Natural Engineer

Reporting

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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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Acknowledgements

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ABOUT THIS MANUAL

Purpose of this Manual

This manual contains all the Reporting options for Natural Engineer. It describes each of the reports that are available, how to select a display mode for the reports, as well as describing the graphical reporting.

The topics covered are:

- GenTree: Structure Analyzer
- GenMetrics: Complexity Metrics Analyzer
- Global Reports, accessible via the Options menu
- Environment Reports
  - Application Metrics, accessible via the Environment menu
  - Quality Logs, accessible via the Environment menu
  - Application Reports, accessible via the Environment menu
- Analysis Reports
  - Impact Reports, accessible via the Analysis menu
- Modification Reports
  - Modification Reports, accessible via the Modification menu.

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

The following conventions are used throughout 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.
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 symbols are used for instructions:

⇒	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.

How this manual is organized

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

Chapter	Contents
1	Provides an overview on how to select the various different reporting display modes available in Natural Engineer.
2	Provides a description of each of the graphical type reporting options and how to use them.
3	Provides a description of each of the textual type reporting options and how to use them.

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, 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.

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.

Type

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.

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

REPORTING DISPLAY MODES

Chapter Overview

The various reporting options within Natural Engineer are displayed in several different ways depending on the option selected. This chapter will introduce the different display modes available and describe how they are invoked.

The reporting options are split into two main types:

1. Displaying Graphical Reports
2. Displaying Textual Reports

Displaying Graphical Reports

Graphical reports make use of any of the following display modes:

1. GenTree

This is one of Natural Engineer's own graphical display executables which, when invoked, will display objects and/or data items in a tree-structure diagram using a legend of icons to distinguish the various individual components.

2. GenMetrics

This is one of Natural Engineer's own graphical display executables, which will either display in a list or graph format for complexity measurement statistics.

3. Third party spreadsheet packages

Third party spreadsheet packages are used to display report information in graph format.

Note: The display modes 1-3 and how they are invoked are explained in more detail in Chapter 2: Graphical Reporting Options.

4. Microsoft Visio 2000

When a structure diagram option (Object Cross Reference Diagram or Internal Object Logic (JSP) Diagram) is selected, it will invoke Microsoft Visio 2000, which will draw and display the selected diagram.

Note: For more information on the Object Cross Reference Diagram and Internal Object Logic (JSP) Diagram refer to the Natural Engineer Application Management for Windows manual.

Displaying Textual Reports

Textual reports make use of any of the following display options:

- **Screen**

The report data is shown on the Natural screen.

- **Spreadsheet**

The report data is shown using in a spreadsheet package e.g., Microsoft Excel or OpenOffice Calc.

- **Word**

The report data is shown using Microsoft Word word-processing package.

- **Browser/HTML**

The report data is shown using an Internet browser.

- **PDF**

The report data is shown in Adobe PDF format.

The selection of which display option to use is made when the textual report has been selected and either the Report Confirmation or Selection List window has been displayed.

The default display option is set to use Word. This can be changed by the NATENG.INI parameter DEFAULT-OUTPUT. Additionally, individual reports can override the default setting by changing the appropriate report id NATENG.INI parameter.

Note: For more information on the NATENG.INI file parameter DEFAULT-OUTPUT and the report id parameters refer to Chapter 1 in the Natural Engineer Administration Guide for Windows manual.

Report Confirmation Window

This screen is displayed for reports showing information for the whole application. Examples of reports that will invoke this window:

- Application Reports
  - Source Code Summary
  - Keywords Summary
  - DDM's Referenced Report
  - Literals Report
- Impact Reports
  - Search Criteria
  - Application Impact Summary
  - Object Impact Summary
- Modification Reports
  - Application Modification Summary
  - Object Modification Summary
  - Database Data Requirements Modification Report.

The following Figure 1-1 illustrates the Report Confirmation screen for the Application report: Source Code Summary.

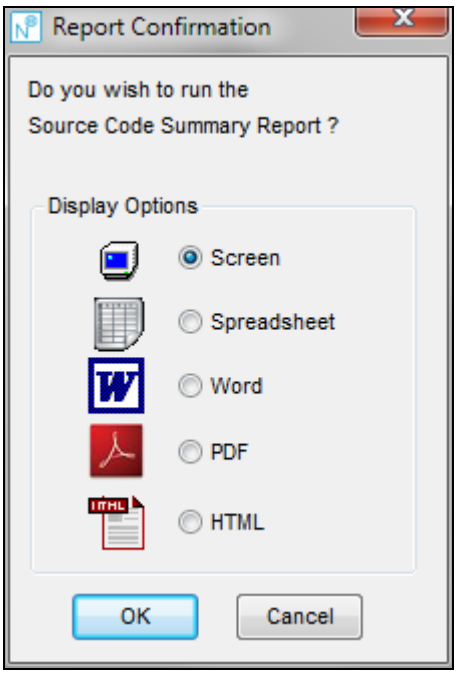


Figure 1-1 Report Confirmation screen

SCREEN ITEMS	DESCRIPTION	
Report Name	The name of the report that has been selected is shown here.	
Display Options	Radio buttons to select the required display option. Options available are dependent on the report chosen.	
	Screen	Display the report using Natural screen.
	Spreadsheet	Display the report using your chosen spreadsheet.
	Word	Display the report using Word document.
	Html	Display the report in HTML format.
	PDF	Display the report in PDF format.

BUTTON NAME	DESCRIPTION
OK	Displays the report using the selected display option.
Cancel	Cancel the report display and close the current screen.

To illustrate the different report display options, the following figures show each of the display options for the Source Code Summary report for the **HOSPITAL** application.

The following Figure 1-3 illustrates the Screen display option.

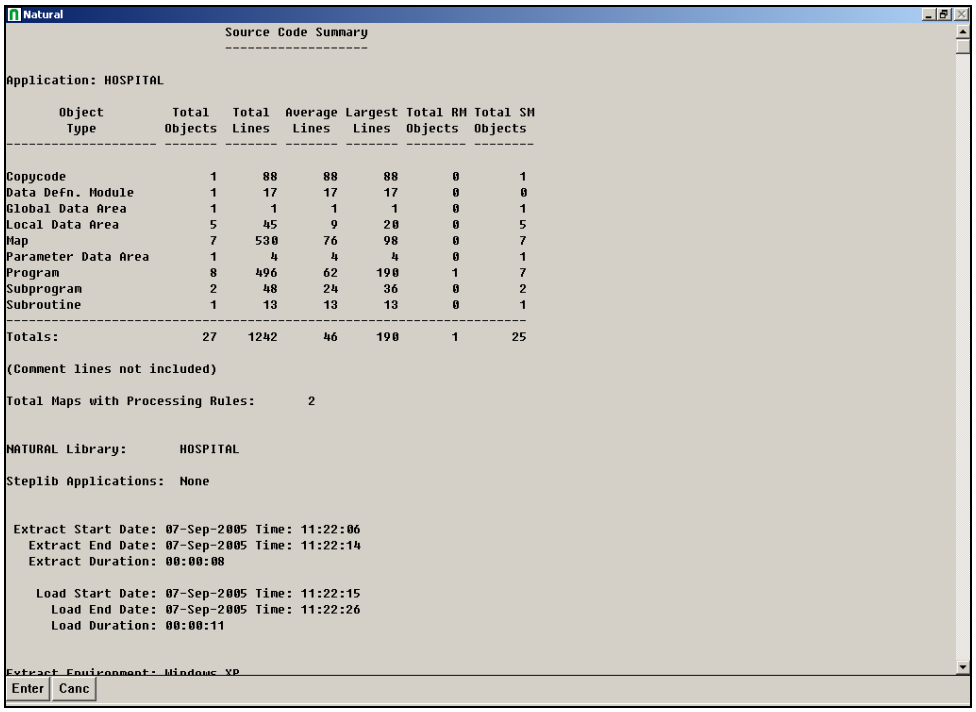


Figure 1-3 Screen display option

The following Figure 1-4 illustrates the Spreadsheet display option using Excel.

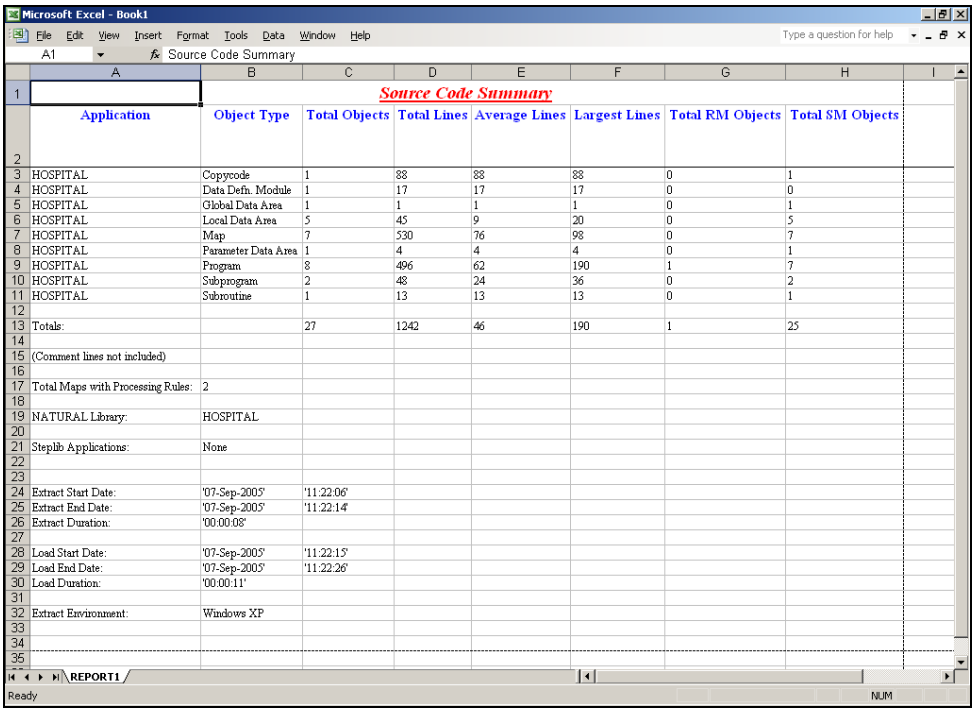


Figure 1-4 Spreadsheet display option using Excel

The following Figure 1-5 illustrates the Word display option.

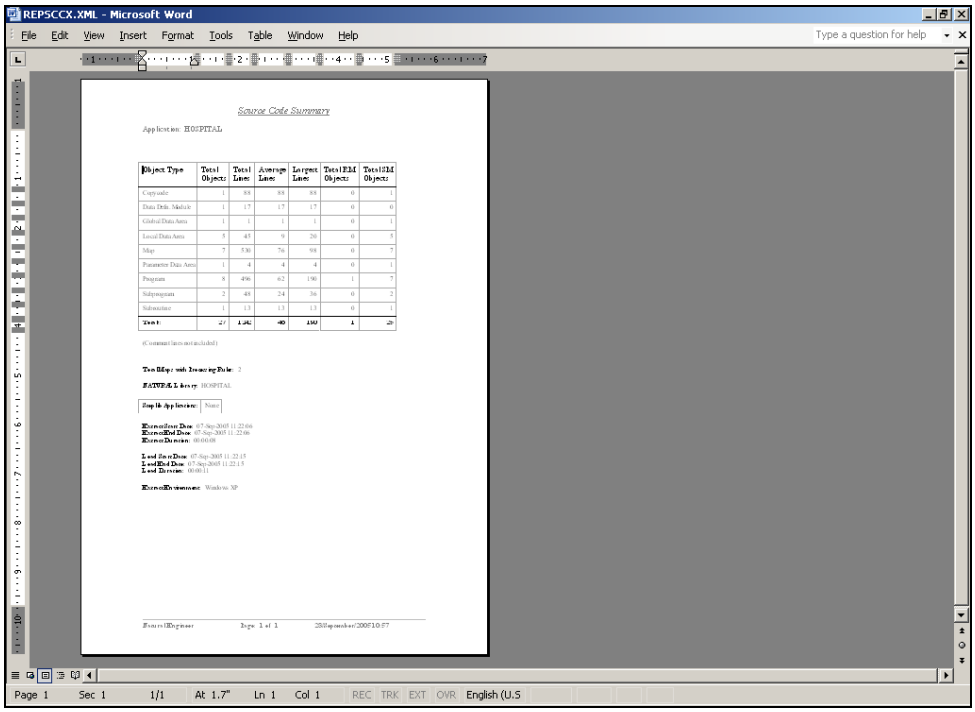


Figure 1-5 Word display option

The following Figure 1-5-1 illustrates the PDF display option.

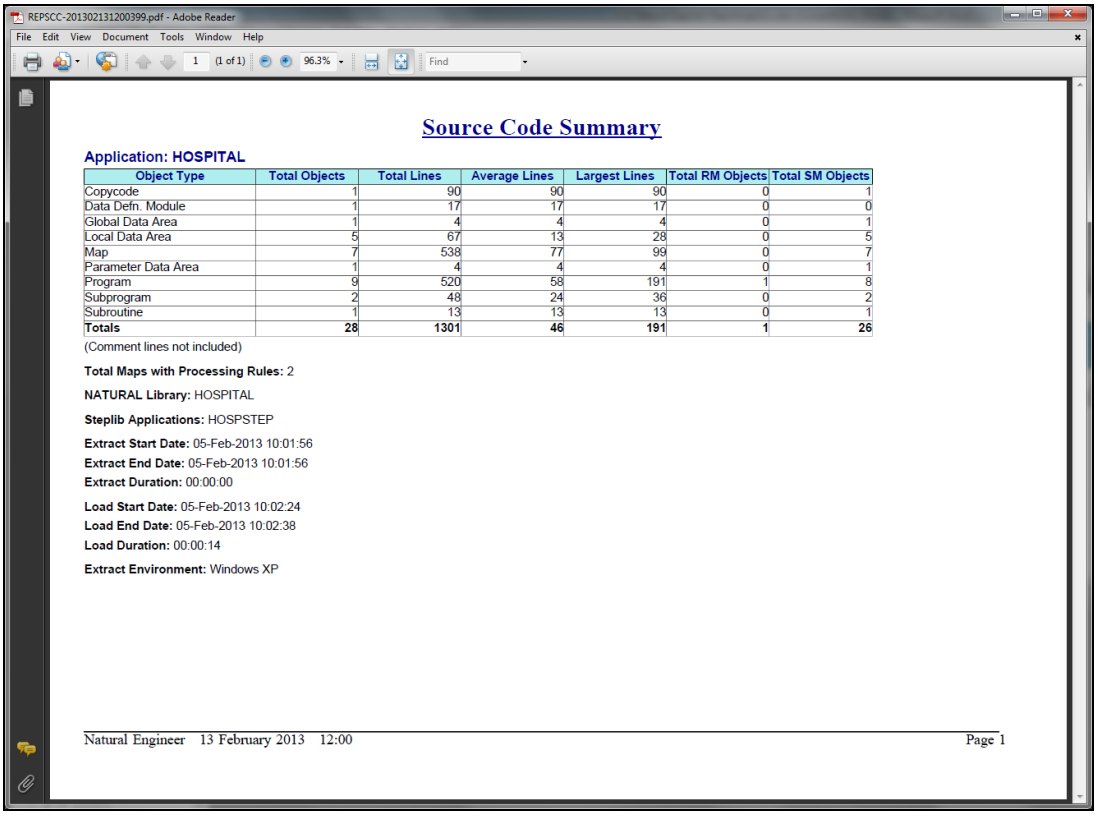


Figure 1-5-1 PDF display option

Note: The generation of reports to PDF is dependent on the installation of a Formatting Objects Processor e.g., Apache FOP 1.1 and the Microsoft Command Line Transformation Utility (MSXSL.EXE). Please see the Natural Engineer Administration Manual for Windows for configuration details.

The following Figure 1-5-2 illustrates the HTML display option.

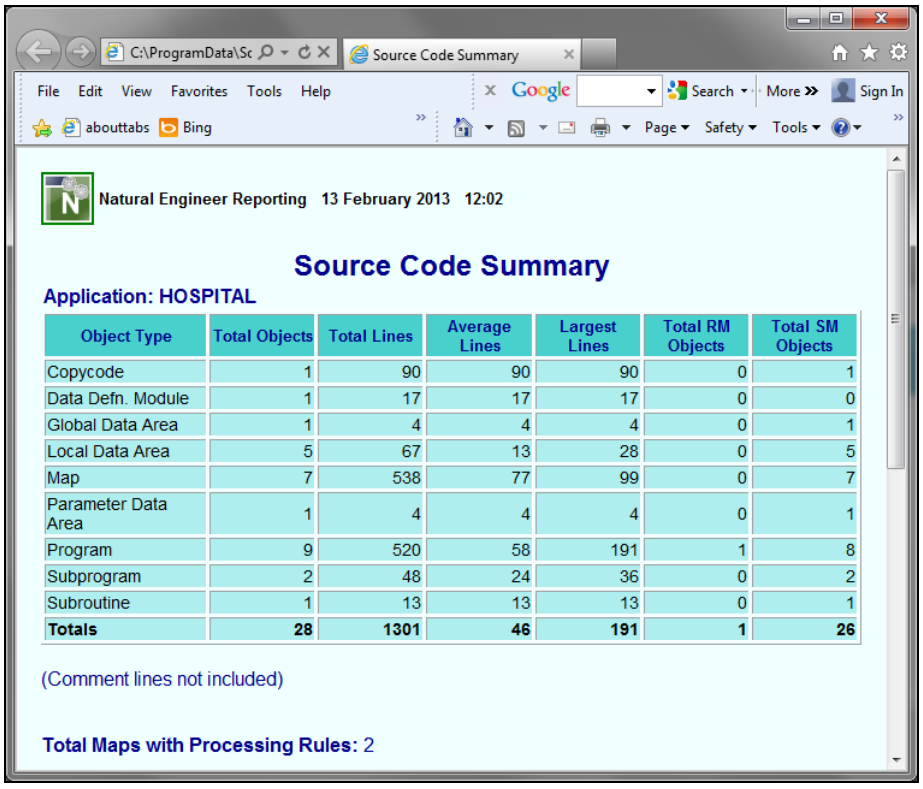


Figure 1-5-2 HTML display option

Selection List Window

The Selection List window provides the facility to refine the data to be displayed in a report, along with the display option required.

There are three types of Selection List available:

1. Object List
2. Field List
3. DDM List

Object List

The Object List screen is displayed for reports that provide information based on objects within an application. The report data can be refined to report for a single object, a group of objects or all objects.

Examples of reports that will invoke this screen:

- Application Reports
  - Objects Referencing Objects
  - Objects Referenced by Objects
  - DDMs Accessed by Objects
  - Database Access (CRUD) by Objects
- Impact Reports
  - Data Item Impact Inventory
- Modification Reports
  - Data Item Inventory Modification

The following Figure 1-6 illustrates the Object List screen for the Impact report: Data Item Impact Inventory.

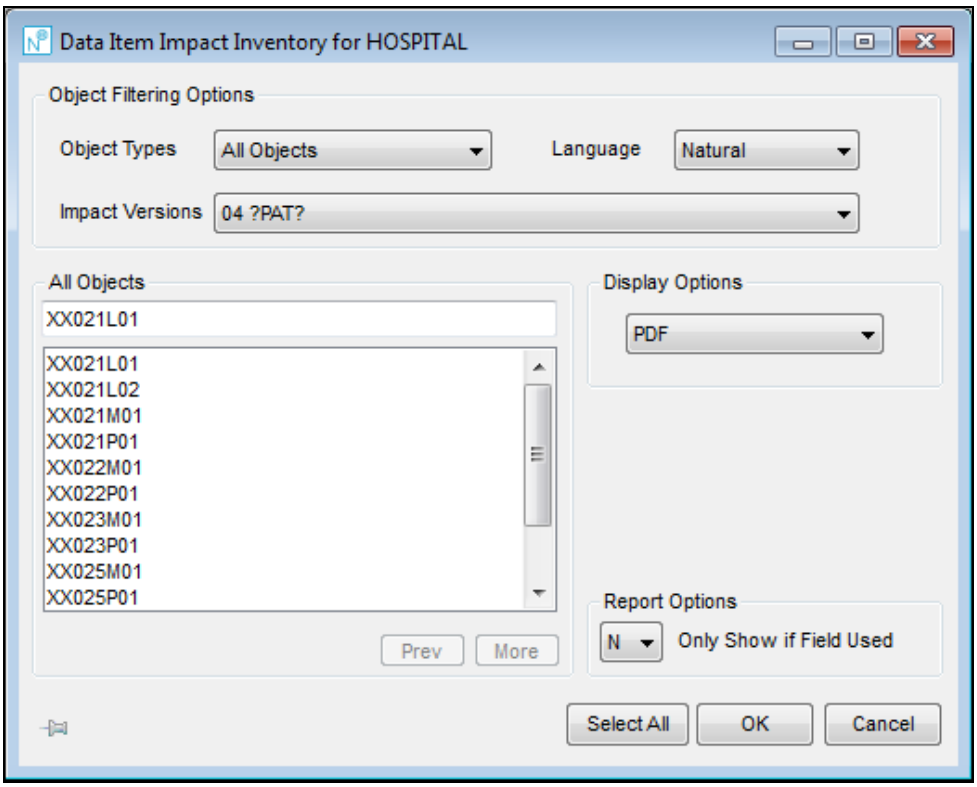


Figure 1-6 Object List screen

SCREEN ITEMS	DESCRIPTION
Object Types	Allows you to select the types of object to be listed. Available selections are: ▪ **All Objects** ▪ **Classes** ▪ **Copycodes** ▪ **Data Definition Modules** ▪ **Dialogs** ▪ **Functions** ▪ **Global Data Areas** ▪ **Helproutines** ▪ **Local Data Areas** ▪ **Maps** ▪ **Parameter Data Areas** ▪ **Programs** ▪ **Subprograms** ▪ **Subroutines**
Language	Allows you to select the programming language of the objects to be listed. Available selections are: ▪ **All** ▪ **Cobol** ▪ **Natural** ▪ **JCL**
Selected Object	The name of the object to be used in the report. Any object name can be selected from the Object List using a single click of the left mouse button. Alternatively, the object name can be typed in. 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 using the '**Select All**' button or by typing in a single '*' (asterisk).
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 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.
Access Type	Allows you to filter the type of file by filter type. *Note: Access type is only available for the Database Access (CRUD) by Objects report.*

SCREEN ITEMS	DESCRIPTION	
	DDM	Displays DDM Objects.
	Predict User Views	Displays Predict User Views.
	SQL Tables	Displays SQL Tables.
Display Options	Allows you to select the required display option.	
	HTML	Displays an interactive report using an Internet Browser.
	Screen	Display the report using Natural screen.
	Spreadsheet	Display the report using your chosen spreadsheet.
	Word	Display the report using Word document.
	PDF	Display the report in PDF format.
Report Options	Report refinement options for Impacted items.	

Note: The Report Options is only available for the Data Item Impact Inventory report.

Only Show if Field Used

N Display all impacts. This is the default setting.

Y Display only the impacts for used fields. Any fields that are defined only will not be shown.

S Display only the impacts for the definition of used fields.

Example using the following source code:

```
0010 DEFINE DATA LOCAL
0020 #USED (A10)
0030 #UNUSED (A5)
0040 END-DEFINE
0050 MOVE 'ABC' TO #USED
0060 WRITE #USED
0070 END
```

Impact run with Impact criteria DATAITEM ?

The Data Item Impact Inventory report will display data as follows:

Only Show if Field Used = N

```
0020 #USED (A10)
0030 #UNUSED (A5)
0050 #USED
0060 #USED
```

SCREEN ITEMS	DESCRIPTION
	Only Show if Field Used = Y 0020 #USED (A10) 0050 #USED 0060 #USED **Only Show if Field Used = S** 0020 #USED (A10)
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.

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.
Select All	Selects all the objects available in the Object List and invokes the report being processed.
OK	Accepts the selected object(s) and invokes the report being processed. *NB: For 'OK' and 'Select All' 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 report display 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 List Context Menu

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

The Object list context menu provides the facility to tailor the list of Objects displayed in the Object list.

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
‘ ‘ (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.

Field List

The Field List screen is displayed for reports that provide information based on fields within an application. The report data can be refined to report for a single field, a group of fields or all fields.

Examples of reports that will invoke this screen:

- Application Reports
  - Data Item Usage Inventory

The following Figure 1-8 illustrates the Field List screen

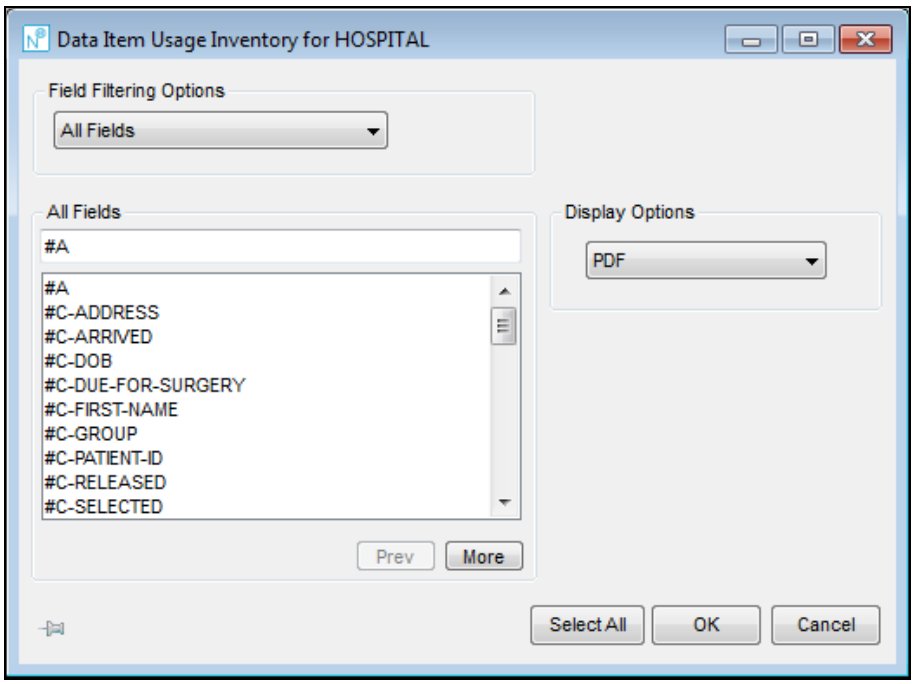


Figure 1-8 Field List screen

SCREEN ITEMS	DESCRIPTION
Field Types	Allows you to select the types of fields to be listed. Available selections are: ▪ **All Fields** ▪ **Non-DDM Fields** ▪ **DDM Fields** ▪ **System Variables**
Selected Field	The name of the field to be used in the report. Any field name can be selected from the Field List using a single click of the left mouse button. Alternatively, 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 'XX001*' will include all fields that are prefixed with 'XX001'. All fields can be selected by using the '**Select All**' button or by typing in a single '*' (asterisk).
Field List	List of all the fields used by the currently selected application. The list of fields can be tailored to your requirements using the option 'Change Start Position of Field List…' from the Field List context menu. The Field List title reflects the Field Types being listed and will append any reposition values that may have been specified.
Display Options	Allows you to select the required display option. **Screen** Display the report using Natural screen. **Spreadsheet** Display the report using a spreadsheet. **Word** Display the report using Word document. **PDF** Display the report in PDF format. **HTML** Display the report in HTML format.
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.

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.
Select All	Selects all the fields available in the Field List and invokes the report being processed.
OK	Accepts the selected field(s) and invokes the report being processed. 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. *NB: For 'OK' and 'Select All' 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 report display 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.

Field List Context Menu

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

The Field list context menu provides the facility to tailor the list of Fields displayed in the Field list.

CONTEXT MENU ITEM	DESCRIPTION
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 reposition value is appended to the Field list title to highlight the type of repositioning being applied. Possible reposition 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'.
XYZ	Reposition to the first Field that either matches or is greater than 'XYZ' and then continue the Field list from that point.

DDM List

The DDM List screen is displayed for reports that provide information based on DDMs within an application. The report data can be refined to report for a single DDM, a group of DDMs or all DDMs.

Examples of reports that will invoke this screen:

- Application Reports
  - Objects Referenced by DDM Fields
  - DDMs Referenced by Objects

The following Figure 1-9 illustrates the DDM List screen

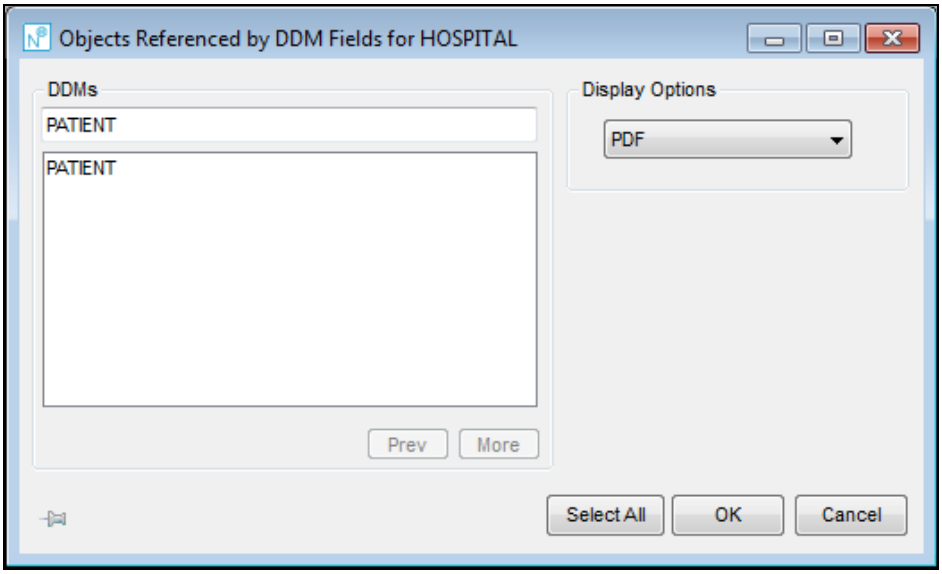


Figure 1-9 DDM List screen

SCREEN ITEMS	DESCRIPTION
Selected DDM	The name of the DDM to be used in the report. Any DDM name can be selected from the DDM List using a single click of the left mouse button. Alternatively, the DDM name can be typed in. A group of DDMs can be selected by typing in a part name using an '*' (asterisk) wildcard. For example 'XX001*' will include all DDMs that are prefixed with 'XX001'. All DDMs can be selected by using the '**Select All**' button or by typing in a single '*' (asterisk).
DDM List	List of all the DDMs used by the currently selected application. The list of DDMs can be tailored to your requirements using the option 'Change Start Position of DDM List…' from the DDM List context menu. The DDM List title will append any reposition values that may have been specified.
Display Options	Radio buttons to select the required display option. **Screen** Display the report using Natural screen. **Spreadsheet** Display the report using a spreadsheet. **Word** Display the report using Word document. **PDF** Display the report in PDF format. **HTML** Display the report in HTML format using a browser.
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.

BUTTON NAME	DESCRIPTION
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.

BUTTON NAME	DESCRIPTION
Select All	Selects all the DDMs available in the DDM List and invokes the report being processed.
OK	Accepts the selected DDM(s) and invokes the report being processed. *NB: For 'OK' and 'Select All' 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 report display 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.

DDM List Context Menu

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

The DDM list context menu provides the facility to tailor the list of DDMs displayed in the DDM list.

CONTEXT MENU ITEM	DESCRIPTION
Change Start Position of DDM List…	Reposition the list of DDMs to start from a particular DDM 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 DDM 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.

Browser Reporting Option

There are three report options that use the Internet browser to display them:

- Application Reports
  - View Source Code
- Impact Reports
  - View Impacted Source Code
- Modification Reports
  - Preview Modified Code

Each one of these will invoke a different version of the Object List window with the relevant browser options available.

Object List Window for View Source Code

The Object List screen for View Source Code is similar to the standard Object List screen except that the Display Options are not shown, only Browser Options are available.

The following Figure 1-10 illustrates the Object List screen for the Application report: View Source Code.

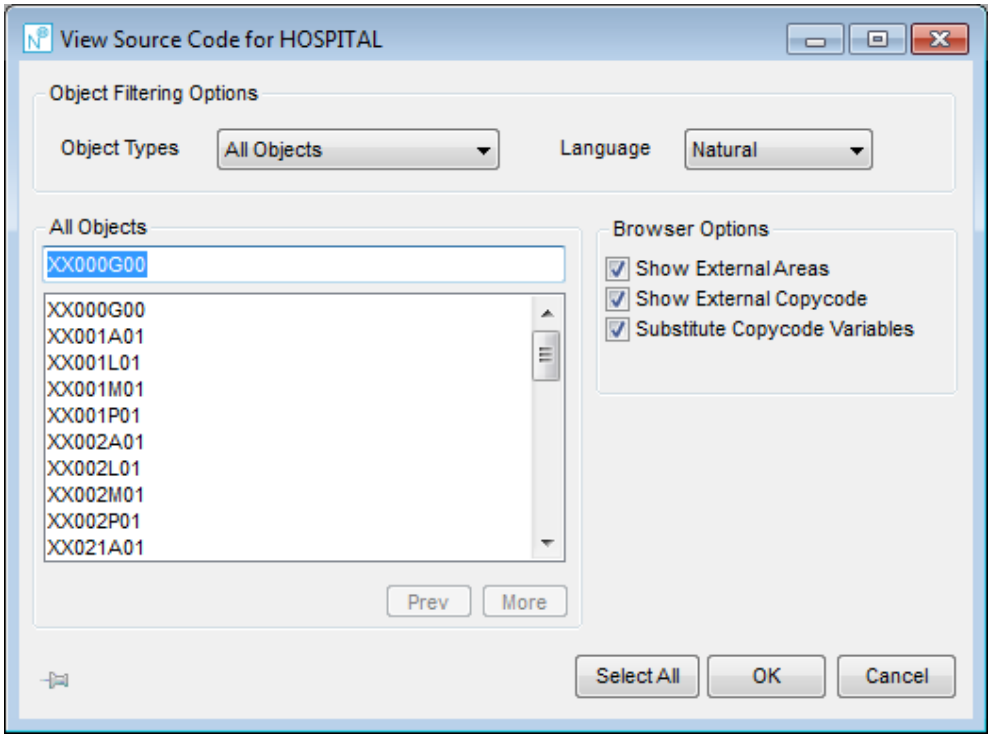


Figure 1-10 Object List screen for View Source Code

SCREEN ITEMS	DESCRIPTION
Object Types	Allows you to select the types of object to be listed. Available selections are: ▪ **All Objects** ▪ **Classes** ▪ **Copycodes** ▪ **Data Definition Modules** ▪ **Dialogs** ▪ **Functions** ▪ **Global Data Areas** ▪ **Helproutines** ▪ **Local Data Areas** ▪ **Maps** ▪ **Parameter Data Areas** ▪ **Programs** ▪ **Subprograms** ▪ **Subroutines**
Language	Allows you to select the programming language of the objects to be listed. Available selections are: ▪ **All** ▪ **Cobol** ▪ **JCL** ▪ **Natural**
Selected Object	The name of the object to be used in the report. Any object name can be selected from the Object List using a single click of the left mouse button. Alternatively, the object name can be typed in. 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 using the '**Select All**' button or by typing in a single '*' (asterisk).

