to start from a particular table	
	The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard.		
	Possible reposition values	are:	
	Value	Result	
	ʻʻ(blank)	Reposition to the top of the table name list.	
	*	Reposition to the top of the table name list.	
	ABC*	Only show table names that are prefixed by 'ABC'.	
	XYZ	Reposition to the first table name that either matches or is greater than 'XYZ' and then continue the table name list from that point.	



# Extract Selection Criteria - SQL Tables

You use this option to select a DDL file for extraction.

You can specify individual tables, select several tables using wildcards, and ranges of tables using the Extract and Load Selection Criteria screen illustrated below.

The default for Extract and Load Selection Criteria is to extract all objects from the DDL file specified.

### How to Invoke the Extract Selection Criteria - SQL Tables Option

- Select the SQL Table Names node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Extract & Load. This will open a sub-menu of further options.
- Select the option: Extract Selection Criteria.



### **Extract Selection Criteria - SQL Tables Window**

The Extract and Load Selection Criteria window controls all the settings required for this option. It allows the definition of the DDL file containing the table definitions and allows the refinement of the tables to be extracted by allowing individual table names and wildcards to be specified.

The following Figure 10-1 illustrates the Extract Selection Criteria - SQL Tables screen.

Start	End	
*		
	Î	
	Î	
	Î	
DDL Location		
C:\NEE\SQLTABLES\DB2_SAG.DDL		Go

Figure 10-1 Extract Selection Criteria - SQL Tables screen

# 10

# Natural Engineer Application Management

SCREEN ITEMS	DESCRIPTION
Table Dours groups	

Table Rows group:	
Start	The name of the first table to be extracted. This can be a single object name or part of a range of objects if an end table has been specified.
	Note: Refer to the section <u>Specifying Table Names</u> below for more information on how to specify table names and ranges.
End	The name of the last table to be extracted. This is only valid if a start table has been specified.
	Note: Refer to the section <u>Specifying Table Names</u> below for more information on how to specify table names and ranges.
DDL Location group:	
DDL Location	This allows the user to specify a file containing the table definitions of the tables to be extracted.
	The file name can be typed in or, if executing purely on the PC, selected by using the DDL Location Selection button [].

#### BUTTON NAME DESCRIPTION

DDL Location group:	
DDL Location Selection []	Invokes the standard Windows 'Open File' dialog, where the DDL File can be selected.
	Note: This button is unavailable if Natural Engineer is executing in a remote development environment.
Go	Will open the specified file using the appropriate program associated with the file extension of the document.
	For example DDL_SAG.doc would be opened by MS Word.
	Note: This button is unavailable if Natural Engineer is executing in a remote development environment.
Extract Selection Criteri	a Screen:
OK	Save changes and close the current screen.
Cancel	Cancel the Extract Selection Criteria process and close the current screen.
Apply	Save changes and retain the current screen.
	Note: This button is only enabled if any changes have been made.

**Managing SQL Tables** 



### **Specifying Table Names**

The table names specified in the Start table and End table columns on the Extract Selection Criteria – SQL Tables screen use the following standard conventions. If the namespace is used in the definitions e.g., DB2COP.O\* then that should be specified if non-standard criteria are used.

#### All Tables

Enter an asterisk (\*) in the Start Table list (standard default).

#### Single Table Name

Enter full table names in Start Table list.

#### **Multiple Table Group**

Enter partial table name in Start Table list, with an asterisk (\*). This will allow you to process all tables starting with the values before the asterisk.

#### **Multiple Table Range**

Enter a Start Table name and an End Table name in the same row. This will process all tables in alphanumeric order starting from the Start Table and ending with the End Table.

#### **Combination Selection Types**

You can enter multiple rows with different criteria, including multiple single tables, groups and ranges.

#### **Examples:**

Start Table	End Table	Result
*		Process all tables.
SQL-PATIENT		Process single table 'SQL-PATIENT'.
SQL-PAT*		Processes all tables with names prefixed with 'SQL-PAT'.
SQL-PATIENT	SQL-PATIENT9	Processes all objects in the alphabetic range starting from SQL-PATIENT and ending at SQL-PATIENT9.



# Extract SQL Tables

This process will analyze SQL Data Definition Language (DDL) file and writes out a XML file that contains the neutral SQL Table Name records and an error log if errors are found during the extract process.

The structure of the output file name in the DATA directory is 'SQLTABLES.XML'.

The structure of the log file name in the DATA directory is 'SQLTABLES\_EXTRACT.LOG'.

If an error occurs then a View Error Log button will become available on the Extract SQL Tables processing window. The error log may also be viewed by selecting Quality Logs, Extract from the main SQL Tables node.

### How to Invoke the Extract SQL Tables Option

- Select the SQL Table Names node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Extract & Load. This will open a sub-menu of further options.
- Select the option: Extract SQL Tables.

Managing SQL Tables



# Load SQL Tables

This process will load previously extracted SQL Table Data into the Natural Engineer Repository.

