

# Natural Engineer

## Installation Guide for Mainframes

Version 9.1

October 2018

## **Manual Order Number: NEE91-010ALL**

Copyright © 1997-2018, Generation Systems Ltd., East Grinstead, UK.

This document applies to Natural Engineer version 9.1 and to all subsequent releases.

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:

document@gensystems.com

## **Acknowledgements**

The name Software AG and all Software AG product names are either trademarks or registered trademarks of Software AG and/or Software AG USA Inc. and/or its subsidiaries and/or its affiliates and/or their licensors. Other company and product names mentioned herein may be trademarks of their respective owners.

Detailed information on trademarks and patents owned by Software AG and/or its subsidiaries is located at <http://softwareag.com/licenses>.

This software may include portions of third-party products. For third-party copyright notices, license terms, additional rights or restrictions, please refer to "License Texts, Copyright Notices and Disclaimers of Third Party Products". For certain specific third-party license restrictions, please refer to section E of the Legal Notices available under "License Terms and Conditions for Use of Software AG Products / Copyright and Trademark Notices of Software AG Products". These documents are part of the product documentation, located at <http://softwareag.com/licenses> and/or in the root installation directory of the licensed product(s).

Use, reproduction, transfer, publication or disclosure is prohibited except as specifically provided for in your License Agreement with Software AG.

# TABLE OF CONTENTS

|   |           |
|---|-----------|
| <b>TABLE OF CONTENTS .....</b>                            | <b>I</b>  |
| <b>ABOUT THIS MANUAL.....</b>                             | <b>1</b>  |
| Purpose of this manual .....                              | 1         |
| Target Audience .....                                     | 1         |
| Typographical Conventions used in this manual .....       | 2         |
| How this manual is organized .....                        | 3         |
| Terminology .....   | 4         |
| Related Literature .....                                  | 7         |
| <b>INSTALLATION ON THE MAINFRAME.....</b>                 | <b>9</b>  |
| Chapter Overview.....                                     | 9         |
| Installation Jobs on the Mainframe .....                  | 10        |
| Mainframe Prerequisites.....                              | 11        |
| Installation Tape for Natural Engineer under z/OS .....   | 12        |
| Installation Tape for Natural Engineer under z/VSE.....   | 15        |
| Installation Tape for Natural Engineer under BS2000 ..... | 17        |
| Mainframe Installation Steps.....                         | 20        |
| Mainframe Customization .....                             | 33        |
| Modifying Natural Engineer Batch Jobs .....               | 34        |
| Natural Engineer Processes and Related Jobs .....         | 47        |
| <b>INDEX.....</b>   | <b>53</b> |



# ABOUT THIS MANUAL

## Purpose of this manual

---

This manual contains the Installation details for Natural Engineer.

It describes all aspects of installing Natural Engineer on supported mainframe platforms, namely z/OS, BS2000 and z/VSE.

This manual should be read carefully before installing and using the product.

## Target Audience

---

The target audience for this manual is intended to be any User of Natural Engineer as well as Systems Administrators responsible for installing and configuring the product.

## Typographical Conventions used in this manual

---

The following conventions are used throughout this manual:

|                                   |   |
|-----------------------------------|---|
| <b>UPPERCASE<br/>TIMES</b>        | Commands, statements, names of programs and utilities referred to in text paragraphs appear in normal (Times) uppercase.  |
| <b>UPPERCASE BOLD<br/>COURIER</b> | 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. |
| <u>Underlined</u>                 | 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 the installation requirements for Natural Engineer in the following chapters:

| <b>Chapter</b> | <b>Contents</b>  |
|----------------|--|
| 1              | Describes the installation procedure on the supported mainframe platforms (z/OS, z/VSE, BS2000). |

## 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.

## About this manual

### 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.

## **Natural Engineer Installation Guide**

### **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.

## Natural Engineer Installation Guide

- 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.

# INSTALLATION ON THE MAINFRAME

## Chapter Overview

---

This chapter describes the installation procedure on the supported mainframe platforms (z/OS, z/VSE, BS2000). This information is organized in the following sections:

- [Installation Jobs on the Mainframe.](#)
- [Mainframe Prerequisites.](#)
- [The z/OS Installation Tape.](#)
- [The z/VSE Installation Tape.](#)
- [The BS2000 Installation Tape.](#)
- [Mainframe Installation steps.](#)
- [Mainframe Customization.](#)
- [Modifying Natural Engineer Jobs.](#)
- [Natural Engineer Processes and Related Jobs.](#)

## Installation Jobs on the Mainframe

---

The installation of Natural Engineer on mainframe platforms is performed by installation jobs. These jobs are either adapted “manually” or generated by SYSTEM MAINTENANCE AID (SMA).

For each step of the installation procedure described below, the job number of a job performing the respective task is indicated. This job number refers to an installation job generated by SMA. If you are not using SMA, a sample installation job of the same number is provided in the job library on the installation tape; you must adapt this example job to your requirements. Please note that the job numbers on the tape are preceded by a product code (for example, NEEI061 or NEEI050).

### Using SYSTEM MAINTENANCE AID

If you are using Software AG’s SYSTEM MAINTENANCE AID (SMA) for the installation process, please note the following before generating jobs:

1. Load the SMA table data as described in the SYSTEM MAINTENANCE AID manual (if you have not already done so).
2. Set NEE844 in the list of available products for your environment to “TO BE INSTALLED”.
3. Set the following SMA parameters specific to Natural Engineer:

In group OPTION:

NEE-FIRST-INSTALL = Y (for first-time installation of Natural Engineer)

NEE-FIRST-INSTALL = N (for migration installation of Natural Engineer)

NEE-REFACT = Y (for migration installation of Natural Engineer Refactoring)

NEE-REFACT-NEW = Y (for first-time installation of Natural Engineer Refactoring)

In group FILNUM:

FNEE = <file number of Natural Engineer Refactoring>

FNEE1 = <file number of Natural Engineer Repository>

FNEE1-DBID= <database number of Natural Engineer Repository>

## Mainframe Prerequisites

---

The following products must be installed before you install Natural Engine:

### **NATURAL**

Natural version 8.2.4 or above.

*Note: Under z/OS, Natural must be LE enabled to utilize the updated Extract engine.*

### **ADABAS**

Adabas version 8.2.2 or above.

### **Natural Development Server**

Natural Development Server (NDV) version 2.2.7 or above.

*Note: This is optional and is only required if you wish to execute Natural Engine in a remote development environment (SPoD). It is recommended to use an NDV Server using batch subtasks if processing JCL and/or COBOL.*

## Installation Tape for Natural Engineer under z/OS

---

### Tape Contents

The installation tape contains the data sets listed in the table below. The sequence of the data sets is shown in the Report of Tape Creation that accompanies the installation tape. The notation ‘*vrs*’ in Data Set Name represents the version number, release level and SM level of the product.

| Data Set Name        | Contents   |
|----------------------|--|
| NEE <i>vrs</i> .SRCE | Source library, containing member CINI (initialization parameters) and statement members for updated Extract engine. |
| NEE <i>vrs</i> .JOBS | Job library with sample JCL for the Natural Engineer process.  |
| NEE <i>vrs</i> .INPL | Natural modules in INPL format.  |
| NEE <i>vrs</i> .ERRN | SYSERR messages for Natural Engineer.  |
| NEE <i>vrs</i> .SYS1 | Natural Engineer Repository file in ADAULD format.   |
| NEE <i>vrs</i> .SYS2 | Natural Engineer Refactoring file in ADAULD format.  |
| NEE <i>vrs</i> .EXPL | Example application library and miscellaneous sample objects library.  |
| NEE <i>vrs</i> .HELP | Natural Engineer Help File.  |
| NEE <i>vrs</i> .LOAD | C modules for Extract engine.  |

### Copying the Tape Contents to a z/OS Disk

If you are using SMA, refer to the *System Maintenance Aid* documentation.

