

# N2O

## User Manual

**Note:** All references to the N2O version in this manual are indicated by *vrs* or *v.r.s.* The current release of N2O is version 5.3.1.

This document is applicable to N2O, and N2O/3GL Version 5.3.1. N2O/3GL is a separately priced, optional feature.

Comments pertaining to this document, N2O, and N2O/3GL are encouraged. Please direct all comments to:

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## PREFACE

The N2O documentation consists of an Administrator Manual, a User Manual, and an Administrative Guide. The Administrator Manual is designed to be used by the N2O Administrator, the User Manual is geared toward the everyday user of N2O, and the Administrative Setup Guide will assist the N2O Administrator in defining N2O's Environment Subsystem.

The first section of the Administrator Manual is an introduction, which defines Change Management and provides an overview of N2O.

The second section describes the installation procedure for N2O. This section illustrates the procedure for OS, VSE, VM, and Siemens BS2000 environments. Sample JCL is included for each environment. This section also describes conversion from N2O 4.0 to N2O 5.0.

The third section describes the Environment Subsystem. This section illustrates the manner in which site-specific information is provided to N2O. The sub-sections describing the Environment Subsystem are arranged in the order in which installation is performed. This arrangement allows the Environment Subsystem section to be used as a tutorial in addition to serving as a reference.

Security for N2O is administered in the Environment Subsystem, but it is discussed in the fourth section of the Administrator Manual. This section explains the different profiles that determine security for N2O users.

The fifth section describes N2O and N2O/3GL operations. Some of the operations included in this section are: customization options, running batch migrations and remote migrations, and Static SQL support.

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\* In this document, CA-LIBRARIAN is referred to as LIBRARIAN, CA-PANVALET is referred to as PANVALET, CA-ACF2 is referred to as ACF2, CA-TOP SECRET is referred to as TOP SECRET, and CA-ENDEVOR is referred to as ENDEVOR.

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# SECTION I

## INTRODUCTION

### **I.1 Change Management Using N2O**

N2O is an exceptional change management tool for programmers and others involved in application development. It performs many tasks including the following:

- Controls, monitors, and coordinates program changes made to applications
- Quickly and efficiently incorporates program changes into production
- Protects the integrity of production code and program changes
- Ensures that changes are tested and approved before being implemented
- Secures migrations by defining migration paths for users
- Archives and recovers previous versions of programs for an application
- Coordinates programming-related activities of development staff
- Maintains complete audit trails to provide the history of all program changes
- Tracks the status of changes and assists in managing projects
- Compares the differences between two NATURAL source programs, two NATURAL object programs, or two environments
- Documents and prints NATURAL objects, File Layouts, Descriptor X-Ref (Cross-Reference) Information, Object Flow Analysis, and Object X-Ref in local N2O environments
- Scans for strings over the object/library range specified by the user and reports on (and records for future lookup) all matches

These tasks help to minimize paper trails, secure environments, improve programmer productivity, reduce management review time, and add to the integrity of applications.

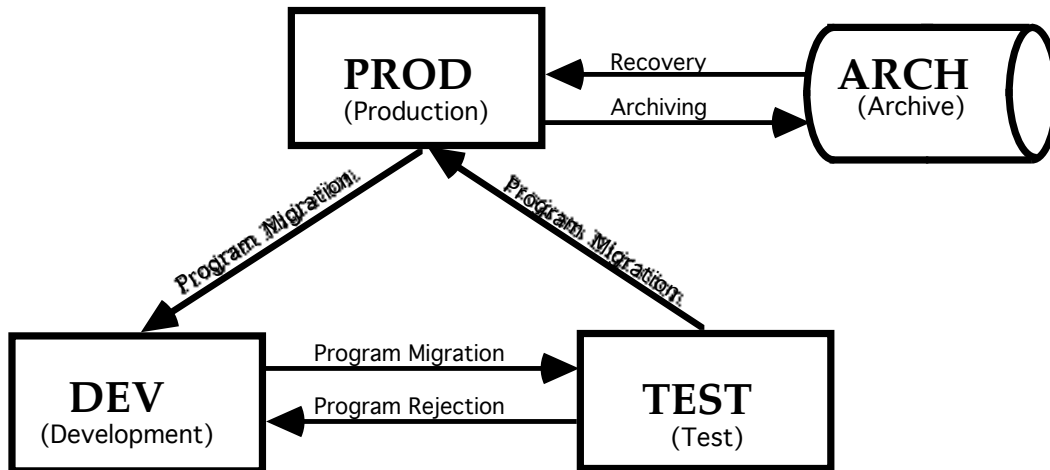
N2O provides Change Management for DDMS, METADATA, NATURAL objects, PREDICT objects, and SYSERR messages.

<b>DDM</b>	Data Definition Modules (DDM)
<b>METADATA</b>	METADATA for User Defined Entities
<b>NATURAL objects</b>	Any of the following in source and/or object format: programs, subprograms, subroutines, copycode, help routines, maps, global data areas, local data areas, parameter data areas, classes, adapters, dialogs, command processors, and text.
<b>PREDICT objects</b>	Any of PREDICT's predefined object types. N2O requires PREDICT version 3.1 or later for migrating PREDICT objects.
<b>SYSERR messages</b>	User-supplied messages in short and/or extended form.

N2O/3GL, a separately-priced optional feature, provides Change Management for 3GL objects by interfacing with ENDEAVOR, The LIBRARIAN, and PANVALET. N2O/3GL also migrates 3GL objects between OS/390 (MVS) Partitioned Datasets (PDSs) using the IEBCOPY Utility.

**3GL objects** Any of the following categories: Assembler, COBOL, FORTRAN, PL/I, RPG, JCL, DATA, MISC, or OTHER.

The Change Management process begins with a request to correct problems, enhance features, or add new applications. To perform these tasks, programmers may migrate or transfer objects from one environment to another. These migrations define an Application Life Cycle.



**Sample Application Life Cycle**

The diagram above shows a sample Application Life Cycle consisting of three environments: Production (PROD), Development (DEV), and Test (TEST). The diagram also shows an Archive file (ARCH) which contains previous versions of programs.

A programmer migrates objects from the Production environment to the Development environment to initiate a change request. The Production versions of the objects are modified and tested in Development.

After modifying objects in the Development environment, programmers may migrate them to the Test environment where they can be evaluated and tested before being migrated to Production. Typically, a testing or quality assurance group must approve an object for migration to Production. If problem areas are identified during testing, the modified objects may be rejected back to Development. Programmers may then correct these problems and migrate the objects back to Test again. This cycle may be repeated several times. When testing is complete, the objects may be approved to migrate to Production, completing the Change Management process.

**Note:** Individual site Application Life Cycles may vary greatly from the sample.

**N2O Events**

An Event is the process of migrating an object between environments using N2O. Examples of Event names are: GEN-LEDG, PAYROLL, and BENEFITS. All migrations in the N2O system have an Event name and an Event sequence number. Event sequence numbers are internally assigned during the migration process.

Once an Event is created, the objects may be migrated immediately, or they may require authorization for migration. If authorization is required, the specified objects will not be migrated until proper authorization is obtained.

## **I.2 N2O Subsystems**

N2O is divided into five Subsystems, each having a separate responsibility within the Change Management process. These Subsystems are logically arranged so that many similar functions can be executed within the same Subsystem.

### **Environment Subsystem**

After installing N2O, the N2O Administrator must define the site's environment and Change Management requirements using the Environment Subsystem. Information and instructions for this subsystem are located in the ***N2O Administrator Manual***.

### **Migration Subsystem**

The Migration Subsystem initiates the Change Management process by creating and processing Events.

This Subsystem allows users to create Events by selecting objects to migrate. These objects include DDMS, METADATA and NATURAL objects, PREDICT objects, 3GL/OTHER objects, and SYSERR messages. N2O verifies authorization for users before processing an Event. If authorization is necessary, N2O holds the Event until the proper authorization is provided. Once authorization occurs, N2O migrates the objects to the specified environment and stores information about the Event.

N2O provides Checkout/Checkin, a feature that controls and monitors changes in an Application Life Cycle. Checkout/Checkin is designed to protect the integrity of objects throughout the Application Life Cycle and to provide an audit trail. N2O can limit multiple checkouts for an object and prevents objects from being overwritten.

### **Project Tracking Subsystem**

The Project Tracking Subsystem maintains detailed information about projects and associated tasks.

Project Tracking can be used to collect requests for changes to a project from users at all levels. A request for a change then becomes a task for a specific project. A task is documented and its progress can be tracked as it advances from one stage to another.

The Project Tracking Subsystem can be used for NATURAL and non-NATURAL application development, as well as other non-programming projects.

### **Reporting Subsystem**

The Reporting Subsystem provides vital information for users, such as administrators, programmers, and auditors. For example, the checked-out Objects Report assists programmers in identifying objects currently checked out.

### **Toolbox Subsystem**

The Toolbox Subsystem supplies application development tools for administrators and programmers. These tools aid in the development, maintenance, and documentation of NATURAL applications.

### **User-Defined Subsystem**

The User-Defined Subsystem allows site-specific, customized programs to be accessed from the N2O menu system

### **I.3 N2O Features**

N2O automates the Change Management process by offering many features, including the following:

#### **Archiving/Recovery**

Archiving/Recovery retains previous versions of NATURAL objects, PDS members, and SYSERR messages for future recovery. Users may access the Archive file to view and to recover these versions.

#### **Audit Trail**

The Audit Trail maintains information about Events and migrated objects.

#### **Autocompile**

Autocompile automates the NATURAL object and 3GL member compile process.

#### **Checkout/Checkin**

Checkout/Checkin controls and monitors object changes and protects the integrity of objects throughout the Application Life Cycle.

#### **Compare Utilities**

Compare utilities provide reports that identify the differences between two NATURAL source programs, two NATURAL object programs, or two environments.

#### **Cross Reference (XREF)**

Cross Reference (XREF) uses PREDICT XREF information to identify all related programs affected or invoked by a object selected to be migrated. XREF is available only for NATURAL objects.

#### **Documentation Toolbox**

Documentation Toolbox function provides utilities to print NATURAL objects, File Layouts, Descriptor X-Ref (Cross-Reference) Information, Object Flow Analysis, Object X-Ref, NATURAL SYSERRs, and Archived 3GL Objects in local N2O environments.

#### **N2OSCAN**

The N2OSCAN utility processes the source of NATURAL objects, scanning for strings over the object/library range specified by the user, and reports on (and records for future lookup) all matches.

#### **On-line Authorization**

On-line authorization ensures integrity and secures applications by allowing only authorized users to migrate objects between environments. This feature provides up to ten levels of authorization, and allows the N2O Administrator to specify the order of authorization. Routine migrations may not require any authorization.

#### **On-line/Batch Migration**

On-line/Batch Migration provides the flexibility of migrating objects on-line or in batch. On-line migrations allow users to migrate objects immediately. Batch migrations allow users to schedule migrations for specific times.

#### **On-line Request System**

The On-line Request System allows a user to select objects to migrate.

**Project Tracking**

Project Tracking allows the progress of programming projects and non-programming projects to be assessed quickly through on-line and batch reports.

**Reporting**

Reporting provides reports about Events and objects by accessing information stored as an audit trail within N2O.

**Security**

Security controls the migration of objects and access to N2O menus and functions.

**User-exits**

User-exits provide the flexibility to tailor N2O for site-specific needs, such as additional security and the ability to interface with other software.

**I.4 The N2O User Interface**

The N2O interface makes the setup and operation of the product easy and trouble-free. N2O makes use of PF-keys, supports the use of direct commands, has an on-line help facility, and has an error trapping system.

There are several types of screens that are used throughout N2O:

**Startup Screens**

Startup screens display authorization and version information about N2O.

**Menu Screens**

Menu screens display sub-functions and allow the selection of a sub-function.

**Data Entry Screens**

Data entry screens display input fields for entering data necessary to perform N2O functions.

**Selection Screens**

Selection screens display a list of items available for possible processing.

**Help Screens**

Help screens display information about the current function or valid data for the field.

**Error Message Screens**

Error message screens display information about an error that has occurred during the use of N2O.

**Startup Screens**

Entering "N2O" at the NATURAL "Next" prompt or logging on to the library N2OLIB and typing "Menu" displays the N2O startup screen.

```

      NN      NN      0000
      NNN     NN      00  00
      NNNN    NN      00  00
      NN  NN  NN      00  00
      NN  NN  NN  222222  00  00
      NN  NNNN  22  22  00  00
      NN  NNN   22      00  00
      NN      NN    22      0000
                22
                22
                22222222

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Press ENTER to continue
    
```

### Menu Screens

N2O menu screens display only the sub-functions listed in a user's security definition and contain an Enter Code field, a Direct Command line, and PF-keys. Menu screens are labeled in the lower right corner, identifying the Direct Command that accesses the menu screen.

```
01-12-31          N-2-O MAIN MENU          TSI0373
11:38:00                                     TSI1

          Code  Function
          ----  -
          E    Environment Subsystem
          M    Migration Subsystem
          R    Reporting Subsystem
          T    Toolbox Subsystem
          U    User-Defined Subsystem
          .    Terminate N-2-O Session
          ----  -

Enter Code :  M

Direct Command:          N2O MENU
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
```

The Enter Code field allows users to select a menu sub-function. For example, on the screen above, entering "M" in the Enter Code field accesses the Migration Subsystem Menu.

The Direct Command line allows users to directly access menu screens. For example, entering MIG MENU on the Direct Command line accesses the Migration Subsystem Menu.

The Direct Command line may also be used to update changes made to a user's security during the user's N2O session by entering "REFRESH" on the Direct Command line. NATURAL System commands may be executed using the Direct Command line. Each NATURAL System command must be preceded by SYS. For example, entering SYS FIN exits N2O and NATURAL.

The PF-keys allow users to request help, end the function, access menu screens, or exit N2O. PF-keys 13-24 provide the same functions as PF-keys 1-12. For example, pressing PF1 or PF13 displays on-line help.

N2O screens, except for the startup screens, follow a standard template. The upper left corner of the screen displays the date and time. The upper right corner of the screen displays the User-ID and Terminal-ID. The top middle of the screen displays the name of the current N2O screen.

**Data Entry Screens**

Data entry screens allow users to enter data to perform N2O functions.

```

13-10-04          N-2-O OBJECT REPORTING          TSI0373
14:01:18          HISTORY OF AN OBJECT            SC0TCP06

Object           : _____
Library          : _____
Date Range       : _____ - _____
List Events      : A (All/Closed/Open)
Detailed Report  : N (Batch Only)
Mode             : O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

For example, the History of an Object report requires an object name and a mode specification to display the history of an object. The Library and Date Range are optional fields that limit the output of the report.

**Selection Screens**

Selection screens display a list of items available for possible processing.

```

Valid Values: C - Copy D - Delete I - Inquire M - Modify
01-12-31          N-2-O SELECT EVENTS FOR PROCESSING          TSI0373
11:38:00          STATUS:0                                    TSI1

S      Event  Seq  From To  Event  ----Added----  ----Task----
-      -----  -   -   -   -   -   -   -   -   -   -   -   -   -
-      EXTRACT 3311 EXTP EXTM N   TSI1  01-12-31  *****  *****
-      PAYOUT  1245 PAYP PAYD N   TSI1  01-12-31  *****  *****

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END   ----  CHNG  ----  ----  ----  ----  ----  ----  ----
    
```

For example, the Select Events for Processing screen displays a list of Events. Entering D, I, or M in the Select field next to an Event identifies the function (Delete, Inquire, or Modify ) to be performed.

**Help Screens**

Help Screens are available on Menu and Data Entry screens. There are two types of help screens: field-level help and screen-level help.

**Field-Level Help**

Pressing PF1 or entering "?" on a field invokes field-level help (if it is available).

```
01-12-31          N-2-O MAIN MENU          TSI0373
11:38:00                                     TSI1

          Code  Function
          ----  -
          E    Environment Subsystem
          M    Migration Subsystem
          R    Reporting Subsystem
          T    Toolbox Subsystem
          U    User-Defined Subsystem
          .    Terminate N-2-O Session
          ----  -

Enter Code :  _

Direct Command: ? _____ N2O MENU
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
```

For example, entering "?" on the Direct Command line invokes field-level help for direct commands.

After entering "?" on the Direct Command line, the pop-up window below displays a list of Direct Commands.

```

01-12-31                                N-2-0 MAIN MENU                                TSI0373
11:38:00                                                                                               TSI1

                                Code  Function
+-----+-----+-----+-----+
| Please select a screen name |
| X  Command                  | Description |
+-----+-----+-----+-----+
| -  N20 MENU                 | MAIN MENU  |
| -  ENV MENU                 | ENVIRONMENT SUBSYSTEM MENU |
| -  ENV ARCH                 | ARCHIVE DEFINITION MENU |
| -  ENV NODE                 | NODE DEFINITION MENU |
| -  ENV EVNT                 | MASTER EVENT MENU |
| X  ENV PARM                 | INSTALL FARMS MENU |
| -  ENV MIG                  | MIGRATION PROFILE MENU |
| -  ENV DEF                  | ENVIRONMENT DEFINITION MENU |
+-----+-----+-----+-----+

Direct Command:  ? _____ N20 MENU
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT

```

Users may select a direct command by entering "X" in the Select field next to the command. For example, the screen above indicates "ENV PARM" has been selected. After pressing Enter, "ENV PARM" is then inserted on the Direct Command line.

Pressing Enter without selecting an item displays the next page of the selection list. Pressing Enter on the last page displays the top of the selection list. Pressing PF3 returns to the screen.

Throughout the manual, the availability of field-level help is identified with an infinity character (∞) beside the field in the field description table.

**Screen-Level Help**

Pressing PF1 or entering "?" in a field that does not have field-level help invokes screen-level help.

```
01-12-31          N-2-O HELP SCREEN FOR N2O0000P          11:38:00

N2O Main Menu

Field              Description
-----
ENTER CODE         The function to be executed.  Valid values
(required)         are as follows:

                   E   Environment Subsystem
                   Defines site standards for Change Management
                   *
                   M   Migration Subsystem
                   Migrates programs in a controlled manner using
                   information defined in the Environment Subsystem
                   *
                   P   Project Tracking Subsystem
                   Maintains detailed information about Projects and
                   tracks the progress of changes within those Projects
                   *

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END ----- TOP  UP  DOWN  BOT -----
```

For example, the screen above displays screen-level help for the N2O Main Menu.

All screen-level help for N2O is stored in the library N2ODOCS and may be modified by editing the program name identified at the top of the Help screen. For example, N2O0000P is the program to be accessed for editing help information for the above screen. Screen-level help displays a maximum of 36 lines of text.

The following PF-keys are provided for screen-level help:

<b><u>Key</u></b>	<b><u>Function</u></b>	<b><u>Description</u></b>
PF3	END	ends screen-level help
PF6	TOP	pages to the top of the text
PF7	UP	pages up (back) through the text
PF8	DOWN	pages down (forward) through the text
PF9	BOT	pages to the bottom of the text

**Error Message Screens**

Error Message screens display information about an error and identifies the N2O program that was running when the error occurred.

```
01-12-31          N-2-O FATAL ERROR DETECTED          TSI0373
11:38:00

A FATAL ERROR HAS BEEN DETECTED BY N2O ROUTINE:  N2O1380N
THE FOLLOWING ERROR MESSAGE WAS PROVIDED BY THE FAILING ROUTINE:

PGM: N2O9200N CMD: L9 CID: L9SR RC: 9 TRACK: RSRC

Please contact your N-2-O System Administrator or
Treehouse Software, Inc.
409 Broad Street, Suite 140
Sewickley, PA 15143 USA
(412) 741-1677
tsi@treehouse.com      www.treehouse.com      support@treehouse.com

THIS N-2-O SESSION WILL BE TERMINATED.

PRESS ENTER TO PROCEED.
```

For example, the screen above shows that program N2O1380N called the subprogram N2O9200N and received a response code 9. The solution to response code 9 is restarting N2O.

Have the PGM, CMD, CID, RC, and TRACK information available when calling Treehouse Software.

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## SECTION II

### MIGRATION SUBSYSTEM

#### II.1 Introduction

The Migration Subsystem is the core of N2O where Events are created. An Event is the process of migrating NATURAL objects, PREDICT objects, 3GL/OTHER objects, and/or SYSERR messages between environments using N2O.

The Migration Subsystem is used by developers to create and maintain Events, as well as by managers and support personnel to authorize Events. The Migration Subsystem relieves the DBA and systems administration staff of the day-to-day tasks associated with change management.

The Migration Subsystem section presents topics in the following order:

- Request Events
- Authorize Events
- Service Events
- Migration Utilities
- Checkout/Checkin Utilities
- Batch JCL Submission

**Note:** Field description tables in this section display valid object types for fields. Object types include the following: DDMS (D), METADATA (M), NATURAL objects (N), PREDICT objects (P), 3GL/OTHER objects (O), and SYSERR messages (S).

To access the Migration Subsystem menu, enter "M" on the N2O Main menu, enter the direct command MIG MENU, or press PF5 on any menu.

```
01-12-31                                N-2-O MAIN MENU                                TSI0373
11:38:00                                                                                          TSI1

Code  Function
-----
E    Environment Subsystem
M    Migration Subsystem
P    Project Tracking Subsystem
R    Reporting Subsystem
T    Toolbox Subsystem
U    User-Defined Subsystem
.    Terminate N-2-O Session
-----

Enter Code:  _

Direct Command: _____ N2O MENU
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
```

After following the instructions on the previous page, the Migration Subsystem menu is displayed.

```

01-12-31          N-2-O MIGRATION SUBSYSTEM MENU          TSI0373
11:38:00

                Code  Function
                ----  -
                A    Authorize Events
                B    Batch JCL Submission
                C    Checkout/Checkin Utilities
                M    Migration Utilities
                R    Request Events
                S    Service Events
                .    Terminate Migration Subsystem
                ----  -

Enter Code:  _

Direct Command:  _____          MIG MENU
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ----  END  ENV  ----  REP  TOL  USR  PRJ  ----  ----  EXIT
    
```

Field	Description
Enter Code	<p>The function to be executed. Valid values are as follows:</p> <ul style="list-style-type: none"> <li><b>A      Authorize Events</b> Authorizes open Events that require authorization.</li> <li><b>B      Batch JCL Submission</b> Submits batch JCL to the systems internal reader.</li> <li><b>C      Checkout/Checkin Utilities</b> Updates the Checkout/Checkin status of objects and provides the ability to enroll new objects.</li> <li><b>M      Migration Utilities</b> Performs Autocompile (if necessary) and completes the MOVE process for Events.</li> <li><b>R      Request Events</b> Creates and maintains Events.</li> <li><b>S      Service Events</b> Processes authorized Events that require servicing.</li> </ul>

## II.2 Request Events

The Request Events function initiates the migration process. This function allows users to request Events to migrate DDMS, METADATA, NATURAL objects, PREDICT objects, 3GL/OTHER objects, and/or SYSERR messages. Events are created using a Master Event, which provides default values for the Event. Master Events may define a Single Target Event or Multiple Target Event.

Multiple Target Events allow a user to migrate DDMS, NATURAL objects, PREDICT objects, and/or SYSERR messages from one environment to several environments using one Event. 3GL/OTHER objects cannot be migrated to multiple targets. The targets for the Event are identified on the Master Event.

### **Checkout/Checkin**

N2O provides Checkout/Checkin, an optional feature that controls and monitors changes in an application life cycle. It is designed to protect the integrity of objects throughout the application life cycle and to provide an audit trail. N2O limits multiple checkouts for an object and prevents objects from being overwritten.

To use Checkout/Checkin, at least one environment must be defined as a BASE environment. A BASE environment serves as a repository for source code. All non-BASE environments are referred to as "development" environments. The Checkout/Checkin feature does not permit migrations between BASE environments.

There are two methods for checking out objects:

- Existing objects are marked as checked-out when an object is selected to migrate from a BASE environment to a development environment.
- New objects in a development environment may be marked as checked-out using the Checkout Utility. For more information, refer to **Section II.6 Checkout/Checkin Utilities**.

The maintenance cycle of an existing object typically begins when it migrates from a BASE environment to a development environment. The object may continue to migrate to other development environments (e.g., system test, training, quality assurance). The cycle ends when the object migrates back to the original BASE environment. N2O then marks the object as checked-in.

When Checkout/Checkin is active, an Extract Event may be used to copy objects to a development environment without changing the Checkout status. These objects are not checked out and may be copied regardless of their current Checkout status. The following restrictions apply to Extract Events:

- The target cannot be a BASE environment.
- The migration cannot overwrite currently checked-out objects.
- The Migration method must be COPY.

When creating Multiple Target Events, the first migration path is verified against Checkout/Checkin rules. All other paths are verified against Extract rules.

**Note:** Once an object is checked out, only the Checkout user may request further migrations of the object. If the N2O Administrator has installed N2OEDIT, NATURAL objects checked out to a user may be edited by that user only.

When Checkout/Checkin is active, Checkout/Checkin rules are verified during the selection process. Unless a request violates the rules, the Checkout/Checkin process is transparent to the user. When an object is selected to migrate from a BASE environment, N2O marks the object as checked out. Once an object is checked out, subsequent migrations must be initiated from the current checkout location by the current checkout user. The object selection screen for migrations from development environments only displays objects the user has checked out.

The final step in the development cycle is to migrate an object back to the BASE environment for checkin. The same user responsible for the checkout must perform the checkin, and the migration must originate from the current checkout location.

The following apply when performing migrations with Checkout/Checkin active:

**Migrating from BASE to Development (Checkout)**

- An object is considered checked-out immediately after it is selected to migrate.

**Migrating between Development Environments**

- The object must be currently checked out to the requesting user.
- The Event must be initiated from the current checkout location of the object.

**Migrating from Development to BASE (Checkin)**

- The object must currently be checked out by the requesting user.
- The Event must be initiated from the current checkout location of the object.
- The object is considered checked-in when the object is migrated.

To access the Request Events menu, enter "R" on the Migration Subsystem menu or enter the direct command MIG REQ on any menu.

```

01-12-31          N-2-O REQUEST EVENTS MENU          TSI0373
11:38:00                                     TSI1

Code  Function
----  -
A     Add an Event
C     Copy an Event
D     Delete an Event
I     Inquire on an Event
M     Modify an Event
R     Recovery from Archive
S     Select Events for Processing
.     Terminate Request Event Menu
----  -

Enter Code:  _  Event      : _____  Type  : N___

                Sequence  : _____  Status:  _

Direct Command _____  MIG REQ
Enter--PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
    
```

Field	Description
ENTER CODE	<p>The function to be executed. Valid values are as follows:</p> <p><b>A Add an Event</b> Creates an Event for migrating objects.</p> <p><b>C Copy an Event</b> Creates an Event for migrating objects by copying an existing Event.</p> <p><b>D Delete an Event</b> Removes an Event that no longer needs to be processed.</p> <p><b>I Inquire on an Event</b> Displays information about an Event.</p> <p><b>M Modify an Event</b> Updates an Event.</p> <p><b>R Recovery from Archive</b> Creates an Event for recovering objects.</p> <p><b>S Select Events for Processing</b> Provides a list of Events that may be deleted, inquired on, or modified.</p>
∞ EVENT (required)	<p>The Master Event associated with the Event to be added or maintained. This name is a logical label used to differentiate individual migration paths. For the Select function, the name is used as a starting value.</p>
∞ TYPE (required for Add and Copy)	<p>The type of objects to migrate. Valid values are one or a combination of the following:</p> <p>N Indicates NATURAL objects. S Indicates SYSERR messages. P Indicates PREDICT objects. O Indicates 3GL/OTHER objects. D Indicates DDMS. M Indicates METADATA</p> <p>(METADATA and PREDICT objects (P) can not be migrated together)</p> <p>All object types may be migrated using a single Event (Default: N).</p>
SEQUENCE (required for Copy, Delete, Inquire and Modify)	<p>The Sequence number of the request to be maintained. For the Add function, N2O automatically assigns this number.</p>
∞ STATUS (optional)	<p>The Status selected for display. For valid values refer to <b>Appendix B N2O Event Status</b>.</p>
∞ indicates field-level help is available.	

**II.2.1 Add an Event**

The Add an Event function creates new Events for migrating objects.

To add an Event, enter "A" in the Enter Code field, the Master Event of the Event to be added in the Event field, and "D" (DDMS), "M" (METADATA), "N" (NATURAL objects), "P" (PREDICT objects), "O" (3GL/OTHER objects), and/or "S" (SYSERR messages) in the Type field on the Request Events menu.

```

01-12-31          N-2-O ADD AN EVENT          TSI0373
11:38:00          Event: PAYOUT      Sequence: 1      TSI1

      From Env      : PROD      From Library      : PAYPROD
      To Env        : DEV        To Library        : PAYDEV
      Process Date   : 20011231   Process Time      : 11:38:00
      Starting Program: _____
      Task Group     : _____      Task Number      : _____
      Include Objects from UEX15: N

C
o
m
m
e
n
t
s
_____
_____
_____
_____
_____
_____
_____
_____

Enter--PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

In the screen above, the Event is "PAYOUT", Sequence "1". Sequence "1" was the first/next available sequence number assigned by N2O.

The Master Event provides the other default values displayed in the Add an Event screen.

The following Field Descriptions apply to all Request Events functions (Add, Copy, Delete, Inquire, and Modify).

Field	Type	Description
EVENT (supplied)	N,S,P,O, D,M	The Master Event of the migration.
SEQUENCE (supplied)	N,S,P,O, D,M	The sequence number of the Event.
FROM ENV (required)	N,S,P,O, D,M	The source Environment Definition of the migration. When using Add or Copy an Event, this field may be modified if the master Event is not locked.
FROM LIBRARY (required)	N,S	The library containing the NATURAL objects and/or SYSERR messages for the migration. When using Add or Copy an Event, this field may be modified if the master Event is not locked.
TO ENV (required)	N,S,P,O, D,M	The target Environment Definition of the migration. When using Add or Copy an Event, this field may be modified if the master Event is not locked. An "*" indicates the Event is a Multiple Target Event.

(continued from previous page)

Field	Type	Description
TO LIBRARY (required)	N,S	The library to which NATURAL objects and/or SYSERR messages are to be migrated. When using Add or Copy an Event, this field may be modified. An "*" indicates the Event is a Multiple Target Event.
PROCESS DATE (required)	N,S,P,O, D,M	The earliest date on which the batch migration may take place. N2O automatically supplies the current date for Add an Event and Copy an Event, but it may be modified by the user if postdating of the migration is desired. When using Add, Copy, or Modify an Event, this field may be modified. For more information about submitting batch Events, refer to <b>Section II.7 Batch JCL Submission</b> .
PROCESS TIME (required)	N,S,P,O, D,M	The earliest time during the Process Date on which the batch migration may take place. When using Add, Copy, or Modify an Event, this field may be modified.
STARTING PROGRAM (optional)	N	<p>The first NATURAL object to appear in the NATURAL object selection list. An "*" may be used as a wildcard character to start the selection list with NATURAL objects prefixed by a string (e.g., "PAY51*" shows a list of all NATURAL objects with names in the range of Starting Program "PAY51AAA" and Ending Program "PAY51999").</p> <p>If the user enters "*" as the Starting Program in an Event, all NATURAL objects are marked for migration. When using Add, Copy, or Modify an Event for NATURAL migrations, this field may be modified.</p> <p>If Program Dependent Master Events (PDME) are used, the Starting Program specified must be within the range of default values defined on the Master Event.</p>
STARTING MESSAGE (optional)	S	<p>The first SYSERR message to appear in the SYSERR message selection list.</p> <p>If the user enters "*" as the Starting Message in an Event, the entire application is marked for migration. When using Add, Copy, or Modify an Event for SYSERR migrations, this field may be modified.</p>

(continued from previous page)

Field	Type	Description
SYSERR TYPE (required if migrating SYSERR)	S	The type of SYSERR messages to migrate: U Indicates user-supplied short messages are to be migrated. U Indicates user-supplied long (extended) L messages are to be migrated. U Indicates both short and long messages are to be migrated. When using Add or Copy an Event for SYSERR migrations, this field may be modified.
SYSERR LANGUAGE (required if migrating SYSERR)	S	The language to be migrated. Valid values are single alphanumeric characters in the ranges 1 - 9, A - Z and a - y. These values are equivalent to the values available for the *LANGUAGE system variable.  * Indicates all languages are to be migrated. When using Add or Copy an Event for SYSERR migrations, this field may be modified, unless Checkout/Checkin is active.
CHANGE CONTROL (required if Master Event change control='Y')	N,S,P,O, D,M	A value that relates multiple Events to a specific change request. This field is only displayed if Change Control is required. When using Add, Copy, or Modify an Event, this field may be modified.
TASK GROUP (required if Project Tracking on Master Event = 'Y')	N,S,P,O, D,M	A value that relates multiple Events to a specific Task Group from the N2O Project Tracking Subsystem. This field is only displayed if Project Tracking is required. When using Add, Copy, or Modify an Event, this field may be modified.
TASK NUMBER (required if Project Tracking on Master Event = 'Y')	N,S,P,O, D,M	A number that relates multiple Events to a specific task from the N2O Project Tracking Subsystem. This field is only displayed if Project Tracking is required. When using Add, Copy, or Modify an Event, this field may be modified.
INCLUDE OBJECTS FROM UEX15 (required)	N,S,P,O, D,M	"Y" indicates User-Exit 15 will be called to include Objects in the Event. "N" indicates User-Exit 15 will not be called. This field defaults to 'N'.
COMMENTS (optional)	N,S,P,O, D,M	A 10-line comment area describing the Event. When using Add, Copy, or Modify an Event, this field may be modified. If the master Event has Comments = 'YES', this field defaults to the Master Event comments.

**Selecting Multiple Target Environments**

```

01-12-31          N-2-O ADD AN EVENT          TSI0373
11:38:00          Event: PAYMULT  Sequence:  4          TSI1

From Env       :  PROD       From Library    :  PAYPROD__
To Env        :  *          To Library     :  *
Process Date   :  20011231  Process Time   :  10:28:24
Starting Pro +-----+
              | Target Environments:          |
              |                               |
              |   DEV   PAYDEV                |
              |   QA   PAYQA1                 |
              |                               |
              | C   _____                |
              | o   _____                |
              | m   _____                |
              | e   _____                |
              | n   _____                |
              | t   _____                |
              | s   _____                |
              |                               |
Enter-PF1---PF2---PF3--- +-----+ -PF10---PF11---PF12---
      HELP  ---  END  -----
    
```

When “\*” is specified for the Environment and Library, the user must define the multiple targets in which to migrate.

Field	Description
From Environment (supplied)	Environment from which objects are migrated.
Target Environments	Environment/library to which objects are migrated.

## **II.2.2 Object Selection Process**

The object selection process allows users to select objects to migrate. A screen is displayed allowing objects to be selected. When objects are selected, a message providing information about the selection is displayed. For more information about messages displayed when objects are selected, refer to **Section II.2.11 Object Selection Screen Messages**.

The following PF-keys are provided for scrolling throughout the selection process:

<b>Key</b>	<b>Function</b>	<b>Description</b>
PF7	Up	Pages up (back) through the text
PF8	Down	Pages down (forward) through the text

**Note:** The object selection screens for each object type to be migrated will appear. When all object selection screens have been displayed the migration process begins. (Refer to **Section II.2.3 Migration Process**.)

### II.2.2.1 Selecting NATURAL Objects

When adding, copying, or modifying an Event that includes NATURAL objects, the NATURAL object selection screen is displayed. When User-Exit 15 is invoked or when copying or modifying an Event, ADD, REPLACE, or WARNING messages will be placed next to previously selected objects. NATURAL objects with no message in the Message field may be selected to migrate. When migrating from a development environment with Checkout/Checkin active, only NATURAL objects checked out to the user are displayed.

```

For the Event: Type A to Add or D to Delete Objects
01-12-31          N-2-O ADD AN EVENT                      TSI0373
11:38:00         Event: PAYOUT      Sequence: 1          TSI1

From Env: PROD    From Library: PAYPROD    To Env: DEV    To Library: PAYDEV
Starting Object:  PAY5100M

S Object      Object      Type      S/C Message      S Object      Object      Type      S/C Message
- PAY5100M    MAP        S
A PAY5110M    MAP        S
- PAY5120S    SUB-RTN    S
- PAY5140S    SUB-RTN    S
- PAY5160S    SUB-RTN    S
A PAY5200P    PROGRAM    S
- PAY5210S    SUB-RTN    S
- PAY5230S    SUB-RTN    S
- PAY5250S    SUB-RTN    S
- PAY5100P    PROGRAM    S
A PAY5110S    SUB-RTN    S
- PAY5130S    SUB-RTN    S
- PAY5150S    SUB-RTN    S
A PAY5200M    MAP        S
- PAY5210M    MAP        S
- PAY5220S    SUB-RTN    S
A PAY5240S    SUB-RTN    S
- PAY5260S    SUB-RTN    S

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ALL  END  INQ  ----  ----  UP  DOWN  ----  ----  ----  STOP
    
```

Entering a value in the Starting Object field defines the NATURAL object where the selection list begins.

NATURAL objects are selected to migrate by entering "A" (Add) in the Select field next to each NATURAL object. Pressing PF2 automatically places "A" in the Select field next to all NATURAL objects on the selection screen. Entering "D" (Delete) in the Select field next to any of these NATURAL objects removes them from the Event. Pressing PF4 displays a pop-up window of all previously-selected NATURAL objects.

Once selections have been made and Enter is pressed, the screen below is displayed.

```

Press PF1 for more information about Messages
01-12-31          N-2-O ADD AN EVENT                      TSI0373
11:38:00         Event: PAYOUT      Sequence: 1          TSI1

From Env: PROD    From Library: PAYPROD    To Env: DEV    To Library: PAYDEV
Starting Object:  PAY5100M

S Object      Object      Type      S/C Message      S Object      Object      Type      S/C Message
- PAY5100M    MAP        S
- PAY5110M    MAP        S      REPLACE
- PAY5120S    SUB-RTN    S
- PAY5140S    SUB-RTN    S
- PAY5160S    SUB-RTN    S
- PAY5200P    PROGRAM    S      REPLACE
- PAY5210S    SUB-RTN    S
- PAY5230S    SUB-RTN    S
- PAY5250S    SUB-RTN    S
- PAY5100P    PROGRAM    S
- PAY5110S    SUB-RTN    S
- PAY5130S    SUB-RTN    S
- PAY5150S    SUB-RTN    S
- PAY5200M    MAP        S      REPLACE
- PAY5210M    MAP        S
- PAY5220S    SUB-RTN    S
- PAY5240S    SUB-RTN    S      FAILED
- PAY5260S    SUB-RTN    S

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  INQ  ----  ----  UP  DOWN  ----  ----  C/O  STOP
    
```

The screen on the previous page allows the user to verify selections. A message is displayed in the Message field for the selected NATURAL objects. Add or Replace is the usual message that will appear. For more information about messages, refer to **Section II.2.11 Object Selection Screen Messages**.

When the 'FAILED' or 'WARNING' message is displayed next to an Object, place the cursor over the Object and use PF11 to display any existing Checkout information.

After selecting and verifying NATURAL objects on the current screen, pressing Enter displays the next screen of NATURAL objects. Pressing Enter on the last page or PF12 ends the current selection process.

**XREF Selection Process for NATURAL Objects**

The XREF (Cross-Reference) selection process for NATURAL objects identifies NATURAL objects affected or invoked by the objects selected to migrate. This process uses Cross-Reference information stored in PREDICT and is invoked following the selection process for NATURAL objects. Objects identified by XREF may optionally be added to the Event.

There are two options available: "Include XREF objects in the Event" or "Do not include XREF objects in the Event". The N2O Administrator determines which options are available for the XREF selection process for NATURAL objects on a user-by-user basis.

If the N2O Administrator specifies one option for the user, no pop-up window is displayed and the option assigned to that user is performed. However, if the N2O Administrator specifies both options for a user, a pop-up window allows the user to select one of the options for the Event.

```

01-12-31                N-2-O ADD AN EVENT                TSI0373
11:38:00                Event: PAYOUT  Sequence: 1        TSI1

From Env: PROD          From Library: PAYPROD             To Env: DEV          To Library: PAYDEV
                          Starting Object:  PAY5100M

S  Object      Object
-  PAY5100M    MAP          |          Select An Option          | S  REPLACE
-  PAY5110M    MAP          |          |          | S  ADD
-  PAY5120S    SUB-RTN    |          _ Include XREF objects in  | S
-  PAY5140S    SUB-RTN    |          the Event.                  | S
-  PAY5160S    SUB-RTN    |          |          | S  REPLACE
-  PAY5200P    PROGRAM   |          - Do not include XREF objects in | S  ADD
-  PAY5210S    SUB-RTN    |          the Event.                  | S
-  PAY5230S    SUB-RTN    |          |          | S
-  PAY5250S    SUB-RTN    |          +-----+ S

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  TOP  UP   DOWN  BOT  ----  ----  STOP
    
```

If the first option in the pop-up window, "Include XREF objects in the Event", is selected, the selection screen below is displayed.

```

Type A To Add NATURAL Programs To The Event
01-12-31          N-2-O XREF LISTING          TSI0373
11:38:00          Event: PAYOUT      Sequence: 1      TSI1

From Env: PROD      From Library: PAYPROD      To Env: DEV      To Library: PAYDEV

  S  Object          Explanation          Objects selected to migrate
  ---  -----
-  MENUL          Invoked by          MENU
-  MENU1          Invoked by          MENU
-  PAY5100P        Affected by Changes to
                    and is Invoked by    PAY5100M  PAY5110M
                    MENU
-  PAY5210S        Invoked by          PAY5200P
-  PAY5230S        Invoked by          PAY5200P
-  PAY5250S        Invoked by          PAY5200P

Enter--PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ALL  END  INQ  ----  ----  ----  ----  ----  ----  STOP
    
```

NATURAL objects identified by XREF are selected to migrate by entering "A" (Add) in the Select field next to each NATURAL object.

If the second option, "Do not include XREF objects in the Event", is selected, XREF processing is ignored.

**II.2.2.2 Selecting SYSERR Messages**

When adding, copying, or modifying an Event that includes SYSERR messages, the SYSERR message selection screen is displayed. When User-Exit 15 is invoked or when copying or modifying an Event, ADD, REPLACE, or WARNING messages will be placed next to previously selected objects. SYSERR messages with no message in the Message field are available to be selected to migrate. When migrating from a development environment with Checkout/Checkin active, only SYSERR messages checked out to the user are displayed.

```

For the Event:  Type A to Add or D to Delete Objects
01-12-31      N-2-O ADD AN EVENT                      TSI0373
11:38:00      Event: PAYOUT   Sequence: 1             TSI1

From Env: PROD      From Library: PAYPROD   To Env: DEV      To Library: PAYDEV
Starting Object: 1010

SYSERR
S  Object      Language S/L  Message      S  Object      Language S/L  Message
A  1010        E       S      -             A  1015        E       S      -
-  1015        E       S      -             -  1040        E       S      -
-  1030        E       S      -             -  1060        E       S      -
-  1040        E       S      -             -  1070        E       S      -
-  1050        E       S      -             A  1090        E       S      -
-  1055        E       S      -             -  1110        E       S      -
-  1060        E       S      -             -  1125        E       S      -
-  1070        E       S      -             -  1140        E       S      -

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP ALL  END  INQ  ----  TOP  UP   DOWN BOT  ----  ----  STOP
    
```

Entering a value in the Starting Object field defines the SYSERR message where the selection list begins.

SYSERR messages are selected to migrate by entering "A" (Add) in the Select field next to each SYSERR message. Pressing PF2 automatically places "A" in the Select field next to all SYSERR messages on the selection screen. Entering "D" (Delete) in the Select field next to any of these SYSERR messages removes them from the Event. Pressing PF4 displays a pop-up window of all previously-selected SYSERR messages.

Once selections have been made and Enter is pressed, the screen below is displayed.

```

Press PF1 for more information about Messages
01-12-31          N-2-O ADD AN EVENT          TSI0373
11:38:00          Event: PAYOUT   Sequence: 1   TSI1

From Env: PROD      From Library: PAYPROD   To Env: DEV      To Library: PAYDEV
Starting Message: 1010

      SYSERR
S  Object      Language  S/L  Message      S  Object      Language  S/L  Message
-  1010         E         S    ADD           -  1015         E         S    ADD
-  1015         E         S
-  1030         E         S
-  1040         E         S
-  1050         E         S
-  1055         E         S
-  1060         E         S
-  1070         E         S
-  1040         E         S
-  1070         E         S
-  1090         E         S    FAILED
-  1110         E         S
-  1125         E         S
-  1140         E         S

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ----  END  INQ  ----  TOP  UP   DOWN  BOT  ----  C/O  STOP
    
```

This screen allows the user to verify selections. A message is displayed in the Message field for selected SYSERR messages. Add or Replace is the usual message that will appear. For more information about messages, refer to **Section II.2.11 Object Selection Screen Messages**.

When the 'FAILED' or 'WARNING' message is displayed next to an Object, place the cursor over the Object and use PF11 to display any existing Checkout information.

After selecting and verifying SYSERR messages on the current screen, pressing Enter displays the next screen of SYSERR messages. Pressing Enter on the last page or PF12 ends the current selection process.

### II.2.2.3 Selecting PREDICT Objects

When migrating PREDICT objects, the user must select PREDICT object types to migrate.

After pressing Enter on the Add an Event screen, a pop-up window is displayed to allow users to select PREDICT object types to be displayed for selection.

```

01-12-31          N-2-O ADD AN EVENT          TSI0373
11:38:00          Event: PAYOUT      Sequence: 1      TSI1

From Env      : +-----+      : PAYPROD_
To Env      : |      Objects      |      : PAYDEV_
Process Date  : | - - - - - |      : 11:38:00
Starting Program: | - DA - PR | age : 0001
SYSEERR Type  : | - DC - RL | ge : E
Change Control : | - ET - RP |
              Includ | - FI - RT | : N
C _____ | - KY - SC |
o _____ | - LS - SV |
m _____ | - MO - SY |
e _____ | - NO - US |
n _____ | - NW - VE |
t _____ | - PG - VM |
s _____ | - UDE -   |
              +-----+

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

A separate object selection process is used for each PREDICT object type marked with "X" on the above pop-up window.

Field	Type	Description	
X (optional)	P	"X" selects the PREDICT object types to be displayed for selection.	
OBJECTS (supplied)	P	PREDICT objects may be selected from the following PREDICT object types:	
	<b>Type</b>	<b>Indicates</b> <b>Predict Version</b>	
	DA	Database	
	DC	Dataspace	
	ET	Extract	
	FI	File	
	IE	Interface	V4.1.2 and above
	KY	Keyword	
	LS	Library Structure	
	MD	Method	V4.1.2 and above
	MO	Module	V3.4.2 and below
	NO	Node	
	NW	Network	
	PG	Package List	
	PR	Program	
	PY	Property	V4.1.2 and above
	RL	Relationship	
	RP	Report	V3.4.2 and below
	RT	Report Listing	
	SC	Storage Space	
	SV	Server	
	SY	System	
	US	User	
	VE	Verification	
	VM	Virtual Machine	
	UDE	User Defined Entities	

When adding, copying, or modifying an Event that includes PREDICT objects, the PREDICT object selection screen is displayed. When User-Exit 15 is invoked or when copying or modifying an Event, ADD, REPLACE, or WARNING messages will be placed next to previously selected objects. PREDICT objects with no message in the Message field are available to be selected to migrate. When migrating from a development environment with Checkout/Checkin active, only PREDICT objects checked out to the user are displayed.

```

Type: A to Add File only; B to Add File and DDM; D - Delete
01-12-31          N-2-O ADD AN EVENT          TSI0373
11:38:00         Event: PAYOUT              Sequence: 1      TSI1

From Env: PROD          To Env: DEV          Object Type: FI
                   Starting Object: PAY-ADMINISTRATION

      S  Object                File
      -  PAY-ADMINISTRATION    Type  DDM  Message
      B  PAY-ARCHIVE           A      *
      A  PAY-MIGRATION         A      *
      A  PAY-TEST-FILE        U

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP ALL  END  INQ  ----  TOP  UP   DOWN  BOT  ----  ----  STOP
    
```

Entering a value in the Starting Object field defines the PREDICT object where the selection list begins.

PREDICT objects are selected to migrate by entering "A" (Add) in the Select field next to each PREDICT object. Pressing PF2 automatically places "A" in the Select field next to all PREDICT objects on the selection screen. For File definitions, an additional selection option is available. Entering "B" (Both) in the Select field next to the file name selects both the file and the generated DDM. Entering "D" (Delete) in the Select field next to any of these PREDICT objects removes them from the Event. Pressing PF4 displays a pop-up window of all previously-selected PREDICT objects.

Once selections have been made and Enter is pressed, the screen below is displayed.

```

Press PF1 for more information about Messages
01-12-31          N-2-O ADD AN EVENT          TSI0373
11:38:00         Event: PAYOUT              Sequence: 1      TSI1

From Env: PROD          To Env: DEV          Object Type: FI
                   Starting Object: BENEFITS

      S  Object                File
      -  PAY-ADMINISTRATION    Type  DDM  Message
      -  PAY-ARCHIVE           A      *  ADD
      -  PAY-MIGRATION         A      *  ADD
      -  PAY-TEST-FILE        U          FAILED

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP ALL  END  INQ  ----  TOP  UP   DOWN  BOT  ----  C/O-  STOP
    
```

The screen on the previous page allows the user to verify selections. A message is displayed in the Message field for selected PREDICT objects. Add or Replace is the usual message that will appear. For more information about messages, refer to **Section II.2.11 Object Selection Screen Messages**.

When the 'FAILED' or 'WARNING' message is displayed next to an Object, place the cursor over the Object and use PF11 to display any existing Checkout information.

After selecting and verifying PREDICT objects on the current screen, pressing Enter displays the next screen of PREDICT objects. Pressing Enter on the last page or PF12 ends the current selection process.

**Related Userview Selection Process for PREDICT Files**

The related userview selection process identifies userviews related to ADABAS Master Files selected to migrate. This process is invoked following the selection process for PREDICT files. The userviews identified by this process may optionally be added to the Event. When an ADABAS Master File is migrated, all ADABAS userviews of this file must also be migrated, or the userviews are locked and deleted at the target of the migration.

There are two options available: "Include related userviews in the Event" or "Do not include related userviews in the Event". The N2O Administrator determines which options are available for the related userview selection process for PREDICT files on a user-by-user basis.

If the N2O Administrator specifies one option for the user, no pop-up window is displayed and the option assigned to that user is performed. However, if the N2O Administrator specifies both options for a user, a pop-up window allows the user to select one of the options for the Event.

```

Press PF1 for more information about messages
01-12-31          N-2-O ADD AN EVENT          TSI0373
11:38:00          Event: PAYOUT              Sequence: 1      TSI1

From Env: PROD          To Env: DEV          Object Type: FI
Starting Object: PAYROLL

+-----+
S  Objec|          Select an Option          |
-  PAY-A|          |                          |
-  PAY-A| -  Include related userviews in   |
-  PAY-M| the Event.                          |
-  PAY-T|          |                          |
-          |          Do not include related userviews |
          |          in the Event.                  |
          |          |                          |
          |          |                          |
+-----+

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ALL  END  INQ  ----  TOP  UP  DOWN  BOT  ----  ----  STOP
    
```

If the first option in the pop-up window, "Include related userviews in the Event", is selected, the selection screen below is displayed.