### How to Invoke the Load SQL Tables Option

- Select the SQL Tables node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Extract & Load. This will open a sub-menu of further options.
- Select the option: Load SQL Tables.



# **Quality Logs**

The Quality Logs provides information on errors that have occurred during both the Extract and Load processes for SQL Tables.

### How to Invoke the Quality Logs Option

Use the following navigation in the site workplace:

- \* Select the main SQL Tables node.
- \* Single click with the right hand mouse button to invoke the context menu.
- \* Select the option: Quality Logs. This will open a sub-menu of further options.
- \* Select the report required.

### **Quality Log Reports**

The following list illustrates the Quality Log reports that are available for SQL Tables:

- Extract
- Load

The Extract quality log relate to the Extract process and show information on the tables that have been extracted as well as any errors that have occurred during the Extract execution.

The Load quality log relates to the Load process and is only available if there has been a problem during the Load execution.





# **Refresh SQL Tables**

This option will refresh the list of SQL tables in the site workspace.

### How to Invoke the Refresh SQL Tables

SQL Table Names can be refreshed by using the following site workspace navigation:

- Select the SQL Tables Node required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Refresh SQL Tables

# **Delete SQL Tables**

All SQL Tables can be deleted by using the following site workspace navigation:

- Select the SQL Tables node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Delete SQL Tables.

All SQL Tables will be removed from the Natural Engineer Repository.

# Delete SQL Table

An individual SQL Table can be deleted by using the following site workspace navigation:

- Select the SQL Table to be deleted.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Delete SQL Table**.

The deletion will remove data for the SQL Table.



# SQL Table Viewer

The SQL Table Viewer option allows you to select and review column information for individual SQL Tables.

### How to Invoke the SQL Table Viewer Option

Use the following navigation in the site workplace:

- Select the SQL Table required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: SQL Table Viewer.

### **SQL Table Window**

For the selected SQL Table, a list of the columns referenced by the SQL Table is listed in the column list box along with their definitions and attributes.

The following figure to 2 musulates the DOL fuble viewer screen.	The f	ollowir	ng Figure	10-2 illustrates	the SOL	. Table	Viewer screen.
--	-------	---------	-----------	------------------	---------	---------	----------------

Name	Definition	Attribute	Key Usage	
EMPNO	CHAR ( 6 ) NOT NULL	A6		1
FIRSTNME	VARCHAR (12) NOT NULL	A12		
MIDINIT	CHAR(1)	A1		١.
NAME	VARCHAR (15) NOT NULL	A15	Y	
WORKDEPT	CHAR (3)	A3		
PHONENO	CHAR(4)	A4		
HIREDATE	DATE	A10		L
JOB	CHAR(8)	A8		
EDLEVEL	SMALLINT NOT NULL	12		
SEX	CHAR(1)	A1		Ξ.

Figure 10-2 SQL Table Viewer screen



Managing SQL Tables

#### SCREEN ITEMS DESCRIPTION

Column Details	Lists all the columns referenced by the selected SQL Table. The fields available are:	
	Name	The name of the column.
	Definition	The datatype and definitions of the column.
Attribute The comparable ADABAS attribute of the colu		The comparable ADABAS attribute of the column.
	Key Usage	Will be set to Y of column is used as a key.

### BUTTON NAME DESCRIPTION

Prev	Scrolls the column list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the column list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.

# SQL Table Viewer Context Menu

The SQL Table Viewer context menu is invoked by placing the cursor on any of the fields listed and using the right hand mouse button with a single click.

Name		Definition	Attribute	Key Usage
EMPNO		CHAR ( 6 ) NOT NULL	A6	
FIRSTNME		VARCHAR (12) NOT NULL	A12	
MIDINIT		CHAR(1)	A1	
NAME			A15	Y
WORKDEPT	Da	atabase Key Usage by Application	A3	
PHONENO	C	nange Filter Value for Column List	A4	
HIREDATE		DATE	A10	
JOB		CHAR(8)	A8	
EDLEVEL		SMALLINT NOT NULL	12	
SEX		CHAR(1)	A1	

The following Figure 10-3 illustrates the SQL Table Viewer context menu

Figure 10-3 SQL Table Viewer context menu

CONTEXT MENU ITEM	DESCRIPTION
Database Key Usage by Application	Will invoke the <u>Database Key Usage</u> diagram for the selected column.
	NB: This is only available if the column is used as a key.
Change Filter Value for Column List	Reposition the list of columns to start from a particular column name.
	The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard.
	The reposition value is appended to the column details list title to highlight the type of repositioning being applied.

# 11

# MANAGING SERVICES

# **Chapter Overview**

This chapter describes how to select and manage Services for processing in Natural Engineer.

Services are a set of related components, provided in support of one or more business or information technology processes. They are typically organized and held in a central repository such as a service catalogue.