If you are not using SMA, follow the instructions described below.

This section explains how to:

- Copy data set COPY.JOB from tape to disk.
- Modify this data set to conform to your local naming conventions.

The JCL in this data set is then used to copy all data sets from tape to disk.

If the data sets for more than one product are delivered on the tape, the data set COPY.JOB contains the JCL to unload the data sets for all delivered products from the tape to your disk.

After that, you will have to perform the individual install procedures for each component.

### Step 1 - Copy data set COPY.JOB from tape to disk.

The data set COPY.JOB (Label 2) contains the JCL to unload all other existing data sets from tape to disk. To unload COPY.JOB use the following sample JCL:

```
//SAGTAPE JOB SAG,CLASS=1,MSGCLASS=X
//*
//COPY EXEC PGM=IEBGENER
//SYSUT1 DD DSN=COPY.JOB,DISP=(OLD,PASS),UNIT=(CASS,,DEFER),
// VOL=(,RETAIN,SER=tape-volume),LABEL=(2,SL)
//SYSUT2 DD DSN=hilev.COPY.JOB,DISP=(NEW,CATLG,DELETE),
// UNIT=3390,VOL=SER=volume,SPACE=(TRK,(1,1),RLSE),
// DCB=*.SYSUT1
//SYSPRINT DD SYSOUT=*
//SYSIN DD DUMMY
//*
```

Where:

*hilev* is a valid high level qualifier.

*tape-volume* is the tape volume name, for example: T12345.

*volume* is the disk volume name.

### Step 2 - Modify COPY.JOB on Your Disk.

Modify the COPY.JOB on your disk to conform to your local naming conventions and set the disk space parameters before submitting this job.

There are three parameters that must be set before submitting the COPY.JOB:

- Set HILEV to a valid high level qualifier.
- Set LOCATION to a storage location.
- Set EXPDT to a valid expiration date.

# 1

## **Natural Engineer Installation Guide**

### **Step 3 - Submit COPY.JOB**

Submit COPY.JOB to unload all other data sets from the tape to your disk.

## Installation Tape for Natural Engineer under z/VSE

---

### Tape Contents

The installation tape contains the data sets listed in the table below. The sequence of the data sets is shown in the Report of Tape Creation that accompanies the installation tape. The notation 'vrs' in Data Set Name represents the version number, release level and SM level of the product.

| <b>Data Set Name</b> | <b>Contents</b>   |
|----------------------|---|
| NEEvrs.LIBR          | Source library, containing member CINI (initialization parameters).   |
| NEEvrs.LIBJ          | Job library with sample JCL for the Natural Engineer process.         |
| NEEvrs.INPL          | Natural modules in INPL format.                                       |
| NEEvrs.ERRN          | SYSERR messages for Natural Engineer.                                 |
| NEEvrs.SYS1          | Natural Engineer Repository file in ADAULD format.                    |
| NEEvrs.SYS2          | Natural Engineer Refactoring file in ADAULD format.                   |
| NEEvrs.EXPL          | Example application library and miscellaneous sample objects library. |
| NEEvrs.HELP          | Natural Engineer Help File.   |

### Copying the Tape Contents to a z/VSE Disk

If you are using SMA, refer to the *System Maintenance Aid* documentation.

If you are not using SMA, follow the instructions below.

This section explains how to:

- Copy data set COPY.JOB from tape to disk.
- Modify this data set to conform to your local naming conventions.

The JCL in this data set is then used to copy all data sets from tape to disk.

# 1

## Natural Engineer Installation Guide

If the data sets for more than one product are delivered on the tape, the data set COPYTAPE.JOB contains the JCL to unload the data sets for all delivered products from the tape to your disk, except the datasets that you can directly install from tape, for example, Natural INPL objects.

After that, you will have to perform the individual install procedures for each component.

### Step 1 - Copy data set COPYTAPE.JOB from tape to disk.

The data set COPYTAPE.JOB (Label 2) contains the JCL to unload all other existing data sets from tape to disk. To unload COPYTAPE.JOB use the following sample JCL:

```
* $$ JOB JNM=LIBRCAT, CLASS=0,
* $$ DISP=D, LDEST=(*,UID), SYSID=1
* $$ LST CLASS=A, DISP=D
// JOB LIBRCAT
* *****
*       CATALOG COPYTAPE.JOB TO LIBRARY
* *****
// ASSGN SYS004, NNN
// MTC REW, SYS004
// MTC FSF, SYS004, 4
// ASSGN SYSIPT, SYS004
// TLBL IJSYSIN, 'COPYTAPE.JOB'
// EXEC LIBR, PARM='MSHP; ACC S=lib.sublib'
// MTC REW, SYS004
// ASSGN SYSIPT, FEC
/*
/&
* $$ EOJ
```

Where:

NNN is the tape address.

lib.sublib is the catalog library name.

### Step 2 - Modify COPYTAPE.JOB to conform to local site standards.

Modify COPYTAPE.JOB to conform to local site standards and complete the disk space parameters before submitting the COPYTAPE.JOB.

### Step 3 - Submit COPYTAPE.JOB

Submit COPYTAPE.JOB to unload all other data sets from the tape to your disk.

## Installation Tape for Natural Engineer under BS2000

---

### Tape Contents

The installation tape contains the data sets listed in the table below. The sequence of the data sets is shown in the *Report of Tape Creation* that accompanies the installation tape. The notation 'vrs' in Data Set Name represents the version number, release level and SM level of the product.

| Data Set Name | Contents  |
|---------------|---|
| NEEvrs.JOBS   | Natural Engineer example installation jobs.                           |
| NEEvrs.INPL   | Natural modules in INPL format.                                       |
| NEEvrs.ERRN   | SYSERR messages for Natural Engineer.                                 |
| NEEvrs.SYS1   | Natural Engineer Repository file in ADAULD format.                    |
| NEEvrs.SYS2   | Natural Engineer Refactoring file in ADAULD format.                   |
| NEEvrs.EXPL   | Example application library and miscellaneous sample objects library. |
| NEEvrs.HELP   | Natural Engineer Help File.   |

### Copying the Tape Contents to a BS2000 Disk

If you are using SMA, refer to the *System Maintenance Aid* documentation.

If you are not using System Maintenance Aid (SMA), use the procedure described below. In this procedure, the values specified below must be supplied.