```

Type A to ADD Userview to the Event.
01-12-31          N-2-O USERVIEW XREF LISTING          TSI0373
11:38:00          Event: PAYOUT Sequence: 1            TSI1

From Env: PROD          To Env: DEV          Object Type: FI

  S  Userview          Master File
  -  -----          -----
  _  BENEFITS          PAYROLL

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP ALL  END  INQ  ----  ----  ----  ----  ----  ----  ----  STOP
    
```

Userviews are selected to migrate by entering "A" (Add) in the Select field next to each userview.

If the second option in the pop-up window, "Do not include related userviews in the Event", is selected, the related userview selection process is ignored and the selection process continues.

**UDE Selection Process**

If UDE – User Defined Entities is selected from the PREDICT object types the selection screen below is displayed.

```

01-12-31          N-2-O ADD AN EVENT          TS11
09:54:48          Event: PAYOUT      Sequence: 1      TERM

                From Env:  PROD                      To Env:  DEV

    UDE
    S Ty Description
    - CM COMPANIES
    - M2 METADATA2
    - M4 METADATA4
    - PD PRODUCTS

    UDE
    S Ty Description
    - M1 METADATA1
    - M3 METADATA3
    - M5 METADATA5

-----
Enter--PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
  
```

A separate object selection process is used for each UDE marked with "X" on the above screen.

Field	Description
X (optional)	"X" selects the UDE – User Defined Entities to be displayed for selection.
Type (supplied)	Object type of the UDE – User Defined Entities
Description (supplied)	Description of the UDE – User Defined Entities

**II.2.2.4 Selecting 3GL/OTHER Objects**

When migrating 3GL/OTHER objects, the user must select 3GL/OTHER Categories to migrate.

After pressing Enter on the Add an Event screen, a pop-up window allows users to select 3GL/OTHER Categories to be displayed for selection. When requesting ENDEVOR Events, a pop-up window requires the ENDEVOR System and Subsystem to be entered before the pop-up window is displayed.

```

01-12-31          N-2-O ADD AN EVENT          TSI0373
11:38:00          Event: PAYOUT      Sequence: 1      TSII

From Env      : +-----+ry      : PAYPROD_
To Env      : | X Categories      | : PAYDEV_
Process Date  : | - ----- |me      : 11:38:00
Starting Program: | - ASMB      |ssage : 0001
SYSERR Type  : | - COBOL      |uage  : E
Change Control : | - FORT      |
              Inclu| - PL/I      |: N
C _____| - RPG      |_____
o _____| - DATA     |_____
m _____| - JCL      |_____
e _____| - OTHER     |_____
n _____| +-----+
t _____|
s _____|

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP ---- END -----

```

A separate object selection process is used for each 3GL/OTHER Category marked with "X" on the above pop-up window.

Field	Description
X (optional)	"X" selects the 3GL/OTHER Categories to be displayed for selection.
CATEGORIES (supplied)	3GL/OTHER members may be selected from the following categories:  ASMB     Indicates all types of Assembler. COBOL    Indicates all types of COBOL. FORT     Indicates all types of FORTRAN. PL/I     Indicates all types of PL/I. RPG      Indicates RPG. DATA     Indicates DATA FILES. JCL      Indicates JCL, CLIST, CNTL. OTHER    Indicates all other types.

When adding, copying, or modifying an Event that includes 3GL/OTHER objects, the 3GL/OTHER selection screen is displayed. When User-Exit 15 is invoked or when copying or modifying an Event, ADD, REPLACE, or WARNING messages will be placed next to previously selected objects. 3GL/OTHER objects with no message in the Message field are available to be selected to migrate. When migrating from a development environment with Checkout/Checkin active, only 3GL/OTHER objects checked out to the user display.

```

Type A to Add 3GL/OTHER Members to the Event, D to Delete
01-12-31          N-2-O ADD AN EVENT                      TSI0373
11:38:00          Event: PAYOUT      Sequence: 1          TSI1
                   DSN Name: COBOL.DATASET
From Env: PROD    To Env: DEV                               Category: COBOL
                   Starting Object: PAYROLL1
Object
S Object      Type      Message      S Object      Type      Message
A PAYROLL1    COBOL
_ PAYROLL3    COBOL
_ TAXSUM2     COB72
A PAYROLL2    COBOL
_ TAXSUM1     ANSCB

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP ALL  END  INQ  ----  TOP  UP  DOWN  BOT  ----  ----  STOP
    
```

Entering a value in the Starting Object field defines the 3GL/OTHER object where the selection list begins.

3GL/OTHER objects are selected to migrate by entering "A" (Add) in the Select field next to each 3GL/OTHER object. Pressing PF2 automatically places "A" in the Select field next to all members on the selection screen. Entering "D" (Delete) in the Select field next to any of these 3GL/OTHER objects removes them from the Event. Pressing PF4 displays a pop-up window of all previously selected 3GL/OTHER objects.

Once selections have been made and Enter is pressed, the screen below is displayed.

```

Press PF1 for more information about Messages
01-12-31          N-2-O ADD AN EVENT          TSI0373
11:38:00          Event: PAYOUT      Sequence: 1      TSI1
                DSN Name: COBOL.DATASET
From Env: PROD          To Env: DEV          Category: COBOL
                Starting Object: PAYROLL1

      Object      Object
      Type        Message      S Object      Object
      _ PAYROLL1  COBOL      FAILED      _ PAYROLL2  COBOL      ADD
      _ PAYROLL3  COBOL
      _ TAXSUM2   COB72
      _ TAXSUM1   ANSCB

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ----  END  INQ  ----  TOP  UP  DOWN  BOT  ----  C/O  STOP
    
```

This screen allows the user to verify selections. A message is displayed in the Message field for the selected 3GL/OTHER objects. 'ADD' or 'REPLACE' are the usual messages that appear. For more information about messages, refer to **Section II.2.11 Object Selection Screen Messages**.

When the 'FAILED' or 'WARNING' message is displayed next to an Object, place the cursor over the Object and use PF11 to display any existing Checkout information.

After selecting and verifying 3GL/OTHER objects on the current screen, pressing Enter displays the next screen of 3GL/OTHER objects. Pressing Enter on the last page or PF12 ends the current selection process.

### II.2.2.5 Extracting and Renaming NATURAL Objects

When using an Extract Event (migrate a copy of an object without creating a checkout), the user has the option of renaming the Object in the target environment. The new Object will be created in the target environment and an N2O catalog master record will be created for the new Object in the From Environment. The Object will not be checked-out. If the new Object is to be migrated back to the Base Environment, check the Object out using the Checkout Utility.

The following rules are in effect during an Extract Event in which Objects are renamed:

- The “new” Object cannot exist in N2O.
- The “new” Object cannot exist in the FUSER.
- The Extract Event must be a single-target Event to utilize the rename option.
- The XREF selection process will occur for the original Object if XREF selection is turned on.
- No Autocompile will take place for an Object being renamed.

When adding, copying, or modifying an Extract Event that includes NATURAL objects, the 'NATURAL object selection and rename' screen is displayed. When User-Exit 15 is invoked or when copying or modifying an Event, ADD messages will be placed next to previously selected objects. NATURAL objects with no message in the Message field may be selected to migrate.

```

For the Event:Type A to Add or D to Delete Objects
01-12-31          N-2-O ADD AN EVENT                      TSI0373
11:38:00          Event: PAYOUT Sequence: 264             TSI1

From Env:  PROD  From Library:  PAYPROD  To Env:  DEV  To Library:  PAYDEV
Starting Object:  PROGL___
Object
S Object      Type      S/C  Rename To  Message
A PAY5100P    PROGRAM  S     _____
A PAY5110P    PROGRAM  S     _____
_  PAY5130P    PROGRAM  S     _____
_  PAY5150P    PROGRAM  S     _____
_  PAY5160S    SUB-RTN  S     _____
_  PAY6000P    PROGRAM  S     _____
A PAY6010P    PROGRAM  S     PAY601A_
A PAY6020P    PROGRAM  S     PAYEX6__
_  PAY6030P    PROGRAM  S     _____
_  PAY6040P    PROGRAM  S     _____
_  PAY6050P    PROGRAM  S     _____
_  PAY6060P    PROGRAM  S     _____
A PAY7000P    PROGRAM  S     PAYEX7__
_  PAY7010P    PROGRAM  S     _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ALL   END   ----  ----  ----  UP   DOWN  ----  ----  STOP
    
```

Entering a value in the Starting Object field defines the NATURAL object where the selection list begins.

NATURAL objects are selected to migrate by entering "A" (Add) in the Select field next to each NATURAL object. Pressing PF2 automatically places "A" in the Select field next to all NATURAL objects on the selection screen. Entering "D" (Delete) in the Select field next to any of these NATURAL objects removes them from the Event. Pressing PF4 displays a pop-up window of all previously-selected NATURAL objects.

Once selections have been made and Enter is pressed, the screen below is displayed.

```

Press PF1 for specific information regarding messages
01-12-31          N-2-O ADD AN EVENT          TSI0373
11:38:00          Event:  PRODTTEST  Sequence: 264      TSI1

From Env:  KALT  From Library:  PRODLIB  To Env:  KALT  To Library:  TESTLIB
Starting Object:  PROG1___
Object
S Object      Type      S/C  Rename To  Message
- PAY5100P    PROGRAM  S    _____  ADD
- PAY5110P    PROGRAM  S    _____  REPLACE
- PAY5130P    PROGRAM  S    _____
- PAY5150P    PROGRAM  S    _____
- PAY5160S    SUB-RTN  S    _____
- PAY6000P    PROGRAM  S    _____
- PAY6010P    PROGRAM  S    PAY601A_  ADD
- PAY6020P    PROGRAM  S    PAYEX6_  ADD
- PAY6030P    PROGRAM  S    _____
- PAY6040P    PROGRAM  S    _____
- PAY6050P    PROGRAM  S    _____
- PAY6060P    PROGRAM  S    _____
- PAY7000P    PROGRAM  S    PAYEX7_  EXISTS
- PAY7010P    PROGRAM  S    _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---F12-
HELP  ----  END  ----  ----  ----  UP  DOWN  ----  ----  C/O  STOP
    
```

The screen above allows the user to verify selections. A message is displayed in the Message field for the selected NATURAL objects. ADD is the usual message that will appear. For more information about messages, refer to **Section II.2.11 Object Selection Screen Messages**.

After selecting and verifying NATURAL objects on the current screen, pressing Enter displays the next screen of NATURAL objects. Pressing Enter on the last page or PF12 ends the current selection process.

### II.2.2.6 Selecting DDMS

When adding, copying, or modifying an Event that includes DDMS, the DDM selection screen is displayed. When User-Exit 15 is invoked or when copying or modifying an Event, ADD, REPLACE, or WARNING messages will be placed next to previously selected objects. DDMS with no message in the Message field are available to be selected to migrate. When migrating from a development environment with Checkout/Checkin active, only DDMS checked out to the user are displayed.

```

For the Event:Type A to Add or D to Delete Objects
01-12-31          N-2-O MODIFY AN EVENT          TS11
10:18:20          Event: PAYOUT   Sequence: 1    TERM

          From Env:  PROD                      To Env:  DEV
          Starting DDM:  AC-PAYGO-SCHED

          S  DDM          DDM          ADA
          Dbid  Fnr      6  Message
          ---  ---
          AC-PAYGO-SCHED  71    241
          ADAREORG-EMPL  55    99  X
          ADV-PRIORITY-ZIP 71    64
          AR-REFUND      71    131
          A  AR-TRANS     71    133  X
          BEACON-FILE    0    38  X
          BUDGET-STU     71    65
          COMMAND        1    1  X
          COMMODITIES-ADAB 0    98  X
          A  EMPL-USERSVIEW 0    1  X
          EMPLOYEES      0    1  X
          EMPLOYEES-FILE  0    1  X
          A  EMPLOYEES-PWD  0    77  X
          FMP-ICM-CASE-V2  0    118 X
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11--F12-
          HELP  ----  END  INQ  ----  ----  UP  DOWN  ----  ----  ----  STOP
    
```

Entering a value in the Starting DDM field defines the DDM message where the selection list begins.

DDMS are selected to migrate by entering "A" (Add) in the Select field next to each DDM. Pressing PF2 automatically places "A" in the Select field next to all DDMS on the selection screen. Entering "D" (Delete) in the Select field next to any of these DDMS removes them from the Event. Pressing PF4 displays a pop-up window of all previously-selected DDMS.

Field	Description
DDM Dbid (optional)	Database number that the DDM will point to in the target environment.
DDM Fnr (optional)	File number that the DDM will point to in the target environment.
ADA 6 (supplied)	Marked with an X if the DDM was created in NATURAL 2.3 or above and will allow a Dbid and/or Fnr greater than 255.

Once selections have been made and Enter is pressed, the screen below is displayed.

```

Objects selected for migration, Press ENTER to proceed
01-12-31          N-2-O MODIFY AN EVENT          TS11
10:19:45          Event: PAYOUT      Sequence: 1    TERM

          From Env:  PROD                      To Env:  DEV
          DDM              ADA
          Dbdid   Fnr   6   Message
S  DDM
-  AC-PAYGO-SCHED          ___71___241
-  ADAREORG-EMPL          ___55___99  X
-  ADV-PRIORITY-ZIP       ___71___64
-  AR-REFUND              ___71___131
-  AR-TRANS               ___71___133  X  ADD
-  BEACON-FILE            ___0___38  X
-  BUDGET-STU             ___71___65
-  COMMAND                ___1___1  X
-  COMMODITIES-ADAB       ___0___98  X
-  EMPL-USERSVIEW         ___0___1  X  ADD
-  EMPLOYEES              ___0___1  X
-  EMPLOYEES-FILE         ___0___1  X
-  EMPLOYEES-PWD          ___0___77  X  FAILED
-  FMP-ICM-CASE-V2        ___0___118 X
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---F12-
      HELP  ----  END  INQ  ----  ----  UP  DOWN  ----  ----  ----  STOP
    
```

This screen allows the user to verify selections. A message is displayed in the Message field for selected DDMS. Add or Replace is the usual message that will appear. For more information about messages, refer to **Section II.2.11 Object Selection Screen Messages**.

When the 'FAILED' or 'WARNING' message is displayed next to an Object, place the cursor over the Object and use PF11 to display any existing Checkout information.

After selecting and verifying DDMS on the current screen, pressing Enter displays the next screen of DDMS. Pressing Enter on the last page or PF12 ends the current selection process.

**II.2.2.7 Selecting METADATA**

When adding, copying, or modifying an Event that includes METADATA, the METADATA selection screen is displayed. When User-Exit 15 is invoked or when copying or modifying an Event, ADD, REPLACE, or WARNING messages will be placed next to previously selected objects. METADATA with no message in the Message field are available to be selected to migrate. When migrating from a development environment with Checkout/Checkin active, only METADATA checked out to the user are displayed.

```

For the Event:Type A to Add or D to Delete Objects
01-12-31          N-2-O ADD AN EVENT          TSI1
12:36:39          Event: PAYOUT   Sequence: 1  TERM

                From Env:  PROD              To Env:  DEV
                Starting METADATA:  CM

                S  OT  METADATA                Message
                -  CM  COMPANIES
                A  M1  METADATA1
                -  M2  METADATA2
                -  M3  METADATA3
                -  M4  METADATA4
                -  M5  METADATA5
                A  PD  PRODUCTS

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP ALL  END  ----  ----  ----  UP  DOWN  ----  ----  ----  STOP
    
```

Entering a value in the Starting DDM field defines the DDM message where the selection list begins.

METADATA are selected to migrate by entering "A" (Add) in the Select field next to each DDM. Pressing PF2 automatically places "A" in the Select field next to all METADATA on the selection screen. Entering "D" (Delete) in the Select field next to any of these METADATA removes them from the Event. Pressing PF4 displays a pop-up window of all previously-selected METADATA.

Once selections have been made and Enter is pressed, the screen below is displayed.

```

For the Event:Type A to Add or D to Delete Objects
01-12-31          N-2-O ADD AN EVENT                      TS11
12:38:14          Event: PAYOUT      Sequence: 1          TERM

                From Env:  PROD                To Env:  DEV
                Starting METADATA:  CM

S  OT  METADATA                                     Message
-  CM  COMPANIES
-  M1  METADATA1                                    FAILED
-  M2  METADATA2
-  M3  METADATA3
-  M4  METADATA4
-  M5  METADATA5
-  PD  PRODUCTS                                     ADD

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END  INQ  ----  ----  UP  DOWN  ----  ----  C/O  STOP
    
```

This screen allows the user to verify selections. A message is displayed in the Message field for selected METADATA. Add or Replace is the usual message that will appear. For more information about messages, refer to **Section II.2.11 Object Selection Screen Messages**.

When the 'FAILED' or 'WARNING' message is displayed next to an Object, place the cursor over the Object and use PF11 to display any existing Checkout information.

After selecting and verifying METADATA on the current screen, pressing Enter displays the next screen of METADATA. Pressing Enter on the last page or PF12 ends the current selection process.

### II.2.3 Migration Process

When the Migration process begins, one of the following occurs:

- An authorization screen is displayed indicating the required levels of authorization (shown below).
- A screen is displayed to begin the migration process.

The authorization screen is displayed if authorization is required for an Event. This screen indicates how many levels of authorization are required. For more information, refer to **Section II.3 Authorize Events**.

```

01-12-31          N-2-O EVENT REQUEST          TSI0373
11:38:00          Event: PAYOUT      Sequence: 1      TSI1

                Event Awaiting Authorization
                (Requires 3 level(s) of authorization)

                Press ENTER to continue

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
-----
    
```

One of the following on-line or batch processing screens is displayed if authorization is not required for an Event.

When a batch Event is ready to begin the migration process, the screen below is displayed, giving the option to submit the batch job to the system internal reader or delay the submission.

```

01-12-31          N-2-O SUBMIT AN EVENT          TSI0373
11:38:00                                     TSI1

                Event   :   PAYOUT
                Sequence:   1

                is a batch Event

                Press ENTER To Submit JCL for this Event
                or
                PF3 to Delay the Submission of the JCL

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Pressing Enter submits the batch JCL (or EXECs) to the system internal reader by reading the batch JCL as defined on the Migration Profile for the Event and replacing any character strings prefixed with "&".

Pressing PF3 delays the submission of the JCL (or EXECs) for a Batch Event. The Event may then be submitted at the appropriate time using the Batch JCL Submission Facilities or using manual procedures.

**Note:** Depending on the value of the Batch Event Submission set by the N2O Administrator, the Event may be forced into delayed or immediate submission. In either case, this screen will not appear.

When an on-line Event is ready to begin the migration process, the screen below is displayed, giving the option to migrate the NATURAL objects and/or SYSERR messages.

```

Press Enter To Proceed Or PF3 To Stop Migration
01-12-31          N-2-O EVENT PROCESSING SCREEN          TSI0373
11:38:00          Event: PAYOUT  Sequence: 1            TSI1

From Env: PROD    From Library: PAYPROD    To Env: DEV    To Library: PAYDEV

Object                Migrated                Archived
Source                Object                Source                Object
-----                -
*****
***  The number of selections  ***
***  in this Event is:        ***
***    NATURAL: 8             ***
***    SYSERR : 0             ***
***    DDM   : 0             ***
*****
    
```

Pressing Enter proceeds with the migration. As NATURAL objects and/or SYSERR messages are migrated, each object scrolls upward by target. The target currently being processed is displayed at the top of the processing screen. A count is displayed for objects in each path.

PF3 stops the migration. To start the Event at a later time, use the Select Events for Processing option from the Request Event menu. Refer to **Section II.2.10 Select Events for Processing**.

When archiving is specified for an Event, NATURAL objects are automatically archived before being replaced. If Autocompile and Autorecovery are specified on the Migration Profile and the Event migrates only source code, the object code for Natural objects is also automatically archived. When using autorecovery, if the Autocompile process encounters errors, the original source and object code may be restored.

If Autocompile is specified and N2O User-Exit 4 (N2OUE04N) has been activated, the Libraries Pending Autocompile screen will be displayed. If User-Exit 4 has not been activated and Autocompile is specified, the user must execute the Autocompile. Refer to **Section II.5.1 Libraries Pending Autocompile**.

**MOVE**

If MOVE is specified for the Migration Method and the Deferred Time on the Migration Profile is 0, the deletion process is started immediately following the migration process.

After the completion of the migration process, the screen below is displayed.

```

Press Enter To Proceed
01-12-31          N-2-O EVENT PROCESSING SCREEN          TSI0373
11:38:00          Event: PAYQA      Sequence: 1          TSI1

From Env: DEV     From Library: PAYDEV   To Env: TEST     To Library: PAYTEST

Object                Migrated                Archived
-----                -
*** 6 Modules will be deleted from: ***
***      Env Def: DEV      ***
***      Library: PAYDEV   ***
*****
    
```

Pressing Enter proceeds with the deletion process for the Event. As NATURAL objects are deleted, each object scrolls upward until processing is complete.

A pop-up window is displayed at the end of the on-line migration process indicating the migration process for the Event has successfully completed.

```

+-----+
|          ENT PROCESSING SCREEN          TSI0373
|          PAYOUT      Sequence: 1          TSI1
| Migration Complete for
|          PAYDEV      To Env: TEST     To Library: PAYTEST
| Event       : PAYIN
| Event Sequence : 1
|          Migrated                Archived
+-----+ Source      Object      Source      Object
-----
PAY5100P          REPLACED    ****          ****          ****
PAY5110M          REPLACED    ****          ****          ****
PAY5110S          ADDED      ****          ****          ****
PAY5200M          REPLACED    ****          ****          ****
PAY5200P          REPLACED    ****          ****          ****
PAY5210M          ADDED      ****          ****          ****
6 out of 6
    
```

If the Event is an Extract Event for NATURAL objects, the message “Extract Complete” instead of “Migration Complete” is displayed and the ‘Rename To’ object will be shown in parenthesis to the right of the object name if the object is renamed during the extract.

If a Deferred MOVE is requested, the pop-up window also displays the earliest date and time at which the deletion process may begin.

### II.2.4 Copy an Event

The Copy an Event function creates an Event for migrating objects by copying an existing Event. The Copy function copies the Change Control Number, Task Group, and Task Number, comments, and objects from the existing Event to the new Event.

To copy an Event, enter "C" in the Enter Code field, the Event to be copied in the Event field, and the Sequence number of the Event to be copied in the Sequence field, or leave the Event and Sequence fields blank. A pop-up window is displayed for the user to enter the new Event.

```

01-12-31          N-2-O REQUEST EVENTS MENU          TSI0373
11:38:00                                     TSI1

Code  Function
-----
A    Add an Event
C    Copy an Event
D    Delete an Event
I    Inquire on an Event
M    Modify an Event
R    Recovery from Archive
S    Select Events for Processing
.    Termina +-----+
-    -----+-----+

Enter Code: c   Event: | Copy Event   :   PAYOUT2
                  | Sequence:      | 1____
                  |
                  | Sequenc | To   Event   :   PAYOUT2_
                  +-----+

Direct Command: _____ MIG REQ
    
```

In the screen above, the new Event is "PAYOUT2", Sequence "2". Sequence "2" was the next available sequence number assigned by N2O. If the Change Control field or the Task Group and Task Number fields are required for the Event, they are defaulted from the original Event. The Comments fields are also defaulted from the original Event.

The setting of the LOCK EVENT field on the Master Event determines if a popup window is displayed. This window prompts for confirmation of copying the original Event's From/To Environment and Library Information and the Processing Date and Time. To confirm the copy request, enter "Y" in the pop-up window for the appropriate information. To cancel the copy request for the appropriate information, enter "N" in the pop-up window or press PF3.

```

01-12-31          N-2-O REQUEST EVENTS MENU          TSI0373
11:38:00                                     TSI1

Code  Function
-----
A    Add an Event
C    Copy an Event
D    Delete an Event
I    Inquire on an Event
M    Modify an Event

+-----+
| Original Event: PAYOUT2          1 | -----+
| Copy From/To LIB Info   : N     | |
| Copy Process Date and Time: N     | | PAYOUT2
Enter C |                               | 1____
+-----+
                  | Sequenc | To   Event   :   _PAYOUT2
                  +-----+

Direct Command: _____ MIG REQ
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP ---- END  ENV  MIG  REP  TOL  ---- PRJ  ---- ---- EXIT
    
```

All other information is defaulted from the Master Event.

The remainder of the copy Event process is identical to the Object Selection process (refer to **Section II.2.2 Object Selection Process**).

**II.2.5 Delete an Event**

The Delete an Event function removes an Event that no longer needs to be processed.

To delete an Event, enter "D" in the Enter Code field, the Event to be deleted in the Event field, and the Sequence number of the Event to be deleted in the Sequence field on the Request Events menu.

```

01-12-31          N-2-0 DELETE AN EVENT          TSI0373
11:38:00          Event: PAYOUT Sequence: 2       TSI1

From Env      : PROD      From Library   : PAYPROD_
To Env       : DEV       To Library    : PAYDEV_
Process Date  : 19991231 Process Time   : 11:38:00

Added User-ID : TSI1__

C _____
o _____
m _____
m _____
e _____ +-----+
n _____ | Do you want to Delete? N (Y/N) |
t _____ |
s _____ +-----+

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END -----
    
```

An Event can only be deleted by the user who creates the Event from the Request Events menu.

Closed Events (Status "C"), In-progress Events (Status "I"), and Held Events (Status "H") that have migrated objects cannot be deleted. Other In-progress Events may only be deleted from the Authorize Events menu. For more information about deleting In-progress Events, refer to **Section II.3.1 Authorize an Event**.

To delete the Event, enter "Y" in the pop-up window. To cancel the delete request, enter "N" in the pop-up window or press PF3.

### II.2.6 Inquire on an Event

The Inquire on an Event function displays information about an Event.

To inquire on an Event, enter "I" in the Enter Code field, the Event to be displayed in the Event field, and the Sequence number of the Event to be displayed in the Sequence field on the Request Events menu.

```

Press ENTER to display the selection list
01-12-31          N-2-O INQUIRE ON AN EVENT          TSI0373
11:38:00          Event: PAYOUT          Sequence: 1          TSI1

          From Env          : PROD          From Library          : PAYPROD_
          To Env          : DEV          To Library          : PAYDEV_
          Process Date          : 20011231          Process Time          : 11:38:00
          Migrate Method          : COPY          Change Control          : EXAMPLE_
          Added User-ID          : TSI0373
          SYSERR Type          : US          SYSERR Language          : E
          THIS IS A SAMPLE EVENT _____
C _____
o _____
m _____
e _____
n _____
t _____
s _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END -----
    
```

Pressing Enter displays a screen listing the objects for the Event.

When inquiring on an Event that migrates more than one type of object, the list for each type is displayed in the following order: NATURAL objects, PREDICT objects, 3GL/OTHER objects, and SYSERR messages.

```

Type X to view source programs
01-12-31          N-2-O INQUIRE ON AN EVENT          TSI0373
11:38:00          Event: PAYOUT          Sequence: 1          TSI1

From Env: PROD    From Library: PAYPROD    To Env: DEV    To Library: PAYDEV
Starting Object: PAY5100P

S Object          Object          S/C Message          S Object          Object          S/C Message
- PAY5100P        PROGRAM        S    REPLACE          - PAY5100M        MAP            S    REPLACE
- PAY5110S        SUB-RTN        S    ADD                - PAY5200M        MAP            S    REPLACE
- PAY5200P        PROGRAM        S    REPLACE          - PAY5210M        MAP            S    ADD

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP ---- END ---- ---- TOP UP DOWN BOT ---- ---- EXIT
    
```

If the list of objects does not fit entirely on one screen, pressing Enter displays the next screen until the end of the list is displayed.

When reviewing the NATURAL object and SYSERR message lists, pressing PF12 displays the next type of Object. When reviewing the PREDICT object and 3GL/OTHER object lists, pressing PF12 displays the next PREDICT object type or the next 3GL/OTHER Category in the list.

Entering "X" beside a NATURAL object on the previous screen displays the source code of the NATURAL object.

```
Press PF4 For Update Information > + PROGRAM : PAY5100P Lib: PAYPROD
....+....1....+....2....+....3....+....4....+....5....+....Mode: STRUCT
0010 *
0020 * * * * *
0030 * PAY (PROGRAM MANAGEMENT SYSTEM) *
0040 * TREEHOUSE SOFTWARE, INC. (C) 1999. *
0050 * * * * *
0060 *
0070 * PROGRAM : PAY5100P
0080 *
0090 * AUTHOR(S): TSI
0100 *
0110 * FUNCTION : GET HELP DATA
0120 *
0130 * * * * *
0140 *
0150 DEFINE DATA
0160     GLOBAL
0170     USING PAYGDA
0180 END-DEFINE
0190 **
0200 INPUT WITH TEXT CS-MESSAGE USING MAP 'PAYM5100'

Press PF3 to Exit...Press PF12 to STOP viewing....6....+....7.
```

Pressing Enter displays the next page of source code. Pressing Enter on the last page displays the next selected NATURAL object in the list. If no other NATURAL objects are selected, pressing Enter returns to the display list.

Pressing PF4 displays update information for the NATURAL object, such as date and time saved, date and time cataloged, User-ID, and NATURAL version. Pressing PF12 cancels display of the current NATURAL object and begins display of the next NATURAL object. If no other NATURAL objects are selected, pressing PF12 returns to the display list.

**II.2.7 Modify an Event**

The Modify an Event function updates an Event. Only the user who creates the Event may modify the Event.

To modify an Event, enter "M" in the Enter Code field, the Event to be modified in the Event field, and the Sequence number of the Event to be modified in the Sequence field on the Request Events menu.

When modifying an Event, the Change Control or Task Group and Task Number, and Comments fields may be updated. Process Date and Process Time may also be updated to delay the migration of a batch Event.

The next step of the Modify an Event function is the object selection process. The object selection process allows users to select objects to migrate. A screen is displayed allowing objects to be selected. Entering "A" next to an object adds the object to the Event. Entering "D" next to a previously-selected object removes the object from the Event. For more information, refer to **Section II.2.2 Object Selection Process**.

```

01-12-31          N-2-O MODIFY AN EVENT          TSI0373
11:38:00          Event: PAYOUT   Sequence: 1    TSI1

                From Env      : PROD      From Library  : PAYPROD
                To Env        : DEV        To Library    : PAYDEV
                Process Date   : 20011231   Process Time   : 11:38:00
                Starting Program: _____

                C _____
                o _____
                m _____
                e _____
                n _____
                t _____
                s _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ---  END  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---
    
```

If modifying an In-progress Event (Status=I) a pop-up window will allow the Event to be continued. Press enter to continue the Event or PF3 to cancel the Modify. The user cannot change any values in an In-progress Event.

### II.2.8 Recovery from Archive

The Recovery from Archive function creates an Event for recovering NATURAL objects, SYSERR messages, and/or PDS objects that have been archived. PREDICT, LIBRARIAN, PANVALET, and ENDEVOR objects are not currently archived. There are two methods of recovery:

- Event Recovery Recovers NATURAL objects, SYSERR messages, and/or PDS objects archived by an Event.
  
- N2OPURGE Recovery Recovers NATURAL objects archived by the N2OPURGE Utility. For more information refer to **Section II.2.9 N2O Purge Recovery.**

To create a Recovery from Archive Event, enter "R" in the Enter Code field, the Event to be added in the Event field, and "N", "S", or "O" in the Type field on the Request Events menu.

The Recovery from Archive function retrieves NATURAL objects, PDS objects, and/or SYSERR messages that have been archived by an Event. When archiving is active, NATURAL objects, PDS objects, and SYSERR messages being replaced by a migration are automatically archived. Recovery from Archive may recover to Multiple Targets using a Multiple Target Master Event. When performing Recovery from Archive, the Archive Event and Archive Sequence fields on the Recovery from Archive screen must contain the Event and Sequence that performed the archiving of the NATURAL objects, PDS objects, and/or SYSERR messages being recovered. To identify the Event and Sequence that archived the version of a NATURAL object, PDS object, and/or SYSERR message to be recovered, refer to **Section IV.4.8 Archive Version Summary.**

```

01-12-31          N-2-O RECOVERY FROM ARCHIVE          TSI0373
11:38:00          Event: PAYREC      Sequence: 1        TSI1

Archive Event   : _____ Archive Sequence: _____

To Env          : DEV           To Library       : PAYDEV__
Process Date    : 20011231     Process Time    : 11:38:00
Starting Program: _____

C _____
o _____
m _____
m _____
e _____
n _____
t _____
s _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Type	Description
EVENT (supplied)	N,S,O	The Master Event of the recovery.
SEQUENCE (supplied)	N,S,O	The sequence number of the Event.
ARCHIVE EVENT (required)	N,S,O	The Event that archived the NATURAL objects, PDS objects, and/or SYSERR messages to be recovered.  "N2OPURGE" must be specified to recover NATURAL objects deleted by the N2OPURGE Utility.
ARCHIVE SEQUENCE (required)	N,S,O	The sequence number of the Event that archived the NATURAL objects, PDS objects, and/or SYSERR messages to be recovered.  When N2OPURGE is entered in the Archive Event field, the archive sequence is defaulted to "1" (this is the only valid value for N2OPURGE recoveries)
TO ENV (required)	N,S,O	The Environment Definition serving as the target of the recovery.
TO LIBRARY (required)	N,S	The library to which NATURAL objects or SYSERR messages are to be recovered. This field is not displayed for PDS object recoveries.
PROCESS DATE (required)	N,S,O	The earliest date on which the batch migration may take place. The current date is automatically supplied by N2O, but may be modified by the user if postdating of the migration is desired. For more information about submitting batch Events, refer to <b>Section II.7 Batch Submission JCL</b> .
PROCESS TIME (required)	N,S,O	The earliest time on the Process Date during which the batch migration may take place.
CHANGE CONTROL (required if specified in the Master Event)	N,S,O	A value that relates multiple Events to a specific change request. This field is only displayed if Change Control is required.
TASK GROUP (required if specified in the Master Event)	N,S,O	A value that relates multiple Events to a specific Task Group from the N2O Project Tracking Subsystem. This field is only displayed if Project Tracking is required. When using Add, Copy, or Modify an Event, this field may be modified.
TASK NUMBER (required if specified in the Master Event)	N,S,O	A number that relates multiple Events to a specific task from the N2O Project Tracking Subsystem. This field is only displayed if Project Tracking is required. When using Add, Copy, or Modify an Event, this field may be modified.

(continued from previous page)

Field	Type	Description
STARTING PROGRAM (optional)	N	<p>The first NATURAL object to appear in the NATURAL object selection list. An "*" may be used as a wildcard character to start the selection list with NATURAL objects prefixed by a string (e.g., "N2O*").</p> <p>If the user enters an "*" as the Starting Program for the Event, all NATURAL objects are marked for migration.</p>
STARTING MESSAGE (optional if SYSERR)	S	<p>The first SYSERR message to appear in the SYSERR message selection list.</p> <p>If the user enters an "*" as the Starting Message in an Event, all SYSERR messages are marked for migration.</p>
SYSERR TYPE (required for SYSERR)	S	<p>The type of SYSERR message to migrate. Valid values are as follows:</p> <ul style="list-style-type: none"> <li>US Indicates user-supplied short messages are to be selected.</li> <li>UL Indicates user-supplied long (extended) messages are to be selected.</li> <li>U Indicates both short and long messages are to be selected.</li> </ul>
SYSERR LANGUAGE (required for SYSERR)	S	<p>The language to be migrated. Valid values are single alphanumeric characters in the ranges 1 - 9, A - Z and a - y. These values are equivalent to the values available for the *LANGUAGE system variable.</p>
COMMENTS (optional)	N,S,O	<p>* Indicates all languages are to be migrated.</p> <p>A 10-line comment area describing the Event.</p>

If a Multiple Target Event is entered for the Archive Event, a pop-up window is displayed listing all paths of the Event that performed archiving. Events perform archiving on a target-by-target basis. To recover NATURAL objects or SYSERR messages from one of these paths, enter "X" next to the path that performed the archiving.

```

01-12-31          N-2-O RECOVERY FROM ARCHIVE          TSI0373
11:38:00          Event: PAYREC      Sequence: 1        TSI1

Archive Event   : PAYIN__  Archive Sequence: 1__

To Env         : DEV      To Library       : PAYDEV__
Process Date   : 20011231 Process Time    : 14:06:48
Starting Pro +-----+
              | Please choose one |
              | S   Recover from:  |
              | -   -----        |
              | -   TEST  PAYTEST   |
              | -   STG1  PAYSTG1   |
              | -   STG2  PAYSTG2   |
              | -   -----        |
C   _____|_____
o   _____|_____
m   _____|_____
e   _____|_____
n   _____|_____
t   _____|_____
s   _____|_____

Enter-PF1---PF2---PF3--- +-----+ PF10--PF11--PF12---
HELP  ---  END  ---

```

The next step of the Recovery from Archive function is the object selection process. This process allows users to select objects to migrate. A screen is displayed allowing objects to be selected. Entering "A" next to an object adds the object to the Event. Entering "D" next to a previously-selected object removes the object from the Event. For more information, refer to **Section II.2.2 Object Selection Process**.

After the object selection process is complete, the migration process begins. For more information about the migration process, refer to **Section II.2.3 Migration Process**.

### II.2.9 N2OPURGE Recovery

The N2OPURGE Recovery function retrieves NATURAL objects that have been archived and deleted using the N2OPURGE Utility. NATURAL objects archived using the N2OPURGE Utility are recovered from an Archive file using the Recovery from Archive function. When performing an N2OPURGE Recovery, "N2OPURGE" must be entered in the Archive Event field, and "1" is defaulted automatically in the Archive Sequence field on the Recovery from Archive screen. The To Env and To Library fields must contain the destination Environment Definition and Library where the NATURAL objects are to be recovered to. A pop-up window will be displayed after pressing ENTER. Enter the N2OPURGE recovery parameters.

```

01-12-31          N-2-O RECOVERY FROM ARCHIVE          TSI0373
11:38:00          Event: PAYREC      Sequence: 1       TSI1

Archive Event   : N2OPURGE  Archive Sequence: 1

-----|
| N2OPURGE Archive Recovery Parameters |
| N2OPURGE From Env....: prdt         |
| N2OPURGE From Library: payprod      |
|                                     |
| t                                     |
| s                                     |
-----|
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ---  END  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---
    
```

The N2OPURGE From Env and From Library fields must contain the Environment Definition and Library where the NATURAL objects resided before being deleted. This will limit the object selection list to only those NATURAL objects that were deleted from the specified From Environment and Library.

When recovering NATURAL objects that were archived by the N2OPURGE Utility, the following screen is displayed. For more information about the N2OPURGE Utility, refer to **Section V.3.1 N2OPURGE Utility**.

NATURAL objects with an ADD or REPLACE message in the Message field have been previously selected to migrate. NATURAL objects with no message in the Message field are available to be selected to migrate.

```

For the Event:  Type A to Add or D to Delete Objects
01-12-31          N-2-O Recovery from Archive          TSI0373
11:38:00          Event: PAYREC      Sequence: 1       TSI1

From Env: ARC1    From Library: PAYPROD    To Env: PROD    To Library: PAYPROD
Starting Object: PAY5100P

S Object      Purge      S/C Message      S Object      Purge      S/C Message
A PAY5100P    01-12-01  S                _ PAY5110M    01-02-17  S
A PAY5210M    01-04-06  S                A PAY5200M    01-05-06  S
_ PAY5200P    01-05-01  S

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ALL  END  INQ  ---  TOP  UP  DOWN  BOT  ---  ---  STOP
    
```

Entering a value in the Starting Object field defines the NATURAL objects where the selection list begins.

NATURAL objects are selected to migrate by entering "A" (Add) in the Select field next to each NATURAL object. Pressing PF2 automatically places "A" in the Select field next to all NATURAL objects on the selection screen. Pressing PF4 displays a pop-up window of all previously-selected NATURAL objects. Entering "D" (Delete) in the Select field next to any of these NATURAL objects removes them from the list.

Field	Type	Description
EVENT (supplied)	N	The Master Event of the migration.
SEQUENCE (supplied)	N	The sequence number of the Event.
FROM ENV (supplied)	N	The source Environment Definition of the migration.
FROM LIBRARY (supplied)	N	The library from which the NATURAL objects were archived.
TO ENV (supplied)	N	The target Environment Definition of the migration.
TO LIBRARY (supplied)	N	The library to which the NATURAL objects are to be migrated.
STARTING OBJECT (optional)	N	The NATURAL object where the selection list begins. Defaults to the first NATURAL object on the screen.
S (optional)	N	The selection code indicates the action to be taken on the NATURAL object. Valid values are as follows:  A     Adds the NATURAL object to the Event. Deletes the NATURAL object from the D     Event.
OBJECT (supplied)	N	The name of the NATURAL object.
PURGE DATE (supplied)	N	The date the NATURAL object was deleted using the N2OPURGE Utility.
S/C (supplied)	N	The form of the NATURAL object. Valid values are as follows:  S     Indicates only the source form of the program may be selected.  C     Indicates only the cataloged form of the program may be selected.  S/C   Indicates both forms of the program may be selected.
MESSAGE (supplied)	N	Provides information about the selection of an object. For more information about messages, refer to <b>Section II.2.11 Object Selection Screen Messages</b> .

Once selections have been made and Enter is pressed, the screen below is displayed.

```

Press PF1 for more information about Messages
01-12-31          N-2-O Recovery From Archive          TSI0373
11:38:00          Event: PAYREC   Sequence: 1          TSI1

From Env: ARC1    From Library: PAYPROD  To Env: PROD    To Library: PAYPROD
                  Starting Object: PAY5100P

S  Object      Purge      S/C  Message      S  Object      Purge      S/C  Message
-  PAY5100P    01-12-01  S    ADD          -  PAY5110M    01-02-17  S    S
-  PAY5210M    01-04-06  S    ADD          -  PAY5200M    01-05-06  S    ADD
-  PAY5200P    01-05-01  S

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ----  END   INQ   ----  TOP   UP    DOWN  BOT   ----  ----  STOP
    
```

This screen allows the user to verify selections. A message is displayed in the Message field for the selected NATURAL objects. For more information about messages, refer to **Section II.2.11 Object Selection Screen Messages**.

After selecting and verifying NATURAL objects on the current screen, pressing Enter displays the next screen of objects. Pressing Enter on the last page or PF12 ends the current selection process and proceeds with the next selection process.

**II.2.10 Select Events for Processing**

The Select Events for Processing function provides a list of Events that may be copied, deleted, inquired on, or modified. The user's Function Profile security defines the user's valid functions.

To select Events for processing, enter "S" in the Enter Code field on the Request Events menu. A starting value may be entered in the Event and Sequence fields. Entering a value in the Status field limits the output to Events with the specified status. If no status is entered, a value of "O" is assumed. The Select Events for Processing function from the Request Events menu only displays Events created by the user.

```

Valid Values: C - Copy D - Delete I - Inquire M - Modify
01-12-31          N-2-O SELECT EVENTS FOR PROCESSING          TSI0373
11:38:00          Status: O          TSI1

S  Event      Seq      From To  Event  ---- Added ----  ---- Task ----
-  -----  -  Env  Env  Type  User-ID  Date  Group  Number
-  -----  -  ---  ---  ---  -----  ---  -----  -----
_  EXTRACT  3311  PROD PAYM  N      TSI1    01-12-31  *****  *****

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END   ----  CHNG  ----  ----  ----  ----  ----  ----  ----
    
```

PF5 is available to toggle between the Project Tracking Task and Change Control for each Event listed on the select screen.

PF7 is available to toggle between sorting the events by Change Control and sorting by event/event sequence.

Field	Description
S (optional)	The function to be executed. Valid functions are C, D, I, or M (Copy, Delete, Inquire, or Modify). The user's Function Profile security defines the user's valid functions. The Event/Sequence selected is processed according to the function code entered.

Pressing Enter pages forward on all screens until the last screen is displayed. Pressing Enter on the last screen wraps around to display the first screen again.

Entering a "C" in the 'S' field on the Select Events for Processing screen invokes the copy option. A pop-up window will be displayed to allow users to enter a new Event name when one Event is copied to another Event with a different name.

```

Valid Values: C - Copy D - Delete I - Inquire M - Modify
01-12-31      N-2-O SELECT EVENTS FOR PROCESSING      TSI0373
11:38:00      Status: 0                              TSI1

S  Event      Seq      From To  Event  ---- Added  ---- Change
-  -----+-----+-----+-----+-----+-----+-----+-----+-----+
C  EXTRAC | Copy Event: EXTRACT Seq: 3311 | -12-31  *****  *****
    | To Event: EXTRACT           |         |
    |                             |         |
    +-----+-----+-----+-----+

```

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---  
HELP ---- END ---- TASK ---- ---- ---- ---- ---- ----

### II.2.11 Object Selection Screen Messages

Object Selection Screen Messages are messages received during the selection process. Typically, "ADD" or "REPLACE" messages are displayed when objects are selected. ADD indicates the selected object will be added to the target; REPLACE indicates the selected object will replace an object at the target. The following are additional messages that may be displayed:

#### **FAILED**

"FAILED" is displayed when Checkout/Checkin is active and one of the following rules is violated:

- When selecting objects to migrate, source code must be available for each NATURAL object to be migrated, and short text must be available for each SYSERR message to be migrated.
- When selecting objects to migrate to a development environment, the selected object cannot overwrite an object with the same name that is checked out in the development environment.
- When selecting objects to migrate from a BASE environment, the number of checkouts for the selected object may not exceed the Checkout/Checkin level. The N2O Administrator determines the Checkout/Checkin level.
- When selecting objects to migrate from a development environment, the checked-out objects may be in only one open Event. To identify Events containing the checked-out objects, refer to **Section IV.4.9 Events Pending for an Object**.
- When selecting objects to migrate to a BASE environment, the selected object must be migrated back to the original BASE environment.

When the "FAILED" message is displayed, place the cursor on the object in question and use PF11 to display any existing checkout information for that object.

The "FAILED" message indicates the selected object is not included in the Event.

#### **WARNING**

When the "WARNING" message is displayed, place the cursor on the object in questions and use PF11 to display any existing checkout information for that object.

"WARNING" is displayed when Checkout/Checkin is active and the selected object is checked out more than one time. "WARNING" indicates the object is added to the Event.

#### **NO XREF**

"NO XREF" is displayed when a NATURAL object is selected to migrate and PREDICT Cross-Reference data does not exist. The "NO XREF" message indicates the NATURAL object is not included in the Event.

#### **NO DOC**

"NO DOC" is displayed when a NATURAL object is selected to migrate and the PREDICT program documentation does not exist. The "NO DOC" message indicates the NATURAL object is not included in the Event.

#### **OBJ FAIL**

"OBJ FAIL" is displayed when a NATURAL object is selected to migrate and the object code does not exist or does not match the source code. The "OBJ FAIL" message indicates the NATURAL object is not included in the Event.

**DENIED**

"DENIED" is displayed when an object is selected to migrate and the object does not pass User-Exit 2 rules. The "DENIED" message indicates the object is not included in the Event.

**NO SHORT**

"NO SHORT" is displayed when only the long text of a SYSERR message is selected to migrate to a target and no short text exists at the target.

**NO SRC**

"NO SRC" is displayed when a NATURAL object is selected to migrate to multiple targets and source code does not exist. The "NO SRC" message indicates the NATURAL object is not included in the Event.

**NO OBJ**

"NO OBJ" is displayed when a NATURAL object is selected to migrate to multiple targets and object code does not exist. The "NO OBJ" message indicates the NATURAL object is not included in the Event.

**MULTIPLE**

"MULTIPLE" is displayed when a NATURAL object, PREDICT object, or SYSERR message is selected to migrate to multiple targets. "MULTIPLE" indicates the object is added to the Event.

**NOSPACES**

"NOSPACES" is displayed when a PREDICT object whose name contains one or more spaces is selected to migrate to a target. "NOSPACES" indicates the PREDICT object is not included in the Event.

**MISC DUP**

"MISC DUP" is displayed when a 3GL object is selected to migrate to a 3GL PDS environment with a category of MISC and an identically named 3GL object of a different category has already been selected for migration to that environment. The " MISC DUP" message indicates the 3GL object is not included in the Event.

### II.3 Authorize Events

The Authorize Events section describes the functions used to authorize Events. The authorization process allows the user to view the Event selection list, as well as the source code of NATURAL objects. In-progress Events may only be deleted from the Authorize Event menu.

To access the Authorize Events menu, enter "A" on the Migration Subsystem menu. Entering the direct command MIG AUTH on any menu also accesses the Authorize Events menu.

```

01-12-31          N-2-O AUTHORIZE EVENTS MENU          TSI0373
11:38:00

Code  Function
----  -
A    Authorize an Event
D    Delete an Event
I    Inquire on an Event
R    Reject an Event
S    Select Events for Processing
.    Terminate Authorize Event
----  -

Enter Code:  _   Event   :  _____

                Sequence :  _____

                Status   :  _

Direct Command _____ MIG AUTH
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
    
```

Field	Description
ENTER CODE	The function to be executed. Valid values are as follows: <b>A Authorize an Event</b> Provides one level of authorization for an Event. <b>D Delete an Event</b> Removes an Event that no longer needs to be processed. <b>I Inquire on an Event</b> Displays information about an Event. <b>R Reject an Event</b> Allows an authorizer to reset all authorizations to send the event back to the developers. <b>S Select Events for Processing</b> Provides a list of Events that may be deleted, inquired on, or authorized.
EVENT (Required for Authorize, Delete, and Inquire)	The Master Event of the request to be authorized or maintained. For the Select function, the name is used as a starting value.
SEQUENCE (Required for Authorize, Delete, and Inquire)	The Sequence number of the Event to be authorized or maintained.
STATUS (optional)	Limits Events displayed by the Select function. For valid values refer to <b>Appendix B N2O Event Status</b> .

### II.3.1 Authorize an Event

The Authorize an Event function allows an approved user to provide a level of authorization for an Event. It also permits the authorizer to view the object selection list for an Event. The ability to view source code for any selected NATURAL object is also available under this option.

To authorize an Event, enter "A" in the Enter Code field, the Event to be authorized in the Event field, and the Sequence number of the Event to be authorized in the Sequence field on the Authorize Events menu.