The Service options in Natural Engineer give the ability to cross-reference the Natural and COBOL objects and database files that are utilized by the Service.

Services may be manually added into Natural Engineer or imported from a service catalogue by using the Natural Engineer API, NEEAPI2. Any links between Services and objects/other services may be imported by using Natural Engineer API, NEEAPI3.

Note: For more information on available Natural Engineer APIs please refer to Chapter 3 in the Natural Engineer Concepts and Facilities manual.



# Services Options

The Services nodes have the ability to invoke various screens to show related Service information or to invoke Service management processes.

For further details please refer to the following sections;

#### **Options available from Services node:**

Service Filter

Refresh Services

Service Documentation

**Objects Referenced in Services** 

Service Analysis

#### **Options available from Services sub-nodes:**

**Delete Service** 

Service Viewer

Entry Point

#### **Related Options:**

Maintain Alternate Key

Maintain Called Services


# Service Filter

The list of Services displayed under the Services node may be tailored to your requirements by using the Service Filter option.

### How to Invoke the Service Filter

Use the following navigation in the site workspace:

- Select the top level Services node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Service Filter.

### **Specifying Service Filter**

### FILTER OPTION DESCRIPTION

Service Filter	Reposition the list The reposition valu name using an '*' ( Possible reposition	Reposition the list of Services to start from a particular Service name. The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard. Possible reposition values are:	
	Value	Result	
	ʻʻ(blank)	Reposition to the top of the Services list.	
	*	Reposition to the top of the Services list.	
	ABC*	Only show Services that are prefixed by 'ABC'.	
	XYZ	Reposition to the first Service that either matches or is greater than 'XYZ' and then continue the Services list from that point.	

Note: The Service Filter is case-sensitive.

\_

# **Refresh Services**

This option will refresh the list of Services in the site workspace.

### How to Invoke the Refresh Services

Services can be refreshed by using the following site workspace navigation:

- Select the Services Node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Refresh Services**

# **Delete Service**

A specific Service can be deleted by using the following site workspace navigation:

- Select the required Service.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Delete Service**.

The Service will be removed from the Natural Engineer Repository.





# Maintain Services

The Maintain Services option allows you to manually add, select and review related information for Services.

Services may also be imported from a Service Catalogue by using the Natural Engineer API, NEEAPI2.

*Note: For more information on available Natural Engineer APIs please refer to Chapter 3 in the Natural Engineer Concepts and Facilities manual.* 

### How to Invoke the Maintain Services Option

Use the following navigation in the site workplace:

- Select the Service Node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Maintain Services

### **Maintain Services Window**

A list of the Services defined to Natural Engineer is listed in the Service list. Selecting a Service will display all the information that is associated with that Service. This information may be added, modified or deleted as required. It is possible to invoke the <u>Service Viewer</u> for a selected Service via a context menu or invoke the <u>Entry Point</u> <u>Structure Diagram</u> for a specified <u>Entry Point for a Service</u>.

The following Figure 11-1 illustrates the Maintain Services screen.

💦 Maintain Servic	es				
New Service					Add
Search Keyword				Search	Keyword Catalogue
All Services					
Get Current Date NEE_Package/NE NEE_Package/NE NEE_Package/NE	(12345:1:54321:1) ETRAIN:call_GETDAT ETRAIN:GETDATE E_Outbound:call_Pub	E NicGetDate			
					Prev More
Service Title					
Get Current	Date(12345:1:5	4321:1)			
Alternate Key					
00000123450000	1000005432100001				Maintain Alt. Key
Entry Point					
NEETRAIN	(	GETDATE		Clear	Entry Point Diagram
Called Services					
					Maintain Called Srv
Keywords					
DATE,					Maintain Keywords
Comments					
Service from Calls to thi	a Service Cat s service iden	alogue List - Get tified via SERVCA	_CurrentDate T & Alt. Key		*
Extended Docume	ntation				
					Go
Active Service	?		Delete	ок	ancel Apply

Figure 11-1 Maintain Services screen



### SCREEN ITEMS DESCRIPTION

New Service	Allows you to define the name of a new Service. This is only available when the ADD button has been activated to add a new Service.
Search Keyword	Allows you to input search keywords to refine the list of Services displayed in the Service list. The search keywords associated with a Service need to be manually added using the Maintain Keywords button.
Services List	List of all the Services defined.
	The list of Services can be tailored to your requirements using the option 'Change Start Position of Service List' from the context menu which is invoked by using the <b>right hand mouse button</b> on a selected Service
Service Title	Provides the input of a Service Title. The default is the Service name. The input is in free format style allowing a maximum of 70 characters to be input. Standard PC Copy, Paste and Cut functions are available.
Alternate Key	Shows any Alternate Key that has been defined.
	The Alternate Key may be modified by invoking the <u>Maintain Alternate</u> <u>Key</u> screen via the Maintain Alt. Key button.
Entry Point	Allows a Natural or COBOL component to be defined that is invoked by the Service.
	NB: An Entry Point or a Called Service may be added but not both.
Called Services	Shows any other Services that have been defined that are called by this Service e.g. a Flow Service or an Adapter Service.
	The Called Services list may be modified by invoking the <u>Maintain Called</u> <u>Services</u> screen via the Maintain Called Srv. button.
	NB: An Entry Point or a Called Service may be added but not both.
Keywords	List of search keywords that have been specified for the Service.
	Up to 20 search keywords may be added by using the Maintain Keywords button.
	NB: When Service Documentation is saved a default *ALL* keyword is added. This allows any 'orphaned' documentation to be identified by using the Keyword Catalogue.
Comments	Provides the ability to input any required comments to document the Service. The input is in free format style allowing a maximum of 250 lines, each of which can have a maximum of 70 characters to be input. Standard PC Copy, Paste and Cut functions are available.