SCREEN ITEMS	DESCRIPTION
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.
Browser Options	Check boxes to select display of external object information. **Show External Areas** If checked, will display the contents of the included data area within the source code of the selected object. If un-checked, then no included data area details will be shown, i.e., will show as **'USING XX001L01'** where XX001L01 is the external object for the included local data area. **Show External Copycode** If checked, will display the contents of the included Copycode within the source code of the selected object. If un-checked, then no copycode details will be shown, i.e., will show as **'INCLUDE XX001C01'** where XX001C01 is the external object containing the copycode.

SCREEN ITEMS	DESCRIPTION

	Substitute Copycode Variables
	If checked, will display any substitution variables used within copycode i.e., those specified with &n& notation.
	For example:
	If unchecked:
	`0100 INCLUDE INCLEX3S '''N'''  'H''69'''  '7'`
	
	`0010 /* EXAMPLE 'INCLEX3S': INCLUDE (STRUCTURED MODE)`
	`0020`
	`0030 ASSIGN #FLAG-ONE = &1&`
	`0040 ASSIGN #1ST-FLAG = &2&`
	`0050 ASSIGN #A-FLAG-1 = &3&`
	
	`If checked:`
	`0100 INCLUDE INCLEX3S '''N'''  'H''69'''  '7'`
	
	`0010 /* EXAMPLE 'INCLEX3S': INCLUDE (STRUCTURED MODE)`
	`0020`
	`0030 ASSIGN #FLAG-ONE = 'N' (&1&)`
	`0040 ASSIGN #1ST-FLAG = H'69' (&2&)`
	`0050 ASSIGN #A-FLAG-1 = 7 (&3&)`

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.

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.
Select All	Selects all the objects available in the Object List and invokes the report being processed.
OK	Accepts the selected object(s) and invokes the report being processed.

BUTTON NAME	DESCRIPTION
	NB: For 'OK' and 'Select All' 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 report display 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 List Context Menu

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

The Object list context menu provides the facility to tailor the list of Objects displayed in the Object list.

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
' ' (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 List Window for View Impacted Source Code

The Object List screen for View Impacted Source Code is similar to the Object List screen for View Source Code described previously. The only difference being the extra Browser Options that are available.

The following Figure 1-11 illustrates the Object List screen for the Impact report: View Impacted Source Code.

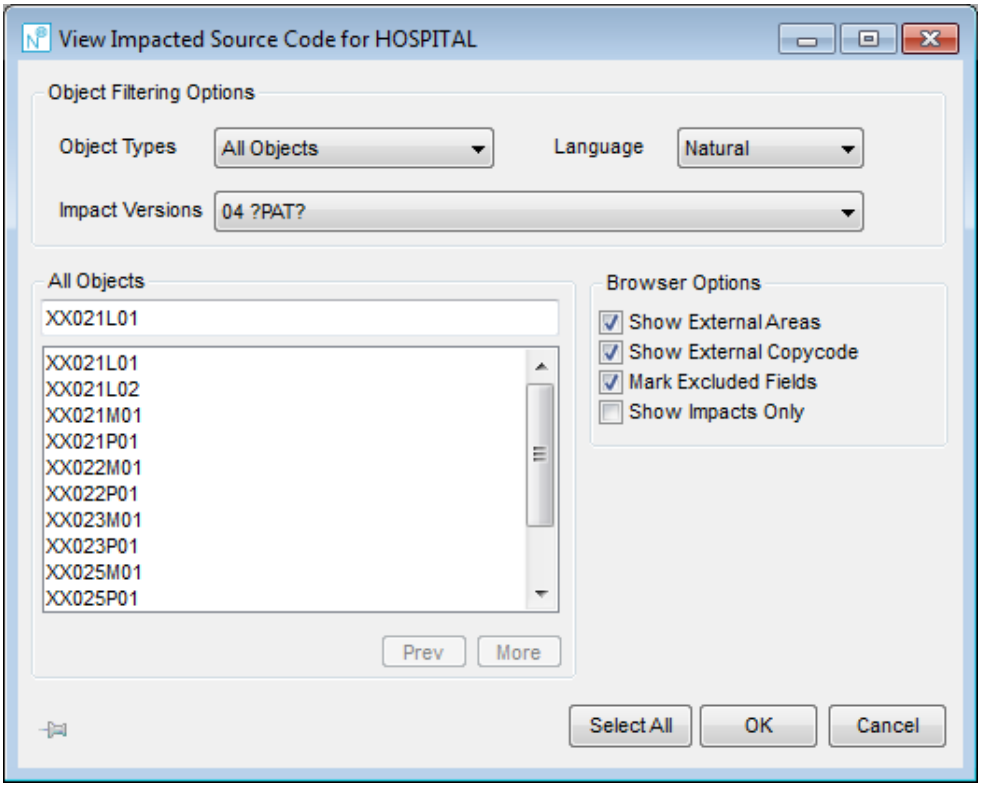


Figure 1-11 Object List screen for View Impacted Source Code

SCREEN ITEMS	DESCRIPTION
Object Types	Allows you to select the types of object to be listed. Available selections are: ▪ **All Objects** ▪ **Classes** ▪ **Copycodes** ▪ **Data Definition Modules** ▪ **Dialogs** ▪ **Functions** ▪ **Global Data Areas** ▪ **Helproutines** ▪ **Local Data Areas** ▪ **Maps** ▪ **Parameter Data Areas** ▪ **Programs** ▪ **Subprograms** ▪ **Subroutines**
Language	Allows you to select the programming language of the objects to be listed. Available selections are: ▪ **All** ▪ **Cobol** ▪ **JCL** ▪ **Natural**
Selected Object	The name of the object to be used in the report. Any object name can be selected from the Object List using a single click of the left mouse button. Alternatively, the object name can be typed in. 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 using the '**Select All**' button or by typing in a single '*' (asterisk).
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.

SCREEN ITEMS	DESCRIPTION
Browser Options	Check boxes to select display of external object information. **Show External Areas** If checked, will display the contents of the included data area within the source code of the selected object. If un-checked, then no included data area details will be shown, i.e., will show as **'USING XX001L01'** where XX001L01 is the external object for the included local data area. **Show External Copycode** If checked, will display the contents of the included Copycode within the source code of the selected object. If un-checked, then no copycode details will be shown, i.e., will show as **'INCLUDE XX001C01'** where XX001C01 is the external object containing the copycode. **Mark Excluded Fields** If checked, will display any fields that have been marked as Excluded. If un-checked, will not display any Excluded fields. **Show impacts only** If checked, will only display the statement lines that have been impacted. If unchecked, will display both the impacted and non-impacted statement lines.
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.

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.
Select All	Selects all the objects available in the Object List and invokes the report being processed.

BUTTON NAME	DESCRIPTION
OK	Accepts the selected object(s) and invokes the report being processed. *NB: For 'OK' and 'Select All' 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 report display 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 List Context Menu

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

The Object list context menu provides the facility to tailor the list of Objects displayed in the Object list.

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
' ' (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 List Window for Preview Modified Code

The Object List screen for Preview Modified Code allows for a single object to be selected and displayed in a browser. There are no Browser Options available.

The following Figure 1-12 illustrates the Object List screen for the Modification report: Preview Modified Code.

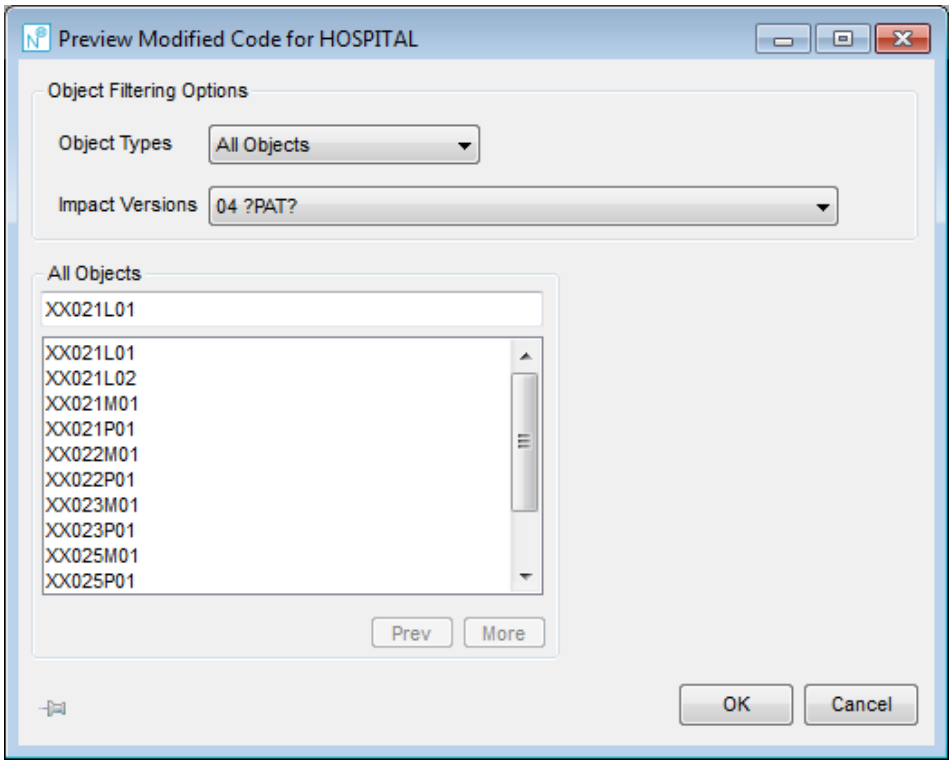


Figure 1-12 Object List screen for Preview Modified Code

SCREEN ITEMS	DESCRIPTION
Object Types	Allows you to select the types of object to be listed. Available selections are: ▪ **All Objects** ▪ **Classes** ▪ **Copycodes**

SCREEN ITEMS	DESCRIPTION
	▪ **Dialogs** ▪ **Functions** ▪ **Global Data Areas** ▪ **Helproutines** ▪ **Local Data Areas** ▪ **Maps** ▪ **Parameter Data Areas** ▪ **Programs** ▪ **Subprograms** ▪ **Subroutines**
Selected Object	The name of the object to be used in the report. Any object name can be selected from the Object List using a single click of the left mouse button. Alternatively, the object name can be typed in. *Note: Only single objects can be selected for the Preview Modified Code report.*
Object List	Lists all the impacted objects for the current Impact Version. The list of objects can be tailored to your requirements using the options available in the Object Types menu. 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.
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.

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.

BUTTON NAME	DESCRIPTION
OK	Accepts the selected object and invokes the report being processed. 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 report display 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 List Context Menu

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

The Object list context menu provides the facility to tailor the list of Objects displayed in the Object list.

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
' ' (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.

Database File and Field Option

This option provides report refinement options to select the objects and fields to be included in the report. The file may be a DDM, Predict User View or a SQL Table. The headings on the report will change accordingly depending on the type of file selected. For the purpose of this documentation DDM is assumed.

Example of reports that invoke this option:

- Application Reports
  - Database Data Requirements
  - Database Access (CRUD)

DDM Selection Window

The DDM Selection screen provides the options to select a single DDM, a group of DDMs or all the DDMs referenced within an application.

The following Figure 1-13 illustrates the DDM Selection screen.

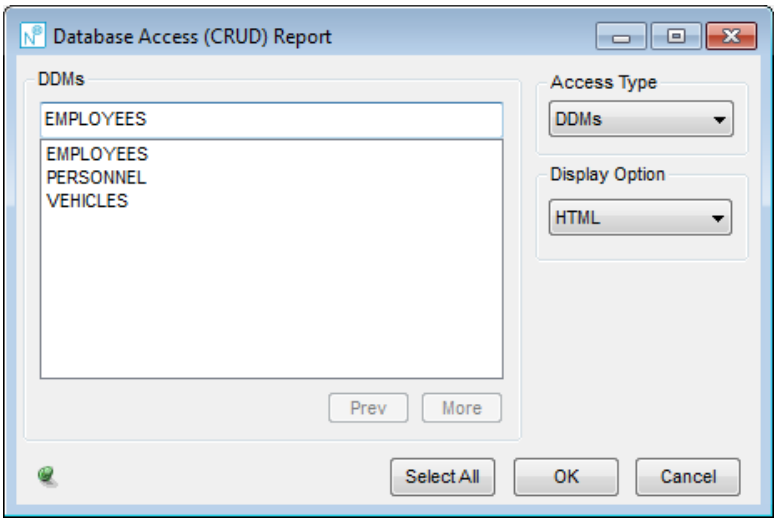


Figure 1-13 DDM Selection screen

SCREEN ITEMS	DESCRIPTION
Selected DDM	The name of the DDM to be used in the report. Any DDM name can be selected from the DDM List using a single click of the left mouse button. Alternatively, the DDM name can be typed in. A group of DDMs can be selected by typing in a part name using an '*' (asterisk) wildcard. For example 'EMP*' will include all DDMs that are prefixed with 'EMP'. All DDMs can be selected by using the '**Select All**' button or by typing in a single '*' (asterisk). *Note: When using either group DDM or all DDM selections, no DDM field selection is allowed. All DDM fields will be included for all the DDMs selected.*
DDM List	List of all the DDMs used by the currently opened application. The list of DDMs can be tailored to your requirements using the option 'Change Start Position of DDM List…' from the DDM List context menu. The DDM List title will append any reposition values that may have been specified.
Display Options	Allow you to select the required display option. **Screen** Display the report using Natural screen. **Spreadsheet** Display the report using a spreadsheet. **PDF** Display the report in PDF format. **HTML** Display the report in HTML format using a browser. **Word** Display the report using Word document.
Access Type	Allow you to filter the file list by file type. **DDM** Displays DDM Objects. **Predict User Views** Displays Predict User Views. **SQL Tables** Displays SQL Tables.
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.

BUTTON NAME	DESCRIPTION
Prev	Scrolls the DDM list to the 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.
Select All	Selects all the DDMs and invoke the report.
OK	Accept the selected DDM and invoke the DDM Field Selection screen. *NB: For 'OK' and 'Select All' 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 DDM Selection 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.

DDM Selection Context Menu

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

The DDM list context menu provides the facility to tailor the list of DDMs displayed in the DDM list.

CONTEXT MENU ITEM	DESCRIPTION
Change Start Position of DDM List…	Reposition the list of DDMs to start from a particular DDM 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 DDM list title to highlight the type of repositioning being applied. Possible reposition values are:

CONTEXT MENU ITEM	DESCRIPTION

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.

DDM Field Selection Window

The DDM Field Selection screen provides the options to select a single DDM field, a group of DDM fields or all the DDM fields for the currently selected DDM.

The following Figure 1-14 illustrates the DDM Field Selection screen.

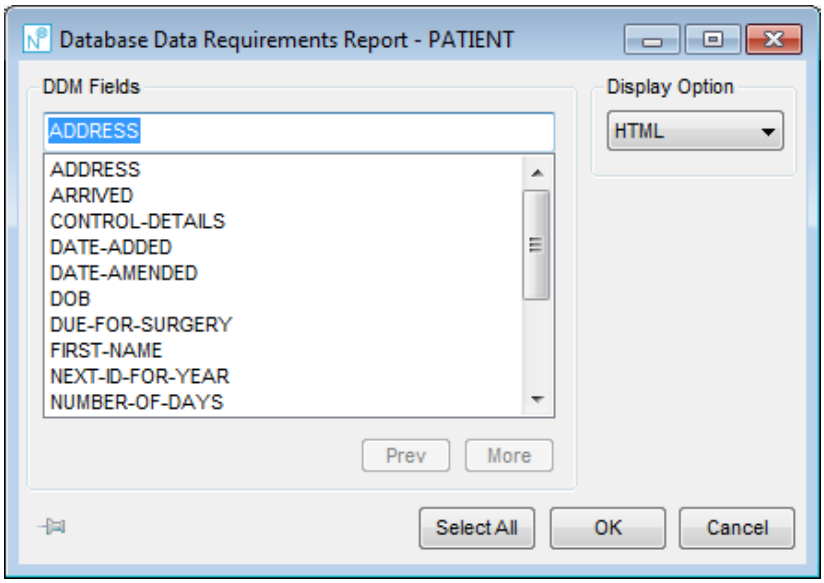


Figure 1-14 DDM Field Selection screen

SCREEN ITEMS	DESCRIPTION
Selected DDM Field	The name of the DDM field to be used in the report. Any DDM field name can be selected from the DDM Field List using a single click of the left mouse button. Alternatively, the DDM field name can be typed in. A group of DDM fields can be selected by typing in a part name using an '*' (asterisk) wildcard. For example 'EMP*' will include all DDM fields that are prefixed with 'EMP'. All DDM fields can be selected by using the '**Select All**' button or by typing in a single '*' (asterisk).
DDM Field List	List of all the DDM fields for the currently selected DDM. The list of DDM fields can be tailored to your requirements using the option 'Change Start Position of DDM Field List…' from the DDM Field List context menu. The DDM Field List title will append any reposition values that may have been specified.
Display Options	Allows you to select the required display option. **Screen** Display the report using Natural screen. **Spreadsheet** Display the report using a spreadsheet. **PDF** Display the report in PDF format. **HTML** Display the report in HTML format using a browser. **Word** Display the report using Word document.
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.

BUTTON NAME	DESCRIPTION
Prev	Scrolls the DDM Field list to the 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 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.
Select All	Selects all the DDM fields and invokes the report.
OK	Accept the selected DDM field and invoke the report.

BUTTON NAME	DESCRIPTION
	NB: For 'OK' and 'Select All' 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 DDM Field Selection 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.

DDM Field Selection Context Menu

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

The DDM Field list context menu provides the facility to tailor the list of DDM fields displayed in the DDM Field list.

CONTEXT MENU ITEM	DESCRIPTION
Change Start Position of DDM Field List…	Reposition the list of DDM fields to start from a particular DDM field 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 DDM Field list title to highlight the type of repositioning being applied. Possible reposition values are:

Value	Result
' ' (blank)	Reposition to the top of the DDM field list.
*****	Reposition to the top of the DDM field list.
ABC*	Only show DDM fields that are prefixed by 'ABC'.
XYZ	Reposition to the first DDM field that either matches or is greater than 'XYZ' and then continue the DDM field list from that point.

2

GRAPHICAL REPORTING OPTIONS

Chapter Overview

This chapter reviews all the graphical reporting options available to Natural Engineer.

The following graphical reporting options are covered:

- GenTree
- GenMetrics
- Environment: Application Metrics
- Global: Unused DDM Items

GenTree

GenTree is a structure analyzer used in several Natural Engineer functions to display graphical and structured details within and between objects and data items in a Tree View. 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.

GenTree automatically refreshes the display each time the data changes, if however the data has not been refreshed, pressing the 'ESC' key will force it to refresh.

GenTree is available for the following functions within Natural Engineer:

- **Object Viewer**

  Object Viewer is invoked from the application workspace object node context menu. Select the object using the right hand mouse button with a single click, and select the Object Viewer option. When the Object Viewer window opens, GenTree will be automatically invoked when any object from the object list is selected.

  For programming objects, GenTree displays objects referenced from within an object. For DDMs, it shows all objects that use the DDM and how the DDM is accessed.

- **Entry Point Structure Diagram**

  The Entry Point Structure Diagram is invoked from the application workspace from either the application or object nodes. Select the application or object using the right hand mouse button with a single click, and select the Entry Point Structure Diagram option. This will invoke the Entry Points selection window. Once all entry points have been selected, use of the **OK** button will invoke GenTree.

  GenTree displays all the objects referenced from defined starting objects within an application.

- **View Structure Diagram for Search Criteria**

  The View Structure Diagram for Search Criteria is invoked from the Object List context menu in the Impact Element Maintenance window. The Impact Element Maintenance window is invoked from the menu Analysis➔Impact Element Maintenance.

GenTree displays the impacts made for specified search criteria either within one selected object within an application.

There are two versions of the GenTree window available:

1. GenTree Viewer

The GenTree Viewer is a non-modal MDI child window which is displayed in the MDI child workspace area of the Natural Engineer window.

2. GenTree Structure Analyzer Window

The GenTree Structure Analyzer window is a stand-alone window that is displayed outside of the Natural Engineer window.

GenTree Viewer Window

The GenTree Viewer window is used by the following Natural Engineer functions:

- Object Viewer.
- View Structured Diagram for Search Criteria.

The following Figure 2-1 illustrates the GenTree diagram for the Object Viewer function.

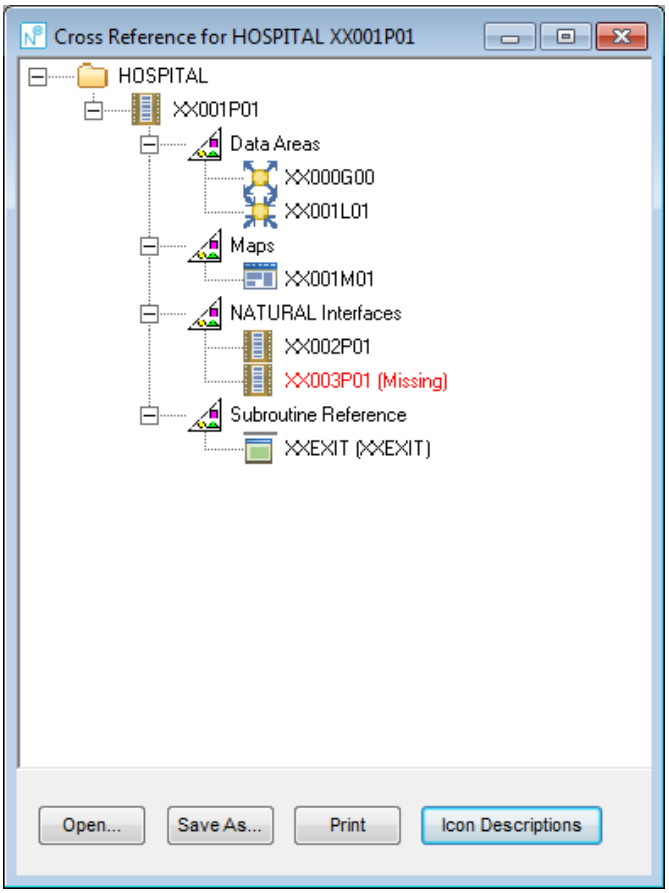


Figure 2-1 GenTree diagram for Object Viewer

SCREEN ITEMS	DESCRIPTION
Diagram Workspace	Displays the GenTree diagram in this area.

BUTTON NAME	DESCRIPTION
Open	Allows you to Open a previously saved GenTree diagram.
Save As…	Allows you to Save a GenTree diagram.
Print	Allows you to print the GenTree diagram on your default printer.
Icon Description	Displays a legend showing each GenTree icon and its description.

GenTree Structure Analyzer Window

The GenTree Structure Analyzer window is used by the following Natural Engineer functions:

- Entry Point Structure Diagram.

The following Figure 2-2 illustrates the GenTree diagram for the Entry Point Structure Diagram function.

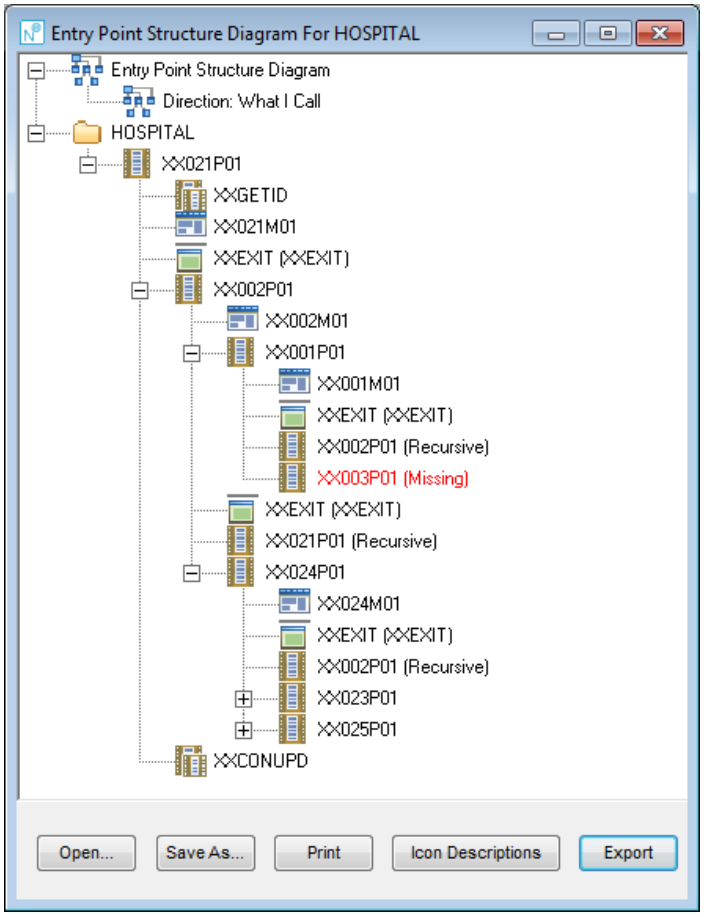


Figure 2-2 GenTree diagram for Entry Point Structure Diagram

OPTIONS	DESCRIPTION
Open	Allows you to Open a previously saved GenTree diagram.
Save As	Allows you to Save a GenTree diagram.
Print	Allows you to print the GenTree diagram on your default printer.
Icon Descriptions	Displays a legend showing each GenTree icon and its description.
Export	Allows you to export the data to a spreadsheet e.g., MS Excel.

SCREEN ITEMS	DESCRIPTION
Diagram Workspace	Displays the GenTree diagram in this area.

GenTree Context Menu

For each object displayed on the GenTree diagram, it is possible to obtain further information about the object via a context menu by using the right hand mouse button with a single click.

The following Figure 2-3 illustrates the GenTree object context menu options for GenTree Viewer.

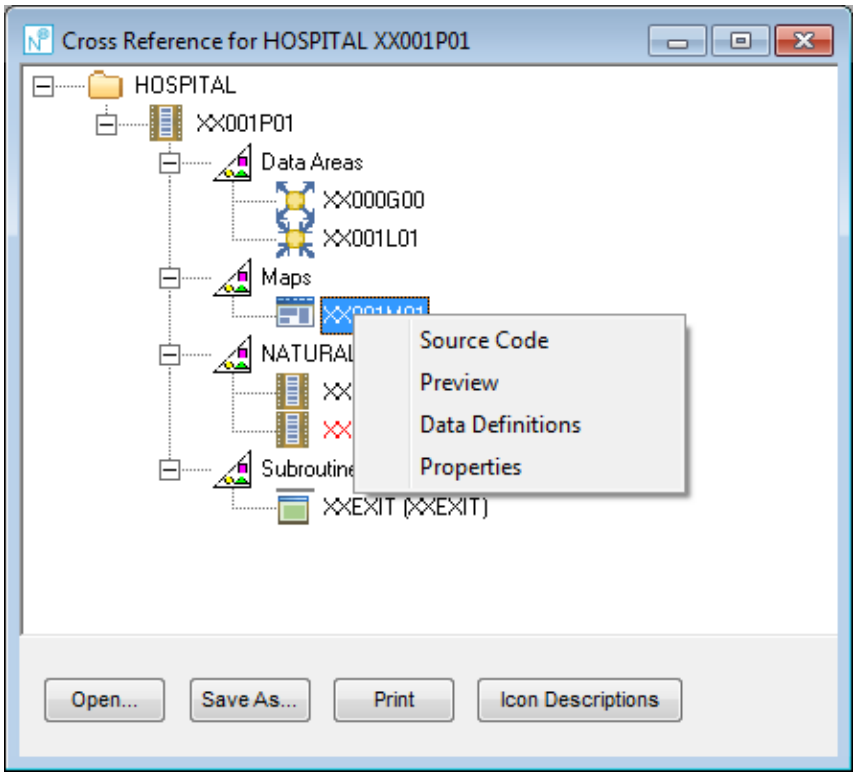


Figure 2-3 GenTree object context menu options for GenTree Viewer

The following Figure 2-4 illustrates the GenTree object context menu options for GenTree Structure Analyzer.

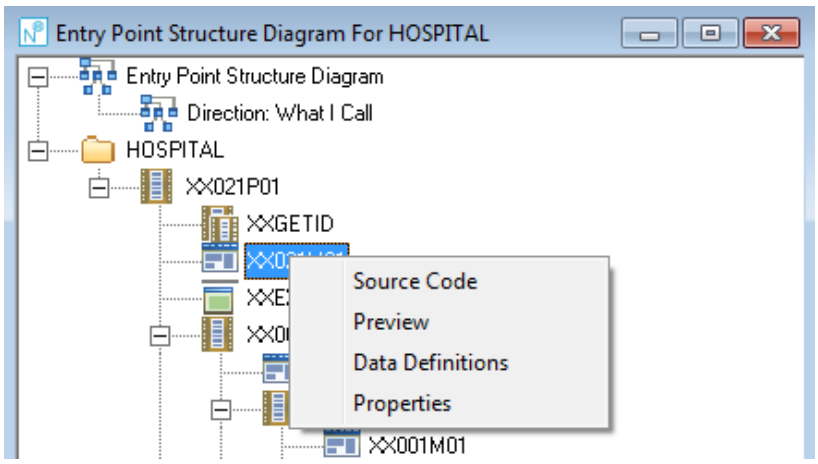


Figure 2-4 GenTree object context menu options for GenTree Structure Analyzer

The context menu items are identical for both options of the GenTree window.

CONTEXT MENU ITEM	DESCRIPTION
Source Code	This will invoke the GenSource source code window to provide a listing of the source code for the object.
Preview	This is only available for a Map object. Will display the map as seen by the user in a separate window.
Data Definitions	Will list the objects data items with their format and length in a separate window.
Properties	Will show details pertaining to the object in a separate window. These include Application, Library, Program, Object Mode, Object Type, Statement Count and Comment Count.

Source Code

When this context menu option is selected, the GenSource source code window will be displayed with the source code for the selected object. The source code listing will match the object type of the selected object. For Example:

OBJECT TYPE	DISPLAY FORMAT
Global Data Area **Local Data Area** **Parameter Data Area**	Will be displayed the same as in the Natural data area editor.
Map	Will be displayed the same as using the **List** command in the Natural map editor.
Programs **Subprograms** **Subroutines** **Copycodes** **Helproutines**	Will be displayed the same as using the Natural program editor.
Dialogs	Will be displayed the same as using the **List** command in the Natural dialog editor.
DDMs	Will be displayed the same as using the **List** command in the Natural DDM editor.

The following Figure 2-5 illustrates the GenSource source code window for a map object.

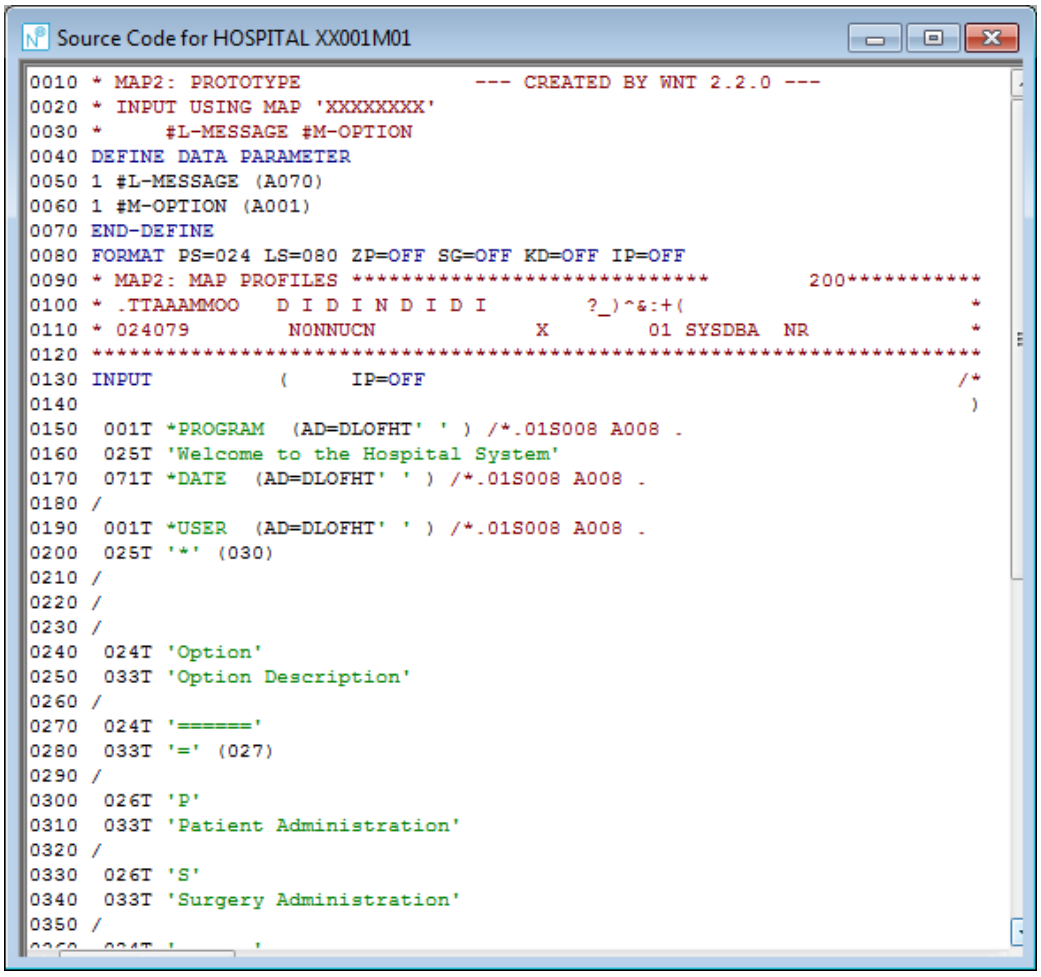


Figure 2-5 GenSource source code window for a map object

Note: If steplibs are being used and the database is not active, GenTree will only be able to find source code for those objects that are not in a steplib library.

GenSource Context Menu

From the GenSource source code window, it is possible to copy selected source code lines via a context menu by using the right hand mouse button with a single click. Source code can first be selected using left hand mouse button and dragging from the desired start position to the end position. Other context menu options are available to customize the GenSource display.

The following Figure 2-6 illustrates the GenSource context menu options.