To copy the data sets from tape to disk, perform the following steps:

**Step 1 - Copy the library SRVvrs.LIB from tape to disk.**

# 1

## Natural Engineer Installation Guide

This step is not necessary if you have already copied the library `SRVvrs.LIB` from another Software AG installation tape. For further information, refer to the element `#READ-ME` in this library. The library `SRVvrs.LIB` is stored on the tape as a sequential file named `SRVvrs.LIBS` containing LMS commands. The current version `vrs` can be obtained from the Report of Tape Creation. To convert this sequential file into an LMS-library, execute the following commands:

```
/IMPORT-FILE  SUPPORT=*TAPE(FILE-NAME=SRVvrs.LIBS, -
/  VOLUME=volser, DEV-TYPE=tape-device)
/ADD-FILE-LINK LINK-NAME=EDTSAM, FILE-NAME=SRVvrs.LIBS, -
/  SUPPORT=*TAPE(FILE-SEQ=3), ACC-METH=*BY-CAT, -
/  BUF-LEN=*BY-CAT, REC-FORM=*BY-CAT, REC-SIZE=*BY-CAT
/START-EDT
@READ  '/'
@SYSTEM 'REMOVE-FILE-LINK  EDTSAM'
@SYSTEM 'EXPORT-FILE  FILE-NAME=SRVvrs.LIBS'
@WRITE  'SRVvrs.LIBS'
@HALT
/ASS-SYSDTA  SRVvrs.LIBS
/MOD-JOB-SW  ON=1
/START-PROG  $LMS
/MOD-JOB-SW  OFF=1
/ASS-SYSDTA  *PRIMARY
```

Where:

- `vrs` is the current version number (see Report of Tape Creation).
- `volser` is the VOLSER of the tape (see Report of Tape Creation).
- `tape-device` is the device-type of the tape, for example: TAPE-C4

**Step 2 - Copy the Procedure COPY.PROC from Tape to Disk.**

To copy the procedure COPY.PROC from tape to disk, call the procedure P.COPYTAPE in the library SRV $vrs$ .LIB:

```
/CALL-PROCEDURE (SRV $vrs$ .LIB, P.COPYTAPE), -  
/ (VSNT= $volser$ , DEVT= $tape-device$ )
```

Where:

$vrs$  is the current version number (see Report of Tape Creation).

$volser$  is the VOLSER of the tape (see Report of Tape Creation).

$tape-device$  is the device-type of the tape, for example: TAPE-C4

If you use a TAPE-C4 device, you may omit the parameter DEVT.

**Step 3 - Copy all Product Files from Tape to Disk.**

To copy all Software AG product files from tape to disk, enter the procedure COPY.PROC:

```
/ENTER-PROCEDURE COPY.PROC, DEVT= $tape-device$ 
```

Where:

$tape-device$  is the device-type of the tape, for example: TAPE-C4

If you use a TAPE-C4 device, you may omit the parameter DEVT. The result of this procedure is written to the file 'L.REPORT.SRV'.

## Mainframe Installation Steps

---

Perform the following steps after copying the tape contents to disk.

### 1. Establish Natural Engineer Database Files

**SMA Reference:** Job I050, Step 7000

- ❑ Load the Natural Engineer Repository file contained in data set NEEvrs.SYS1.

**SMA Reference:** Job I050, Step 7001

- ❑ Load the Natural Engineer Refactoring file contained in data set NEEvrs.SYS2.

*Note: This is optional and is only required if you wish to use the Natural Engineer Refactoring function.*

### 2. Apply changes to Repository FDT

The Jobs NEEI051 provided with the example job library contain the necessary Adabas utility JCL required to apply each of the changes to the Repository FDT.

#### From Natural Engineer Version 8.2.1

If you are upgrading from Natural Engineer version 8.2.1 to Natural Engineer version 8.2.2 then there are no conversion tasks to be performed.

#### From Natural Engineer Version 8.2.2 Base Release

If you are upgrading from Natural Engineer version 8.2.2 to Natural Engineer version 8.2.2.1 you will need to perform the following task:

**SMA Reference:** Job I051, Step 7110

[i] Release the following Superdescriptor:

SQ= AA(1,8), AZ(1,1), AK(1,32), RC(1,1), AB(1,8)

[ii] Conversion is Complete

### From Natural Engineer Version 8.2.2.1

If you are upgrading from Natural Engineer version 8.2.2.1 to Natural Engineer version 8.2.2.2 you will need to perform the following task:

**SMA Reference:** Job I051, Step 7120-7170

[i] Add the following fields to the end of the REPOSITORY file:

01,NQ,65,A,NU

[ii] Invert the following Superdescriptor:

ST= AA (1, 8) , AB (1, 8) , NQ (1, 65)

[iii] Decompress the Repository file.

[iv] Backup and then delete the existing Repository file.

[v] Compress and Load using the inline definitions in the Job.

[vi] Conversion is Complete

### From Natural Engineer Version 8.2.2.2

**SMA Reference:** Job I082, Step 7004

[i] If you are upgrading from Natural Engineer version 8.2.2.2 to Natural Engineer version 8.2.3 and have JCL loaded into your repository you will need to run the following object in the SYSNEE library:

NEEJXCNV

Note: This program is completely re-executable and should be executed in a Natural session invoked using the Natural Parameter file: NATENG

### From Natural Engineer Version 8.2.3 Base Release

**SMA Reference:** Job I082, Step 7005

[i] If you are upgrading from Natural Engineer version 8.2.3 to Natural Engineer version 8.2.3.1 you will need to run the following object in the SYSNEE library:

NEEEXCNV

Note: This program is completely re-executable and should be executed in a Natural session invoked using the Natural Parameter file: NATENG

# 1

## Natural Engineer Installation Guide

### From Natural Engineer Version 8.2.3.1

**SMA Reference:** Job I082, Step 7006

[i] If you are upgrading from Natural Engineer version 8.2.3.1 to Natural Engineer version 8.2.3.2 and have COBOL Links defined then you will need to run the following object in the SYSNEE library:

NEECLCNV

Note: This program is completely re-executable and should be executed in a Natural session invoked using the Natural Parameter file: NATENG

### From Natural Engineer Version 8.2.3.2

If you are upgrading from Natural Engineer version 8.2.3.2 to Natural Engineer version 8.3.1 you will need to perform the following tasks:

**SMA Reference:** Job I051, Step 7180

[i] Invert the following Superdescriptors:

SU= AA (1,8), NL (1,1), AN (1,32)

SV= AA (1,8), NL (1,1), OL (1,1), AS (1,1), AN (1,32)

SW= AA (1,8), NL (1,1), OL (1,1), AN (1,32)

If you have soft links within your applications then the following object needs to be run to ensure that the soft link records are converted to the new format.

**SMA Reference:** Job I082, Step 7007

[i] To apply the necessary conversions run the following object in the SYSNEE library

NEESLCNV

Note: This program is completely re-executable and should be executed in a Natural session invoked using the Natural Parameter file: NATENG:

[ii] Conversion is complete

**From Natural Engineer Version 8.3.1 Base Release**

If you are upgrading from Natural Engineer version 8.3.1 Base Release to Natural Engineer version 8.3.2 there are no conversion tasks to be performed.

**From Natural Engineer Version 8.3.2 Base Release**

If you are upgrading from Natural Engineer version 8.3.2 Base Release to Natural Engineer version 8.3.3 there are no conversion tasks to be performed.

**From Natural Engineer Version 8.3.3 Base Release**

If you are upgrading from Natural Engineer version 8.3.3 Base Release to Natural Engineer version 8.3.3.1 there are no conversion tasks to be performed.

**From Natural Engineer Version 8.3.3.1**

If you are upgrading from Natural Engineer version 8.3.3.1 to Natural Engineer version 8.3.4 there are no conversion tasks to be performed.