```

Press ENTER to view the selection list
01-12-31          N-2-O AUTHORIZE AN EVENT          TSI0373
11:38:00          Event: PAYIN      Sequence: 1      TSI1

      From Env      : TEST      From Library      : PAYTEST_
      To Env        : PROD      To Library        : PAYPROD_
      Process Date  : 20011231  Process Time     : 11:34:00
      Added User-ID : TREE08__

      Task Group    : PAY330E_   Task Number      : 14___

      VERIFICATION PROGRAMS_____
      C _____
      o _____
      m _____
      m _____
      e _____
      n _____
      t _____
      s _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END -----
    
```

The Process Date, Process Time, Change Control, and Comments fields are modifiable when authorizing an Event.

If PF5 is labeled AUTH, pressing PF5 will display the list of authorizers for Events that require multiple levels of authorization.

Field	Type	Description
EVENT (supplied)	N,S,P,O, M,D	The Master Event of the migration.
SEQUENCE (supplied)	N,S,P,O, M,D	The sequence number of the Event.
FROM ENV (supplied)	N,S,P,O, M,D	The source Environment Definition of the migration.
FROM LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages to be migrated.
TO ENV (supplied)	N,S,P,O, M,D	The target Environment Definition of the migration.
TO LIBRARY (supplied)	N,S	The library to which NATURAL objects and/or SYSERR messages are to be migrated.

(continued from previous page)

Field	Type	Description
PROCESS DATE (required)	N,S,P,O, M,D	The earliest date on which the batch migration takes place. The current date is automatically supplied by N2O, but it may be modified by the user if postdating of the migration is desired. For more information about submitting batch Events, refer to <b>Section II.7 Batch JCL Submission</b> .
PROCESS TIME (required)	N,S,P,O, M,D	The earliest time on the Process Date during which the batch migration may take place.
ADDED USER-ID (supplied)	N,S,P,O, M,D	The user who created the Event.
TASK GROUP (required if Master Event Project Tracking = 'Y')	N,S,P,O, M,D	A value that relates multiple Events to a specific Task Group from the N2O Project Tracking Subsystem. This field is only displayed if Project Tracking is required. When using Add, Copy, or Modify an Event, this field may be modified.
TASK NUMBER (required if Master Event Project Tracking = 'Y')	N,S,P,O, M,D	A number that relates multiple Events to a specific task from the N2O Project Tracking Subsystem. This field is only displayed if Project Tracking is required. When using Add, Copy, or Modify an Event, this field may be modified.
COMMENTS (optional)	N,S,P,O, M,D	A 10-line comment area describing the Event.
AUTH USER-ID (supplied)	N,S,P,O, M,D	The last user who authorized the Event.
CHANGE CONTROL (required if Master Event Charge Control='Y')	N,S,P,O, M,D	A value that relates multiple Events to a specific change request. This field is only displayed if Change Control is required.

Pressing Enter displays a screen listing the objects selected for the Event. For example, the screen below displays NATURAL objects selected for Event "PAYIN", Sequence "1".

When authorizing an Event that migrates more than one object type, the selection list for each type is displayed in the following order: NATURAL objects, PREDICT objects, 3GL/OTHER objects, and SYSERR messages.

```

01-12-31          N-2-O AUTHORIZE AN EVENT          TSI0373
11:38:00          Event: PAYIN      Sequence: 1      TSI1

From Env: TEST    From Library: PAYTEST    To Env: PROD    To Library: PAYPROD
                Starting Object: PAY5100P

S Object      Object
  Object      Type      S/C  Message      S Object      Object
  PAY5100P    PROGRAM  S    REPLACE      _ PAY5100M    MAP      S    REPLACE
  PAY5110S    SUB-RTN  S    ADD           _ PAY5200M    MAP      S    REPLACE
  PAY5200P    PROGRAM  S    REPLACE      _ PAY5210M    MAP      S    ADD

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  TOP  UP   DOWN  BOT  ----  ----  EXIT
    
```

If the selection list does not fit entirely on one screen, pressing Enter displays the next screen. This process is repeated until the end of the list.

When reviewing the NATURAL objects and SYSERR message lists, pressing PF12 displays the next object type list. When reviewing the PREDICT and 3GL/OTHER object lists, pressing PF12 displays the next PREDICT object type or the next 3GL/OTHER category in the selection list.

Source code for NATURAL objects may be viewed by entering "X" in the Select field beside the program name and pressing Enter. For more information, refer to **Section II.2.6 Inquire on an Event**.

Field	Type	Description
EVENT (supplied)	N,S,P,O, M,D	The Master Event of the migration.
SEQUENCE (supplied)	N,S,P,O, M,D	The sequence number of the Event.
FROM ENV (supplied)	N,S,P,O, M,D	The source Environment Definition of the migration.
FROM LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages to be migrated.
TO ENV (supplied)	N,S,P,O, M,D	The target Environment Definition of the migration.
TO LIBRARY (supplied)	N,S	The library to which the NATURAL objects and/or SYSERR messages are to be migrated.

(continued from previous page)

Field	Type	Description
STARTING OBJECT (optional)	N,S,P,O, M,D	The object where the selection list begins.
S (optional)	N,S,P,O, M,D	"X" in the Select field allows source code of a NATURAL object to be viewed when inquiring on an Event.
OBJECT (supplied)	N,S,P,O, M,D	The name of the object.
OBJECT TYPE (supplied)	N,P,O	The NATURAL object type (e.g., program, map, subprogram, etc.).
S/C (supplied)	N	The form of the NATURAL object:  S Indicates only the source form of the object may be selected.  C Indicates only the cataloged form of the object may be selected.  S/C Indicates both forms of the object may be selected.
DDM Dbid (optional)	D	Database number that the DDM will point to in the target environment.
DDM Fnr (optional)	D	File number that the DDM will point to in the target environment.
ADA 6 (supplied)	D	Marked with an X if the DDM was created in NATURAL 2.3 or above and will allow a Dbid and/or Fnr greater than 255.
METADATA (supplied)	M	Description of the UDE – User Defined Entities
MESSAGE (supplied)	N,S,P,O, M,D	Provides information about the selection of an object. For more information about messages, refer to <b>Section II.2.11 Object Selection Screen Messages</b> .

If additional levels of authorization are required, the screen below is displayed indicating how many more levels of authorization are required.

```

01-12-31          N-2-O EVENT REQUEST          TSI0373
11:38:00          Event: PAYIN      Sequence: 1      TSI1

                Event Awaiting Authorization
                (Requires 1 more level(s) of authorization)

                Press ENTER to continue

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
                -----
    
```

If servicing is required for the Event, the screen below is displayed.

```
01-12-31          N-2-O EVENT REQUEST          TSI0373
11:38:00          Event: PAYIN      Sequence: 1    TSI1

                Event Awaiting Servicing

                Press ENTER to continue

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
-----
```

If no additional levels of authorization or servicing are required, the migration process begins. For more information about the migration process, refer to **Section II.2.3 Migration Process**.

### II.3.2 Delete an Event

The Delete an Event function removes an Event that no longer needs to be processed.

To delete an Event, enter "D" in the Enter Code field, the Event to be deleted in the Event field and the Sequence number of the Event to be deleted in the Sequence field on the Authorize Events menu.

Closed Events (Status "C") and In-progress Events (status "I") that have migrated Objects cannot be deleted. Other In-progress Events may only be deleted from the Authorize Event menu.

```

01-12-31          N-2-O DELETE AN EVENT          TSI0373
11:38:00          Event: PAYOUT   Sequence: 3    TSI1

      From Env      :  PROD      From Library   :  PAYPROD_
      To Env        :  DEV        To Library     :  PAYDEV__
      Process Date  :  20011231   Process Time   :  11:38:00
      Added User-ID :  TSI1__

      C _____
      o _____
      m _____
      e _____+-----+
      n _____| Do you want to Delete? N (Y/N) |
      t _____|
      s _____+-----+

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
----- END -----
    
```

To delete the Event, enter "Y" in the pop-up window. To cancel the delete request, press PF3 or enter "N" in the pop-up window.

Refer to **Section II.2.1 Add an Event** for a description of each field.

### II.3.3 Inquire on an Event

The Inquire on an Event function displays Event information.

To inquire on an Event, enter "I" in the Enter Code field, the Event to be viewed in the Event field, and the Sequence number of the Event to be viewed in the Sequence field on the Authorize Events menu.

```

Press Enter to display the selection list
01-12-31          N-2-O INQUIRE ON AN EVENT          TSI0373
11:38:00          Event:  EXTRACT  Sequence:  1      TSI1
                  Extract Event

      From Env      :  PROD      From Library      :  PAYPROD_
      To Env        :  MAIN      To Library        :  PAYMAIN_
      Process Date   :  20011231  Process Time     :  12:10:42
      Added User-ID  :  TSI1__

C _____
o _____
m _____
m _____
e _____
n _____
t _____
s _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
----- END -----
    
```

Refer to **Section II.2.1 Add an Event** for a description of each field.

Pressing Enter displays a screen listing the objects selected for the Event. For example, the screen below displays NATURAL objects selected for Event "EXTRACT", Sequence "1".

When inquiring on an Event that migrates more than one object type, the selection list for each type is displayed in the following order: NATURAL objects, PREDICT objects, 3GL/OTHER objects, SYSERR messages DDMS and METADATA .

```

01-12-31          N-2-O INQUIRE ON AN EVENT          TSI0373
11:38:00          Event:  EXTRACT  Sequence:  1      TSI1

From Env: PROD    From Library: PAYPROD  To Env: MAIN    To Library: PAYMAIN
Starting Object: PAY5100P

S Object          Object          S/C  Message          S Object          Object          S/C  Message
- PAY5100P        PROGRAM    S    REPLACE          - PAY5100M        MAP            S    REPLACE
- PAY5110S        SUB-RTN   S    ADD              - PAY5200M        MAP            S    REPLACE
- PAY5200P        PROGRAM    S    REPLACE          - PAY5210M        MAP            S    ADD

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP ----- END ----- TOP  UP  DOWN  BOT ----- EXIT
    
```

If the list does not fit entirely on one screen, pressing Enter displays the next screen. This process is repeated until the end of the list.

When reviewing the DDMS, NATURAL objects and SYSERR message lists, pressing PF12 displays the next object type. When reviewing the METADATA, PREDICT and 3GL/OTHER object lists, pressing PF12 displays the next PREDICT object type or the next 3GL/OTHER category in the selection list.

Source code for NATURAL objects may be viewed by entering "X" in the Select field beside the object name and pressing Enter. For more information, refer to **Section II.2.6 Inquire on an Event**.

Field	Type	Description
EVENT (supplied)	N,S,P,O, M,D	The Master Event of the migration.
SEQUENCE (supplied)	N,S,P,O, M,D	The sequence number of the Event.
FROM ENV (supplied)	N,S,P,O, M,D	The source Environment Definition of the migration.
FROM LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages to be migrated.
TO ENV (supplied)	N,S,P,O, M,D	The target Environment Definition of the migration.
TO LIBRARY (supplied)	N,S	The library to which the NATURAL objects and/or SYSERR messages are to be migrated.
STARTING OBJECT (optional)	N,S,P,O, M,D	The object where the selection list begins.
S (optional)	N,S,P,O, M,D	"X" in the Select field allows source code of a NATURAL object to be viewed when inquiring on an Event.
OBJECT (supplied)	N,S,P,O, M,D	The name of the object.
OBJECT TYPE (supplied)	N,P,O	The object type (e.g., program, map, subprogram, etc.)
S/C (supplied)	N	The form of the object:  S     Indicates only the source form of the object may be selected.  C     Indicates only the cataloged form of the object may be selected.  S/C   Indicates both forms of the object may be selected.

(continued from previous page)

<b>Field</b>	<b>Type</b>	<b>Description</b>
DDM Dbid (optional)	D	Database number that the DDM will point to in the target environment.
DDM Fnr (optional)	D	File number that the DDM will point to in the target environment.
ADA 6 (supplied)	D	Marked with an X if the DDM was created in NATURAL 2.3 or above and will allow a Dbid and/or Fnr greater than 255.
METADATA (supplied)	M	Description of the UDE – User Defined Entities
MESSAGE (supplied)	N,S,P,O	Provides information about the selection of an object. For more information about messages, refer to <b>Section II.2.11 Object Selection Screen Messages</b> .

### II.3.4 Reject an Event

The Reject an Event function allows an authorizer to reject all authorizations applied to an Event.

To Reject an Event, enter "R" in the Enter Code field, the Event to be viewed in the Event field, and the Sequence number of the Event with authorizations to be rejected in the Sequence field on the Authorize Events menu.

Pressing Enter displays a screen listing the userids that have authorized the Event. For example, the screen below displays NATURAL objects selected for Event "PAYOUT", Sequence "3".

```

Reject Event: PAYOUT   Seq:      3
----- Authorization -----
#  USERID      DATE      TIME
-  -
1  AUTH1       20130729  15:29:21
2
3
4
5
6
7
8
9
10
Press ENTER to Reject the authorizations, or
PF3 to Stop the Reject Process
    
```

Pressing Enter will reject all Authorizations for the Event. Pressing PF3 will abort rejecting all Authorizations and leave the Authorizations in place.

Field	Type	Description
EVENT (supplied)	N,S,P,O, M,D	The Master Event of the migration.
SEQUENCE (supplied)	N,S,P,O, M,D	The sequence number of the Event.
USERID (supplied)	N,S,P,O, M,D	Userid that authorized the authorization level.
DATE (supplied)	N,S,P,O, M,D	Date of the authorization for the authorization level.
TIME (supplied)	N,S,P,O, M,D	Time of the authorization for the authorization level.

### II.3.5 Select Events for Processing

The Select Events for Processing function provides a list of Events that may be deleted, inquired on, or authorized. This function only displays Events that need to be authorized.

To select Events for processing, enter "S" in the Enter Code field on the Authorize Events menu. A starting value may be entered in the Event and Sequence fields. Entering a value in the Status field limits the output to Events with the specified status. If no status is entered, a value of "O" is assumed.

```

Valid Values: D - Delete I - Inquire
01-12-31      N-2-O SELECT EVENTS FOR PROCESSING      TSI0373
11:38:00      Status:  O                              TSI1

S  Event      Seq      From To   Event  ---- Added  ----  ---- Task  ----
  Env  Env      Type  User-ID Date      Group  Number
-----
_  EXTRACT  1      PROD MAIN N      TSI0373 01-12-31  *****  *****

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ---  END  ---  CHNG  ---  ---  ---  ---  ---  ---  ---
    
```

PF5 is available to toggle between the Project Tracking Task and Change Control for each Event listed on the select screen.  
 PF7 is available to toggle the sorting of displayed Events by Change Control or Event and Sequence.

Field	Description
S (optional)	The function to be executed. Possible functions are A, D, or I (Authorize, Delete, or Inquire). The user's Function Profile security defines the user's valid functions. The Event/Sequence selected is processed according to the function code entered.

Pressing Enter pages forward on all screens until the last screen is displayed. Pressing Enter on the last screen displays the first screen again.

### II.4 Service Events

The Service Events section describes the functions used to service Events. The Service Events process allows the user to view the Event selection list, as well as the source code of NATURAL objects.

To access the Service Events menu, enter "S" on the Migration Subsystem menu. Entering the direct command MIG SERV on any menu also accesses the Service Events menu.

```

01-12-31          N-2-O SERVICE EVENTS MENU          TSI0373
11:38:00

Code  Function
-----
D    Delete an Event
I    Inquire on an Event
P    Service an Event
S    Select Events for Processing
.    Terminate Service Event
-----

Enter Code:  _   Event   : _____

                Sequence : _____

                Status   :  _

Direct Command: _____          MIG SERV
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP ---- END  ENV  MIG  REP  TOL  USR  PRJ  ---- ---- EXIT
    
```

Field	Description
ENTER CODE	The function to be executed. Valid values are as follows: <ul style="list-style-type: none"> <li><b>D Delete an Event</b> Removes an Event that no longer needs to be Serviced.</li> <li><b>I Inquire on an Event</b> Displays information about an Event.</li> <li><b>P Service an Event</b> Provides a level of authorization above Authorize an Event.</li> <li><b>S Select Events for Processing</b> Provides a list of Events that may be deleted, inquired on, or modified.</li> </ul>
EVENT (Required for Inquire and Service)	The Master Event of the request to service or inquire on. For the Select function, the Event name is used as a starting search key.
SEQUENCE (Required for Inquire and Service)	The sequence number of the Event on which to service or inquire.
STATUS (optional)	The Status limits Events displayed by the Select function. For valid values refer to <b>Appendix B N2O Event Status</b> .

### II.4.1 Delete an Event

The Delete an Event function removes an Event that no longer needs to be processed.

To delete an Event, enter "D" in the Enter Code field, the Event to be deleted in the Event field, and the Sequence number of the Event to be deleted in the Sequence field on the Service Events menu.

Closed Events (Status "C") and In-progress Events (status "I") that have migrated Objects cannot be deleted.

```

01-12-31          N-2-O DELETE AN EVENT          TSI0373
11:38:00          Event: PAYOUT Sequence: 2      TSI1

      From Env      : PROD      From Library   : PAYPROD_
      To Env        : DEV        To Library     : PAYDEV__
      Process Date   : 20011231 Process Time    : 11:38:00

      Added User-ID  : TSI1__

C _____
o _____
m _____
m _____
e _____+-----+
n _____| Do you want to Delete? N (Y/N) |
t _____|
s _____+-----+

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
----- END -----
    
```

To delete the Event, enter "Y" in the pop-up window. To cancel the delete request, press PF3 or enter "N" in the pop-up window.

Refer to **Section II.2.1 Add an Event** for a description of each field.

**II.4.2 Inquire on an Event**

The Inquire on an Event function displays information about an Event.

To inquire on an Event, enter "I" in the Enter Code field, the Event to be displayed in the Event field, and the Sequence number of the Event to be displayed in the Sequence field on the Service Events menu.

```

Press Enter to display the selection list
01-12-31          N-2-O INQUIRE ON AN EVENT          TSI0373
11:38:00          Event: PAYIN  Sequence: 1          TSI1

      From Env      : TEST      From Library    : PAYTEST_
      To Env        : PROD      To Library      : PAYPROD_
      Process Date  : 20011231  Process Time   : 12:10:42
      Create User-ID : TSI1_

C _____
o _____
m _____
m _____
e _____
n _____
t _____
s _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
----- END -----
    
```

Pressing Enter displays a screen listing objects selected to migrate. For example, the screen below displays NATURAL objects selected for Event "PAYIN", Sequence "1".

When inquiring on an Event that migrates more than one object type, the selection list for each type is displayed in the following order: NATURAL objects, PREDICT objects, 3GL/OTHER objects, and SYSERR messages.

```

01-12-31          N-2-O INQUIRE ON AN EVENT          TSI0373
11:38:00          Event: PAYIN  Sequence: 1          TSI1

From Env: TEST    From Library: PAYTEST    To Env: PROD    To Library: PAYPROD
Starting Object: PAY5100P

S Object      Object
  Object Type S/C Message  S Object      Object
- PAY5100P PROGRAM S REPLACE  - PAY5100M MAP S REPLACE
- PAY5110S SUB-RTN S ADD      - PAY5200M MAP S REPLACE
- PAY5200P PROGRAM S REPLACE  - PAY5210M MAP S ADD

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP ---- END ---- ---- TOP UP DOWN BOT ---- ---- EXIT
    
```

If the selection list does not fit entirely on one screen, pressing Enter displays the next screen. This process is repeated until the end of the list.

When reviewing the NATURAL objects and SYSERR message lists, pressing PF12 displays the next object type. When reviewing the PREDICT and 3GL/OTHER object lists, pressing PF12 displays the next PREDICT object type or the next 3GL/OTHER category in the selection list.

Source code for NATURAL objects may be viewed by entering "X" in the Select field beside the object name and pressing Enter. For more information, refer to **Section II.2.6 Inquire on an Event**.

<b>Field</b>	<b>Type</b>	<b>Description</b>
EVENT (supplied)	N,S,P,O, M,D	The Master Event of the migration.
SEQUENCE (supplied)	N,S,P,O, M,D	The sequence number of the Event.
FROM ENV (supplied)	N,S,P,O, M,D	The source Environment Definition of the migration.
FROM LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages to be migrated.
TO ENV (supplied)	N,S,P,O, M,D	The target Environment Definition of the migration.
TO LIBRARY (supplied)	N,S	The library to which the NATURAL objects and/or SYSERR messages are to be migrated.
STARTING OBJECT (optional)	N,S,P,O, M,D	The object where the selection list begins.
S (optional)	N,S,P,O, M,D	"X" in the Select field allows source code of a NATURAL object to be viewed when inquiring on an Event.
OBJECT (supplied)	N,S,P,O, M,D	The name of the object.
OBJECT TYPE (supplied)	N,P,O	The NATURAL object type (e.g., program, map, subprogram, etc.).
S/C (supplied)	N	The form of the NATURAL object:  S     Indicates only the source form of the object may be selected.  C     Indicates only the cataloged form of the object may be selected.  S/C   Indicates both forms of the object may be selected.

(continued from previous page)

Field	Type	Description
DDM Dbid (optional)	D	Database number that the DDM will point to in the target environment.
DDM Fnr (optional)	D	File number that the DDM will point to in the target environment.
ADA 6 (supplied)	D	Marked with an X if the DDM was created in NATURAL 2.3 or above and will allow a Dbid and/or Fnr greater than 255.
METADATA (supplied)	M	Description of the UDE – User Defined Entities
MESSAGE (supplied)	N,S,P,O, M,D	Provides information about the selection of an object. For more information about messages, refer to <b>Section II.2.11 Object Selection Screen Messages</b> .

### II.4.3 Service an Event

The Service an Event function allows a user to view the Event selection list. This function also provides the ability to view the source code of NATURAL objects and provides an additional level of authorization.

To service an Event, enter "P" in the Enter Code field, the Event to be serviced in the Event field, and the Sequence number of the Event to be serviced in the Sequence field on the Service Events menu.

```

Press ENTER to view the selection list
01-12-31          N-2-O SERVICE AN EVENT          TSI0373
11:38:00          Event: PAYIN      Sequence: 66          TSI1

      From Env      : TEST      From Library      : PAYTEST_
      To Env        : PROD      To Library        : PAYPROD_
      Process Date  : 20011231  Process Time     : 11:34:00
      Added User-ID : TSI1_____ Authorize User-ID: TSI2_____

      Task Group    : PAYE_____ Task Number      : 7_____

      C _____
      o _____
      m _____
      m _____
      e _____
      n _____
      t _____
      s _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END -----
    
```

The Process Date, Process Time, Change Control, and Comments fields are modifiable when servicing an Event.

If PF5 is labeled AUTH, pressing PF5 will display the list of authorizations for Events that require multiple levels of authorization.

Field	Type	Description
EVENT (supplied)	N,S,P,O, M,D	The Master Event of the migration.
SEQUENCE (supplied)	N,S,P,O, M,D	The sequence number of the Event.
FROM ENV (supplied)	N,S,P,O, M,D	The source Environment Definition of the migration.
FROM LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages to be migrated.
TO ENV (supplied)	N,S,P,O, M,D	The target Environment Definition of the migration.
TO LIBRARY (supplied)	N,S	The library to which NATURAL objects and/or SYSERR messages are to be migrated.

(continued from previous page)

Field	Type	Description
PROCESS DATE (required)	N,S,P,O, M,D	The earliest date on which the batch migration takes place. The current date is automatically supplied by N2O, but it may be modified by the user if postdating of the migration is desired. For more information about submitting batch Events, refer to <b>Section II.7 Batch JCL Submission</b> .
PROCESS TIME (required)	N,S,P,O, M,D	The earliest time on the Process Date during which the batch migration may take place.
ADDED USER-ID (supplied)	N,S,P,O, M,D	The user who created the Event.
TASK GROUP (required)	N,S,P,O, M,D	A value that relates multiple Events to a specific Task Group from the N2O Project Tracking Subsystem. This field is only displayed if Project Tracking is required. When using Add, Copy, or Modify an Event, this field may be modified.
TASK NUMBER (required)	N,S,P,O, M,D	A number that relates multiple Events to a specific task from the N2O Project Tracking Subsystem. This field is only displayed if Project Tracking is required. When using Add, Copy, or Modify an Event, this field may be modified.
AUTH USER-ID (supplied)	N,S,P,O, M,D	The last user who authorized the Event.
CHANGE CONTROL (required)	N,S,P,O, M,D	A value that relates multiple Events to a specific change request. This field is only displayed if Change Control is required.
COMMENTS (optional)	N,S,P,O, M,D	A 10-line comment area describing the Event.

Pressing Enter displays a screen listing objects selected to migrate. For example, the screen below displays NATURAL objects selected for Event "PAYIN", Sequence "1".

When servicing an Event that migrates more than one object type, the selection list for each type is displayed in the following order: NATURAL objects, PREDICT objects, 3GL/OTHER objects, and SYSERR messages.

```

01-12-31          N-2-O SERVICE AN EVENT          TSI0373
11:38:00          Event: PAYIN      Sequence: 1    TSI1

From Env: TEST    From Library: PAYTEST  To Env: PROD    To Library: PAYPROD
                Starting Object: PAY5100P

S Object      Object      S/C  Message      S Object      Object      S/C  Message
_ PAY5100P    PROGRAM  S    REPLACE      _ PAY5100M    MAP        S    REPLACE
_ PAY5110S    SUB-RTN  S    ADD          _ PAY5200M    MAP        S    REPLACE
_ PAY5200P    PROGRAM  S    REPLACE      _ PAY5210M    MAP        S    ADD

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  TOP  UP   DOWN  BOT  ----  ----  EXIT
    
```

If the selection list does not fit entirely on one screen, pressing Enter displays the next screen. This process is repeated until the end of the list.

When reviewing the NATURAL objects and SYSERR message lists, pressing PF12 displays the next object type. When reviewing the PREDICT and 3GL/OTHER object lists, pressing PF12 displays the next PREDICT object type or the next 3GL/OTHER category in the selection list.

Source code for NATURAL objects may be viewed by entering "X" in the Select field beside the object name and pressing Enter. For more information, refer to **Section II.2.6 Inquire on an Event**.

Field	Type	Description
EVENT (supplied)	N,S,P,O, M,D	The Master Event of the migration.
SEQUENCE (supplied)	N,S,P,O, M,D	The sequence number of the Event.
FROM ENV (supplied)	N,S,P,O, M,D	The source Environment Definition of the migration.
FROM LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages to be migrated.
TO ENV (supplied)	N,S,P,O, M,D	The target Environment Definition of the migration.
TO LIBRARY (supplied)	N,S	The library to which the NATURAL objects and/or SYSERR messages are to be migrated.
STARTING OBJECT (optional)	N,S,P,O, M,D	The object where the selection list begins.
S (optional)	N,S,P,O, M,D	"X" in the Select field allows source code of a NATURAL object to be viewed when inquiring on an Event.
OBJECT (supplied)	N,S,P,O, M,D	The name of the object.
OBJECT TYPE (supplied)	N,P,O	The NATURAL object type (e.g., program, map, subprogram, etc.).
S/C (supplied)	N	The form of the NATURAL object:  S Indicates only the source form of the object may be selected.  C Indicates only the cataloged form of the object may be selected.  S/C Indicates both forms of the object may be selected.
DDM Dbid (optional)	D	Database number that the DDM will point to in the target environment.
DDM Fnr (optional)	D	File number that the DDM will point to in the target environment.
ADA 6 (supplied)	D	Marked with an X if the DDM was created in NATURAL 2.3 or above and will allow a Dbid and/or Fnr greater than 255.
METADATA (supplied)	M	Description of the UDE – User Defined Entities
MESSAGE (supplied)	N,S,P,O, M,D	Provides information about the selection of an object. For more information about messages, refer to <b>Section II.2.11 Object Selection Screen Messages</b> .

### II.4.4 Select Events for Processing

The Select Events for Processing function provides a list of Events that may be inquired on or serviced.

To select Events for processing, enter "S" in the Enter Code field on the Service Events menu. A starting value may be entered in the Event and Sequence fields. Entering a value in the Status field limits the output to Events with the specified status. Refer to **Appendix B N2O Event Status** for valid Status field values. If no status is entered, a value of "A" is assumed.

```

Valid Values: D - Delete I - Inquire P - Service
01-12-31          N-2-O SELECT EVENTS FOR PROCESSING          TSI0373
11:38:00          Status: O                                  TSI1

S  Event      Seq      From To  Event  ----  Added  ----  ----  Task  ----
-  -----  -  -----  Env  Env  Type  User-ID  Date  Group  Number
-  -----  -  -----  ---  ---  ---  -----  ---  -----  -----
_  PAYIN      1          TEST  PROD  N      TSI1     01-12-31  *****  *****

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  CHNG  ----  ----  ----  ----  ----  ----  ----
    
```

PF5 is available to toggle between the Project Tracking Task and Change Control for each Event listed on the select screen.

PF7 is available to toggle between sorting the events by Change Control and sorting by event/event sequence.

Field	Description
S (optional)	The function to be executed. Valid functions are D, I, and P (Delete, Inquire and Service). The user's Function Profile security defines the user's valid functions.

Only Events that a user may process are displayed. The Event/Sequence selected is processed according to the function code entered.

Pressing Enter pages forward on all screens until the last screen is displayed. Pressing Enter on the last screen wraps around to display the first screen again.

### II.5 Migration Utilities

The Migration Utilities assist users in performing Autocompile and completing the MOVE process for Events.

To access the Migration Utilities menu, enter "M" on the Migration Subsystem menu. Entering the direct command MIG UTIL on any menu also accesses the Migration Utilities menu.

```

01-12-31          N-2-O MIGRATION UTILITIES MENU          TSI0373
11:38:00

Code  Function
-----
A    Libraries Pending Autocompile
B    Process Deferred Move Events
C    Cancel Deferred Move Events
D    3GL/Other PDS Member Type Update
E    Build Event by Change Control
.    Terminate Migration Utilities
-----

Enter Code:  _

Direct Command _____ MIG UTIL
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
    
```

Field	Description
ENTER CODE	<p>The function to be executed. Valid values are as follows:</p> <ul style="list-style-type: none"> <li><b>A Libraries Pending Autocompile</b> Displays a list of libraries that contain Events marked for Autocompile.</li> <li><b>B Process Deferred Move Events</b> Processes deferred move Events.</li> <li><b>C Cancel Deferred Move Events</b> Cancels deferred move Events.</li> <li><b>D 3GL/OTHER PDS Member Type Update</b> 3GL/OTHER objects for 3GL/OTHER Autocompile.</li> <li><b>E Build Event by Change Control</b> Build an Event by Change Control.</li> </ul>

### II.5.1 Libraries Pending Autocompile

Libraries Pending Autocompile displays a list of all libraries in the current FUSER that contain Events marked for Autocompile.

N2O provides Autocompile to automate the compile process for NATURAL source objects after they have been migrated. Autocompile automatically updates the NATURAL buffer pool for the target environment. If Autocompile is not used and object code is migrated, the NATURAL buffer pool is not updated. The Libraries Pending Autocompile function initiates the on-line Autocompile process.

XREF at the Target is available with Autocompile and uses Cross-Reference information stored in PREDICT. If the object type being migrated is specified in the XREF TARGET field on the Migration Profile, PREDICT Cross-Reference information will be used to determine all NATURAL objects affected by the migrated object(s). These affected objects and the objects being migrated will be autocompiled in the target Environment.

During the Autocompile process, N2O provides an optional Automatic Recovery feature. If an error occurred during the Event compilation process, then Automatic Recovery restores the previous versions of all the migrated objects within that Event.

After entering "A" in the Enter Code field and pressing Enter on the Migration Utilities menu, the Libraries Pending Autocompile screen is displayed. Entering "N2OCATI" on the NATURAL Command line also accesses the Libraries Pending Autocompile screen.

A pop-up window indicates that a scan of all libraries is being performed, which searches for libraries pending Autocompile. The screen below displays all libraries pending Autocompile. The number next to the library name identifies the number of Events that are pending Autocompile.

```

Type X to select a library to perform AUTOCOMPILE on (DOES NOT RETURN TO N2O)
01-12-31          N-2-0 LIBRARIES PENDING AUTOCOMPILE          TSI0373
11:38:00                                     TSI1

                                DBID: 1      FNR: 231

      X Library  Nbr      X Library  Nbr
      - - - - - - - - - - - - - - - - -
      _ PAYPROD  1

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

To list the Events awaiting Autocompile for a library, enter "X" beside the library name and press Enter. Only one library may be selected.

N2O logs on to the selected library and lists all Events marked for Autocompile as shown on the Events Pending Autocompile screen. Entering "N2OCAT" on the NATURAL Command line in the target environment also accesses the Events Pending Autocompile screen. This provides the ability to perform Autocompile on remote environments.

```

Type X to perform Autocompile or D to Delete
01-12-31          N2O MIGRATION UTILITIES          TSI0373
11:38:00          EVENTS PENDING AUTOCOMPILE      TSI1

      S  Event   Seq   Date    Time      User-ID  Function
      -  - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
      _  PAYIN   1     01-12-31  13:58:12  TSI1     CAT

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

The screen above displays a list of Events for the selected target library that are pending Autocompile. To compile NATURAL objects for an Event, enter "X" beside the Events. To delete the Autocompile process for an Event, enter "D" beside the Event. A pop-up window displays the number of Events to be deleted, and requests confirmation before deleting. It is possible to select more than one Event at a time.

After selecting Events for Autocompile and pressing Enter, the Automatic Compile Subsystem screen displays the Event selected for Autocompile.

```

01-12-31          N-2-O AUTOCOMPILE          TSI0373
11:38:00          TSI1

Autocompile has been requested for
Event : PAYIN      Sequence : 1

Press ENTER to proceed

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

After pressing Enter on the Automatic Compile Subsystem screen, the Cataloging Phase screen displays each NATURAL object as it is cataloged. If an error occurs during the cataloging process, the error and the line number on which the error occurred are displayed next to the object.

```

11:38:00          ***** Recatalog Application *****          01-12-31
USER: TSI0373          Cataloging Phase          LIBRARY: PAYPROD

                                     Object   Error Line
                                     -----   -
                                     -----

                                     Please wait
                                     -----

Objects   current   correct   failed   Curr. Object   BPAY   82   1050
          4         4         2         1         DELOPAY   CATSCAN
                                     COPIER

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
    
```

After the cataloging phase is complete, the Error Report screen is displayed if any of the NATURAL objects received syntax errors. This screen identifies NATURAL objects with errors, the errors they received, and the lines that caused the errors.

```

11:38:00          ***** Recatalog Application *****          TSI0373
User: TSI1          Error Report          TSI1

Object   Error Line
-----   -
BPAY     82     1050
    
```

When Autocompile is completed for an Event, the Autocompile screen confirms that Autocompile is completed. After pressing Enter, User-Exit 7 is invoked. This User-Exit may be used to return the user to the N2O main menu or exit NATURAL (Refer to the **N2O Administration Manual** for details on User-Exit 7).

```
01-12-31          N-2-O AUTOCOMPILE          TSI0373
11:38:00                                     TSI1

          Autocompile has completed for
Event : PAYIN          Sequence : 1

          Press ENTER to proceed

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
-----
```

To restart a compile that was terminated abnormally, enter "N2OCAT" on the NATURAL Command line and press Enter. An Autocompile Re-Start screen is displayed. If Enter is pressed on the Re-Start screen, the compile process continues compiling NATURAL objects at the point where it had previously terminated. If PF3 is pressed, the request for Autocompile is deleted for that Event and the Autocompile process continues for the remaining Events.

**II.5.2 Process Deferred Move Events**

The Process Deferred Move Events function starts the deletion process for Deferred Move Events. This utility only processes on-line Events. Batch Events are handled by the deletion process for a Batch Deferred Move. Events having a deferred date and time greater than the current date and time are bypassed. User-Exit 12 may be called to secure the use of the Process Deferred Move Events function. (Refer to the **N2O Administration Manual** for details on User-Exit 12.)

After entering "B" in the Enter Code field on the Migration Utilities menu, the Process Deferred Move Events screen is displayed.

```

Type X To Process a Deferred Move Event
01-12-31          N-2-O PROCESS DEFERRED MOVE EVENTS          TSI0373
11:38:00                                               TSI1

      X  Event      Seq      From  From      --- Migration ---  Added
      -  - - - - -  - - -  Env   Library  Date      Time      User-ID
      -  - - - - -  - - -  - - -  - - - - -  - - - - -  - - - - -
      -  PAYTEST    2      DEV   PAYDEV   01-12-01  13:30:00  TSI0373
      -  PAYTES     3      DEV   PAYDEV   01-12-01  15:30:00  TSI0373

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12--
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

The deletion process is initiated by entering "X" beside an Event. It is possible to select more than one Event at a time. As the Event is processed, the NATURAL objects scroll upward until processing is complete. A "CANCEL" message indicates that a previous migration has eliminated the need for the delete to occur. A verification screen is displayed after each selection is processed.

**II.5.3 Cancel Deferred Move Events**

The Cancel Deferred Move Events function cancels the deletion process for deferred moves. User-Exit 12 may be called to secure the use of the Cancel Deferred Move Events function. (Refer to the *N2O Administration Manual* for details on User-Exit 12.)

After entering "C" in the Enter Code field on the Migration Utilities menu, the Cancel Deferred Move Events screen is displayed.

```

Type X to cancel a Deferred Move Event
01-12-31          N-2-O CANCEL DEFERRED MOVE EVENTS          TSI0373
11:38:00                                     TSI1

      X  Event      Seq      From  From  --- Migration ---  Added
      -  - - - - -  - - - -  Env   Library  Date      Time      User-ID
      -  - - - - -  - - - -  - - -  - - - - -  - - - - -  - - - - -
      -  PAYTEST    2       DEV   PAYDEV  01-12-01  13:30:00  TSI0373
      -  PAYTEST    3       DEV   PAYDEV  01-12-01  15:30:00  TSI0373

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      - - - - -  END  - - - - -  - - - - -  - - - - -  - - - - -  - - - - -
    
```

The deletions for an Event may be canceled by placing "X" beside the Event. It is possible to select more than one Event at a time.

### II.5.4 3GL/OTHER PDS Object Type Update

The 3GL/OTHER PDS Object Type Update function updates the N2O Migration file with information about 3GL/OTHER PDS objects. This information is used during the migration selection process and the 3GL/OTHER Autocompile process.

After entering "D" in the Enter Code field on the Migration Utilities menu and pressing Enter, the 3GL/OTHER PDS Object Type Update screen is displayed.

```

01-12-31          N-2-O 3GL/OTHER PDS MEMBER TYPE UPDATE          TSI0373
11:38:00                                               TSI1

                               Env Def      : PDSP
                               Category     : COBOL_
                               Starting Value: _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ---  END  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---
    
```

Field	Description
∞ ENV DEF (required)	The Environment Definition of the PDS to be updated.
∞ CATEGORY (required)	The 3GL/OTHER category to be selected for updating.
STARTING VALUE (optional)	The starting object.

∞ indicates field-level help is available.

After entering the appropriate information on the 3GL/OTHER PDS Object Type Update screen and pressing Enter, the PDS Object Type Update screen is displayed.

```

01-12-31          N2O 3GL/OTHER PDS MEMBER TYPE UPDATE          TSI0373
11:38:00                                               TSI1

Env Def:   PDSP          Category:  COBOL

Member      Member Type  Message
-----
C-BOL-3     COBOL _____
CAKENAT6    COBOL _____
CARRPRTC    COBOL _____
CATALLC     COBOL _____
CATOS6      COBOL _____
CCATALLC    COBOL _____
CDACMP      COBOL _____
CDADBS      COBOL _____
CDAFRM      COBOL _____
CDALOD      COBOL _____
CDAREORG    COBOL _____
CDAREP      COBOL _____
CDAULD      COBOL _____
CDAWAN      COBOL _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----

```

A list of objects and member types is displayed. The member types may be updated by entering a new value.

### II.5.5 Build Event by Change Control

The Build Event by Change Control function allows the entry of an Event and change control number. This information will be used to build an Event containing all modules checked out using the associated change control number and currently residing in the Environment/Library of the Master Event entered. The existing checkouts will be transferred to the current user (if necessary) before being selected for the event.

After entering "E" in the Enter Code field on the Migration Utilities menu and pressing Enter, Build Event by Change Control Update screen is displayed.

```

14-01-14          N-2-O MIGRATION UTILITIES MENU          VLM1
14:52 +-----+-----+-----+-----+-----+-----+ CP11
!
!          *****
!          Build Event by Change Control
!          *****
!          Utility to consolidate all checkouts currently in the
!          from environment of the requested event that were
!          migrated with a specific Change Control, transfer the
!          checkout to the current user (if necessary), and build
!          an event that contains all the objects.
!          *****
!          Type          : N (N,S,P,O,D,M)
!          Event         :
!          Change Control:          (BLANK TO READ FROM EVENT)
!
!          ** PF1=Help  ENTER '.' OR PF3 TO CANCEL
!          *****
!
+-----+-----+-----+-----+-----+-----+
Direct Command: _____          MIG UTIL

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ENV  MIG  REP  TOL  ----  PRJ  ----  ----  EXIT
    
```

Field	Description
∞TYPE (required)	The type of objects affected. Valid values are as follows:  D Indicates DDM. M Indicates METADATA. N Indicates NATURAL. P Indicates PREDICT. S Indicates SYSERR. O Indicates 3GL/OTHER
∞ EVENT (required)	The Master Event of the migration.
∞ CHANGE CONTROL (required)	A value that relates multiple Events to a specific change request.

∞ indicates field-level help is available.

## II.6 Checkout/Checkin Utilities

When the Checkout/Checkin feature is active, it automatically updates the Checkout/Checkin status as objects migrate through the application life cycle. The Checkout/Checkin Utilities are also available to manually update the Checkout/Checkin status of an object.

Each of the Checkout/Checkin Utilities maintains an audit trail, which lists the User-ID of users of the utility, and the date and time the utility was executed. Other relevant information is stored according to the type of utility that was executed. The complete life cycle for an object may be viewed in **Section IV.4.2 History of an Object**.

User-Exit 5 may be called to secure the use of the Checkout/Checkin Utilities. This user-exit may be used to prevent users from canceling or transferring objects checked out to other users, to verify naming standards, or to prevent existing objects from being checked out (Refer to the **N2O Administration Manual** for details on User-Exit 5).

To access the Checkout/Checkin utilities menu, enter "C" in the Enter Code field on the Migration Subsystem menu. Entering the direct command MIG COCI on any menu also accesses the Checkout/Checkin Utilities menu.

```

01-12-31          N-2-O CHECKOUT/CHECKIN UTILITIES MENU          TSI0373
11:38:00                                     TSI1

Code  Function
----  -
A     Cancel Utility
B     Transfer Utility
C     Transfer by Event Utility
D     Checkout Utility
E     Reject Utility
F     Enrollment Facility
G     Reject by Event Utility
.     Terminate Checkout Utilities
-     -----

Enter Code:  _   Type :  N

Direct Command: _____ MIG COCI
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
    
```

**Note:** The following sections display only NATURAL object screens. However, field description tables include fields found on screens for the following objects: DDMS (D), METADATA (M), NATURAL objects (N), PREDICT objects (P), 3GL/OTHER objects (O), and SYSERR messages (S).

Field	Description
ENTER CODE	<p>The function to be executed. Valid values are as follows:</p> <ul style="list-style-type: none"> <li><b>A Cancel Utility</b> Utilities that remove the Checkout status of an object.</li> <li><b>B Transfer Utility</b> Transfers responsibility for a checked-out object to another user.</li> <li><b>C Transfer by Event Utility</b> Transfers responsibility for all checked-out objects in an Event to another user.</li> <li><b>D Checkout Utility</b> Checks out newly-created objects in a development environment.</li> <li><b>E Reject Utility</b> Updates the checkout location to the previous development environment.</li> <li><b>F Enrollment Facility</b> Updates the Migration file with information about objects on a remote node or objects in a 3GL Environment.</li> <li><b>G Reject by Event Utility</b> Updates the checkout location to the previous environment for all objects in an Event.</li> </ul>
TYPE	<p>The type of objects affected. Valid values are as follows:</p> <ul style="list-style-type: none"> <li>D Indicates DDM.</li> <li>M Indicates METADATA.</li> <li>N Indicates NATURAL.</li> <li>P Indicates PREDICT.</li> <li>S Indicates SYSERR.</li> <li>O Indicates 3GL/OTHER.</li> </ul> <p>This field is not required for the Transfer by Event Utility.</p>

**II.6.1 Cancel Utility**

To access the Cancel utility menu, enter "A" in the Enter Code field on the Checkout/Checkin Utilities menu. Entering the direct command MIG CANC on any menu also accesses the Cancel Utility menu.

If only one function is allowed by N2O Security, the Cancel Utility menu will be skipped and the allowed function screen will appear.

```

01-12-31          N-2-O CANCEL Utility MENU          TSI0373
11:38:00
Code  Function
-----
A    Cancel
B    Cancel with Delete
C    Cancel with Extract
.    Terminate Cancel Utilities
-    -----

Enter Code:  _   Type :  N

Direct Command:          MIG CANC
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
    
```

NOTE – In order to access the 2 new cancel utility functions (added in N2O v5.2.1), Cancel with Delete and Cancel with Extract, a site must include the MIG CANC functions in a Function Profile assigned to the user.

Field	Description
ENTER CODE	<p>The function to be executed. Valid values are as follows:</p> <ul style="list-style-type: none"> <li><b>A Cancel Utility</b> Removes the Checkout status of an object.</li> <li><b>B Cancel with Delete Utility</b> Removes the Checkout status of an object and will delete the object from the current library.</li> <li><b>C Cancel with Extract Utility</b> Removes the Checkout status of an object and create a Extract event to migrate a new copy of the object from the Base Environment/Library.</li> </ul>
TYPE	<p>The type of objects affected. Valid values are as follows:</p> <ul style="list-style-type: none"> <li>D Indicates DDM.</li> <li>M Indicates METADATA.</li> <li>N Indicates NATURAL.</li> <li>P Indicates PREDICT.</li> <li>S Indicates SYSERR.</li> <li>O Indicates 3GL/OTHER.</li> </ul> <p>This field is not required for the Cancel with Delete and Cancel with Extract Utilities.</p>

**II.6.1.1 Cancel Utility**

The Cancel Utility removes the checkout status of an object. A checked-out object may be canceled for any user, unless restricted by User-Exit 5.

After entering "A" in the Enter Code field and "N" (NATURAL) in the Type field on the Checkout/Checkin Utilities menu and pressing Enter, the Cancel Utility for NATURAL Objects screen is displayed.

```
01-12-31          N-2-O CANCEL UTILITY          TSI0373
11:38:00          NATURAL OBJECTS              TSI010

                                     BASE Env      : _____
                                     BASE Library   : _____
                                     Object          : _____
                                     User-ID        : TSI0373_
                                     Checkout Date  : _____ EQ (EQ,GT,LT)
                                     Current Env    : _____
                                     Current Library : _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
BASE ENV (required)	N,S,P,O,M,D	The Environment Definition representing the repository for the checked-out object.
BASE LIBRARY (required)	N,S	The library within the environment that contains the checked-out NATURAL object or SYSERR message.
OBJECT (required)	N,S,P,O,M,D	The checked-out object to be canceled.  "" Generates a selection list of all objects checked out to the user. The "" may also be used as a wildcard character to select objects prefixed by a string (e.g., N2O*).
USER-ID (required)	N,S,P,O,M, D	The User-ID responsible for the checked-out object (defaults to the user executing the utility). If User-Exit 5 does not restrict the utility, any User-ID may be entered. Partial names and wildcards (e.g., AAP*) may be entered.
ENDEVOR SYSTEM	O	The classification of an application for an ENDEVOR object.
ENDEVOR SUBSYSTEM	O	The specific application within a system for an ENDEVOR object.
CHECKOUT DATE	N,S,P,O,M, D	The date used to evaluate which checkouts are displayed based on when the Object was checked out.
CHECKOUT DATE CRITERIA (Ignored if CHECKOUT DATE is blank)	N,S,P,O,M, D	Criteria used to evaluate which checkouts are displayed based on when the Object was checked out.  EQ=Equal,GT=Greater-Than,LT=Less-Than
CURRENT ENV	N,S,P,O,M, D	The Environment Definition serving as the current development location of the object.
CURRENT LIBRARY	N,S	The library within the development environment where the NATURAL objects and SYSERR messages currently are located.

When wildcarding is specified ('\*' in the Object field) and Enter is pressed on the initial Cancel Utility screen, the screen below is displayed.

```

Type X to select
01-12-31          N-2-O CANCEL UTILITY          TSI0373
11:38:00          NATURAL PROGRAMS            TSI1
      Library: PAYPROD          User-ID: TSI0373
      Object              Object
X   Object  Type      Message      X  OBJECT  Type      Message
-   -      -      -      -      -  -      -      -
-   PAY5900P PROGRAM
-   PAY59101 MAP
-   PAY5950P PROGRAM
-   PAY5953S SUBROUTINE
-
Enter--PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
-----END-----STOP
    
```

Field	Type	Description
LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages.
USER-ID (supplied)	N,S,P,O, M,D	The User-ID of the user responsible for the checked-out objects.
X (optional)	N,S,P,O, M,D	"X" in the Select field cancels the object.
OBJECT (supplied)	N,S,P,O, M,D.	The object to be canceled. Partial names and wildcards (e.g., AAP*, *s would list everything ending in s)
OBJECT TYPE (supplied)	N,P,O	Identifies the type of NATURAL objects, PREDICT objects, 3GL/OTHER objects, and/or SYSERR messages.
MESSAGE (supplied)	N,S,P,O, M,D	Indicates the success or failure of the requested cancel: CANCEL     Indicates a successful cancel. FAILED    Indicates a failed cancel. DENIED     Indicates the cancel was prevented by user-exits.

When wildcarding is specified (“\*” in the Object and Userid field) and Enter is pressed on the initial Cancel Utility screen, the screen below is displayed.

```

Type X to select
01-12-31          N-2-O CANCEL UTILITY          TSI1
13:01:09          NATURAL PROGRAMS            TERM

          Library: PAYPROD          User-ID: *
          Object

X Object  Type      Userid  Message  X Object  Type      Userid  Message
-----
_ CITYTAXP PROGRAM  TSI1
_ LIFEINSC COPYCODE TSI1
_ FEDTAXL LOCAL    TSI1
_ LIFEINSL LOCAL    TSI1

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11--PF12--
-----
          END          STOP
    
```

Field	Type	Description
LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages.
USER-ID (supplied)	N,S,P,O, M,D	The User-ID entered into the previous screen.
USERID (supplied)	N,S,P,O, M,D	The User-ID of the user responsible for the checked-out objects.
X (optional)	N,S,P,O, M,D	"X" in the Select field cancels the object.
OBJECT (supplied)	N,S,P,O, M,D.	The object to be canceled.
OBJECT TYPE (supplied)	N,P,O	Identifies the type of NATURAL objects, PREDICT objects, 3GL/OTHER objects, and/or SYSERR messages.
MESSAGE (supplied)	N,S,P,O, M,D	Indicates the success or failure of the requested cancel: CANCEL Indicates a successful cancel. FAILED Indicates a failed cancel. DENIED Indicates the cancel was prevented by user-exits.

**II.6.1.2 Cancel with Delete Utility**

The Cancel with Delete Utility removes the checkout status of an object and deletes the object from the Natural FUSER in the environment the object is currently checked out to. A checked-out object may be canceled for any user, unless restricted by User-Exit 5.

After entering "B" in the Enter Code field and "N" (NATURAL) in the Type field on the Checkout/Checkin Utilities menu and pressing Enter, the Cancel with Delete Utility for NATURAL Objects screen is displayed.

```

08-07-01          N-2-O CANCEL W/ DELETE          TSI1
16:44:35          NATURAL PROGRAMS              TERM

                BASE Env      : _____
                BASE Library   : _____
                Object         : _____
                User-ID        : _____
                Checkout Date   : _____ EQ (EQ,GT,LT)
                Current Env     : _____
                Current Library : _____

                This Cancel option will cancel the checkout of the
                Object(s) selected AND Delete the Object(s) from
                the current Environment/Library

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Type	Description
BASE ENV (required)	N	The Environment Definition representing the repository for the checked-out object.
BASE LIBRARY (required)	N	The library within the environment that contains the checked-out NATURAL object or SYSERR message.
OBJECT (required)	N	The checked-out object to be canceled.
USER-ID (required)	N	"" Generates a selection list of all objects checked out to the user. The "" may also be used as a wildcard character to select objects prefixed by a string (e.g., N2O*). The User-ID responsible for the checked-out object (defaults to the user executing the utility). If User-Exit 5 does not restrict the utility, any User-ID may be entered. Partial names and wildcards (e.g., AAP*) may be entered.
CHECKOUT DATE	N	The date used to evaluate which checkouts are displayed based on when the Object was checked out.
CHECKOUT DATE CRITERIA (Ignored if CHECKOUT DATE is blank)	N	Criteria used to evaluate which checkouts are displayed based on when the Object was checked out. EQ=Equal,GT=Greater-Than,LT=Less-Than
CURRENT ENV	N	The Environment Definition serving as the current development location of the object.
CURRENT LIBRARY	N	The library within the development environment where the NATURAL objects and SYSERR messages currently are located.

When wildcarding is specified ('\*' in the Object field) and Enter is pressed on the initial Cancel Utility screen, the screen below is displayed.