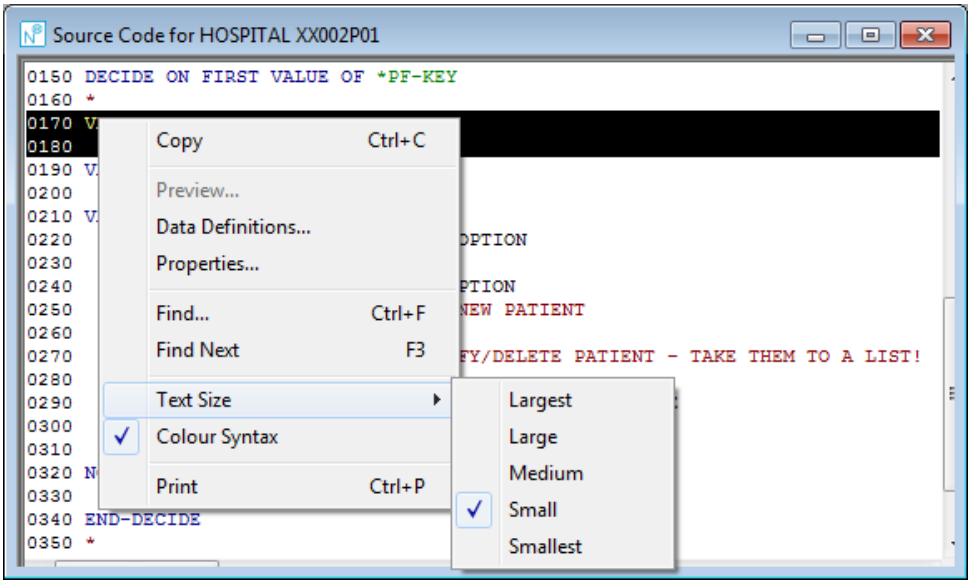


Figure 2-6 GenSource context menu options

CONTEXT MENU ITEM	DESCRIPTION
Copy	Copies the selected source code lines to the clipboard. These can then be pasted into any open editor, for example Notepad, Natural, Word.
Preview	This is only available for a Map object. Will display the map as seen by the user in a separate window.
Data Definition	Lists the data items with their format and length for the currently selected object in a separate window.
Properties	Shows the header information for the currently

CONTEXT MENU ITEM	DESCRIPTION
	selected object in a separate window.
Find	Uses standard windows' functionality to find an occurrence of a string.
Find Next	Uses standard windows' functionality to find the next occurrence of a string.
Text Size	Choose a different font size for the source code. *Note: This affects the size of text used when printing the source code.*
Colour Syntax	If selected (marked by a tick) will color the source code as per the Natural Editor.
Print	Will print the selected object.

Preview

When this context menu option is selected, a test view of the map object is displayed in a separate window.

This option is only available for objects with an object type of map.

The following Figure 2-7 illustrates the preview map window.

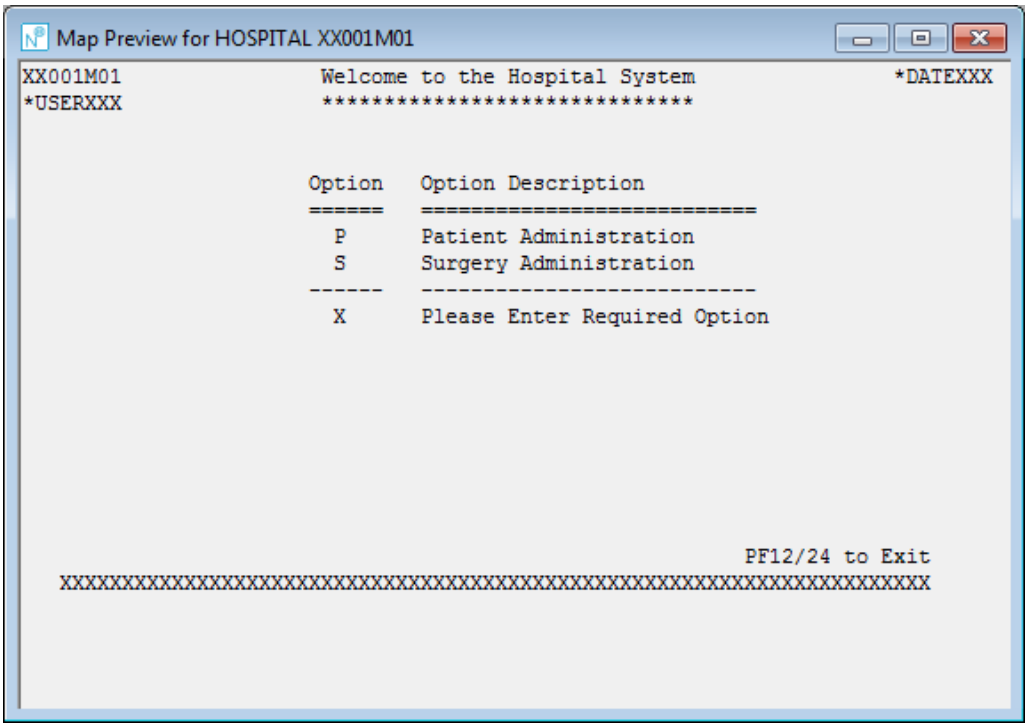


Figure 2-7 Preview map window

Once viewed the Preview map window can be closed using the close window button in the title bar.

Data Definitions

When this context menu option is selected, a GenSource Data Definitions window will be displayed with the data definitions for the selected object.

The following Figure 2-8 illustrates the GenSource Data Definitions window.

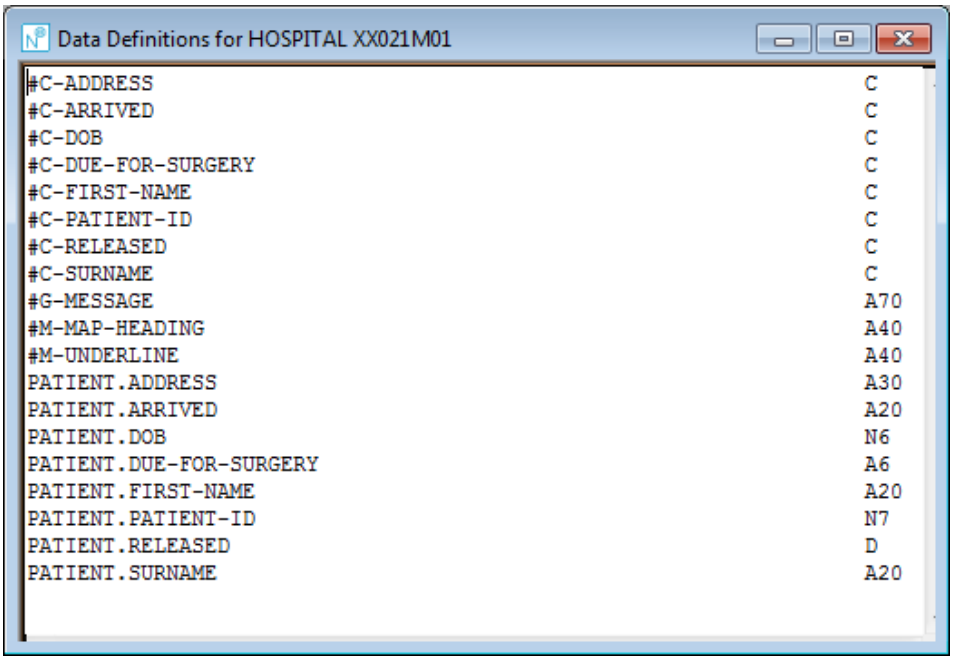


Figure 2-8 GenSource Data Definitions window

Once viewed the GenSource Data Definitions window can be minimized/maximized or closed using the standard window buttons in the title bar.

Properties

When this context menu option is selected, the GenTree Properties window will be displayed with property information on the selected object.

The following Figure 2-9 illustrates the GenTree Properties window.

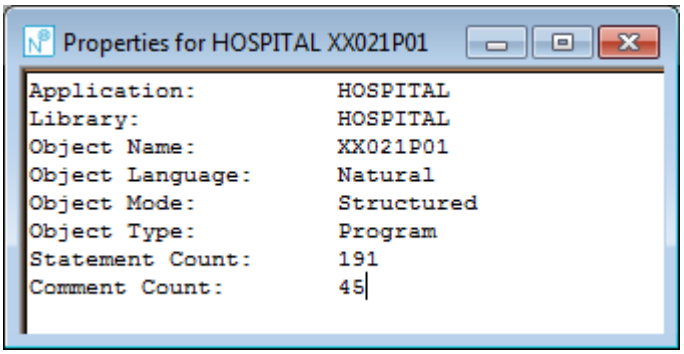


Figure 2-9 GenTree Properties window

SCREEN ITEMS	DESCRIPTION
Application	The name of the application as defined in Natural Engineer.
Library	The name of the Natural library from where the object was extracted.
Object Name	The object name.
Object Mode	The Natural programming mode of the object - Structured or Reporting.
Object Type	The object type of the object.
Statement Count	The total number of executable statement lines in the object.
Comment Count	The total number of comment lines in the object.

Once viewed the GenTree Properties window can be minimized/maximized or closed using the standard window buttons in the title bar. Using the **OK** button will also close the window.

View Structure Diagram for Search Criteria

The View Structure Diagram for Search Criteria report shows the Impacts made within an application for an individual Impact Version in a graphical format using GenTree.

This is accessed from the Object List context menu in the Impact Element Maintenance window. The Impact Element Maintenance window is invoked from the menu Analysis➔Impact Element Maintenance.

The report data can be refined to report for a single object, a group of objects or all objects using the Object List screen.

View Structure Diagram for Search Criteria Report

The View Structure Diagram for Search Criteria report displays in graphical format all the impacted objects within an application for a selected Impact Version.

The report is displayed using the GenTree Structure Analyzer window, with all the standard GenTree functionality available.

The following Figure 2-10 illustrates the View Structure Diagram for Search Criteria report.

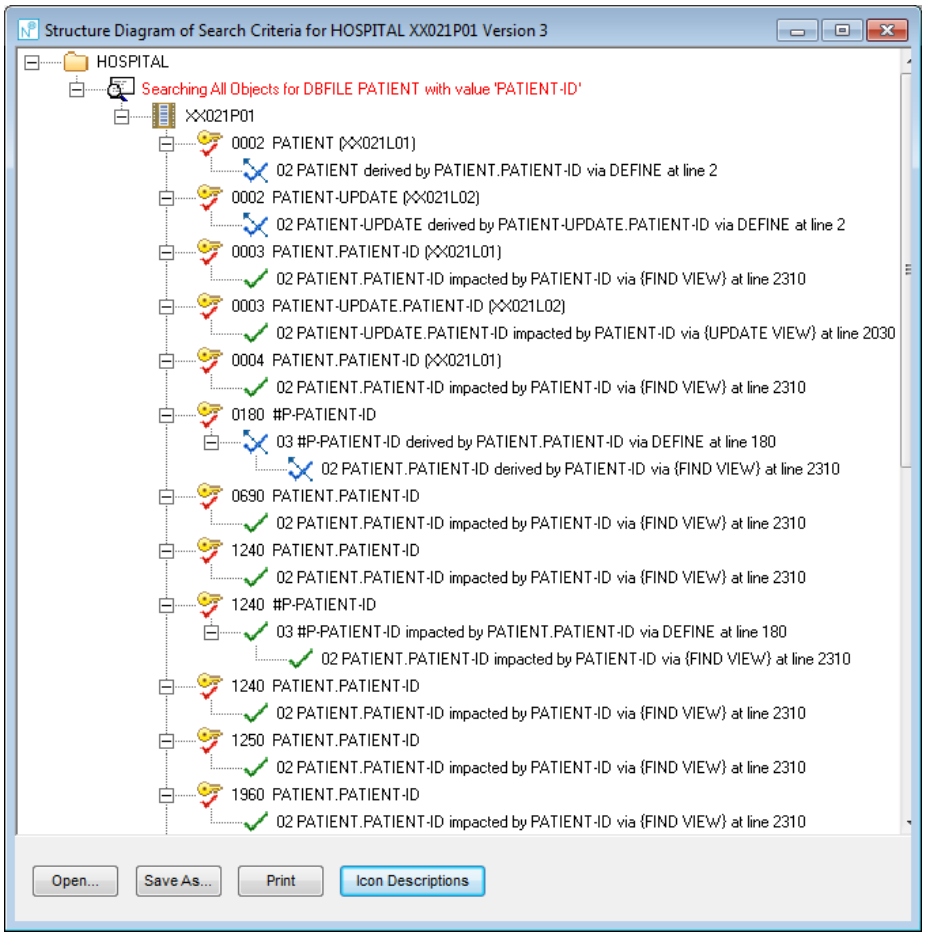


Figure 2-10 View Structure Diagram for Search Criteria report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Search Criteria Details	The Impact search criteria within the currently selected Impact Version. Each search criteria is displayed in red.
Impacted Objects	The impacted objects are displayed for each search criterion.
Impacted Statement Lines	The impacted statement line number and data item within each object are displayed. If the impacted data item is from an external object, the external object name is displayed.

GenMetrics

GenMetrics is the analysis tool for interactively displaying output of the complexity metrics. This can be for the whole application, for individually selected objects or a group of object types.

GenMetrics uses industry standard Halstead and McCabe complexity metrics calculations based on information built up in the Repository during the load process. The results for these calculations are displayed in a GenMetrics window if Interactive display mode is selected. The data may also be displayed with a textual report in Screen, Word, a Spreadsheet e.g., Excel, PDF or HTML display mode.

The metrics are calculated internally as part of the post process of Natural Engineer. This is controlled by the metrics setting in the LOAD section of the NATENG.INI file.

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

How to Invoke GenMetrics

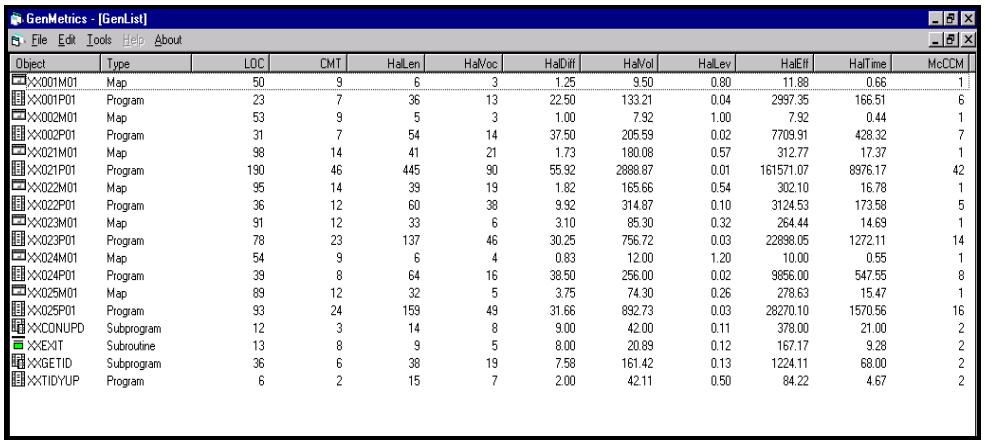
Use the following navigation in the application workspace:

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

GenMetrics Window

The GenMetrics window will be automatically invoked as the Object Statistics report is processed in Interactive mode.

The following Figure 2-11 illustrates the GenMetrics window.



Object	Type	LOC	CMT	HalLen	HalVoc	HalDif	HalVol	HalLev	HalEff	HalTime	McCCM
XX001M01	Map	50	9	6	3	1.25	9.50	0.80	11.88	0.66	1
XX001P01	Program	23	7	36	13	22.50	133.21	0.04	2997.35	166.51	6
XX002M01	Map	53	9	5	3	1.00	7.92	1.00	7.92	0.44	1
XX002P01	Program	31	7	54	14	37.50	205.59	0.02	7709.91	428.32	7
XX021M01	Map	98	14	41	21	1.73	180.08	0.57	312.77	17.37	1
XX021P01	Program	190	46	445	90	55.92	2888.87	0.01	161571.07	8976.17	42
XX022M01	Map	95	14	39	19	1.82	165.66	0.54	302.10	16.78	1
XX022P01	Program	36	12	60	38	9.92	314.87	0.10	3124.53	173.58	5
XX023M01	Map	91	12	33	6	3.10	85.30	0.32	264.44	14.69	1
XX023P01	Program	78	23	137	46	30.25	756.72	0.03	22898.05	1272.11	14
XX024M01	Map	54	9	6	4	0.83	12.00	1.20	10.00	0.55	1
XX024P01	Program	39	8	64	16	38.50	256.00	0.02	9856.00	547.55	8
XX025M01	Map	89	12	32	5	3.75	74.30	0.26	278.63	15.47	1
XX025P01	Program	93	24	159	49	31.66	892.73	0.03	28270.10	1570.56	16
XXCONUPD	Subprogram	12	3	14	8	9.00	42.00	0.11	378.00	21.00	2
XXEXIT	Subroutine	13	8	9	5	8.00	20.89	0.12	167.17	9.28	2
XXGETID	Subprogram	36	6	38	19	7.58	161.42	0.13	1224.11	68.00	2
XXTIDYUP	Program	6	2	15	7	2.00	42.11	0.50	84.22	4.67	2

Figure 2-11 GenMetrics window

MENU ITEMS	OPTIONS	DESCRIPTION
File	**Exit**	Exits the GenMetrics window.
Edit	**Settings**	Settings, provides the user with a method of changing what is viewed.
Tools	**List**	Displays the statistics in a list form (GenList).
	Graph	Displays the statistics in a graphical form (GenGraph).
Help		Invokes the GenMetrics help.
About		Displays the GenMetrics version information.

GenMetrics relies on a work file to build up the information to display in the window. The work file path needs to be defined in the NATENG.INI file.

The metrics are calculated internally as part of the post process of Natural Engineer. This is controlled by the metrics setting in the LOAD section of the NATENG.INI file.

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

Settings

Using the Edit➔Settings option allows you to customize the appearance and content of the GenMetrics window.

When invoked, the Settings window will be displayed offering three areas for customization:

1. Global
2. GenList
3. GenGraph.

Global

Global settings allow you to change the colors of each object type displayed in the GenGraph window.

The following Figure 2-12 illustrates the Global Settings option.

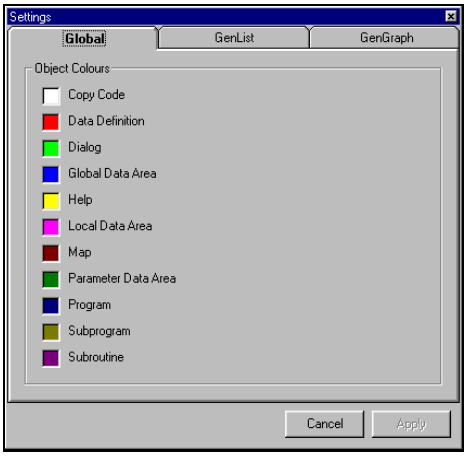


Figure 2-12 Global Settings

TAB ITEMS	DESCRIPTION
Object Colours	Each object color can be changed by using a double mouse click on each color box. This action will invoke the Color Palette window.

GenList

GenList settings allow you to change the data to be displayed in the GenMetrics window.

The following Figure 2-13 illustrates the GenList Settings option.

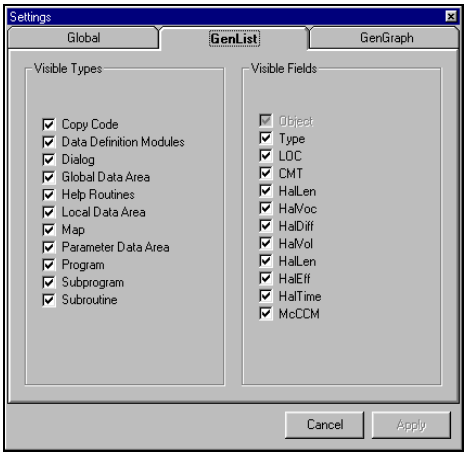


Figure 2-13 GenList Settings

TAB ITEMS	DESCRIPTION
Visible Types	Each type can be selected or deselected by using a mouse click on each check box.
Visible Fields	Each field can be selected or deselected by using a mouse click on each check box.

GenGraph

GenGraph settings allow you to change the data to be displayed in the GenGraph window.

The following Figure 2-14 illustrates the GenGraph Settings option.

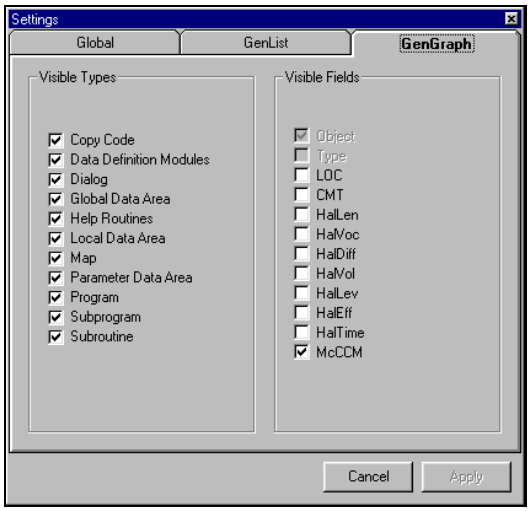


Figure 2-14 GenGraph Settings

TAB ITEMS	DESCRIPTION
Visible Types	Each type can be selected or deselected by using a mouse click on each check box.
Visible Fields	Each field can be selected or deselected by using a mouse click on each check box.

Tools

Using the Tools menu allows you to select a display mode for the GenMetrics information. There are two options:

1. List
2. Graph.

List

This will use the GenList mode to display the GenMetrics information.

Graph

This will use the GenGraph mode to display the GenMetrics information. The following Figure 2-15 illustrates the GenGraph display mode.

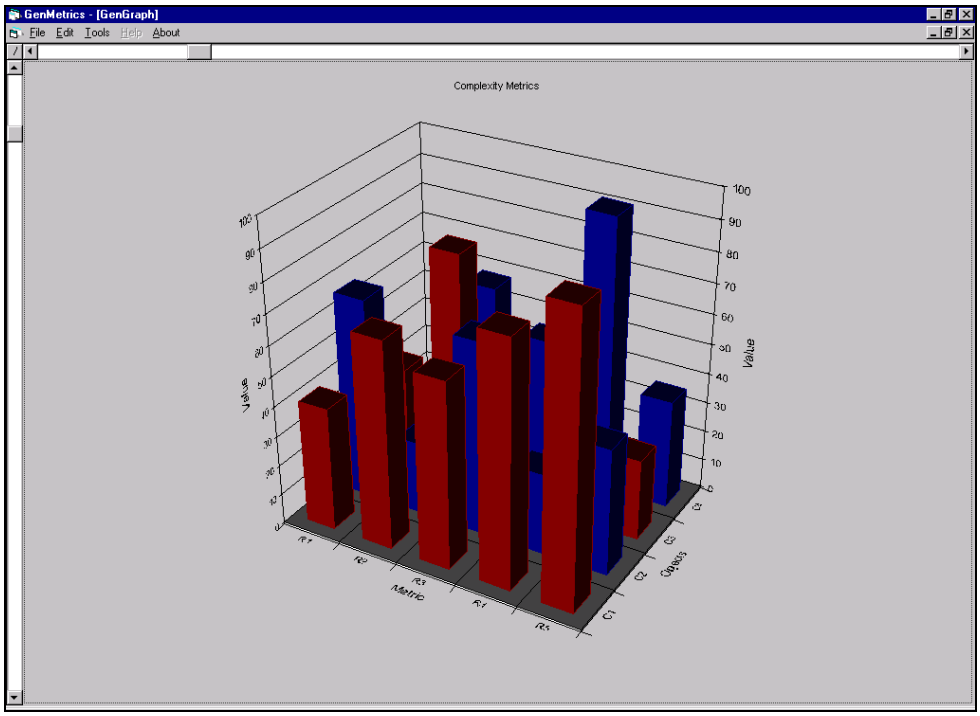


Figure 2-15 GenGraph display mode

Environment: Application Metrics

Application Metrics provide various measurement and complexity information on the objects within an application.

How to Invoke the Application Metrics

Use the following navigation in the application workspace:

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

Object Type Summary

This report uses a third party spreadsheet graph to display the number of objects per object type. The following Figure 2-16 illustrates the Object Type Summary graph.

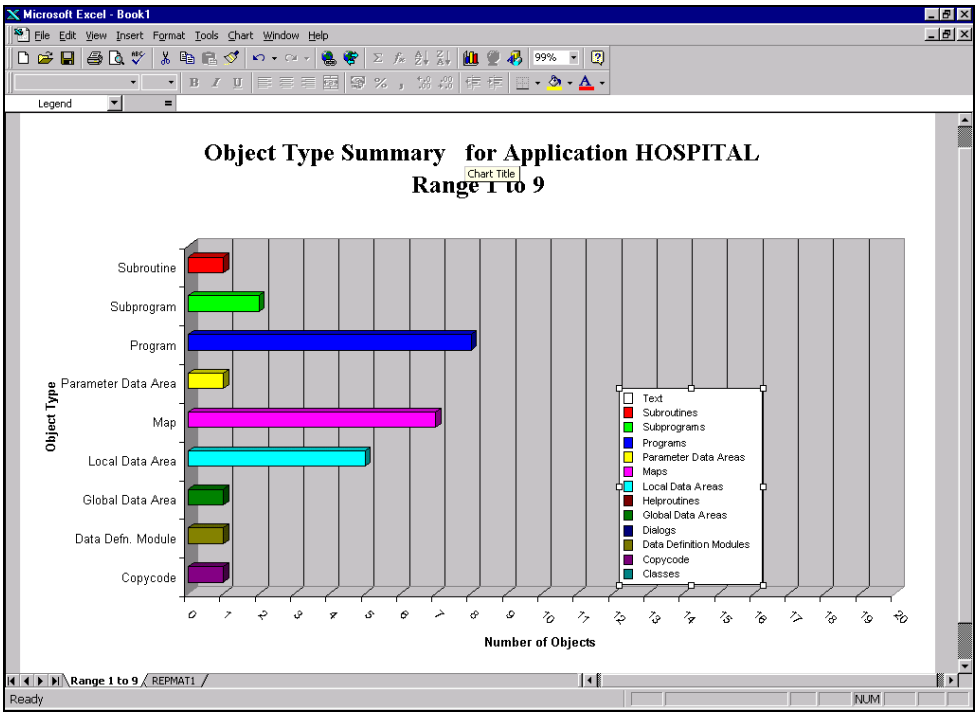


Figure 2-16 Object Type Summary graph

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Range	The number of object types displayed on the current page.
Object Type	The object types that are used in the application.
Number of Objects	The number of objects per object type.
Legend	The color representation per object type

Object Size

This report uses a third party spreadsheet graph to display the number of objects within specified object size ranges. The following Figure 2-17 illustrates the Object Size graph.

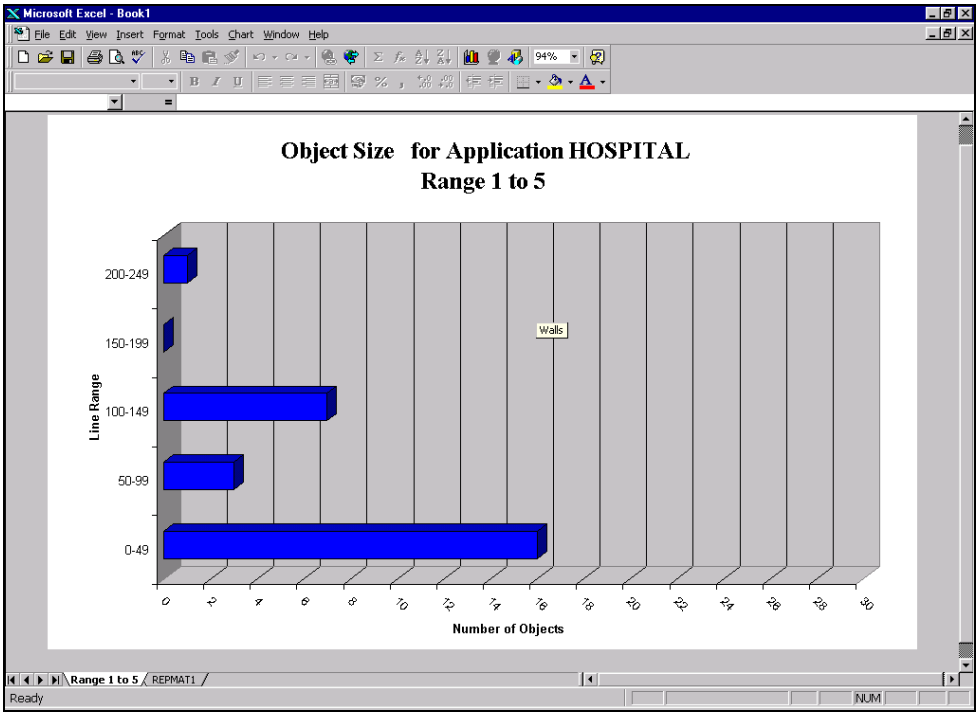


Figure 2-17 Object Size graph

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Range	The number of Line Range values displayed on the current page
Line Range	The number of lines in a range. For example: 100-149 means that the number of lines in an object falls within that range.
Number of Objects	The number of objects that have a number of lines of code within each Line Range.

Object Usage

This report uses a third party spreadsheet graph to display the number of times objects are referenced. The following Figure 2-18 illustrates the Object Usage graph.

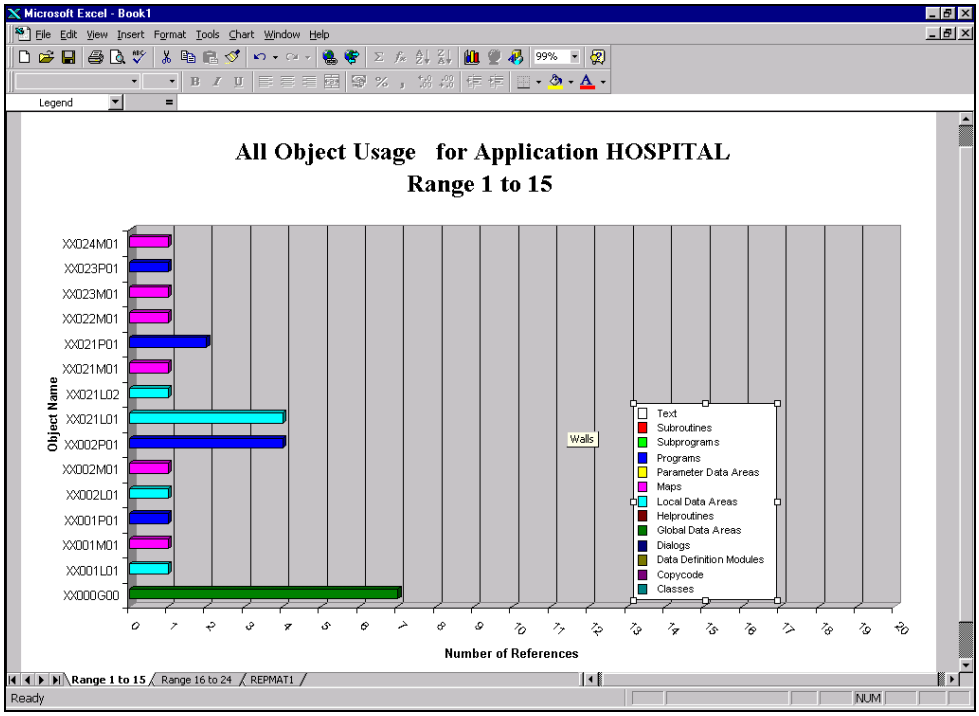


Figure 2-18 Object Usage graph

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Range	The number of objects displayed on the current page. The report shows a maximum of 15 objects per page.
Object Name	The names of the objects.
Number of References	The number of times each object is referenced in the application.

Object Statistics

This option provides summary and detailed information about the application, objects, and code, for the purpose of providing structural statistics, for example Halstead and McCabe.

This option will also produce a graphical report using GenMetrics if the Interactive report option is chosen.

Note: Refer to Chapter 2: Graphical Reporting Options, section GenMetrics window for more information on the graphical reporting options.

The following Figure 2-19 illustrates the Object Statistics Report.

Statistical Analysis

Application: HOSPITAL
Language: All
Object Types:All

Object Name	Object Type	Lines of Code	Comment Count	HalLen	HalVoc	HalDiff	HalVol	HalLev	HalEff	HalTime	McCabe
XX001M01	Map	50	9	6	3	1.25	9.51	0.80	11.89	0.66	1
XX001P01	Program	23	7	36	13	22.50	133.22	0.04	2997.36	166.52	6
XX002M01	Map	53	9	5	3	1.00	7.92	1.00	7.92	0.44	1
XX002P01	Program	31	7	54	14	37.50	205.60	0.03	7709.91	428.33	7
XX021M01	Map	98	14	41	21	1.74	180.09	0.58	312.78	17.38	1
XX021P01	Program	190	46	445	90	55.93	2888.87	0.02	161571.07	8976.17	42
XX022M01	Map	95	14	39	19	1.82	165.67	0.55	302.10	16.78	1
XX022P01	Program	36	12	60	38	9.92	314.88	0.10	3124.54	173.59	5
XX023M01	Map	91	12	33	6	3.10	85.30	0.32	264.44	14.69	1
XX023P01	Program	78	23	137	46	30.26	756.73	0.03	22898.05	1272.11	14
XX024M01	Map	54	9	6	4	0.83	12.00	1.20	10.00	0.56	1
XX024P01	Program	39	8	64	16	38.50	256.00	0.03	9856.01	547.56	8
XX025M01	Map	89	12	32	5	3.75	74.30	0.27	278.63	15.48	1
XX025P01	Program	93	24	159	49	31.67	892.74	0.03	28270.11	1570.56	16
XXCONUPD	Subprogram	12	3	14	8	9.00	42.00	0.11	378.00	21.00	2
XXEXIT	Subroutine	13	8	9	5	8.00	20.90	0.13	167.18	9.29	2
XXGETID	Subprogram	36	6	38	19	7.58	161.42	0.13	1224.11	68.01	2

Figure 2-19 Object Statistics Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Language	The programming language selected for the report.
Object Types	The object type selected for the report.
Object Name	The name of the object.
Object Type	The type of object, for example Map, Program, Local Data Area.

REPORT ITEM	DESCRIPTION
Lines of Code	Total number of code lines within the object.
Comment Count	The number of comment lines within the object.
HalLen	Halstead program length metric.
HalVoc	Halstead program vocabulary metric.
HalDiff	Halstead program difficulty metric.
HalVol	Halstead program volume metric.
HalLev	Halstead program level metric.
HalEff	Halstead programming effort metric.
HalTime	Halstead programming time metric.
McCabe	McCabe number metric.

The metrics are calculated internally as part of the post process of Natural Engineer. This is controlled by the metrics setting in the LOAD section of the NATENG.INI file.

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

3

TEXTUAL REPORTING OPTIONS

Chapter Overview

This chapter reviews all the textual reports available to Natural Engineer.

Each report is described showing an image of a sample of that report along with an explanation as to the contents of that report.

Note: More information on how to select different display modes can be found in Chapter 1: Reporting Display Modes.

The following report sections are covered:

- Global Reports
- Environment: Soft Links
- Environment: Quality Logs
- Environment: Application Reports
- Analysis: Impact Reports
- Modification Reports

Global Reports

Global Reports show information that spans across Applications, which are loaded into the Repository. The reports show both Environment and Impact type information.

They are accessed by using the following menu navigation Options➔Global Reports.

The following table summarizes the Global Reports:

REPORT ID	REPORT NAME	DESCRIPTION
	Detailed Impacted DDMs accessed by Objects	Provides a list of Impacted DDMs and DDM fields within applications.
	Global DDM Report for Impacted DDMs	Provides a list of each impacted DDM fields within each DDM, within each object, within each application for all applicable Impact versions.
	Global Object Usage	Provides a list of Applications that a particular Object or range of Objects reside in.
	Global Field Usage	Provides a list of Applications that a particular field resides in.

Detailed Impacted DDMs accessed by Objects

This report shows the Impacted DDMs and DDM fields within applications. The report helps to identify DDM field usage across applications and any implications of applying potential modification to these DDM fields.

Note: Impact needs to be executed prior to this report, in order to retrieve the necessary data.