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### Natural Engineer Application Management

### SCREEN ITEMS DESCRIPTION

Extended Documentation	Provides the ability to specify a location of any supporting documentation that you wish to associate with the Service. For example: Program specification, execution instructions.
	The location can be typed in, or selected by the Extended Description Selection button []. It may point to a file or a URL (if prefixed by http://).
Active Service	Set on if this is an active service e.g. one that is currently in production.

### BUTTON NAME DESCRIPTION

Search	Invoke a search of all the Services defined to locate any Services that have matching search keywords.
Add	Will allow the creation of a new Service.
Keyword Catalogue	Invokes the Keyword Catalogue screen to search for related entities.
	Note: For more information on the Keyword Catalogue refer to Chapter 6 in the Natural Engineer Utilities for Windows manual.
Keywords group:	
Maintain Keywords	Invokes a screen to add/maintain up to 20 search keywords. These keywords may be used to group related entities which can then be identified via the Keyword Catalogue.
Services List group:	
Prev	Scrolls the Services list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the Services list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Called Services group:	
Maintain Called Srv	Invokes the <u>Maintain Called Services</u> screen to allow the definitions of any other services that may be called by the Service.



### BUTTON NAME DESCRIPTION

Alternate Key group:	
Maintain Alt. Key	Invokes the <u>Maintain Alternate Key</u> screen to allow the definition of an Alternate Key for the Service.
Entry Point/Application	Object group:
Entry Point Application Selection []	Invokes the general selection screen where the Application name of the Application containing the entry point can be selected.
Entry Point Object Selection []	Invokes the general selection screen where the object name of the entry point in the chosen Application can be selected.
Clear	Will clear any defined Entry Point Application or Object name.
Entry Point Diagram	Will invoke the <u>Entry Point Diagram</u> for the selected application/object combination.
Extended Documentatio	n group:
Extended Documentation Selection []	Invokes the standard Windows 'Open File' dialog, where the documentation can be selected.
Go	Will open the specified file using the appropriate program associated with the file extension of the document.
	For example XX001P01_Spec.doc would be opened by MS Word.
	Note: This button is only enabled if a specified file is present.
Maintain Services screen	1:
Delete	Delete the information for the current selected Service only.
ОК	Save changes and close the current screen.
Cancel	Cancel the Maintain Services process and close the current screen.
Apply	Save changes and retain the current screen. Note: This button is only enabled if any changes have been made.



### **Maintain Services Context Menus**

The context menus are invoked by placing the cursor within the Services list, Object Title or Comments screen items and using the right hand mouse button with a single click.

	<b>DESCIUM</b>		
Services List:			
Service Viewer	Invoke the <u>Service Viewer</u> for the selected Service.		
Change Start Position of Service List	Reposition the list of Services to start from a particular Service name.		
	The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard.		
	The reposition value is appended to the Services list title to highlight the type of repositioning being applied.		
	Possible repo	sition values are:	
	Value Result		
	ʻʻ(blank)	Reposition to the top of the Services list	
	*	Reposition to the top of the Services list.	
	ABC*	Only show Services that are prefixed by 'ABC'.	
	WW7	Democition to the first Commiss that sither	
	AIL	matches or is greater than 'XYZ' and then continue the Services list from that point.	

### CONTEXT MENU ITEM DESCRIPTION

Service Title / Comments group:	
Undo	U

Undo	Undo last action.
Cut	Copy the selected data to the clipboard.
Сору	'Cut' out selected data (delete) to the clipboard.
Paste	Paste clipboard data to selected input position.
Delete	Delete selected data.
Select All	Select all the available data.



# **Objects Referenced in Services**

The Objects Referenced in Services option will show a list of all objects and services called by all defined Services for which Service Analysis has been run.

### How to Invoke the Objects Referenced in Services Option

Use the following navigation in the site workplace:

- Select the Service Node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Objects Referenced in Services.**

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**Natural Engineer Application Management** 

### **Objects Referenced in Services Window**

Shows all Objects and Services that are referenced by other Services for which <u>Service</u> <u>Analysis</u> has been run.