```

Type X to select
01-12-31          N-2-O CANCEL W/ DETETE          TSI0373
11:38:00          NATURAL PROGRAMS              TSI1
Library: PAYPROD      User-ID: TSI0373
Object              Object
X Object           Type      Message      X OBJECT        Type      Message
-----
- PAY5900P         PROGRAM
- PAY59101         MAP
- PAY5950P         PROGRAM
- PAY5953S         SUBROUTINE
-
Enter--PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
----- END ----- STOP
    
```

Field	Type	Description
LIBRARY (supplied)	N	The library containing the NATURAL objects and/or SYSERR messages.
USER-ID (supplied)	N	The User-ID of the user responsible for the checked-out objects.
X (optional)	N	"X" in the Select field cancels the object.
OBJECT (supplied)	N	The object to be canceled. Partial names and wildcards (e.g., AAP*, *s would list everything ending in s)
OBJECT TYPE (supplied)	N	Identifies the type of NATURAL objects, PREDICT objects, 3GL/OTHER objects, and/or SYSERR messages.
MESSAGE (supplied)	N	Indicates the success or failure of the requested cancel: CANCEL Indicates a successful cancel. FAILED Indicates a failed cancel. DENIED Indicates the cancel was prevented by user-exits. DELETE Indicates a successful cancel and the object was deleted from the Current Environment.

### II.6.1.3 Cancel with Extract Utility

The Cancel with Extract Utility removes the checkout status of an object and creates an EXTRACT event to migrate the current object from the base environment into the current checkout environment. A checked-out object may be canceled for any user, unless restricted by User-Exit 5.

After entering "C" in the Enter Code field and "N" (NATURAL) in the Type field on the Checkout/Checkin Utilities menu and pressing Enter, the Cancel with Extract Utility for NATURAL Objects screen is displayed.

```

08-07-01          N-2-O CANCEL W/ EXTRACT          TSI1
16:49:04          NATURAL PROGRAMS                TERM

          BASE Env      : _____
          BASE Library  : _____
          Object        : _____
          User-ID       : 1_____

          Extract Event : _____

Leave Blank or Press PF5 to retrieve information from the Event
          Current Env   : _____
          Current Library : _____

This cancel option will cancel the checkout of the object(s)
selected and creates an Extract Event to migrate the original
object(s) (in the Base) to current environment/library

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Type	Description
BASE ENV (required)	N	The Environment Definition representing the repository for the checked-out object.
BASE LIBRARY (required)	N	The library within the environment that contains the checked-out NATURAL object or SYSERR message.
OBJECT (required)	N	The checked-out object to be canceled.
USER-ID (required)	N	"" Generates a selection list of all objects checked out to the user. The "" may also be used as a wildcard character to select objects prefixed by a string (e.g., N2O*). The User-ID responsible for the checked-out object (defaults to the user executing the utility). If User-Exit 5 does not restrict the utility, any User-ID may be entered. Partial names and wildcards (e.g., AAP*) may be entered.
EXTRACT EVENT (required)	N	Extract Event which will migrate the cancelled objects.
CURRENT ENV (required)	N	The Environment Definition serving as the current development location of the object.
CURRENT LIBRARY (required)	N	The library within the development environment where the NATURAL objects and SYSERR messages currently are located.

When wildcarding is specified ('\*' in the Object field) and Enter is pressed on the initial Cancel Utility screen, the screen below is displayed.

```

Type X to select
01-12-31          N-2-O CANCEL W/ EXTRACT          TSI0373
11:38:00          NATURAL PROGRAMS                TSI1
Library: PAYPROD      User-ID: TSI0373
Object              Object
X Object            Type      Message      X OBJECT          Type      Message
-----            -
- PAY5900P          PROGRAM
- PAY59101          MAP
- PAY5950P          PROGRAM
- PAY5953S          SUBROUTINE
-
Enter--PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END ----- STOP
    
```

Field	Type	Description
LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages.
USER-ID (supplied)	N,S,P,O, M,D	The User-ID of the user responsible for the checked-out objects.
X (optional)	N,S,P,O, M,D	"X" in the Select field cancels the object.
OBJECT (supplied)	N,S,P,O, M,D.	The object to be canceled. Partial names and wildcards (e.g., AAP*, *s would list everything ending in s)
OBJECT TYPE (supplied)	N,P,O	Identifies the type of NATURAL objects, PREDICT objects, 3GL/OTHER objects, and/or SYSERR messages.
MESSAGE (supplied)	N,S,P,O, M,D	Indicates the success or failure of the requested cancel: CANCEL Indicates a successful cancel. FAILED Indicates a failed cancel. DENIED Indicates the cancel was prevented by user-exits. EXTRACT Indicates a successful cancel and the object was added to the Extract Event.

After the user finishes canceling the checkouts, the option to process or modify the extract event that contains the objects cancelled will be displayed .

```

Type X to select
01-12-31          N-2-O CANCEL W/ EXTRACT          TSI1
13:01:09          NATURAL PROGRAMS                TERM
Library: PAYPROD          User-ID: *
Object
X Object  Typ +-----+-----+-----+-----+-----+
- - - - - - - - - - | Event: EEVENT  Seq:   31 Created | TSI1
- CITYTAXP  PROGR| with          1 Objects      | TSI1
- LIFEINSC  COPYC|                                     |
|                                     |
|                                     |
|                                     |
|                                     |
|                                     |
+-----+-----+-----+-----+
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12--
-----  END  -----  -----  -----  -----  -----  -----  STOP
    
```

Field	Type	Description
Event	N,S,P,O, D,M	The Master Event of the Extract Event.
Sequence	N,S,P,O, D,M	The sequence number of the Event
Process Event		'Y' Continue to process the Extract Event 'N' do not process the Extract Event
Modify Event		'Y' Modify the generated Extract Event 'N' Do not modify the generated Extract Event
Delete Event		'Y' Delete the generated Extract Event 'N' Do not delete the generated Extract Event

**II.6.2 Transfer Utility**

The Transfer Utility transfers responsibility for a checked-out object to another user. Checkout responsibility may be transferred for any user, unless restricted by User-Exit 5 (Refer to the **N2O Administration Manual** for details on User-Exit 5).

After entering "B" in the Enter Code field and "N" (NATURAL) in the Type field on the Checkout/Checkin Utilities menu and pressing Enter, the Transfer Utility screen is displayed.

```

01-12-31          N-2-O TRANSFER UTILITY          TSI0373
11:38:00          NATURAL PROGRAMS              TSI1

                                BASE Env   : _____
                                BASE Library: _____
                                Object     : _____
                                User-ID    : TSI0373_
                                New User-ID: _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Type	Description
BASE ENV (required)	N,S,P,O, M,D	The Environment Definition representing the repository for the checked out object.
BASE LIBRARY (required)	N,S	The library within the environment that contains the checked-out NATURAL object or SYSERR message.
OBJECT (required)	N,S,P,O, M,D	The checked-out object to be transferred.  "" Generates a selection list of all objects checked out to the user. The "" may also be used as a wildcard character to select objects prefixed by a string (e.g., N2O*).
USER-ID (required)	N,S,P,O, M,D	The User-ID currently responsible for the object (defaults to the User-ID executing the utility). If User-Exit 5 does not restrict the utility, any User-ID may be substituted. Partial names and wildcards (e.g., AAP*, *s would list everything ending in s)
NEW USER-ID (required)	N,S,P,O, M,D	The User-ID being assigned the checked-out object.
ENDEVOR SYSTEM	O	The classification of an application for an ENDEVOR object.
ENDEVOR SUBSYSTEM	O	The specific application within a system for an ENDEVOR object.

When wildcarding is specified ('\*' in the Object field) and Enter is pressed on the initial

Transfer Utility screen, the screen below is displayed.

```

Type X to select program(s)
01-12-31          N-2-O TRANSFER UTILITY          TSI0373
11:38:00          NATURAL PROGRAMS              TS11
Library: PAYPROD          User-ID: TREE06
Object            Object
S  Object        Type    Message      S  Object        Object
-  - - - - -      - - - - -      - - - - -      -  - - - - -      - - - - -
-  CMIGUTIL      COPYCODE          -  PAYDCOCI      PROGRAM
-  PAYENVA       PROGRAM          -  PAYENVB       PROGRAM
-  PAYENVC       PROGRAM          -  PAYENVND      PROGRAM
-  PAYENVE       PROGRAM          -  PAYEVNTA      PROGRAM
-  PAYEVNTB      PROGRAM          -  PAYEVNTC      PROGRAM
-  PAYEVNTD      PROGRAM          -  PAYEVNTE      PROGRAM
-  PAYEVNTF      PROGRAM          -  PAYEVNTG      PROGRAM
-  PAYEVNTI      PROGRAM          -  PAYOBJA       PROGRAM
-  PAYOBJB       PROGRAM          -  PAYOBJD       PROGRAM
-  PAYOBJG       PROGRAM          -  PAYOBJH       PROGRAM
-  PAYOBJI       PROGRAM          -  PAYSTATA      PROGRAM
-  PAYSTATB      PROGRAM          -  PAYSTATC      PROGRAM
-  PAYSTATD      PROGRAM          -  PAYSTATE      PROGRAM
-  PAYUE15N      SUB-RTN          -  PAYVCOCI      PROGRAM

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP   END   -----
    
```

Field	Type	Description
LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages.
USER-ID(supplied)	N,S,P,O,M ,D	The User-ID of the user who is responsible for the objects.
S (optional)	N,S,P,O.M .D	"X" in the Select field transfers an object.
OBJECT (supplied)	N,S,P,O,M ,D	The object to be transferred.
OBJECT TYPE (supplied)	N,P,O	Identifies the type of NATURAL objects, PREDICT objects, 3GL/OTHER objects, and/or SYSERR messages.
MESSAGE (supplied)	N,S,P,O,M, D	Indicates the success or failure of the requested transfer:  TRANSFER    Indicates a successful transfer. FAILED      Indicates a failed transfer. DENIED      Indicates the transfer was prevented by User-Exit-5.

When wildcarding is specified ('\*' in the Object and User-id field) and Enter is pressed on the initial Transfer Utility screen, the screen below is displayed.

```

Type X to select
01-12-31          N-2-O TRANSFER UTILITY          TSI1
13:20:27          NATURAL PROGRAMS              TERM

          Library: PAYPROD          User-ID: *
          Object

X Object  Type      Userid  Message  X Object  Type      Userid  Message
-----
_ CITYTAXP PROGRAM  TSI1
_ LIFEINSC COPYCODE TSI1
_ FEDTAXL LOCAL     TSI1
_ LIFEINSL LOCAL     TSI1

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
-----
          END
    
```

Field	Type	Description
LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages.
USER-ID (supplied)	N,S,P,O,M ,D	The User-ID entered into the previous screen.
USERID (supplied)	N,S,P,O,M ,D	The User-ID of the user who is responsible for the objects.
S (optional)	N,S,P,O,M .D	"X" in the Select field transfers an object.
OBJECT (supplied)	N,S,P,O,M ,D	The object to be transferred.
OBJECT TYPE (supplied)	N,P,O	Identifies the type of NATURAL objects, PREDICT objects, 3GL/OTHER objects, and/or SYSERR messages.
MESSAGE (supplied)	N,S,P,O,M, D	Indicates the success or failure of the requested transfer:  TRANSFER Indicates a successful transfer. FAILED Indicates a failed transfer. DENIED Indicates the transfer was prevented by User-Exit-5.

**II.6.3 Transfer by Event Utility**

The Transfer by Event Utility transfers responsibility for all checked-out objects in an Event to another user.

After entering "C" in the Enter Code field on the Checkout/Checkin Utilities menu and pressing Enter, the Transfer by Event Utility screen is displayed.

```

01-12-31          N-2-O TRANSFER BY EVENT UTILITY          TSI0373
11:38:00                                               TSI1

                Event          : _____
                Sequence       : _____
                New User-ID    : _____
                Change Control : _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
EVENT (required)	The Event that last migrated the checked-out objects that are to be transferred. The destination of the Event must match the current checkout location of the objects.
SEQUENCE (optional)	A starting Sequence number for the Event specified.
NEW USER-ID (required)	The User-ID that will be responsible for the checked-out object after the transfer.
CHANGE CONTROL (optional)	A limiting value for the Event specified. Only Events with this Change Control are shown.

After entering the information on the previous screen and pressing Enter, a list of Events is shown.

```

Type an X to select an Event for Transfer
01-12-31      N-2-O TRANSFER BY EVENT UTILITY      TSI0373
11:38:00                                           TSII

   X  Event      Seq      Change   --- From ---  --- To ---  Added
   -  -----  ----  Control  Env  Library  Env  Library  User-ID
   -  PAYOUT    1      E141    PROD  PAYPROD  TEST  PAYTEST  TSI0373

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      END
    
```

Field	Description
X (optional)	"X" selects the Event.
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
CHANGE CONTROL (supplied)	A value that relates multiple Events to a specific change request.
FROM ENV (supplied)	The source Environment Definition of the Event.
FROM LIBRARY (supplied)	The source library for the Event.
TO ENV (supplied)	The target Environment Definition of the Event.
TO LIBRARY (supplied)	The target library of the Event.
ADDED USER-ID (supplied)	The User-ID of the user that created the Event.

The utility attempts to transfer checkout responsibility of all objects in an Event. If the utility successfully transfers objects, the Event is marked with "\*" in the Select field. If the utility does not transfer any objects, the Event is marked with "F" in the Select field. If objects are not transferred, they are displayed on a separate screen with a reason for their failure.

**II.6.4 Checkout Utility**

The Checkout Utility checks out objects created in a development environment. Objects must be marked as checked out before they may be migrated to other environments. When Checkout/Checkin is active, existing objects are automatically checked out when they migrate from a BASE environment to a development environment.

The Checkout Utility updates the checkout status and identifies the current checkout location for an object. This utility does not migrate objects.

After entering "D" in the Enter Code field and "N" (NATURAL) in the Type field on the Checkout/Checkin Utilities menu and pressing Enter, the Checkout Utility screen is displayed. An object's Checkout/Checkin status can only be updated by the user who currently has the object checked out.

```

01-12-31          N-2-O CHECKOUT UTILITY          TSI0373
11:38:00          NATURAL PROGRAMS              TSI1

                                     BASE Env      : ____
                                     BASE Library   : _____
                                     Current Env    : ____
                                     Current Library : _____
                                     Object         : _____
                                     Object Type    : ____
                                     User-ID       : TSI1____

Enter--PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Type	Description
BASE ENV (required)	N,S,P,O, M,D	The Environment Definition representing the repository for the checked-out object.
BASE LIBRARY (required)	N,S	The library within the environment containing the checked-out NATURAL objects and SYSERR messages.
CURRENT ENV (required)	N,S,P,O, M,D	The Environment Definition serving as the current development location of the object.
CURRENT LIBRARY (required)	N,S	The library within the development environment where the NATURAL objects and SYSERR messages currently are located.

(continued from previous page)

Field	Type	Description
OBJECT (required)	N,S,P,O, M,D	The object to be checked out.  "" Generates a selection list of all NATURAL objects, SYSERR messages, and PREDICT objects in the current environment and library. The "" may also be used as a wildcard character to select NATURAL objects, SYSERR messages, and PREDICT objects prefixed by a string (e.g., N2O*, *s would list everything ending in s)). If this field is left blank, a second data entry screen is displayed, allowing up to 28 objects to be entered.
OBJECT TYPE (required)	N	The object type to be checked out.  Valid object types for NATURAL are as follows:  A Indicates Parameter data. C Indicates Copycode. G Indicates Global data. H Indicates Helproutine. L Indicates Local data. M Indicates Map. N Indicates Subprogram. P Indicates Program. S Indicates Subroutine. T Indicates Text. O Indicates Macro. R Indicates Report. Y Indicates ExpertModel. Z Indicates Recording. 3 Indicates Dialog. 4 Indicates Class. 5 Indicates Processor. K Indicates Server. 7 Indicates Function. 8 Indicates Adapter. O Indicates Macro.

(continued from previous page)

Field	Type	Description																																																																								
	P	Valid object types for PREDICT are as follows: <table border="1"> <thead> <tr> <th>Type</th> <th>Indicates</th> <th>Predict Version</th> </tr> </thead> <tbody> <tr><td>DA</td><td>Database</td><td></td></tr> <tr><td>DC</td><td>Dataspace</td><td></td></tr> <tr><td>ET</td><td>Extract</td><td></td></tr> <tr><td>FI</td><td>File</td><td></td></tr> <tr><td>IE</td><td>Interface</td><td>V4.1.2 and above</td></tr> <tr><td>KY</td><td>Keyword</td><td></td></tr> <tr><td>LS</td><td>Library Structure</td><td></td></tr> <tr><td>MD</td><td>Method</td><td>V4.1.2 and above</td></tr> <tr><td>MO</td><td>Module</td><td>V3.4.2 and below</td></tr> <tr><td>NO</td><td>Node</td><td></td></tr> <tr><td>NW</td><td>Network</td><td></td></tr> <tr><td>PG</td><td>PackageList</td><td></td></tr> <tr><td>PR</td><td>Program</td><td></td></tr> <tr><td>PY</td><td>Property</td><td>V4.1.2 and above</td></tr> <tr><td>RL</td><td>Relationship</td><td></td></tr> <tr><td>RP</td><td>Report</td><td>V3.4.2 and below</td></tr> <tr><td>RT</td><td>Report Listing</td><td></td></tr> <tr><td>SC</td><td>Storagespace</td><td></td></tr> <tr><td>SV</td><td>Server</td><td></td></tr> <tr><td>SY</td><td>System</td><td></td></tr> <tr><td>US</td><td>User</td><td></td></tr> <tr><td>VE</td><td>Verification</td><td></td></tr> <tr><td>VM</td><td>Virtual Machine</td><td></td></tr> </tbody> </table>	Type	Indicates	Predict Version	DA	Database		DC	Dataspace		ET	Extract		FI	File		IE	Interface	V4.1.2 and above	KY	Keyword		LS	Library Structure		MD	Method	V4.1.2 and above	MO	Module	V3.4.2 and below	NO	Node		NW	Network		PG	PackageList		PR	Program		PY	Property	V4.1.2 and above	RL	Relationship		RP	Report	V3.4.2 and below	RT	Report Listing		SC	Storagespace		SV	Server		SY	System		US	User		VE	Verification		VM	Virtual Machine	
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VE	Verification																																																																									
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USER-ID (required)	N,S,P,O, M,D	The User-ID responsible for the checked-out Object (defaults to the user executing the utility). If User-Exit 5 does not restrict the utility, any User-ID may be substituted.																																																																								
CATEGORY (required)	O	The category associated with the member being checked out. Valid 3GL/OTHER categories are as follows: <table border="1"> <tbody> <tr><td>ASMB</td><td>Indicates all types of Assembler.</td></tr> <tr><td>COBOL</td><td>Indicates all types of COBOL.</td></tr> <tr><td>FORT</td><td>Indicates all types of FORTRAN.</td></tr> <tr><td>PL/I</td><td>Indicates all types of PL/I.</td></tr> <tr><td>RPG</td><td>Indicates RPG.</td></tr> <tr><td>DATA</td><td>Indicates DATA FILES.</td></tr> <tr><td>JCL</td><td>Indicates JCL, CLIST, CNTL.</td></tr> <tr><td>OTHER</td><td>Indicates all other object types.</td></tr> </tbody> </table> <p>This field is valid for 3GL/OTHER checkouts only.</p>	ASMB	Indicates all types of Assembler.	COBOL	Indicates all types of COBOL.	FORT	Indicates all types of FORTRAN.	PL/I	Indicates all types of PL/I.	RPG	Indicates RPG.	DATA	Indicates DATA FILES.	JCL	Indicates JCL, CLIST, CNTL.	OTHER	Indicates all other object types.																																																								
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(continued from previous page)

Field	Type	Description
FILE TYPE (required)	P	The type of file being checked out. Valid values are: A Indicates ADABAS. C Indicates Conceptual. D Indicates DB2 table. E Indicates DB2 view. I Indicates IMS segment. J Indicates IMS seg. layout. K Indicates IMS userview. L Indicates Logical VSAM. M Indicates ISAM. O Indicates OTHER. P Indicates NATURAL PROCESS. Q Indicates PROCESS userviews. R Indicates Logical VSAM view. S Indicates Sequential. U Indicates ADABAS userview. V Indicates VSAM. W Indicates VSAM userview. Z Indicates Standard.
DDM GENERATED (required)	P	An identification of the existence or non-existence of a generated DDM.  Y indicates a generated DDM exists for a file.  N indicates a generated DDM does not exist for a file.
ENDEVOR SYSTEM	O	The classification of an application for an ENDEVOR object.
ENDEVOR SUBSYSTEM	O	The specific application within a system for an ENDEVOR object.
DDM Dbid (required)	D	Database number that the DDM will point to.
DDM Fnr (required)	D	File number that the DDM will point to.
DDM ADA 6 (required)	D	Marked with an X if the DDM was created in NATURAL 2.3 or above and will allow a Dbid and/or Fnr greater than 255.
METADATA (required)	M	Description of the UDE – User Defined Entities

When wildcarding is specified ('\*' in the Object field) on the initial Checkout Utility screen and Enter is pressed, the screen below is displayed.

```

Type X to select
01-12-31          N-2-O CHECKOUT UTILITY          TSI0373
11:38:00          NATURAL PROGRAMS              TSI1
Library: PAYPROD      User-ID: TSI0373
Object
X  Object  Type  Message      X  Object  Type  Message
-  - - - -  - - -  - - - - -    -  - - - -  - - -  - - - - -
-  PAY5900P P          -  PAY5910S  S
-  PAY59101 M          -  PAY5950P  P
-  PAY5951S S          -  PAY59511  M
-  PAY5952S S          -  PAY59521  M
-  PAY5953S S          -  PAY59531  M

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Type	Description
LIBRARY (supplied)	N,S	The library containing the objects.
USER-ID (supplied)	N,S,P,M, D	The User-ID of the user responsible for the objects.
X (optional)	N,S,P,M, D	"X" in the Select field checks out an object.
OBJECT (supplied)	N,S,P,M, D	The object to be checked out.
OBJECT TYPE (supplied)	N,P	Identifies the object type to be checked out: A Indicates Parameter data. C Indicates Copycode. G Indicates Global data. H Indicates Helproutine. L Indicates Local data. M Indicates Map. N Indicates Subprogram. P Indicates Program. S Indicates Subroutine. O Indicates Macro. R Indicates Report. Y Indicates ExpertModel. Z Indicates Recording. 3 Indicates Dialog. 4 Indicates Class. 5 Indicates Processor. K Indicates Server. 7 Indicates Function. 8 Indicates Adapter. O Indicates Macro.

(continued from previous page)

Field	Type	Description	
		Valid object types for PREDICT are as follows:	
	<b>Type</b>	<b>Indicates</b>	
		<b>Predict Version</b>	
	DA	Database	
	DC	Dataspace	
	ET	Extract	
	FI	File	
	IE	Interface	V4.1.2 and above
	KY	Keyword	
	LS	Library Structure	
	MD	Method	V4.1.2 and above
	MO	Module	V3.4.2 and below
	NO	Node	
	NW	Network	
	PG	PackageList	
	PR	Program	
	PY	Property	V4.1.2 and above
	RL	Relationship	
	RP	Report	V3.4.2 and below
	RT	Report Listing	
	SC	Storagespace	
	SV	Server	
	SY	System	
	US	User	
	VE	Verification	
	VM	Virtual Machine	
DDM Dbid (supplied)	D	Database number that the DDM will point to.	
DDM Fnr (supplied)	D	File number that the DDM will point to.	
DDM ADA 6 (supplied)	D	Marked with an X if the DDM was created in NATURAL 2.3 or above and will allow a Dbid and/or Fnr greater than 255.	
METADATA (supplied)	M	Description of the UDE – User Defined Entities	
MESSAGE (supplied)	N,S,P,M, D	Indicates the success or failure of the requested checkout:	
	CHKD OUT	Indicates a successful checkout.	
	WARNING	Indicates multiple checkouts of the same objects.	
	FAILED	Indicates a failed checkout.	
	DENIED	Indicates User-Exit 5 prevented the checkout.	
	REJECTED	Indicates N2O Security prevented the checkout.	

When the 'FAILED' or 'WARNING' message is displayed next to an Object, place the cursor over the Object and use PF11 to display any existing Checkout information.

### II.6.5 Reject Utility

The Reject Utility returns the checkout location to the previous development environment. This utility does not migrate objects.

Many sites have a review process as objects move from one development environment to another. For example, objects may be copied from Development to Quality Assurance. A user may determine that the objects have deficiencies and may wish to return the objects to development. Rather than create an Event to copy the objects back to the development environment, a user may use the Reject Utility.

After entering "E" in the Enter Code field and "N" (NATURAL) in the Type field on the Checkout/Checkin Utilities menu, the Reject Utility screen is displayed.

```

01-12-31          N-2-O REJECT UTILITY          TSI0373
11:38:00          NATURAL PROGRAMS             TSI1

                                     BASE Env      :      ___
                                     BASE Library   :      ___
                                     Object         :      ___

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ---  END  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---
    
```

Field	Type	Description
BASE ENV (required)	N,S,P,O, M,D	The Environment Definition representing the repository for the checked-out object.
BASE LIBRARY (required)	N,S	The library within the environment containing the checked-out NATURAL objects and SYSERR messages objects.
OBJECT (required)	N,S,P,O, M,D	The checked-out object to be rejected.
ENDEVOR SYSTEM	O	The classification of an application for an ENDEVOR object.
ENDEVOR SUBSYSTEM	O	The specific application within a system for an ENDEVOR object.

**II.6.6 Enrollment Facility**

The Enrollment Facility updates the N2O Migration file with information about objects on a remote node or 3GL/OTHER objects. This information is used during the migration selection process. The Enrollment Facility is used to enroll new objects in an environment, as well as to update information about existing objects.

After entering "F" in the Enter Code field and "N" (NATURAL) in the Type field on the Checkout/Checkin Utilities menu, the Enrollment Facility screen is displayed.

```

01-12-31          N-2-O ENROLLMENT FACILITY          TSI0373
11:38:00          NATURAL PROGRAMS                  TSI1

      Env Def      :      _____
      Library      :      _____
      Object       :      _____
      Src/Obj      :      _____
      Object Type  :      -

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Type	Description
ENV DEF (required)	N,S,P,O, M,D	The Environment Definition for the remote node or 3GL Environment containing the object to be enrolled.
LIBRARY (required)	N,S	The library within the remote Environment. This field is only available when enrolling NATURAL objects and SYSERR messages objects.
OBJECT (required)	N,S,P,O, M,D	The object to be enrolled.
SRC/OBJ (required)	N	The form of the NATURAL object.
	S	Indicates the source form of the object is being enrolled.
	C	Indicates the cataloged form of the object is being enrolled.
	SC	Indicates both forms of the object are being enrolled.
SHORT/LONG (required)	S	The length of the message to be enrolled.
	S	Indicates user-supplied short messages are to be enrolled.
	SL	Indicates both short and long message are to be enrolled.

(continued from previous page)

<b>Field</b>	<b>Type</b>	<b>Description</b>
OBJECT TYPE (required)	N,P	<p>The object type to be enrolled. Valid object types for NATURAL objects are as follows:</p> <ul style="list-style-type: none"> <li>A Indicates Parameter data.</li> <li>C Indicates Copycode.</li> <li>G Indicates Global data.</li> <li>H Indicates Helproutine.</li> <li>L Indicates Local data.</li> <li>M Indicates Map.</li> <li>N Indicates Subprogram.</li> <li>P Indicates Program.</li> <li>S Indicates Subroutine.</li> <li>O Indicates Macro.</li> <li>R Indicates Report.</li> <li>Y Indicates ExpertModel.</li> <li>Z Indicates Recording.</li> <li>3 Indicates Dialog.</li> <li>4 Indicates Class.</li> <li>5 Indicates Processor.</li> <li>K Indicates Server.</li> <li>7 Indicates Function.</li> <li>8 Indicates Adapter.</li> <li>O Indicates Macro.</li> </ul>

Valid object types for PREDICT objects are as follows:

<b>Type</b>	<b>Indicates</b>	<b>Predict Version</b>
DA	Database	
DC	Dataspace	
ET	Extract	
FI	File	
IE	Interface	V4.1.2 and above
KY	Keyword	
LS	Library Structure	
MD	Method	V4.1.2 and above
MO	Module	V3.4.2 and below
NO	Node	
NW	Network	
PG	PackageList	
PR	Program	
PY	Property	V4.1.2 and above
RL	Relationship	
RP	Report	V3.4.2 and below
RT	Report Listing	
SC	Storagespace	
SV	Server	
SY	System	
US	User	
VE	Verification	
VM	Virtual Machine	

(continued from previous page)

Field	Type	Description
FILE TYPE (required)	P	The type of file being checked out. Valid values are: A Indicates ADABAS. C Indicates Conceptual. D Indicates DB2 table. E Indicates DB2 view. I Indicates IMS segment. J Indicates IMS seg. layout. K Indicates IMS userview. L Indicates Logical VSAM. M Indicates ISAM. O Indicates OTHER. P Indicates NATURAL PROCESS. Q Indicates PROCESS userviews. R Indicates Logical VSAM view. S Indicates Sequential. U Indicates ADABAS userview. V Indicates VSAM. W Indicates VSAM userview. Z Indicates Standard.
DDM GENERATED (required)	P	Indicates whether a generated DDM exists or not. Y indicates a generated DDM exists for a file. N indicates a generated DDM does not exist for a file.
CATEGORY (required)	O	The category associated with the member. This field is only available when enrolling 3GL/OTHER objects. Valid 3GL/OTHER categories are as follows: ASMB Indicates all types of Assembler. COBOL Indicates all types of COBOL. FORT Indicates all types of FORTRAN. PL/I Indicates all types of PL/I. RPG Indicates RPG. DATA Indicates DATA FILES. JCL Indicates JCL, CLIST, CNTL. OTHER Indicates all other object types.
ENDEVOR SYSTEM	O	The classification of an application for an ENDEVOR object.
ENDEVOR SUBSYSTEM	O	The specific application within a system for an ENDEVOR object.
DDM Dbid (supplied)	D	Database number that the DDM will point to.
DDM Fnr (supplied)	D	File number that the DDM will point to.

(continued from previous page)

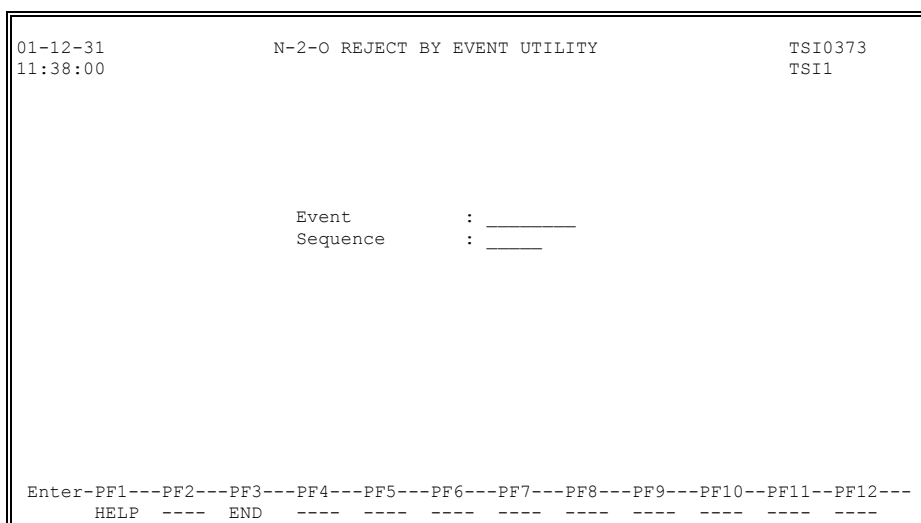
Field	Type	Description
DDM ADA 6 (supplied)	D	Marked with an X if the DDM was created in NATURAL 2.3 or above and will allow a Dbid and/or Fnr greater than 255.
METADATA (supplied)	M	Description of the UDE – User Defined Entities

### II.6.7 Reject by Event Utility

The Reject by Event Utility returns the checkout location to the previous development environment for all objects in an Event. This utility does not migrate objects.

Many sites have a review process as objects move from one development environment to another. For example, objects may be copied from a development environment to a quality assurance environment. A user may determine that the objects have deficiencies and wants to return the objects to development. Rather than create an Event to copy the objects back to the development environment, a user may use the Reject by Event Utility.

After entering "G" in the Enter Code field and "N" (NATURAL) in the Type field on the Checkout/Checkin Utilities menu, the Reject by Event Utility screen is displayed.



Field	Description
EVENT (required)	The Event that migrated the objects to be rejected.
SEQUENCE (optional)	The Event sequence that migrated the objects to be rejected.

After entering the information on the previous screen and pressing Enter, a list of Events is shown.

```

Type an X to select an Event for Reject
01-12-31          N-2-O REJECT BY EVENT UTILITY          TSI0373
11:38:00                                     TSI1

   X  Event      Seq  Change  --- From ---  --- To ---  Added
   -  - - - - -  - - -  Control  Env  Library  Env  Library  User-ID
   -  - - - - -  - - -  - - - - -  - - -  - - - - -  - - - - -  - - - - -
   -  DEV2QUAL  1    ***** DEV  PAYDEV  QUAL  PAYQA  TSI0373
   -  DEV2QUAL  2    ***** DEV  PAYDEV  QUAL  PAYQA  TSI0373
   -  DEV2QUAL  3    ***** DEV  PAYDEV  QUAL  PAYQA  TSI0373
   -  DEV2QUAL  4    ***** DEV  PAYDEV  QUAL  PAYQA  TSI0373
   -  DEV2QUAL  5    ***** DEV  PAYDEV  QUAL  PAYQA  TSI0373
   -  DEV2QUAL  6    ***** DEV  PAYDEV  QUAL  PAYQA  TSI0373
   -  DEV2QUAL  7    ***** DEV  PAYDEV  QUAL  PAYQA  TSI0373
   -  DEV2QUAL  8    ***** DEV  PAYDEV  QUAL  PAYQA  TSI0373
   -  DEV2QUAL  9    ***** DEV  PAYDEV  QUAL  PAYQA  TSI0373
   -  DEV2QUAL 10    ***** DEV  PAYDEV  QUAL  PAYQA  TSI0373
   -  DEV2QUAL 11    ***** DEV  PAYDEV  QUAL  PAYQA  TSI0373
   -  DEV2QUAL 12    ***** DEV  PAYDEV  QUAL  PAYQA  TSI0373
   -  DEV2QUAL 13    ***** DEV  PAYDEV  QUAL  PAYQA  TSI0373
   -  DEV2QUAL 14    ***** DEV  PAYDEV  QUAL  PAYQA  TSI0373

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      END
    
```

Field	Description
X (optional)	"X" selects the Event.
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
CHANGE CONTROL (supplied)	A value that relates multiple Events to a specific change request.
FROM ENV (supplied)	The source Environment Definition of the Event.
FROM LIBRARY (supplied)	The source library for the Event.
TO ENV (supplied)	The target Environment Definition of the Event.
TO LIBRARY (supplied)	The target library of the Event.
ADDED USER-ID (supplied)	The User-ID of the user that created the Event.

The utility attempts to return each object in the Event to the previous development environment. If the utility successfully rejects all objects, the Event is marked with "\*" in the Select field. If the utility fails to reject any objects, the Event is marked with "F" in the Select field. All objects are displayed on a separate screen with a status message.

**II.7 Batch JCL Submission**

N2O provides the ability to submit batch JCL (or EXECs) to a system internal reader. N2O reads batch JCL from the JCL Library specified on the Install Parm screen or on the Migration Profile for an Event. If the JCL contains substitution variables, N2O supplies and replaces the necessary values before submitting the JCL to the system internal reader. The N2O Job Submission Exit, "N2OUEJJE", must be modified for site RJE requirements before submitting batch JCL. If a system internal reader is not available, the batch JCL must be submitted manually. Refer to the **N2O Administration Manual** for details on N2OUEJJE.

To access the Batch JCL Submission menu, enter "B" in the Enter Code field on the Migration Subsystem menu. Entering the direct command MIG SUB on any menu also accesses the Batch JCL Submission menu.

```

01-12-31          N-2-O BATCH JCL SUBMISSION          TSI0373
11:38:00                                               TSI1

Code  Function
-----
A    Submit an Event
B    Submit a Master Event
C    Submit Migration Profiles
D    Submit All Pending Events
E    View JCL for a Profile
F    3GL/Other Autocompile
G    DB2 DBRM Generation
H    DB2 Plan Bind
.    Terminate Batch JCL Submission
-    -----

Enter Code: _

Direct Command:                               MIG SUB
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
  
```

Field	Description
ENTER CODE	<p>The function to be executed. Valid values are as follows:</p> <ul style="list-style-type: none"> <li><b>A     Submit an Event</b> Displays all Events pending batch migration and submits JCL for selected Events.</li> <li><b>B     Submit a Master Event</b> Displays a count of all Events pending batch migration for a master Event and submits JCL to process the group of Events.</li> <li><b>C     Submit Migration Profiles</b> Displays a count of all Events pending batch migration for a Migration Profile and submits JCL to process the group of Events.</li> <li><b>D     Submit All Pending Events</b> Displays a list of all Events pending batch migration and submits the JCL to migrate all Events.</li> <li><b>E     View JCL for a Profile</b> Displays the JCL associated with a Migration Profile.</li> <li><b>F     3GL/OTHER Autocompile</b> Displays all closed 3GL/OTHER Events that are pending Autocompile, and submits the JCL to compile selected Events.</li> <li><b>G     DB2 DBRM Generation</b> Displays all Events pending DBRM generation, and submits JCL to generate DBRM(s) for selected Events.</li> <li><b>H     DB2 Plan Bind</b> Displays all Events for which a DBRM has been generated, and submits JCL to bind a DB2 Plan.</li> </ul>

### II.7.1 Submit an Event

The Submit an Event function submits batch migration JCL (or EXECs) to a system internal reader for an Event. Batch Events that have been delayed are available for submission from this screen. Refer to **Section II.2.3 Migration Process**.

To access the Submit an Event Screen, enter "A" in the Enter Code field on the Batch JCL Submission menu.

```

Type an X - submit D - delete Event I - Inquire V - View JCL
01-12-31          N-2-O SUBMIT AN EVENT          TSI0373
11:38:00                                     TCP00004

Ret      Event      System JCL      3GL JCL
Code X  Event      Seq      Library  Program  Pred Pgm  Library  Program  Arch Pgm
-----
-   PRODTEST 3      N2OJCL  PRODTEST ***** ***** *****
-   PRODTEST 2      N2OJCL  PRODTEST ***** ***** *****
-   PRODTEST 140    N2OJCL  PRODTEST ***** ***** *****
-   PRODTEST 141    N2OJCL  PRODTEST ***** ***** *****
-   PRODTEST 142    N2OJCL  PRODTEST ***** ***** *****
-   PRODTEST 143    N2OJCL  PRODTEST ***** ***** *****
-   PRODTEST 146    N2OJCL  PRODTEST ***** ***** *****
-   PRODTEST 147    N2OJCL  PRODTEST ***** ***** *****
-   PRODTEST 148    N2OJCL  PRODTEST ***** ***** *****
-   PRODTEST 176    N2OJCL  PRODTEST ***** ***** *****
-   PRODTEST 178    N2OJCL  PRODTEST ***** ***** *****
-   PRODTEST 234    N2OJCL  PRODTEST ***** ***** *****

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
-----
      END      USER      -----
    
```

Field	Type	Description
RET CODE (supplied)	N,S,P,O, M,D	A value appears in this column next to an Event if the job submission receives a return code greater than zero.
X (optional)	N,S,P,O, M,D	"X" submits JCL for an Event. "D" deletes the Event.  "I" displays information about an Event.  "V" displays the JCL that will be submitted for the Event.  After pressing enter,  "*" Indicates a successful submission.  "F" indicates a failed submission.  "#" Indicates the JCL was deleted.  "N" indicates the JCL was not found
EVENT (supplied)	N,S,P,O, M,D	The Master Event of the migration.
EVENT SEQ (supplied)	N,S,P,O, M,D	The sequence number of the Event.
SYSTEM JCL LIBRARY (supplied)	N,S,P,O, M,D	The NATURAL library that contains the JCL for migrating DDMS, METADATA, NATURAL objects, PREDICT objects, and SYSERR messages.

(continued from previous page)

<b>Field</b>	<b>Type</b>	<b>Description</b>
SYSTEM JCL PROGRAM (supplied)	N,S,D	The NATURAL object that contains the JCL for migrating DDM, NATURAL objects and SYSERR messages.
SYSTEM JCL PRED PGM (supplied)	P,M	The NATURAL object that contains the JCL for migrating METADATA and PREDICT objects.  Contains "DISABLED" if the BUILD-EXTRACT variable in User-Exit 14 is set to FALSE.
3GL JCL LIBRARY (supplied)	O	The NATURAL library that contains the JCL for migrating 3GL/OTHER objects.
3GL JCL PROGRAM (supplied)	O	The NATURAL object that contains the JCL for migrating 3GL/OTHER objects.
3GL JCL ARCH PGM (supplied)	O	The NATURAL object that contains the JCL for archiving PDS members.

If the Event contains a combination of NATURAL and 3GL/OTHER objects, two jobs are submitted for the Event.

The following PF-keys are provided for the Submit an Event function:

<b>Key</b>	<b>Function</b>	<b>Description</b>
PF5	USER	Toggle between displaying all events / displaying only the current user's event.

### II.7.2 Submit a Master Event

The Submit a Master Event function submits batch migration JCL (or EXECs) to a system internal reader. All batch-ready Events for a Master Event are submitted as a single job.

To access the Submit a Master Event screen, enter "B" in the Enter Code field on the Batch JCL Submission menu.

```

Type X to submit or D to delete Event for a Master Event
01-12-31          N-2-O SUBMIT A MASTER EVENT          TSI0373
11:28:00                                               TCP00004

          Ret      X      Master Event      Event
          Code     -      -----          Count
          ----     -      -----          ----
                   -      PRODTST          12

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
          -----
          END
    
```

Field	Type	Description
RET CODE (supplied)	N,S,P,O,M ,D	A value appears in this column next to an Event if the job submission receives a return code greater than zero.
X (optional)	N,S,P,O,M ,D	"X" in the Select field submits JCL for a Master Event.  "D" in the Select field deletes the Event.  "*" Indicates a successful submission.  "F" indicates a failed submission.  "#" Indicates the JCL was deleted.
MASTER EVENT (supplied)	N,S,P,O,M ,D	The Master Event of the migration.
EVENT COUNT (supplied)	N,S,P,O,M ,D	The number of batch-ready Events to be processed.

A list of all Master Events with pending batch jobs is displayed. The Event Count indicates how many Events are pending for the Master Event.

**II.7.3 Submit Migration Profiles**

The Submit Migration Profiles function submits batch migration JCL (or EXECs) to a system internal reader. All batch-ready Events for a Migration Profile are submitted as a single job.

To access the Submit Migration Profiles menu, enter "C" in the Enter Code field on the Batch JCL Submission menu.

```

Type X to submit, C for Change Control or D to delete Events
01-12-31          N-2-O SUBMIT MIGRATION PROFILES          TSI0373
11:38:00                                     TCP00004

Ret   Migration  Event ----- System JCL ----- 3GL JCL-----
Code X Profile   Count Library  Program  Pred Pgm  Library  Program  Arch Pgm
-----
_  PROD  TEST    12  N2OJCL  PRODTST  *****  *****  *****  *****

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
----- ALL  END -----
    
```

Field	Type	Description
RET CODE (supplied)	N,S,P,O,M ,D	A value appears in this column next to an Event if the job submission receives a return code greater than zero.
X (optional)	N,S,P,O,M ,D	"X" in the Select field submits JCL for a Migration Profile.  "C" in the Select field submits JCL for a Migration Profile to process all Events that are related to a specified Change Control.  "D" in the Select field deletes all pending Events (status "B") for a Migration Profile.  After pressing enter,  "*" indicates successful submission  "F" indicates failed submission  "#" indicates the JCL was deleted.
MIGRATION PROFILE (supplied)	N,S,P,O,M ,D	The Migration Profile to be submitted.
EVENT COUNT (supplied)	N,S,P,O,M ,D	The number of batch-ready Events to be processed.
SYSTEM JCL LIBRARY (supplied)	N,S,P,M,D	The NATURAL library that contains the JCL for migrating DDMS, METADATA, NATURAL objects, PREDICT objects, and SYSERR messages.
SYSTEM JCL PROGRAM (supplied)	N,S,D	The NATURAL object that contains the JCL for migrating DDMS, NATURAL objects, and SYSERR messages.

(continued from previous page)

Field	Type	Description
SYSTEM JCL PRED PGM (supplied)	P	The NATURAL object that contains the JCL for migrating METADATA and PREDICT objects.  Contains "DISABLED" if the BUILD-EXTRACT variable in user exit 14 is set to FALSE.
3GL JCL LIBRARY (supplied)	O	The NATURAL library that contains the JCL for migrating 3GL/OTHER objects.
3GL JCL PROGRAM (supplied)	O	The NATURAL object that contains the JCL for migrating 3GL/OTHER objects.
3GL JCL ARCH PGM (supplied)	O	The NATURAL object that contains the JCL for archiving PDS objects.

A list of all Migration Profiles with pending batch jobs is displayed. The Event Count indicates how many Events are pending for the Migration Profile.

When "C" is used in the Select field to submit JCL for a Migration Profile, based on change control number, the following popup window allows the Change Control to be input or selected.

```

Type X to submit, C for Change Control or D to delete JCL
01-12-31          N-2-O SUBMIT MIGRATION PROFILES          TSI0373
11:38:00          +-----+                               TCP00004
                  | Select or Enter a Change Control: _____ |
Ret   Migration  | X CC   # X CC   # X CC   # | L-----
Code X Profile   | ----- | Arch Pgm
----- | ----- | -----
      C PROD TEST | _ CHGcntl1 3 _ CHGcnrl2 2 | * *****
                  | ----- |
                  +-----+
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      --- ALL  END  ---
    
```

Field	Type	Description
Select or Enter a Change Control (optional)	N,S,P,O,M ,D	Input of Change Control.
X (optional)	N,S,P,O,M ,D	"X" in the Select field selects the Change Control.
CC (supplied)	N,S,P,O,M ,D	Change Control.
# (supplied)	N,S,P,O,M ,D	Number of events associated with the Change Control.

**II.7.4 Submit All Pending Events**

The Submit All Pending Events function submits batch migration JCL (or EXECs) to a system internal reader. All batch-ready Events are submitted as a single job.

To access the Submit All Pending Events screen, enter "D" in the Enter Code field on the Batch JCL Submission menu.

```

Press ENTER to submit JCL for all Events
01-12-31          N-2-O SUBMIT ALL PENDING EVENTS          TSI0373
11:38:00                                     TSI1

      Event      Seq      From  To      Event      Seq      From  To
      -----   -
      PAYIN      2      DEV   PROD   PAYIN      3      DEV   PROD

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12
      -----   -
      END
    
```

Field	Type	Description
EVENT (supplied)	N,S,P,O, M,D	The Master Event of the migration.
SEQ (supplied)	N,S,P,O, M,D	The sequence number of the Event.
FROM ENV (supplied)	N,S,P,O, M,D	The source Environment Definition of the migration.
TO ENV (supplied)	N,S,P,O, M,D	The target Environment Definition of the migration.

A list of all pending batch Events is displayed. When Enter is pressed, a pop-up window displays for the user to enter the JCL library and JCL object to perform the batch migration. Events that include PREDICT objects cannot be submitted using this option and are not included in the list.

### II.7.5 View JCL for a Profile

The View JCL for a Profile function displays the JCL Object for a Migration Profile.

To access the View JCL for a Profile screen, enter "E" in the Enter Code field on the Batch JCL Submission menu.

```

Valid Values: D (Default Mig), P (PREDICT Mig), B (Both)
01-12-31          N-2-O VIEW JCL FOR A PROFILE          TSI0373
11:38:00                                               TS11

      JCL      JCL      Predict
      X  Library Program Program Migration Profile
      -  -----
      -  PAYJCL NATMIGR NATMIGP      DEV      TEST
      -  PAYJCL NATMIGA *****      TEST      PROD

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12
      END
    
```

Field	Type	Description
X (optional)	N,S,P,M,D	"D" in the Select field displays the JCL program specified in the Migration Profile.  "P" in the Select field displays the PREDICT JCL program specified in the Migration Profile.  "B" in the Select field displays both JCL programs specified in the Migration Profile.
JCL LIBRARY (supplied)	N,S,P,O,M D	The NATURAL library that contains the JCL for migrating DDMS, METADATA, NATURAL objects, PREDICT objects, and SYSERR messages. This is assigned on the Migration Profile.
JCL PROGRAM (supplied)	N,S,D	The NATURAL object that contains the JCL for migrating DDMS, NATURAL objects, SYSERR messages, METADATA and PREDICT objects (if User-Exit 14 sets the Build-Extract variable to false). This is assigned on the Migration Profile.
PREDICT JCL PROGRAM (supplied)	P,M	The NATURAL object that contains the JCL for migrating PREDICT objects(if User-Exit 14 sets the Build-Extract variable to true). This is assigned on the Migration Profile.  Contains "DISABLED" if the BUILD-EXTRACT variable in User-Exit 14 is set to FALSE.
MIGRATION PROFILE (supplied)	N,S,P,M,D	The Migration Profile identifying the JCL for migrating NATURAL objects, SYSERR messages, and PREDICT objects.

Entering "D" in the Select field for the DEV to TEST Migration Profile on the View JCL for a Profile screen, the screen below is displayed.

```

01-12-31          N-2-O VIEW JCL FOR A PROFILE          TSIO373
11:38:00  Library: N2OJCL   Program: N2OMIG   Type: DEFAULT   TS11
.....+.....1.....+.....2.....+... DB1  PRD3 ..+....5.....+....6.....+....7..
//NATMIGR JOB (20000),'NATURAL MIGRATION',CLASS=T,NOTIFY=&USERID
//*
//  USER-ID will be replaced automatically by N2O with
//*  *INIT-USER or the User-ID supplied to N2O by
//*  N2OUEOON when the batch migration is submitted
//*  to an internal reader.
//*
//*  Proc NATL must execute NATURAL on the FUSER local to
//*  the N2O installation.
//*
//*  &INPUT will be replaced automatically by N2O with
//*  the required parameters when the batch
//*  migration is submitted to an internal reader.
//*  For manual submission, see Select Options.
//*
//N2OSEL EXEC NATL
//CMWKF01 DD *
&INPUT
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12
-----  END  -----  STOP

```

This screen displays the default JCL that is used to migrate NATURAL, SYSERR, and PREDICT objects. Pressing Enter continues listing the JCL for the Migration Profile.

**II.7.6 3GL/OTHER Autocompile**

The 3GL/OTHER Autocompile function submits 3GL compile JCL (or EXECs) to a system internal reader.

To access the 3GL/OTHER Autocompile screen, enter "F" in the Enter Code field on the Batch JCL Submission menu. Enter a starting Event and Sequence on the first screen displayed and press enter. A summary screen similar to the one below will be shown.