### 3. Modify, Reassemble and Link the NATPARM Module

**SMA Reference:** Job I060, Step 0010 (BS2000, z/VSE), Step 0010 + 0015 (z/OS)

1. Modify the NATPARM module used for the Natural Engineer process as described in the table below.

*Note: As an alternative to this step, users can use dynamic parameters in their Natural environment. The size parameters are recommendations only. You may have to adapt these values to your particular environment.*

| Parameter                                 | Setting  |
|---|--|
| DATSIZE=512                               | This is the maximum value. It is recommended to cover all values that may have been in place when an object was compiled.  |
| LFILE=(095,001,010)                       | Location of the Natural Engineer Refactoring file.<br>Logical number is 095<br>Physical Database is 001. Modify as required for the environment.<br>Physical File Number is 010. Modify as required for the environment. |
| LFILE=(096,001,011)                       | Location of the Natural Engineer Repository file.<br>Logical number is 096<br>Physical Database is 001. Modify as required for the environment.<br>Physical File Number is 011. Modify as required for the environment.  |
| ZD=OFF                                    | This prevents NAT1302 error during the Load process.   |
| XML=(ON,RODC=ON,PARSE=ON)                 | Only required if the Bulk Extract & Load processes (BLKEXL and BLKEXX) are to be used.   |
| NTWORK=((1-24),AM=STD,OPEN=ACC,CLOSE=CMD) |  |
| NTPRINT=((1-2),OPEN=ACC,AM=STD,CLOSE=FIN) |  |

2. Assemble and link the NATPARM module.

## 4. Link the Batch NATURAL Nucleus

**SMA Reference:** Job I060, Step 0020 (z/OS, z/VSE) Step 3801 (BS2000).

1. Find the JCL used to link your current batch Natural nucleus.  
This will ensure that all INCLUDE statements specified when you built your current batch Natural nucleus are supplied in this step.
2. In the INCLUDE statement for the NATPARM, specify the name of the NATPARM module that you reassembled in Step 3.
3. Link the Natural nucleus.

## 5. Load Natural Engineer System Programs

**SMA Reference:** Job I061, Step 7000

- The Natural Engineer system programs are contained in the data set NEEvrs.INPL. Load them to your Natural FNAT and FUSER system files using the Natural utility INPL.

*Note: If you have an existing Natural Engineer Installation and are upgrading to Natural Engineer v8.2.3 or above from a previous version then please delete the RJE Text Members prefixed JCL\* from your SYSNEE library and the relevant SYSNEEx library before loading the Natural Engineer system programs.*

*For z/OS, the JCL is supplied within library SYSNEEM.*

*For z/VSE, the JCL is supplied within library SYSNEEV.*

*For BS2000, the JCL is supplied within library SYSNEEB.*

## 6. Load Natural Engineer SYSERR messages

**SMA Reference:** Job I061, Step 7001

- The Natural Engineer SYSERR messages are contained in the data set NEEvrs.ERRN. Load them to your Natural FUSER system files using the Natural utility ERRLODUS.

## 7. Load Example Application and Miscellaneous Sample Objects

**SMA Reference:** Job I061, Step 7002

- The Natural Engineer example application (HOSPITAL) and the miscellaneous sample objects (NEEEXPG) are contained in the data set NEEvrs.EXPL. Load it to your Natural FUSER system files using the Natural utility INPL.

## 8. Load the Natural Engineer Jobs z/OS

**SMA Reference:** Job I200, Steps 7001-7026.

|      |          |          |
|------|----------|----------|
| 7001 | NEEDELAP | DELAPP   |
| 7002 | NEEEXTMI | EXTMIS   |
| 7003 | NEEEXTRA | EXTRACT  |
| 7004 | NEEIMPAC | IMPACT   |
| 7005 | NEELOAD  | LOAD     |
| 7006 | NEEREPEN | REPORTEN |
| 7007 | NEEREPGL | REPORTGL |
| 7008 | NEEREPIM | REPORTIM |
| 7009 | NEEREPMO | REPORTMO |
| 7010 | NEEMODIF | MODIFY   |
| 7011 | NEETASK  | TASKSCH  |
| 7012 |          | IMPFLD   |
| 7013 |          | JCLANAL  |
| 7015 |          | NEARPC   |
| 7016 |          | NEASERV  |
| 7017 |          | NEASERVC |
| 7020 | NEERPC   | NEERPC   |
| 7021 |          | SQLEXT   |
| 7022 |          | SQLLOD   |
| 7023 |          | SOFTLINK |
| 7024 |          | DELLODLG |
| 7025 |          | BLKEXX   |
| 7026 |          | BLKEXL   |

- The Natural Engineer sample jobs are contained in the JOBS data set for z/OS. Load the sample jobs to your designated Natural Engineer job library.

The sample jobs supplied are for running in Batch Mode when not using the Natural Engineer RJE function.

## 9. Modify Sample Jobs

1. The Job card statement will need to be set up with the correct site standard Job Name convention applicable at your site. The Job Class will also need to be set to a valid class applicable at your site. (It is recommended that you set this to a class that equates to a 'medium' run time as a default for ALL jobs.)
2. Each of the Work File data set names contains a reference to the Application being run through Natural Engineer. This can be identified in the sample jobs by looking for 'AAAAAAAA' within the data set names. It is recommended that you change this for each Application that you are running through Natural Engineer to avoid overwriting any of the data sets.
3. Work File 1 contains the Natural Engineer Initialization parameters (CINI) and is required in ALL the sample Jobs provided. It is set up as a PDS member called 'CINI' (in NEEvrs.SRCE). For each Application you are running you will need to edit CINI to reflect the correct Application Library name. This can be identified within CINI as 'LIBRARY=AAAAAAAA'.

## 10. Natural Engineer RJE Jobs

- Any batch jobs submitted via the Natural Engineer RJE function utilize JCL text members to build up the jobs. These are loaded as part of the install process.

The user must modify these jobs and the Natural text members according to their requirements.

*Note: For z/OS, the JCL is supplied within library SYSNEEM. These should be copied to the SYSNEE library.*

*For BS2000, the JCL is supplied within library SYSNEEB. These should be copied to the SYSNEE Library.*

*For z/VSE, the JCL is supplied within library SYSNEEV. These should be copied to the SYSNEE Library. When running under z/VSE, the minimum partition recommended to execute Natural Engineer batch jobs is 8MB.*

## 11. General Adaptions

- Supplied member name is `###CINIX`. If this is a new installation, rename to `###CINI`. If this is an existing installation, check parameters in `###CINIX` and see if they need transferring to existing `###CINI` file.

| Group Header / Parameter  | Description   |
|---|---|
| <i>Note: The following parameters are used by updated Extract Engine under z/OS only. They can be customized as required to meet the site standards applicable.</i> |   |
| <b>[NATURAL]</b>  |   |
| <b>STT=</b>   | Default=NEEvrs.SRCE(NATSTT)<br>Location of the NATSTT source file.  |
| <b>REPORT-MISSING-INCLUDES</b>  | Default=Y<br>If set to Y, any missing copycode objects will be reported during the Extract process.<br>If set to N, will not report missing copycode objects.<br>Possible values Y,N  |
| <b>REPORT-MISSING-DDMS</b>  | Default=Y<br>If set to Y, any missing DDM objects will be reported during the Extract process.<br>If set to N, will not report missing DDM objects.<br>Possible values Y,N  |
| <b>REPORT-INCORRECT-MODE</b>  | Default=Y<br>If set to Y, if a reporting mode object is discovered, but contains structured mode syntax, or vice-versa, then it will be reported during the Extract process.<br>If set to N, will not be reported.<br>Possible values Y,N |
| <b>[COBOL]</b>  |   |
| <b>STT=</b>   | Default=NEEvrs.SRCE(COBSTT)<br>Location of the COBSTT source file   |

| Group Header / Parameter | Description   |
|--------------------------|---|
| (JCL)                    |   |
| STT=                     | Default-NEEvrs.SRCE(JCLSTT)<br>Location of the JCLSTT source file   |
| [EXTRACT]                |   |
| CEE=                     | Default=Y<br>If set to Y, will use the new Extract engine.<br>If set to N, will use the old Extract engine.<br>Possible values Y,N  |
| NO-SECS=                 | Default=N<br>If set to Y, when comparing timestamps, will include seconds, i.e. will use HH:MM:SS.<br>If set to N, when comparing timestamps, will not include seconds, i.e. will use HH:MM.<br>Possible values Y,N |
| JOBCLASS=                | Used by <a href="#">Bulk Extract and Load</a> standalone job (BLKEXL) to specify jobclass of the extract & load jobs.   |

- Supplied member name ###DEFnn. If this is a new installation, rename to ###DEF01. This contains the default values for the Multi-Search feature in Impact Analysis.
- The supplied stand-alone batch jobs and Natural Engineer RJE JCL text members need to be reviewed before any batch jobs are submitted. Modify as required to meet your site standards.