The list of items displayed can be tailored to your requirements by using the Object Types and Language filtering options. Further refinement can be made using the option 'Change Start Position of Object List...' from the Objects Referenced in Services context menu by using the **right hand mouse button**.

Note: For more information on the Objects Referenced in Services context menu, refer to section <u>Objects Referenced in Services Context Menu</u>

The following Figure 11-2 illustrates the Objects Referenced in Services screen.

bject Filtering Options			
Object Types All Objects	•	Language	•
bjects			
Name	Library	Object Type	
GETDATA	NEETRAIN	Subprogram	
GETDATE	NEETRAIN	Subprogram	
NEE_Package/NEETRAIN:GETDATE		Service	
ervices - GETDATA/NEETRAIN			Prev More
ervices - GETDATA/NEETRAIN Set Current Date(12345:1:54321:1) IEE_Paokage/NEETRAIN:CETDATE IEE_Package/NEETRAIN:cal_GETDAT	TE		Prev More
ervices - GETDATA/NEETRAIN Set Current Date(12345:1:54321:1) IEE_Package/NEETRAIN:GETDATE IEE_Package/NEETRAIN:cail_GETDAT	re.		Prev More
ervices - GETDATA/NEETRAIN Set Current Date(12345:1:54321:1) IEE_Package/NEETRAIN:GETDATE IEE_Package/NEETRAIN:call_GETDAT	TE		Prev More
ervices - GETDATA/NEETRAIN Set Current Date(12345:1:54321:1) IEE_Package/NEETRAIN:GETDATE IEE_Package/NEETRAIN:call_GETDAT	TE		Prev More
ervices - GETDATA/NEETRAIN Set Current Date(12345:1:54321:1) IEE_Package/NEETRAIN:GETDATE IEE_Package/NEETRAIN:call_GETDAT	re		Prev More
arvices - GETDATA/NEETRAIN Set Current Date(12345:1:54321:1) IEE_Package/NEETRAIN:GETDATE IEE_Package/NEETRAIN:call_GETDAT	re		Prev More
arvices - GETDATA/NEETRAIN Set Current Date(12345:1:54321:1) IEE_Package/NEETRAIN:GETDATE IEE_Package/NEETRAIN:call_GETDAT	re		Prev More
ervices - GETDATA/NEETRAIN Set Current Dale(12345.1:54321:1) IEE_Package/NEETRAIN/GETDATE IEE_Package/NEETRAIN:call_GETDAT	TE		Prev More
ervices - GETDATA/NEETRAIN Set Current Date(12345:1:54321:1) IEE_Package/NEETRAIN:GETDATE IEE_Package/NEETRAIN:call_GETDAT	TE		Prev More
ervices - GETDATA/NEETRAIN Set Current Date(12345:1:54321:1) IEE_Package/NEETRAIN:GETDATE IEE_Package/NEETRAIN:call_GETDAT	TE		Prev More

Figure 11-2 Objects Referenced in Services screen



### SCREEN ITEMS DESCRIPTION

Object Filtering group:	
Object Types	Allows you to select the types of object to be listed. The list is tailored to the Objects Types referenced by services for which analysis has been run.
Language	Allows you to select the programming language of the objects to be listed. The list is tailored to the language of the objects referenced by services for which analysis has been run.
Objects group:	
Name	The name of the called object or service.
Library	The library where the called object resides.
	<i>Note: This is only applicable to Natural or COBOL objects not called services.</i>
Object Type	The type of object referenced by the object or service.
Services group:	
Services	The Service that references the called object or service.

### BUTTON NAME DESCRIPTION

Object group:	
Prev	Scrolls the Object list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the Object list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Services group:	
Prev	Scrolls the Services to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.



### BUTTON NAME DESCRIPTION

More

Scrolls the Services forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.

### **Objects Referenced in Services Context Menus**

The context menus are invoked by placing the cursor within the Objects list and using the right hand mouse button with a single click.

CONTEXT MENU ITEM	DESCRIPT	TION
Change Start Position of Object List	Reposition the list of items to start from a particular object or service name. The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard. The reposition value is appended to the Objects list title to highlight the type of repositioning being applied. Possible reposition values are:	
	Value	Result
	ʻʻ(blank)	Reposition to the top of the item list
	*	Reposition to the top of the item list.
	ABC*	Only show items that are prefixed by 'ABC'.
	XYZ	Reposition to the first item that either matches



# Service Analysis

The Service Analysis option provides the facility to analyze which objects or services are referenced by a Service.

How to Invoke the Service Analysis Option

Use the following navigation in the site workplace:

- Select the main Services node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Service Analysis.

### Service Analysis Window

The Service Analysis window controls all the settings required for this option. It is accessed from the context menu of the main Services node.

The following Figure 11-3 illustrates the Service Analysis screen.