```

Type an X to submit JCL for an Event
01-12-31          N-2-O 3GL/OTHER AUTO_COMPILE          TSI0373
11:38:00                                     TSI1

X   Event      Event  From  To    3GL    ---- Migrated ----
-   -----   ----  ----  --    ----  -----
-   COBOLTPP   34    LIBT  LIBP  LIBR   01-11-27  16:08:00
-   COBOLTPP   35    LIBT  LIBP  LIBR   01-11-28  16:04:00
-   COBOLTPP   36    LIBT  LIBP  LIBR   01-11-29  16:01:00

Enter--PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12
-----END-----
    
```

Field	Type	Description
X (optional)	O	"X" in the Select field submits JCL for a 3GL Autocompile.  "D" in the Select field deletes JCL for a 3GL Autocompile.  After pressing enter,  "*" Indicates the 3GL/OTHER Autocompile JCL was successfully submitted.  "N" indicates the JCL could not be located.  "F" indicates an error was encountered when the JCL was submitted.  "#" Indicates the JCL was deleted.
EVENT (supplied)	O	The Master Event of the migration.
EVENT SEQ (supplied)	O	The sequence number of the Event.
FROM ENV (supplied)	O	The source Environment Definition of the migration.
TO ENV (supplied)	O	The target Environment Definition of the migration.
3GL INTERFACE (supplied)	O	The 3GL interface used to migrate the 3GL/OTHER objects. Valid values are as follows: PDS, LIBR, PANV, ENDV.
MIGRATED DATE (supplied)	O	The date the Event completed the migration process.
MIGRATED TIME (supplied)	O	The time the Event completed the migration process.

**II.7.7 DB2 DBRM Generation**

The DB2 DBRM Generation function submits JCL (or EXECs) to a system internal reader using NATRJE. The DBRM Generation process performs the following steps:

- **Execute the Create DBRM (Data Base Request Modules) Command**  
The database access statements generated in NATURAL objects are extracted and transformed to a static assembler program (DBRM).
- **Execute the DB2 Precompile**  
In this step, the generated static assembler program is sent through the DB2 Precompiler. The output consists of the precompiled DBRM containing the SQL statements, and an assembler program, which contains all the database access statements, transformed from SQL into assembler statements.
- **Assemble and Link the Assembler Program**  
The assembler program is then assembled and linked creating an executable load module.
- **Bind the DBRM as a Package (optional)**  
This is an optional step available with DB2 V2.3. A package is a subcomponent of a Plan, and it is not executable until it is included in a Plan.

N2O provides Static SQL Support by creating Database Request Modules (DBRM) and then binding these DBRMs into a DB2 Application Plan. After an Event has completed, the Event is ready for DBRM Generation.

Once an Event has been submitted for DBRM Generation, a batch job may then be submitted to bind the DBRM(s) and/or Packages into a DB2 Application Plan.

To access the DB2 DBRM Generation screen, enter "G" in the Enter Code field on the Batch JCL Submission menu.

```

Valid Values : X - Submit DBRM, C - Cancel DBRM/PLAN
01-12-31          N-2-O DB2 DBRM GENERATION          TSI0373
11:38:00                                     TSI1

Ret      -- Target --- --- Compiled ----      DB2
Code S   Event  Seq   Env Library  Date   Time   Warning  Stat
-----
-   PAYIN  1     PROD PAYPROD  01-03-09 12:16:29 AC-ERROR  D
-   PAYIN  2     PROD PAYPROD  01-03-10 09:50:37 RECOVERD  D
-   PAYIN  3     PROD PAYPROD  01-03-10 10:02:41 RECOVERD  D
-   PAYIN  4     PROD PAYPROD  ***** ***** RECOVERD  D
-   PAYIN  5     PROD PAYPROD  ***** ***** RECOVERD  C
-   PAYIN  6     PROD PAYPROD  ***** ***** RECOVERD  D
-   PAYIN  7     PROD PAYPROD  01-04-05 09:03:53 RECOVERD  D
-   PAYIN  8     PROD PAYPROD  ***** ***** RECOVERD  D
-   PAYIN  9     PROD PAYPROD  ***** ***** RECOVERD  D
-   PAYIN 10     PROD PAYPROD  ***** ***** RECOVERD  D
-   PAYIN 11     PROD PAYPROD  ***** ***** RECOVERD  D
-   PAYIN 12     PROD PAYPROD  01-04-05 09:47:22 RECOVERD  D
-   PAYIN 13     PROD PAYPROD  ***** ***** RECOVERD  D
-   PAYIN 14     PROD PAYPROD  ***** ***** RECOVERD  D

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
----- END -----
    
```

Field	Type	Description
RET CODE (supplied)	O	A value appears in this column next to an Event if the job submission receives a return code greater than zero.
S (optional)	O	Valid values are as follows: X submits the DBRM. C cancels the DBRM/PLAN.
EVENT (supplied)	O	The Master Event of the migration.
SEQ (supplied)	O	The sequence number of the Event.
TARGET ENV (supplied)	N	The target Environment Definition of the migration.
TARGET LIBRARY (supplied)	N	The library to which NATURAL objects and/or SYSERR messages are to be migrated.
COMPILED DATE (supplied)	N	The date the objects were compiled using Autocompile.
COMPILED TIME (supplied)	N	The time the objects were compiled using Autocompile.
WARNING (supplied)	N	Events may contain one of the following warning messages:  <div style="margin-left: 20px;"> OVERVERRIDE    The Event migrated to an environment without proper authorization.   AC-ERROR      Objects within the Event received compile errors during the Autocompile process.   RECOVERED     Objects within the Event received errors and the Event was automatically recovered.   *****        Indicates Events with no warning message. </div>
DB2 STAT (supplied)	O	Limits the report to Events with the specified DB2 Status. Valid values are as follows:  <div style="margin-left: 20px;"> D Indicates DBRM Ready.  P Indicates Plan Ready.  S Indicates Static.  C Indicates Canceled. </div>

The DBRM to be created for each program of an Event defaults to the object name. However, User-Exit 9 may identify a single DBRM Name for all objects of the Event. The Event may be re-submitted at a later date and time if an error occurs in the DBRM Generation process. To cancel DB2 processing for the Event, enter "C" in the select field.

**II.7.8 DB2 Plan Bind**

The DB2 Plan Bind function submits JCL (or EXECs) to the system internal reader to bind the DBRMs and/or packages into a DB2 Application Plan. After an Event has been submitted for DBRM Generation, the Event may be submitted for the DB2 Plan Bind.

To access the DB2 Plan Bind screen, enter "H" in the Enter Code field on the Batch JCL Submission menu.

```

Valid Bind Values: X - Submit C - Cancel D - Delete
01-12-31          N-2-O DB2 PLAN BIND          TSI0373
11:38:00                                     TSI1

Ret          -- Target --- DBRM          ----- DBRM Generated ----- DB2
Code X Event   Seq  Env  Library Name      Date      Time      User-ID  Stat
-----
_   EXTRACT  2085  TST4  PAY11          01-03-02  11:20:38  PAY04    S

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  -----
MIG SUB
EXIT
    
```

Field	Type	Description
RET CODE (supplied)	O	A value appears in this column next to an Event if the job submission receives a return code greater than zero.
X (optional)	O	"X" in the Select field submits Bind JCL for an Event.
EVENT (supplied)	O	The Master Event of the migration.
SEQ (supplied)	O	The sequence number of the Event.
TARGET ENV (supplied)	N	The target Environment Definition of the migration.
TARGET LIBRARY (supplied)	N	The library to which NATURAL objects and/or SYSERR messages are to be migrated.
DBRM NAME (supplied)	O	The name of the DBRM generated for the Event.
DBRM GENERATED DATE (supplied)	O	The date the DBRM was generated.
DBRM GENERATED TIME (supplied)	O	The time the DBRM was generated.

(continued from previous page)

<b>Field</b>	<b>Type</b>	<b>Description</b>
DBRM GENERATED USER-ID (supplied)	O	The User-ID of the user who generated the DBRM.
DB2 STAT (supplied)	O	Limits the report to Events with the specified DB2 Status. Valid values are as follows:  D Indicates Deleted. P Indicates Plan Ready. S Indicates Static. C Indicates Canceled.

Only those Events that have been previously submitted for DBRM Generation are displayed. The Event may be re-submitted at a later date and time if an error occurs in the Bind process.

After submitting an Event, "\*" in the Select field indicates the DB2 Bind JCL was successfully submitted, "N" indicates the JCL could not be located. "F" indicates an error was encountered when the JCL was submitted. "C" indicates the job was cancelled back to DBRM Generation. "D" indicates the job was deleted.

## SECTION III

### PROJECT TRACKING SUBSYSTEM

#### III.1 Introduction

The Project Tracking Subsystem maintains information about organizational activities. It is designed to provide a framework for sites to use in developing the project information that they require. The Project Tracking Subsystem can be used to manage NATURAL and non-NATURAL application development projects. It can also be used to manage hardware and software installations, documentation efforts, and other non-programming activities.

The Project Tracking Subsystem identifies the activities that need to be performed, why they must be accomplished, when they must be completed, and how they are progressing. Based on this information, projects can be scheduled efficiently, and resources can be allocated where they are most needed.

A project consists of the following:

- TASK GROUPS
- STAGES OF A TASK
- PRIORITY VALUES
- IMPACT VALUES

The Project Tracking Subsystem section presents topics in the following order:

- PROJECT DEFINITION
- TASK LIST
- SUGGESTION BOX
- TASK UTILITIES
- PROJECT TRACKING REPORTS

To access the Project Tracking Subsystem menu, enter "P" on the N2O Main menu, enter the direct command PRJ MENU, or press PF9 on any menu.

```

01-12-31          N-2-O MAIN MENU          TSI0373
11:38:00                                     TSI1

                                Code  Function
                                ----  -
                                E    Environment Subsystem
                                M    Migration Subsystem
                                P    Project Tracking Subsystem
                                R    Reporting Subsystem
                                T    Toolbox Subsystem
                                U    User-Defined Subsystem
                                .    Terminate N-2-O Session
                                ----  -

Enter Code:  _

Direct Command:          N2O MENU
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
    
```

After following the instructions on the previous page, the Project Tracking Subsystem menu is displayed.

```

01-12-31          N-2-O PROJECT TRACKING SUBSYSTEM MENU          TSI0373
11:38:00                                               TSI1

                Code  Function
                ----  -
                A    Project Definition
                B    Task List
                C    Suggestion Box
                D    Task Utilities
                E    Project Tracking Reports
                .    Terminate Project Tracking Subsystem
                ----  -

Enter Code:  _

Direct Command: _____ PRJ MENU
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP ---- END  ENV  MIG  REP  TOL  USR  ----  ----  ----  EXIT
    
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows: <ul style="list-style-type: none"> <li><b>A Project Definition</b> Defines applications and activities to the Project Tracking Subsystem.</li> <li><b>B Task List</b> Defines each element of work to be accomplished within a project.</li> <li><b>C Suggestion Box</b> Allows users at all levels of an organization to document changes or ideas.</li> <li><b>D Task Utilities</b> Assists users in documenting and updating all information related to a task.</li> <li><b>E Project Tracking Reports</b> Provides access to the information stored in the Project Tracking audit trail.</li> </ul>

### III.2 Project Definition

The first step in using the Project Tracking Subsystem is defining projects. A project is a collection of related activities. The Project Tracking Subsystem maintains the characteristics of each project. Some examples of projects are: payroll applications, invoicing procedures, and software installation.

To access the Project Definition menu, enter "A" on the Project Tracking Subsystem menu or enter the direct command PRJ PROJ on any menu.

```

01-12-31          N-2-O PROJECT DEFINITION MENU          TSI0373
11:38:00                                               TSI1

Code  Function
-----
A    Add a Project Definition
C    Copy a Project Definition
D    Delete a Project Definition
I    Inquire on a Project Definition
M    Modify a Project Definition
S    Select a Project Definition
.    Terminate Project Definition
-----

Enter Code:  _   Project: _____

Direct Command _____ PRJ PROJ
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
    
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:  <b>A Add a Project Definition</b> Creates a Project Definition.  <b>C Copy a Project Definition</b> Creates a Project Definition by copying an existing Project Definition.  <b>D Delete a Project Definition</b> Removes a Project Definition.  <b>I Inquire on a Project Definition</b> Displays information about a Project Definition.  <b>M Modify a Project Definition</b> Updates a Project Definition.  <b>S Select a Project Definition</b> Provides a list of Project Definitions that may be copied, deleted, inquired on, or modified.
∞ PROJECT (required for all functions except Select)	The project to be added or maintained. For the Select function, the project is the starting value.
∞	indicates field-level help is available.

### III.2.1 Add a Project Definition

Add a Project Definition creates a new Project Definition.

To add a Project Definition, enter "A" in the Enter Code field and the name of the project to be added in the Project field on the Project Definition menu.

```

01-12-31          N-2-O ADD A PROJECT DEFINITION          TSI0373
11:38:00                                     TSI1

Project   : PAYROLL
Updated   : TSI0373   01-12-31   10:09:13
Short Desc: CALCULATE COMPENSATION PACKAGE

Options:
Extended Desc : Y
Task Groups   : Y
Stages        : Y
Priority Values: Y
Impact Values : Y

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

The following Field Descriptions apply to all Project Definition functions (Add, Copy, Delete, Inquire on, and Modify).

Field	Description
PROJECT (supplied)	The name of the Project Definition to be added or maintained.
UPDATED (supplied)	The User-ID of the user who created or last updated the record and the date and time that action occurred.
SHORT DESC (required)	A 30-character description of the project.
EXTENDED DESC (required)	Indicates whether a longer description of the project can be entered or not.  Y        Allows a longer description to be entered. This is the default value. N        Bypasses the Extended Description feature.
TASK GROUPS (required)	Indicates whether the user is able to list task groups or not.  Y        Allows the user to list task groups. N        Bypasses the Task Groups feature.

(continued from previous page)

Field	Description
STAGES (required)	Indicates whether the user is able to list stages or not.
	Y Allows the user to list stages. N Bypasses the Stages feature.
PRIORITY VALUES (required)	Indicates whether the user is able to define a set of priority values for project activities.
	Y Allows the user to define a set of priority values. N Bypasses the Priority Values feature.
IMPACT VALUES (required)	Indicates whether the user is able to define a set of impact values for project activities.
	Y Allow the user to define a set of impact values. N Bypasses the Impact Values feature.

If Extended Desc option='Y' the following screen will appear to define an extended description screen.

```

01-12-31          N-2-O ADD A PROJECT DEFINITION          TSI0373
11:38:00          Project: PAYROLL                         TSI1

Extended Description:
____
____
____
____
____
____
____
____
____
____
____
____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
  
```

Field	Description
EXTENDED DESCRIPTION (optional)	Additional freeform information for describing the project in detail.

If task group option = 'Y', the following pop up window will appear to define task groups.

```

01-12-31          N-2-O ADD A PROJECT DEFINITION          TSI0373
11:38:00                                               TSI1

Project          :  PAYROLL
-----+-----+1-12-31  10:09:13
|              |COMPENSATION PACKAGE
|              |
| Task Groups  |
|-----|
| 1. CITYTAX_ |
| 2. FICA_____|
| 3. FEDTAX___|
| 4. BENEFITS_|
| 5. SALARY___|
| 6. BONUSES__|
| 7. _____|
| 8. _____|
| 9. _____|
| 10. _____|
|-----+-----|

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
TASK GROUPS (optional)	Identify and organize related tasks within a project. A Task Group must be unique throughout Project Tracking.

**Note:** Task Groups information will not be copied because it must be unique to all of Project Tracking.

If stages option = 'Y', the following pop up window will appear to define stages.

```

01-12-31          N-2-O ADD A PROJECT DEFINITION          TSI0373
11:38:00                                               TSI1

Project          :  PAYROLL
Updated         :  +-----+
Short Desc:     | Stages of a Task
|              |-----|
| 1. DESIGN____| 11. _____|
| 2. ACTIVE____| 12. _____|
| 3. PHASE 1___| 13. _____|
| 4. TEST______| 14. _____|
| 5. APPROVE___| 15. _____|
| 6. PHASE 2___| 16. _____|
| 7. COMPLETE__| 17. _____|
| 8. _____| 18. _____|
| 9. _____| 19. _____|
| 10. _____| 20. _____|
|-----+-----|

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
STAGES OF A TASK (optional)	<p>Identify the milestones for a task on its path to completion. The following stages are reserved for use by N2O:</p> <p>CANCEL Indicates a successful cancel.</p> <p>FAILED Indicates a failed cancel.</p> <p>DENIED Indicates the cancel was prevented by user-exits.</p> <p>DEFINED Indicates a new task that has not been started.</p>

If priority values option = 'Y', the following pop-up window will appear to define priority values.

```

01-12-31          N-2-O ADD A PROJECT DEFINITION          TSI0373
11:38:00                                     TSI1

Project   : PAYROLL
Updated  : TSI0373   01-12-31   10:0
Short Desc: CALCULATE COMPENSATION PAC

Options:
  Extended Desc : Y
  Task Groups   : Y
  Stages        : Y
  Priority Values: Y
  Impact Values: Y

+-----+
| Priority Values |
|-----|
| High  HIGH_   |
|       MED_   |
|       LOW_   |
|       _____|
|       _____|
|       _____|
|       _____|
|       _____|
| Low   _____|
+-----+

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP   ---  END   ---  ---  ---  ---  ---  ---  ---  ---  ---  ---
  
```

Field	Description
PRIORITY VALUES (optional)	<p>Identify a set of valid priorities to assign to tasks within the project. The HIGH and LOW labels establish a range for the values.</p>

If impact values = 'Y', the following pop-up window will appear to define impact values.

```

01-12-31          N-2-O ADD A PROJECT DEFINITION          TSI0373
11:38:00                                         TSI1

Project   : PAYROLL
Updated   : TSI0373    01-12-31    10:09:13
Short Desc: CALCULATE COMPENSATION PACKAGE

Options:
Extended Desc : Y
Task Groups   : Y
Stages        : Y
Priority Values: Y
Impact Values : Y

+-----+
| Impact Values |
|-----|
| High  HIGH_   |
|          MED_ |
|          LOW_  |
|          _____|
|          _____|
|          _____|
|          _____|
|          _____|
|          _____|
|          _____|
|          _____|
|          _____|
| Low   _____|
+-----+

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
IMPACT VALUES (optional)	Identify a set of valid impacts to assign to tasks within the project. The HIGH and LOW labels establish a range for the values.

**III.2.2 Copy a Project Definition**

Copy a Project Definition creates a Project Definition by copying an existing Project Definition.

**Note:** Task group information will not be copied because it must be unique to all of Project Tracking.

To copy a Project Definition, enter "C" in the Enter Code field and the Project Definition to be copied in the Project field on the Project Definition menu. A pop-up window is displayed for the user to enter the new project name.

```

01-12-31          N-2-O PROJECT DEFINITION MENU          TSI0373
11:38:00

Code  Function
----  -
A    Add a Project Definition
C    Copy a Project Definition
D    Delete a Project Definition
I    Inquire on a Project Definition
M    Modify a Project Definition
S    Select a Project Definition
.    Termina +-----+
-----+-----+
Enter Code:  _   Project | Copy Project:  PAYROLL_____ |
                          | To Project   :  ACCTSRECV_____ |
                          |                               |
                          +-----+

Direct Command _____ PRJ PROJ
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ---  END  ENV  MIG  REP  TOL  USR  PRJ  ---  ---  EXIT
    
```

All of the screens for copying a Project Definition are the same as adding a project. Refer to **Section III.2.1 Add a Project Definition** for more details.

**III.2.3 Delete a Project Definition**

Delete a Project Definition removes a Project Definition that no longer needs to be referenced.

If any tasks are related to the project, the user must first delete the tasks using the Task List Delete option.

To delete a Project Definition, enter "D" in the Enter Code field and the Project Definition to be deleted in the Project field on the Project Definition menu.

```

01-12-31          N-2-O DELETE A PROJECT DEFINITION          TSI0373
11:38:00                                     TSI1

Project          : PAYROLL
Updated         : TSIO373    01-12-31
Short Desc      : COMPENSATION PACKAGE

Task Groups      Stages of a Task          Priority      Impact
Values          Values                    Values        Values
-----
1. CITY TAX     1. DESIGN      11.          High         High
2. FED TAX     2. APPROVAL1  12.
3. FICA TAX    3. INITIATE   13.
4. BENEFITS    4. TEST       14.
5.             5. APPROVAL2  15.
6.             6. USER TEST  16.          +-----+
7.             7. APPROVAL3  17.          | Do you want to Delete? N (Y/N) |
8.             8. COMPLETED 18.          |
9.             9.             19.          |
10.            10.             20.          +-----+

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END -----
    
```

To confirm the delete request, enter "Y" in the pop-up window. To cancel the delete request, enter "N" in the pop-up window or press PF3.

**III.2.4 Inquire on a Project Definition**

Inquire on a Project Definition displays information about a Project Definition.

To inquire on a Project Definition, enter "I" in the Enter Code field and the Project Definition to be viewed in the Project field on the Project Definition menu.

```

01-12-31          N-2-O INQUIRE ON A PROJECT DEFINITION          TSI0373
11:38:00                                               TSI1

Project          : PAYROLL
Updated         : TSI0373    01-12-31
Short Desc     : CALCULATE COMPENSATION PACKAGE

Task Groups      Stages of a Task          Priority      Impact
Values          Values
-----
1. CITY TAX      1. DESIGN          11.          High         High
2. FED TAX       2. APPROVAL1       12.
3. FICA TAX      3. INITIATE        13.
4. BENEFITS      4. TEST            14.
5.               5. APPROVAL2       15.
6.               6. USER TEST      16.
7.               7. APPROVAL3       17.
8.               8. COMPLETED      18.
9.               9.                 19.
10.              10.                20.          Low          Low

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
-----
                        END
    
```

**III.2.5 Modify a Project Definition**

Modify a Project Definition updates a Project Definition.

To modify a Project Definition, enter "M" in the Enter Code field and the project to be modified in the Project field on the Project Definition menu.

```

01-12-31          N-2-O MODIFY A PROJECT DEFINITION              TSI0373
11:38:00                                               TSI1

Project          : PAYROLL
Updated         : TSI0373    01-12-31    10:09:13
Short Desc     : CALCULATE COMPENSATION PACKAGE

Options:
Extended Desc  : Y
Task Groups    : Y
Stages         : Y
Priority Values: Y
Impact Values  : Y

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

**III.2.6 Select a Project Definition**

Select a Project Definition provides a list of Project Definitions that may be copied, deleted, inquired on, or modified.

To select a Project Definition, enter "S" in the Enter Code field on the Project Definition menu. A starting value may be entered in the Project field on the Project Definition menu.

```

Valid values: C - Copy D - Delete I - Inquire M - Modify
01-12-31          N-2-O SELECT A PROJECT DEFINITION          TSI0373
11:38:00                                     TSI1

      S   Project          Short Description
      -   -----
      -   PAYROLL         CALCULATE COMPENSATION PACKAGE
      -   ACCSTRECV       ACCOUNTS RECEIVABLE PACKAGE

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
S (optional)	The function to be executed. Each user's Function Profile security determines the user's valid values. Valid values are as follows:  C Indicates Copy a Project Definition. D Indicates Delete a Project Definition. I Indicates Inquire on a Project Definition. M Indicates Modify a Project Definition.

Pressing Enter pages forward on all screens until the last screen is displayed. Pressing Enter on the last screen wraps around to display the first screen again.

### III.3 Task List

Each activity that is part of a project is called a task. A task is a unit of work that advances the project toward completion. The Project Tracking Subsystem stores important information about a task. This information can be used to follow the progress of the task.

To access the Task List menu, enter "B" on the Project Tracking Subsystem menu or enter the direct command PRJ TASK on any menu.

```

01-12-31          N-2-O TASK LIST MENU          TSI0373
11:38:00                                     TSI1

          Code  Function
          ----  -
          A    Add a Task
          C    Copy a Task
          D    Delete a Task
          I    Inquire on a Task
          M    Modify a Task
          S    Select a Task
          .    Terminate Task List
          ----  -

Enter Code:  _   Project: _____

                Task Group: _____ Task Number: _____

Direct Command _____ PRJ TASK
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP ---- END  ENV  MIG  REP  TOL  ---- PRJ  ---- ---- EXIT
    
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:  <b>A Add a Task</b> Creates a task.  <b>C Copy a Task</b> Creates a task by copying an existing task.  <b>D Delete a Task</b> Removes a task.  <b>I Inquire on a Task</b> Displays information about a task.  <b>M Modify a Task</b> Updates a task.  <b>S Select a Task</b> Provides a list of tasks that may be copied, deleted, inquired on, or modified.
∞ PROJECT (required)	The name of the project.
TASK GROUP (required for all functions except Select)	The group that identifies a task.
TASK NUMBER (required for Copy, Modify, Inquire on, and Delete)	The number that uniquely identifies a task.

∞ indicates field-level help is available.

### III.3.1 Add a Task

The Add a Task function creates a new task.

To add a task, enter "A" in the Enter Code field, and the project name and task group of the task to be added on the Task List menu.

```

01-12-31          N-2-O ADD A TASK          TSIO373
11:38:00          Project: PAYROLL          TSII

Task Group       : BENEFITS      Task Number:000001   Stage: DEFINED

Updated          : TSIO373      01-12-31  10:10:10
Short Desc       : CALCULATE AS PERCENTAGE OF DEDUCT
Priority          : _____
Impact           : _____
Change Cntl      : _____
Time Estimate    : ___ weeks   ___ days   ___ hours

Primary Contact Information:
Name             : _____      Phone: _____
User-ID:         : _____      Other: _____

Extended Desc    : Y
Checklist        : Y
Additional Contacts: Y

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
-----      END -----
    
```

When adding a new task, N2O automatically assigns the task number and a stage of "Defined".

The following Field Descriptions apply to all Task List functions (Add, Copy, Delete, Inquire on, and Modify).

Field	Description
∞ PROJECT (supplied)	The project in which a task belongs.
TASK GROUP (supplied)	The group that identifies a task.
TASK NUMBER (supplied)	The number that uniquely identifies a task.
STAGE (supplied)	The progress of a task. All tasks begin at the DEFINED stage.
UPDATED (supplied)	The User-ID of the user who created or last updated the record and the date and time that action occurred.
SHORT DESC (required)	A 30-character description of the task.
PRIORITY (optional)	Displays the priority of the task. Valid values for this field are defined on the Project Definition.

∞ indicates field-level help is available.

(continued from previous page)

Field	Description
IMPACT (optional)	Displays the impact of the task. Valid values for this field are defined on the Project Definition.
CHANGE CNTL (optional)	Relates a task to a site-specific tracking number or label.
TIME ESTIMATE (optional)	Displays the projected time required to complete a task in weeks, days, or hours.
NAME (optional)	The name of the contact.
PHONE (optional)	The phone number of the contact.
USER-ID (optional)	The User-ID of the contact.
OTHER (optional)	Other information pertinent to the contact, such as e-mail address or department.
EXTENDED DESC (required)	Indicates whether a longer description of the project can be entered.
	Y Allows a longer description of the project to be entered. This is the default value.
	N Bypasses the extended description feature.
CHECKLIST (required)	Indicates whether a pop-up window that can hold specifications or reminders about a task is available or not.
	Y Displays the pop-up window. This is the default value.
	N Bypasses the pop-up window.
ADDITIONAL CONTACTS (required)	Indicates whether a pop-up window for information to be entered for up to 9 additional contacts is available or not.
	Y Displays the pop-up window. This is the default value.
	N Bypasses the pop-window.

### III.3.2 Copy a Task

The Copy a Task function creates a task by copying an existing task. The Copy function copies all information from an existing task to a new task.

To copy a task, enter "C" in the Enter Code field, and the project, task group, and task number of the task to be copied in the task fields on the Task List menu.

```

01-12-31          N-2-O TASK LIST MENU          TSI0373
11:38:00                                     TSI1

Code  Function
-----
A    Add a Task
C    Copy a Task
D    Dele +-----+
I    Inqu |
M    Modi | Copy Task Group :  BENEFITS
S    Sele | Task Number:  2
.    Term |
-----  +-----+
      | To Project   :  ACCTSRECV
      | Task Group  :  ANNUITY
Enter Code:  _  Proje|
                  +-----+

Direct Command _____ PRJ TASK
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
    
```

A pop-up window is displayed for information to be entered about the new task. Refer to Section III.3.1 Add a Task for an explanation of copy screens.

### III.3.3 Delete a Task

The Delete a Task function removes a task.

To delete a task, enter "D" in the Enter Code field, and the project, task group, and task number of the task to be deleted in the task fields on the Task List menu.

```

01-12-31          N-2-O DELETE A TASK          TSI0373
11:38:00          Project:  PAYROLL           TSI1

Task Group      :      BENEFITS      Task Number:  000001      Stage:  DEFINED
Updated        :      TSI0373 01-12-31  11:38:00
Short Desc     :      2000 Benefits changes
Priority       :
Impact        :
Change Cntl   :
Time Estimate  :      weeks      days      hours

Primary Contact Information:
Name          :                               Phone:
User-ID:      Other:
Extended Desc :  Y
Checklist    :  Y
Additional Contacts:  N
              +-----+
              | Do you want to Delete?  N (Y/N) |
              +-----+

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      ----  ----  END  ----  ----  ----  ----  ----  ----  ----  ----
    
```

To confirm the delete request, enter "Y" in the pop-up window. To cancel the delete request, enter "N" in the pop-up window or press PF3.

**III.3.4 Inquire on a Task**

The Inquire on a Task function displays information about a task.

To inquire on a task, enter "I" in the Enter Code field, and the project, task group, and task number of the task to be viewed in the task fields on the Task List menu.

```

01-12-31          N-2-O INQUIRE ON A TASK          TSI0373
11:38:00          Project: PAYROLL                 TSI1

Task Group   : BENEFITS   Task Number:000001   Stage: DEFINED

Updated      : TSI0373   01-12-31  12:00:00
Short Desc   : _____
Priority     : _____
Impact      : _____
Change Cntl  : _____
Time Estimate: ___ weeks  ___ days  ___ hours

Primary contact Information:
Name        : _____ Phone : _____
User-ID:    _____ Other  : _____

Extended Desc : Y
Checklist    : Y
Additional Contacts: N

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
----- END -----
    
```

**III.3.5 Modify a Task**

The Modify a Task function updates a task.

To modify a task, enter "M" in the Enter Code field, and the project, task group, and task number of the task to be modified in the task fields on the Task List menu.

```

01-12-31          N-2-O MODIFY A TASK              TSI0373
11:38:00          Project: PAYROLL                 TSI1

Task Group   : BENEFITS   Task Number:000001   Stage: DEFINED

Updated      : TSI0373   01-12-31  12:00:00
Short Desc   : CALC AS PERCENTAGE OF DEDUCT
Priority     : _____
Impact      : _____
Change Cntl  : _____
Time Estimate: ___ weeks  ___ days  ___ hours

Primary contact Information:
Name        : _____ Phone : _____
User-ID:    _____ Other  : _____

Extended Desc : Y
Checklist    : Y
Additional Contacts: N

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
----- END -----
    
```

**III.3.6 Select a Task**

The Select a Task function provides a list of tasks that may be copied, deleted, inquired on, or modified.

To select a task, enter "S" in the Enter Code field on the Task List menu. A starting value may be entered in the Project and Task Group fields on the Task List menu.

```

Valid values: C - Copy D - Delete I - Inquire M - Modify
01-12-31          N-2-O SELECT A TASK          TSI0373
11:38:00          TSI1
----- Task -----
 S  Group          Number  Short Description          Stage
-----
-   CITY TAX       000001  ALL ACCOUNTS              DEFINED
-   FED TAX        000002  ALL ACCOUNTS              DEFINED
-   FICA TAX       000003  ALL ACCOUNTS              DEFINED
-   BENEFITS      000004  ALL ACCOUNTS              DEFINED

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
S (optional)	The function to be executed. Each user's Function Profile security determines the user's valid values. Valid values are as follows:  C Indicates Copy a Task. D Indicates Delete a Task. I Indicates Inquire on a Task. M Indicates Modify a Task.

Pressing Enter pages forward on all screens until the last screen is displayed. Pressing Enter on the last screen wraps around to display the first screen again.

### III.4 Suggestion Box

The Suggestion Box is a Project Tracking function that is designed to collect end-user requests for changes to projects. The Suggestion Box can also hold ideas or other types of requests from management, application programmers, etc.

To access the Suggestion Box menu, enter "C" on the Project Tracking menu or enter the direct command PRJ SUGG on any menu.

```

01-12-31          N-2-O SUGGESTION BOX MENU          TSI0373
11:38:00                                     TSI1

Code  Function
-----
A    Add a Suggestion
C    Copy a Suggestion
D    Delete a Suggestion
I    Inquire on a Suggestion
M    Modify a Suggestion
S    Select a Suggestion
.    Terminate Suggestion Box
-----

Enter Code:  _   Project: _____

                          Suggestion: _____

Direct Command _____ PRJ SUGG
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
    
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:  <b>A Add a Suggestion</b> Creates a suggestion.  <b>C Copy a Suggestion</b> Creates a suggestion by copying an existing suggestion.  <b>D Delete a Suggestion</b> Removes a suggestion.  <b>I Inquire on a Suggestion</b> Displays information about a suggestion.  <b>M Modify a Suggestion</b> Updates a suggestion.  <b>S Select a Suggestion</b> Provides a list of suggestions that may be copied, deleted, inquired on, or modified.
∞ PROJECT (required)	The project to which the suggestion applies.
SUGGESTION (required for Copy, Modify, Delete, and Inquire on)	The number that uniquely identifies a suggestion. When adding, N2O automatically generates the suggestion number.
∞	indicates field-level help is available.

**III.4.1 Add a Suggestion**

Add a Suggestion creates a new suggestion.

To add a suggestion, enter "A" in the Enter Code field, and the project to which the suggestion applies in the Project field on the Suggestion Box menu. N2O automatically assigns the next available suggestion number to the request.

```

01-12-31          N-2-O ADD A SUGGESTION          TSI0373
11:38:00                                     TSI1

Project   : PAYROLL
Suggestion: 100
Updated   : TSI0373  01-12-31  10:00:00
Short Desc: _____
Status    : _____

Requested by:
Name      : _____
Phone     : _____ User-ID: _____
Date      : 19991231 Other : _____

Suggestion Description:
_____
_____
_____
_____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

The following Field Descriptions apply to all Suggestion Box functions (Add, Copy, Delete, Inquire on, and Modify).

Field	Description
PROJECT (supplied)	The project to which the suggestion applies.
SUGGESTION (supplied)	The number that uniquely identifies the suggestion. When adding, N2O automatically generates the suggestion.
UPDATED (supplied)	The User-ID of the user who created or last updated the record and the date and time that action occurred.
SHORT DESC (required)	A 30-character description of the suggestion.
STATUS (optional)	The status of a suggestion (i.e., opens, rejected, accepted, etc.). N2O does not restrict values for this field.
NAME (optional)	The name of the contact individual responsible for the suggestion.
PHONE (optional)	The phone number of the requester.

(continued from previous page)

---

<b>Field</b>	<b>Description</b>
USER-ID (optional)	The User-ID of the requester.
DATE (optional)	The date the request was made. N2O automatically supplies this, but the requester may modify it.
OTHER (optional)	Other information pertinent to the requester.
SUGGESTION DESCRIPTION (optional)	Provides a description of the suggestion.

### III.4.2 Copy a Suggestion

Copy a Suggestion creates a suggestion by copying an existing suggestion.

To copy a suggestion, enter "C" in the Enter Code field, the Project Definition in the Project field, and the suggestion number to be copied in the Suggestion field on the Suggestion Box menu.

```

01-12-31          N-2-O SUGGESTION BOX MENU          TSI0373
11:38:00                                     TSI1

Code  Function
-----
A    Add a Suggestion
C    Copy a Suggestion
D    Delete a Suggestion
I    Inquire on a Suggestion
M    Modify a Suggestion
S    Select a Suggestion
.    Termina +-----+
-----+-----+
Enter Code:  _   Project | Copy Project:  PAYROLL_____
                          | Suggestion   :  100_____
                          | To Project   :  ACCTSRECV_____
                          +-----+
Direct Command _____ PRJ SUGG
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
    
```

A pop-up window is displayed for information to be entered about the new suggestion.

### III.4.3 Delete a Suggestion

Delete a Suggestion removes a suggestion.

To delete a suggestion, enter "D" in the Enter Code field, the Project Definition in the Project field, and the suggestion number to be deleted in the Suggestion field on the Suggestion Box menu.

```

01-12-31          N-2-O DELETE A SUGGESTION          TSI0373
11:38:00                                     TSI1

Project   :  PAYROLL
Suggestion:   100
Updated   :  TSI0373   01-12-31   11:34:07
Short Desc:  _____
Status    :  _____

Requested by:
Name      :  _____
Phone    :  _____   User-ID:  _____
Date     :  20011231   Other   :  _____

Suggestion Description:
_____ +-----+
_____ | Do you want to Delete?  N (Y/N) |
_____ |
_____ +-----+

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
----  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

To confirm the delete request, enter "Y" in the pop-up window. To cancel the delete request, press "N" in the pop-up window or press PF3.

**III.4.4 Inquire on a Suggestion**

Inquire on a Suggestion displays information about a suggestion.

To inquire on a suggestion, enter "I" in the Enter Code field, the Project Definition in the Project field, and the suggestion number to be viewed in the Suggestion field on the Suggestion Box menu.

```

01-12-31          N-2-O INQUIRE ON A SUGGESTION          TSI0373
11:38:00                                               TSI1

Project           : PAYROLL
Suggestion        : 1
Updated           : TSI0373    01-12-31
Short Desc       : ENHANCE PAYROLL RPT1
Status           : _____

Requested by:
Name             : _____
Phone           : _____ User-ID: _____
Date            : 20011231   Other : _____

Suggestion Description:
  ADD EMPLOYEE ADDRESS TO RPT. _____
  ALLOW SORT ORDER TO BE SPECIFIED _____
  BY THE USER. _____
  _____
  _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END -----

```

**III.4.5 Modify a Suggestion**

Modify a Suggestion updates a suggestion.

To modify a suggestion, enter "M" in the Enter Code field, the project in the Project Definition field, and the suggestion number to be modified in the Suggestion field on the Suggestion Box menu.

```

01-12-31          N-2-O MODIFY A SUGGESTION              TSI0373
11:38:00                                               TSI1

Project           : PAYROLL
Suggestion        : 1
Updated           : TSI0373    01-12-31
Short Desc       : ENHANCE PAYROLL RPT1
Status           : OPEN_____

Requested by:
Name             : _____
Phone           : _____ User-ID: _____
Date            : 20011231   Other : _____

Suggestion Description:
  ADD EMPLOYEE ADDRESS TO RPT. _____
  ALLOW SORT ORDER TO BE SPECIFIED _____
  BY THE USER. _____
  _____
  _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP ----- END -----

```

**III.4.6 Select a Suggestion**

Select a Suggestion provides a list of all suggestions currently recorded.

To select a suggestion, enter "S" in the Enter Code field on the Suggestion Box menu. A starting value may be entered in the Project and Suggestion fields on the Suggestion Box menu.

```

Valid values: C - Copy D - Delete I - Inquire M - Modify
01-12-31          N-2-O SELECT A SUGGESTION          TSI0373
11:38:00          TS11

```

S	Project	Suggestion	Short Description	Status
-	PAYROLL	1	ENHANCE PAYROLL RPT1	OPEN

```

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----

```

Field	Description
S (optional)	The function to be executed. Each user's Function Profile security determines the user's valid values. Valid values are as follows:  C Indicates Copy a Suggestion. D Indicates Delete a Suggestion. I Indicates Inquire on a Suggestion. M Indicates Modify a Suggestion.

Pressing Enter pages forward on all screens until the last screen is displayed. Pressing Enter on the last screen wraps around to display the first screen again.

**III.5 Task Utilities**

Most of the basic information about tasks is maintained in the Task List. However, there are circumstances that require additional information about a task. The Task Utilities allow this type of detailed information to be created and updated.

To access the Task Utilities menu, enter "D" on the Project Tracking Subsystem menu or enter the direct command PRJ TUTL on any menu.

```

01-12-31          N-2-O TASK UTILITIES MENU          TSI0373
11:38:00                                     TSI1

Code  Function
----  -
A    Update Stage for a Task
B    Cancel a Task
C    Reject a Task
D    Link Objects to a Task
E    Link Suggestions to a Task
F    Link Tasks to a Task
.    Terminate Task Utilities
----  -

Enter Code:  _

Direct Command _____ PRJ TUTL
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ---  END  ENV  MIG  REP  TOL  USR  PRJ  ---  ---  EXIT
    
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:  <b>A Update Stage for a Task</b> Allows a task to be promoted to a new stage.  <b>B Cancel a Task</b> Marks the stage of a task as canceled.  <b>C Reject a Task</b> Marks the stage of a task as rejected.  <b>D Link Objects to a Task</b> Maintains a list of objects that are affected by a particular task.  <b>E Link Suggestions to a Task</b> Maintains a list of suggestions that are related to a task.  <b>F Link Tasks to a Task</b> Maintains a list of tasks that are related to a particular task.

### III.5.1 Update Stage for a Task

As resources are assigned to a task and activities are accomplished, the progress of a task changes. This progress is tracked by the stage of a task.

The Update Stage for a Task function allows a task to be promoted to a new stage. Usually, the task is updated to the next sequential stage. The order of the stages is determined by the Project Definition. In some cases, it may be necessary to skip stages or to return to a previous stage. User-Exit 20 is available from this utility to allow sites to override the order of the stages. User-Exit 20 can also be used to provide security to update the stages of tasks. Refer to the **N2O Administration Manual** for details on User-Exit 20.

To update a stage for a task, enter "A" on the Task Utilities menu.

```

01-12-31          N-2-O TASK UTILITIES          TSI0373
11:38:00          UPDATE STAGE FOR A TASK        TSI1

                Project   :  PAYROLL
                Task Group :  _____
                Task Number:  _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  -----
    
```

Field	Description
∞ PROJECT (required)	The project in which a task belongs.
TASK GROUP (optional)	The group in which a task belongs.
TASK NUMBER (optional)	The number that uniquely identifies a task.

∞ indicates field-level help is available.

To display the Update Stage for a Task select screen, enter a project on the previous screen. A task group and a task number may also be entered on the previous screen to limit the search.

```

01-12-31          N-2-0 UPDATE STAGE FOR A TASK          TSI0373
11:38:00          Project: PAYROLL                      TSI1

----- Task -----
X  Group      Number  Short Description          Stage      Message
-----
-  BENEFITS    2    CALC AS PERCENTAGE OF DEDUCT  DEFINED
-  BONUSES     1    YEAR TO DATE SUMMARY OF BONUS  DEFINED
-  CITYTAX     1    COMPUTE 99 RATE INCREASE      DEFINED
-  CITYTAX     2    CALC AS PERCENTAGE OF DEDUCT  DESIGN
-  FEDTAX      1    ADJUST TO NEW RATES           DEFINED
-  FEDTAX      2    CALC AS FEDTAX AS % OF DEDUCT  DEFINED
-  FICA        1    CALC AS PERCENTAGE OF DEDUCT  DEFINED

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----

```

Field	Description
PROJECT (supplied)	The name of the project.
X (optional)	Entering "X" next to a task displays a pop-up window for the new stage, allowing comments to be entered. The new stage defaults to the next stage in the sequence defined on the Project Definition.
TASK GROUP (supplied)	The group in which a task belongs.
TASK NUMBER (supplied)	The number that uniquely identifies a task.
SHORT DESCRIPTION (supplied)	A 30-character description of the task.
STAGE (supplied)	The current stage assigned to the task.
MESSAGE (supplied)	Indicates the stage of the task has been updated.

**III.5.2 Cancel a Task**

Tasks that are in the process of being completed may be re-evaluated based on available resources. Tasks that are suspended for this reason are considered canceled.

Cancel a Task marks the stage of a task to be canceled. Tasks that are in the canceled stage may be restarted from the beginning at any time.

To cancel a task, enter "B" on the Task Utilities menu.

```

01-12-31          N-2-O TASK UTILITIES          TSI0373
11:38:00          N-2-O CANCEL A TASK           TSI1

Project   : PAYROLL
Task Group : _____
Task Number: _____

Enter- PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ PROJECT (required)	The project in which a task is to be canceled.
TASK GROUP (optional)	The group that identifies a task.
TASK NUMBER (optional)	The number that uniquely identifies a task.
∞ indicates field-level help is available.	

To display the Cancel a Task select screen, enter a project on the previous screen. A task group and a task number may also be entered on the previous screen to limit the search.

```

01-12-31          N-2-0 CANCEL A TASK          TSI0373
11:38:00          Project: PAYROLL            TSII

----- Task -----
X  Group      Number  Short Description          Stage      Message
-----
-  BENEFITS    2    CALC AS PERCENTAGE OF DEDUCT  DEFINED
-  BONSES     1    YEAR TO DATE SUMMARY OF BONUS  DEFINED
-  CITYTAX    1    COMPUTE 99 RATE INCREASE      DEFINED
-  CITYTAX    2    CALC AS PERCENTAGE OF DEDUCT  DESIGN
-  FEDTAX     1    ADJUST TO NEW RATES           DEFINED
-  FEDTAX     2    CALC AS FEDTAX AS % OF DEDUCT  DEFINED
-  FICA       1    CALC AS PERCENTAGE OF DEDUCT  DEFINED

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END ----- STOP
    
```

Field	Description
PROJECT (supplied)	The name of the project.
X (optional)	Entering "X" next to a task displays a pop-up window allowing comments to be entered and sets the task's stage to cancel.
TASK GROUP (supplied)	The group in which a task belongs.
TASK NUMBER (supplied)	The number that uniquely identifies a task.
SHORT DESCRIPTION (supplied)	A 30-character description of the task.
STAGE (supplied)	The current stage assigned to the task.
MESSAGE (supplied)	Indicates the task has been canceled.

**III.5.3 Reject a Task**

A task may reach a certain stage and not meet the requirements for being at that stage. In this situation, the task should be rejected.

Reject a Task removes a task from its current stage and places it in the prior stage. Tasks that are rejected must be restarted at the prior stage.

A canceled task may not be rejected.

To reject a task, enter "C" on the Task Utilities menu.

```

01-12-31          N-2-O TASK UTILITIES          TSI0373
11:38:00          N-2-O REJECT A TASK           TSI1

Project   : PAYROLL
Task Group : _____
Task Number: _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ PROJECT (required)	The project in which a task is to be rejected.
TASK GROUP (optional)	The group that identifies a task.
TASK NUMBER (optional)	The number that uniquely identifies a task.

∞ indicates field-level help is available.

To display a Reject a Task select screen, enter a project on the previous screen. A task group and a task number may also be entered on the previous screen to limit the search.

```

01-12-31          N-2-0 REJECT A TASK          TSI0373
11:38:00          Project: PAYROLL             TSI1

----- Task -----
X  Group      Number  Short Description          Stage      Message
-----
-  BENEFITS    2    CALC AS PERCENTAGE OF DEDUCT  DEFINED
-  BONUSSES    1    YEAR TO DATE SUMMARY OF BONUS  DEFINED
-  CITYTAX     1    COMPUTE 99 RATE INCREASE      DEFINED
-  CITYTAX     2    CALC AS PERCENTAGE OF DEDUCT  DESIGN
-  FEDTAX      1    ADJUST TO NEW RATES           DEFINED
-  FEDTAX      2    CALC AS FEDTAX AS % OF DEDUCT  DEFINED
-  FICA        1    CALC AS PERCENTAGE OF DEDUCT  DEFINED

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
PROJECT (supplied)	The name of the project.
X (optional)	Entering "X" next to a task displays a pop-up window allowing comments to be entered.
TASK GROUP (supplied)	The group in which a task belongs.
TASK NUMBER (supplied)	The number that uniquely identifies a task.
SHORT DESCRIPTION (supplied)	A 30-character description of the task.
STAGE (supplied)	The current stage assigned to the task.
MESSAGE (supplied)	Indicates the task has been rejected.

**III.5.4 Link Objects to a Task**

In application programming, it is useful to package objects affected by a change. The Link Objects to a Task function maintains a list of objects that are affected by a task.

To link Objects to a task, enter "D" on the Task Utilities menu.

```

01-12-31                N-2-O TASK UTILITIES                TSI0373
11:38:00                LINK OBJECTS TO A TASK                TSI1

Task Group :  BENEFITS
Task Number:  000003

Options:
View Linked Objects           Y
Select Objects from Event/Seq N
Add Linked Objects            N
Delete Linked Objects         N

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  -----
    
```

Field	Description
TASK GROUP (required)	The group that identifies a task.
TASK NUMBER (required)	The number that uniquely identifies a task.
VIEW LINKED OBJECTS	Y Displays a list of objects already linked to a task. (If "Y" is entered for this option, "N" must be entered for all other options.) N Bypasses the display.
SELECT OBJECTS FROM EVENT/SEQ	Y Prompts for Event, then displays a list of Event objects, and allows objects to be linked to an object. (If "Y" is entered for this option, "N" must be entered for all other options.) N Bypasses the display.
ADD LINKED OBJECTS	Y Allows the user to add objects linked to a task. (If "Y" is entered for this option, "N" must be entered for all other options.) N Bypasses the display.
DELETE LINKED OBJECTS	Y Allows the user to remove objects linked to a task. (If "Y" is entered for this option, "N" must be entered for all other options.) N Bypasses the display.

To display the View Linked Objects screen, enter a task group and a task number on the previous screen, and a "Y" next to the View Linked Objects option.

```

Press Enter to continue
01-12-31      N-2-O LINK OBJECTS TO A TASK      TSI0373
11:38:00      VIEW LINKED OBJECTS              TSI1
                Task Group: BENEFITS  Task Number: 1
                Short Desc: ALL ACCOUNTS

                Object Name                    Type  Obj Type
                -----
                PAYEVNTD                       N     PROGRAM
                PAY4240N                       N     SUB-PGM
                PAY4240S                       N     SUB-RTN
                PAY42401                       N     MAP
                PAY42411                       N     MAP
                PAY42412                       N     MAP

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
-----
                END                               STOP
    
```

Field	Description
TASK GROUP (supplied)	The group in which the task belongs.
TASK NUMBER (supplied)	The number that uniquely identifies a task.
SHORT DESC (supplied)	A 30-character description of the task.
OBJECT NAME (supplied)	The object linked to the task.
TYPE (supplied)	The following types are required when using this function to supply information to User-Exit 15: N Indicates NATURAL. S Indicates SYSERR. P Indicates PREDICT. O Indicates 3GL/OTHER.