The following Figure 3-1-1 illustrates the Detailed Impacted DDMs accessed by Objects.

Detailed Impacted DDMs accessed by Objects

DDM Name	DDM Field Name	Format & Length	Application	Impact Version	Object Name	Data View Name	Access Type
PATIENT							
	PATIENT-ID	N7					
			HOSPITAL				
				01	XX021P01	PATIENT	DELETE
				01	XX021P01	PATIENT	STORE
				01	XX021P01	PATIENT-UPDATE	FIND
				01	XX021P01	PATIENT-UPDATE	UPDATE
				01	XX021P01	PATIENT	FIND
				01	XX022P01	PATIENT	FIND
				01	XX023P01	PATIENT	READ
				01	XXGETID	PATIENT	FIND
				01	XXGETID	PATIENT	STORE
				01	XXGETID	PATIENT	UPDATE

Figure 3-1-1 Detailed Impacted DDMs accessed by Objects

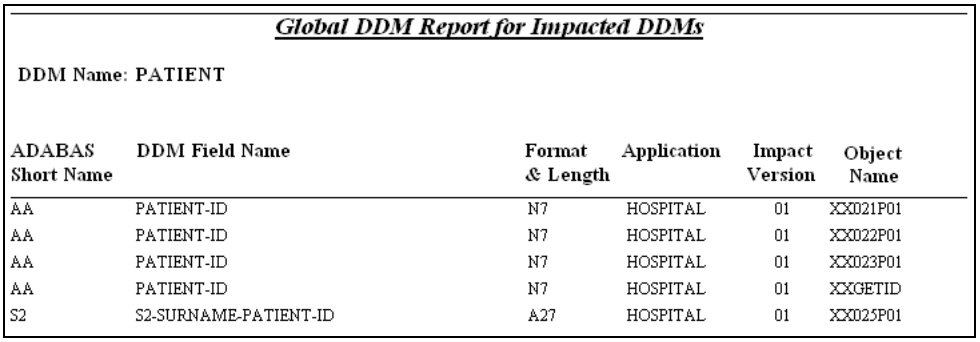
REPORT ITEM	DESCRIPTION
DDM Name	The name of the DDM used to access the database.
DDM Field Name	The name of the field within the DDM.
Format and Length	The format and length of the DDM field.
Application	The name of the application.
Impact Version	The Impact Version used to Impact the DDM.
Object Name	The name of the object.
Data View Name	The name of the View used to define the logical view of a DDM.
Access Type	The type of Natural statement used to access the DDM, for example FIND, STORE.

Global DDM Report for Impacted DDMs

This report shows each impacted DDM field within each DDM, within each object, within each application for all applicable Impact versions.

Note: Impact needs to be executed prior to this report, in order to retrieve the necessary data.

The following Figure 3-1-2 illustrates the Global DDM Report for Impacted DDMs.



Global DDM Report for Impacted DDMs

DDM Name: PATIENT

ADABAS Short Name	DDM Field Name	Format & Length	Application	Impact Version	Object Name
AA	PATIENT-ID	N7	HOSPITAL	01	XX021P01
AA	PATIENT-ID	N7	HOSPITAL	01	XX022P01
AA	PATIENT-ID	N7	HOSPITAL	01	XX023P01
AA	PATIENT-ID	N7	HOSPITAL	01	XXGETID
S2	S2-SURNAME-PATIENT-ID	A27	HOSPITAL	01	XX025P01

Figure 3-1-2 Global DDM Report for Impacted DDMs

REPORT ITEM	DESCRIPTION
DDM Name	The name of the DDM used to access the database.
Adabas Short Name	The Adabas Short Name for the DDM field.
DDM Field Name	The name of the field within the DDM.
Format & Length	The format and length of the DDM field.
Application	The name of the application.
Impact Version	The Impact Version used to Impact the DDM.
Object Name	The name of the object.

Global Object Usage

This report shows each application that contains a particular object or range of objects and where those objects are called from. This detailed report is generated from the Global Object Usage screen which shows a summary of global object usage.

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.

Note: For more information on the Global Object Usage screen refer to the Global Object Usage section in Chapter 3 of the Natural Engineer Application Management Manual.

The following Figure 3-1-3 illustrates the Global Object Usage report.

Global Object Usage

Object Name: XX*
Language: All
Object Type: All

Application	Object Name	Object Type	Call Type	Object Call Type	Calling Object	Ext. Calling Object	Line No.
HOSPITAL	XX002P01	Program	Nat. Call	Fetch Program	XX001P01		0190
HOSPITAL	XX002P01	Program	Nat. Call	Fetch Program	XX021P01		1100
HOSPITAL	XX002P01	Program	Nat. Call	Fetch Program	XX024P01		0210
HOSPITAL	XX021A01	Adapter					
HOSPITAL	XX021L01	Local Data Area	Nat. Include	Local Data Area	AX021P01		0040
HOSPITAL	XX021L01	Local Data Area	Nat. Include	Local Data Area	BX021P01		0040
HOSPITAL	XX021L01	Local Data Area	Nat. Include	Local Data Area	XX021P01		0040
HOSPITAL	XX021L01	Local Data Area	Nat. Include	Local Data Area	XX022P01		0020
HOSPITAL	XX021L01	Local Data Area	Nat. Include	Local Data Area	XX023P01		0040

Figure 3-1-3 Global Object Usage report

REPORT ITEM	DESCRIPTION
Application	The name of the application the object resides in.
Object Name	The name of the object. *NB: If an object is called dynamically e.g., via a softlink or language code then the name of the dynamic call will be shown after the object name*.
Object Type	The type of the object.
Call Type	The type of call being issued, for example Include for data areas, Call for maps.
Object Call Type	The type of call, for example Perform Subroutine.
Call Name	The name of the object referenced by the call.
Calling Object	The name of the object that invokes the object.
Ext. Calling Object	If the call name is contained in another physical object, then the name of that object is 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.
Line No.	The statement line number.

Global Field Usage

This report shows each application and object that contains a particular field and where the field is referenced. This detailed report is generated from the Global Field Usage screen which shows a summary of global field usage.

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.

Note: For more information on the Global Field Usage screen refer to the Global Field Usage section in Chapter 3 of the Natural Engineer Application Management Manual.

The following Figure 3-1-4 illustrates the Global Field Usage report.

Global Field Usage

Field Name: #M-YEAR*
Language: All
Object Type: All
Displaying all objects that use the field.

Application	Object Name	Object Type	Field Name	Keyword	Attribute	External Object	Line No.
HOSPITAL	XX024P01	Program	#M-YEAR	STACK			0310
HOSPSET	XX023M01	Map	#M-YEAR	DEFINE	N2		0090
HOSPSET	XX023M01	Map	#M-YEAR	INPUT			0160
HOSPSET	XX023P01	Program	#M-YEAR	DEFINE	N2		0100
HOSPSET	XX023P01	Program	#M-YEAR	INPUT			0270
HOSPSET	XX023P01	Program	#M-YEAR	MOVE			0280
HOSPSET	XX023P01	Program	#M-YEAR.#M-YEAR-ALPHA	DEFINE	A2		0120
HOSPSET	XX023P01	Program	#M-YEAR.#M-YEAR-ALPHA	IF			0810

Figure 3-1-4 Global Field Usage report

REPORT ITEM	DESCRIPTION
Application	The name of the application the field resides in.
Object Name	The name of the object.
Object Type	The type of the object.
Field Name	The name of the field.
Keyword	The type of statement being used to reference the field.
Attribute	The attribute of the field. *NB: This will be shown on any definition keyword or in the case of a system variable the first time the system variable is referenced.*
External Object	The name of the external data area object that contains the keyword that references the field.
Line No.	The statement line number.

Environment: Soft Links

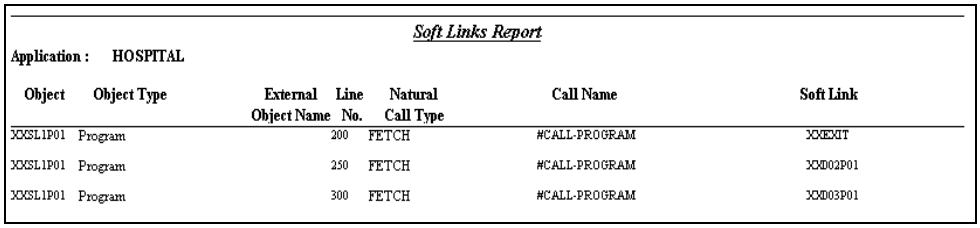
Soft Links reports show object link information. A Soft Link is one where a link between two objects has been defined using an alphanumeric variable rather than a literal constant.

The Soft Links report is accessed using the application node context menu from the application workspace.

Soft Links Report

This report contains all Soft Links that a user has defined for objects.

The following Figure 3-2-1 illustrates the Soft Links Report.



Soft Links Report

Application : HOSPITAL

Object	Object Type	External Object Name	Line No.	Natural Call Type	Call Name	Soft Link
XXSL1P01	Program		200	FETCH	#CALL-PROGRAM	XXEXIT
XXSL1P01	Program		250	FETCH	#CALL-PROGRAM	XXD02P01
XXSL1P01	Program		300	FETCH	#CALL-PROGRAM	XXD03P01

Figure 3-2-1 Soft Links Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Object	The name of the object.
Object Type	The type of object, for example Map, Program, Local Data Area.
External Object Name	The name of the external object containing the Soft Link used by the object. For example Copycode.
Line No.	The statement line number where the call is referenced.
Natural Call Type	The type of Natural calls, for example CALLNAT.
Call Name	The name of the alphanumeric variable used to define the link.
Soft Link	The name of the object used by the Soft Link.

Environment: Quality Logs

Quality logs provide information on errors that occurred during both the Extract and Load Repository process and also report missing or unused objects once the Repository has been loaded.

How to Invoke the Quality Logs

Use the following navigation in the application workspace:

- Select the application 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.

Extract Source Code

This report shows the details within the Extract Error file (data files with file extension .EEX) for the current application. This can be viewed in the window as shown below or using NOTEPAD by selecting the button on the window.

Note: These details can be seen in summary format by using the Extract Source Code Summary option. See next report.

The following Figure 3-3-1 illustrates the Extract Source Code Quality Log.

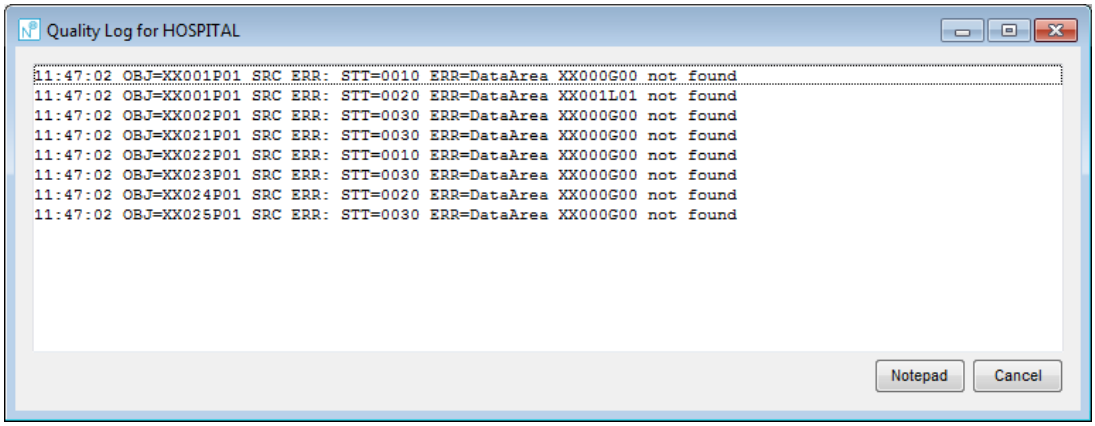


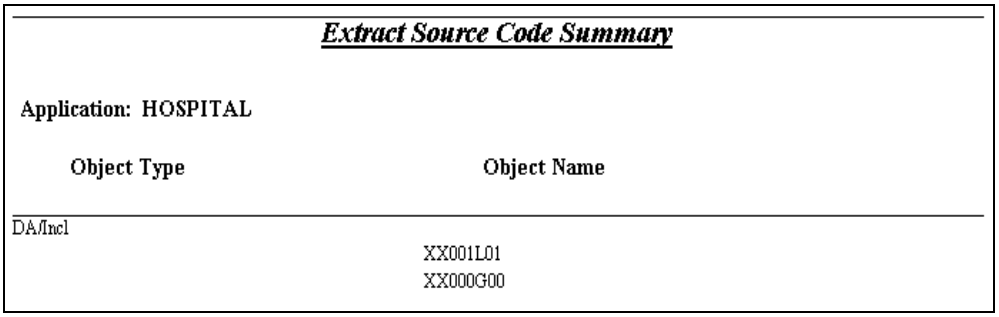
Figure 3-3-1 Extract Source Code Quality Log

REPORT ITEM	DESCRIPTION
OBJ=	The name of the object being extracted.
STT=	The statement line number of the external object being referenced.
ERR=	Details the extract error.

Extract Source Code Summary

This report summarizes the errors in the Extract Error Log so that they are only shown once for each object. You can therefore see what objects are required to resolve the references.

The following Figure 3-3-2 illustrates the Extract Source Code Summary Report.



Extract Source Code Summary

Application: HOSPITAL

Object Type	Object Name
DA/Incl	XX001L01
	XX000G00

Figure 3-3-2 Extract Source Code Summary Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Object Type	The type of object, for example Map, Program, Local Data Area.
Object Name	The name of the object

Load Repository

This report shows the details within the Load Error file (data files with file extension .ELD) for the current application. This can be viewed in the window as shown below or using NOTEPAD by selecting the button on the window.

The following Figure 3-3-3 illustrates the Load Repository Quality Log.

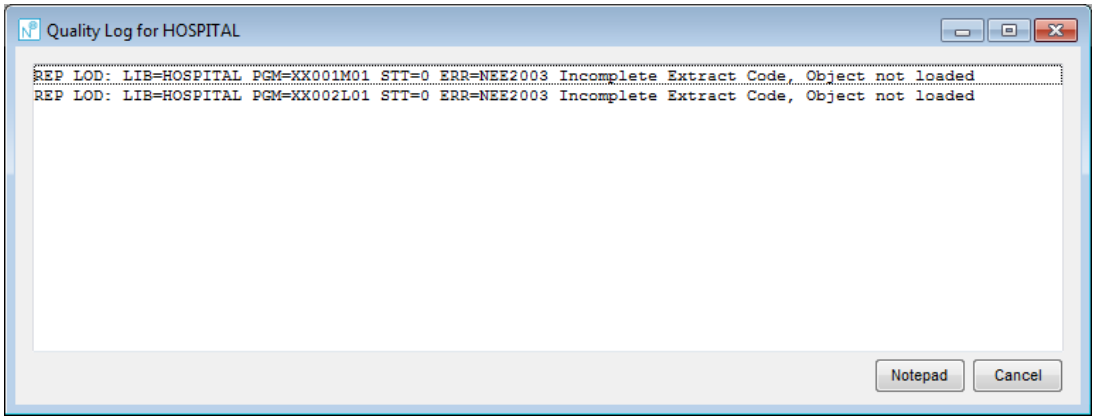


Figure 3-3-3 Load Repository Quality Log

REPORT ITEM	DESCRIPTION
LIB=	The name of the application being processed.
PGM=	The name of the object being loaded.
STT=	The statement line number within the object (if applicable).
ERR=	Details the load error.

Missing Objects

This report identifies objects (including DDMs) that were referenced by an object but were not found in the application library. You can either:

- Remove the object referencing the missing object from the application library, delete it from the Repository and source code library.

Or:

1. Locate the missing object and copy it to the application library.
2. Selectively extract both the objects that referenced the missing object and the missing object.
3. Load the objects using Load Repository.

Or:

1. Locate the missing object and copy it to the application library.
2. Extract the Missing Objects using the Extract Missing Objects Option.
3. Load the objects using Load Repository.

The following Figure 3-3-4 illustrates the Missing Objects Report.

Missing Objects

Application : HOSPITAL

Missing Object	Missing Object Type	Object Name	Call Type	External Object Name	Steplib Application	Line No.
XX003P01	Fetch Program	XX001P01	Nat. Call			0220

Figure 3-3-4 Missing Objects Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Missing Object	The name of the object that is missing.
Missing Object Type	The type of call that references the missing object, for example Perform Subroutine.

REPORT ITEM	DESCRIPTION
Object Name	The name of the object.
Call Type	The types of call being issued, for example Include for data areas, Call for programs.
External Object Name	If the call name is contained in another physical object, then the name of that object is 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.
Steplib Application	The name of the application if the object is from a Steplib library.
Line No.	The statement line number.

If a missing object matches the list of Valid Missing Objects specified at the Extract stage then the Missing object will be marked in the report as ‘Valid Miss Obj’ followed by the Object Language e.g., NAT.

Unused Objects

This report identifies the objects within the application that do not have a reference to another object. Programs and Dialogs are excluded from this report. If an application uses 'soft linking' between objects then information in this report will be invalid unless the correct information has been populated into the Natural Engineer Repository using the Soft Link functionality.

The following Figure 3-3-5 illustrates the Unused Objects Report.

Unused Objects

Application : GREEXSM

Unused Object	Object Type	Indirectly Unused
##A-TEST-SUBROUTINE2	Subroutine	
##A-TEST-SUBROUTINE4	Subroutine	
ASTDA99S	Parameter Data Area	
ASTDC99S	Copycode	
ASTDG99S	Global Data Area	
ASTDL99S	Local Data Area	
CALNEX3S	Subprogram	
CALNEX4S	Subprogram	Y
DDATEX6S	Subprogram	
DDATEX7S	Subprogram	
DEFNEX4S	Subprogram	
DEFNPDA	Parameter Data Area	Y

Figure 3-3-5 Unused Objects Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Unused Object	The name of the object.
Object Type	The type of object, for example Map, Subprogram, Local Data Area.
Indirectly Unused	Indicates if the object is unused because all the objects it is referenced in are also unused.

Load Audit Trail

This report shows any objects that when loaded have had a different timestamp to the corresponding object within the repository. The option is activated by the Activate Load Audit Trail setting in the Global Properties.

The report may be limited by a date range and on the PC the data exported to a spreadsheet.

The following Figure 3-3-6 illustrates the Load Audit Trail Report.

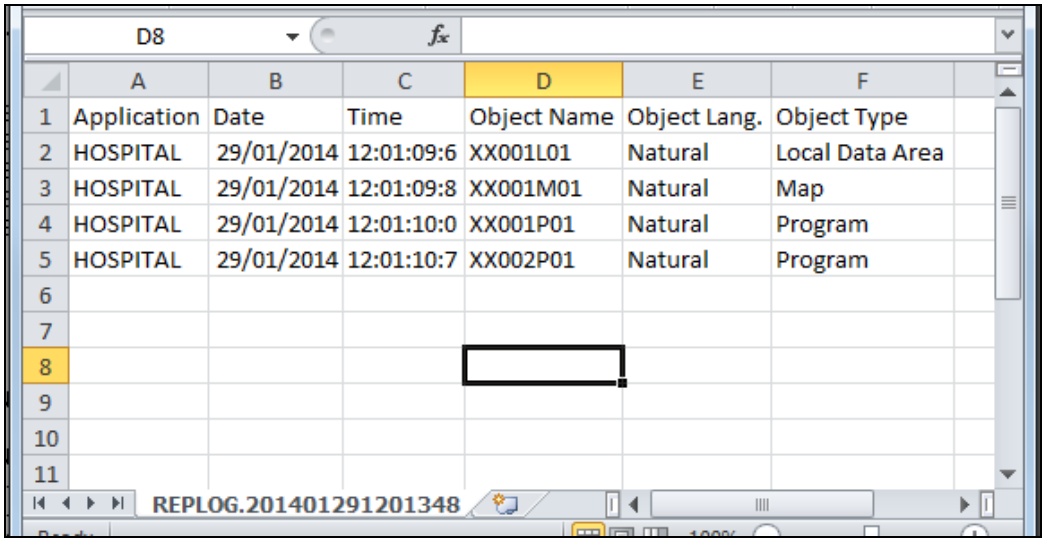


Figure 3-3-6 Load Audit Trail Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Date	The date when the object was loaded.
Time	The time when the object was loaded.
Object Name	The name of the object loaded.
Object Lang.	The language of the object loaded, for example Natural, COBOL, JCL.
Object Type	The type of object, for example Map, Subprogram, Local Data Area.

Environment: 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).

You can view this information in any one of several reporting display modes:

- In graphical format using the interface to an OLE-compliant diagramming tool (For Example Microsoft Visio 2000).
- In textual format using either the Natural screen, a spreadsheet e.g., Microsoft Excel or OpenOffice Calc, Microsoft Word or Adobe PDF (NB: requires additional 3rd party software). Certain reports also provide output in HTML format.

Note: For more information on the different Reporting Display Modes refer to Chapter 1 of this manual.

How to Invoke the Application Reports

Use the following navigation in the application workspace:

- 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.

The following table summarizes the Application Reports:

REPORT ID	REPORT NAME	DESCRIPTION
	Bulk Report Generator	This allows you to select reports to be executed at the same time. You can use this option to produce all reports for viewing later.
REPSCC	**Source Code Summary**	Provides a high-level view of the application by object type.
REPOIS	**Object Summary**	Provides a list of objects and their size in the

REPORT ID	REPORT NAME	DESCRIPTION
		application.
REPKWD	**Natural Keyword Summary**	Provides a list of statement types used in the application.
REPLIT	**Literals Summary Report**	Shows the amount of times a literal occurs. Useful for identifying unique occurrences of a literal.
REPCAL	**Objects Referencing Objects**	Identifies the objects, internal and external, used by an object.
REPCA2	**Objects Referenced by Objects**	Identifies for an object all uses of it by all other objects.
REPODF	**Objects Referenced by DDM Fields**	Identifies for each DDM field the objects that use the field.
REPEXX	**External Objects Referenced by Objects**	Identifies all non-Natural objects referenced within the application.
REPCMO	**Construct Models referenced by Objects**	Show models and user exits used within the application.
REPDDM	**DDMs Referenced**	Identifies all DDMs used in the application.
REPDVO	**DDMs Referenced by Objects**	Identifies, for DDMs, all objects that use them.
REPDAO	**DDMs Accessed by Objects**	Identifies the type of access of the DDMs by the objects using them (either directly or via Data Views).
REPDDR	**Database Data Requirements**	Identifies DDM and fields referenced by an Application.
REPDII	**Data Item Inventory**	Show all fields (data items), by object, used in the application.
REPFLD	**Data Item Usage Inventory**	Shows all objects a data item is used in.
REPCRD	**Database Access (CRUD)**	Shows an overview of Database Access within an application.
REPCRO	**Database Access (CRUD) by Objects**	Shows an overview of Database Access within objects within an application.
REPSTP	**Steplib Object Reference**	Shows where an object that resides on a steplib library is called/referenced from.
REPSRC	**View Source Code**	Displays object source code in the Browser.

The table shows the report ids for each report. These are used within the REPORTER section of the NATENG.INI file to set the default report display mode for each report.

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

Source Code Summary

Provides a high level view of a Natural Application after the Extract and Load processes have been completed. The report details the number of objects, executable statement code lines and programming modes for each object type found. The Extract and Load date and time information along with any Steplib applications is also reported.

The following Figure 3-4-1 illustrates the Source Code Summary Report.

Source Code Summary

Application : HOSPITAL

Object Type	Total Objects	Total Lines	Average Lines	Largest Lines	Total RM Objects	Total SM Objects
Copycode	1	88	88	88	0	1
Data Defn. Module	1	17	17	17	0	0
Global Data Area	1	4	4	4	0	1
Local Data Area	5	69	14	30	0	5
Map	7	530	76	98	0	7
Parameter Data Area	1	4	4	4	0	1
Program	8	496	62	190	1	7
Subprogram	2	48	24	36	0	2
Subroutine	1	13	13	13	0	1
Totals:	**27**	**1,269**	**47**	**190**	**1**	**25**

(Comment lines not included)

Total Maps with Processing Rules: 2

NATURAL Library: HOSPITAL
Steplib Applications: SYSTEM

Extract Start Date: 04-Nov-2003 14:02:21
Extract End Date: 04-Nov-2003 14:03:27
Extract Duration: 00:01:06

Load Start Date: 04-Nov-2003 14:03:27
Load End Date: 04-Nov-2003 14:04:02
Load Duration: 00:00:35

Extract Environment: Win NT

Figure 3-4-1 Source Code Summary Report

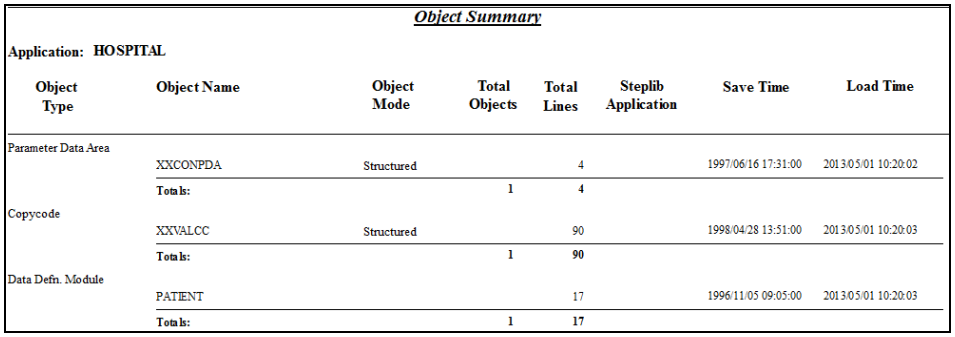
REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Object Type	The type of object, for example Map, Program, Local Data Area.
Total Objects	The number of objects for each object type.
Total Lines	The number of executable statement code lines for each object type.
Average Lines	The average number of executable statement code lines ('Total Lines' divided by 'Total Objects') for each object type.
Largest Lines	The largest number of executable statement code lines within a single object for each object type.
Total RM Objects	The number of Reporting mode objects for each object type
Total SM Objects	The number of Structured mode objects for each object type.
Total Maps with Processing Rules	The number of map objects that contain processing rules.
Natural library	The library where the Natural code was extracted from.
Steplib Applications	The list of Natural libraries that are used as Steplib libraries for the application. Up to 9 libraries can be listed and are controlled by the *STEPLIB and Steplib input fields on the Application Properties screen.
Extract Start Date	The date and time that the Extract process started.
Extract End Date	The date and time that the Extract process ended.
Extract Duration	The time taken for the Extract process to be completed. (Extract End Date subtracted from the Extract Start Date.)
Load Start Date	The date and time that the Load process started.
Load End Date	The date and time that the Load process ended.
Load Duration	The time taken for the Load process to be completed. (Load End Date subtracted from the Load Start Date.)
Extract Environment	The operating environment that the Natural application executes in. For documentation purposes only.

Note: Comment lines are NOT included in the line counts.

Object Summary

Provides a high level view of an application after the Extract and Load processes have been completed. The report shows the number of objects, executable statement code lines, the object save date and time and the Natural Engineer Load date and time, for each Object type found.

The following Figure 3-4-2 illustrates the Object Summary Report.



Object Summary

Application: HOSPITAL

Object Type	Object Name	Object Mode	Total Objects	Total Lines	Steplib Application	Save Time	Load Time
Parameter Data Area							
	XXCONPDA	Structured		4		1997/06/16 17:31:00	2013/05/01 10:20:02
	Totals:		1	4			
Copycode							
	XXVALCC	Structured		90		1998/04/28 13:51:00	2013/05/01 10:20:03
	Totals:		1	90			
Data Defn. Module							
	PATIENT			17		1996/11/05 09:05:00	2013/05/01 10:20:03
	Totals:		1	17			

Figure 3-4-2 Object Summary Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Object Type	The type of object, for example Map, Program, Local Data Area.
Object Name	The name of the object.
Object Mode	For Natural Objects will show if the object is in Structured or Reporting Mode.
Total Objects	The number of objects for each object type.
Total Lines	The number of executable statement code lines for each object. Sub-totals per object type are also provided.
Steplib Application	The name of the application if the object is from a Steplib library.
Save Time	The date and time the object was last saved in Natural.
Load Time	The date and time the object was loaded into Natural Engineer.

Note: Comment lines are NOT included in line counts.

Keywords Summary

Provides a list of statement types used by an application grouped by language. This can be used to categorize the application in terms of statement complexity; for example, update applications as opposed to read-only applications, or to identify applications using particular syntax.

The following Figure 3-4-3 illustrates the Keywords Summary Report.

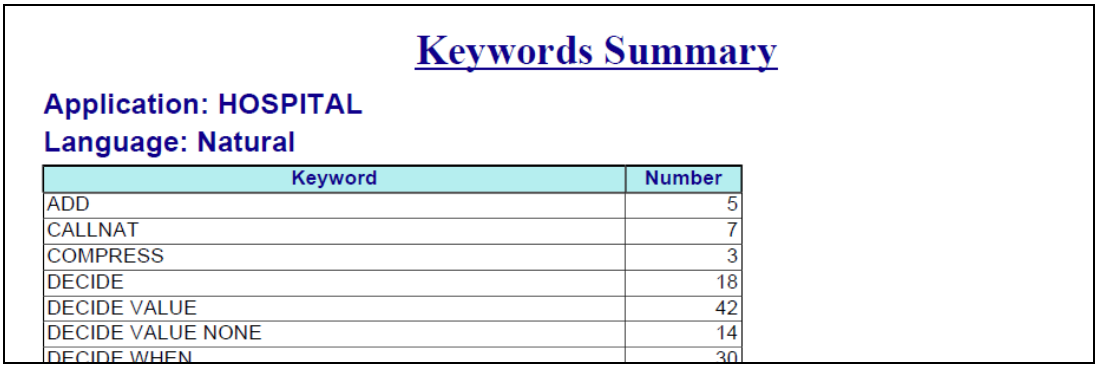


Figure 3-4-3 Keywords Summary Report

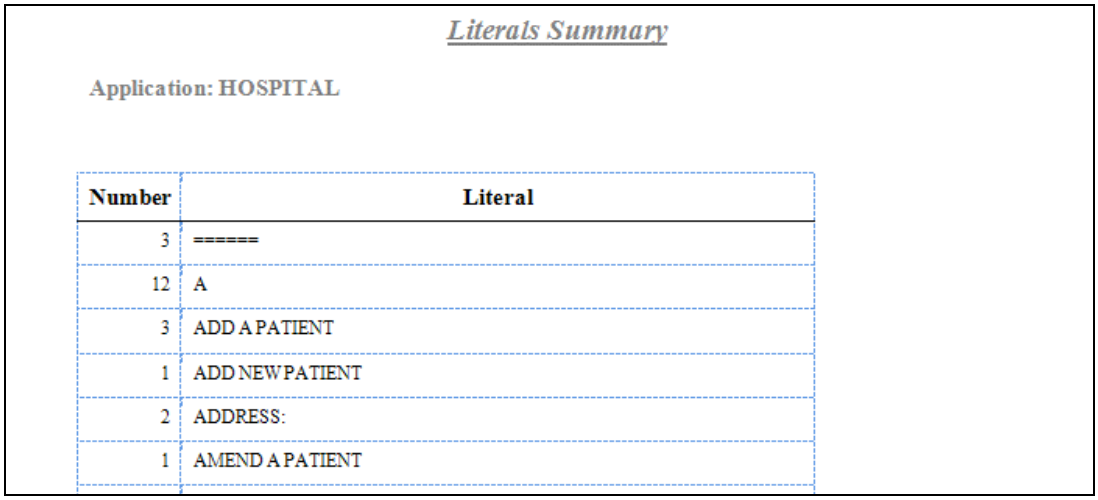
REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Language	The language the keyword applies to.
Keyword	The name of the keyword
Number	The number of occurrences of the keyword found in the application.

Literals Summary

Provides a list of literals used by an application. This can be used to identify unique occurrences of literals within an application.

The Literals Summary report is available for HTML, Screen, Spreadsheet and Word output formats only.

The following Figure 3-4-4 illustrates the Literals Summary Report.



Literals Summary

Application: HOSPITAL

Number	Literal
3	======
12	A
3	ADD A PATIENT
1	ADD NEW PATIENT
2	ADDRESS:
1	AMEND A PATIENT

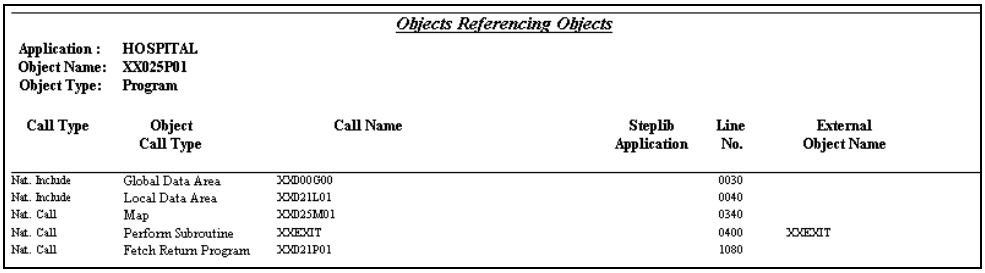
Figure 3-4-4 Literals Summary Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Number	The number of occurrences of the literal found in the application
Literal	The name of the literal.

Objects Referencing Objects

Identifies the objects, internal and external, used by a specific object within an application. This report identifies all objects used to identify the other components of the application used by the object.

The following Figure 3-4-5 illustrates the Objects Referencing Objects Report.



Objects Referencing Objects

Application : HOSPITAL
Object Name: XX025P01
Object Type: Program

Call Type	Object Call Type	Call Name	Steplib Application	Line No.	External Object Name
Nat. Include	Global Data Area	XXD00G00		0030	
Nat. Include	Local Data Area	XXD21L01		0040	
Nat. Call	Map	XXD25M01		0340	
Nat. Call	Perform Subroutine	XXEXIT		0400	XXEXIT
Nat. Call	Fetch Return Program	XXD21P01		1080	

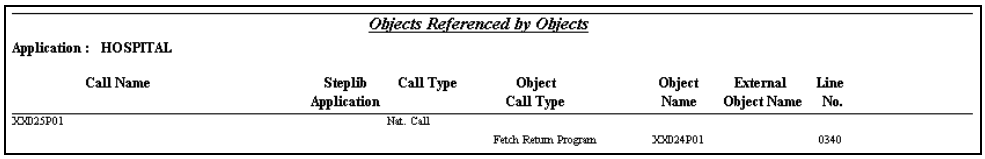
Figure 3-4-5 Objects Referencing Objects Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Object Name	The name of the object.
Object Type	The type of object, for example Map, Program, Local Data Area.
Call Type	The type of call being issued, for example Include for data areas, Call for maps.
Object Call Type	The type of call, for example Perform Subroutine.
Call Name	The name of the object referenced by the call.
Steplib Application	The name of the application if the object is from a Steplib library.
Line No.	The statement line number.
External Object Name	If the call name is contained in another physical object, then the name of that object is 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.

Objects Referenced by Objects

Identifies, for an object, all uses of it by all other objects within an application (and any Steplib libraries), for both internal and external routines.

The following Figure 3-4-6 illustrates the Objects Referenced by Objects Report.