Il Services	s	elected		
Get Current Date(12345:1:54321:1) * VEE_Package/NEETRAIN:call_GETDATE * VEE_Package/NEETRAIN:GETDATE * VEE_Package/NEE Outbound:call PublicGetDate *	>>>			
	<<			
Prev	More <<<			Prev More
All Services	-0	bject Call Level Limi	t	
Unprocessed Services	L	imit (0=unlimited)	0 🗸	
			View Log	Execute Cance

Figure 11-3 Service Analysis screen

SCREEN ITEMS	DESCRIPTION
Service List	List all the Services that are available.
	The list of Services can be tailored to your requirements using the options 'Change Start Position of Service List' from the Service List context menu.
	The Service List title reflects the Services being listed and will append any reposition values that may have been specified.
	Services can be selected by using a double click with the <b>left hand mouse button</b> .
	Note: Any Services listed that have already been processed will have an '*' (asterisk) appended to the right hand side of the Service name.
Selected	List all the Services that have been selected for Service Analysis processing.
	Note: At least one Service must be selected to run the analysis.
	Services can be de-selected by using a double click with the <b>left hand mouse button</b> .



### SCREEN ITEMS DESCRIPTION

Object Call Level Limit	Specifies the amount of levels to be checked by the Service Analysis process. Setting this value to 0 (default) will mean no level limit will be used.
	The default value may be changed by setting the value in the ANALYSIS-LEVEL-LIMIT parameter in the JCL section of the NATENG.INI file.

### BUTTON NAME DESCRIPTION

Service List group:	
Prev	Scrolls the Service list to previous page.
	This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the Service list forward one page.
	This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
All Services	Change the list of Services displayed in the Service List.
	If selected, then all processed and unprocessed Services are listed.
Unprocessed	Change the list of Service displayed in the Service List.
Services	If selected, then only the Service that have not yet been processed are listed.
Selection / De-selection	buttons:
>>>	Select all Services in the Service list (when more than one page is available, as set by the LISTBOXMAX parameter in the NATENG.INI file).
>>	Select all Services on the current page in the Service list.
>	Select all selected Services in the Service list.
<	De-select all selected Services in the selected list.
<<	De-select all Services on the current page in the selected list.
<<<	De-select all Services in the selected list (when more than one page is available, as set by the LISTBOXMAX parameter in the NATENG.INI file).

Selected group:

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### Natural Engineer Application Management

<b>BUTTON NAME</b>	DESCRIPTION
Prev	Scrolls the selected list to previous page.
	This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the selected list forward one page.
	This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Service Analysis scree	n:
Exe Batch	Will submit the batch Service Analysis process for the selected Services. This is only available in a SPod environment when running against a mainframe server.
	Note: This button is only enabled if any changes have been made.
View Log	Will show the Service Analysis Log File which details the Services that have been processed along with any exception messages.
Execute	Invoke the Service Analysis process for the selected Services.
	Note: This button is only enabled if any changes have been made.
Cancel	Cancel any Service selection and close the current screen.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.



# Service Viewer

The Service Viewer option allows you to view the information defined for a specific Service as well as objects and database files referenced by the service.

### How to Invoke the Service Viewer Option

Use the following navigation in the site workplace:

- Select the required Service.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Service Viewer

### Service Viewer Window

A list of the Services defined to Natural Engineer is listed in the Service list. Selecting a Service will display all the information that is associated with that Service.

The following Figure 11-4 illustrates the Service Viewer screen.

ervice liftie			
et Current Date(	12345:1:54321:1)		
lternate Key			
000012345000010000	05432100001		View Alt. Key
atus	Entry Poi	int	
✓ Active Service?	NEETRA	NN/GETDATE	Entry Point Dia
alled Services			
			View Called
)ATE.			View Keyword
			View Reyword
omments			
tended Documentation			
Referenced Objects	Deferenced Files		(c
dended Documentation	Referenced Files		
Referenced Objects	Referenced Files	Object Type	
Referenced Objects Name GETDATA	Referenced Files Library NEETRAIN	Object Type Subprogram	
Referenced Objects Name GETDATA GETDATE	Referenced Files Library NEETRAIN NEETRAIN	Object Type Subprogram Subprogram	
Referenced Objects Name GETDATA GETDATE	Referenced Files Library NEETRAIN NEETRAIN	Object Type Subprogram Subprogram	
Referenced Objects Name GETDATA GETDATE	Referenced Files Library NEETRAIN NEETRAIN	Object Type Subprogram Subprogram	
Referenced Objects Name GETDATA GETDATE	Referenced Files Library NEETRAIN NEETRAIN	Object Type Subprogram Subprogram	
Referenced Objects           Name           GETDATA           GETDATE	Referenced Files Library NEETRAIN NEETRAIN	Object Type Subprogram Subprogram	
Referenced Objects	Referenced Files Library NEETRAIN NEETRAIN	Object Type Subprogram Subprogram	
Referenced Objects	Referenced Files Library NEETRAIN NEETRAIN	Object Type Subprogram Subprogram	