(Continued from previous page)

Field	Description																																																																																																												
OBJ TYPE (supplied)	<p>The following object types are required when using this function to supply information to User-Exit 15 (Refer to the <b>N2O Administration Manual</b> for details on User-Exit 15). This field is not used for SYSERR messages.</p> <p>NATURAL object type</p> <table> <tr><td>PARM</td><td>Indicates Parameter data area.</td></tr> <tr><td>COPYCODE</td><td>Indicates Copycode.</td></tr> <tr><td>GLOBAL</td><td>Indicates Global data area.</td></tr> <tr><td>HELP-RTN</td><td>Indicates Helproutine.</td></tr> <tr><td>LOCAL</td><td>Indicates Local data area.</td></tr> <tr><td>MAP</td><td>Indicates Map.</td></tr> <tr><td>SUB-PGM</td><td>Indicates Subprogram.</td></tr> <tr><td>PROGRAM</td><td>Indicates Program.</td></tr> <tr><td>SUB-RTN</td><td>Indicates Subroutine.</td></tr> <tr><td>TEXT</td><td>Indicates Text.</td></tr> <tr><td>MACRO</td><td>Indicates macro.</td></tr> <tr><td>REPORT</td><td>Indicates Report.</td></tr> <tr><td>EXP-MDL</td><td>Indicates ExpertModel.</td></tr> <tr><td>RECORD</td><td>Indicates Recording.</td></tr> <tr><td>DIALOG</td><td>Indicates Dialog.</td></tr> <tr><td>CLASS</td><td>Indicates Class.</td></tr> <tr><td>CMD-PROC</td><td>Indicates Processor.</td></tr> <tr><td>SERVER</td><td>Indicates Server.</td></tr> </table> <p>PREDICT object type</p> <table> <thead> <tr> <th>Type</th> <th>Indicates</th> <th>Predict Version</th> </tr> </thead> <tbody> <tr><td>DA</td><td>Database</td><td></td></tr> <tr><td>DC</td><td>Dataspace</td><td></td></tr> <tr><td>ET</td><td>Extract</td><td></td></tr> <tr><td>FI</td><td>File</td><td></td></tr> <tr><td>IE</td><td>Interface</td><td>V4.1.2 and above</td></tr> <tr><td>KY</td><td>Keyword</td><td></td></tr> <tr><td>LS</td><td>Library Structure</td><td></td></tr> <tr><td>MD</td><td>Method</td><td>V4.1.2 and above</td></tr> <tr><td>MO</td><td>Module</td><td>V3.4.2 and below</td></tr> <tr><td>NO</td><td>Node</td><td></td></tr> <tr><td>NW</td><td>Network</td><td></td></tr> <tr><td>PG</td><td>PackageList</td><td></td></tr> <tr><td>PR</td><td>Program</td><td></td></tr> <tr><td>PY</td><td>Property</td><td>V4.1.2 and above</td></tr> <tr><td>RL</td><td>Relationship</td><td></td></tr> <tr><td>RP</td><td>Report</td><td>V3.4.2 and below</td></tr> <tr><td>RT</td><td>Report Listing</td><td></td></tr> <tr><td>SC</td><td>Storagespace</td><td></td></tr> <tr><td>SV</td><td>Server</td><td></td></tr> <tr><td>SY</td><td>System</td><td></td></tr> <tr><td>US</td><td>User</td><td></td></tr> <tr><td>VE</td><td>Verification</td><td></td></tr> <tr><td>VM</td><td>Virtual Machine</td><td></td></tr> </tbody> </table>	PARM	Indicates Parameter data area.	COPYCODE	Indicates Copycode.	GLOBAL	Indicates Global data area.	HELP-RTN	Indicates Helproutine.	LOCAL	Indicates Local data area.	MAP	Indicates Map.	SUB-PGM	Indicates Subprogram.	PROGRAM	Indicates Program.	SUB-RTN	Indicates Subroutine.	TEXT	Indicates Text.	MACRO	Indicates macro.	REPORT	Indicates Report.	EXP-MDL	Indicates ExpertModel.	RECORD	Indicates Recording.	DIALOG	Indicates Dialog.	CLASS	Indicates Class.	CMD-PROC	Indicates Processor.	SERVER	Indicates Server.	Type	Indicates	Predict Version	DA	Database		DC	Dataspace		ET	Extract		FI	File		IE	Interface	V4.1.2 and above	KY	Keyword		LS	Library Structure		MD	Method	V4.1.2 and above	MO	Module	V3.4.2 and below	NO	Node		NW	Network		PG	PackageList		PR	Program		PY	Property	V4.1.2 and above	RL	Relationship		RP	Report	V3.4.2 and below	RT	Report Listing		SC	Storagespace		SV	Server		SY	System		US	User		VE	Verification		VM	Virtual Machine	
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VE	Verification																																																																																																												
VM	Virtual Machine																																																																																																												

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<b>Field</b>	<b>Description</b>
	3GL category
ASMB	Indicates Assembler.
COBOL	Indicates COBOL.
FORT	Indicates FORTRAN.
PL/I	Indicates PL/I.
RPG	Indicates RPG.
DATA	Indicates DATA FILES.
JCL	Indicates JCL.
OTHER	Indicates all other objects.

**III.5.5 Link Suggestions to a Task**

Suggestions may be the reason a task is defined. Several suggestions can be accomplished by a single task.

Link Suggestions to a Task allows suggestions to be related to a task.

To link suggestions to a task, enter "E" on the Task Utilities menu.

```

01-12-31          N-2-O TASK UTILITIES          TSI0373
11:38:00          LINK SUGGESTIONS TO A TASK    TSI1

Task Group :  BENEFITS
Task Number:      3

Options:
View Linked Suggestions  Y
Modify Linked Suggestions N

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  -----
    
```

Field	Description
TASK GROUP (required)	The group in which a particular task belongs.
TASK NUMBER (required)	The number of a particular task.
VIEW LINKED SUGGESTIONS (required)	Y Provides a list of suggestions linked to a task. (If "Y" is entered for this option, "N" must be entered for the remaining option.)
MODIFY LINKED SUGGESTIONS (required)	Y Allows user to modify suggestions linked to a task. (If "Y" is entered for this option, "N" must be entered for the remaining option.)

To display the View Linked Suggestions screen, enter a task group and a task number on the previous screen and a "Y" next to the View Linked Suggestions option.

```

01-12-31          N-2-O LINK SUGGESTIONS TO A TASK          TSI0373
11:38:00          VIEW LINKED SUGGESTIONS                   TS11

Task Group :  BENEFITS
Task Number:         3
Short Desc  :  UPDATE TAX CODES

      Project          Suggestion      Project          Suggestion
      -----          -
PAYROLL                32
PAYROLL                35
PAYROLL                38
PAYROLL                40
PAYROLL                53
PAYROLL                33
PAYROLL                36
PAYROLL                39
PAYROLL                51

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  END  ----
    
```

Field	Description
TASK GROUP (supplied)	The group to which a particular task belongs.
TASK NUMBER (supplied)	The number of a particular task.
SHORT DESC (supplied)	A 30-character of the task.
PROJECT (supplied)	The name of the project.
SUGGESTION (supplied)	The number of the suggestion.

To display the Modify Linked Suggestions screen, enter a task group and a task number on the previous screen and a "Y" next to the Modify Linked Suggestions option.

```

01-12-31          N-2-0 LINK SUGGESTIONS TO A TASK          TSI0373
11:38:00          MODIFY LINKED SUGGESTIONS                 TSII

Task Group :  BENEFITS
Task Number:         3
Short Desc  :  UPDATE TAX CODES

Project          Suggestion      Project          Suggestion
-----          -
PAYROLL         32              _____
PAYROLL         35              _____
PAYROLL         38              _____
PAYROLL         40              _____
PAYROLL         53              _____
PAYROLL         33              _____
PAYROLL         36              _____
PAYROLL         39              _____
PAYROLL         51              _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
-----  END  LIST  -----
    
```

Field	Description
TASK GROUP (supplied)	The group to which a particular task belongs.
TASK NUMBER (supplied)	The number of a particular task.
SHORT DESC (supplied)	A 30-character of the task.
PROJECT (optional)	The name of the project.
SUGGESTION (optional)	The number of the suggestion.

PF4 allows selection of a suggestion from a list.

**III.5.6 Link Tasks to a Task**

Many activities within a project overlap one another. It is important for tracking to be able to relate any similar activities.

Link Tasks to a Task allows up to 20 tasks to be linked to a single task.

To link tasks to a task, enter "F" on the Task Utilities menu.

```

01-12-31          N-2-O TASK UTILITIES          TSI0373
11:38:00          LINK TASKS TO A TASK          TSI1

Task Group :  BENEFITS
Task Number:  1_____

Options:
View Linked Tasks      N
Modify Linked Tasks    N

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
TASK GROUP (required)	The group in which a particular task belongs.
TASK NUMBER (required)	The number that uniquely identifies a task.
VIEW LINKED TASKS (required)	Y Displays a list of objects already defined to a task. (If "Y" is entered for this option, "N" must be entered for the remaining option.)
MODIFY LINKED TASKS (required)	Y Allows user to modify linked tasks. (If "Y" is entered for this option, "N" must be entered for the remaining option.)

To display the View Linked Tasks screen, enter a task group and a task number on the previous screen, and enter a "Y" next to the View Linked Tasks option.

```

01-12-31          N-2-O LINK TASKS TO A TASK          TSI0373
11:38:00          VIEW LINKED TASKS                  TSI1

Task Group :  BENEFITS
Task Number:    1
Short Desc  :  ALL ACCOUNTS

  Task Group  Task Number      Task Group  Task Number
  -----
  PAY330E     42
  _____
  _____
  _____
  _____
  _____
  _____
  _____
  _____
  _____
  _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ---  END  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---
    
```

Field	Description
TASK GROUP (supplied)	The group to which a particular task belongs.
TASK NUMBER (supplied)	The number that uniquely identifies a task.
SHORT DESC (supplied)	A 30-character description of the task.
TASK GROUP (supplied)	The task linked with this task.
TASK NUMBER (supplied)	The task number associated with the linked task.

To display the Modify Linked Tasks screen, enter a task group and a task number on the previous screen, and enter a "Y" next to the Modify Linked Tasks option.

```

01-12-31          N-2-O LINK TASKS TO A TASK          TSI0373
11:38:00          MODIFY LINKED TASKS                TS11

Task Group :  BENEFITS
Task Number:         1
Short Desc  :  ALL ACCOUNTS

  Task Group  Task Number  Task Group  Task Number
  -----
  PAY330E     42          _____
  _____
  _____
  _____
  _____
  _____
  _____
  _____
  _____
  _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ---  END  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---
    
```

Field	Description
TASK GROUP (supplied)	The group to which a particular task belongs. Pressing PF4 allows a selection of a task from a list.
TASK NUMBER (supplied)	The number that uniquely identifies a task.
SHORT DESC (required)	A 30-character description of the task.
TASK GROUP (optional)	The task linked with this task.
TASK NUMBER (optional)	The task number associated with the linked task.

### III.6 Project Tracking Reports

To access the Project Tracking Reports menu, enter "E" on the Project Tracking Subsystem menu or enter the direct command PRJ REP on any menu.

```

01-12-31          N-2-O PROJECT TRACKING REPORTS MENU          TSI0373
11:38:00                                               TSI1

                Code  Function
                ----  -
                A    History of a Task
                B    Task Details
                C    Project Status
                D    User Status
                E    Events Related to a Task
                F    Suggestion Details
                .    Terminate Project Tracking Reports
                -    -----
                -
                Enter Code:  _

Direct Command  _____ PRJ REP
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
                HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
    
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:
	<b>A History of a Task</b> Provides a history of the stages a task has passed in reverse chronological order.
	<b>B Task Details</b> Provides all information about a task.
	<b>C Project Status</b> Shows all tasks defined to a project, and the current stage of each task.
	<b>D User Status</b> Displays all tasks where a user is listed as a contact, based on User-ID.
	<b>E Events Related to a Task</b> Provides a list of all Events that influence a particular task.
	<b>F Suggestion Details</b> Provides detailed information about each suggestion within a project.

**III.6.1 History of a Task**

History of a Task provides a history of the stages a task has passed in reverse chronological order.

To access the History of a Task function, enter "A" on the Project Tracking Reports menu.

```

01-12-31          N-2-O PROJECT TRACKING REPORTS          TSI0373
11:38:00          HISTORY OF A TASK                      TSI1

Project   :  PAYROLL_____
Task Group :  _____
Task Number :  _____
Date Range :  _____ - _____

Mode      :  O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ PROJECT (required)	The name of the project.
TASK GROUP (required)	The group that identifies a task.
TASK NUMBER (required)	The number that uniquely identifies a task.
DATE RANGE (optional)	Limits output to specific time period. Dates must be formatted YYYYMMDD.
MODE (required)	Indicates how the job is executed (batch or on-line).  O Submits JCL to the internal reader that processes the function in batch. B Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

To display the History of a Task report, enter a project, task group, and task number on the previous screen.

```

01-12-31          N-2-0 PROJECT TRACKING REPORTS          TSIO373
11:38:00          HISTORY OF A TASK                      TSII
                                                         Page: 1
Task Group: BENEFITS Task Number: 3 Project: PAYROLL

Stage   Date      Time      User-ID   Comments
-----
APPROVED 01-12-31  11:35:40 TSIO373   ALL ACCOUNTS
TESTED   00-12-04  10:23:00 TSIO373   RECENT ACCOUNTS
DEFINED  01-09-25  12:22:58 TSIO373   INITIAL ACCOUNTS

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      END      STOP
    
```

Field	Description
TASK GROUP (supplied)	The group that identifies a task.
TASK NUMBER (supplied)	The number that uniquely identifies a task.
PROJECT (supplied)	The name of the project.
STAGE (supplied)	The progress of a task.
DATE (supplied)	Date the task passed the specified stage.
TIME (supplied)	Time the task passed the specified stage.
USER-ID (supplied)	The User-ID responsible for updating the task to the specified stage.
COMMENTS (supplied)	The information provided when the task was updated to the specified stage.

**III.6.2 Task Details**

Task Details provides the details of a task. The following fields can limit this report: Project, Task Group, Task Number, Stage, Priority, and Impact.

To access the Task Details function, enter "B" on the Project Tracking Reports menu.

```

01-12-31          N-2-O PROJECT TRACKING REPORTS          TSI0373
11:38:00          TASK DETAILS                            TSI1

Project   :  PAYROLL_____
Task Group :  _____
Task Number:  _____
Stage     :  _____
Priority   :  _____
Impact    :  _____

Mode      :  0

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ---  END  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---
    
```

Field	Description
∞ PROJECT (required)	The name of the project.
TASK GROUP (optional)	Limits the report to tasks with the specified task group.
TASK NUMBER (optional)	The number of a task.
STAGE (optional)	Limits the report to tasks with the specified stage.
PRIORITY (optional)	Limits the report to tasks with the specified priority.
IMPACT (optional)	Limits the report to tasks with the specified impact.
MODE (required)	Indicates how the job is executed (batch or on-line). O Submits JCL to the internal reader that processes the function in batch. B Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

To display the Task Details report screen, enter a project on the previous screen.

```

Valid values: D-Details C-Contacts L-Checklist
01-12-31          N-2-O PROJECT TRACKING REPORTS          TSI0373
11:38:00          TASK DETAILS                              TSI1
                                                    Page: 1

---- Task ----
S  Group   Number  Short Description          Stage    Prty  Impact
-----
-  BENEFITS  1  ALL ACCOUNTS             DEFINED  **   **
-  BENEFITS  2  RECENT ACCOUNTS         DEFINED  **   **
-  BENEFITS  3  INITIAL ACCOUNTS        DEFINED  **   **

Enter--PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11--PF12---
-----  END  -----  -----  -----  -----  -----  -----  STOP
    
```

Field	Description
S (optional)	The function to be executed. Valid values are as follows: D Displays detailed information about the task. C Displays the list of contacts for the task. L Displays the checklist items for the task.
TASK GROUP (supplied)	The group that identifies a task.
TASK NUMBER (supplied)	The number that uniquely identifies a task.
SHORT DESCRIPTION (supplied)	A 30-character description of the task.
STAGE (supplied)	The current stage of a task.
PRTY (supplied)	The priority of a task.
IMPACT (supplied)	The impact of a task.

**III.6.3 Project Status**

Project Status shows all tasks defined to a project, and the current stage of each task.

To access the Project Status function, enter "C" on the Project Tracking Reports menu.

```

01-12-31          N-2-O PROJECT TRACKING REPORTS          TSI0373
11:38:00          PROJECT STATUS                          TSI1

Project: _____
Mode   :  O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ PROJECT (required)	The name of the project.
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

To display the Project Status report screen, enter a project on the previous screen.

```

01-12-31          N-2-O PROJECT TRACKING REPORTS          TSI0373
11:38:00          PROJECT STATUS FOR PAYROLL              TS11
                                                           Page 1

---- Task -----
Group  Number  Short Description          Prty  Impact  Stage
-----
BENEFITS 000002  CALC AS PERCENTAGE OF DEDUCT  MED   MED   DEFINED
BONUSES  000001  YEAR TO DATE SUMMARY OF BONUS  LOW   LOW   DEFINED
CITYTAX  000001  COMPUTE 99 RATE INCREASE      HIGH  MED   DEFINED
CITYTAX  000002  CALC AS PERCENTAGE OF DEDUCT  MED   MED   DESIGN
FEDTAX   000001  ADJUST TO NEW RATES           HIGH  HIGH  DEFINED
FEDTAX   000002  CALC AS FEDTAX AS % OF DEDUCT  HIGH  MED   DEFINED
FICA     000001  CALC AS PERCENTAGE OF DEDUCT  MED   MED   DEFINED

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
-----
                END          -----
                STOP
    
```

The Project Status report shows all tasks that belong to the project. The Current Stage field is displayed to allow the user to quickly assess the status of the entire project.

Field	Description
TASK GROUP (supplied)	The group that identifies a task.
TASK NUMBER (supplied)	The number that uniquely identifies a task.
SHORT DESCRIPTION (supplied)	A 30-character description of the task.
PRTY (supplied)	The priority of a task.
IMPACT (supplied)	The impact of a task.
STAGE (supplied)	The current stage of a task.

**III.6.4 User Status**

User Status displays all tasks where a user is listed as a contact. The report is based on the User-ID of the user.

To access the User Status function, enter "D" on the Project Tracking Reports menu.

```

01-12-31          N-2-O PROJECT TRACKING REPORTS          TSI0373
11:38:00          USER STATUS                             TSI1

                                     User-ID       : TSI0373_
                                     Project        : PAYROLL_____
                                     Date Range     : _____ - _____
                                     Primary Contact: Y
                                     Mode           : O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
USER-ID (required)	The User-ID.
∞ PROJECT (required)	Limits the report to tasks for the specified project.
DATE RANGE (optional)	Limits the report to a specific time period. Dates must be formatted YYYYMMDD.
PRIMARY CONTACT (required)	Indicates whether tasks are displayed only if the specified User-ID is the primary contact or all tasks where the specified User-ID is referenced.  Y Displays only tasks where the specified User-ID is the primary contact.  N Displays all tasks that reference the specified User-ID.
MODE (required)	Indicates how the job is executed (batch or on-line).  B Submits JCL to the internal reader that processes the function in batch.  O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

To display the User Status report screen, enter a User-ID on the previous screen.

```

Press PF5 to view Description
01-12-31      N-2-O PROJECT TRACKING REPORTS      TSI0373
11:38:00      USER STATUS FOR TREE06              TSI1

----- Task -----
Project      Group   Number Stage      Date      Update    User-ID
-----
PAYROLL      BENEFITS 000002 AUTHORIZED 01-10-17 10:29:02 TSI0373
PAYROLL      BENEFITS 000003 AUTHORIZED 01-08-04 16:11:44 TSI0373
PAYROLL      BENEFITS 000005 AUTHORIZED 01-07-16 15:30:57 TSI0373
PAYROLL      BENEFITS 000009 DEFINED    01-05-26 14:23:37 TSI0373
PAYROLL      BENEFITS 000010 AUTHORIZED 01-02-17 10:29:12 TSI0373
PAYROLL      BENEFITS 000011 AUTHORIZED 01-02-20 09:57:56 TSI0373
PAYROLL      BENEFITS 000014 AUTHORIZED 01-02-17 10:28:05 TSI0373
PAYROLL      BENEFITS 000015 TESTING   01-02-01 09:23:38 TSI0373
PAYROLL      BENEFITS 000016 AUTHORIZED 01-02-15 15:31:15 TSI0373
PAYROLL      BENEFITS 000017 AUTHORIZED 01-02-24 11:00:18 TSI0373
PAYROLL      BENEFITS 000018 AUTHORIZED 01-01-21 11:56:11 TSI0373
PAYROLL      BENEFITS 000020 AUTHORIZED 01-01-23 14:09:40 TSI0373
PAYROLL      BENEFITS 000022 AUTHORIZED 01-01-06 16:57:38 TSI0373
PAYROLL      BENEFITS 000023 AUTHORIZED 01-01-17 10:28:15 TSI0373

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
----- END ----- DESC ----- STOP
    
```

The User Status report displays all tasks that reference the User-ID. The PF5 key toggles between the short description of the task and the Update Date, Update Time, and Update User-ID fields of the task.

Field	Description
PROJECT (supplied)	The name of the project.
TASK GROUP (supplied)	The group that identifies a task.
TASK NUMBER (supplied)	The number that identifies a task.
STAGE (supplied)	The current stage of the task.
UPDATE DATE (supplied)	The date the task was updated.
UPDATE TIME (supplied)	The time the task was updated.
UPDATE USER-ID (supplied)	The User-ID that updated the task to the specified stage.

**III.6.5 Events Related to a Task**

Events Related to a Task provides a list of all Events that reference a particular task.

To access the Events Related to a Task function, enter "E" on the Project Tracking Reports menu.

```

01-12-31          N-2-O PROJECT TRACKING REPORTS          TSI0373
11:38:00          EVENTS RELATED TO A TASK                TSI1

Task Group   : _____
Task Number  : _____

Mode        : 0

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ---  END   ---  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---
    
```

Field	Description
TASK GROUP (required)	The group that identifies a task.
TASK NUMBER (required)	The number that uniquely identifies a task.
MODE (required)	Indicates how the job is executed (batch or on-line). O Submits JCL to the internal reader that processes the function in batch. B Processes the function on-line. (Default: O)

To display the Events Related to a Task report screen, enter a task group and task number on the previous screen.

```

01-12-31          N-2-0 PROJECT TRACKING REPORTS          TSI0373
11:38:00          EVENTS RELATED TO TASK                  TSI1
                  Task Group : PAY330E Task Number:      1      Page:  1
                  Short Desc : ENHANCE REPORTING SUBSYSTEM

Event   Seq   Date   Added   User-ID   Date   Closed   User-ID
-----  -
PAYOUT  171  01-02-21  10:25:02  TSI006   01-02-21  10:25:43  TSI004
PAYOUT  220  01-03-23  07:28:39  TSI006   01-03-23  07:29:07  TSI004

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
-----  END  -----  -----  -----  -----  -----  STOP
    
```

The Events Related to a Task report shows all Events that were related to the task when they were added. This report helps to track program migrations within a project area.

Field	Description
TASK GROUP (supplied)	The group that identifies a task.
TASK NUMBER (supplied)	The number that identifies a task.
SHORT DESC (supplied)	A 30-character description of the task.
EVENT (supplied)	The name of the Event.
SEQ (supplied)	The sequence number of the Event.
ADDED DATE (supplied)	The date the Event was added.
ADDED TIME (supplied)	The time the Event was added.
ADDED USER-ID (supplied)	The User-ID that added the Event.
CLOSED DATE (supplied)	The date the Event was closed.
CLOSED TIME (supplied)	The time the Event was closed.
CLOSED USER-ID (supplied)	The User-ID that closed the Event.

**III.6.6 Suggestion Details**

Suggestion Details provides detailed information about each suggestion within a project.

To access the Suggestion Details function, enter "F" on the Project Tracking Reports.

```

01-12-31          N-2-O PROJECT TRACKING REPORTS          TSI0373
11:38:00          SUGGESTION DETAILS                      TSI1

Project   : _____
Suggestion: _____
Status    : _____

Mode      : 0

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ PROJECT (required)	The name of the project.
SUGGESTION (optional)	The number of the suggestion to be displayed.
STATUS (optional)	Limits the report to suggestions with the specified status.
MODE (required)	Indicates how the job is executed (batch or on-line). O Submits JCL to the internal reader that processes the function in batch. B Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

To display the Suggestion Details report screen, enter a project on the previous screen.

```

01-12-31          N-2-O PROJECT TRACKING REPORTS          TSI0373
11:38:00          SUGGESTION DETAILS                     TSI1
                  Project: PAYROLL                       Page: 1

X Suggestion      Short Description          Status      Request
- - - - -        - - - - -                - - - - -   - - - - -
-                1 SEPARATE AUTOCOMPILE STEP      OPEN        01-02-10
-                2 LIMIT AUTOCOMP TO SINGLE USER  OPEN        01-02-10
-                3 USER-DEFINED PF-KEYS          OPEN        01-02-10
-                4 DISABLE USE OF CLEAR KEY      ACCEPTED    01-02-10
-                5 SELECT OBJECTS BY DATE/TIME   OPEN        01-02-10
-                6 STARTING OBJECT FOR ALL TYPES  OPEN        01-02-10
-                7 SELECTION BY OBJECT TYPE      OPEN        01-02-10
-                8 SELECTION BY LIFO OR FIFO      OPEN        01-02-10
-                9 NEW STATUS CODES              OPEN        01-02-10
-               10 EVENT TRIGGERED MIGRATIONS    OPEN        01-02-10
-               11 EXPAND COPYCODE IN VIEW       OPEN        01-02-10
-               12 ADD EDITOR FUNCTIONS TO VIEW  OPEN        01-02-10
-               13 ADD SCAN UTILITY TO TOOLBOX   OPEN        01-02-10

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
-----END-----STOP
    
```

The Suggestion Details report shows the list of suggestions within the project.

Field	Description
PROJECT (supplied)	The name of the project.
X (optional)	Entering "X" next to a suggestion (or next to more than one suggestion) displays specific details about the suggestion.
SUGGESTION (supplied)	The number of the suggestion displayed.
SHORT DESCRIPTION (supplied)	A 30-character description of the suggestion.
STATUS (supplied)	The status assigned to the suggestion.
REQUEST DATE (supplied)	The date the suggestion was requested.

## SECTION IV

### REPORTING SUBSYSTEM

#### IV.1 Introduction

N2O maintains an audit trail of all migration activities. The Reporting Subsystem provides reports that display information retrieved from this audit trail. The Reporting Subsystem also provides reports that show relationships within the Environment Subsystem.

The Reporting Subsystem section presents topics in the following order:

- Environment Reporting
- Event Reporting
- Object Reporting
- Statistical Reporting
- Security Reporting

To access the Reporting Subsystem menu, enter "R" on the N2O Main menu or enter the direct command REP MENU or PF6 on any menu.

```

01-12-31                      N-2-O MAIN MENU                      TSI0373
11:38:00                                                                TSI1

                                Code  Function
                                ----  -
                                E    Environment Subsystem
                                M    Migration Subsystem
                                P    Project Tracking Subsystem
                                R    Reporting Subsystem
                                T    Toolbox Subsystem
                                U    User-Defined Subsystem
                                .    Terminate N-2-O Session
                                ----  -

Enter Code:  _

Direct Command: _____ N2O MENU
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
    
```

After following the instructions on the previous page, the Reporting Subsystem menu is displayed.

```

01-12-31          N-2-O REPORTING SUBSYSTEM MENU          TSI0373
11:38:00                                     TSI1

          Code   Function
-----
          A     Environment Reporting
          B     Event Reporting
          C     Object Reporting
          D     Statistical Reporting
          E     Security Reporting
          .     Terminate Reporting Subsystem
          -----

Enter Code:  _

Direct Command:                                     REP MENU
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11--PF12---
HELP  ----  END  ENV  MIG  ----  TOL  USR  PRJ  ----  ----  EXIT
    
```

Field	Description
ENTER CODE (required)	<p>The function to be executed. Valid values are as follows:</p> <ul style="list-style-type: none"> <li><b>A Environment Reporting</b> Provides reports that display relationships within the Environment Subsystem.</li> <li><b>B Event Reporting</b> Provides reports that display information about Events.</li> <li><b>C Object Reporting</b> Provides reports that display information about objects.</li> <li><b>D Statistical Reporting</b> Provides reports that display numerical data for Events and objects.</li> <li><b>E Security Reporting</b> Provides reports that detail the N2O Security definitions.</li> </ul>

**Note:** Pressing PF12 (STOP) exits a report and returns to the previous data entry screen. Pressing PF3 (END) exits a report and returns to the menu from which the report was accessed.

### IV.2 Environment Reporting

Environment Reporting provides reports that display relationships within the Environment Subsystem.

To display the Environment Reporting menu, enter "A" on the Reporting Subsystem menu or enter the direct command REP ENV on any menu.

```

01-12-31          N-2-O ENVIRONMENT REPORTING MENU          TSI0373
11:38:00

Code  Function
-----
A    Authorized Users to an Environment
B    Node Definition Usage
C    Archive Definition Usage
D    Environment Definition Usage
E    Users Related to a Group-ID
.    Terminate Environment Reporting
-----

Enter Code:  _

Direct Command:  _____          REP ENV
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
    
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows: <ul style="list-style-type: none"> <li><b>A Authorized Users to an Environment</b> Displays users who are authorized to migrate objects to an environment.</li> <li><b>B Node Definition Usage</b> Displays Environment Definitions and Archive Definitions that reference a Node Definition.</li> <li><b>C Archive Definition Usage</b> Displays Environment Definitions that reference an Archive Definition.</li> <li><b>D Environment Definition Usage</b> Displays Migration Profiles that reference an Environment Definition or an Archive Definition.</li> <li><b>E Users Related to a Group-ID</b> Displays users that are assigned a Group-ID.</li> </ul>

**IV.2.1 Authorized Users to an Environment**

The Authorized Users to an Environment report displays users who are authorized to migrate objects to an Environment. This information is based on the Approval profiles, PREDICT profiles, and 3GL/OTHER profiles assigned to users in N2O Security. This report is not available for sites using the SECURITRE interface.

To display the Authorized Users to an Environment input screen, enter "A" on the Environment Reporting menu.

```

Enter the Target Environment
01-12-31          N-2-O ENVIRONMENT REPORTING          TSI0373
11:38:00          AUTHORIZED USERS TO AN ENVIRONMENT    TSI1

                               Env Def      : _____
                               Library      : _____
                               Detailed Report: N (Batch Only)
                               Mode        : 0

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ ENV DEF (required)	An environment defined by the N2O Administrator.
LIBRARY (optional)	Limits the report to NATURAL and SYSERR target environments only.
DETAILED REPORT (required)	Indicates whether detailed information should be displayed when executed in batch. Y Display all detail information for reports when executed in batch (similar to entering X next to a User-ID on-line). N Display information as the online summary report screen. (Default: N)
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Authorized Users to an Environment Selection screen.

```

Type X to view User Definition
01-12-31      N-2-O PROFILE REPORT      TSI0373
11:38:00      APPROVAL PROFILE - ALL-APPR  TSI1
                                                    Page: 1

      X  User-ID  Description
      -  -----  -----
      -  TSI0371  DBA
      -  TSI0372  PROJECT LEADER
      -  TSI0373  DEVELOPER

                    5 Users assigned this profile
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
-----  END  -----  -----  -----  -----  -----  -----  STOP
    
```

The Profile Report identifies profiles that enable users to migrate objects to an Environment, as well as the users assigned to those profiles. Selecting one or more users displays the User Definition(s) of the selected user(s).

Field	Description
X (optional)	"X" in the select field displays the User Definition of the User-ID.
USER-ID (supplied)	The User-ID of the user assigned to the profile.
DESCRIPTION (supplied)	A description of the User-ID.

**IV.2.2 Node Definition Usage**

The Node Definition Usage report displays Environment Definitions and Archive Definitions that reference a Node Definition.

To display the Node Definition Usage input screen, enter "B" on the Environment Reporting menu.

```

01-12-31          N-2-O ENVIRONMENT REPORTING          TSI0373
11:38:00          NODE DEFINITION USAGE              TSI1

                                     Node:  _____
                                     Mode:  O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ NODE (required)	A node defined by the N2O Administrator.
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line. (Default: O)
∞ indicates field-level help is available.	

Entering the necessary information in the input screen and pressing Enter displays the Node Definition Usage report.

```

Press Enter to continue
01-12-31      N-2-O ENVIRONMENT REPORTING      TSI0373
11:38:00      NODE DEFINITION USAGE          TSI1
Node: CPUL                                         Page: 1

Arch Def ARC1      Env Def DEV      Env Def PROD
ENV Def TEST

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END ----- STOP
    
```

Field	Description
NODE (supplied)	A node defined by the N2O Administrator.
ARCH DEF (supplied)	An Archive Environment defined by the N2O Administrator.
ENV DEF (supplied)	An Environment defined by the N2O Administrator.

### IV.2.3 Archive Definition Usage

The Archive Definition Usage report displays Environment Definitions that reference an Archive Definition.

To display the Archive Definition Usage input screen, enter "C" on the Environment Reporting menu.

```

01-12-31          N-2-O ENVIRONMENT REPORTING          TSI0373
11:38:00          ARCHIVE DEFINITION USAGE            TSI1

                                     Arch Def:  _____
                                     Mode      :  O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ ARCH DEF (required)	An Archive Environment defined by the N2O Administrator.
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Archive Definition Usage report.

```

Press Enter to continue
01-12-31          N-2-O ENVIRONMENT REPORTING          TSI0373
11:38:00          ARCHIVE DEFINITION USAGE            TSI1
                  Arch Def:  ARC1                     Page:  1

      Env Def          Env Def          Env Def
      -----          -----          -----
      PROD

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ---  END  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---  STOP
    
```

Field	Description
∞ ARCHIVE DEF (supplied)	An Archive Environment defined by the N2O Administrator.
ENV DEF (supplied)	An Environment defined by the N2O Administrator.
∞ indicates field-level help is available.	

**IV.2.4 Environment Definition Usage**

The Environment Definition Usage report displays Migration Profiles that reference an Environment Definition or an Archive Definition.

To display the Environment Definition Usage input screen, enter "D" on the Environment Reporting menu.

```

01-12-31          N-2-O ENVIRONMENT REPORTING          TSI0373
11:38:00          ENVIRONMENT DEFINITION USAGE        TSI1

                               Env Def:  _____
                               Mode   :  0

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ ENV DEF (required)	An Environment defined by the N2O Administrator.
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line. (Default: O)
∞	indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Environment Definition Usage report.

```

Press Enter to continue
01-12-31          N-2-O ENVIRONMENT REPORTING          TSI0373
11:38:00          ENVIRONMENT DEFINITION USAGE        TSI1
                  Env Def: DEV                        Page: 1

      Migration Profile      Migration Profile      Migration Profile
      -----              -----              -----
          RC1 DEV              DEV DEV              DEV TEST
          PROD DEV              TEST DEV

```

---

```

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END ----- STOP

```

Field	Description
ENV DEF (supplied)	An Environment defined by the N2O Administrator.
MIGRATION PROFILE (supplied)	A Migration Profile defined by the N2O Administrator.

**IV.2.5 Users Related to a Group-ID**

The Users Related to a Group-ID report displays users that are assigned a Group-ID.

To display the Users Related to a Group-ID input screen, enter "E" on the Environment Reporting menu.

```

01-12-31          N-2-O ENVIRONMENT REPORTING          TSI0373
11:38:00          USERS RELATED TO A GROUP-ID          TSI1

                                     Group-ID: _____
                                     Mode      :  O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
GROUP-ID (required)	A Group-ID defined by the N2O Administrator.
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line. (Default: O)

Entering the necessary information in the input screen and pressing Enter displays the Users Related to a Group-ID report.

```

Press Enter to continue
01-12-31          N-2-O ENVIRONMENT REPORTING          TSI0373
11:38:00          USERS RELATED TO A GROUP-ID          TSI1
                  Group-ID:  PAY                       Page:  1

      User-ID          User-ID          User-ID
      -----          -----          -----
      TSI0373          TSI0374          TSI0375

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
-----  END  -----  -----  -----  -----  -----  -----  -----  STOP
    
```

Field	Description
GROUP-ID (supplied)	A Group-ID defined by the N2O Administrator.
USER-ID (supplied)	The users related to the Group-ID.

**IV.2.6 Environment Reporting in Batch**

Sample reporting JCL is provided in the MVSREPT, VMREPT, BSREPT and VSEREPT members located in the Natural library N2OBATCH.

The following table illustrates the JCL and EXECs modifications necessary to execute Environment reports in batch.

<b>REPORT</b>	<b>&amp;REPORT</b>	<b>&amp;INPUT</b>
Authorized Users to an Environment	N2OENVA	ENV-DEF,LIBRARY,DETAILED-REPORT
Node Definition Usage	N2OENVB	NODE
Archive Definition Usage	N2OENVC	ARCH DEF
Environment Definition Usage	N2OENVD	ENV DEF or ARCH DEF
Users Related to a Group-ID	N2OENVE	GROUP-ID

The &INPUT parameter list by default is delimited by commas with no spaces following the commas. To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).

For descriptions of &INPUT fields, refer to field descriptions in corresponding sections of Environment Reporting.

<b>Note:</b> The batch reports from the N2O Reporting Subsystem and the Documentation Tools require that the NATURAL Parameter IM (Input Mode) be set to "IM=D" (Delimiter Mode).
---

### IV.3 Event Reporting

Event Reporting provides reports that display information about Events. Each report allows users to view a list of Events based on specific requirements.

To display the Event Reporting menu, enter "B" on the Reporting Subsystem menu or enter the direct command REP EVNT on any menu.

```

01-12-31          N-2-O EVENT REPORTING MENU          TSI0373
11:38:00                                     TSI1

Code  Function
-----
A    Events Requiring Further Authorization
B    Chronology of Events
C    Events Related by Change Control
D    Event Details
E    Events Processed by Date
F    Events with Warning Messages
G    Events Pending Move
H    Events Pending Autocompile
I    Autocompile Summary for Events
.    Terminate Event Reporting
-----

Enter Code:  _

Direct Command: _____ REP EVNT
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
    
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:
<b>A</b>	<b>Events Requiring Further Authorization</b> Displays Events that require authorization or servicing.
<b>B</b>	<b>Chronology of Events</b> Displays the history of Events.
<b>C</b>	<b>Events Related by Change Control</b> Displays Events associated with a change request.
<b>D</b>	<b>Event Details</b> Displays all Events created using N2O.
<b>E</b>	<b>Events Processed by Date</b> Displays Events migrated within a specified date range.
<b>F</b>	<b>Events with Warning Messages</b> Displays Events that received warning messages.
<b>G</b>	<b>Events Pending Move</b> Displays deferred move Events.

(continued from previous page)

Field	Description
H	<b>Events Pending Autocompile</b> Displays Events that contain programs to be compiled.
I	<b>Autocompile Summary for Events</b> Displays compile information about Events and programs.

**IV.3.1 Events Requiring Further Authorization**

The Events Requiring Further Authorization report displays Events that require authorization or servicing. This report displays the added Date/User-ID and authorized Date/User-ID of pending Events.

To display the Events Requiring Further Authorization input screen, enter "A" on the Event Reporting menu.

```

01-12-31          N-2-O EVENT REPORTING          TSI0373
11:38:00          EVENTS REQUIRING FURTHER AUTHORIZATION  TSI1

                Delay      :      _____
                Detailed Report:  N (Batch Only)
                Mode        :      O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
DELAY (required)	Indicates whether Events require either Authorization or service.  AUTH     displays Events requiring Authorization. SERV     displays Events requiring service.
DETAILED REPORT (required)	Indicates whether detailed information should be display when executed in batch.  Y     Display all detail information for reports when executed in batch (similar to entering E and O on the Events Requiring Further Authorization Selection screen.)  N     Display information similar to the Events Requiring Further Authorization screen. (Default: N)
MODE (required)	Indicates how the job is executed (batch or on-line).  B     Submits JCL to the internal reader that processes the function in batch.  O     Processes the function on-line. (Default: O)

Entering the necessary information in the input screen and pressing Enter displays the Events Requiring Further Authorization Selection screen.

```

Valid Values: A - Autocompile E - Event O - Object
01-12-31          N-2-O EVENT REPORTING          TSI0373
11:38:00          EVENTS REQUIRING FURTHER AUTHORIZATION TSI1
                  Delay: SERV                      Page: 1

S Event          Change From To   Event ----- Added ----- Authorized ---
  Seq          Control Env  Env  Type Date       User-ID Date       User-ID
-----
- PAYIN          1      E125  TEST PROD N   01-12-31 TSI0373 01-12-31 TSI0373
- PAYIN          2      E039  TEST PROD N   01-06-01 TSI0373 01-12-31 TSI0424
- PAYIN          3      B127  TEST PROD N   01-06-01 TSI0373 01-12-31 TSI0373

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
-----
                END ----- STOP
    
```

Field	Description
DELAY (supplied)	The value specified to execute this report.
S (optional)	The function to be executed. Valid values are as follows:  A displays autocompile details (if available) E displays Event details. O displays object details.
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
CHANGE CONTROL (supplied)	A value that relates multiple Events to a specific change request.
FROM ENV (supplied)	The source Environment Definition of the Event.
TO ENV (supplied)	The target Environment Definition of the Event. An asterisk (*) indicates the Event is a multiple target Event.
EVENT TYPE (supplied)	The types of objects requested for the Event. Valid values are as follows:  N Indicates NATURAL. S Indicates SYSERR. P Indicates PREDICT. O Indicates 3GL/OTHER. D Indicates DDM. M Indicates METADATA.

(continued from previous page)

---

<b>Field</b>	<b>Description</b>
ADDED DATE (supplied)	The date the Event was added.
ADDED USER-ID (supplied)	The user who added the Event.
AUTHORIZED DATE (supplied)	The date the Event was last authorized.
AUTHORIZED USER-ID (supplied)	The user who last authorized the Event.

**IV.3.2 Chronology of Events**

The Chronology of Events report displays the history of Events. This report displays the dates and times Events were added, authorized, and closed.

To display the Chronology of Events input screen, enter "B" on the Event Reporting menu.

```

01-12-31          N-2-O ADMINISTRATIVE REPORTING          TSI0373
11:38:00          CHRONOLOGY OF EVENTS                    TSI1

Event            : _____
Sequence         : _____

Date             : ____ - __ - ____ (YYYY-MM-DD)

Detailed Report: N (Batch Only)
Mode             : 0

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ EVENT (optional)	A Master Event that identifies the starting value of the report.
SEQUENCE (optional)	The sequence number of the Event.
DETAILED REPORT (required)	Indicates whether detailed information should be displayed when executed in batch.  Y Display all detail information for reports when executed in batch. (Similar to entering E and O next to an Event on the Chronology of Events selection screen.)  N Display information similar to the Chronology of Events selection screen. (Default: N)
DATE (optional)	Date the Event(s) were run.
MODE (required)	Indicates how the job is executed (batch or on-line).  B Submits JCL to the internal reader that processes the function in batch.  O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Chronology of Events selection screen.

```

Valid Values:  A - Autocompile  E - Event  O - Object
01-12-31      N-2-O EVENT REPORTING      TSI0373
11:38:00     CHRONOLOGY OF EVENTS      TSI1
                                           Page: 1
-----
S  Event      Seq      Added      Authorized      Closed
   Date       Time      Date       Time      Date       Time
-----
-  PAYOUT     1      01-12-14  13:40:17  01-12-14  13:47:14  01-12-14  13:47:22
-  PAYOUT     2      01-12-22  13:05:08  01-12-22  13:10:22  01-12-22  13:10:27
-  PAYOUT     3      01-12-19  10:41:08  01-12-19  10:42:17  01-12-19  10:42:42
-  PAYOUT     4      01-12-21  15:40:46  01-12-21  15:46:19  *****
-----
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
-----
                END                                STOP
    
```

Field	Description
S (optional)	The function to be executed. Valid values are as follows:  A displays autocompile details (if available) E displays Event details. O displays object details.
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
ADDED DATE (supplied)	The date the Event was added.
ADDED TIME (supplied)	The time the Event was added.
AUTHORIZED DATE (supplied)	The date the Event was last authorized. Asterisks in the Authorized Date field represent Events without authorization.
AUTHORIZED TIME (supplied)	The time the Event was last authorized. Asterisks in the Authorized Time field represent Events without authorization.
CLOSED DATE (supplied)	The date the Event was closed. Asterisks in the Closed Date field represent Events pending migration.
CLOSED TIME (supplied)	The time the Event was closed. Asterisks in the Closed Time field represent Events pending migration.

**IV.3.3 Events Related by Change Control**

The Events Related by Change Control report displays Events associated with a change request. A Change Control value relates multiple Events to a single change request throughout the application life cycle.

To display the Events Related by Change Control input screen, enter "C" on the Event Reporting menu.

```

01-12-31          N-2-O EVENT REPORTING          TSI0373
11:38:00          EVENTS RELATED BY CHANGE CONTROL      TSI1

Change Control : _____
Added User-ID  : _____
Date Range    : _____ - _____
Detailed Report: N (Batch Only)
Mode          : 0

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
CHANGE CONTROL (optional)	Limits the report to Events with the specified Change Control value.
∞ ADDED USER-ID (optional)	Limits the report to Events added by the user with the specified User-ID.
DATE RANGE (optional)	Limits the report to Events migrated within the range of dates. Dates must be formatted YYYYMMDD.
DETAILED REPORT (required)	Indicates whether detailed information should be displayed when executed in batch.
	Y Display all detail information for reports when executed in batch (similar to entering E and O next to an Event on the Events Related by Change Control selection screen).
	N Display information similar to the Events Related by Change Control selection screen. (Default: N)
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Events Related by Change Control selection screen.

```

Valid Values: A - Autocompile E - Event O - Object
01-12-31      N-2-O EVENT REPORTING          TSI0373
11:38:00      EVENTS RELATED BY CHANGE CONTROL TSI1
                                                    Page: 1

  Change                From To   Event          ----- Closed -----
-
S Control  Event  Seq  Env  Env  Type  Extr  Date  Time  User-ID
-
- A12345  PAYOUT  1   PROD DEV  N      NO   01-10-01 11:34:55 TSI0373
- A12345  PAYTEST  2   DEV  TEST  N      NO   01-10-05 08:43:21 TSI0373
- A12345  PAYIN   1   TEST PROD  N      NO   ***** ***** *****

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END ----- STOP
    
```

Field	Description
S (optional)	The function to be executed. Valid values are as follows:  A displays autocompile details (if available) E displays Event details. O displays object details.
CHANGE CONTROL (supplied)	A value that relates multiple Events to a specific change request.
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
FROM ENV (supplied)	The source Environment Definition of the Event.
TO ENV (supplied)	The target Environment Definition of the Event. An asterisk (*) indicates the Event is a multiple target Event.
EVENT TYPE (supplied)	The types of objects requested for the Event. Valid values are as follows:  N Indicates NATURAL. S Indicates SYSERR. P Indicates PREDICT. O Indicates 3GL/OTHER. D Indicates DDM. M Indicates METADATA.

---

(continued from previous page)

---

<b>Field</b>	<b>Description</b>
EXTR (supplied)	Indicates whether the Event is an Extract Event or not.  YES Indicates the Event is an Extract Event. NO Indicates the Event is not an Extract Event.
CLOSED DATE (supplied)	The date the Event was closed. Asterisks in the Closed Date field represent Events pending migration.
CLOSED TIME (supplied)	The time the Event was closed. Asterisks in the Closed Time field represent Events pending migration.
CLOSED USER_ID (supplied)	The user who closed the Event. Asterisks in the Closed User-ID field represent Events pending migration.

**IV.3.4 Event Details**

The Event Details report displays all Events created using N2O. The optional fields displayed below can limit the list of Events.

To display the Event Details input screen, enter "D" on the Event Reporting menu.

```

01-12-31          N-2-O EVENT REPORTING          TSI0373
11:38:00          EVENT DETAILS                  TSI1

                                     Name      Seq.
                                     -----  -
Starting Event : _____ (Wildcard/Single)
Ending Event  : _____ (Both Blank=All)

From Env.     : _____
To Env        : _____
Added User-ID : _____
Event Status  : _____
DB2 Status    : _____

Detailed Report: N (Batch Only)
Mode           : O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ STARTING EVENT (optional)	A Master Event that identifies the starting value of the report. Partial names and wildcards (e.g., AAP*) may be entered.
STARTING SEQUENCE (optional)	The starting sequence number of the Event entered in Starting Event. If this field is left blank, all Event Sequences ranging from 1 to the number entered in Ending Event Sequence for the Event will be reported.
∞ ENDING EVENT (optional)	A Master Event that identifies the ending value of the report. Wildcards (e.g., AAP9*) may be entered. To report on a single Event, leave this field, Starting Event Sequence and Ending Event Sequence blank and enter the Master Event in the Starting Event field.
ENDING SEQUENCE (optional)	The ending sequence number of the Event entered in Ending Event. To report on a single Event/Sequence, leave the Ending Event and this field blank, enter the Event in the Starting Event field and enter the Event Sequence in the Starting Event Sequence field.
∞ FROM ENV (optional)	Limits the report to Events with the specified From Environment Definition.
∞ indicates field-level help is available.	

(continued from previous page)

Field	Description
∞ TO ENV (optional)	Limits the report to Events with the specified To Environment Definition.
∞ ADDED USER-ID (optional)	Limits the report to Events that were added by the User with the specified User-ID.
EVENT STATUS (optional)	Limits the report to Events with the specified Event status. For valid values refer to Appendix B N20 Event Status.
DB2 STATUS (optional)	Limits the report to Events with the specified DB2 Status. Valid values are as follows:  D Indicates DBRM Ready. P Indicates Plan Ready. S Indicates Static. C Indicates Canceled.
DETAILED REPORT (required)	Indicates whether detailed information should be displayed when executed in batch.  Y Display all detail information for reports when executed in batch (similar to entering E and O next to an Event on the Event Details Selection screen).  N Display information similar to the Event Details Selection screen (Default: N).
MODE (required)	Indicates how the job is executed (batch or on-line).  B Submits JCL to the internal reader that processes the function in batch.  O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Event Details selection screen.