Objects Referenced by Objects

Application : HOSPITAL

Call Name	Steplib Application	Call Type	Object Call Type	Object Name	External Object Name	Line No.
XMD25P01		Nat. Call				
			Fetch Return Program	XMD24P01		0340

Figure 3-4-6 Objects Referenced by Objects Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Call Name	The name of the object referenced by the call.
Steplib Application	The name of the application if the object is from a Steplib library.
Call Type	The type of call being issued, for example Include for data areas, Call for maps.
Object Call Type	The type of call, for example Perform Subroutine.
Object Name	The name of the object that references the called object.
External Object Name	If the call name is contained in another physical object, then the name of that object is 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.
Line No.	The statement line number where the reference occurs.

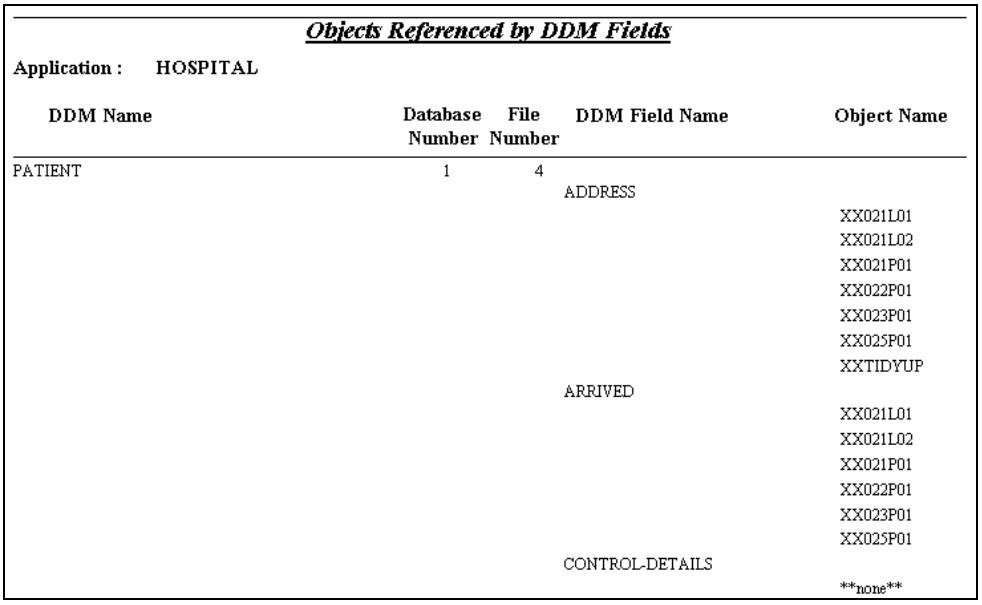
On the PC the object list selection screen is displayed prior to the execution of the report. This allows the user to selectively choose which Call Name they want to inquire on, where that Call Name is either an Automatic Rule within maps, a Function or a Subroutine, then the following Natural Engineer names are shown in the object list:

&AUTORUL for Automatic Rules in maps
&FUNC for Functions.
&SUBR for Subroutines.

Objects Referenced by DDM Fields

Identifies for each DDM field the objects that reference the field.

The following Figure 3-4-7 illustrates the Objects Referenced by DDM Report.



Objects Referenced by DDM Fields

Application : HOSPITAL

DDM Name	Database Number	File Number	DDM Field Name	Object Name
PATIENT	1	4		
			ADDRESS	
				XX021L01
				XX021L02
				XX021P01
				XX022P01
				XX023P01
				XX025P01
				XXTIDYUP
			ARRIVED	
				XX021L01
				XX021L02
				XX021P01
				XX022P01
				XX023P01
				XX025P01
			CONTROL-DETAILS	
				none

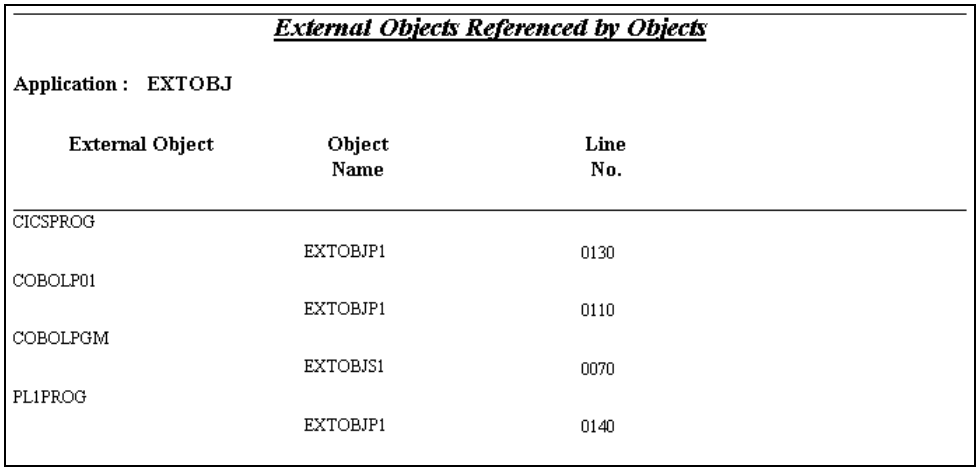
Figure 3-4-7 Objects Referenced by DDM Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
DDM Name	The name of the DDM used to access the database.
Database Number	The database number of the DDM.
File Number	The file number of the DDM.
DDM Field Name	The name of the field within the DDM.
Object Name	The name of the Natural object where the DDM field is referenced. If no objects reference the DDM field, then this is set to '**none**'.

External Objects Referenced by Objects

Identifies all references to non-Natural objects from an application. This report is therefore a complete list of the external non-Natural routines used directly by a Natural application.

The following Figure 3-4-8 illustrates the External Objects Referenced by Objects Report.



External Objects Referenced by Objects

Application : EXTOBJ

External Object	Object Name	Line No.
CICSPROG		
	EXTOBJP1	0130
COBOLP01		
	EXTOBJP1	0110
COBOLPGM		
	EXTOBJS1	0070
PL1PROG		
	EXTOBJP1	0140

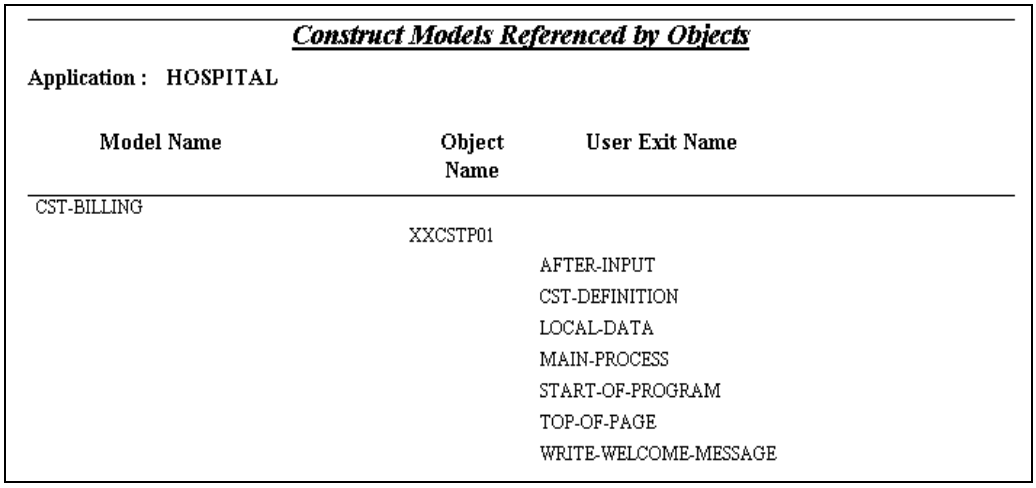
Figure 3-4-8 External Objects Referenced by Objects Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
External Object	The name of the external non-Natural object referenced by the call.
Object Name	The name of the Natural object issuing the call.
Line No.	The statement line number where the reference occurred.

CONSTRUCT Models Referenced by Objects

This report shows the Construct models and User Exits used by objects within an application.

The following Figure 3-4-9 illustrates the Construct Models Referenced by Objects Report.



Construct Models Referenced by Objects

Application : HOSPITAL

Model Name	Object Name	User Exit Name
CST-BILLING		
	XXCSTP01	
		AFTER-INPUT
		CST-DEFINITION
		LOCAL-DATA
		MAIN-PROCESS
		START-OF-PROGRAM
		TOP-OF-PAGE
		WRITE-WELCOME-MESSAGE

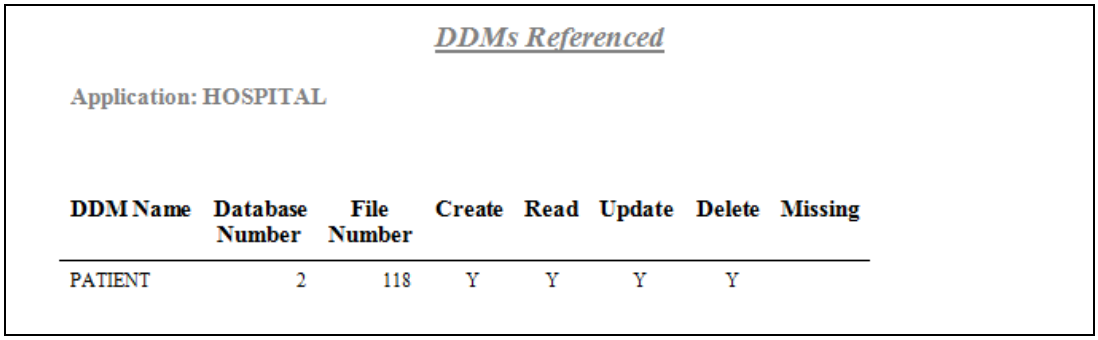
Figure 3-4-9 Construct Models Referenced by Objects Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Model Name	The name of the Construct model used.
Object Name	The name of the object.
User Exit Name	The name of the User Exit used.

DDMs Referenced

Identifies all DDMs used within an application and how the DDM is used within the application.

The following Figure 3-4-11 illustrates the DDMs Referenced Report.



DDMs Referenced

Application: HOSPITAL

DDM Name	Database Number	File Number	Create	Read	Update	Delete	Missing
PATIENT	2	118	Y	Y	Y	Y	

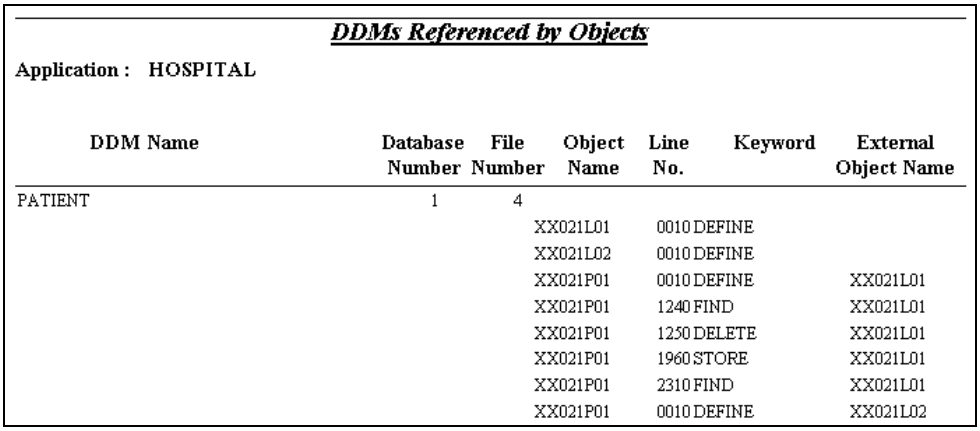
Figure 3-4-11 DDMs Referenced Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
DDM Name	The name of the DDM used to access the database.
Database Number	The database number of the DDM.
File Number	The file number of the DDM.
Create	Will be set to Y if the DDM is used in a CREATE (STORE) type statement.
Read	Will be set to Y if the DDM is used in a READ (BROWSE) type statement.
Update	Will be set to Y if the DDM is used in an UPDATE type statement.
Delete	Will be set to Y if the DDM is used in a DELETE type statement.
Missing	Will be set to Y if the DDM was not found for the application during the Extract process and should be investigated for inclusion.

DDMs Referenced by Objects

Identifies, for DDMs, all objects within the application that reference them, indicating whether the definition is external for the object. This report is used to identify DDM usage with the application.

The following Figure 3-4-12 illustrates the DDMs Referenced by Objects Report.



DDMs Referenced by Objects

Application : HOSPITAL

DDM Name	Database Number	File Number	Object Name	Line No.	Keyword	External Object Name
PATIENT	1	4				
			XX021L01	0010	DEFINE	
			XX021L02	0010	DEFINE	
			XX021P01	0010	DEFINE	XX021L01
			XX021P01	1240	FIND	XX021L01
			XX021P01	1250	DELETE	XX021L01
			XX021P01	1960	STORE	XX021L01
			XX021P01	2310	FIND	XX021L01
			XX021P01	0010	DEFINE	XX021L02

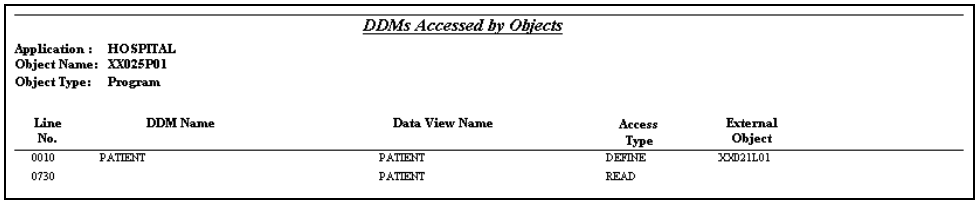
Figure 3-4-12 DDMs Referenced by Objects Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
DDM Name	The name of the DDM used to access the database.
Database Number	The database number of the DDM.
File Number	The file number of the DDM.
Object Name	The name of the object referencing the DDM.
Line No.	The statement line number.
Keyword	The type of Natural statement used to access the view, for example FIND, STORE.
External Object Name	The name of the external data area object used to define the logical view of the DDM used by the object.

DDMs Accessed by Objects

Identifies the type of access to DDMs by objects within an application. This can either be directly or via an internal or external view definition. By viewing the types of access within objects, you can, for example, identify which objects update files.

The following Figure 3-4-13 illustrates the DDMs Accessed by Objects Report.



DDMs Accessed by Objects

Application : HOSPITAL
Object Name: XX025P01
Object Type: Program

Line No.	DDM Name	Data View Name	Access Type	External Object
0010	PATIENT	PATIENT	DEFINE	XXD21L01
0730		PATIENT	READ	

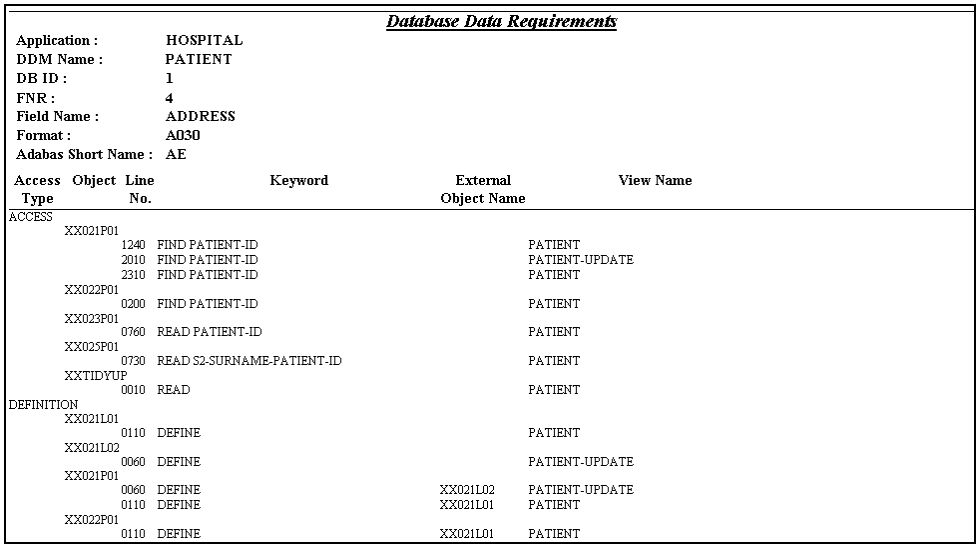
Figure 3-4-13 DDMs Accessed by Objects Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Object Name	The name of the object.
Object Type	The type of object, for example Map, Program, Local Data Area.
Line No.	The statement line number.
DDM Name	The name of the DDM used to access the database.
Data View Name	The name of the View used to define the logical view of a DDM.
Access Type	The type of Natural statement used to access the view, for example FIND, STORE.
External Object	The name of the external data area object used to define the logical view of the DDM used by the object.

Database Data Requirements

Identifies the database data requirements for an application. Each DDM field accessed by the application is detailed showing all the access requirements within the application objects.

The following Figure 3-4-14 illustrates the Database Data Requirements Report.



Database Data Requirements

Application : HOSPITAL
DDM Name : PATIENT
DB ID : 1
FNR : 4
Field Name : ADDRESS
Format : A030
Adabas Short Name : AE

Access Type	Object	Line No.	Keyword	External Object Name	View Name
ACCESS					
	XX021P01				
		1240	FIND PATIENT-ID		PATIENT
		2010	FIND PATIENT-ID		PATIENT-UPDATE
		2310	FIND PATIENT-ID		PATIENT
	XX022P01				
		0200	FIND PATIENT-ID		PATIENT
	XX023P01				
		0760	READ PATIENT-ID		PATIENT
	XX025P01				
		0730	READ S2-SURNAME-PATIENT-ID		PATIENT
	XXTIDYUP				
		0010	READ		PATIENT
DEFINITION					
	XX021L01				
		0110	DEFINE		PATIENT
	XX021L02				
		0060	DEFINE		PATIENT-UPDATE
	XX021P01				
		0060	DEFINE	XX021L02	PATIENT-UPDATE
		0110	DEFINE	XX021L01	PATIENT
	XX022P01				
		0110	DEFINE	XX021L01	PATIENT

Figure 3-4-14 Database Data Requirements Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
DDM Name	The name of the DDM used to access the database.
DBID	The database number of the DDM.
FNR	The file number of the DDM.
Field Name	The field name as defined in the DDM.
Format	The format and length of the field.
Adabas Short Name	The 2 character name used in the FDT.

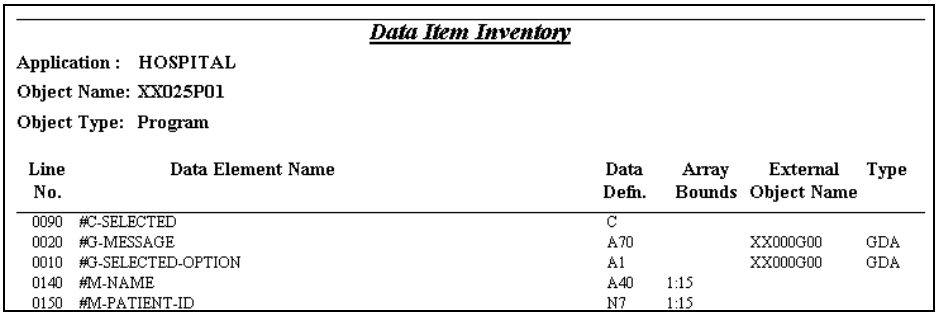
REPORT ITEM	DESCRIPTION
Access Type	Classifications of the type of access being reported. There are 7 access types available:
Object	The name of the object.
Line No.	The statement line number.
Keyword	The Natural keyword being used to reference the database data, for example READ, FIND or STORE. If any access key is being used, then the key used will also be shown. For the MANIPULATION access type if the field is used as a target field e.g. MOVE #A TO FIRST-NAME then the keyword will be suffixed with (TO). If it is used as source field e.g. MOVE FIRST-NAME TO #A then the keyword will be suffixed with (FROM).
External Object Name	The name of the external data area object used to define the logical view of the DDM used by the object.
View Name	The name of the View used to define the logical view of a DDM.

Type	Description
Definition	DDM field definitions within logical views.
Access	DDM field references for database access statements, for example READ or FIND.
Output	DDM field references for output statements, for example WRITE or DISPLAY.
Condition	DDM field references for conditional logic statements, for example IF, DECIDE, REJECT or ACCEPT.
Modification	DDM field references for database update statements, for example STORE, UPDATE or DELETE.
Transaction	End of logical transaction statements, for example END TRANSACTION.
Manipulation	DDM field references for data manipulation statements, for example MOVE, ASSIGN or EXAMINE.

Data Item Inventory

Shows all the data items used by a specific object within the application. This report identifies all fields that the object has access to, whether they are defined in the object or defined externally.

The following Figure 3-4-15 illustrates the Data Item Inventory Report.



Data Item Inventory

Application : HOSPITAL
Object Name: XX025P01
Object Type: Program

Line No.	Data Element Name	Data Defn.	Array Bounds	External Object Name	Type
0090	#C-SELECTED	C			
0020	#G-MESSAGE	A70		XX000G00	GDA
0010	#G-SELECTED-OPTION	A1		XX000G00	GDA
0140	#M-NAME	A40	1:15		
0150	#M-PATIENT-ID	N7	1:15		

Figure 3-4-15 Data Item Inventory Report

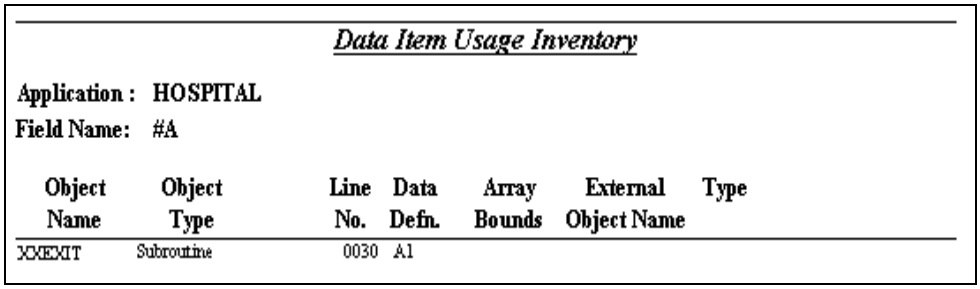
REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Object Name	The name of the object. For DDM objects, this will be the internal name used by Natural Engineer followed by the DDM name. For external Subroutine objects, this will be the name of the object followed by name used to execute the subroutine in a Perform statement.
Object Type	The type of object, for example Map, Program, Local Data Area.
Line No.	The statement line number.
Data Element Name	The name of the data item. If the data item is part of a group or logical view, then the data item name will be prefixed by the group or view name.
Data Defn.	The format and length of the data item.
Array Bounds	The number of occurrences of the data item if it has been defined as an array.

REPORT ITEM	DESCRIPTION
External Object Name	The name of the external data area object used to define the data item used by the object.
Type	The type of external object, for example GDA, LDA, PDA.

Data Item Usage Inventory

Shows all data items used within the application. This report identifies for all data items the objects that use the data item, whether they are defined in the object or defined externally.

The following Figure 3-4-16 illustrates the Data Item Usage Inventory Report.



Data Item Usage Inventory

Application : HOSPITAL
Field Name: #A

Object Name	Object Type	Line No.	Data Defn.	Array Bounds	External Object Name	Type
XXEXIT	Subroutine	0030	A1			

Figure 3-4-16 Data Item Usage Inventory Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Field Name	The name of the data item.
Object Name	The name of the object.
Object Type	The type of object, for example Map, Program, Local Data Area.
Line No.	The statement line number.
Data Defn.	The format and length of the data item.
Array Bounds	The number of occurrences of the data item if it has been defined as an array.
External Object Name	The name of the external data area object used to define the data item used by the object.
Type	The type of external object, for example GDA, LDA, PDA.

Database Access (CRUD)

Shows an overview of any Database Access for a selected file/field and if that field is used in a **C**reate/**R**ead/**U**pdate/**D**elete statement within the application. The file may be a DDM, Predict User View or a SQL Table. The headings on the report will change accordingly depending on the type of file selected.

It allows the input of report refinement options to select the objects and fields to be included in the report.

The report can be displayed using display options HTML, Spreasdsheet, Screen, PDF or Word.

The HTML display option is presented in both summary and detail form and provides full interactive navigation via hyperlinks to review the report details.

Note: For the purpose of this documentation the HTML version of the report is used for a DDM.

The following Figure 3-4-17 illustrates the Database Access (CRUD) Summary Report.

Database Access (CRUD)
Field Summary

Data Definition Module	Field Name	Create	Read	Update	Delete	Key Usage
EMPLOYEES	BIRTH		Y			
EMPLOYEES	NAME		Y			Y
EMPLOYEES	PERSONNEL-ID		Y			
EMPLOYEES	SEX		Y			
PERSONNEL	NAME		Y			
PERSONNEL	PERSONNEL-NUMBER		Y			
VEHICLES	COLOR	Y	Y	Y	Y	
VEHICLES	COLOUR		Y			
VEHICLES	MAKE	Y	Y	Y	Y	
VEHICLES	MODEL	Y	Y	Y	Y	
VEHICLES	PERSONNEL-ID	Y	Y	Y	Y	Y
VEHICLES	REG-NUM	Y	Y	Y	Y	

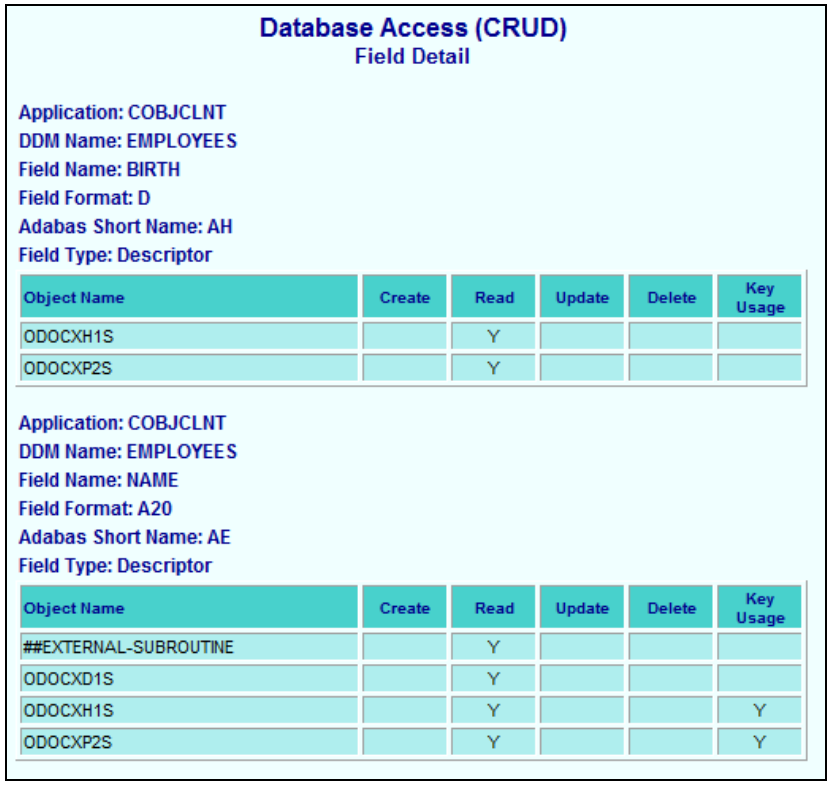
***** End of Report *****

Figure 3-4-17 Database Access (CRUD) Summary Report

REPORT ITEM	DESCRIPTION
Data Definition Module	The name of the file being processed.

REPORT ITEM	DESCRIPTION
Field Name	The name of the data item.
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.

The following Figure 3-4-18 illustrates the Database Access (CRUD) Detail Report.



Database Access (CRUD)
Field Detail

Application: COBJCLNT
DDM Name: EMPLOYEES
Field Name: BIRTH
Field Format: D
Adabas Short Name: AH
Field Type: Descriptor

Object Name	Create	Read	Update	Delete	Key Usage
ODOCXH1S		Y			
ODOCXP2S		Y			

Application: COBJCLNT
DDM Name: EMPLOYEES
Field Name: NAME
Field Format: A20
Adabas Short Name: AE
Field Type: Descriptor

Object Name	Create	Read	Update	Delete	Key Usage
##EXTERNAL-SUBROUTINE		Y			
ODOCXD1S		Y			
ODOCXH1S		Y			Y
ODOCXP2S		Y			Y

Figure 3-4-18 Database Access (CRUD) Detail Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
DDM Name	The name of the DDM used to access the database.
Field Name	The field name as defined in the DDM.
Field Format	The format and length of the field.
Adabas Short Name	The 2 character name used in the FDT.
Field Type	If the field is used as a descriptor or as a periodic group or multiple 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 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.

Database Access (CRUD) by Objects

Shows an overview of any Database Access contained within a selected object. It shows which files are used and if they are used in a **C**reate/**R**ead/**U**pdate/**D**elete statement within the object. The file may be a DDM, Predict User View or a SQL Table. The headings on the report will change accordingly depending on the type of file selected.

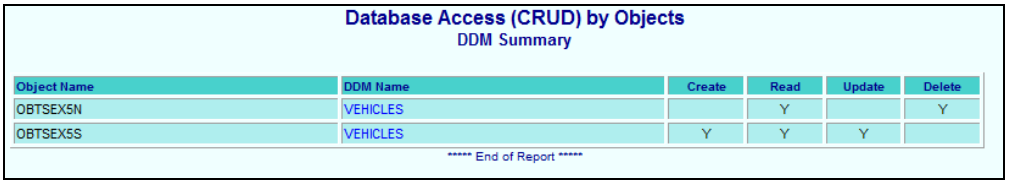
It allows the input of report refinement options to select the object and DDM to be included in the report.

The report can be displayed using display options HTML, Spreadsheet, Screen, PDF or Word.

The HTML display option is presented in both summary and detail form and provides full interactive navigation via hyperlinks to review the report details.

Note: For the purpose of this documentation the HTML version of the report is used for a DDM.

The following Figure 3-4-19 illustrates the Database Access (CRUD) by Objects Summary Report.



Database Access (CRUD) by Objects
DDM Summary

Object Name	DDM Name	Create	Read	Update	Delete
OBTSEX5N	VEHICLES		Y		Y
OBTSEX5S	VEHICLES	Y	Y	Y	

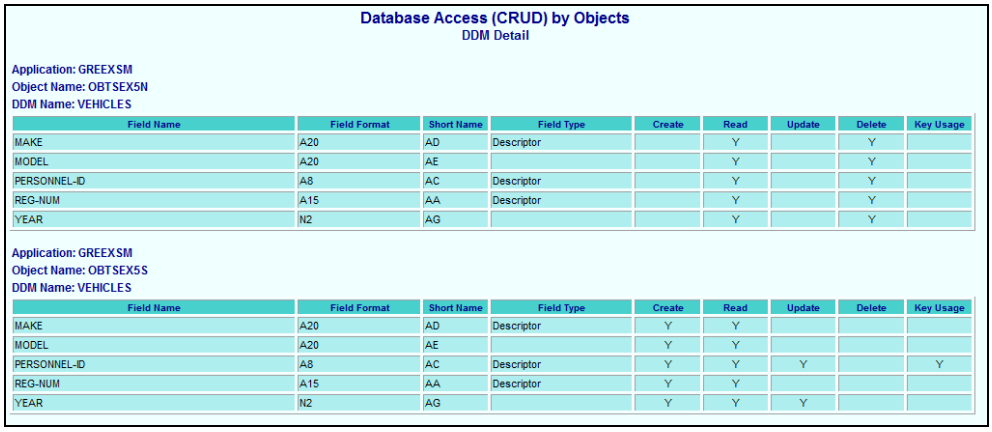
***** End of Report *****

Figure 3-4-19 Database Access (CRUD) by Objects Summary Report

REPORT ITEM	DESCRIPTION
Object Name	The name of the Object being processed.
Data Definition Module	The name of the DDM being processed.
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.

REPORT ITEM	DESCRIPTION
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.

The following Figure 3-4-20 illustrates the Database Access (CRUD) by Objects Detail Report.



Database Access (CRUD) by Objects
DDM Detail

Application: GREEXSM
Object Name: OBTSEX5N
DDM Name: VEHICLES

Field Name	Field Format	Short Name	Field Type	Create	Read	Update	Delete	Key Usage
MAKE	A20	AD	Descriptor		Y		Y	
MODEL	A20	AE			Y		Y	
PERSONNEL-ID	A8	AC	Descriptor		Y		Y	
REG-NUM	A15	AA	Descriptor		Y		Y	
YEAR	N2	AG			Y		Y	

Application: GREEXSM
Object Name: OBTSEX5S
DDM Name: VEHICLES

Field Name	Field Format	Short Name	Field Type	Create	Read	Update	Delete	Key Usage
MAKE	A20	AD	Descriptor	Y	Y			
MODEL	A20	AE		Y	Y			
PERSONNEL-ID	A8	AC	Descriptor	Y	Y	Y		Y
REG-NUM	A15	AA	Descriptor	Y	Y			
YEAR	N2	AG		Y	Y	Y		

Figure 3-4-20 Database Access (CRUD) by Objects Detail Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Object Name	The name of the Object containing the Database Access.
DDM Name	The name of the DDM used to access the database.
Field Name	The field name as defined in the DDM.
Field Format	The format and length of the field.
Short Name	The 2 character name used in the FDT.
Field Type	If the field is used as a descriptor, a periodic group or a multiple 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.

REPORT ITEM	DESCRIPTION
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.

Steplib Object Reference

Shows where an object that resides on a steplib application is called/referenced from. This report is available from the object node of an application if the object has been referenced by an object in another application.

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.

NB: All applications (base and steplibs) need to be extracted using Include All Called Objects option and loaded into the repository to enable this report correctly.

The following Figure 3-4-21 illustrates the Steplib Object Reference Report.

Steplib Object Reference

Application: HOSPSTEP
Object: XX003P01
Object Type: Program

Calling Application	Calling Object Name	Calling Object Type	External Object Name	Line No.
HOSPSET	XX001P01	Program		0220
HOSPSET	XX003P01	Program		0220
HOSPSET	XX034P01	Program		0210

Figure 3-4-21 Steplib Object Reference Report

REPORT ITEM	DESCRIPTION
Application	The name of the steplib application being processed.
Object	The name of the object.
Object Type	The type object e.g., Program or Subprogram.
Calling Application	The name of the referencing application.
Calling Object Name	The name of the object referencing the called object.
Calling Object Type	The type of the calling object e.g., Program or Subprogram.
External Object Name	If the object name is contained in another physical object, then the name of that object is 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.
Line No.	The statement line number.

Analysis: Impact Reports

The Impact Reports provide various types of information concerning the Impact Analysis results, including a view of used Search Criteria. Reports are available at the summary, object and detailed data item levels.

You can view this information in any one of several reporting display modes:

- In a Browser.
- In textual format using either the Natural screen, a spreadsheet e.g., Microsoft Excel or OpenOffice Calc, Microsoft Word, Adobe PDF or HTML.

Note: For more information on the different Reporting Display Modes refer to Chapter 1 of this manual.

The Impact Reports can be accessed using the following menu navigation: Analysis ➔Impact Reports.