Figure 11-4 Service Viewer screen



### SCREEN ITEMS DESCRIPTION

Service Title	Provides the input of a Service Title. The default is the Service name. The input is in free format style allowing a maximum of 70 characters to be input. Standard PC Copy, Paste and Cut functions are available.
Alternate Key	Shows any alternate key that have been defined.
	The alternate key may be shown by invoking the <u>View Alternate Key</u> screen via the View Alt. Key button.
Active Service ?	Displays if the Service has been designated as active or not.
Entry Point	Displays any application/object name combination that may have been defined as an entry point for the service. The Entry Point diagram may be displayed via the Entry Point Diag button.
Called Services	Displays any Called Services referenced by the Service. The full list of Called Services may be shown by invoking the <u>View Called Services</u> screen via the View Called button.
Keywords	List of search keywords that have been specified for the Service.
	The full list of search keywords for the service may be viewed by using the Maintain Keywords button.
	NB: When Service Documentation is saved a default *ALL* keyword is added. This allows any 'orphaned' documentation to be identified by using the Keyword Catalogue.
Comments	Displays any comments saved regarding the Service.
Extended Documentation	Shows the location of any supporting documentation that is associated with the Service. For example: Program specification, execution instructions.
Deferenced Objects Teb	The documentation may be viewed by selecting the GO button.
Referenced Objects Tat	
Name	The name of any objects or other services referenced by the object.
Library	The library where the called object resides. Note: This is only applicable to Natural or COBOL objects not called services.
Object Type	The type of object or service.
Referenced Files Tab:	
File	The File Name of any files accessed by any of the called objects for the service.

SCREEN ITEMS	DESCRIPTION
DBID	The Database Number of the file referenced.
File Nbr	The File Number of the file referenced.
Create	Will be set to Y if the file is used in a CREATE(STORE) statement in the application.
Read	Will be set to Y if the file is used in a READ(BROWSE) statement in the application.
Update	Will be set to Y if the file is used in an UPDATE statement in the application.
Delete	Will be set to Y if the file is used in a DELETE statement in the application.

#### **BUTTON NAME** DESCRIPTION

Keywords group:	
View Keywords	Invokes a screen to view all the search keywords associated with the service.
Called Services group:	
View Called	Invokes the <u>View Called Services</u> screen to display the full list of any other services that may be called by the Service.
Alternate Key group:	
View Alt. Key	Invokes the <u>View Alternate Key</u> screen to display the Alternate Key for the Service.
Entry Point/Application	Object group:
Entry Point Diag	Invokes the entry point diagram for the selected application/object combination.
Extended Documentation	n group:
Go	Will open the specified file using the appropriate program associated with the file extension of the document.
	For example XX001P01_Spec.doc would be opened by MS Word.
	Note: This button is only enabled if a specified file is present.



Referenced Objects grou	ıp:
Prev	Scrolls the Referenced Objects list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the Referenced Objects list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Referenced Files group:	
Prev	Scrolls the Referenced Files list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
More	Scrolls the Referenced Files list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.
Service Viewer screen:	
ОК	Save changes and close the current screen.
Cancel	Cancel the Service Viewer process and close the current screen.
Apply	Save changes and retain the current screen. Note: This button is only enabled if any changes have been made.



# Entry Point for Services

The Entry Point for Services option allows you to view which objects use a service and the objects used by a service using the <u>Entry Point Diagram</u>.

### How to Invoke the Entry Point for Services Option

Use the following navigation in the site workplace:

- Select the required Service.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Entry Point
- Select the sub option: What I Call/What Calls Me





### **Entry Point for Services Examples**

### **Natural Calling Integration Server Flow Service**

In this example a Natural subprogram GETDAT-N is a stub module generated in EntireX for the Integration Server Flow Service call\_PublicGetDate. The trigger object is NATGWRPC using an alternate key of NEE\_Package:call\_PublicGetDate. This shows that the Natural program GETDAT-P is using the flow service.

The following Figure 11-4-1 illustrates Entry Point Diagram showing Natural Calling Integration Server Flow Service.



Figure 11-4-1 Entry Point Diagram showing Natural Calling Integration Server Flow Service.



### Flow Service using a Natural Object

In this example Flow Service call\_GETDATE is using an adapter service GETDATE which in turn uses a Natural subprogram GETDATE from library NEETRAIN. A Flow Service uses other Services and an Adapter Service uses an Entry Point.

The following Figure 11-4-2 illustrates an Entry Point Diagram showing Flow Service using a Natural Object.



Figure 11-4-2 Entry Point Diagram showing Flow Service using a Natural Object.



# 11

# Maintain Alternate Key

The Maintain Alternate Key option provides the facility to specify an Alternate key for the service. An Alternate Key is a unique identifier that links Natural and COBOL objects to the service.