*Note: For more information on modifying the batch jobs refer to section [Modifying Natural Engineer Batch Jobs](#).*

- The Application name associated with each Work File data set is handled automatically by Natural Engineer RJE function.

## 12. NATURAL SECURITY Considerations

To run Natural Engineer under Natural Security:

- ❑ Define library SYSNEE to Natural Security for all Platforms.
- ❑ Define library SYSNEEI to Natural Security for all Platforms.
- ❑ Define library NEEEXPG to Natural Security for all Platforms.
- ❑ Define library HOSPITAL to Natural Security for all Platforms.
- ❑ Define library HOSPITAX to Natural Security for all Platforms.
- ❑ Define library SYSNEEM to Natural Security for z/OS.
- ❑ Define library SYSNEEV to Natural Security for z/VSE.
- ❑ Define library SYSNEEB to Natural Security for BS2000.

## 13. Loading Natural Engineer Help System

**SMA Reference:** JOB I500, Step 7010

To run the load of the Natural Engineer Help System, execute member HELPLOAD from the NEEvrs.JOBS data set. This will delete the existing Natural Engineer help and replace it with the new version of the help from NEEvrs.HELP data set.

*Note: For z/VSE, the member HELPLOAD is located in the NEEvrs.LIBJ data set.*

## 14. User Exit Considerations

### Natural User Exits

Natural Engineer utilizes various Natural user exits. These need to be made available to the Natural session where you are running Natural Engineer.

USR2021N  
USR3005N  
USR4206N  
USR4209N

If you are using the Natural Engineer Web Interface then the following user exit also needs to be made available.

USR1005N

*Note: It is recommended that these User Exit objects are copied from SYSEXT to the FNAT library SYSTEM.*

### Natural Engineer User Exits

Natural Engineer user exit modules are supplied named 'NEEUExnX' where 'n' in the number of the User Exit, on the Natural Engineer SYSNEE library supplied in the NEEvrs.INPL data set. This is to avoid overwriting any existing (modified) versions on the production SYSNEE library during Natural Engineer installation. If the user exit has not been loaded before, then it will need to be renamed to 'NEEUExn' e.g. NEEUEx2, NEEUEx3 or NEEUEx4 accordingly before making use of the User Exit functionality.

N.B., NEEUEx5 and NEEUEx6 need to be present on the SYSNEE library before starting Natural Engineer.

#### i. NEEUEx1 – Application Lock Password

- ❑ NEEUEx1 is used if you wish to change the Application Lock Release Password from the default value. The new value must be uppercase and contain no special characters.

#### ii. NEEUEx2 – RJE Job Submission

- ❑ This is used to customize RJE online job submission.

# 1

## Natural Engineer Installation Guide

□

### iii. NEEUEX3 - Modification

- NEEUEX3 is used in modification.

The user exit module can be customized to replace selected items, which have been impacted by the Impact Analysis process, within an object with up to 20 lines of new source code.

### iv. NEEUEX4 – NJX Processing

- NEEUEX4 allows the dynamic generation of adapter and variable names in the Natural for Ajax processing.

### v. NEEUEX5 – Generate Application Names

- NEEUEX5 allows for the dynamic generation of application names within Natural Engineer.

### vi. NEEUEX6 – Access to Applications

- NEEUEX6 controls access to applications when Natural Security does not exist. This is only used if you are running in a SPoD environment against a mainframe server.

Further information on the usage of these user exits are contained within the source of the user exits themselves on the SYSNEE FNAT library.

## 15. Verify the Installation

- To confirm that the installation was successful, follow the procedure described in the *Natural Engineer Application Management* manual against the supplied example application library.

## Mainframe Customization

---

### Setting Initialization Parameters

The various configuration options for Natural Engineer are held as initialization parameters and are used to control both the online and batch processes within Natural Engineer.

The initialization parameters are available in two locations:

1. Text member ###CINI located in the Natural Engineer library SYSNEE. This is used by the online and Natural Engineer RJE batch job submission processes.
2. PDS Member CINI located in the installation tape data sets. This is used by any stand-alone batch jobs only.

In both cases, the same initialization parameters can be applied.

*Note: For more information on the various initialization parameters refer to Chapter 2 in the Natural Engineer Administration Guide for Mainframes manual.*

## Modifying Natural Engineer Batch Jobs

---

The Natural Engineer batch jobs need to be reviewed and administered to ensure that they comply with your site standards before any batch job is submitted.

The Natural Engineer batch jobs are supplied in two formats:

1. **Stand-alone batch jobs**

The stand-alone batch jobs can be manually submitted after the appropriate online selections and settings have been made.

For z/OS the JCL is supplied in the NEEvrs.JOBS data set on the installation tape.

2. **Natural Engineer RJE JCL text members**

The Natural Engineer RJE JCL text members are automatically submitted when a batch function is selected online and the Natural Engineer RJE submission screen is presented.

For z/OS, the JCL is supplied within library SYSNEEM. These should be copied to the SYSNEE library.

For z/VSE, the JCL is supplied within library SYSNEEV. These should be copied to the SYSNEE library.

For BS2000, the JCL is supplied within library SYSNEEB. These should be copied to the SYSNEE library.

## Supplied Natural Engineer Stand-alone Batch Jobs

The following Natural Engineer stand-alone batch jobs are supplied:

| <b>Extract and Load Members</b>       | <b>Description</b>                      |
|---------------------------------------|---|
| EXTMIS                                | Extract Missing Objects.                |
| EXTRACT                               | Extract Application.                    |
| LOAD                                  | Load Repository.                        |
| BLKEXX                                | Bulk Extract & Load Parameter Generator |
| BLKEXL                                | Bulk Extract & Load Execution.          |
| SQLEXT                                | SQL Tables Extract.                     |
| SQLOD                                 | SQL Tables Load.                        |
| <b>Application Management Members</b> | <b>Description</b>                      |
| JCLANAL                               | JCL Analysis.                           |
| SOFTLINK                              | Softlink Import.                        |
| SRVANAL                               | Services Analysis.                      |
| <b>Impact Member</b>                  | <b>Description</b>                      |
| IMPACT                                | Impact Execution.                       |
| IMPFLD                                | Impact Execution – Field Analysis.      |
| <b>Data Modification Member</b>       | <b>Description</b>                      |
| MODIFY                                | Execute Modification for all Objects.   |
| <b>Report Members</b>                 | <b>Description</b>                      |
| REPORTGL                              | Global Reports.                         |
| REPORTIM                              | Impact Reports.                         |
| REPORTMO                              | Modification Reports.                   |

# 1

## Natural Engineer Installation Guide

REPORTEN                      Application Reports.

| <b>Deletion Members</b> | <b>Description</b>             |
|-------------------------|--------------------------------|
| DELAPP                  | Application Delete.            |
| DELODLG                 | Delete Load Audit Log Records. |

  

| <b>Natural Engineer Web Interface Members</b> | <b>Description</b> |
|---|--------------------|
| NEARPC  | NEA RPC Engine.    |
| NEASERV                                       | NEA Server Start.  |
| NEASERVC                                      | NEA Server Cancel. |

## Bulk Extract & Load

There are two supplied Natural Engineer stand-alone batch jobs that may be used to provide automatic extract and load of one or more applications.

BLKEXX      Bulk Extract & Load Parameter Generator

BLKEXL      Bulk Extract & Load Execution.