The following table summarizes the Impact Reports:

REPORT ID	REPORT NAME	DESCRIPTION
	Bulk Report Generator	This allows you to select reports to be executed at the same time. You can use this option to produce all reports for viewing later.
IMPSCL	**Search Criteria**	Lists the Search Criteria used for this execution of the Impact Analysis.
IMPAIS	**Application Impact Summary**	Provides a high-level view of the Impact on the Application, by Object Type.
IMPOIS	**Object Impact Summary**	Identifies for each object both the number of impacted lines of code and data elements.
IMPALL	**All Impacts**	Identifies all impacted items within an application.
IMPREP	**Impacts by Impact & Object Type**	Identifies all impacted items within an application and displays them by Impact Type and Object Type.
IMPEXX	**Impacted External Objects**	Identifies if any impacted fields are passed to external objects.
IMPEXW	**Impacted External**	Identifies if any WRITE or READ workfile

REPORT ID	REPORT NAME	DESCRIPTION
	Interfaces	statements have been impacted.
IMPCMO	**Impacted Construct Models**	Identifies if any Construct models have been impacted by other data items.
IMPPCO	**Impacted Predict Case Components**	Identifies if any Predict Case Generated Objects have been impacted by other data items.
IMPDII	**Data Item Impact Inventory**	Identifies impacted data items, by Object, used in the Application.
IMPJCL	**Impacted JCL Steps**	Shows all Job Steps that have been impacted by impacted Objects and Datasets.
IMPSDI	**Impacted Steplib Inventory**	Identifies for each object any other impacts for the object in other applications.
IMPFLD	**Data Item Impact Usage Inventory**	Identifies for each Data item the impacted objects that the field is in.
	View Impacted Source Code	Allows the viewing of program type objects within an Internet Browser with Impacted Code highlighted.

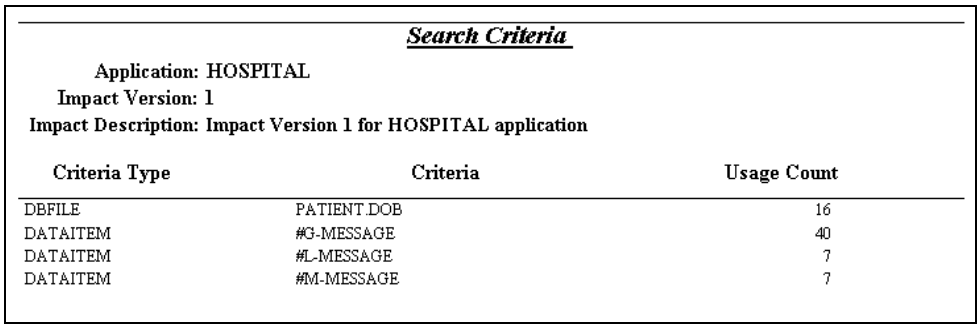
The table shows the report ids for each report. These are used within the REPORTER section of the NATENG.INI file to set the default report display mode for each report.

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

Search Criteria

This report lists the Search Criteria used for this execution of the Impact Analysis. You can keep the Search Criteria versioned with the other impact reports.

The following Figure 3-5-1 illustrates the Search Criteria Report.



Search Criteria

Application: HOSPITAL
Impact Version: 1
Impact Description: Impact Version 1 for HOSPITAL application

Criteria Type	Criteria	Usage Count
DBFILE	PATIENT.DOB	16
DATAITEM	#G-MESSAGE	40
DATAITEM	#L-MESSAGE	7
DATAITEM	#M-MESSAGE	7

Figure 3-5-1 Search Criteria Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Impact Version.	The version of the Impact to which the criteria are applicable.
Impact Description	The description of the Impact version to which the criteria are applicable.
Criteria Type	The primary keyword used in the search, for example DBFILE.
Criteria	The search value used to refine the search.
Usage Count	The number of impacts identified by each criteria.

Application Impact Summary

This report provides a high-level view of the impact on the application, by object type. This is the initial view of the impact of the Search Criteria. You can see the overall number of lines and data elements affected. You can use this report for an initial preparation of resources and duration of the Modification process.

The following Figure 3-5-2 illustrates the Application Impact Summary Report.

Application Impact Summary

Application: HOSPITAL
Impact Version: 1
Impact Description: Impact Version 1 for HOSPITAL application

Object Type	Total Objects	Total Affected Objects	Percentage of Affected Objects	Total Lines	Total Affected Lines	Percentage of Affected Lines	Total Element Definitions
Parameter Data Area	1	0	0.00%	4	0	0.00%	0
Copycode	1	0	0.00%	88	0	0.00%	0
Data Defn. Module	1	1	100.00%	17	1	5.88%	0
Global Data Area	1	1	100.00%	4	1	25.00%	0
Local Data Area	5	4	80.00%	69	5	7.25%	0
Map	7	7	100.00%	530	14	2.64%	0
Subprogram	2	0	0.00%	48	0	0.00%	0
Program	8	7	87.50%	496	46	9.27%	0
Subroutine	1	0	0.00%	13	0	0.00%	0
Totals:	27	20	74.07%	1,269	67	5.28%	0

Impact Mode = Re-Eng

Impact Start Date: 20-Apr-2004 16:03:49
Impact End Date: 20-Apr-2004 16:03:53
Impact Duration: 00:00:00:04

Figure 3-5-2 Application Impact Summary Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Object Type	The type of object, for example Map, Program, Local Data Area.
Total Objects	The number of objects for each object type.
Total Affected Objects	The number of objects impacted for the selected Impact version.

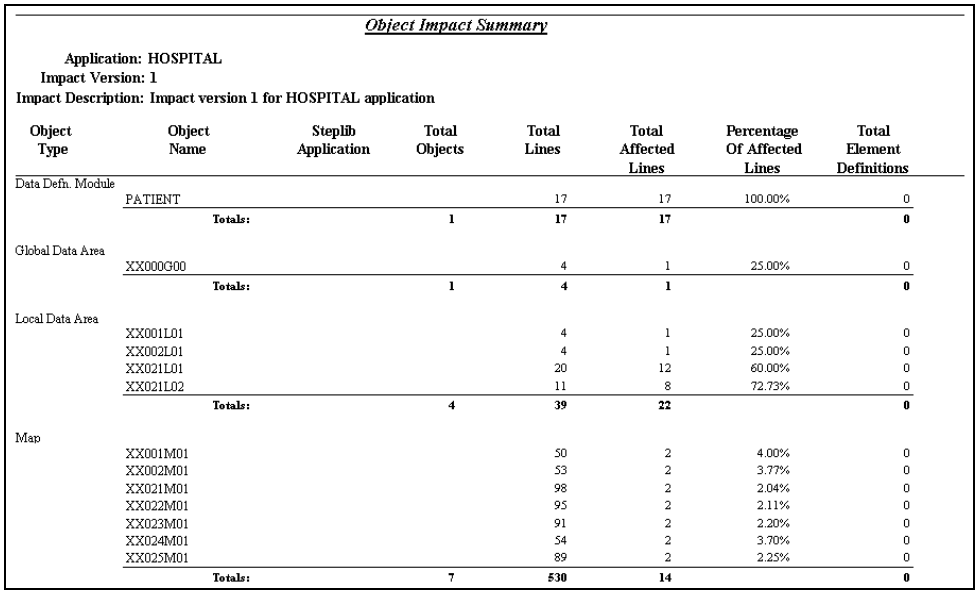
REPORT ITEM	DESCRIPTION
Percentage of Affected Objects	Total Affected Objects / Total Objects * 100.
Total Lines	The number of executable statement code lines for each object type.
Total Affected Lines	The number of executable statement code lines impacted by the selected Impact version.
Percentage of Affected Lines	Total Affected Lines / Total Lines * 100
Total Element Definitions	The number of defined data elements identified as affected by the Search Criteria.
Impact Mode	The type of Impact Analysis that was used, for example Re-Eng.
Impact Start Date	The date and time that the Impact process started.
Impact End Date	The date and time that the Impact process ended.
Impact Duration	The time taken for the impact process to be completed. (Impact End Date is subtracted from the Impact Start Date.) The format is: days:hours:minutes:seconds.
IOR Start Date	The date and time that the inter object tracing process started.
IOR End Date	The date and time that the inter object tracing process ended.
IOR Duration	The time taken for the inter object tracing process to be completed. (IOR End Date is subtracted from the IOR Start Date.) The format is: days:hours:minutes:seconds.

Note: Comment lines are not included in line counts. Lines are counted only once for multiple impacts. INCLUDE statement lines are not marked or counted as impacted.

Object Impact Summary

This report shows the same type of information as the Application Impact Summary, broken down for each object in the application. It is thus possible to identify the objects with a significantly higher number of impacts as against those with a low impact.

The following Figure 3-5-3 illustrates the Object Impact Summary Report.



Object Impact Summary

Application: HOSPITAL
Impact Version: 1
Impact Description: Impact version 1 for HOSPITAL application

Object Type	Object Name	Steplib Application	Total Objects	Total Lines	Total Affected Lines	Percentage Of Affected Lines	Total Element Definitions
Data Defn. Module							
	PATIENT			17	17	100.00%	0
	Totals:		**1**	**17**	**17**		**0**
Global Data Area							
	XX000G00			4	1	25.00%	0
	Totals:		**1**	**4**	**1**		**0**
Local Data Area							
	XX001L01			4	1	25.00%	0
	XX002L01			4	1	25.00%	0
	XX021L01			20	12	60.00%	0
	XX021L02			11	8	72.73%	0
	Totals:		**4**	**39**	**22**		**0**
Map							
	XX001M01			50	2	4.00%	0
	XX002M01			53	2	3.77%	0
	XX021M01			98	2	2.04%	0
	XX022M01			95	2	2.11%	0
	XX023M01			91	2	2.20%	0
	XX024M01			54	2	3.70%	0
	XX025M01			89	2	2.25%	0
	Totals:		**7**	**530**	**14**		**0**

Figure 3-5-3 Object Impact Summary Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Object Type	The type of object, for example Map, Program, Local Data Area.
Object Name	The name of the object.
Steplib Application	The name of the application if the object is from a steplib library.

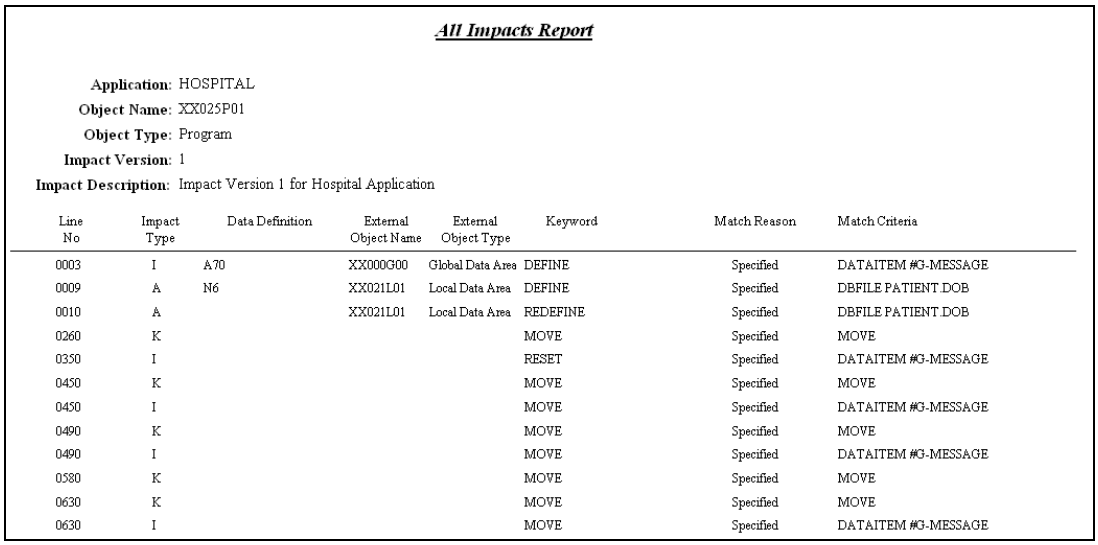
REPORT ITEM	DESCRIPTION
Total Objects	The number of objects for each object type.
Total Lines	The number of executable statement code lines for each object type.
Total Affected Lines	The number of executable statement code lines impacted by the selected Impact version.
Percentage of Affected Lines	Total Affected Lines / Total Lines * 100.
Total Element Definitions	The number of defined data elements identified as affected by the Search Criteria.

Note: Comment lines are not included in line counts.

All Impacts

This report identifies all the impacted items for each object within an application, for a selected Impact version.

The following Figure 3-5-4 illustrates the All Impacts Report.



All Impacts Report

Application: HOSPITAL
Object Name: XX025P01
Object Type: Program
Impact Version: 1
Impact Description: Impact Version 1 for Hospital Application

Line No	Impact Type	Data Definition	External Object Name	External Object Type	Keyword	Match Reason	Match Criteria
0003	I	A70	XX000G00	Global Data Area	DEFINE	Specified	DATAITEM #G-MESSAGE
0009	A	N6	XX021L01	Local Data Area	DEFINE	Specified	DBFILE PATIENT.DOB
0010	A		XX021L01	Local Data Area	REDEFINE	Specified	DBFILE PATIENT.DOB
0260	K				MOVE	Specified	MOVE
0350	I				RESET	Specified	DATAITEM #G-MESSAGE
0450	K				MOVE	Specified	MOVE
0450	I				MOVE	Specified	DATAITEM #G-MESSAGE
0490	K				MOVE	Specified	MOVE
0490	I				MOVE	Specified	DATAITEM #G-MESSAGE
0580	K				MOVE	Specified	MOVE
0630	K				MOVE	Specified	MOVE
0630	I				MOVE	Specified	DATAITEM #G-MESSAGE

Figure 3-5-4 All Impacts Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Object Name	The name of the object.
Object Type	The type of object, for example Map, Program, Local Data Area.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Line No.	The statement line number.
Impact Type	The type of Impact.
Data Definition	The format and length of the data item.

REPORT ITEM	DESCRIPTION
External Object Name	The name of the external data area object used to define the data item used by the object.
External Object Type	The type of external object, for example GDA, LDA, PDA.
Keyword	The name of the keyword.
Match Reason	The reason for the Impact.
Match Criteria	The actual match made, either by a search criterion or another data item. For data areas and DDMs, the programming object is identified if an impact was found in it.

Impacts by Impact & Object Types

This report identifies all the impacted items for each object within an application, for a selected Impact version. The Impact details are presented in both summary and detail form, and are sorted by either the Impact Types or Object Types.

The report is divided in into five sub-sections providing the following Impact details:

1. Summary of Report Sections. (Only available for the display option: HTML.)
2. Summary of Impacts by Object Type.
3. Detail of Impacts by Object Type.
4. Summary of Impacts by Impact Type.
5. Detail of Impacts by Impact Type.

The report can be displayed using display options HTML, Spreadsheet, Screen or Word. If the HTML display option is used, it provides full interactive navigation via hyperlinks to review the report details.

Note: For the purpose of this documentation the HTML version of the report is used. All the main report sub-sections (2-5 above) are identical across all the display options.

1. Summary of Report Sections

Note: This report page is only available when selecting the display option: HTML.

The following Figure 3-5-5 illustrates the Impacts by Impact & Object Types Report - Summary of Report Sections.

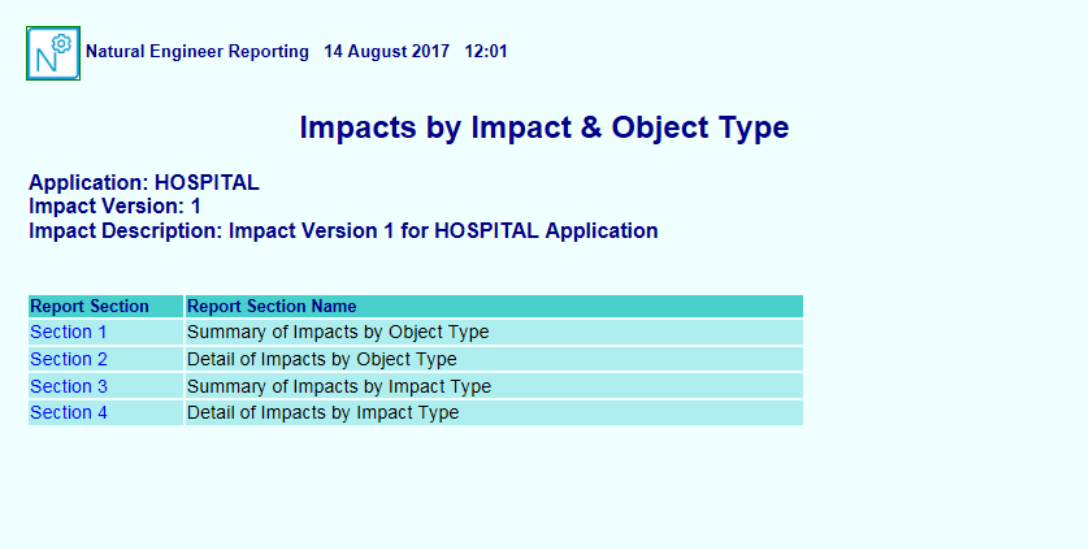


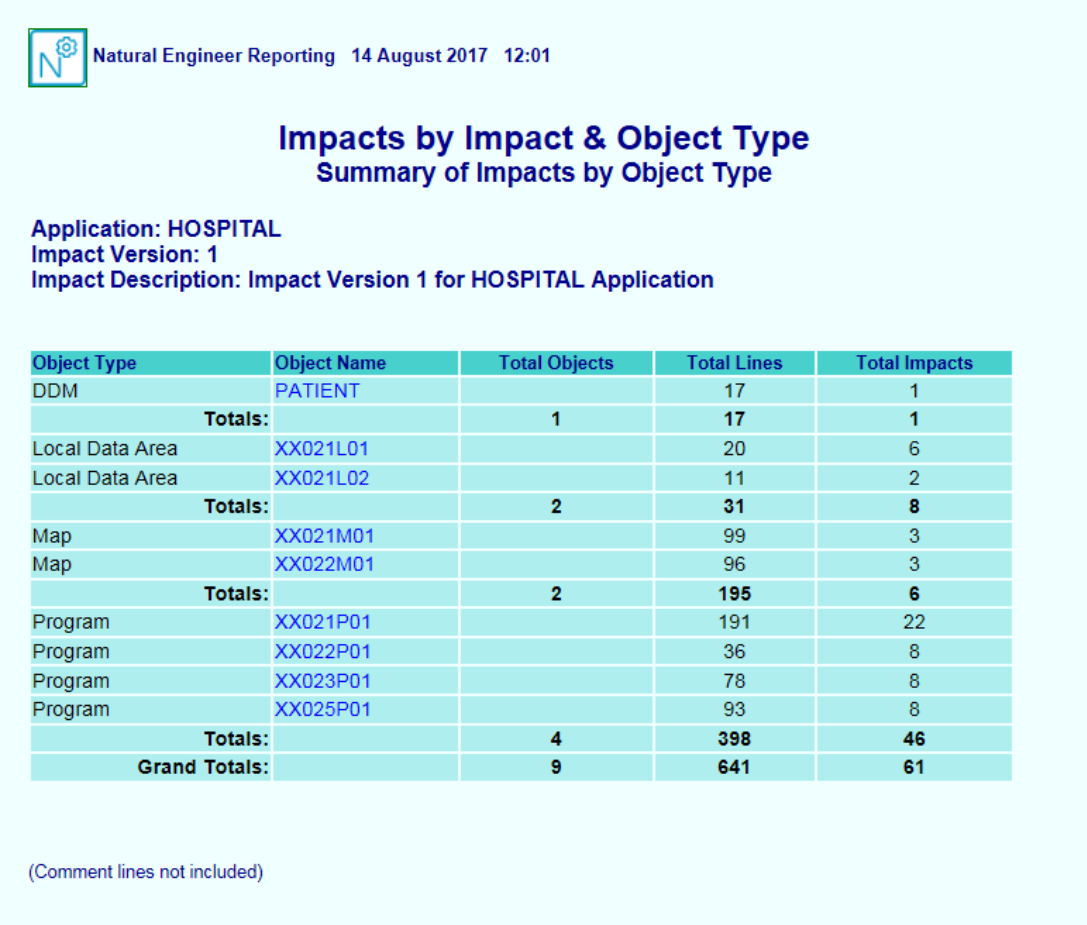
Figure 3-5-5 Impacts by Impact & Object Type Report - Summary of Report Sections

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Report Section	The main report sections available. The section names are hyperlinked to the relevant report.

REPORT ITEM	DESCRIPTION
Report Section Name	The name of each report section. There are four report sections available: ▪ **Summary of Impacts by Object Type.** ▪ **Detail of Impacts by Object Type.** ▪ **Summary of Impacts by Impact Type.** ▪ **Detail of Impacts by Impact Type.**

2. Summary of Impacts by Object Type

The following Figure 3-5-6 illustrates the Impacts by Impact & Object Types Report - Summary of Impacts by Object Type.



Natural Engineer Reporting 14 August 2017 12:01

Impacts by Impact & Object Type
Summary of Impacts by Object Type

Application: HOSPITAL
Impact Version: 1
Impact Description: Impact Version 1 for HOSPITAL Application

Object Type	Object Name	Total Objects	Total Lines	Total Impacts
DDM	PATIENT		17	1
Totals:		**1**	**17**	**1**
Local Data Area	XX021L01		20	6
Local Data Area	XX021L02		11	2
Totals:		**2**	**31**	**8**
Map	XX021M01		99	3
Map	XX022M01		96	3
Totals:		**2**	**195**	**6**
Program	XX021P01		191	22
Program	XX022P01		36	8
Program	XX023P01		78	8
Program	XX025P01		93	8
Totals:		**4**	**398**	**46**
Grand Totals:		**9**	**641**	**61**

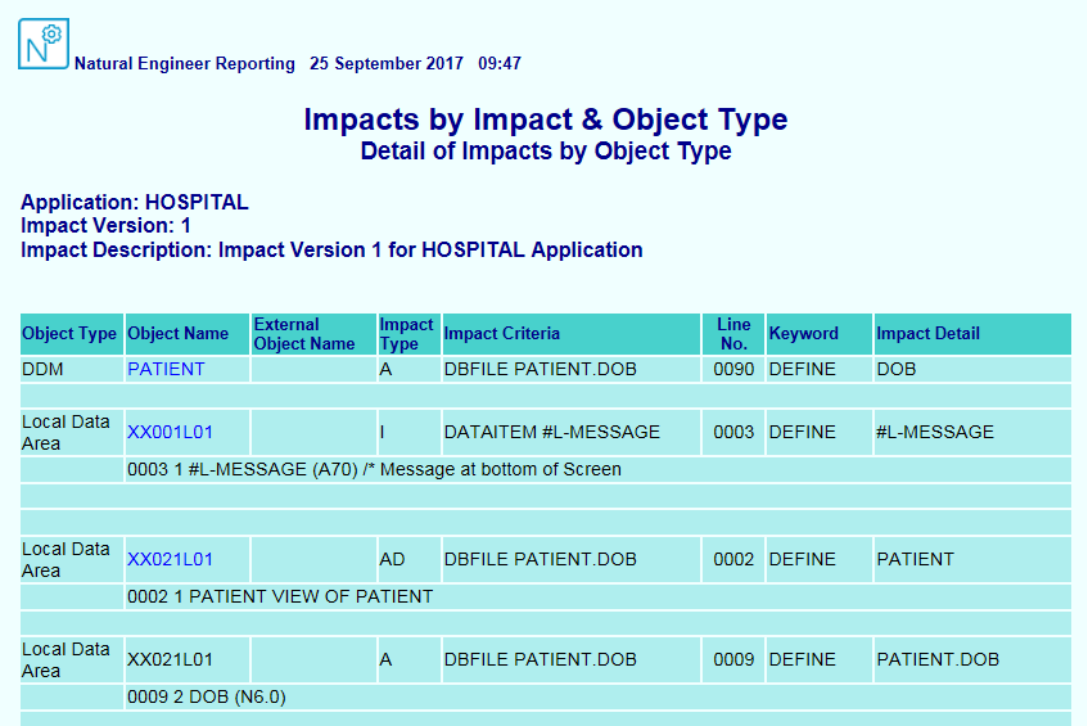
(Comment lines not included)

Figure 3-5-6 Impacts by Impact & Object Type Report - Summary of Impacts by Object Type

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Object Type	The type of object, for example Map, Program, Local Data Area.
Object Name	The name of the object.
Total Objects	The number of objects for each object type.
Total Lines	The number of executable statement code lines for each object type.
Total Impacts	The number of executable statement code lines impacted by the selected Impact version.

3. Detail of Impacts by Object Type

The following Figure 3-5-7 illustrates the Impacts by Impact & Object Types Report - Detail of Impacts by Object Type.



Natural Engineer Reporting 25 September 2017 09:47

Impacts by Impact & Object Type
Detail of Impacts by Object Type

Application: HOSPITAL
Impact Version: 1
Impact Description: Impact Version 1 for HOSPITAL Application

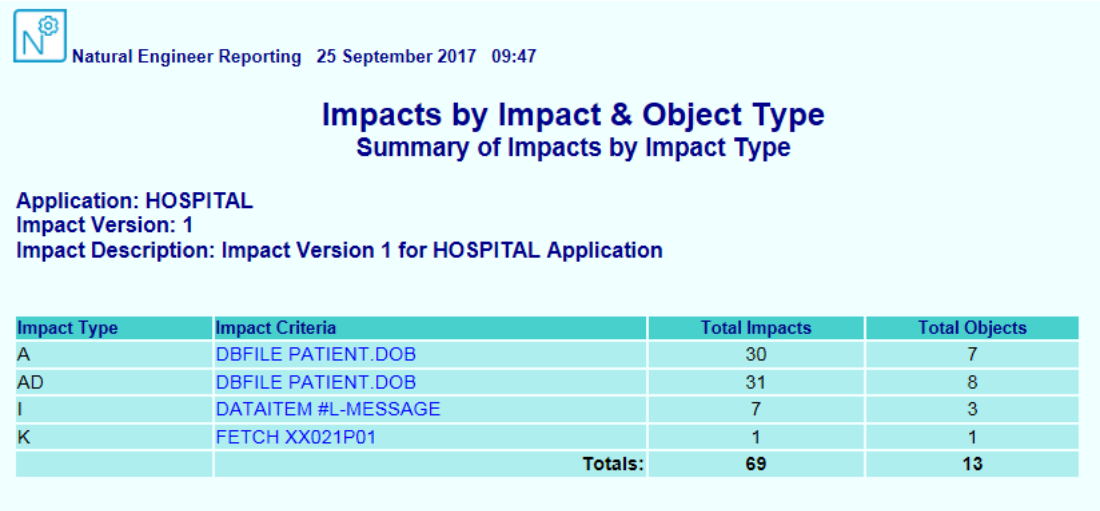
Object Type	Object Name	External Object Name	Impact Type	Impact Criteria	Line No.	Keyword	Impact Detail
DDM	PATIENT		A	DBFILE PATIENT.DOB	0090	DEFINE	DOB
Local Data Area	XX001L01		I	DATAITEM #L-MESSAGE	0003	DEFINE	#L-MESSAGE
	0003 1 #L-MESSAGE (A70) /* Message at bottom of Screen						
Local Data Area	XX021L01		AD	DBFILE PATIENT.DOB	0002	DEFINE	PATIENT
	0002 1 PATIENT VIEW OF PATIENT						
Local Data Area	XX021L01		A	DBFILE PATIENT.DOB	0009	DEFINE	PATIENT.DOB
	0009 2 DOB (N6.0)						

Figure 3-5-7 Impacts by Impact & Object Type Report - Detail of Impacts by Object Type

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Object Type	The type of object, for example Map, Program, Local Data Area.
Object Name	The name of the object.
External Object Name	The name of the external data area object used to define the data item used by the object.
Impact Type	The type of the Impact identified.
Impact Criteria	The details of the search criterion that resulted in the Impact being made.
Line No.	The statement line number.
Keyword	The name of the Keyword.
Impact Detail	Any supplementary Impact detail.
Source Code	The impacted source code lines are listed immediately after each row of object Impact details, starting in the Object Name column.

4. Summary of Impacts by Impact Type

The following Figure 3-5-8 illustrates the Impacts by Impact & Object Types Report - Summary of Impacts by Impact Type.



Natural Engineer Reporting 25 September 2017 09:47

Impacts by Impact & Object Type
Summary of Impacts by Impact Type

Application: HOSPITAL
Impact Version: 1
Impact Description: Impact Version 1 for HOSPITAL Application

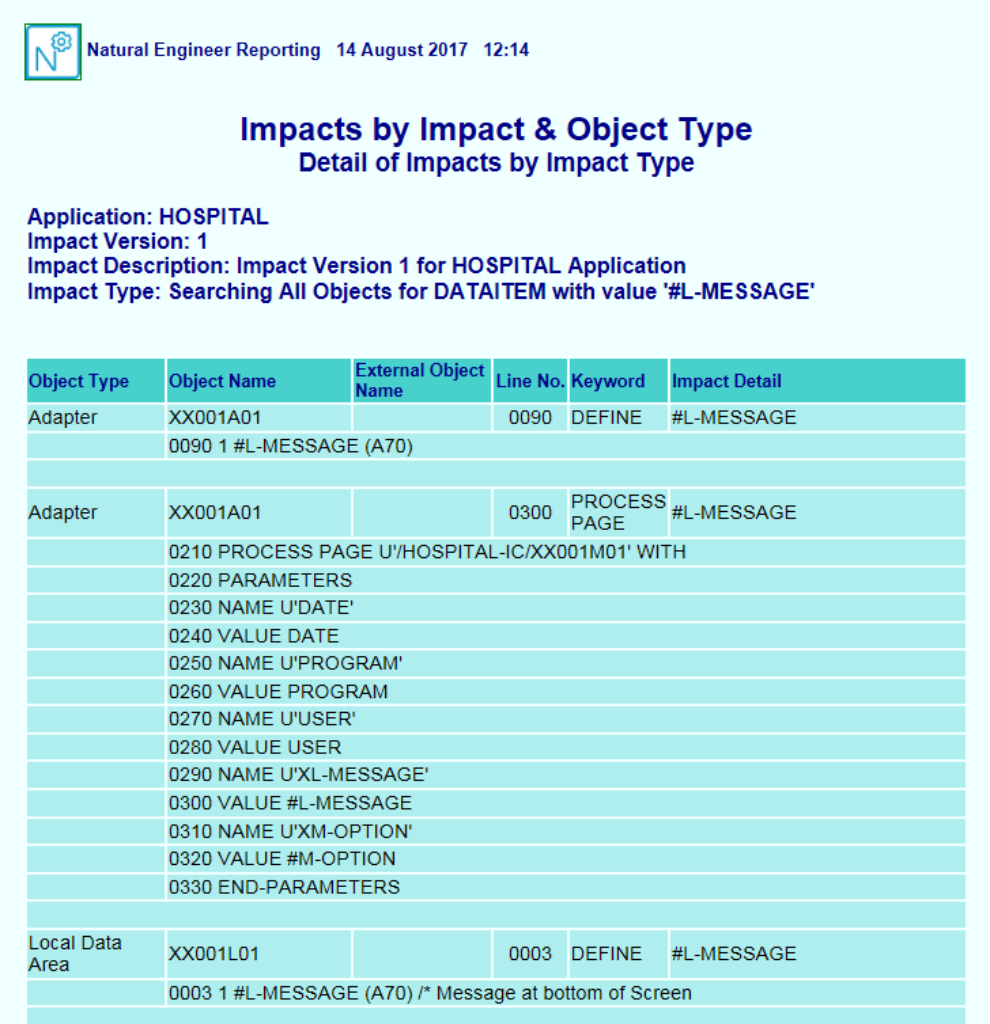
Impact Type	Impact Criteria	Total Impacts	Total Objects
A	DBFILE PATIENT.DOB	30	7
AD	DBFILE PATIENT.DOB	31	8
I	DATAITEM #L-MESSAGE	7	3
K	FETCH XX021P01	1	1
	Totals:	**69**	**13**

Figure 3-5-8 Impacts by Impact & Object Type Report - Summary of Impacts by Impact Type

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Impact Type	The type of the Impact identified.
Impact Criteria	The details of the search criterion that resulted in the Impact being made.
Total Impacts	The number of executable statement code lines impacted by the search criterion.
Total Objects	The number of objects impacted by the search criterion.

5. Detail of Impacts by Impact Type

The following Figure 3-5-9 illustrates the Impacts by Impact & Object Types Report - Detail of Impacts by Impact Type.



Natural Engineer Reporting 14 August 2017 12:14

Impacts by Impact & Object Type
Detail of Impacts by Impact Type

Application: HOSPITAL
Impact Version: 1
Impact Description: Impact Version 1 for HOSPITAL Application
Impact Type: Searching All Objects for DATAITEM with value '#L-MESSAGE'

Object Type	Object Name	External Object Name	Line No.	Keyword	Impact Detail
Adapter	XX001A01		0090	DEFINE	#L-MESSAGE
	0090 1 #L-MESSAGE (A70)				
Adapter	XX001A01		0300	PROCESS PAGE	#L-MESSAGE
	0210 PROCESS PAGE U'/HOSPITAL-IC/XX001M01' WITH				
	0220 PARAMETERS				
	0230 NAME U'DATE'				
	0240 VALUE DATE				
	0250 NAME U'PROGRAM'				
	0260 VALUE PROGRAM				
	0270 NAME U'USER'				
	0280 VALUE USER				
	0290 NAME U'XL-MESSAGE'				
	0300 VALUE #L-MESSAGE				
	0310 NAME U'XM-OPTION'				
	0320 VALUE #M-OPTION				
	0330 END-PARAMETERS				
Local Data Area	XX001L01		0003	DEFINE	#L-MESSAGE
	0003 1 #L-MESSAGE (A70) /* Message at bottom of Screen				

Figure 3-5-9 Impacts by Impact & Object Type Report - Detail of Impacts by Impact Type

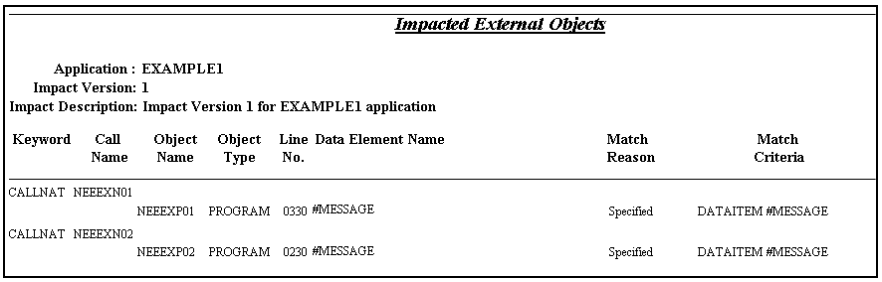
REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Impact Type	The details of the search criterion that resulted in the Impact being made and the Impact Type identiied.
Object Type	The type of object, for example Map, Program, Local Data Area.
Object Name	The name of the object.
External Object Name	The name of the external data area object used to define the data item used by the object.
Line No.	The statement line number.
Keyword	The name of the Keyword.
Impact Detail	Any supplementary Impact detail.
Source Code	The impacted source code lines are listed immediately after each row of object Impact details, starting in the Object Name column.

Impacted External Objects

This report identifies any external objects that have impacted code passed to them. This report can be used to identify which external routines are impacted. The owner of the external routine can determine if there is a replacement module, or whether a change to the impacted routine is required.

Any missing Natural object in the Natural Engineer Repository is classed as external to the application, and if impacted will appear on this report.