```

Valid Values: A - Autocompile E - Event O - Object
01-12-31      N-2-O EVENT REPORTING      TSI0373
11:38:00      EVENT DETAILS              TSI1
                                           Page: 1

S  Event      Seq      Change      From To      Event      Added      Event
-  - - - - -  - - - - -  - - - - -  - - - - -  - - - - -  - - - - -  - - - - -  - - - - -
-  PAYOUT      1      *****  PROD DEV  N      NO      TSI0373    O      *****
-  PAYOUT      2      E20000    PROD DEV  N      NO      TSI0373    C      *****
-  PAYOUT      3      *****  PROD DEV  N      NO      TSI0373    O      *****
-  PAYOUT      4      *****  PROD DEV  N      NO      TSI0373    O      *****
-  PAYOUT      6      *****  DEV TEST  N      NO      TSI0373    O      *****
-  PAYTEST     1      E065      DEV TEST  N      NO      TSI0373    C      *****
-  PAYTEST     2      HELP      DEV TEST  N      NO      TSI0373    O      *****
-  PAYTEST     3      E129      TEST *    N      NO      TSI0373    O      *****

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END ----- DB2 ----- STOP
    
```

Pressing PF5 will toggle the output between Event Status and DB2 Status.

Field	Description
S (optional)	The function to be executed. Valid values are as follows: A displays autocompile details (if available) E displays Event details. O displays object details.
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
CHANGE CONTROL (supplied)	A value that relates multiple Events to a specific change request. An asterisk (*) indicates that Change Control was not required.
FROM ENV (supplied)	The source Environment Definition of the Event.
TO ENV (supplied)	The target Environment Definition of the Event. An asterisk (*) indicates that the Event is a multiple target Event.
EVENT TYPE (supplied)	The types of objects requested for the Event. Valid values are as follows: N Indicates NATURAL. S Indicates SYSERR. P Indicates PREDICT. O Indicates 3GL/OTHER. D Indicates DDM. M Indicates METADATA.

(continued from previous page)

<b>Field</b>	<b>Description</b>
EXTR (supplied)	Indicates whether the Event is an Extract Event or not.  YES Indicates the Event is an Extract Event. NO Indicates the Event is not an Extract Event.
ADDED USER-ID (supplied)	The user who added the Event.
EVENT STATUS (supplied)	The status of the Event. For valid values refer to Appendix B N2O Event Status.
WARNING (supplied)	Events may contain one of the following warning messages:  OVERRIDE Indicates the Event migrated to an environment without proper authorization.  AC-ERROR Indicates programs within the Event received compile errors during the Autocompile process.  RECOVERD Indicates programs within the Event received compile errors and the Event was automatically recovered.
DB2 STATUS (supplied)	The status of the DB2 processing of the Event. Valid values are as follows: D Indicates DBRM Ready. P Indicates Plan Ready. S Indicates Static. C Indicates Canceled.

Entering "E" in the S field on the previous screen and pressing Enter displays the Event Details screen.

```

Press ENTER to continue
01-12-31      N-2-O EVENT DETAILS      TSI0373
11:38:00      Event: PAYOUT  Sequence: 1  TSI1
                EXTRACT EVENT

      From Env      : PROD      From Library : PAYPROD
      To Env        : DEV        To Library   : PAYDEV
      Event Status  : 0

C _____
o _____
m _____
m _____
e _____
n _____
t _____
s _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
-----  END  -----  STOP
    
```

Field	Description
EVENT (supplied)	The Master Event of the migration.
SEQUENCE (supplied)	The sequence number of the Event.
FROM ENV (supplied)	The source Environment Definition of the Event.
FROM LIBRARY (supplied)	The source library of the migration for NATURAL objects and/or SYSERR messages.
TO ENV (supplied)	The target Environment Definition of the Event. An asterisk (*) indicates that the Event is a multiple target Event.
TO LIBRARY (supplied)	The target library of the migration for NATURAL objects and/or SYSERR messages.
EVENT STATUS (supplied)	The Status of the Event. For valid values refer to <b>Appendix B N2O Event Status</b> .
COMMENTS (supplied)	A 10-line comment area describing the Event.

To display further Event information, press Enter on the Event Details screen.

```

Press ENTER to continue
01-12-31      N-2-O EVENT DETAILS      TSI0373
11:38:00      Event: PAYOUT      Sequence: 1      TSI013
                Warning: AC-ERROR

      Added      : 01-03-13 09:15:17 TREE04
      Modified   : ***** ***** *****
      Authorized : ***** ***** *****
      Closed     : 01-03-16 14:18:07 BATCH03
      Autocompiled : 01-03-16 14:18:07 BATCH03
      DBRM Generated: ***** ***** *****
      Plan Bind  : ***** ***** *****

                Migration Options
                -----

      Event Type : N      Delay      : NONE
      Verify Object: NO    Levels of Auth : 0
      Migrate XREF : N      Migration Method : COPY
      Program Doc  : NO    Deferred Time : 0 hrs.

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
----- END ----- STOP
    
```

Field	Description
EVENT (supplied)	The Master Event of the migration.
SEQUENCE (supplied)	The sequence number of the Event.
WARNING (supplied)	Events may contain one of the following warning messages (does not appear if Event has no warnings): OVERRIDE Indicates the Event migrated to an environment without proper authorization. AC-ERROR Indicates programs within the Event received compile errors during the Autocompile process. RECOVERD Indicates programs within the Event received compile errors and the Event was automatically recovered.
ADDED (supplied)	Lists the User-ID of the user who added the Event and the date and time that action occurred.
MODIFIED (supplied)	Lists the User-ID of the user who last modified the Event and the date and time that action occurred.
AUTHORIZED (supplied)	Lists the User-ID of the user who authorized the Event and the date and time that action occurred.
CLOSED (supplied)	Lists the User-ID of the user who closed the Event and the date and time that action occurred.
AUTOCOMPILED (supplied)	Lists the User-ID of the user who Autocompiled the Event and the date and time that action occurred.

(continued from previous page)

<b>Field</b>	<b>Description</b>
DBRM GENERATED (supplied)	Lists the User-ID of the user who generated a DBRM for the Event and the date and time that action occurred.
PLAN BIND (supplied)	Lists the User-ID of the user who last bound the DB2 plan for the Event and the date and time that action occurred.
EVENT TYPE (supplied)	Specifies the type of Event.
DELAY (supplied)	Indicates whether Events require either Authorization or service.  NONE Indicates the migration may proceed immediately without authorization.  AUTH Indicates the migration must be authorized through the Authorize Event menu.  SERV Indicates the migration must be authorized through the Authorize Event menu and serviced through the Service Event menu.
VERIFY OBJECT (supplied)	Indicates whether NATURAL object code will be verified before the program migrates or not.  YES Indicates NATURAL object code must exist for a program and that the timestamp of the object code must be greater than the timestamp of the source code or the program will be prevented from migrating.  NO Indicates NATURAL object code will not be verified before the program migrates.
LEVELS OF AUTH (supplied)	The number of authorizations required when AUTH or SERV is specified in the delay field.
MIGRATE XREF (supplied)	Indicates whether PREDICT Cross-Reference data should be migrated or not.  N Indicates the migration does not migrate PREDICT Cross-Reference data.  S Indicates the migration should migrate all PREDICT Cross-Reference data whenever it exists.  Y Indicates PREDICT Cross-Reference data must exist for a NATURAL object before the object may be selected for migration.

(continued from previous page)

Field	Description
MIGRATION METHOD (supplied)	Indicates whether the object will be deleted from the source after migration.
	COPY Indicates an object at the source of the migration will be placed at the target.
	MOVE Indicates an object at the source of the migration will be placed at the target and then deleted from the source of the migration.
PROGRAM DOC (supplied)	Indicates whether the existence of PREDICT program documentation is checked or not.
	N Indicates the existence of PREDICT program documentation is not checked for a NATURAL object migration. This is the default value.
	Y Indicates PREDICT program documentation must exist in the FROM ENV for a NATURAL object to migrate.
DEFERRED TIME (supplied)	Indicates the minimum number of hours between the migration process and the deletion process of a MOVE. This field must be 0 when COPY is specified for the Method field (Default: 0).

Entering "O" in the S field on the Event Details Selection screen and pressing Enter displays the Object Details for an Event screen.

```

01-12-31          N-2-O OBJECT DETAILS          TSI0373
11:38:00          Event: PAYOUT Sequence: 1 Total Objects: 2  TSI1

From Env:  PROD  From Library:  PAYPROD  To Env:  DEV  To Library:  PAYDEV

X  Object      Type      Rn  X  Object      Type      Rn  X  Object      Type      Rn
--  -----  -
-  A-TEST      SOURCE      -   -  A-TEST      ARC-SRC      -   -  A-TEST      ARC-OBJ
X  CPROG001    SOURCE      *   -  CPROG001    ARC-SRC      -   -  CPROG001    ARC-OBJ
-  CPROG002    SOURCE      -   -  CPROG002    ARC-SRC      -   -  CPROG002    ARC-OBJ
-  MENU        SOURCE      -   -  MENU        ARC-SRC      -   -  MENU        ARC-OBJ

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
-----END-----STOP
    
```

Field	Description
EVENT (supplied)	The Master Event of the migration.
SEQUENCE (supplied)	The sequence number of the Event.
FROM ENV (supplied)	The source Environment Definition of the Event.
FROM LIBRARY (supplied)	The source library of the migration for NATURAL objects and/or SYSERR messages.
TO ENV (supplied)	The target Environment Definition for the Event.
TO LIBRARY (supplied)	The target library of the migration for NATURAL objects and/or SYSERR messages.
X (optional)	"X" in the Select field displays additional details about an object.
OBJECT (supplied)	The name of the NATURAL object, PREDICT object, 3GL/OTHER object, or SYSERR message.

(continued from previous page)

Field	Description
TYPE (supplied)	<p>Valid values are as follows:</p> <p>ARC-EXT Indicates Archive expanded error message.</p> <p>ARC-OBJ Indicates Archive object.</p> <p>ARC-SHRT Indicates Archive short error message.</p> <p>ARC-SRC Indicates Archive source.</p> <p>EXT-MSG Indicates expanded error.</p> <p>OBJECT Indicates cataloged module.</p> <p>PURG-EXT Indicates purge expanded error message from Archive.</p> <p>PURG-OBJ Indicates purge object from Archive.</p> <p>PURG-SHT Indicates purge short error message from Archive.</p> <p>PURG-SRC Indicates purge source from Archive.</p> <p>SHORT Indicates short error message.</p> <p>SOURCE Indicates source module.</p>
RN (Renamed) (supplied)	<p>A '*' in this field indicates the object was renamed during an Extract Event. Valid for NATURAL Extract Events only.</p>

Entering "X" in the select field on the Object Details for an Event screen and pressing Enter displays the Object Details report.

```

01-12-31          N-2-O OBJECT DETAILS          TSI0373
11:38:00                                     TSI1

Object   : CPROG001   Date Saved: 01-02-01   Terminal-ID : TSI0373
Type     : Source    Time Saved:  11:38:25   NAT Version  : 2.14
Object Type: LOCAL   User-ID   : TSI0373    XREF Migrated: NO
Renamed To : LOCAL1A
Event    : E-TEST    Sequence   :      25000
From Env : TEST      From Library: PAYTEST
To Env   : ARC1      To Library  : PAYPROD

Added    : 01-11-17  11:36:10   TSI0373
Modified : *****  *****  *****
Authorized : *****  *****  *****
Closed   : 01-11-17  11:37:50   TSI0373
Autocompiled : *****  *****  *****
Move Completed: *****  *****  *****

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  DISP  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
OBJECT (supplied)	The name of the NATURAL object.
DATE SAVED (supplied)	The date the object was saved.
TERMINAL-ID (supplied)	The Terminal-ID used to save the object.
TYPE (supplied)	Valid values are as follows: ARC-EXT      Indicates Archive expanded error message. ARC-OBJ      Indicates Archive object. ARC-SHRT     Indicates Archive short error message. ARC-SRC      Indicates Archive source. EXT-MSG      Indicates expanded error. OBJECT       Indicates cataloged module. PURG-EXT     Indicates purge expanded error message from Archive. PURG-OBJ     Indicates purge object form Archive. PURG-SHT     Indicates purge short error message from Archive. PURG-SRC     Indicates purge source from Archive. SHORT        Indicates short error message. SOURCE       Indicates source module.

(continued from previous page)

Field	Description
TIME SAVED (supplied)	The time the object was saved.
NAT VERSION (supplied)	The NATURAL version under which the object was saved.
OBJECT TYPE (supplied)	The NATURAL object type. PARM            Indicates Parameter data area. COPYCODE      Indicates Copycode. GLOBAL        Indicates Global data area. HELP-RTN      Indicates Helproutine. LOCAL         Indicates Local data area. MAP            Indicates Map. SUB-PGM       Indicates Subprogram. PROGRAM       Indicates Program. SUB-RTN       Indicates Subroutine. TEXT           Indicates Text. MACRO         Indicates Macro. REPORT        Indicates Report. EXP-MDL       Indicates ExpertModel. RECORD       Indicates Recording. DIALOG        Indicates Dialog. CLASS         Indicates Class. CMD-PROC     Indicates Processor. SERVER        Indicates Server. FUNCTION.    Indicates Function. ADAPTER.     Indicates Adapter. MACRO.        Indicates Macro.
USER-ID (supplied)	The User-ID of the user who saved the object.
XREF MIGRATED (supplied)	Indices whether the PREDICT XREF data migrated with the NATURAL object or not. YES      Indicates PREDICT XREF data migrated with the NATURAL object. NO       Indicates PREDICT XREF did not migrate with the NATURAL object.
RENAMED TO (supplied)	The new object name if the object was renamed in a NATURAL Extract Event.
EVENT (supplied)	The Master Event of the migration.
SEQUENCE (supplied)	The sequence number of the Event.
FROM ENV (supplied)	The source Environment Definition of the Event.
FROM LIBRARY (supplied)	The source library of the migration for NATURAL objects and/or SYSERR messages.
TO ENV (supplied)	The target Environment Definition of the Event. An asterisk (*) indicates the Event is a multiple target Event.

(continued from previous page)

---

<b>Field</b>	<b>Description</b>
TO LIBRARY (supplied)	The target library of the migration for NATURAL objects and/or SYSERR objects.
ADDED (supplied)	Lists the User-ID of the user who added the Event and the date and time that action occurred.
MODIFIED (supplied)	Lists the User-ID of the user who modified the Event and the date and time that action occurred.
AUTHORIZED (supplied)	Lists the User-ID of the user who authorized the Event and the date and time that action occurred.
CLOSED (supplied)	Lists the User-ID of the user who closed the Event and the date and time that action occurred.
AUTOCOMPILED (supplied)	Lists the User-ID of the user who Autocompiled the Event and the date and time that action occurred.
MOVE COMPLETED (supplied)	Lists the User-ID of the user who deleted objects from the source of the Event and the date and time that action occurred.

**IV.3.5 Events Processed by Date**

The Events Processed by Date report displays Events migrated within a specified date range.

Note that program N2OREPD will permit sites to execute a regularly scheduled batch job that will generate a report of all Events that processed on the previous day. N2OREPD will calculate yesterday's date and call N2OEVNTE (Events Processed by Date report), passing the calculated date. A site may customize N2OREPD to specify the detail level of the Events Processed by Date report. The default is to provide summary information. For details, refer to the program N2OREPD in the N2OLIB Library.

N2OREPD should be run in place of N2OEVNTE in a batch job.

To display the Events Processed by Date input screen, enter "E" on the Event Reporting menu.

```

01-12-31          N-2-O EVENT REPORTING          TSI0373
11:38:00          EVENTS PROCESSED BY DATE        TSI1

                Event      : _____
                Sequence   : _____
                Date Range  : _____ - _____
                Added User-ID : _____

                Detailed Report: N (Batch Only)
                Mode        : O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
EVENT (required)	The master Event of the migration.
SEQUENCE (optional)	The sequence number of the Event.
DATE RANGE (optional)	Limits the report to Events that migrated within the range of dates. Dates must be formatted YYYYMMDD.
ADDED USER-ID (optional)	Limits the report to Events added by a User-ID.
DETAILED REPORT (required)	Indicates whether detailed information should be display when executed in batch.  Y Display all detail information for reports when executed in batch (similar to entering E and O next to an Event on the Events Processed by Date selection screen).  N Display information similar to the Events Processed by Date selection screen. (Default: N)

(continued from previous page)

Field	Description
MODE (required)	Indicates how the job is executed (batch or on-line).  B Submits JCL to the internal reader that processes the function in batch.  O Processes the function on-line. (Default: O)

Entering the necessary information in the input screen and pressing Enter displays the Events Processed by Date selection screen.

```

01-12-31          N-2-O EVENT REPORTING          TSI0373
11:38:00          EVENTS PROCESSED BY DATE      TSI1
                  Date Range 19991001 - 19991005      Page: 1

S Event      Seq      Change  From To  Event ----- Closed -----
- PAYOUT     30      A12345  PROD DEV  N      01-10-01 11:34:55 TSI0373  *****
- PAYOUT     38      A12345  PROD DEV  N      01-10-03 12:14:16 TSI0373  *****
- PAYTEST    45      A12345  DEV  TEST N      01-10-05 08:43:21 TSI0373  *****

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END ----- STOP
    
```

Field	Description
DATE RANGE (supplied)	Date range specified on previous screen.
S (optional)	The function to be executed. Valid values are as follows:  A Displays autocompile details (if available) E Displays Event details. O Displays object details.
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
CHANGE CONTROL (supplied)	A value that relates multiple Events to a specific change request.
FROM ENV (supplied)	The source Environment Definition of the Event.
TO ENV (supplied)	The target Environment Definition of the Event. An asterisk (*) indicates the Event is a multiple target Event.

(continued from previous page)

Field	Description
EVENT TYPE (supplied)	<p>The types of objects requested for the Event. Valid values are as follows:</p> <p>N Indicates NATURAL.</p> <p>S Indicates SYSERR.</p> <p>P Indicates PREDICT.</p> <p>O Indicates 3GL/OTHER.</p> <p>D Indicates DDM.</p> <p>M Indicates METADATA.</p>
CLOSED DATE (supplied)	<p>The date the Event was closed. Asterisks in the Closed Date field represent Events pending migration.</p>
CLOSED TIME (supplied)	<p>The time the Event was closed. Asterisks in the Closed Time field represent Events pending migration.</p>
CLOSED USER-ID (supplied)	<p>The user who closed the Event. Asterisks in the Closed User-ID field represent Events pending migration.</p>
WARNING (supplied)	<p>Events may contain one of the following warning messages:</p> <p>OVERRIDE Indicates the Event migrated to an environment without proper authorization.</p> <p>AC-ERROR Indicates programs within the Event received compile errors during the Autocompile process.</p> <p>RECOVERD Indicates programs within the Event received compile errors and the Event was automatically recovered.</p> <p>***** Indicates Events with no warning messages.</p>

**IV.3.6 Events With Warning Messages**

The Events with Warning Messages report displays Events that received one of the following warning messages:

- OVERRIDE**            The Event migrated to an Environment without proper authorization or the user who created the Event also authorized the Event.
  
- AC-ERROR**            Programs within the Event received compile errors during the Autocompile process.
  
- RECOVERD**            The Event was automatically recovered after programs within the Event received compile errors during the Autocompile process.

To display the Events with Warning Messages input screen, enter "F" on the Event Reporting menu.

```

01-12-31          N-2-O EVENT REPORTING          TSI0373
11:38:00          EVENTS WITH WARNING MESSAGES   TSI1

                Name      Seq.
                -----  -
Starting Event : _____ (Wildcard/Single)
Ending Event  : _____ (Both Blank=All)

Warning       : _____
Date Range   : _____ - _____

Detailed Report: N (Batch Only)
Mode         : O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ STARTING EVENT (optional)	A Master Event that identifies the starting value of the report. Partial names and wildcards (e.g., AAP*) may be entered.
STARTING SEQUENCE (optional)	The starting sequence number of the Event entered in Starting Event. If this field is left blank, all Event Sequences ranging from 1 to the number entered in Ending Event Sequence for the Event will be reported.
∞ ENDING EVENT (optional)	A Master Event that identifies the ending value of the report. Wildcards (e.g., AAP9*) may be entered. To report on a single Event, leave this field, Starting Event Sequence and Ending Event Sequence blank and enter the Master Event in the Starting Event field.

∞ indicates field-level help is available.

(continued from previous page)

Field	Description
ENDING SEQUENCE (optional)	The ending sequence number of the Event entered in Ending Event. To report on a single Event/Sequence, leave the Ending Event and this field blank, enter the Event in the Starting Event field and enter the Event Sequence in the Starting Event Sequence field.
WARNING (optional)	Limits the report to Events that received the specified warning. Valid values are as follows:  OVERRIDE Indicates the Event migrated to an environment without proper authorization.  AC-ERROR Indicates programs within the Event received compile errors during the Autocompile process.  RECOVERD Indicates programs within the Event received compile errors and the Event was automatically recovered.
DATE RANGE (optional)	Limits the report to Events that migrated within the specified range of dates. Dates must be formatted YYYYMMDD.
DETAILED REPORT (required)	Indicates whether detailed information should be display when executed in batch.  Y Display all detail information for reports when executed in batch (similar to entering E and O next to an Event on the Events with Warning Messages selection screen).  N Display information similar to the Events with Warning Messages selection screen. (Default: N)
MODE (required)	Indicates how the job is executed (batch or on-line).  B Submits JCL to the internal reader that processes the function in batch.  O Processes the function on-line. (Default: O)

Entering the necessary information in the input screen and pressing Enter displays the Events with Warning Messages selection screen.

```

Valid Values: A - Autocompile E - Event O - Object
01-12-31      N-2-O EVENT REPORTING      TSI0373
11:38:00      EVENTS WITH WARNING MESSAGES TSI1
                                           Page: 1

S Event      Seq      Change  From To  Event  ---- Closed ----
-----
- PAYOUT     1      A12345  PROD DEV  N      NO      01-10-01 11:34:55 AC-ERROR
- PAYTEST    2      A12345  DEV  TEST N      NO      01-10-05 08:43:21 *****
- PAYIN      1      A12345  TEST PROD N      NO      ***** ***** *****

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END ----- STOP
    
```

Field	Description
-------	-------------

S (optional)	The function to be executed. Valid values are as follows: A displays autocompile details (if available) E Displays Event details. O Displays object details.
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
CHANGE CONTROL (supplied)	A value that relates multiple Events to a specific change request.
FROM ENV (supplied)	The source Environment Definition of the Event.
TO ENV (supplied)	The target Environment Definition of the Event. An asterisk (*) indicates the Event is a multiple target Event.
EVENT TYPE (supplied)	The types of objects requested for the Event. Valid values are as follows: N Indicates NATURAL. S Indicates SYSERR. P Indicates PREDICT. O Indicates 3GL/OTHER. D Indicates DDM. M Indicates METADATA.

(continued from previous page)

<b>Field</b>	<b>Description</b>
EXTR (supplied)	Indicates whether the Event is an Extract Event or not.  YES Indicates the Event is an Extract Event. NO Indicates the Event is not an Extract Event.
CLOSED DATE (supplied)	The date the Event was closed. Asterisks in the Closed Date field represent Events pending migration.
CLOSED TIME (supplied)	The time the Event was closed. Asterisks in the Closed Time field represent Events pending migration.
WARNING (supplied)	Events may contain one of the following warning messages:  OVERRIDE Indicates the Event migrated to an environment without proper authorization.  AC-ERROR Indicates programs within the Event received compile errors during the Autocompile process.  RECOVERD Indicates programs within the Event received compile errors and the Event was automatically recovered.

**IV.3.7 Events Pending Move**

The Events Pending Move report displays Events that contain objects to be deleted.

To display the Events Pending Move input screen, enter "G" on the Event Reporting menu.

```

01-12-31          N-2-O EVENT REPORTING          TSI0373
11:38:00          EVENTS PENDING MOVE           TSI1

                Added User-ID: _____
                From Library : _____

                Mode   :  O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ ADDED USER-ID (optional)	Limits the report to Events added by the user with the specified User-ID.
FROM LIBRARY (optional)	Limits the report to Events that migrated from the specified library.
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Events Pending Move report.

```

01-12-31          N-2-O EVENT REPORTING          TSI0373
11:38:00          EVENTS PENDING MOVE          TSI1
                                           Page: 1

  Event   Seq   ----From----   ----Closed-----   ----Deferred----
  -----  ---  Env  Library   Date   Time   Date   Time
  -----  ---  ---  -----   ---   ---   ---   ---
PAYTEST   3    TST0 PAYDEV   01-12-15 11:36:19 01-12-31 12:00:00
PAYTEST   2    PRD2 PAYDEV   01-10-28 04:21:36 01-12-15 12:00:00

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ---  END  ---  ---  ---  ---  ---  ---  ---  ---  ---  STOP
    
```

Field	Description
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
FROM ENV (supplied)	The source Environment Definition of the Event.
FROM LIBRARY (supplied)	The source library of the migration for NATURAL objects and/or SYSERR messages.
CLOSED DATE (supplied)	The date the Event was closed.
CLOSED TIME (supplied)	The time the Event was closed.
DEFERRED DATE (supplied)	The date the deletion process can be initiated for the Event.
DEFERRED TIME (supplied)	The time the deletion process can be initiated for the Event.

**IV.3.8 Events Pending Autocompile**

Events Pending Autocompile displays Events that have migrated, but have not been compiled.

To display the Events Pending Autocompile input screen, enter "H" on the Event Reporting menu.

```

01-12-31          N-2-O EVENT REPORTING          TSI0373
11:38:00          EVENTS PENDING AUTOCOMPILE     TSI1

                Event      : _____
                Sequence   : _____
                Date Range  : _____ - _____

                Detailed Report: N (Batch Only)
                Mode        : O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ---  END  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---
    
```

Field	Description
∞ EVENT (optional)	A Master Event that identifies the starting value for the report.
SEQUENCE (optional)	The sequence number of the Event.
DATE RANGE (optional)	Limits the report to Events that migrated within the specified range of dates. Dates must be formatted YYYYMMDD.
DETAILED REPORT (required)	Indicates whether detailed information should be displayed when executed in batch. Y Display all detail information for reports when executed in batch (similar to entering E and O next to an Event on the Events Pending Autocompile selection screen). N Display information similar to the Event Pending Autocompile selection screen. (Default: N)
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Events Pending Autocompile selection screen.

```

Valid Values: A - Autocompile E - Event O - Object
01-12-31          N-2-O EVENT REPORTING          TSI0373
11:38:00          EVENTS PENDING AUTOCOMPILE      TSI1
                                                    Page: 1

S   Event      Seq      Change   From To   Event   ----- Closed -----
-   -          -          Control Env  Env   Type  Extr  Date      Time      User-ID
-   -          -          -      -   -   -   -   -   -   -   -
-   PAYIN      1          A12345 TEST PROD N   NO    01-10-01 11:34:55 TSI0375
-   PAYIN      3          A12345 TEST PROD N   NO    01-10-05 08:43:21 TSI0375
-   PAYIN      4          A12345 TEST PROD N   NO    01-10-06 09:23:21 TSI0375
-   PAYIN      5          A12345 TEST PROD N   NO    01-10-03 12:14:16 TSI0375

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END ----- STOP
    
```

Field	Description
S (optional)	The function to be executed. The valid values are as follows:  A displays autocompile details (if available) E Displays Event details. O Displays object details.
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
CHANGE CONTROL (supplied)	A value that relates multiple Events to a specific change request.
FROM ENV (supplied)	The source Environment Definition of the Event.
TO ENV (supplied)	The target Environment Definition of the Event. An asterisk (*) indicates the Event is a multiple target Event.
EVENT TYPE (supplied)	The object types requested for an Event. Valid values are as follows:  N Indicates NATURAL. S Indicates SYSERR. P Indicates PREDICT. O Indicates 3GL/OTHER. D Indicates DDM. M Indicates METADATA.

(continued from previous page)

---

<b>Field</b>	<b>Description</b>
EXTR (supplied)	Indicates whether the Event is an Extract Event or not.  YES     Indicates the Event is an Extract Event. NO     Indicates the Event is not an Extract Event.
CLOSED DATE (supplied)	The date the Event was closed. Asterisks in the Closed Date field represent Events pending migration.
CLOSED TIME (supplied)	The time the Event was closed. Asterisks in the Closed Time field represent Events pending migration.
CLOSED USER-ID (supplied)	The user who closed the Event. Asterisks in the Closed User-ID field represent Events pending migration.

**IV.3.9 Autocompile Summary for Events**

The Autocompile Summary for Events report displays the results of all Autocompiles performed by N2O.

To display the Autocompile Summary input screen, enter "I" on the Event Reporting menu.

```

01-12-31          N-2-O EVENT REPORTING          TSI0373
11:38:00          AUTOCOMPILE SUMMARY FOR EVENTS  TSI1

                Name      Seq.
                -----  -----
Starting Event : _____ (Wildcard/Single)
Ending Event  : _____ (Both Blank=All)

Date Range    : _____ - _____

Detailed Report: N (Batch Only)
Mode          : O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ---  END   ---  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---
    
```

Field	Description
∞ STARTING EVENT (optional)	A Master Event that identifies the starting value of the report. Partial names and wildcards (e.g., AAP*) may be entered.
STARTING SEQUENCE (optional)	The starting sequence number of the Event entered in Starting Event. If this field is left blank, all Event Sequences ranging from 1 to the number entered in Ending Event Sequence for the Event will be reported.
∞ ENDING EVENT (optional)	A Master Event that identifies the ending value of the report. Wildcards (e.g., AAP9*) may be entered. To report on a single Event, leave this field, Starting Event Sequence and Ending Event Sequence blank and enter the Master Event in the Starting Event field.
ENDING SEQUENCE (optional)	The ending sequence number of the Event entered in Ending Event. To report on a single Event/Sequence, leave the Ending Event and this field blank, enter the Event in the Starting Event field and enter the Event Sequence in the Starting Event Sequence field.
DATE RANGE (optional)	Limits the report to Events compiled within the range of dates. Dates must be formatted YYYYMMDD.

∞ indicates field-level help is available.

(continued from previous page)

<b>Field</b>	<b>Description</b>
DETAILED REPORT (required)	Indicates whether detailed information should be displayed when executed in batch.  Y     Display all detail information for reports when executed in batch (similar to entering X next to an Event onto the Autocompile Summary for Events selection screen).  N     Display information similar to the Autocompile Summary for Events selection screen (Default: N).
MODE (required)	Indicates how the job is executed (batch or on-line).  B     Submits JCL to the internal reader that processes the function in batch.  O     Processes the function on-line. (Default: O)

Entering the necessary information in the input screen and pressing Enter displays the Autocompile Summary for Events selection screen. This report shows all Events that required Autocompile.

```

Valid Values: X - Autocompile Details
01-12-31      N-2-O EVENT REPORTING      TSI0373
11:38:00      AUTOCOMPILE SUMMARY          TSI1
                                           Page: 1

```

X	Event	Seq	Change Control	---- Closed ---- Date	Time	--Autocompiled -- Date	Time	Warning
-	PAYIN	1	*****	01-11-05	17:00:46	01-11-05	17:05:49	OVERRIDE
-	PAYIN	3	*****	01-12-04	10:45:07	01-12-04	11:27:47	*****
-	PAYIN	4	*****	01-12-04	11:04:32	01-12-04	11:26:05	*****
-	PAYIN	5	*****	01-12-15	12:14:48	01-12-15	12:46:39	*****

```

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END ----- STOP

```

Field	Description
X (optional)	"X" in the select field displays Autocompile Details about the Event.
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
CHANGE CONTROL (supplied)	A value that relates multiple Events to a specific change request.
CLOSED DATE (supplied)	The date the Event was closed.
CLOSED TIME (supplied)	The time the Event was closed.
AUTOCOMPILED DATE (supplied)	The date the Event was Autocompiled. "Canceled" indicates the Autocompile process was canceled for the Event.
AUTOCOMPILED TIME (supplied)	The time the Event was Autocompiled. "Canceled" indicates the Autocompile process was canceled for the Event.

(continued from previous page)

---

<b>Field</b>	<b>Description</b>
WARNING (supplied)	Event contains one of the following warning messages:  OVERRIDE      Indicates the Event migrated to an environment without proper authorization.  AC-ERROR      Indicates programs within the Event received compile errors during the Autocompile process.  RECOVERD      Indicates programs within the Event received compile errors and the Event was automatically recovered.

Selecting an Event on the previous screen (using an 'X') displays the Autocompile Details report.

```

01-12-31          N-2-O AUTOCOMPILE DETAILS          TSI0373
11:38:00          Event:  PAYIN      Sequence:  3          TSI1

From Env:  TEST From Library:  PAYTEST   To Env:  PROD To Library:  PAYPROD

  Target      Object      Object      ----- Autocompiled -----
  XREF        Object      Type        Date       Time       User-ID
  -----
   *          CINCLUDE  COPYCODE   01-03-15   10:17:32   TSI0373
   *          PROGRAM1  PROGRAM    01-03-15   10:17:35   TSI0373
   *          LOCAL1    LOCAL      01-03-15   10:17:40   TSI0373
   *          SUBRTN1   SUB-RTN    Error       82         1060

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
-----
          END
  
```

Field	Description
EVENT (supplied)	The Master Event of the migration.
SEQUENCE (supplied)	The sequence number of the Event.
FROM ENV (supplied)	The source Environment Definition of the Event.
FROM LIBRARY (supplied)	The source library of the migration for NATURAL objects and/or SYSERR messages.
TO ENV (supplied)	The target Environment Definition of the Event.
TO LIBRARY (supplied)	The target library of the migration for NATURAL objects and/or SYSERR messages.
TARGET XREF (supplied)	(*) indicates the program was not migrated but was compiled using the XREF at the target feature.
OBJECT (supplied)	The NATURAL object compiled by Autocompile.

(continued from previous page)

Field	Description
OBJECT TYPE (supplied)	<p>The NATURAL object type.</p> <p>PARM            Indicates Parameter data area.</p> <p>COPYCODE      Indicates Copycode.</p> <p>GLOBAL        Indicates Global data area.</p> <p>HELP-RTN      Indicates Helproutine.</p> <p>LOCAL         Indicates Local data area.</p> <p>MAP            Indicates Map.</p> <p>SUB-PGM        Indicates Subprogram.</p> <p>PROGRAM       Indicates Program.</p> <p>SUB-RTN        Indicates Subroutine.</p> <p>TEXT           Indicates Text.</p> <p>MACRO         Indicates Macro.</p> <p>REPORT        Indicates Report.</p> <p>EXP-MDL       Indicates ExpertModel.</p> <p>RECORD        Indicates Recording.</p> <p>DIALOG        Indicates Dialog.</p> <p>CLASS         Indicates Class.</p> <p>CMD-PROC      Indicates Processor.</p> <p>SERVER        Indicates Server.</p> <p>FUNCTION.     Indicates Function.</p> <p>ADAPTER.      Indicates Adapter.</p> <p>MACRO.        Indicates Macro.</p>
AUTOCOMPILED DATE (supplied)	<p>The date the NATURAL object was Autocompiled.</p> <p>"Error" indicates an error occurred during the compilation process.</p>
AUTOCOMPILED TIME (supplied)	<p>The time the NATURAL object was Autocompiled.</p> <p>Also displays the error number received during the compile process.</p>
AUTOCOMPILED USER-ID (supplied)	<p>The user who Autocompiled the NATURAL object.</p> <p>Also displays the line number of the error.</p>

### IV.3.10 Event Reporting in Batch

Sample reporting JCL is provided in the MVSREPT, VMREPT, BSREPT and VSEREPT members located in the Natural library N2OBATCH.

Note that program N2OREPD will permit sites to execute a regularly scheduled batch job that will generate a report of all Events that processed on the previous day. N2OREPD will calculate yesterday's date and call N2OEVNTE (Events Processed by Date report), passing the calculated date. A site may customize N2OREPD to specify the detail level of the Events Processed by Date report. The default is to provide summary information. For details, refer to the program N2OREPD in the N2OLIB Library.

N2OREPD should be run in place of N2OEVNTE in a batch job.

The following table illustrates the JCL and EXECs modifications necessary to execute Event reports in batch.

REPORT	&REPORT	&INPUT
Events Requiring Further Authorization	N2OEVNTA	DELAY,DETAILED-REPORT
Chronology of Events	N2OEVNTB	EVENT,SEQUENCE,START-DATE,DETAILED-REPORT
Events Related by Change Control	N2OEVNTC	CHANGE CONTROL,ADDED USER-ID,DATE-1,DATE-2,DETAILED-REPORT
Event Details	N2OEVNTD	STARTING-EVENT,STARTING-SEQ,ENDING-EVENT,ENDING-SEQ,FROM-ENV,TO-ENV,ADDED-USER-ID EVENT-STATUS,DB2-STATUS,DETAILED-REPORT
Events Processed by Date – <i>To generate a report of the previous day's migrations, use N2OREPD as noted above</i>	N2OEVNTE	EVENT,SEQUENCE,DATE-1,DATE-2,ADDED-USER-ID,DETAILED-REPORT
Events with Warning Messages	N2OEVNTF	STARTING-EVENT,STARTING-SEQ,ENDING-EVENT,ENDING-SEQ,WARNING,DATE-1,DATE-2,DETAILED-REPORT

REPORT	&REPORT	&INPUT
Events Pending Move	N2OEVNTG	ADDED USER-ID,FROM LIBRARY
Events Pending Autocompile	N2OEVNTH	EVENT,SEQUENCE,DATE-1,DATE-2,DETAILED-REPORT
Autocompile Summary for Events	N2OEVNTI	STARTING-EVENT,STARTING-SEQ,ENDING-EVENT,ENDING-SEQ,DATE-1,DATE-2,DETAILED-REPORT

The &INPUT parameter list by default is delimited by commas with no spaces following the commas. To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).

For descriptions of &INPUT fields, refer to field descriptions in corresponding sections of Event Reporting.

**Note:** The batch reports from the N2O Reporting Subsystem and the Documentation Tools require that the NATURAL Parameter IM (Input Mode) be set to "IM=D" (Delimiter Mode).

#### IV.4 Object Reporting

Object Reporting provides reports that display information about NATURAL objects, PREDICT objects, 3GL/OTHER objects, and SYSERR messages.

To display the Object Reporting menu, enter "C" on the Reporting Subsystem menu or enter the direct command REP OBJ on any menu.

```

01-12-31          N-2-O OBJECT REPORTING MENU          TSI0373
11:38:00                                     TSI1

          Code  Function
          -----
          A    History of an Environment
          B    History of an Object
          C    Directory List
          D    Directory Compare
          E    Cross Reference
          F    Checked Out Objects
          G    Objects Archived by N2OPURGE
          H    Archive Version Summary
          I    Events Pending for an Object
          .    Terminate Object Reporting
          -----

          Enter Code: _   Type : N

Direct Command: _____ REP OBJ
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP ---- END  ENV  MIG  REP  TOL  USR  PRJ  ---- ---- EXIT
  
```

Field	Description
ENTER CODE (required)	<p>The function to be executed. Valid values are as follows:</p> <p><b>A History of an Environment</b> Displays objects migrated to an environment.</p> <p><b>B History of an Object</b> Displays the complete audit trail of an object.</p> <p><b>C Directory List</b> Displays a list of objects from an environment.</p> <p><b>D Directory Compare</b> Displays the differences between two environments.</p> <p><b>E Cross Reference</b> Displays objects that are related to an object.</p> <p><b>F Checked Out Objects</b> Displays objects checked out from a BASE environment.</p> <p><b>G Objects Archived by N2OPURGE</b> Displays NATURAL objects archived using the N2OPURGE utility.</p> <p><b>H Archive Version Summary</b> Displays Events which performed archiving for an object.</p> <p><b>I Events Pending for an Object</b> Displays Events pending for an object.</p>
∞ TYPE (required)	<p>One of four object types can be selected. Valid values include the following:</p> <p>N Indicates NATURAL. P Indicates PREDICT. S Indicates SYSERR. O Indicates 3GL/OTHER. D Indicates DDM. M Indicates METADATA.</p>

∞ indicates field-level help is available.

**IV.4.1 History of an Environment**

The History of an Environment report displays objects that migrated to an environment.

To display the History of an Environment input screen for NATURAL objects, enter "A" in the Enter Code field and "N" in the Type field on the Object Reporting menu.

```

01-12-31          N-2-O OBJECT REPORTING          TSI0373
11:38:00          HISTORY OF AN ENVIRONMENT        TSI1

Library          : _____
Env Def          : _____
Date Range       : _____ - _____

Detailed Report: N (Batch Only)
Mode             : O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Type	Description
LIBRARY (required)	N,S	The target library of the migration for NATURAL objects and/or SYSERR messages.
∞ ENV DEF (optional)	N,S,P,O,D,M	Limits the report to objects migrated to the specified Environment Definition.
DATE RANGE (optional)	N,S,P,O,D,M	Limits the report to objects migrated within the specified range of dates. Dates must be formatted YYYYMMDD.
DETAILED REPORT (required)	N,S,P,O,D,M	Indicates whether detailed information should be displayed when executed in batch.  Y Display all detail information for reports when executed in batch (similar to entering X next to an object on the Object Reporting menu on the Environment selection screen).  N Display information similar to the History of an Environment selection screen (Default: N).
MODE (required)		Indicates how the job is executed (batch or on-line).  B Submits JCL to the internal reader that processes the function in batch.  O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the History of an Environment report.

```

Type X for Info or D for Event Details
01-12-31          N-2-O OBJECT REPORTING          TSI0373
11:38:00          HISTORY OF AN ENVIRONMENT      TSI1
                  LIBRARY: PAYDEV                Page: 1

S Date          Object      Object      To          Message     Mig
-----          -
- 01-04-10     PAY5210S    SUB-RTN    DEV         REPLACE     S
- 01-04-10     PAYRECV3    PROGRAM    DEV         REPLACE     S
- 01-04-10     PAY19721    MAP        DEV         REPLACE     S
- 01-04-10     PAY19711    MAP        DEV         REPLACE     S
- 01-04-06     PAY3150S    SUB-RTN    DEV         REPLACE     S
- 01-04-06     PAY1146N    SUB-PGM    DEV         REPLACE     S
- 01-04-06     PAY1510S    SUB-RTN    DEV         REPLACE     S
- 01-04-06     PAY138D1    MAP        DEV         REPLACE     S
- 01-04-06     PAY19981    MAP        DEV         REPLACE     S
- 01-04-06     PAY19951    MAP        DEV         REPLACE     S
- 01-04-06     PAY19911    MAP        DEV         REPLACE     S
- 01-04-06     PAY19901    MAP        DEV         REPLACE     S
- 01-04-06     PAY1998S    SUB-RTN    DEV         REPLACE     S
-
Enter--PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
-----      END      -----      -----      -----      -----      -----      STOP
    
```

Field	Type	Description
LIBRARY (supplied)	N,S	The name of the NATURAL library.
CATEGORY (supplied)	O	The 3GL/OTHER category.
DATE (supplied)	N,S,P,O,D,M	The date an object was migrated to the environment.
OBJECT (supplied)	N,S,P,O,D,M	The name of the NATURAL object, PREDICT object, 3GL/OTHER object, or SYSERR message.
S (optional)	N,S,P,O,D,M	"X" displays information about the Event/Utility. "D" displays the Event Details report for that event.
OBJECT TYPE (supplied)	N	The NATURAL object type.
	PARAM	Indicates Parameter data area.
	COPYCODE	Indicates Copycode.
	GLOBAL	Indicates Global data area.
	HELP-RTN	Indicates Helproutine.
	LOCAL	Indicates Local data area.
	MAP	Indicates Map.
	SUB-PGM	Indicates Subprogram.
	PROGRAM	Indicates Program.
	SUB-RTN	Indicates Subroutine.
	TEXT	Indicates Text.
	MACRO	Indicates Macro.
	REPORT	Indicates Report.
	EXP-MDL	Indicates ExpertModel.
	RECORD	Indicates Recording.
	DIALOG	Indicates Dialog.
	CLASS	Indicates Class.
	CMD-PROC	Indicates Processor.
	SERVER	Indicates Server.
	FUNCTION.	Indicates Function.
	ADAPTER.	Indicates Adapter.
	MACRO.	Indicates Macro.

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Field	Type	Description																																																																								
	P	The PREDICT object type.																																																																								
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LANGUAGES (supplied)	S	The SYSERR messages migrated.																																																																								
FILE TYPE (supplied)	P	The PREDICT file type (e.g., A is ADABAS, C is Conceptual, etc.).																																																																								

(continued from previous page)

<b>Field</b>	<b>Type</b>	<b>Description</b>
TO ENV (supplied)	N,S,P,O,D,M	The target Environment Definition of the migrated object.
MESSAGE (supplied)	N,S,P,O,D,M	Valid messages are: ADD, REPLACE, WARNING, and RECOVERED.
MIG S/C (supplied)	N,O	The form of the object migrated.  S        Indicates only the source form of the program may be selected. C        Indicates only the cataloged form of the program may be selected. S/C      Indicates both forms of the program may be selected.
MIG S/L (supplied)	S	The form of the migrated SYSERR message.
EXTR (supplied)	N,S,P,O,D,M	Indicates whether the Event is an Extract Event or not.  YES      Indicates the Event is an Extract Event. NO       Indicates the Event is not an Extract Event.
EVENT (supplied)	N,S,P,O,D,M	The Master Event of the migration.
SEQ (supplied)	N,S,P,O,D,M	The sequence number of the Event.

**IV.4.2 History of an Object**

The History of an Object report displays a complete audit trail of an object. This report identifies Events that migrated and archived the object and utilities that updated the Checkout/Checkin status of the object.

To display the History of an Object input screen for NATURAL objects, enter "B" in the Enter Code field and "N" in the Type field on the Object Reporting menu.

```

01-12-31          N-2-O OBJECT REPORTING          TSI0373
11:38:00          HISTORY OF AN OBJECT           TSI1

Object           : _____
Library          : _____
Date Range       : _____ - _____

List Events      : A (All/Closed/Open)
Detailed Report  : N (Batch Only)
Mode             : O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Type	Description
OBJECT (required)	N,S,P,O,D,M	Displays the history of a DDM, METADATA, NATURAL object, PREDICT object, 3GL/OTHER object, or SYSERR message.
LIBRARY (optional)	N,S	Limits the report to NATURAL objects or SYSERR messages for the library.
DATE RANGE (optional)	N,S,P,O,D,M	Limits the report to objects migrated within the specified range of dates. Dates must be formatted YYYYMMDD.
List Events	N,S,P,O,D,M	Limit the history displayed to 'A'll, 'O'pen, or 'C'losed Events
DETAILED REPORT (required)	N,S,P,O,D,M	Indicates whether detailed information should be displayed when executed in batch.  Y     Display all detail information for reports when executed in batch (similar to entering X next to an object on the History of an Object selection screen).  N     Display information similar to the History of an Object selection screen (Default: N).
MODE (required)	N,S,P,O,D,M	Indicates how the job is executed (batch or on-line).  B     Submits JCL to the internal reader that processes the function in batch.  O     Processes the function on-line (Default: O).

(continued from previous page)

Field	Type	Description																																																																								
∞ OBJECT TYPE (required)	P	Limits the report to PREDICT objects for the specified PREDICT object type. Valid values are as follows:  <table border="0"> <tr> <td>Type</td> <td>Indicates</td> <td>Predict Version</td> </tr> <tr> <td>DA</td> <td>Database</td> <td></td> </tr> <tr> <td>DC</td> <td>Dataspace</td> <td></td> </tr> <tr> <td>ET</td> <td>Extract</td> <td></td> </tr> <tr> <td>FI</td> <td>File</td> <td></td> </tr> <tr> <td>IE</td> <td>Interface</td> <td>V4.1.2 and above</td> </tr> <tr> <td>KY</td> <td>Keyword</td> <td></td> </tr> <tr> <td>LS</td> <td>Library Structure</td> <td></td> </tr> <tr> <td>MD</td> <td>Method</td> <td>V4.1.2 and above</td> </tr> <tr> <td>MO</td> <td>Module</td> <td>V3.4.2 and below</td> </tr> <tr> <td>NO</td> <td>Node</td> <td></td> </tr> <tr> <td>NW</td> <td>Network</td> <td></td> </tr> <tr> <td>PG</td> <td>PackageList</td> <td></td> </tr> <tr> <td>PR</td> <td>Program</td> <td></td> </tr> <tr> <td>PY</td> <td>Property</td> <td>V4.1.2 and above</td> </tr> <tr> <td>RL</td> <td>Relationship</td> <td></td> </tr> <tr> <td>RP</td> <td>Report</td> <td>V3.4.2 and below</td> </tr> <tr> <td>RT</td> <td>Report Listing</td> <td></td> </tr> <tr> <td>SC</td> <td>Storagespace</td> <td></td> </tr> <tr> <td>SV</td> <td>Server</td> <td></td> </tr> <tr> <td>SY</td> <td>System</td> <td></td> </tr> <tr> <td>US</td> <td>User</td> <td></td> </tr> <tr> <td>VE</td> <td>Verification</td> <td></td> </tr> <tr> <td>VM</td> <td>Virtual Machine</td> <td></td> </tr> </table>	Type	Indicates	Predict Version	DA	Database		DC	Dataspace		ET	Extract		FI	File		IE	Interface	V4.1.2 and above	KY	Keyword		LS	Library Structure		MD	Method	V4.1.2 and above	MO	Module	V3.4.2 and below	NO	Node		NW	Network		PG	PackageList		PR	Program		PY	Property	V4.1.2 and above	RL	Relationship		RP	Report	V3.4.2 and below	RT	Report Listing		SC	Storagespace		SV	Server		SY	System		US	User		VE	Verification		VM	Virtual Machine	
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∞ CATEGORY (required)	O	Limits the report to 3GL/OTHER objects from the specified 3GL category. Valid values are as follows:  <table border="0"> <tr> <td>ASMB</td> <td>Indicates all types of Assembler.</td> </tr> <tr> <td>COBOL</td> <td>Indicates all types of COBOL.</td> </tr> <tr> <td>FORT</td> <td>Indicates all types of FORTRAN.</td> </tr> <tr> <td>PL/I</td> <td>Indicates all PL/I types.</td> </tr> <tr> <td>RPG</td> <td>Indicates RPG.</td> </tr> <tr> <td>DATA</td> <td>Indicates DATA FILES.</td> </tr> <tr> <td>JCL</td> <td>Indicates JCL, CLIST, CNTL.</td> </tr> <tr> <td>OTHER</td> <td>Indicates all other types.</td> </tr> </table>	ASMB	Indicates all types of Assembler.	COBOL	Indicates all types of COBOL.	FORT	Indicates all types of FORTRAN.	PL/I	Indicates all PL/I types.	RPG	Indicates RPG.	DATA	Indicates DATA FILES.	JCL	Indicates JCL, CLIST, CNTL.	OTHER	Indicates all other types.																																																								
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∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the History of an Object selection screen.