BLKEXX is designed to run against an existing repository and will read all current extract and load settings and produce an XML file that may be tailored by the user to their own requirements. This XML file is then used by the Bulk Extract & Load Execution process (BLKEXL).

If you wish to run the Bulk Extract & Load then the following Natural parameter should be added to the session where you are running Natural Engineer:

XML=(ON,RODC=ON,PARSE=ON)

## Bulk Extract & Load Parameter Generator

BLKEXX will produce an XML Template based on existing extract and load settings. It requires three input parameters:

```
* #IN-OPT (A03)          - TMP for template xml file
*                       - EXT for xml file containing application overrides
* #IN-OVERRIDES (A01)  - Y = Individual application settings for extract
*                       languages, Sync flags & Natural Objects for
*                       Compilation & Called Objects will be included.
* #IN-APP-RANGE (A17)  - Application Range (wildcards or range A:BB)
```

*NB: Wildcard names for Application Range may be 'starting from' e.g., ABC\* will process all applications beginning with ABC or 'ending a't e.g., \*XYZ will process all applications ending in XYZ.*

## Sample Bulk Extract & Load XML template

If you wish to build your own template for input into the Bulk Extract & Load Execution process then a text member BLKEXX-T is provided in the Natural Engineer SYSNEE library explain the tags required. It contains;

```
<?xml version='1.0' ?>
<BLKEXL>
<GeneralParms>
  <JobName></JobName> <!-- Mandatory. Defaults to 5 chars of *USER. Only
                        1st 5 chars used in job submission to allow
                        sequential numbering of jobnames -->
  <JobClass></JobClass> <!-- Mandatory. -->
  <JobSysid></JobSysid>
  <ExtractParms>
    <Applications></Applications> <!-- Mandatory. Wildcards & ranges
                                    allowed e.g. A:BZZZZZZZ) Multiple
                                    tags allowed. -->
    <Languages></Languages> <!-- Mandatory. N,J and/or C -->
    <NaturalSync></NaturalSync> <!-- Mandatory. Y/N -->
    <CobolSync></CobolSync> <!-- Mandatory. Y/N -->
    <JCLSync></JCLSync> <!-- Mandatory. Y/N -->
    <NaturalObjCompilation></NaturalObjCompilation> <!-- Mandatory.Y/N->
    <NaturalCalledObjects></NaturalCalledObjects> <!-- Mandatory.Y/N->
  </ExtractParms>
  <LoadParms>
    <!--Following tags are mandatory. Y/N, Values obtained from ini file
        if present -->
    <CalculateMetrics></CalculateMetrics>
    <ForceReplace></ForceReplace>
    <ValidateObjects></ValidateObjects>
  </LoadParms>
</GeneralParms>
```

# 1

## Natural Engineer Installation Guide

```
<AppOverrides>                                <!-- Optional section -->
  <App>
    <AppName></AppName>
    <ExtractParms>
      <Languages></Languages> <!-- If present, overrides General Parms
                               Languages. N J and or C -->
      <Natural>
        <ObjectTypes></ObjectTypes>
        <!-- If present, overrides General Parms Y/N -->
        <Sync></Sync>
        <ObjCompilation></ObjCompilation>
        <CalledObjects></CalledObjects>

        <InclObjectRange></InclObjectRange>
        <UserDefFile></UserDefFile>
        <EntryPointApp></EntryPointApp>
        <EntryPointObject></EntryPointObject>
        <EntryPointLevels></EntryPointLevels>
        <ExclObjectRange></ExclObjectRange>
      <ExclUserDefFile></ExclUserDefFile>
      <ValidMissObjects></ValidMissObjects>
    </Natural>
    <Cobol>
      <Sync></Sync> <!-- If present, overrides General Parms Y/N -->
      <InclObjectRange></InclObjectRange>
      <UserDefFile></UserDefFile>
      <ExclObjectRange></ExclObjectRange>
      <ExclUserDefFile></ExclUserDefFile>
      <ValidMissObjects></ValidMissObjects>
    </Cobol>

    <JCL>
      <Sync></Sync> <!-- If present, overrides General Parms Y/N -->
      <InclObjectRange></InclObjectRange>
      <UserDefFile></UserDefFile>
      <ExclObjectRange></ExclObjectRange>
      <ExclUserDefFile></ExclUserDefFile>
      <ValidMissObjects></ValidMissObjects>
    </JCL>
  </ExtractParms>

  <LoadParms>
    <!-- If present, overrides General Parms Y/N -->
    <CalculateMetrics></CalculateMetrics>
    <ForceReplace></ForceReplace>
    <ValidateObjects></ValidateObjects>
  </LoadParms>
</App>
</AppOverrides>
</BLKEXL>
```

## JCL Analysis

The supplied JCLANAL stand-alone job for JCL Analysis may be modified to process a selection of applications and objects as required.

The parameters into the process are specified as follows;

```
//CMSYNIN DD *
LOGON SYSNEE
JCEANA-P AAAAAAAA,U,Q,SSSSSSSS,EEEEEEEE,N
FIN
/*
//* ****
//*
//* WHERE
//*
//* AAAAAAAA - APPLICATION
//* U - UNPROCESSED JOBS, Y OR N
//* Q - ALL OBJECTS? Y OR N
//* SSSSSSSS - OBJECT START <XX* IS VALID>
//* EEEEEEEE - OBJECT END
//* - <IF COMPLETED, MUST BE GREATER THAN START>
//* N - OBJECT-LIMIT 0-9 UALID
//* ****
```

Some examples:

**JCEANA-P HOSPITAL,Y,N,XX\*, , 5**

Will perform analysis on all unprocessed jobs in HOSPITAL in range XX\* to object level limit of 5.

**JCEANA-P HOSPITAL,N,Y, , , 0**

Will perform analysis on all jobs in HOSPITAL with no limit check.

**JCEANA-P HOSPITAL,Y,Y, , , 5**

Will perform analysis on all unprocessed jobs in HOSPITAL to object level limit of 5

**JCEANA-P HOSPITAL,N,N,XX00001,XX00100,5**

Will perform analysis on all jobs in HOSPITAL with range XX00001-XX00100 to object level limit of 5.

# 1

## Natural Engineer Installation Guide

### Global Changes for z/OS

#### Stand-alone Batch Jobs

The supplied Natural Engineer stand-alone batch jobs for z/OS should be reviewed to adapt them to your site standards. The following changes need to be addressed:

| <b>Value</b>             | <b>Description</b>                                |
|--------------------------|---|
| UNIT=3390                | Specify correct UNIT type.                        |
| VOL=SER=XXXXXX           | Specify correct DASD volume.                      |
| PGM=NAT <i>vr</i> sBAT   | Specify correct batch Natural program.            |
| DSN=NEE <i>vr</i> s.SRCE | Specify name of supplied NEE <i>vr</i> s.SRCE.    |
| DSN=NAT.LOAD             | Specify name of batch Natural steplib.            |
| DSN=ADA.LOAD             | Specify name of Adabas steplib.                   |
| DB=025                   | Specify normal database for ADARUN parameters.    |
| SVC=233                  | Specify correct SVC number for ADARUN parameters. |
| DEVICE=3390              | Specify correct DEVICE for the database.          |
| AAAAAAAA                 | Specify name of application to be processed.      |

#### Additional Changes for Stand-alone Batch Jobs

Check that the environment settings for 'MSGCLASS=' and 'MSGLEVEL=' are correct for your site standards.

A default Job Name and Job Class are supplied with each stand-alone batch job. These can be modified to your site standards as required.