The following Figure 3-5-10 illustrates the Impacted External Objects Report.



Impacted External Objects

Application : EXAMPLE1
Impact Version: 1
Impact Description: Impact Version 1 for EXAMPLE1 application

Keyword	Call Name	Object Name	Object Type	Line No.	Data Element Name	Match Reason	Match Criteria
CALLNAT	NEEEXN01						
		NEEEXP01	PROGRAM	0330	#MESSAGE	Specified	DATAITEM #MESSAGE
CALLNAT	NEEEXN02						
		NEEEXP02	PROGRAM	0230	#MESSAGE	Specified	DATAITEM #MESSAGE

Figure 3-5-10 Impacted External Objects Report

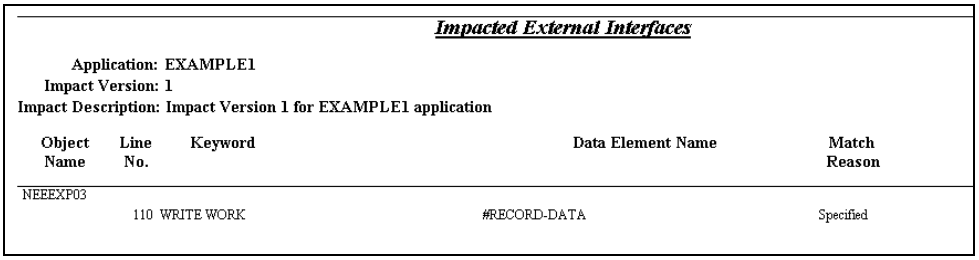
REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Keyword	The keyword used to reference the external object, for example CALLNAT.
Call Name	The name of the object referenced by the call.
Object Name	The name of the object.
Object Type	The type of object, for example Map, Program, Local Data Area.
Line No.	The statement line number.
Data Element Name	The name of the data item. If the data item is part of a group or logical view, then the data item name will be prefixed by the group or view name.

REPORT ITEM	DESCRIPTION
Match Reason	The reason for the Impact.
Match Criteria	The actual match made, either by a search criterion or another data item. For data areas and DDMs, the programming object is identified if an impact was found in it.

Impacted External Interfaces

This report identifies any access to work files with data items that have been impacted. This report can be used to identify which work files are actually used by another application.

The following Figure 3-5-11 illustrates the Impacted External Interfaces Report.



Impacted External Interfaces

Application: EXAMPLE1
Impact Version: 1
Impact Description: Impact Version 1 for EXAMPLE1 application

Object Name	Line No.	Keyword	Data Element Name	Match Reason
NEEEXP03				
	110	WRITE WORK	#RECORD-DATA	Specified

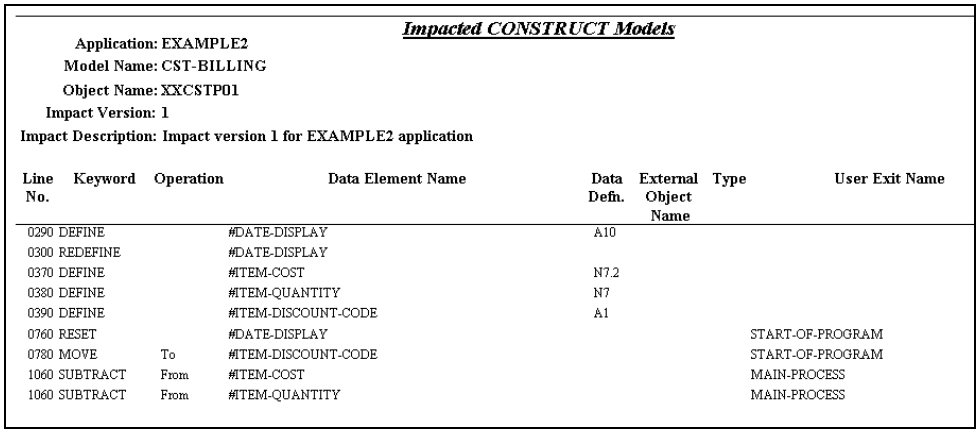
Figure 3-5-11 Impacted External Interfaces Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Object Name	The name of the object.
Line No.	The statement line number.
Keyword	The name of the keyword.
Data Element Name	The name of the data item. If the data item is part of a group or logical view, then the data item name will be prefixed by the group or view name.
Match Reason	The reason for the Impact.

Impacted Construct Models

This report identifies any Construct models that have impacted data items passed to them. The owner of the model can determine if there is a replacement module, or whether a change to the impacted model is required.

The following Figure 3-5-12 illustrates the Impacted Construct Models Report.



Impacted CONSTRUCT Models

Application: EXAMPLE2
Model Name: CST-BILLING
Object Name: XXCSTP01
Impact Version: 1
Impact Description: Impact version 1 for EXAMPLE2 application

Line No.	Keyword	Operation	Data Element Name	Data Defn.	External Object Name	Type	User Exit Name
0290	DEFINE		#DATE-DISPLAY	A10			
0300	REDEFINE		#DATE-DISPLAY				
0370	DEFINE		#ITEM-COST	N7.2			
0380	DEFINE		#ITEM-QUANTITY	N7			
0390	DEFINE		#ITEM-DISCOUNT-CODE	A1			
0760	RESET		#DATE-DISPLAY			START-OF-PROGRAM	
0780	MOVE	To	#ITEM-DISCOUNT-CODE			START-OF-PROGRAM	
1060	SUBTRACT	From	#ITEM-COST			MAIN-PROCESS	
1060	SUBTRACT	From	#ITEM-QUANTITY			MAIN-PROCESS	

Figure 3-5-12 Impacted Construct Models Report

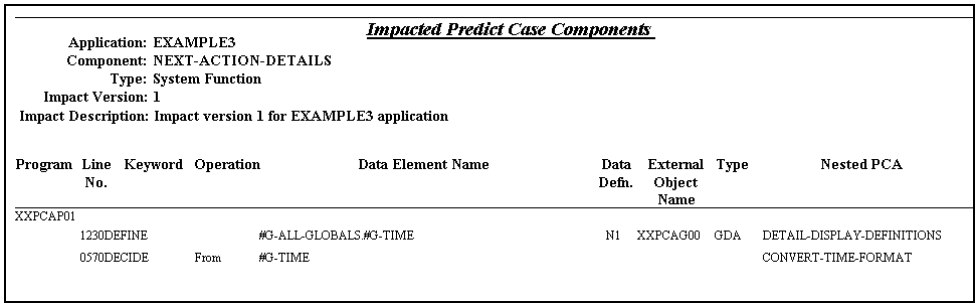
REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Model Name	The name of the Construct model.
Object Name	The name of the object.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Line No.	The statement line number.
Keyword	The name of the keyword.
Operation	The Natural Engineer defined relationship for the statement.

REPORT ITEM	DESCRIPTION
Data Element Name	The name of the data item. If the data item is part of a group or logical view, then the data item name will be prefixed by the group or view name.
Data Defn.	The format and length of the data item.
External Object Name	The name of the external data area object used to define the data item used by the object.
Type	The type of external object, for example GDA, LDA, PDA.
User Exit Name	The name of the Construct user exit, where applicable.

Impacted Predict Case Components

This report identifies any Predict Case Components that have impacted data items within them. The owner of the component can determine if there is a replacement module, or whether a change to the impacted component is required.

The following Figure 3-5-13 illustrates the Impacted Predict Case Components Report.



Impacted Predict Case Components

Application: EXAMPLE3
Component: NEXT-ACTION-DETAILS
Type: System Function
Impact Version: 1
Impact Description: Impact version 1 for EXAMPLE3 application

Program	Line No.	Keyword	Operation	Data Element Name	Data Defn.	External Object Name	Type	Nested PCA
XXPCAP01								
	1230	DEFINE		#G-ALL-GLOBALS.#G-TIME	N1	XXPCAG00	GDA	DETAIL-DISPLAY-DEFINITIONS
	0570	DECIDE	From	#G-TIME				CONVERT-TIME-FORMAT

Figure 3-5-13 Impacted Predict Case Components Report

REPORT ITEM	DESCRIPTION
Application	The name of the Application being processed.
Component	The name of the Predict Case Component.
Type	The type of Predict Case Component, for example System Function, Frame.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Program	The name of the object.
Line No.	The statement line number.
Keyword	The name of the keyword.
Operation	The Natural Engineer defined relationship for the statement.
Data Element Name	The name of the data item. If the data item is part of a group or logical view, then the data item name will be prefixed by the group or view name.
Data Defn.	The format and length of the data item.

REPORT ITEM	DESCRIPTION
External Object Name	The name of the external data area object used to define the data item used by the object.
Type	The type of external object, for example GDA, LDA, PDA.
Nested PCA	If the Predict Case Component is nested within another Predict Case Component then this field shows the name of the parent.

Impacted JCL Steps

This report identifies all the JCL Steps that reference, directly or indirectly, any objects or datasets that have been impacted for a selected impact version. The Impact details are presented in both summary and detail form, and are sorted by either the Objects or Datasets.

The report can be displayed using display options HTML, Spreadsheet, Screen or Word.

The HTML display option provides full interactive navigation via hyperlinks to review the report details.

The report is divided into three sub-sections providing the following Impact details:

1. Summary of Report Sections. (Only available for the display option: HTML.)
2. Impacted JCL Steps - by Impacted Objects.
3. Impacted JCL Steps - by Impacted Datasets.

Note: For the purpose of this documentation the HTML version of the report is used. All the main report sub-sections (2-3 above) are identical across all the display options.

.

1. Summary of Report Sections

Note: This report page is only available when selecting the display option: HTML.

The following Figure 3-5-14 illustrates the Impacted JCL Steps Report - Summary of Report Sections.

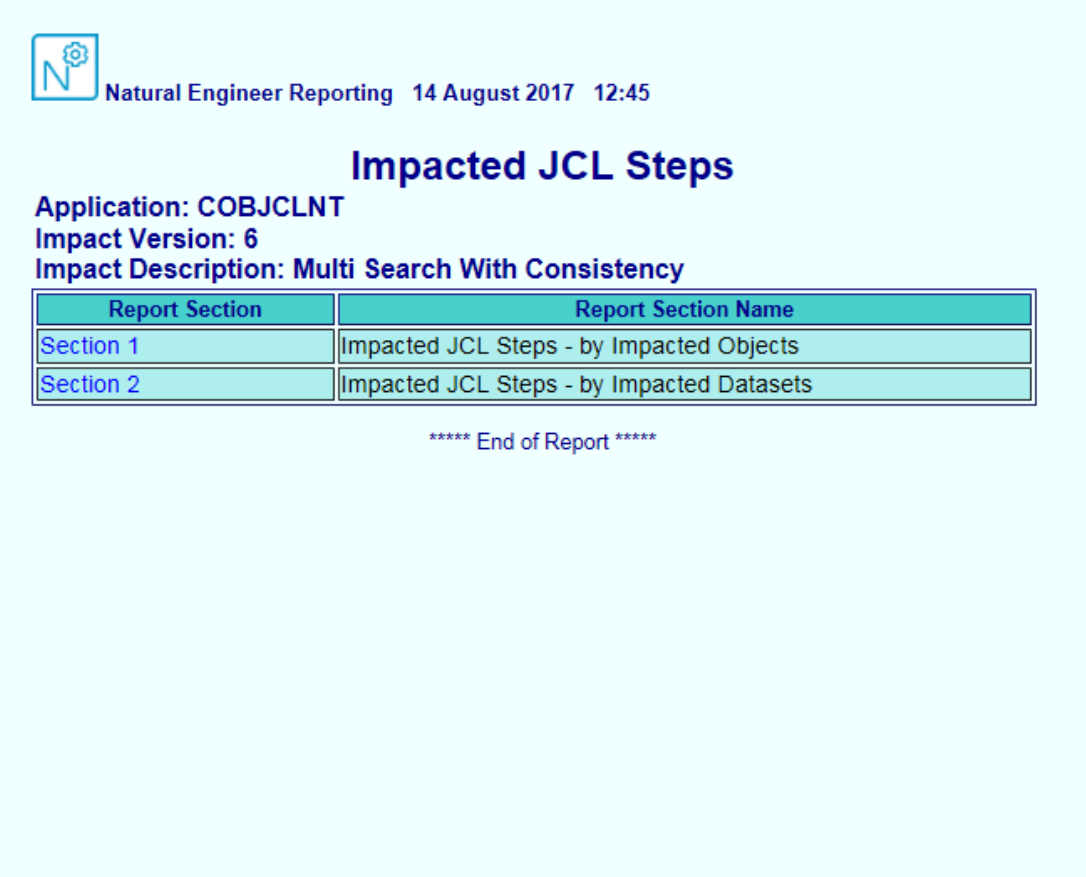


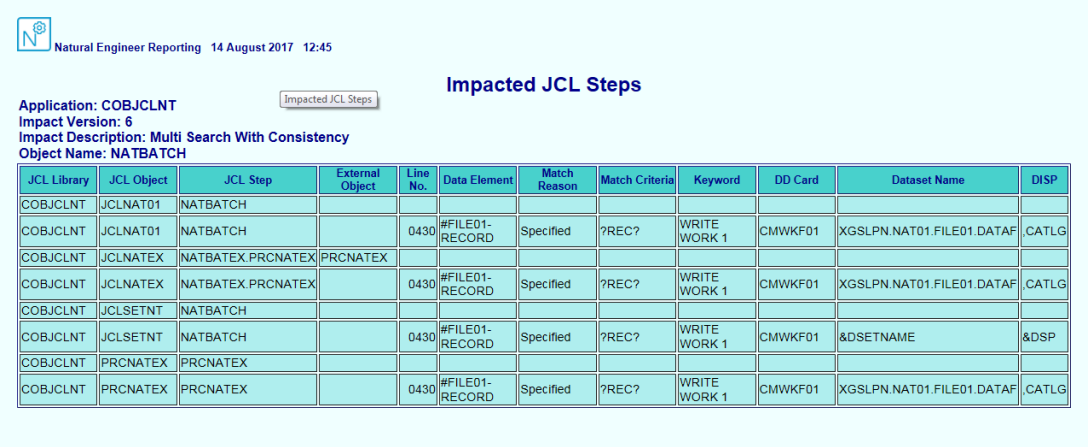
Figure 3-5-14 Impacted JCL Steps Report - Summary of Report Sections

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Report Section	The main report sections available. The section names are hyperlinked to the relevant report.
Report Section Name	The name of each report section. There are two report sections available: ▪ **Impacted JCL Steps – by Impacted Objects.** ▪ **Impacted JCL Steps – by Impacted Datasets.**

2. Impacted JCL Steps – by Impacted Objects

This shows all JCL steps that are impacted because of an impacted object used within that step. If the impacted data element is within a workfile related statement then additional information is shown.

The following Figure 3-5-15 illustrates the Impacted JCL Steps Report – by Impacted Objects.



Natural Engineer Reporting 14 August 2017 12:45

Impacted JCL Steps

Impacted JCL Steps

Application: COBJCLNT
Impact Version: 6
Impact Description: Multi Search With Consistency
Object Name: NATBATCH

JCL Library	JCL Object	JCL Step	External Object	Line No.	Data Element	Match Reason	Match Criteria	Keyword	DD Card	Dataset Name	DISP
COBJCLNT	JCLNAT01	NATBATCH									
COBJCLNT	JCLNAT01	NATBATCH		0430	#FILE01-RECORD	Specified	?REC?	WRITE WORK 1	CMWKF01	XGSLPN.NAT01.FILE01.DATAF	,CATLG
COBJCLNT	JCLNATEX	NATBATEX.PRCNATEX	PRCNATEX								
COBJCLNT	JCLNATEX	NATBATEX.PRCNATEX		0430	#FILE01-RECORD	Specified	?REC?	WRITE WORK 1	CMWKF01	XGSLPN.NAT01.FILE01.DATAF	,CATLG
COBJCLNT	JCLSETNT	NATBATCH									
COBJCLNT	JCLSETNT	NATBATCH		0430	#FILE01-RECORD	Specified	?REC?	WRITE WORK 1	CMWKF01	&DSETNAME	&DSP
COBJCLNT	PRCNATEX	PRCNATEX									
COBJCLNT	PRCNATEX	PRCNATEX		0430	#FILE01-RECORD	Specified	?REC?	WRITE WORK 1	CMWKF01	XGSLPN.NAT01.FILE01.DATAF	,CATLG

Figure 3-5-15 Impacted JCL Steps Report – by Impacted Objects

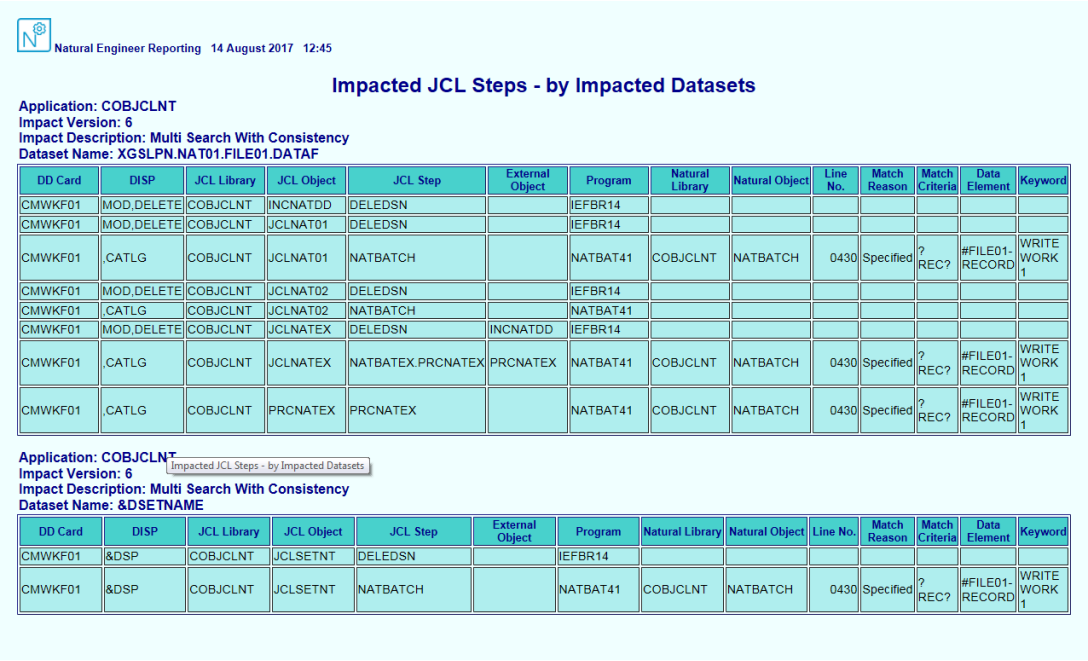
REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Object Name	The name of the object.
JCL Object	The name of the JCL Object.
JCL Library	The name of the library where the JCL Object resides.
JCL Step	The name of the JCL Step.
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.

REPORT ITEM	DESCRIPTION
The following items are only shown if the impact occurs within a workfile related access e.g., WRITE WORK FILE, READ WORK FILE, DISPLAY (n), WRITE (n) or PRINT (n).	
Line No.	The Line Number of the impacted item.
Data Element	The name of the data element impacted.
Match Reason	How an impact was identified.
Match Criteria	The actual match made, either by a search criterion or another data item.
Keyword	The name of the keyword associated with the impacted item.
DD Card	The DD Card name.
Dataset Name	The dataset name related to the impacted item.

3. Impacted JCL Steps – by Impacted Datasets

This shows all JCL steps in JCL Objects that have been impacted because a dataset has been identified as impacted.

The following Figure 3-5-16 illustrates the Impacted JCL Steps Report – by Impacted Datasets.



Natural Engineer Reporting 14 August 2017 12:45

Impacted JCL Steps - by Impacted Datasets

Application: COBJCLNT
Impact Version: 6
Impact Description: Multi Search With Consistency
Dataset Name: XGSLPN.NAT01.FILE01.DATAF

DD Card	DISP	JCL Library	JCL Object	JCL Step	External Object	Program	Natural Library	Natural Object	Line No.	Match Reason	Match Criteria	Data Element	Keyword
CMWKF01	MOD,DELETE	COBJCLNT	INCNATDD	DELEDSN		IEFBR14							
CMWKF01	MOD,DELETE	COBJCLNT	JCLNAT01	DELEDSN		IEFBR14							
CMWKF01	,CATLG	COBJCLNT	JCLNAT01	NATBATCH		NATBAT41	COBJCLNT	NATBATCH	0430	Specified	? REC?	#FILE01-RECORD	WRITE WORK 1
CMWKF01	MOD,DELETE	COBJCLNT	JCLNAT02	DELEDSN		IEFBR14							
CMWKF01	,CATLG	COBJCLNT	JCLNAT02	NATBATCH		NATBAT41							
CMWKF01	MOD,DELETE	COBJCLNT	JCLNATEX	DELEDSN	INCNATDD	IEFBR14							
CMWKF01	,CATLG	COBJCLNT	JCLNATEX	NATBATEX.PRCNATEX	PRCNATEX	NATBAT41	COBJCLNT	NATBATCH	0430	Specified	? REC?	#FILE01-RECORD	WRITE WORK 1
CMWKF01	,CATLG	COBJCLNT	PRCNATEX	PRCNATEX		NATBAT41	COBJCLNT	NATBATCH	0430	Specified	? REC?	#FILE01-RECORD	WRITE WORK 1

Application: COBJCLNT
Impacted JCL Steps - by Impacted Datasets
Impact Version: 6
Impact Description: Multi Search With Consistency
Dataset Name: &DSETNAME

DD Card	DISP	JCL Library	JCL Object	JCL Step	External Object	Program	Natural Library	Natural Object	Line No.	Match Reason	Match Criteria	Data Element	Keyword
CMWKF01	&DSP	COBJCLNT	JCLSETNT	DELEDSN		IEFBR14							
CMWKF01	&DSP	COBJCLNT	JCLSETNT	NATBATCH		NATBAT41	COBJCLNT	NATBATCH	0430	Specified	? REC?	#FILE01-RECORD	WRITE WORK 1

Figure 3-5-16 Impacted JCL Steps Report – by Impacted Datasets

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Dataset Name	The name of the dataset.
DD Card	The DD Card name

REPORT ITEM	DESCRIPTION
JCL Library	The name of the library where the JCL Object resides.
JCL Object	The name of the JCL Object.
JCL Step	The name of the JCL Step.
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.
Program	The name of the program being invoked within the JCL step.
Natural Library	The name of the Natural Library where the Natural Object resides.
Natural Object	The name of the Natural Object.
Line No.	The Line Number of the impacted item.
Match Reason	How an impact was identified.
Match Criteria	The actual match made, either by a search criterion or another data item.
Data Element	The name of the data element impacted.
Keyword	The name of the keyword associated with the impacted item.

Data Item Impact Inventory

This report identifies all data elements impacted for each object, together with the reason the impact occurred. From this list you can trace impact back to the specified Search Criteria.

You can also verify that there are no missing objects, including DDMs before Impact Analysis is executed. If there are missing objects, use the Object Impact Detail (by Name) Report to see all elements impacted.

The following Figure 3-5-17 illustrates the Data Item Impact Inventory Report.

Data Item Impact Inventory

Application: HOSPITAL
Object Name: #G-MESSAGE
Object Type: Program
Impact Version: 1
Impact Description: Impact Version 1 for Hospital Application

Line No.	Keyword	Data Element Name	Data Defn.	Array Bounds	External Object Name	Type	Match Reason	Match Criteria
0003	DEFINE	#G-MESSAGE	A70		XX000G00	GDA	Specified	DATAITEM #G-MESSAGE
0350	RESET	#G-MESSAGE					Specified	DATAITEM #G-MESSAGE
0450	MOVE	#G-MESSAGE					Specified	DATAITEM #G-MESSAGE
0490	MOVE	#G-MESSAGE					Specified	DATAITEM #G-MESSAGE
0630	MOVE	#G-MESSAGE					Specified	DATAITEM #G-MESSAGE
1040	MOVE	#G-MESSAGE					Specified	DATAITEM #G-MESSAGE
1110	MOVE	#G-MESSAGE					Specified	DATAITEM #G-MESSAGE

Figure 3-5-17 Data Item Impact Inventory Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Object Name	The name of the object.
Object Type	The type of object, for example Map, Program, Local Data Area.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Line No.	The statement line number.

REPORT ITEM	DESCRIPTION
Keyword	The name of the Keyword.
Data Element Name	The name of the data item. If the data item is part of a group or logical view, then the data item name will be prefixed by the group or view name.
Data Defn.	The format and length of the data item.
Array Bounds	The number of occurrences of the data item if it has been defined as an array.
External Object Name	The name of the external data area object used to define the data item used by the object.
Type	The type of external object, for example GDA, LDA, PDA.
Match Reason	How an impact was identified.
Match Criteria	The actual match made, either by a search criterion or another data item. For data areas and DDMs, the programming object is identified if an impact was found in it.

Impacted Steplib Inventory

This report identifies all the impacted items for each object within an application for a selected Impact version, impacted items for the same objects in steplib applications and impacted items where an object is being used in other applications.

From this report you can trace impact back to the specified Search Criteria, and also identify other impacted applications.

The report is organized into three categories for each impacted object:

1. Impacted items for the currently selected Impact version.
2. Steplib impacts for all Impact versions for each steplib application referenced by the current application.
3. Cross reference impacts for all Impact versions for the current application.

This report can be viewed in one of two ways:

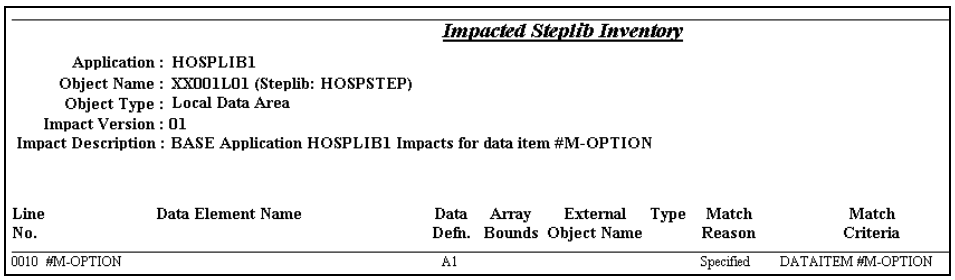
1. From the steplib application.

The report will show all the impacts for each of the objects within the steplib application first, followed by the any impacts in the referencing applications.

2. From an application that references a steplib application.

The report will show all the impacts for each object for the selected application and impact version, followed by impacts for the steplib objects referenced by the application, followed by impacts for each application (for all impact versions) referencing the steplib application.

The following Figure 3-5-18 illustrates the Impacted Steplib Inventory report for currently selected Impact version.



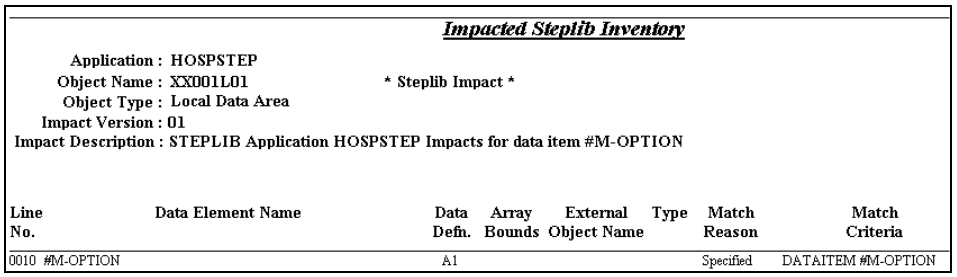
Impacted Steplib Inventory

Application : HOSPLIB1
Object Name : XX001L01 (Steplib: HOSPSTEP)
Object Type : Local Data Area
Impact Version : 01
Impact Description : BASE Application HOSPLIB1 Impacts for data item #M-OPTION

Line No.	Data Element Name	Data Defn.	Array Bounds	External Object Name	Type	Match Reason	Match Criteria
0010	#M-OPTION	A1				Specified	DATAITEM #M-OPTION

Figure 3-5-18 Impacted Steplib Inventory report for currently selected Impact version

The following Figure 3-5-19 illustrates the Impacted Steplib Inventory report for steplib impacts.



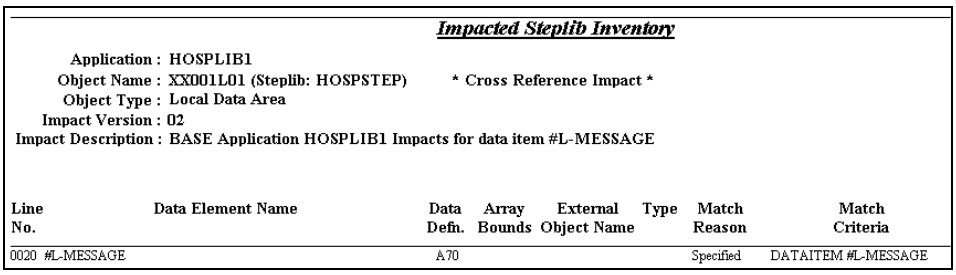
Impacted Steplib Inventory

Application : HOSPSTEP
Object Name : XX001L01 * Steplib Impact *
Object Type : Local Data Area
Impact Version : 01
Impact Description : STEPLIB Application HOSPSTEP Impacts for data item #M-OPTION

Line No.	Data Element Name	Data Defn.	Array Bounds	External Object Name	Type	Match Reason	Match Criteria
0010	#M-OPTION	A1				Specified	DATAITEM #M-OPTION

Figure 3-5-19 Impacted Steplib Inventory report for steplib impacts

The following Figure 3-5-20 illustrates the Impacted Steplib Inventory report for cross reference impacts.



Impacted Steplib Inventory

Application : HOSPLIB1
Object Name : XX001L01 (Steplib: HOSPSTEP) * Cross Reference Impact *
Object Type : Local Data Area
Impact Version : 02
Impact Description : BASE Application HOSPLIB1 Impacts for data item #L-MESSAGE

Line No.	Data Element Name	Data Defn.	Array Bounds	External Object Name	Type	Match Reason	Match Criteria
0020	#L-MESSAGE	A70				Specified	DATAITEM #L-MESSAGE

Figure 3-5-20 Impacted Steplib Inventory report for cross reference impacts

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Object Name	The name of the object. If the object is from a steplib, then the steplib library name will be shown as '(Steplib: xxxxxxxx)', where xxxxxxxx is the steplib library name. If the object is impacted due to an Impact version of a steplib application then the text '* Steplib Impact *' will be shown. If the object is impacted due to an Impact version of another application then the text '* Cross Reference Impact *' will be shown.
Object Type	The type of object, for example Map, Program, Local Data Area.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Line No.	The statement line number.
Data Element Name	The name of the data item. If the data item is part of a group or logical view, then the data item name will be prefixed by the group or view name.
Data Defn.	The format and length of the data item.
Array Bounds	The number of occurrences of the data item if it has been defined as an array.
External Object Name	The name of the external data area object used to define the data item used by the object.

REPORT ITEM	DESCRIPTION
Type	The type of external object, for example GDA, LDA, PDA.
Match Reason	How an impact was identified.
Match Criteria	The actual match made, either by a search criterion or another data item. For data areas and DDMs, the programming object is identified if an impact was found in it.

Data Item Impact Usage Inventory

This report identifies all data elements impacted for the application and then shows each object that the data element was impacted in.

From this list you can identify where the impacts for the field are across the application.

The following Figure 3-5-21 illustrates the Data Item Impact Usage Inventory Report.

Data Item Impact Usage Inventory

Application: HOSPITAL
Field Name: #G-MESSAGE
Impact Version: 1
Impact Description: Impact version 1 for HOSPITAL application

Object Name	Object Type	Line No.	Data Defn.	External Object Name	Type	Match Reason	Match Criteria
XX000G00	Global Data Area	0020	A70			Specified	DATAITEM #G-MESSAGE
XX001P01	Program	0020	A70	XX000G00	GDA	Specified	DATAITEM #G-MESSAGE
XX002P01	Program	0020	A70	XX000G00	GDA	Specified	DATAITEM #G-MESSAGE
XX021M01	Map	0170	A70			Specified	DATAITEM #G-MESSAGE
XX021M01	Map	0910				Specified	DATAITEM #G-MESSAGE
XX021P01	Program	0020	A70	XX000G00	GDA	Specified	DATAITEM #G-MESSAGE
XX021P01	Program	0960				Specified	DATAITEM #G-MESSAGE
XX021P01	Program	1320				Specified	DATAITEM #G-MESSAGE
XX021P01	Program	2200				Specified	DATAITEM #G-MESSAGE
XX021P01	Program	2210				Specified	DATAITEM #G-MESSAGE
XX022M01	Map	0170	A70			Specified	DATAITEM #G-MESSAGE
XX022M01	Map	0880				Specified	DATAITEM #G-MESSAGE
XX022P01	Program	0020	A70	XX000G00	GDA	Specified	DATAITEM #G-MESSAGE
XX022P01	Program	0230				Specified	DATAITEM #G-MESSAGE
XX022P01	Program	0340				Specified	DATAITEM #G-MESSAGE
XX022P01	Program	0430				Specified	DATAITEM #G-MESSAGE

Figure 3-5-21 Data Item Impact Usage Inventory Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Field Name	The name of the data item.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Object Name	The name of the object.

REPORT ITEM	DESCRIPTION
Object Type	The type of object, for example Map, Program, Local Data Area.
Line No.	The statement line number.
Data Defn.	The format and length of the data item.
External Object Name	The name of the external data area object used to define the data item used by the object.
Type	The type of external object, for example GDA, LDA, PDA.
Match Reason	How an impact was identified.
Match Criteria	The actual match made, either by a search criterion or another data item. For data areas and DDMs, the programming object is identified if an impact was found in it.

View Impacted Source Code

This report displays the application source code, with the impacted elements highlighted. To make use of this report, you need access to a Browser. A selection box allows you to select the object for display. The Browser options are shown below:

Mark Excluded Fields	Code excluded by the Search Criteria will be highlighted.
Show External Areas	External areas will be included in the object and highlighted.
Show External Copycode	Copycode will be included in the object and highlighted.
Show Impacts Only	Only impacted code will be displayed and not all object code.

For more information on the Browser options refer to section Object List Window for View Source Code in Chapter 1.

The following Figure 3-5-22 illustrates the View Impacted Source Code Report.

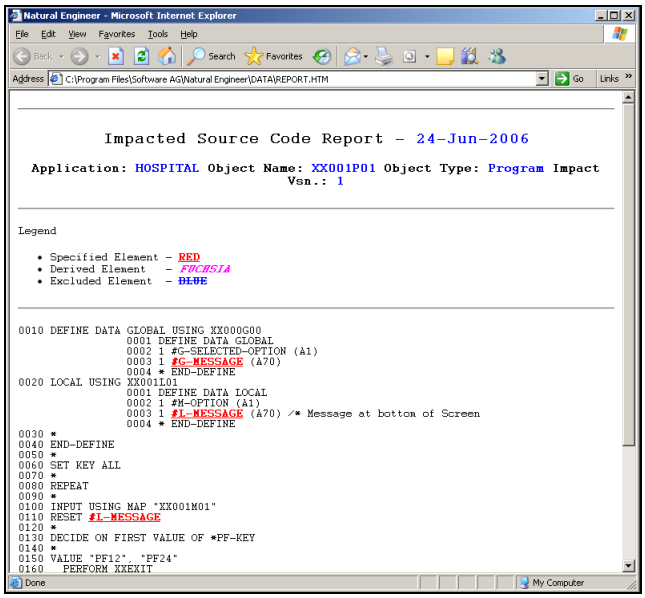


Figure 3-5-22 View Impacted Source Code Report

SCREEN ITEMS	DESCRIPTION
Date	Date report was generated.
Application	The name of the application being processed.
Object Name	The name of the object.
Object Type	The type of object, for example Map, Program, Local Data Area.
Impact Vsn.	The Impact version selected.
Legend	Identifies the color coding for the highlighting of the impacted code: - Specified element. - Derived element. - Excluded element.
Source Code Listing	Source Code is listed with the impacted items highlighted as per the colors specified in the legend.