It is invoked from the <u>Maintain Services</u> screen via the Maintain Alt. Key button. A readonly version, View Alternate Key, is available from the View Alternate Key button on the <u>Service Viewer</u> screen.

### Maintain Alternate Key Window

The Maintain Alternate Key window controls all the settings required for this option

The following Figure 11-5 illustrates the Maintain Alternate Key screen.

💦 Maintain Alternate Key	
NEE_Package:call_PublicGetDate	
	OK Cancel Apply

Figure 11-5 Maintain Alternate Key screen

Alternate Key

Allows the specification of an Alternate Key. *NB: The Alternate Key is limited to 180 bytes.* 

<b>BUTTON NAME</b>	DESCRIPTION
OK	Save changes and close the current screen.
Cancel	Cancel the Maintain Alternate Key process and close the current screen.
Apply	Save changes and retain the current screen.
	Note: This button is only enabled if any changes have been made.

*Note: The OK, Cancel and Apply buttons are unavailable on the read-only View Alternate Key screen.* 

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.





# Maintain Called Services

The Maintain Called Services option provides the facility to add any other Services that are referenced by a particular Service e.g. A Flow Service may call one or more other services. These services may be added on this screen. It is invoked from the <u>Maintain</u> <u>Services</u> screen via the Called Services button. A read-only version, View Called Services, is available from the View Called Srv. button on the <u>Service Viewer</u> screen.

### **Maintain Called Services Window**

The Maintain Called Services window controls all the settings required for this option.

Called Services					
NEE_Package/NEET	TRAIN:GETDATE				
				Prev	More

The following Figure 11-6 illustrates the Maintain Called Services screen.

Figure 11-6 Maintain Called Services screen

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### Natural Engineer Application Management

### SCREEN ITEMS DESCRIPTION

Called Services	Allows the specification of the Called Service name.
	NB: The Called Service Name is limited to 180 bytes.

### BUTTON NAME DESCRIPTION

Maintain Called S	ervices group:	
Prev	Scrolls the Called Services list to previous page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.	
More	Scrolls the Called Services list forward one page. This button will be available/unavailable depending on the value specified in the LISTBOXMAX parameter in the NATENG.INI file.	
Maintain Services	Screen:	
ОК	Save changes and close the current screen.	
Cancel	Cancel the Maintain Called Services process and close the current screen	
Apply	Save changes and retain the current screen. Note: This button is only enabled if any changes have been made.	

Note: The OK, Cancel and Apply buttons are unavailable on the read-only View Called Services screen.

Note: For more information on the NATENG.INI file parameter LISTBOXMAX refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

# 12

### MANAGING PREDICT USER VIEWS

## **Chapter Overview**

This chapter describes how to select and manage Predict User Views for processing in Natural Engineer.

Whenever an object is loaded into the Natural Engineer repository that uses a Predict User View, e.g., a COBOL object containing EXEC ADABAS statements then Natural Engineer will add an entry to the global Predict User View node. In addition the information will be added to the Application Node as a Predict User View sub-node.

The node is structured as follows;

- Predict User View Header
  - Predict User View1
    - Application1
    - Application2
  - Predict User View2
    - Application1
    - Application2

Note: This option is only available if Natural Engineer is executing in a remote development environment, Natural version 4.2 or above is installed on the mainframe and the Predict file is mapped in the remote environment settings



# Predict User Views Filter

The list of Predict User Views displayed under the Predict User Views node may be tailored to your requirements by using the Predict User Views Filter option.

### How to Invoke the Predict User Views Filter

Use the following navigation in the site workspace:

- Select the top level Predict User Views node.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: Predict User Views Filter.

### **Specifying Predict User Views Filter**

Predict User Views Filter	Reposition the list of Predict User Views to start from a particular Predict User View name.				
	The reposition value can be input using either a complete name or part name using an '*' (asterisk) wildcard.				
	Possible reposition values are:				
	Value	Result			
	ʻʻ(blank)	Reposition to the top of the Predict User Views list.			
	*	Reposition to the top of the Predict User Views list.			
	ABC*	Only show Predict User Views that are prefixed by 'ABC'.			
	XYZ	Reposition to the first Predict User View that either matches or is greater than 'XYZ' and then continue the Predict User Views list from that point.			

### FILTER OPTION DESCRIPTION

Managing Predict User Views



# Refresh Predict User Views

This option will refresh the list of Predict User Views in the site workspace.

### How to Invoke the Refresh Predict User Views

Predict User Views can be refreshed by using the following site workspace navigation:

- Select the Predict User Views Node required.
- Single click with the right hand mouse button to invoke the context menu.
- Select the option: **Refresh Predict User Views**

# Predict User View Options

The Predict User View nodes have the ability to invoke various screens to show related Predict User View information.

For further details please refer to the following sections;

#### **Options available from Predict User View Name sub-node:**

Field List

Database Access (CRUD) by Application

Predict Information

**Object Documentation** 

### **Options available from Application Name sub-node:**

Database Access (CRUD) by Object

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