## Natural Engineer RJE JCL Text Members

The supplied Natural Engineer RJE JCL text members for z/OS should be reviewed to adapt them to your site standards. This can be done by reviewing the following initialization parameters in the Natural Engineer text member ###CINI:

| Group Header / Parameter | Description   |
|--------------------------|---|
| [JCL-MVS]                |   |
|                          | <i>Note: The following parameters are used by the Natural Engineer RJE JCL text members only. They can be customized as required to meet the site standards applicable.</i>   |
| ADADB=                   | Default=025<br>The Adabas database number.  |
| ADASVC=                  | Default=233<br>The Adabas SVC number.   |
| ADADEVICE=               | Default=3390<br>The Adabas device type.   |
| LOGON=                   | Default=LOGON SYSNEE<br>The name of the Natural Engineer logon library.<br><i>Note: If Natural Security is being utilized then the USER and PASSWORD information can be also be specified here. For example:</i><br><i>LOGON=SYSNEE,USER,PASSWORD</i>   |
| UNIT=                    | Default=3390<br>The device type where the data set resides.<br>If the batch environment utilizes System Managed Storage (SMS), then UNIT=SMS can be specified.<br><i>Note: If UNIT=SMS is specified then the JCL line containing this information is not included in the submitted JCL stack.</i> |
| VOL=                     | Default=DISK01<br>The volume name where the data set resides.   |

# 1

## Natural Engineer Installation Guide

| Group Header / Parameter | Description   |
|--------------------------|---|
| <b>NATBAT=</b>           | <p>Default=NATvrsBAT</p> <p>The name of the batch Natural program used during batch job submission.</p>   |
| <b>NATLOAD=</b>          | <p>Default=NATvrs.LOAD</p> <p>The name of the Natural load library.</p>   |
| <b>ADALOAD=</b>          | <p>Default=ADAvrs.LOAD</p> <p>The name of the Adabas load library.</p>  |
| <b>PARM=</b>             | <p>Any parameter data to be passed to the batch Natural program. For example:</p> <p>PARM='PROFILE=SYSNEE2'</p> <p><i>Note: If PARM= is left blank, then the JCL line containing this information is not included in the submitted JCL stack.</i></p> |
| <b>EXTRA-STEP1=</b>      | <p>Default=NEEvrs.LOAD</p> <p>Additional load library to be included for the batch Natural program.</p> <p><i>Note: If EXTRA-STEP1= is left blank, then the JCL line containing this information is not included in the submitted JCL stack.</i></p>  |
| <b>EXTRA-STEP2=</b>      | <p>Additional load library to be included for the batch Natural program.</p> <p><i>Note: If EXTRA-STEP2= is left blank, then the JCL line containing this information is not included in the submitted JCL stack.</i></p>                             |
| <b>HLQ=</b>              | <p>Default=NATENG</p> <p>The high level qualifier name used for Natural Engineer data sets.</p>   |

*Note: Do not change the application name setting of 'AAAAAAA', this is dynamically replaced by the Natural Engineer RJE Job submission screen with the name of the currently selected application.*

### Additional Changes for Natural Engineer JCL text member JCLSTART

Check that the environment settings for Job Class, 'MSGCLASS=' and 'MSGLEVEL=' are correct for your site standards.

*Note: Do not change the job name setting of 'NNNNNNNN', this is dynamically replaced by the Natural Engineer RJE Job submission screen.*

## Global Changes for z/VSE

### Stand-alone Batch Jobs

The supplied Natural Engineer stand-alone batch jobs for z/VSE should be reviewed to adapt them to your site standards. The following changes need to be addressed:

| Value                      | Description  |
|----------------------------|--|
| VVVVVV,,,XXXX,YYYY         | Specify correct DASD volume, start track and number of tracks. |
| EXEC NAT <sub>vrs</sub> BA | Specify correct batch Natural program.                         |
| SAGLIB.NAT <sub>vrs</sub>  | Specify name of batch Natural steplib.                         |
| SAGLIB.ADA <sub>vrs</sub>  | Specify name of Adabas steplib.                                |
| DB=002                     | Specify normal database for ADARUN parameters.                 |
| SVC=045                    | Specify correct SVC number for ADARUN parameters.              |
| DEVICE=3390                | Specify correct DEVICE for the database.                       |
| AAAAAAAA                   | Specify name of application to be processed.                   |

*Note: The batch job CREATE.J creates the CINI (initialization parameters) file to be used by subsequent stand-alone batch jobs. This must be run before any other stand-alone batch jobs in order to correctly establish the CINI file.*

### Additional Changes for Stand-alone Batch Jobs

Check that the environment settings for 'DISP=' and 'DEST=' are correct for your site standards.

# 1

## Natural Engineer Installation Guide

A default Job Name and Job Class are supplied with each stand-alone batch job. These can be modified to your site standards as required.

### Natural Engineer RJE JCL Text Members

The supplied Natural Engineer RJE JCL text members for z/VSE should be reviewed to adapt them to your site standards. This can be done by reviewing the following initialization parameters in the Natural Engineer text member ###CINI:

| Group Header / Parameter  | Description   |
|---|---|
| <b>[JCL-VSE]</b>  |   |
| <i>Note: The following parameters are used by the Natural Engineer RJE JCL text members only. They can be customized as required to meet the site standards applicable.</i> |   |
| <b>ADADB=</b>   | Default=002<br>The Adabas database number.  |
| <b>ADASVC=</b>  | Default=045<br>The Adabas SVC number.   |
| <b>ADADEVICE=</b>   | Default=3390<br>The Adabas device type.   |
| <b>LOGON=</b>   | Default=LOGON SYSNEE<br>The name of the Natural Engineer logon library.<br><i>Note: If Natural Security is being utilized then the USER and PASSWORD information can be also be specified here. For example:</i><br><i>LOGON=SYSNEE,USER,PASSWORD</i> |

*Note: Do not change the application name setting of 'AAAAAAA', this is dynamically replaced by the Natural Engineer RJE Job submission screen with the name of the currently selected application.*

### Additional Changes for Natural Engineer JCL text member JCLSTART

Check that the environment settings for Job Class, 'DISP=' and 'DEST=' are correct for your site standards.

*Note: Do not change the job name setting of 'NNNNNNNN', this is dynamically replaced by the Natural Engineer RJE Job submission screen.*

The supplied Natural Engineer RJE text member JCLSTART for z/VSE includes settings for dynamic JCL parameters which are used throughout the Natural Engineer RJE JCL text members for z/VSE. These are dynamically resolved at run time.

Review the following dynamic JCL parameters in JCLSTART:

| Value                     | Description   |
|---------------------------|---|
| USRLIB='SAGLIB.USRNATvrs' | Specify name of batch Natural steplib.                        |
| ADALIB='SAGLIB.ADAvrs'    | Specify name of Adabas steplib.                               |
| NATBAT='NAT vrsBA'        | Specify correct batch Natural program.                        |
| DEV001                    | Specify the disk name for the data set.                       |
| ssss,nnnn                 | Specify the start track and number of tracks for the data set |

*Note: The disk name, start track and number of tracks information is repeated for each Natural Engineer data set required. They are identified by the 'SETPARM' JCL statement.*

## Global Changes for BS2000

### Natural Engineer RJE JCL Text Members

The supplied Natural Engineer RJE JCL text members for BS2000 should be reviewed to adapt them to your site standards. This can be done by reviewing the following initialization parameters in the Natural Engineer text member ###CINI:

# 1

## Natural Engineer Installation Guide

| Group Header / Parameter | Description   |
|--------------------------|---|
| [JCL-BS2000]             |   |
|                          | <i>Note: The following parameters are used by the Natural Engineer RJE JCL text members only. They can be customized as required to meet the site standards applicable.</i>   |
| <b>NATBAT=</b>           | Default=NATEXE<br><br>The name of the batch Natural program used during batch job submission.   |
| <b>LOGON=</b>            | Default=LOGON SYSNEE<br><br>The name of the Natural Engineer logon library.<br><br><i>Note: If Natural Security is being utilized then the USER and PASSWORD information can be also be specified here. For example:</i><br><br><i>LOGON=SYSNEE,USER,PASSWORD</i> |

*Note: Do not change the application name setting of 'AAAAAAA', this is dynamically replaced by the Natural Engineer RJE Job submission screen with the name of the currently selected application.*

### Additional Changes for Natural Engineer JCL text member JCLSTART

Check that the various environment settings are correct for your site standards.