Modification Reports

The Modification Reports provide various levels of information for reviewing and processing the identified impacts and modifications, before and after Modification execution. Reports are available at the summary, object and detailed data item levels.

You can view this information in any one of several reporting display modes:

- In a Browser.
- In textual format using either the Natural screen, a spreadsheet e.g., Microsoft Excel or OpenOffice Calc, Microsoft Word, Adobe PDF or HTML.

Note: For more information on the different Reporting Display Modes refer to Chapter 1 of this manual.

The Modification Reports can be accessed using the following menu navigation: Modification➔Modification Reports.

The following table summarizes the Modification Reports:

REPORT ID	REPORT NAME	DESCRIPTION
	Bulk Report Generator	This allows you to select reports to be executed at the same time. You can use this option to produce all reports for viewing later.
REMAIS	**Application Modification Summary**	Provides a high-level view of the modification for the application, by object type.
REMOIS	**Object Modification Summary**	Identifies the potential modification on the objects by object type.
REMCTS	**Category / Type Summary**	Shows a breakdown of the types of changes required for the application and how they can be made.
REMPRD	**PREDICT Changes**	Identifies changes required to each DDM.
REMDII	**Data Item Inventory Modification**	Identifies data elements for modification, by object, used in the application.
REMDIA	**Data Item Inventory for Automatic Modification**	Identifies data elements for modification, by object, used in the application, which can be executed automatically.

REPORT ID	REPORT NAME	DESCRIPTION
REMDIM	**Data Item Inventory for Manual Modification**	Identifies data elements for modification, by object, used in the application which must be executed manually.
REMCPY	**Impacted Objects Not Directly Modified**	Identifies objects that are impacted but not directly modified. These must be copied to the Modification library and re-STOWed.
REMCMO	**Construct Models Not Directly Modified**	Identifies if any Construct models have been impacted by other Items and require manual Modification.
REMDDR	**Database Data Requirements Modification**	Identifies DDM and fields impacted in modified objects.
	Preview Modified Code	Display the modified object code using the Browser. The whole object source code will be displayed with the modified code highlighted.

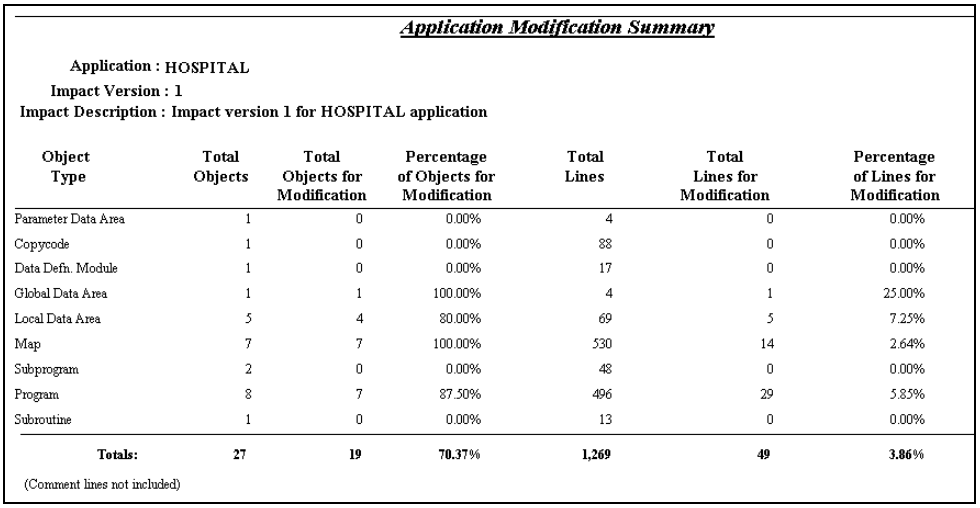
The table shows the report ids for each report. These are used within the REPORTER section of the NATENG.INI file to set the default report display mode for each report.

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

Application Modification Summary

This report provides summary information for object types that are to be modified.

The following Figure 3-6-1 illustrates the Application Modification Summary Report.



Application Modifıcation Summary

Application : HOSPITAL
Impact Version : 1
Impact Description : Impact version 1 for HOSPITAL application

Object Type	Total Objects	Total Objects for Modification	Percentage of Objects for Modification	Total Lines	Total Lines for Modification	Percentage of Lines for Modification
Parameter Data Area	1	0	0.00%	4	0	0.00%
Copycode	1	0	0.00%	88	0	0.00%
Data Defn. Module	1	0	0.00%	17	0	0.00%
Global Data Area	1	1	100.00%	4	1	25.00%
Local Data Area	5	4	80.00%	69	5	7.25%
Map	7	7	100.00%	530	14	2.64%
Subprogram	2	0	0.00%	48	0	0.00%
Program	8	7	87.50%	496	29	5.85%
Subroutine	1	0	0.00%	13	0	0.00%
Totals:	**27**	**19**	**70.37%**	**1,269**	**49**	**3.86%**

(Comment lines not included)

Figure 3-6-1 Application Modification Summary Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Object Type	The type of object, for example Map, Program, Local Data Area.
Total Objects	The number of objects for each object type.
Total Objects for Modification	The number of objects impacted for the selected Impact version with Modification criteria.
Percentage of Objects for Modification	Total Objects for Modification / Total Objects * 100.
Total Lines	The number of executable statement code lines for each object type.

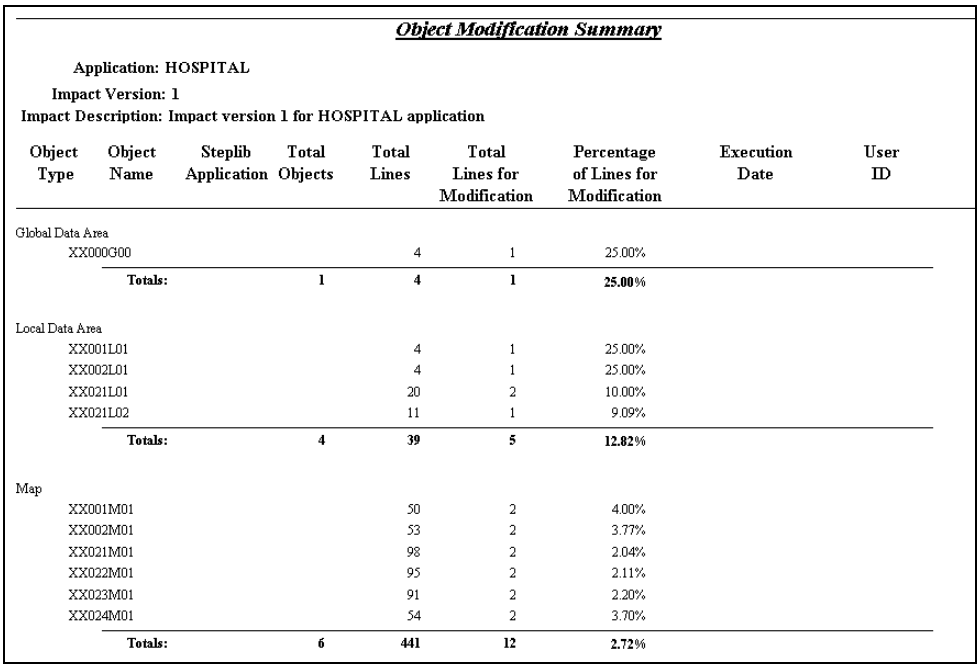
REPORT ITEM	DESCRIPTION
Total Lines for Modification	The number of executable statement code lines impacted by the selected Impact version with Modification criteria.
Percentage of Lines for Modification	Total Lines for Modification / Total Lines * 100

Note: The number of modified objects can be different from the number of impacted objects, if an impacted object has no changes required in it. Comment lines are NOT included in line counts.

Object Modification Summary

This report shows the same type of information as the Application Modification Summary report, but at the object level.

The following Figure 3-6-2 illustrates the Object Modification Summary Report.



Object Modification Summary

Application: HOSPITAL
Impact Version: 1
Impact Description: Impact version 1 for HOSPITAL application

Object Type	Object Name	Steplib Application	Total Objects	Total Lines	Total Lines for Modification	Percentage of Lines for Modification	Execution Date	User ID
Global Data Area								
	XX000G00			4	1	25.00%		
	Totals:		**1**	**4**	**1**	**25.00%**		
Local Data Area								
	XX001L01			4	1	25.00%		
	XX002L01			4	1	25.00%		
	XX021L01			20	2	10.00%		
	XX021L02			11	1	9.09%		
	Totals:		**4**	**39**	**5**	**12.82%**		
Map								
	XX001M01			50	2	4.00%		
	XX002M01			53	2	3.77%		
	XX021M01			98	2	2.04%		
	XX022M01			95	2	2.11%		
	XX023M01			91	2	2.20%		
	XX024M01			54	2	3.70%		
	Totals:		**6**	**441**	**12**	**2.72%**		

Figure 3-6-2 Object Modification Summary Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Object Type	The type of object, for example Map, Program, Local Data Area.
Object Name	The name of the object.

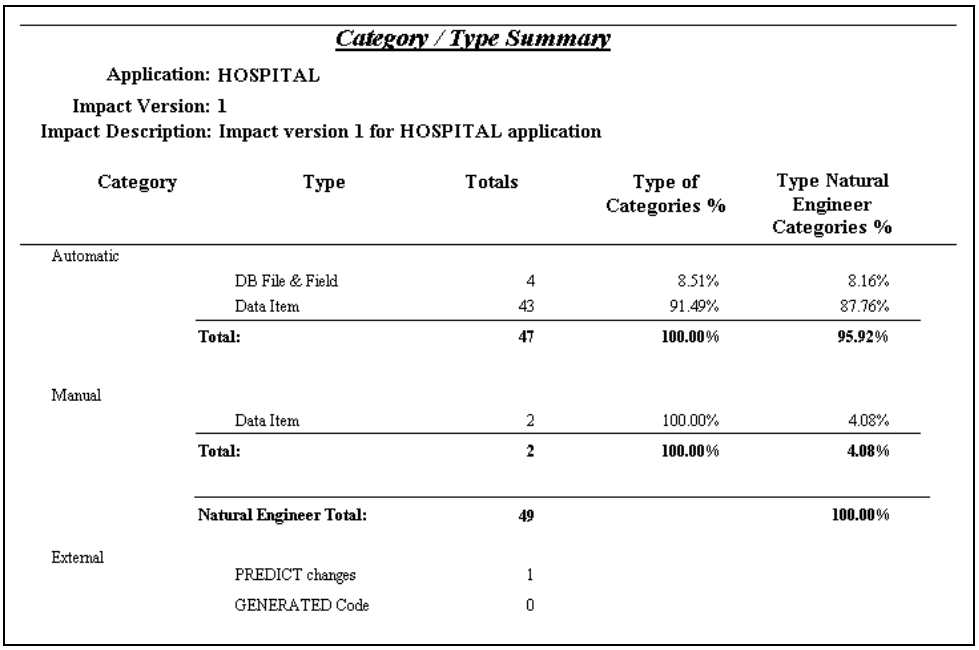
REPORT ITEM	DESCRIPTION
Steplib Application	The name of the application if the object is from a Steplib library.
Total Objects	The number of objects for each object type.
Total Lines	The number of executable statement code lines for each object type.
Total Lines for Modification	The number of executable statement code lines impacted by the selected Impact version with Modification criteria.
Percentage of Lines for Modification	Total Lines for Modification / Total Lines * 100
Execution Date	The date when the Modification changes were applied.
User ID	The User-Id of the person who applied the Modification changes.

Note: The number of modified objects can be different from the number of impacted objects, if an impacted object has no changes required in it. Comment lines are NOT included in line counts.

Category / Type Summary

This report shows the number of changes for each Modification category and type identified by Natural Engineer.

The following Figure 3-6-3 illustrates the Category / Type Summary Report.



Category / Type Summary

Application: HOSPITAL
Impact Version: 1
Impact Description: Impact version 1 for HOSPITAL application

Category	Type	Totals	Type of Categories %	Type Natural Engineer Categories %
Automatic				
	DB File & Field	4	8.51%	8.16%
	Data Item	43	91.49%	87.76%
	Total:	**47**	**100.00%**	**95.92%**
Manual				
	Data Item	2	100.00%	4.08%
	Total:	**2**	**100.00%**	**4.08%**
	Natural Engineer Total:	**49**		**100.00%**
External				
	PREDICT changes	1		
	GENERATED Code	0		

Figure 3-6-3 Category / Type Summary Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Category	The Modification category, for example Automatic, Manual.
Type	The name of the Impact Type associated with the Modification change, for example Data Item, DB File & Field.

REPORT ITEM	DESCRIPTION
Totals	The total number of Modification changes for each Impact Type.
Type of Categories %	The total number of Modification changes for each Impact Type / the total number of Modification changes for each Category * 100.
Type Natural Engineer Categories %	The percentage of each type within each category.
PREDICT Changes	Number of Predict Modification changes required. This applies to any DDM objects.
GENERATED Code	The number of Modification changes required within Generated Code. This applies to any code generated using CONSTRUCT or Predict Case.

Predict Changes

The PREDICT Changes report shows any DDM modifications that are required for an application. The report will provide any DDM field name and/or DDM field format and length changes that have been identified for each DDM within an application.

Natural Engineer does not apply any automatic modifications to DDMs, the modifications need to be applied manually by your Database Administrator.

The following Figure 3-6-4 illustrates the Predict Changes Report.

PREDICT Changes

Application: HOSPITAL
DDM Name: PATIENT
Database Number: 1
File Number: 4
Impact Version: 1
Impact Description: Impact Version 1 for HOSPITAL application

ADABAS Short Name	Field Name	Format Length	New Field Name	New Format Length
AC	SURNAME	A20	LAST-NAME	
AD	DOB	N6		N8

Figure 3-6-4 Predict Changes Report

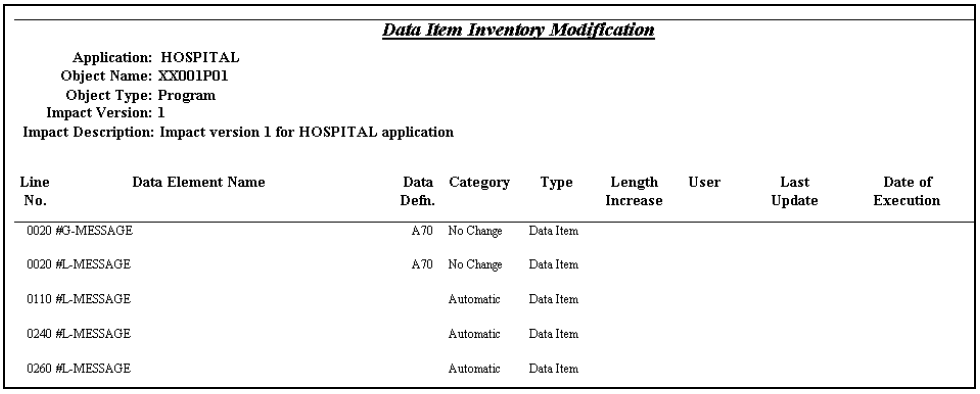
REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
DDM Name	The name of the DDM.
Database Number	The database number of the DDM.
File Number	The file number of the DDM.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
ADABAS Short Name	The Adabas Short Name for the DDM field.
Field Name	The name of the field within the DDM.

REPORT ITEM	DESCRIPTION
Format Length	The format and length of the DDM field.
New Field Name	The new DDM field name.
New Format Length	The new DDM field format and length.

Data Item Inventory Modification

This report identifies the Modification associated with each data element in each object. This is the complete list of changes that Natural Engineer will make or has identified to be required.

The following Figure 3-6-5 illustrates the Data Item Inventory Modification Report.



Data Item Inventory Modification

Application: HOSPITAL
Object Name: XX001P01
Object Type: Program
Impact Version: 1
Impact Description: Impact version 1 for HOSPITAL application

Line No.	Data Element Name	Data Defn.	Category	Type	Length Increase	User	Last Update	Date of Execution
0020	#G-MESSAGE	A70	No Change	Data Item				
0020	#L-MESSAGE	A70	No Change	Data Item				
0110	#L-MESSAGE		Automatic	Data Item				
0240	#L-MESSAGE		Automatic	Data Item				
0260	#L-MESSAGE		Automatic	Data Item				

Figure 3-6-5 Data Item Inventory Modification Report

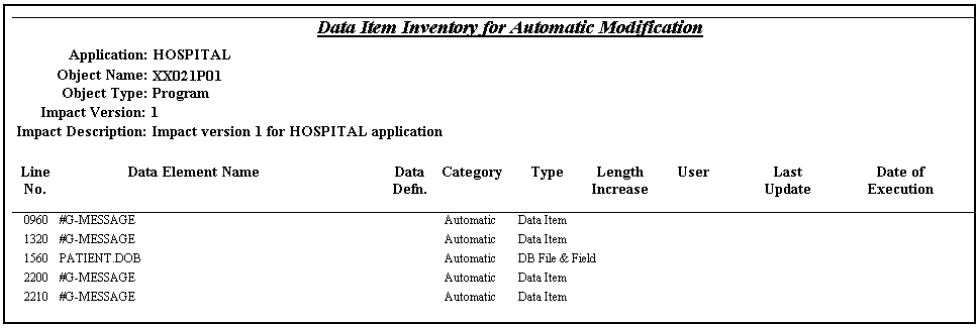
REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Object Name	The name of the object.
Object Type	The type of object, for example Map, Program, Local Data Area.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Line No.	The statement line number.
Data Element Name	The name of the data item. If the data item is part of a group or logical view, then the data item name will be prefixed by the group or view name.
Data Defn.	The format and length of the data item.
Category	The Modification category, for example Automatic, Manual.

REPORT ITEM	DESCRIPTION
Type	The name of the Impact Type associated with the Modification change, for example Data Item, DB File & Field.
Length Increase	The increase required to the length of the field.
User	The User-Id of the person who applied any changes to the Modify Details section from the Modification Element Maintenance screen, for example the Replace Value, Modification Category.
Last Update	The date when any changes were last applied to the Modify Details section from the Modification Element Maintenance screen, for example the Replace Value, Modification Category.
Date of Execution	The date when the Modification changes were applied.

Data Item Inventory for Automatic Modification

This report is similar to the Data Item Inventory Modification report but only includes Automatic changes, that is, changes that Natural Engineer will make.

The following Figure 3-6-6 illustrates the Data Item Inventory for Automatic Modification Report.



Data Item Inventory for Automatic Modification

Application: HOSPITAL
Object Name: XX021P01
Object Type: Program
Impact Version: 1
Impact Description: Impact version 1 for HOSPITAL application

Line No.	Data Element Name	Data Defn.	Category	Type	Length Increase	User	Last Update	Date of Execution
0960	#G-MESSAGE		Automatic	Data Item				
1320	#G-MESSAGE		Automatic	Data Item				
1560	PATIENT.DOB		Automatic	DB File & Field				
2200	#G-MESSAGE		Automatic	Data Item				
2210	#G-MESSAGE		Automatic	Data Item				

Figure 3-6-6 Data Item Inventory for Automatic Modification Report

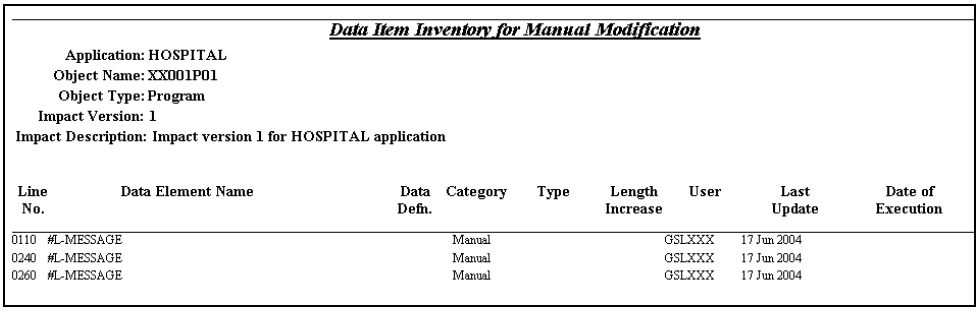
REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Object Name	The name of the object.
Object Type	The type of object, for example Map, Program, Local Data Area.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Line No.	The statement line number.
Data Element Name	The name of the data item. If the data item is part of a group or logical view, then the data item name will be prefixed by the group or view name.
Data Defn.	The format and length of the data item.
Category	The Modification category, for example Automatic, Manual.
Type	The name of the Impact Type associated with the Modification change, for example Data Item, DB File & Field.

REPORT ITEM	DESCRIPTION
Length Increase	The increase required to the length of the field.
User	The User-Id of the person who applied any changes to the Modify Details section from the Modification Element Maintenance screen, for example the Replace Value, Modification Category.
Last Update	The date when any changes were last applied to the Modify Details section from the Modification Element Maintenance screen, for example the Replace Value, Modification Category.
Date of Execution	The date when the Modification changes were applied.

Data Item Inventory for Manual Modification

This report is similar to the Data Item Inventory Modification report but only includes Manual changes, that is, changes that Natural Engineer will NOT make.

The following Figure 3-6-7 illustrates the Data Item Inventory for Manual Modification Report.



Data Item Inventory for Manual Modification

Application: HOSPITAL
Object Name: XX001P01
Object Type: Program
Impact Version: 1
Impact Description: Impact version 1 for HOSPITAL application

Line No.	Data Element Name	Data Defn.	Category	Type	Length Increase	User	Last Update	Date of Execution
0110	#L-MESSAGE		Manual			GSLXXX	17 Jun 2004	
0240	#L-MESSAGE		Manual			GSLXXX	17 Jun 2004	
0260	#L-MESSAGE		Manual			GSLXXX	17 Jun 2004	

Figure 3-6-7 Data Item Inventory for Manual Modification Report

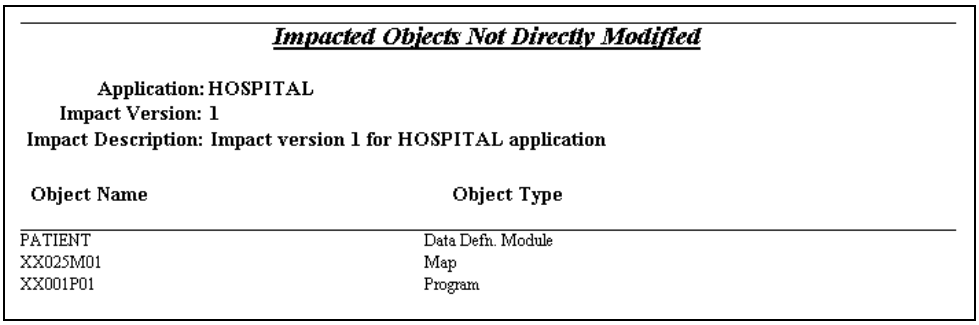
REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Object Name	The name of the object.
Object Type	The type of object, for example Map, Program, Local Data Area.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Line No.	The statement line number.
Data Element Name	The name of the data item. If the data item is part of a group or logical view, then the data item name will be prefixed by the group or view name.
Data Defn.	The format and length of the data item.
Category	The Modification category, for example Automatic, Manual.
Type	The name of the Impact Type associated with the Modification change, for example Data Item, DB File & Field.
Length Increase	The increase required to the length of the field.

REPORT ITEM	DESCRIPTION
User	The User-Id of the person who applied any changes to the Modify Details section from the Modification Element Maintenance screen, for example the Replace Value, Modification Category.
Last Update	The date when any changes were last applied to the Modify Details section from the Modification Element Maintenance screen, for example the Replace Value, Modification Category.
Date of Execution	The date when the Modification changes were applied.

Impacted Objects Not Directly Modified

This report identifies objects that were impacted, but not directly modified. You must copy these objects to the Modification library and re-STOW them.

The following Figure 3-6-8 illustrates the Impacted Objects Not Directly Modified Report.



Impacted Objects Not Directly Modified

Application: HOSPITAL
Impact Version: 1
Impact Description: Impact version 1 for HOSPITAL application

Object Name	Object Type
PATIENT	Data Defn. Module
XX025M01	Map
XX001P01	Program

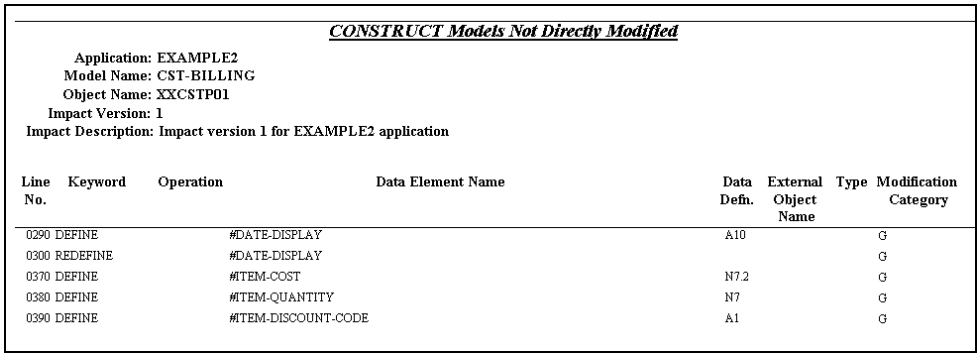
Figure 3-6-8 Impacted Objects Not Directly Modified Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Object Name	The name of the object.
Object Type	The type of object, for example Map, Program, Local Data Area.

Construct Models Not Directly Modified

This report identifies any Construct models that have data items to Modify passed to them. The owner of the model can determine if there is a replacement module, or whether a change to the impacted model is required.

The following Figure 3-6-9 illustrates the Construct Models Not Directly Modified Report.



CONSTRUCT Models Not Directly Modified

Application: EXAMPLE2
Model Name: CST-BILLING
Object Name: XXCSTP01
Impact Version: 1
Impact Description: Impact version 1 for EXAMPLE2 application

Line No.	Keyword	Operation	Data Element Name	Data Defn.	External Object Name	Type	Modification Category
0290	DEFINE		#DATE-DISPLAY	A10			G
0300	REDEFINE		#DATE-DISPLAY				G
0370	DEFINE		#ITEM-COST	N7.2			G
0380	DEFINE		#ITEM-QUANTITY	N7			G
0390	DEFINE		#ITEM-DISCOUNT-CODE	A1			G

Figure 3-6-9 Construct Models Not Directly Modified Report

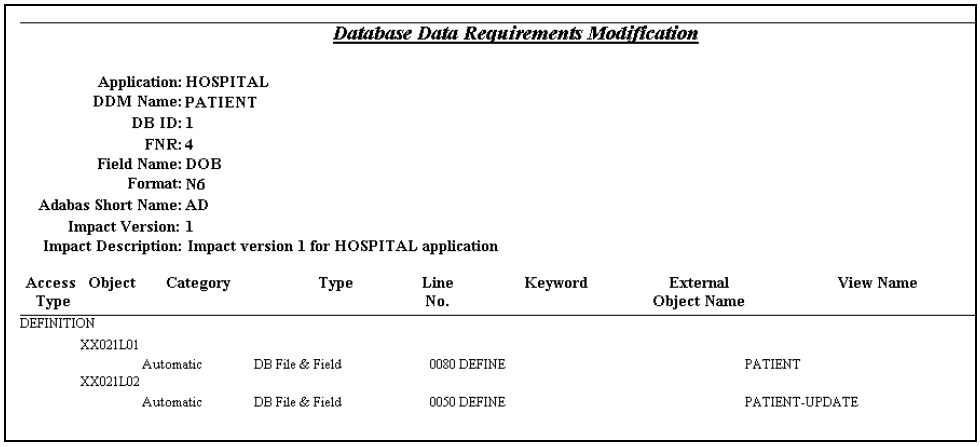
REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
Model Name	The name of the Construct model.
Object Name	The name of the object.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.
Line No.	The statement line number.
Keyword	The name of the keyword.
Operation	The Natural Engineer defined relationship for the statement.
Data Element Name	The name of the data item. If the data item is part of a group or logical view, then the data item name will be prefixed by the group or view name.
Data Defn.	The format and length of the data item.

REPORT ITEM	DESCRIPTION
External Object Name	The name of the external data area object used to define the data item used by the object.
Type	The type of external object, for example GDA, LDA, PDA.
Modification Category	The Modification category, for example Automatic, Manual.

Database Data Requirements Modification

Identifies the DDM and DDM fields that have been impacted and have Modification changes, to show the objects within an application that use logical views based on the DDM and DDM field.

The following Figure 3-6-10 illustrates the Database Data Requirements Modification Report.



Database Data Requirements Modifications

Application: HOSPITAL
DDM Name: PATIENT
DB ID: 1
FNR: 4
Field Name: DOB
Format: N6
Adabas Short Name: AD
Impact Version: 1
Impact Description: Impact version 1 for HOSPITAL application

Access Type	Object	Category	Type	Line No.	Keyword	External Object Name	View Name
DEFINITION							
	XX021L01						
		Automatic	DB File & Field	0080 DEFINE		PATIENT	
	XX021L02						
		Automatic	DB File & Field	0050 DEFINE		PATIENT-UPDATE	

Figure 3-6-10 Database Data Requirements Modification Report

REPORT ITEM	DESCRIPTION
Application	The name of the application being processed.
DDM Name	The name of the DDM used to access the database.
DBID	The database number of the DDM.
FNR	The file number of the DDM.
Field Name	The field name as defined in the DDM.
Format	The format and length of the field.
Adabas Short Name	The 2 character name used in the FDT.
Impact Version	The Impact version selected.
Impact Description	The Impact version description.

<table>
<tr><th>REPORT ITEM</th><th>DESCRIPTION</th></tr>
<tr><td>Access Type</td><td>Classifications of the type of access being reported. There are 7 access types available:
<table><tr><th>Type</th><th>Description</th></tr><tr><td>Definition</td><td>DDM field definitions within logical views.</td></tr><tr><td>Access</td><td>DDM field references for database access statements, for example READ or FIND.</td></tr><tr><td>Output</td><td>DDM field references for output statements, for example WRITE or DISPLAY.</td></tr><tr><td>Condition</td><td>DDM field references for conditional logic statements, for example IF, DECIDE, REJECT or ACCEPT.</td></tr><tr><td>Modification</td><td>DDM field references for database update statements, for example STORE, UPDATE or DELETE.</td></tr><tr><td>Transaction</td><td>End of logical transaction statements, for example END TRANSACTION.</td></tr><tr><td>Manipulation</td><td>DDM field references for data manipulation statements, for example MOVE, ASSIGN or EXAMINE.</td></tr></table></td></tr>
<tr><td>Object</td><td>The name of the object.</td></tr>
<tr><td>Category</td><td>The Modification category, for example Automatic, Manual.</td></tr>
<tr><td>Type</td><td>The name of the Impact Type associated with the Modification change, for example Data Item, DB File & Field.</td></tr>
<tr><td>Line No.</td><td>The statement line number.</td></tr>
<tr><td>Keyword</td><td>The Natural keyword being used to reference the database data, for example READ, FIND or STORE.
If any access key is being used, then the key used will also be shown.</td></tr>
<tr><td>External Object Name</td><td>The name of the external data area object used to define the logical view of the DDM used by the object.</td></tr>
<tr><td>View Name</td><td>The name of the View used to define the logical view of a DDM.</td></tr>
</table>

Preview Modified Code

This report displays the object source code, with the modified code highlighted. To make use of this report, you need access to a Browser.

The following Figure 3-6-11 illustrates the Preview Modified Code Report.

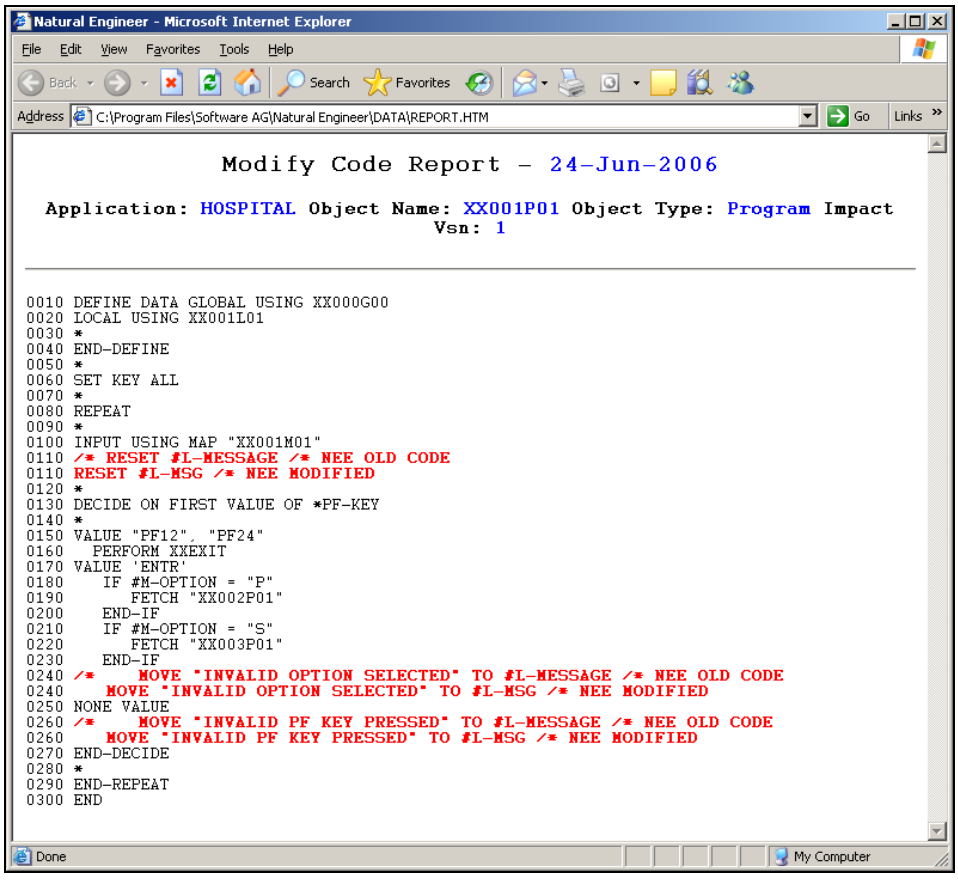


Figure 3-6-11 Preview Modified Code Report

SCREEN ITEMS	DESCRIPTION
Date	Date report was generated.
Application	The name of the application being processed.
Object Name	The name of the object.
Object Type	The type of object, for example Map, Program, Local Data Area.
Impact Vsn.	The Impact version selected.
Source Code Listing	Source Code is listed with the modified code highlighted.

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