*Note: Do not change the job name setting of 'NNNNNNNN', this is dynamically replaced by the Natural Engineer RJE Job submission screen.*

## Natural Engineer Processes and Related Jobs

---

This section illustrates the relationships between the Natural Engineer batch processes, the stand-alone batch jobs and the Natural Engineer JCL text members.

### Extract Missing Objects

| Stand-alone Batch Job | Equivalent Natural Engineer RJE JCL text members |
|-----------------------|--|
| EXTMIS                | JCLSTART<br>JCLINIWT<br>JCLEXTMS<br>JCLLAST      |

### Extract Application

| Stand-alone Batch Job | Equivalent Natural Engineer RJE JCL text members |
|-----------------------|--|
| EXTRACT               | JCLSTART<br>JCLINIWT<br>JCLEXTRT                 |

### Load Repository

| Stand-alone Batch Job | Equivalent Natural Engineer RJE JCL text members |
|-----------------------|--|
| LOAD                  | JCLSTART<br>JCLINIWT<br>JCLLOAD<br>JCLLAST       |

# 1

## Natural Engineer Installation Guide

### Extract and Load

| <b>Stand-alone Batch Job</b> | <b>Equivalent Natural Engineer RJE JCL text members</b> |
|------------------------------|---|
| EXTRACT                      | JCLSTART  |
| LOAD                         | JCLINIWT  |
|                              | JCLEXTLD  |

### Extract, Load and Impact

| <b>Stand-alone Batch Job</b> | <b>Equivalent Natural Engineer RJE JCL text members</b> |
|------------------------------|---|
| EXTRACT                      | JCLSTART  |
| LOAD                         | JCLINIWT  |
| IMPACT                       | JCLEXLDI  |

### Impact Execution

| <b>Stand-alone Batch Job</b> | <b>Equivalent Natural Engineer RJE JCL text members</b> |
|------------------------------|---|
| IMPACT                       | JCLSTART  |
|                              | JCLINIWT  |
|                              | JCLIMPCT  |
|                              | JCLLAST   |

### Impact Execution Field Analysis

| <b>Stand-alone Batch Job</b> | <b>Equivalent Natural Engineer RJE JCL text members</b> |
|------------------------------|---|
| IMPFLD                       | JCLSTART  |
|                              | JCLINIWT  |
|                              | JCLIMPWZ  |
|                              | JCLLAST   |

## Execute Modification for all Objects

| <b>Stand-alone Batch Job</b> | <b>Equivalent Natural Engineer RJE JCL text members</b> |
|------------------------------|---|
| MODIFY                       | JCLSTART<br>JCLINIWT<br>JCLREMDY<br>JCLLAST             |

## Global Reports

| <b>Stand-alone Batch Job</b> | <b>Equivalent Natural Engineer RJE JCL text members</b> |
|------------------------------|---|
| REPORTGL                     | JCLSTART<br>JCLINIWT<br>JCLREPGL<br>JCLREPCT<br>JCLLAST |

# 1

## Natural Engineer Installation Guide

### Application Reports

| <b>Stand-alone Batch Job</b> | <b>Equivalent Natural Engineer RJE JCL text members</b> |
|------------------------------|---|
| REPORTEN                     | JCLSTART<br>JCLINIWT<br>JCLREPAP<br>JCLREPCT<br>JCLLAST |

### Impact Reports

| <b>Stand-alone Batch Job</b> | <b>Equivalent Natural Engineer RJE JCL text members</b> |
|------------------------------|---|
| REPORTIM                     | JCLSTART<br>JCLINIWT<br>JCLREPIM<br>JCLREPCT<br>JCLLAST |

### Modification Reports

| <b>Stand-alone Batch Job</b> | <b>Equivalent Natural Engineer RJE JCL text members</b> |
|------------------------------|---|
| REPORTMO                     | JCLSTART<br>JCLINIWT<br>JCLREPRM<br>JCLREPCT<br>JCLLAST |

## Application Delete

| Stand-alone Batch Job | Equivalent Natural Engineer RJE JCL text members |
|-----------------------|--|
| DELAPP                | JCLSTART<br>JCLINIWT<br>JCLDELET                 |

## Application Management

| Stand-alone Batch Job | Equivalent Natural Engineer RJE JCL text members |
|-----------------------|--|
| JCLANAL               | JCLSTART<br>JCLINIWT<br>JCLEXEC<br>JCLLAST       |
| SRVANAL               | JCLSTART<br>JCLINIWT<br>JCLEXEC<br>JCLLAST       |

## SQL Tables Extract

| Stand-alone Batch Job | Equivalent Natural Engineer RJE JCL text members |
|-----------------------|--|
| SQLEXT                | JCLSTART<br>JCLINIWT<br>JCLSQLEX                 |

## SQL Tables Load

| Stand-alone Batch Job | Equivalent Natural Engineer RJE JCL text members |
|-----------------------|--|
| SQLLOD                | JCLSTART<br>JCLINIWT<br>JCLSQLLD                 |

# 1

## Natural Engineer Installation Guide

### Soft Links Import

| <b>Stand-alone Batch Job</b> | <b>Equivalent Natural Engineer RJE JCL text members</b> |
|------------------------------|---|
| SOFTLINK                     | JCLSTART<br>JCLINIWT<br>JCLEXEC<br>JCLLAST              |

### Delete Load Audit Log Records

| <b>Stand-alone Batch Job</b> | <b>Equivalent Natural Engineer RJE JCL text members</b> |
|------------------------------|---|
| DELLODLG                     | JCLSTART<br>JCLINIWT<br>JCLEXEC<br>JCLLAST              |

# INDEX

## M

Mainframe Installation, 9  
    Customization, 33  
    Installation Jobs, 10  
    Installation Steps, 20  
    Installation Tape for Natural Engineer  
        under BS2000, 17  
    Installation Tape for Natural Engineer  
        under z/OS, 12  
    Installation Tape for Natural Engineer  
        under z/VSE, 15  
Modifying Natural Engineer Batch Jobs,  
    34  
    Bulk Extract & Load, 36  
    Global Changes for BS2000, 45  
    Global Changes for z/OS, 40  
    Global Changes for z/VSE, 43  
    JCL Analysis, 39  
    Supplied Stand-alone Batch Jobs, 35  
NEE Processes and Related Jobs, 47  
    Application Delete, 51

    Application Management, 51  
    Application Reports, 50  
    Delete Load Audit Log Records, 52  
    Execute Modification for All Objects,  
        49  
    Extract and Load, 48  
    Extract Application, 47  
    Extract Missing Objects, 47  
    Extract, Load and Impact, 48  
    Global Reports, 49  
    Impact Execution, 48  
    Impact Execution – Field Analysis, 48  
    Impact Reports, 50  
    Load Repository, 47  
    Modification Reports, 50  
    Soft Links Import, 52  
    SQL Tables Extract, 51  
    SQL Tables Load, 51

## P

Prerequisites, 11