```

01-12-31          N-2-O OBJECT REPORTING          TSI0373
11:38:00          HISTORY OF AN OBJECT          TSI1
                  Object: MENU                  Page: 1
                  Open and Closed Events

X  Date          Event/          From To          Mig Arch Purg  Added
-  - - - - -    Utility          Env  Env          S/C S/C  S/C  User-ID
-  - - - - -    - - - - -    - - - - -    - - - - -    - - - - -    - - - - -    - - - - -
-  01-10-16     PAYIN           67   TEST  PROD  REPLACE  S   S   ***  TSI0374
-  01-10-14     EXTRACT        3209  PROD  TEST  REPLACE  S   S   ***  TSI0376
-  01-10-13     PAYQA          112   DEV   TEST  REPLACE  S   S   ***  TSI0376
-  01-08-13     PAYOUT        205   PROD  DEV   REPLACE  S   S   ***  TSI0374
-  01-08-12     CANCEL        PROD  DEV   REPLACE  ***  ***  ***  TSI0374
-  01-08-11     CHECKOUT      PROD  DEV   *****  ***  ***  ***  TSI0376
-  01-05-13     EXTRACT      3122  PROD  TEST  *****  S   ***  ***  TSI0374
-  01-05-08     EXTRACT      3116  PROD  TEST  REPLACE  C   ***  ***  TSI0374
-  01-05-03     PAYIN         20    TEST  PROD  REPLACE  S   S/C  ***  TSI0374
-  01-03-19     PAYQA         30    DEV   TEST  REPLACE  S/C  C   ***  TSI0376
-  01-03-19     PAYOUT        99    PROD  DEV   REPLACE  S   ***  S   TSI0376
-  01-02-23     EXTRACT      2980  DEV   TEST  REPLACE  C   C   ***  TSI0374
-  01-02-22     EXTRACT      2978  PROD  TEST  REPLACE  C   ***  C   TSI0374

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END ----- OPEN ----- STOP
    
```

Field	Type	Description
OBJECT (supplied)	N,S,P,O,D,M	The name of the NATURAL object, PREDICT object, 3GL/OTHER object, or SYSERR message.
3GL CATEGORY (supplied for 3GL only)	O	The 3GL/OTHER object category.
X (optional)	N,S,P,O,D,M	"X" displays information about the Event/Utility. "D" displays the Event Details report for that event. "X" next to a utility displays details about the utility.
DATE (supplied)	N,S,P,O,D,M	The migration date of an Event or the date a utility was executed.
EVENT/ UTILITY (supplied)	N,S,P,O,D,M	The Event that migrated the object or the utility that updated the Checkout/Checkin status of the object.
SEQ (supplied)	N,S,P,O,D,M	The sequence number of the Event.
FROM ENV (supplied)	N,S,P,O,D,M	The source Environment Definition of the Event.
TO ENV (supplied)	N,S,P,O,D,M	The target Environment Definition of the Event. An asterisk (*) indicates the Event is a multiple target Event.
MESSAGE (supplied)	N,S,P,O,D,M	Valid messages are: ADD, REPLACE, WARNING, RENAME, and RECOVERED.

(continued from previous page)

<b>Field</b>	<b>Type</b>	<b>Description</b>
MIG S/C (supplied)	N,S,P,O,D,M	The form of the object migrated.
		S Indicates only the source form of the program may be selected.
		C Indicates only the cataloged form of the program may be selected.
		S/C Indicates both forms of the program may be selected.
ARCH S/C (supplied)	N,S,O	The form of the object archived.
		S Indicates only the source form of the program may be selected.
		C Indicates only the cataloged form of the program may be selected.
		S/C Indicates both forms of the program may be selected.
PURG S/C (supplied)	N,S,O	The form of the object purged.
		S Indicates only the source form of the program may be selected.
		C Indicates only the cataloged form of the program may be selected.
		S/C Indicates both forms of the program may be selected.
ADDED USER-ID (supplied)	N,S,P,O,D,M	The User-ID of the user who added the Event or executed the utility.

PF5 is available to toggle between displaying Open and Closed Events, Open Events only or Closed Events only.

**IV.4.3 Directory List**

The Directory List report displays objects of an environment along with the date and time of the source and object code for each object.

To display the Directory List input screen for NATURAL objects, enter "C" in the Enter Code field and "N" in the Type field on the Object Reporting menu.

```

01-12-31          N-2-O OBJECT REPORTING          TSI0373
11:38:00          DIRECTORY LIST                  TSI1

                Env Def      : ____
                Library      : _____
                Starting Value: _____
                Ending Value  : _____

                Mode         : 0

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END   -----
    
```

Field	Type	Description
∞ ENV DEF (required)	N,S,P,O,D,M	The source Environment Definition serving for the report.
LIBRARY (required)	N,S	The library containing the NATURAL objects or SYSERR messages.

∞ indicates field-level help is available.

(continued from previous page)

Field	Type	Description																																																																								
∞ OBJECT TYPE (required)	P	The PREDICT object type for PREDICT objects. Valid values are as follows: <table border="1"> <thead> <tr> <th>Type</th> <th>Indicates</th> <th>Predict Version</th> </tr> </thead> <tbody> <tr><td>DA</td><td>Database</td><td></td></tr> <tr><td>DC</td><td>Dataspace</td><td></td></tr> <tr><td>ET</td><td>Extract</td><td></td></tr> <tr><td>FI</td><td>File</td><td></td></tr> <tr><td>IE</td><td>Interface</td><td>V4.1.2 and above</td></tr> <tr><td>KY</td><td>Keyword</td><td></td></tr> <tr><td>LS</td><td>Library Structure</td><td></td></tr> <tr><td>MD</td><td>Method</td><td>V4.1.2 and above</td></tr> <tr><td>MO</td><td>Module</td><td>V3.4.2 and below</td></tr> <tr><td>NO</td><td>Node</td><td></td></tr> <tr><td>NW</td><td>Network</td><td></td></tr> <tr><td>PG</td><td>PackageList</td><td></td></tr> <tr><td>PR</td><td>Program</td><td></td></tr> <tr><td>PY</td><td>Property</td><td>V4.1.2 and above</td></tr> <tr><td>RL</td><td>Relationship</td><td></td></tr> <tr><td>RP</td><td>Report</td><td>V3.4.2 and below</td></tr> <tr><td>RT</td><td>Report Listing</td><td></td></tr> <tr><td>SC</td><td>Storagespace</td><td></td></tr> <tr><td>SV</td><td>Server</td><td></td></tr> <tr><td>SY</td><td>System</td><td></td></tr> <tr><td>US</td><td>User</td><td></td></tr> <tr><td>VE</td><td>Verification</td><td></td></tr> <tr><td>VM</td><td>Virtual Machine</td><td></td></tr> </tbody> </table>	Type	Indicates	Predict Version	DA	Database		DC	Dataspace		ET	Extract		FI	File		IE	Interface	V4.1.2 and above	KY	Keyword		LS	Library Structure		MD	Method	V4.1.2 and above	MO	Module	V3.4.2 and below	NO	Node		NW	Network		PG	PackageList		PR	Program		PY	Property	V4.1.2 and above	RL	Relationship		RP	Report	V3.4.2 and below	RT	Report Listing		SC	Storagespace		SV	Server		SY	System		US	User		VE	Verification		VM	Virtual Machine	
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STARTING VALUE (optional)	N,S,P,O,D,M	The starting value of the object list.																																																																								

∞ indicates field-level help is available.

(continued from previous page)

---

<b>Field</b>	<b>Type</b>	<b>Description</b>
ENDING VALUE (optional)	N,S,P,O,D,M	The ending value of the object list.
MODE (required)	N,S,P,O ,D,M	Indicates how the job is executed (batch or on-line).  B        Submits JCL to the internal reader that processes the function in batch.  O        Processes the function on-line. (Default: O)

Entering the necessary information in the input screen and pressing Enter displays the Directory List report.

```

01-12-31          N-2-O OBJECT REPORTING          TSI0373
11:38:00          DIRECTORY LIST                 TSI1
                  Env Def:  DEV  Library:  PAYDEV          Page:  1

  Object      Object      ----- Source -----      Object -----
  Object      Type      Date      Time      User-ID      Date      Time      User-ID
  -----
ACE          PROGRAM      01-09-30  14:47:47  TREE06      *****
BENWORK      MAP          01-04-13  17:24:44  TREE08      *****
B1           PROGRAM      01-04-11  15:59:55  TREE08      01-04-11  15:59:55  TREE08
CADAERRD     COPYCODE     01-03-31  16:39:48  BATCH02     *****
CADDREP      COPYCODE     01-03-31  16:39:49  BATCH02     *****
CALSAVE      MAP          01-04-13  12:12:15  TREE04      01-03-31  18:09:34  BATCH02
CARARCH      PROGRAM      01-03-20  15:36:07  TREE04      01-03-31  18:59:10  BATCH02
CAROUT       PROGRAM      *****
TEST         PROGRAM      01-04-11  14:13:32  TREE04      01-12-22  13:47:38  TREE04
TEST         PROGRAM      01-04-11  14:13:32  TREE04      01-03-31  18:59:20  BATCH02
TEST         PROGRAM      01-03-30  17:01:40  TREE04      01-03-31  18:59:34  BATCH02
TEST         PROGRAM      01-04-11  17:04:55  TREE04      *****
CCDATE       COPYCODE     01-03-31  16:39:51  BATCH02     *****
CDELDTLS     COPYCODE     01-03-31  16:39:53  BATCH02     *****

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12-
----- END ----- STOP

```

Field	Type	Description
ENV DEF (supplied)	N,S,P,O,D,M	The source Environment Definition for the report.
LIBRARY (supplied)	N,S	The library containing the NATURAL objects or SYSERR messages.
OBJECT (supplied)	N,S,P,O,D,M	The name of the NATURAL object, PREDICT object, 3GL/OTHER object, or SYSERR message.
OBJECT TYPE (supplied)	N	The NATURAL object type
	PARAM	Indicates Parameter data area.
	COPYCODE	Indicates Copycode.
	GLOBAL	Indicates Global data area.
	HELP-RTN	Indicates Helproutine.
	LOCAL	Indicates Local data area.
	MAP	Indicates Map.
	SUB-PGM	Indicates Subprogram.
	PROGRAM	Indicates Program.
	SUB-RTN	Indicates Subroutine.
	TEXT	Indicates Text.
	MACRO	Indicates Macro.
	REPORT	Indicates Report.
	EXP-MDL	Indicates ExpertModel.
	RECORD	Indicates Recording.
	DIALOG	Indicates Dialog.
	CLASS	Indicates Class.
	CMD-PROC	Indicates Processor.
	SERVER	Indicates Server.
	FUNCTION.	Indicates Function.
	ADAPTER.	Indicates Adapter.
	MACRO.	Indicates Macro.

(continued from previous page)

Field	Type	Description																																																																								
	P	PREDICT object type																																																																								
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SOURCE DATE (supplied)	N	The date the source code was saved.																																																																								
SOURCE TIME (supplied)	N	The time the source code was saved.																																																																								
SOURCE USER-ID (supplied)	N	The User-ID of the user who saved the source code.																																																																								

(continued from previous page)

<b>Field</b>	<b>Type</b>	<b>Description</b>
OBJECT DATE (supplied)	N	The date the object code was compiled.
OBJECT TIME (supplied)	N	The time the object code was compiled.
OBJECT USER-ID (supplied)	N	The User-ID of the user who compiled the object code.
SYSERR LANGUAGE (supplied)	S	The SYSERR languages available for the SYSERR message.
FILE TYPE (supplied)	P	The PREDICT file type (e.g., A is ADABAS, U is ADABAS Userview, etc.). Only displays when object type "FI" is selected.
DATE (supplied)	P	The date the PREDICT object was saved.
CATEGORY (supplied)	O	The 3GL/OTHER Category of the 3GL/OTHER objects.
DDM Dbid (supplied)	D	Database number that the DDM will point to.
DDM Fnr (supplied)	D	File number that the DDM will point to.
DDM ADA 6 Support (supplied)	D	Marked with an X if the DDM was created in NATURAL 2.3 or above and will allow a Dbid and/or Fnr greater than 255.
Description (supplied)	M	Description of the UDE – User Defined Entities

**IV.4.4 Directory Compare**

The Directory Compare report displays the differences between two environments.

To display the Directory Compare input screen for NATURAL objects, enter "D" in the Enter Code field and "N" in the Type field on the Object Reporting menu.

```

01-12-31          N-2-O OBJECT REPORTING          TSI0373
11:38:00          DIRECTORY COMPARE              TSI1

                               Base      Compare
Env Def           : _____
Library          : _____
Source/Object    : _____
Starting Value   : _____
Ending Value     : _____

Verify Timestamps: N
Verify Existence : N

Mode             : O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Type	Description
∞ ENV DEF (required)	N,S,P,O,D,M	The Environment Definitions serving as the source for the report.
LIBRARY (required)	N,S	The libraries containing the NATURAL objects or SYSERR messages.
SOURCE/ OBJECT (required)	N	The forms of the NATURAL objects to be compared: S Indicates source code. C Indicates object code.
STARTING VALUE (optional)	N,S,P,O,D,M	The starting value of the object list.
ENDING VALUE (optional)	N,S,P,O,D,M	The ending value of the object list.
VERIFY TIMESTAMPS (required)	N,P	Limits the report to objects that have different dates and times (defaults to "N").
VERIFY EXISTENCE (required)	N,S,P,O,D,M	Limits the report to objects that exist in one environment but not in another environment (defaults to "N").

∞ indicates field-level help is available.

(continued from previous page)

<b>Field</b>	<b>Type</b>	<b>Description</b>																																																																								
MODE (required)	N,S,P,O	Indicates how the job is executed (batch or on-line).  B Submits JCL to the internal reader that processes the function in batch.  O Processes the function on-line (Default: O).																																																																								
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∞ CATEGORY (required)	O	The 3GL/OTHER category for 3GL/OTHER objects. Valid values are as follows:  ASMB Indicates Assembler. COBOL Indicates COBOL. FORT Indicates FORTRAN. PL/I Indicates PL/I types. RPG Indicates RPG. DATA Indicates DATA FILES. JCL Indicates JCL, CLIST, CNTL. OTHER Indicates all other types.																																																																								

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Directory Compare report.

```

01-12-31          N-2-O OBJECT REPORTING          TSI0373
11:38:00          DIRECTORY COMPARE              TSII
                                                    Page: 1

                PAYD  PAYDEV
                ----- Source -----
Object   Object   Date   Time   User-ID   Date   Time   User-ID
-----
ACE761   PROGRAM  01-09-30 14:47:47 TSI0376   *****
BENWORK  MAP      01-04-13 17:24:44 TSI0378   *****
BLOOM    PROGRAM  01-04-11 15:59:55 TSI0378   *****
PAYERRD  COPYCODE 01-03-31 16:39:48 BATCH02   01-01-31 17:42:06 BATCH01
PAYFREP  COPYCODE 01-03-31 16:39:49 BATCH02   01-01-31 17:42:13 BATCH01
PAYLSAVE SUB-PGM  01-04-13 12:12:15 TSI0374   *****
PAYARCH  PROGRAM  01-03-20 15:36:07 TSI0374   *****
PAYR     PROGRAM  01-04-11 14:13:32 TSI0374   *****
PAYR     PROGRAM  01-03-30 17:01:40 TSI0374   *****
PAYR     PROGRAM  01-04-11 17:04:55 TSI0374   *****
PAY      COPYCODE 01-03-31 16:39:51 BATCH02   *****
PAYT     COPYCODE *****
                ***** 01-01-31 17:42:15 BATCH01

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
-----
                END
    
```

Field	Type	Description
OBJECT (supplied)	N,S,P,O	The NATURAL object compiled by Autocompile.
OBJECT TYPE (supplied)	N	The NATURAL object type. PARM Indicates Parameter data area. COPYCODE Indicates Copycode. GLOBAL Indicates Global data area. HELP-RTN Indicates Helproutine. LOCAL Indicates Local data area. MAP Indicates Map. SUB-PGM Indicates Subprogram. PROGRAM Indicates Program. SUB-RTN Indicates Subroutine. TEXT Indicates Text. MACRO Indicates Macro. REPORT Indicates Report. EXP-MDL Indicates ExpertModel. RECORD Indicates Recording. DIALOG Indicates Dialog. CLASS Indicates Class. CMD-PROC Indicates Processor. SERVER Indicates Server. FUNCTION. Indicates Function. ADAPTER. Indicates Adapter. MACRO. Indicates Macro.

(continued from previous page)

Field	Type	Description
	P	The PREDICT object type of the PREDICT objects.
		Type      Indicates      Predict Version
		DA      Database
		DC      Dataspace
		ET      Extract
		FI      File
		IE      Interface      V4.1.2 and above
		KY      Keyword
		LS      Library Structure
		MD      Method      V4.1.2 and above
		MO      Module      V3.4.2 and below
		NO      Node
		NW      Network
		PG      PackageList
		PR      Program
		PY      Property      V4.1.2 and above
		RL      Relationship
		RP      Report      V3.4.2 and below
		RT      Report Listing
		SC      Storagespace
		SV      Server
		SY      System
		US      User
		VE      Verification
		VM      Virtual Machine
	O	The actual object type of a category. Specific member types are determined when an object is enrolled.
		ASMB      Indicates Assembler.
		COBOL      Indicates COBOL.
		FORT      Indicates FORTRAN.
		PL/I      Indicates PL/I.
		RPG      Indicates RPG.
		DATA      Indicates DATA FILES.
		JCL      Indicates JCL.
		OTHER      Indicates all other objects.
SOURCE DATE (supplied)	N	The date the source code was saved.
SOURCE TIME (supplied)	N	The time the source code was saved.

(continued from previous page)

<b>Field</b>	<b>Type</b>	<b>Description</b>
SOURCE USER-ID (supplied)	N	The User-ID of the user who saved the source code.
OBJECT DATE (supplied)	N	The date the object code was compiled.
OBJECT TIME (supplied)	N	The time the object code was compiled.
OBJECT USER-ID (supplied)	N	The User-ID of the user who compiled the object code.
SYSERR LANGUAGE (supplied)	S	The languages found for the SYSERR message (e.g., E, F, G, etc.).
FILE TYPE (supplied)	P	The PREDICT file type (e.g., A is ADABAS, U is ADABAS userviews, etc.).
DATE (supplied)	P	The date the PREDICT object was saved.
CATEGORY (supplied)	O	The 3GL/OTHER category. ASMB Indicates Assembler. COBOL Indicates COBOL. FORT Indicates FORTRAN. PL/I Indicates PL/I. RPG Indicates RPG. DATA Indicates DATA FILES. JCL Indicates JCL. OTHER Indicates all other objects.
DDM Dbid (supplied)	D	Database number that the DDM will point to.
DDM Fnr (supplied)	D	File number that the DDM will point to.
DDM ADA 6 Support (supplied)	D	Marked with an X if the DDM was created in NATUR above and will allow a Dbid and/or Fnr greater than 2
Description (supplied)	M	Description of the UDE – User Defined Entities

**IV.4.5 Cross-Reference**

The Cross-Reference report identifies external references to programs of a NATURAL or 3GL object.

To display the Cross-Reference input screen for NATURAL objects, enter "E" in the Enter Code field and "N" in the Type field on the Object Reporting menu.

```

01-12-31          N-2-O OBJECT REPORTING          TSI0373
11:38:00          CROSS REFERENCE                 TSI1

Env Def:  _____
Library:  _____
Object :  _____

Mode   :  O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Type	Description
∞ ENV DEF (required)	N,O	An environment defined to N2O.
LIBRARY (required)	N	The library containing the NATURAL object.
OBJECT (required)	N,O	The NATURAL or 3GL/OTHER object.
MODE (required)	N,O	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line (Default: O).
∞ CATEGORY (required)	O	Identifies the 3GL/OTHER category for 3GL/OTHER objects. Valid values are as follows: ASMB Indicates all types of Assembler. COBOL Indicates all types of COBOL. FORT Indicates all types of FORTRAN. PL/I Indicates all PL/I types. RPG Indicates RPG. DATA Indicates DATA FILES. JCL Indicates JCL, CLIST, CNTL. OTHER Indicates all other types.

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Cross-Reference report.

```
Press ENTER to display invoked programs
01-12-31      N-2-O OBJECT REPORTING      TSI0373
11:38:00      CROSS REFERENCE            TSI1
                                                Page: 1

      The following programs are affected by changes to MENU

PAYMENU      PAYERROR      PAYREAD

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
----- END ----- STOP
```

A list of affected programs is displayed.

If source is available, pressing enter displays a list of invoked, stacked and called programs.

```
Press ENTER to display invoked programs
01-12-31      N-2-O OBJECT REPORTING      TSI0373
11:38:00      CROSS REFERENCE            TSI1
                                                Page: 2

      The following programs are invoked by MENU

N20111N      N20112N      N20113N      N20114N      N20115N      N20116N
N20116N      N20117N      N20118N      N20119N      N20120N      PAYREAD
PAYERROR

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
----- END ----- STOP
```

**IV.4.6 Checked-out Objects**

The Checked-out Objects report displays objects checked out from a BASE environment or all BASE environments. This report identifies programs a user has checked out.

To display the Checked-out Objects input screen for NATURAL objects, enter "F" in the Enter Code field and "N" in the Type field on the Object Reporting menu.

```

01-12-31          N-2-O OBJECT REPORTING          TSI0373
11:38:00          CHECKED-OUT OBJECTS             TSI1

                BASE Env      : _____
                BASE Library   : _____
                Object         : _____
                Current Env    : _____
                Current Library : _____
                Checkout User-ID: TSI0373_____
                Checkout Date   : _____

                Mode           : 0

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ---- END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Type	Description
∞ BASE ENV (optional)	N,S,P,O,D,M	The Environment Definition used to check out objects. When blank, all objects checked out to the specified user-ID will be reported.
BASE LIBRARY (optional)	N,S	Limits the report to NATURAL objects or SYSERR messages checked out of the BASE library.
OBJECT (optional)	N,S,P,O,D,M	Limits the report to the NATURAL objects, PREDICT objects, 3GL/OTHER objects, or SYSERR messages specified. An (*) may be used as a wildcard character to start the report with objects prefixed by a string.
∞ CURRENT ENV (optional)	N,S,P,O,D,M	Limits the report to objects checked out to an Environment Definition.
CURRENT LIBRARY (optional)	N,S	Limits the report to NATURAL objects or SYSERR messages checked out to a library.
∞ CHECKOUT USER-ID (optional)	N,S,P,O,D,M	Limits the report to objects checked out by the user with the specified User-ID. (Defaults to current User-ID)
CHECKOUT DATE (optional)	N,S,P,O, ,D,M	Limits the report to objects checked out on the specified date. Dates must be formatted YYYYMMDD.

∞ indicates field-level help is available.

(continued from previous page)

Field	Type	Description																																																																								
MODE (required)	N,S,P,O,D,M	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line (Default: O).																																																																								
∞ OBJECT TYPE (required)	P	Identifies the PREDICT object type for PREDICT objects. Valid values are as follows: <table border="1"> <thead> <tr> <th>Type</th> <th>Indicates</th> <th>Predict Version</th> </tr> </thead> <tbody> <tr><td>DA</td><td>Database</td><td></td></tr> <tr><td>DC</td><td>Dataspace</td><td></td></tr> <tr><td>ET</td><td>Extract</td><td></td></tr> <tr><td>FI</td><td>File</td><td></td></tr> <tr><td>IE</td><td>Interface</td><td>V4.1.2 and above</td></tr> <tr><td>KY</td><td>Keyword</td><td></td></tr> <tr><td>LS</td><td>Library Structure</td><td></td></tr> <tr><td>MD</td><td>Method</td><td>V4.1.2 and above</td></tr> <tr><td>MO</td><td>Module</td><td>V3.4.2 and below</td></tr> <tr><td>NO</td><td>Node</td><td></td></tr> <tr><td>NW</td><td>Network</td><td></td></tr> <tr><td>PG</td><td>PackageList</td><td></td></tr> <tr><td>PR</td><td>Program</td><td></td></tr> <tr><td>PY</td><td>Property</td><td>V4.1.2 and above</td></tr> <tr><td>RL</td><td>Relationship</td><td></td></tr> <tr><td>RP</td><td>Report</td><td>V3.4.2 and below</td></tr> <tr><td>RT</td><td>Report Listing</td><td></td></tr> <tr><td>SC</td><td>Storagespace</td><td></td></tr> <tr><td>SV</td><td>Server</td><td></td></tr> <tr><td>SY</td><td>System</td><td></td></tr> <tr><td>US</td><td>User</td><td></td></tr> <tr><td>VE</td><td>Verification</td><td></td></tr> <tr><td>VM</td><td>Virtual Machine</td><td></td></tr> </tbody> </table>	Type	Indicates	Predict Version	DA	Database		DC	Dataspace		ET	Extract		FI	File		IE	Interface	V4.1.2 and above	KY	Keyword		LS	Library Structure		MD	Method	V4.1.2 and above	MO	Module	V3.4.2 and below	NO	Node		NW	Network		PG	PackageList		PR	Program		PY	Property	V4.1.2 and above	RL	Relationship		RP	Report	V3.4.2 and below	RT	Report Listing		SC	Storagespace		SV	Server		SY	System		US	User		VE	Verification		VM	Virtual Machine	
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∞ CATEGORY (required)	O	Identifies the 3GL/OTHER category for 3GL/OTHER objects. Valid values are as follows: ASMB Indicates Assembler. COBOL Indicates COBOL. FORT Indicates FORTRAN. PL/I Indicates PL/I types. RPG Indicates RPG. DATA Indicates DATA FILES. JCL Indicates JCL, CLIST, CNTL. OTHER Indicates all other types.																																																																								

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Checked-out Objects report. When a BASE environment is specified on the Checked-Out Objects Input screen, the following report is generated.

```

Type X to display additional details
01-12-31          N-2-O OBJECT REPORTING          TSI0373
11:38:00          CHECKED-OUT OBJECTS            TSI1
                                                    Page: 1

  X  Object      Object  Checkout  --- BASE ---  - Previous --  -- Current --
  -  Object      Type    User-ID   Env  Library   Env  Library   Env  Library
  -  -----
  -  CMIGUTIL    COPYCODE  TREE06   PROD  PAYPROD  DEV  PAYDEV   TEST  PAYTEST
  -  PAYDCOCI    PROGRAM   TREE06   PROD  PAYPROD  PROD  PAYPROD  DEV  PAYDEV
  -  PAYENVA     PROGRAM   TREE06   PROD  PAYPROD  DEV  PAYDEV   TEST  PAYTEST
  -  PAYENVB     PROGRAM   TREE06   PROD  PAYPROD  DEV  PAYDEV   TEST  PAYTEST
  -  PAYENVC     PROGRAM   TREE06   PROD  PAYPROD  DEV  PAYDEV   TEST  PAYTEST
  -  PAYENVV     PROGRAM   TREE06   PROD  PAYPROD  DEV  PAYDEV   TEST  PAYTEST
  -  PAYENVE     PROGRAM   TREE06   PROD  PAYPROD  DEV  PAYDEV   TEST  PAYTEST
  -  PAYEVNTA    PROGRAM   TREE06   PROD  PAYPROD  DEV  PAYDEV   TEST  PAYTEST
  -  PAYEVNTB    PROGRAM   TREE06   PROD  PAYPROD  DEV  PAYDEV   TEST  PAYTEST
  -  PAYEVNTC    PROGRAM   TREE06   PROD  PAYPROD  DEV  PAYDEV   TEST  PAYTEST
  -  PAYEVNTD    PROGRAM   TREE06   PROD  PAYPROD  DEV  PAYDEV   TEST  PAYTEST
  -  PAYEVNTE    PROGRAM   TREE06   PROD  PAYPROD  DEV  PAYDEV   TEST  PAYTEST
  -  PAYEVNTF    PROGRAM   TREE06   PROD  PAYPROD  DEV  PAYDEV   TEST  PAYTEST
  -  -----
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
-----  END  -----  STOP
    
```

Field	Type	Description
X (optional)	N,S,P,O,D,M	"X" selects an object for additional details.
OBJECT (supplied)	N,S,P,O,D,M	The DDMS, METADATA, NATURAL object, PREDICT object, 3GL/OTHER object, or SYSERR message.
OBJECT TYPE (supplied)	N	The NATURAL object type. PARM            Indicates Parameter data area. COPYCODE      Indicates Copycode. GLOBAL        Indicates Global data area. HELP-RTN      Indicates Helproutine. LOCAL         Indicates Local data area. MAP            Indicates Map. SUB-PGM       Indicates Subprogram. PROGRAM       Indicates Program. SUB-RTN       Indicates Subroutine. TEXT           Indicates Text. MACRO          Indicates Macro. REPORT        Indicates Report. EXP-MDL       Indicates ExpertModel. RECORD        Indicates Recording. DIALOG        Indicates Dialog. CLASS          Indicates Class. CMD-PROC      Indicates Processor. SERVER        Indicates Server. FUNCTION.     Indicates Function. ADAPTER.      Indicates Adapter. MACRO.        Indicates Macro.
	S	The SYSERR messages (e.g., E, G, F, etc.).

(continued from previous page)

<b>Field</b>	<b>Type</b>	<b>Description</b>																																																																								
	P	The PREDICT object type.																																																																								
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RT	Report Listing																																																																									
SC	Storagespace																																																																									
SV	Server																																																																									
SY	System																																																																									
US	User																																																																									
VE	Verification																																																																									
VM	Virtual Machine																																																																									
CHECKOUT USER-ID (supplied)	N,S,P,O	The User-ID of the user who has the object checked-out.																																																																								
BASE ENV (supplied)	N,S,P,O	The BASE Environment Definition.																																																																								
BASE LIBRARY (supplied)	N,S	The BASE library.																																																																								
PREVIOUS ENV (supplied)	N,S,P,O	The previous checkout Environment Definition.																																																																								
PREVIOUS LIBRARY (supplied)	N,S	The previous checkout library.																																																																								
CURRENT ENV (supplied)	N,S,P,O	The current checkout Environment Definition.																																																																								

---

(continued from previous page)

---

<b>Field</b>	<b>Type</b>	<b>Description</b>
CURRENT LIBRARY (supplied)	N,S	The current checkout library.
CATEGORY (supplied)	O	The 3GL/OTHER category.  ASMB     Indicates Assembler. COBOL    Indicates COBOL. FORT     Indicates FORTRAN. PL/I     Indicates PL/I. RPG      Indicates RPG. DATA     Indicates DATA FILES. JCL      Indicates JCL. OTHER    Indicates All other objects.

Selecting an object on the previous screen (using an 'X') and pressing Enter displays additional details for a checked-out object.

```

01-12-31          N-2-O OBJECT REPORTING          TSI0373
11:38:00          CHECKED-OUT OBJECTS             TSI1

Object   Object   Checkout  ---- BASE ----  -- Previous --  -- Current ---
-----  Type     User-ID   Env  Library   Env  Library   Env  Library
-----  -----  -----  ---  -
CDELDTLS COPYCODE TREE06   PROD  PAYPROD   DEV  PAYDEV   TEST PAYTEST

                ----- Checkout -----
                Event   Sequence  Date      Time
                -----  -----
                PAYOUT  232      01-03-29  08:34:19

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
-----  END  -----  -----  -----  -----  -----  -----  STOP
    
```

Field	Type	Description
OBJECT (supplied)	N,S,P,O, D,M	The NATURAL object, PREDICT object, 3GL/OTHER object, or SYSERR message.
OBJECT TYPE (supplied)	N	The NATURAL object type. PARM Indicates Parameter data area. COPYCODE Indicates Copycode. GLOBAL Indicates Global data area. HELP-RTN Indicates Helproutine. LOCAL Indicates Local data area. MAP Indicates Map. SUB-PGM Indicates Subprogram. PROGRAM Indicates Program. SUB-RTN Indicates Subroutine. TEXT Indicates Text. MACRO Indicates Macro. REPORT Indicates Report. EXP-MDL Indicates ExpertModel. RECORD Indicates Recording. DIALOG Indicates Dialog. CLASS Indicates Class. CMD-PROC Indicates Processor. SERVER Indicates Server. FUNCTION. Indicates Function. ADAPTER. Indicates Adapter. MACRO. Indicates Macro.
CHECKOUT USER-ID (supplied)	N,S,P,O,D,M	The User-ID of the user who has the object checked-out.
BASE ENV (supplied)	N,S,P,O,D,M	The BASE Environment Definition.

(continued from previous page)

<b>Field</b>	<b>Type</b>	<b>Description</b>
BASE LIBRARY (supplied)	N,S	The BASE library.
PREVIOUS ENV (supplied)	N,S,P,O,D,M	The previous checkout Environment Definition.
PREVIOUS LIBRARY (supplied)	N,S	The previous checkout library.
CURRENT ENV (supplied)	N,S,P,O, ,D,M	The current checkout Environment Definition.
CURRENT LIBRARY (supplied)	N,S	The current checkout library.
CHECKOUT EVENT (supplied)	N,S,P,O, ,D,M	The Master Event that checked out the object.
CHECKOUT SEQUENCE (supplied)	N,S,P,O, ,D,M	The sequence number of the Event used to check out the utility.
CHECKOUT DATE (supplied)	N,S,P,O, ,D,M	The date the object was checked out.
CHECKOUT TIME (supplied)	N,S,P,O,D,M	The time the object was checked out.
CATEGORY (supplied)	O	The 3GL/OTHER category. ASMB Indicates Assembler. COBOL Indicates COBOL. FORT Indicates FORTRAN. PL/I Indicates PL/I. RPG Indicates RPG. DATA Indicates DATA FILES. JCL Indicates JCL. OTHER Indicates all other objects.

When no BASE Environment is specified on the Checked-Out Objects Input screen, the user is notified with the following message:

```

01-12-31          N-2-O OBJECT REPORTING          TSI0373
11:38:00          CHECKED-OUT OBJECTS             TSI1

      |-----|
      | NO BASE ENVIRONMENT SPECIFIED.             |
      | ALL OBJECTS IN ALL ENVIRONMENTS           |
      | WILL BE DISPLAYED FOR USER MLS1 .         |
      |-----|
      | HIT ENTER TO CONTINUE OR PF3 TO EXIT.     |
      |-----|

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ---  END   ---  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---
  
```

Pressing PF3 returns the user to the Checked-Out Objects entry screen. Pressing enter generates the following report of all checked-out objects in all environments for a User-Id:

```

01-12-31          N-2-O Object Reporting          TSI0373
11:38:00          All Checked Out Objects for    TSI1
                  User Id:  MLS1                Page: 1

      Typ --- Base ---- -- Current -- -- Checkout --
      Object Name ----- - Env  Library  Env  Library  Event  Seq
-----
PAY0001          S  PROD PAYPROD  DEV  PAYDEV  PAYOUT  29
PAY0002          P  PROD PAYPROD  DEV  PAYDEV  PAYOUT  29
PAY0003          P  PROD PAYPROD  DEV  PAYDEV1 PAYOUT  1

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      ---  ---  END   ---  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---
  
```

Field	Type	Description
USER ID (supplied)	N,S,P,O, ,D,M	The User-ID of the user who has the object checked-out.
OBJECT NAME (supplied)	N,S,P,O, ,D,M	The DDMS, METADATA, NATURAL object, PREDICT object, 3GL/OTHER object, or SYSERR message.
TYP (supplied)	N	The NATURAL object type. A Indicates Parameter data area. C Indicates Copycode. G Indicates Global data area. H Indicates Helproutine. L Indicates Local data area. M Indicates Map. N Indicates Subprogram. P Indicates Program. S Indicates Subroutine. T Indicates Text. O Indicates Macro. R Indicates Report. Y Indicates ExpertModel. Z Indicates Recording. 3 Indicates Dialog. 4 Indicates Class. 5 Indicates Processor. K Indicates Server. 7 Indicates Function. 8 Indicates Adapter. O Indicates Macro.
	S	The SYSERR messages (e.g., E, G, F, etc.).

(continued from previous page)

<b>Field</b>	<b>Type</b>	<b>Description</b>																																																																								
	P	The PREDICT object type.																																																																								
		<table border="1"> <thead> <tr> <th><b>Type</b></th> <th><b>Indicates</b></th> <th><b>Predict Version</b></th> </tr> </thead> <tbody> <tr><td>DA</td><td>Database</td><td></td></tr> <tr><td>DC</td><td>Dataspace</td><td></td></tr> <tr><td>ET</td><td>Extract</td><td></td></tr> <tr><td>FI</td><td>File</td><td></td></tr> <tr><td>IE</td><td>Interface</td><td>V4.1.2 and above</td></tr> <tr><td>KY</td><td>Keyword</td><td></td></tr> <tr><td>LS</td><td>Library Structure</td><td></td></tr> <tr><td>MD</td><td>Method</td><td>V4.1.2 and above</td></tr> <tr><td>MO</td><td>Module</td><td>V3.4.2 and below</td></tr> <tr><td>NO</td><td>Node</td><td></td></tr> <tr><td>NW</td><td>Network</td><td></td></tr> <tr><td>PG</td><td>PackageList</td><td></td></tr> <tr><td>PR</td><td>Program</td><td></td></tr> <tr><td>PY</td><td>Property</td><td>V4.1.2 and above</td></tr> <tr><td>RL</td><td>Relationship</td><td></td></tr> <tr><td>RP</td><td>Report</td><td>V3.4.2 and below</td></tr> <tr><td>RT</td><td>Report Listing</td><td></td></tr> <tr><td>SC</td><td>Storagespace</td><td></td></tr> <tr><td>SV</td><td>Server</td><td></td></tr> <tr><td>SY</td><td>System</td><td></td></tr> <tr><td>US</td><td>User</td><td></td></tr> <tr><td>VE</td><td>Verification</td><td></td></tr> <tr><td>VM</td><td>Virtual Machine</td><td></td></tr> </tbody> </table>	<b>Type</b>	<b>Indicates</b>	<b>Predict Version</b>	DA	Database		DC	Dataspace		ET	Extract		FI	File		IE	Interface	V4.1.2 and above	KY	Keyword		LS	Library Structure		MD	Method	V4.1.2 and above	MO	Module	V3.4.2 and below	NO	Node		NW	Network		PG	PackageList		PR	Program		PY	Property	V4.1.2 and above	RL	Relationship		RP	Report	V3.4.2 and below	RT	Report Listing		SC	Storagespace		SV	Server		SY	System		US	User		VE	Verification		VM	Virtual Machine	
<b>Type</b>	<b>Indicates</b>	<b>Predict Version</b>																																																																								
DA	Database																																																																									
DC	Dataspace																																																																									
ET	Extract																																																																									
FI	File																																																																									
IE	Interface	V4.1.2 and above																																																																								
KY	Keyword																																																																									
LS	Library Structure																																																																									
MD	Method	V4.1.2 and above																																																																								
MO	Module	V3.4.2 and below																																																																								
NO	Node																																																																									
NW	Network																																																																									
PG	PackageList																																																																									
PR	Program																																																																									
PY	Property	V4.1.2 and above																																																																								
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RP	Report	V3.4.2 and below																																																																								
RT	Report Listing																																																																									
SC	Storagespace																																																																									
SV	Server																																																																									
SY	System																																																																									
US	User																																																																									
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BASE ENV (supplied)	N,S,P,O,D,M	The BASE Environment Definition.																																																																								
BASE LIBRARY (supplied)	N,S	The BASE library.																																																																								
CURRENT ENV (supplied)	N,S,P,O,D,M	The current checkout Environment Definition.																																																																								
CURRENT LIBRARY (supplied)	N,S	The current checkout library.																																																																								
CHECKOUT EVENT (supplied)	N,S,P,O,D,M	The Event or Utility used to check out the object.																																																																								
CHECKOUT SEQ (supplied)	N,S,P,O,D,M	The Sequence Number associated with the Check-out Event.																																																																								

**IV.4.7 Objects Archived by N2OPURGE**

The Objects Archived by N2OPURGE report displays NATURAL objects archived using the N2OPURGE utility. This report is only available for NATURAL objects (N).

To display the Objects Archived by N2OPURGE input screen, enter "G" in the Enter Code field and "N" in the Type field on the Object Reporting menu.

```

01-12-31          N-2-O OBJECT REPORTING          TSI0373
11:38:00          OBJECTS ARCHIVED BY N2OPURGE    TSI1

Object   : _____
Env Def  : _____
Library  : _____
Date Range: _____ - _____
Mode     : 0

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ---  END  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---
    
```

Field	Type	Description
OBJECT (optional)	N	The name of a NATURAL object.
∞ ENV DEF (optional)	N	The Environment Definition that contained the NATURAL object.
LIBRARY (optional)	N	The library that contained the NATURAL object.
DATE RANGE (optional)	N	Limits the report to objects migrated within the specified range of dates. Dates must be formatted YYYYMMDD.
MODE (required)	N	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line (Default: O).

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Objects Archived by N2OPURGE report.

```

01-12-31          N-2-O OBJECT REPORTING          TSI0373
11:38:00          OBJECTS ARCHIVED BY N2OPURGE    TSI1
                                                    Page: 1

S Object      Object      -----From-----  Arch  Arch
-----      Type              Env   Library  Def   S/C   Date   Time
- MENU      PROGRAM    TEST  PAYTEST  ARC1  S/C   01-08-19  17:10:08
- MENU      PROGRAM    TEST  PAYTEST  ARC1  S     01-10-05  08:22:14
- MENU      PROGRAM    DEV   PAYDEV   ARC1  S/C   01-11-15  15:50:43
- MENU      PROGRAM    DEV   PAYDEV   ARC1  S     01-09-16  15:20:34

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
-----  END  -----  -----  -----  -----  -----  -----  STOP
    
```

Field	Type	Description
S	N	"X" selects an object for additional details.
(optional)		
OBJECT	N	The NATURAL object archived and deleted.
(supplied)		
OBJECT TYPE	N	The NATURAL object type.
(supplied)		
		PARAM            Indicates Parameter data area.
		COPYCODE        Indicates Copycode.
		GLOBAL          Indicates Global data area.
		HELP-RTN        Indicates Helproutine.
		LOCAL           Indicates Local data area.
		MAP             Indicates Map.
		SUB-PGM         Indicates Subprogram.
		PROGRAM         Indicates Program.
		SUB-RTN         Indicates Subroutine.
		TEXT            Indicates Text.
		MACRO           Indicates Macro.
		REPORT          Indicates Report.
		EXP-MDL         Indicates ExpertModel.
		RECORD          Indicates Recording.
		DIALOG          Indicates Dialog.
		CLASS           Indicates Class.
		CMD-PROC        Indicates Processor.
		SERVER          Indicates Server.
		FUNCTION.       Indicates Function.
		ADAPTER.        Indicates Adapter.
		MACRO.          Indicates Macro.
FROM ENV	N	The Environment Definition that contained the NATURAL object.
(supplied)		
FROM LIBRARY	N	The library that contained the NATURAL object.
(supplied)		

---

(continued from previous page)

<b>Field</b>	<b>Type</b>	<b>Description</b>
ARCH DEF (supplied)	N	The Archive Definition used to archive the NATURAL object.
ARCH S/C (supplied)	N	The form of the object archived and deleted. S Indicates only the source form of the program may be selected. C Indicates only the cataloged form of the program may be selected. S/C Indicates both forms of the program may be selected.
DATE (supplied)	N	The date the NATURAL object was archived and deleted.
TIME (supplied)	N	The time the NATURAL object was archived and deleted.

**IV.4.8 Archive Version Summary**

The Archive Version Summary report displays all Events that archived an object.

To display the Archive Version Summary input screen for NATURAL objects, enter "H" in the Enter Code field and "N" in the Type field on the Object Reporting menu.

```

01-12-31          N-2-O OBJECT REPORTING          TSI0373
11:38:00          ARCHIVE VERSION SUMMARY          TSI1

Object           : _____
Library          : _____
Date Range      : _____ - _____

Detailed Report: N (Batch Only)
Mode            : O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  -----END-----
    
```

This report is only available for NATURAL objects (N), 3GL/OTHER members (O), and SYSERR messages (S).

Field	Type	Description
OBJECT (required)	N,S,O	Displays the archive history of a NATURAL object, PDS object, or SYSERR message.
LIBRARY (optional)	N,S	Limits the report to NATURAL objects or SYSERR messages for the specified library.
DATE RANGE (optional)	N,S,O	Limits the report to objects migrated within the range of dates. Dates must be formatted YYYYMMDD.
DETAILED REPORT (required)		Indicates whether detailed information should be displayed when executed in batch.  Y Display all detail information for reports when executed in batch (similar to entering X next to an object on the Archive Version Summary selection screen).  N Display information similar to the Archive Version Summary selection screen (Default: N).
MODE (required)	N,S,O	Indicates how the job is executed (batch or on-line).  B Submits JCL to the internal reader that processes the function in batch.  O Processes the function on-line (Default: O).

Entering the necessary information in the input screen and pressing Enter displays the Archive Version Summary selection screen.

```

Type X to display Event Details or Utility Details
01-12-31      N-2-O OBJECT REPORTING      TSI0373
11:38:00      ARCHIVE VERSION SUMMARY    TSI1
Object: PAYROLL                               Page: 1

   X  Date      Event/      Seq      Change      From      To      Arch      Added
   -  -----  Utility     -----  Control     Env       Env       S/C      User-ID
   -  -----  -----  -----  -----  -----  -----  -----  -----
   -  01-11-01  PAYIN       99      *****  PROD      ARC1     S        TSI0374
   -  01-11-01  EXTRACT    98      *****  TEST      ARC1     C        TSI0374
   -  01-09-01  PAYTEST    1       *****  TEST      ARC1     S/C      TSI0375
   -  01-09-25  PAYOUT     3307    *****  DEV       ARC1     S/C      TSI0374
   -  01-07-10  PAYIN      3261    *****  PROD      ARC1     S/C      TSI0375
   -  01-06-20  PAYTEST    3068    *****  TEST      ARC1     S/C      TSI0374
   -  01-06-16  EXTRACT    1       *****  TEST      ARC1     S        TSI0375
   -  01-05-20  PAYIN      70      *****  PROD      ARC1     S/C      TSI0375
   -  01-05-14  PAYTEST    2697    *****  TEST      ARC1     S        TSI0374
   -  01-04-22  PAYOUT     1924    *****  TEST      ARC1     S/C      TSI0375
   -  01-03-04  EXTRACT    965     *****  TEST      ARC1     S        TSI0375
   -  01-01-04  EXTRACT    964     *****  TEST      ARC1     S        TSI0374

Enter--PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END ----- STOP
    
```

Field	Type	Description
OBJECT (supplied)	N,S,O	The name of the object for executing this report.
X (optional)	N,S,O	"X" displays Event/Utility Details.
DATE (supplied)	N,S,O	The migration date of an Event or the date the utility was executed.
EVENT/ UTILITY (supplied)	N,S,O	The Master Event of the migration.
SEQ (supplied)	N,S,O	The sequence number of the Event.
CHANGE CONTROL (supplied)	N,S,O	A value that relates multiple Events to a specific change request.
FROM ENV (supplied)	N,S,O	The source Environment Definition of the Event.
TO ENV (supplied)	N,S,O	The target Environment Definition of the Event.

(continued from previous page)

<b>Field</b>	<b>Type</b>	<b>Description</b>
ARCH S/C (supplied)	N,S,O	The form of the object archived.  S Indicates only the source form of the program may be selected.  C Indicates only the cataloged form of the program may be selected.  S/C Indicates both forms of the program may be selected.
ADDED USER-ID (supplied)	N,S,O	The user who added the Event or executed the utility.

**IV.4.9 Events Pending for an Object**

The Events Pending for an Object report displays all Events pending for an object.

To display the Events Pending for an Object input screen for NATURAL objects, enter "I" in the Enter Code field and "N" in the Type field on the Object Reporting menu and press Enter.

```

01-12-31          N-2-O OBJECT REPORTING          TSI0373
11:38:00          EVENTS PENDING FOR AN OBJECT    TSI1

Object           : _____
Added User-ID:   : _____

Mode             : 0

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Type	Description
OBJECT (required)	N,S,P,O, ,D,M	The DDMS, METADATA, NATURAL object, PREDICT object, 3GL/OTHER object, or SYSERR message.
∞ ADDED USER-ID (optional)	N,S,P,O, ,D,M	Limits the report to Events added by a user with the specified User-ID.
MODE (required)	N,S,P,O, ,D,M	Indicates how the job is executed (batch or on-line).  B Submits JCL to the internal reader that processes the function in batch.  O Processes the function on-line (Default: O).

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Events Pending for an Object report.

```

01-12-31          N-2-O OBJECT REPORTING          TSI0373
11:38:00          EVENTS PENDING FOR AN OBJECT    TSI1
                Object: PAY1111N                 Page: 1

Event      Seq      Extr      Mig      From      To      ----- Added -----
-----      -----      -----      -----      Env      Env      Date      Time      User-ID
PAYIN      83      NO      S      TEST      PROD    01-04-06    16:59:56    TSI0373

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
-----      END      -----      -----      -----      -----      -----      STOP
    
```

Field	Type	Description
OBJECT (supplied)	N,S,P,O, ,D,M	The NATURAL object, PREDICT object, 3GL/OTHER object, or SYSERR message.
EVENT (supplied)	N,S,P,O, ,D,M	The Master Event of the migration.
SEQ (supplied)	N,S,P,O, ,D,M	The sequence number of the Event.
EXTR (supplied)	N,S,P,O, ,D,M	Indicates whether the Event is an Extract Event or not.  YES Indicates the Event is an Extract Event. NO Indicates the Event is not an Extract Event.
MIG TYPE (supplied)	N,S,P,O, ,D,M	The form of the object migrated.  S Indicates only the source form of the program may be selected. C Indicates only the cataloged form of the program may be selected. S/C Indicates both forms of the program may be selected.
FROM ENV (supplied)	N,S,P,O,D,M	The source Environment Definition of the Event.
TO ENV (supplied)	N,S,P,O,D,M	The target Environment Definition of the Event. An asterisk (*) indicates the Event is a multiple target Event.

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(continued from previous page)

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<b>Field</b>	<b>Type</b>	<b>Description</b>
ADDED DATE (supplied)	N,S,P,O,D,M	The date the Event was added.
ADDED TIME (supplied)	N,S,P,O,D,M	The time the Event was added.
ADDED USER-ID (supplied)	N,S,P,O,D,M	The User-ID of the user who added the Event.

---

**Object Reporting in Batch**

Sample reporting JCL is provided in the MVSREPT, VMREPT, BSREPT and VSEREPT members located in the Natural library N2OBATCH.

**Note:** The batch reports from the N2O Reporting Subsystem and the Documentation Tools require that the NATURAL Parameter IM (Input Mode) be set to "IM=D" (Delimiter Mode).

The following tables illustrate the JCL and EXECs modifications necessary to execute Object reports in batch.

**History of an Environment**

TYPE	&REPORT	&INPUT
N,S	N2OOBJA	TYPE, DETAILED-REPORT LIBRARY, ENV-DEF, DATE-1, DATE-2
P	N2OOBJA	TYPE, DETAILED-REPORT OBJECT-TYPE, ENV-DEF, DATE-1, DATE-2
O	N2OOBJA	TYPE, DETAILED-REPORT CATEGORY, ENV-DEF, DATE-1, DATE-2

**History of an Object**

TYPE	&REPORT	&INPUT
N,S	N2OOBJB	TYPE, DETAILED-REPORT OBJECT, LIBRARY, DATE-1, DATE-2
P	N2OOBJB	TYPE, DETAILED-REPORT OBJECT, OBJECT-TYPE, DATE-1, DATE-2
O	N2OOBJB	TYPE, DETAILED-REPORT OBJECT, CATEGORY, DATE-1, DATE-2

----- indicates that inputs are on separate lines.

**Directory List**

TYPE	&REPORT	&INPUT
N,S	N2OOBJC	TYPE ----- ENV-DEF,LIBRARY ----- STARTING VALUE,ENDING VALUE
P	N2OOBJC	TYPE ----- ENV-DEF,OBJECT-TYPE ----- STARTING-VALUE,ENDING-VALUE
O	N2OOBJC	TYPE ----- ENV-DEF,CATEGORY ----- STARTING-VALUE,ENDING-VALUE, ENDEVOR-SYSTEM,ENDEVOR-SUBSYSTEM

**Directory Compare**

TYPE	&REPORT	&INPUT
N	N2OOBJD	TYPE ----- BASE-ENV-DEF,COMPARE-ENV-DEF,BASE-LIBRARY, COMPARE-LIBRARY,BASE-SOURCE-OBJECT, COMPARE-SOURCE-OBJECT ----- STARTING-VALUE,ENDING-VALUE, VERIFY-TIMESTAMPS,VERIFY-EXISTENCE
S	N2OOBJD	TYPE ----- BASE-ENV-DEF,COMPARE-ENV-DEF,BASE-LIBRARY, COMPARE-LIBRARY ----- STARTING VALUE,ENDING VALUE,VERIFY-EXISTENCE
P	N2OOBJD	TYPE ----- BASE-ENV-DEF,COMPARE-ENV-DEF,OBJECT TYPE ----- STARTING-VALUE,ENDING-VALUE, VERIFY-TIMESTAMPS,VERIFY-EXISTENCE
O	N2OOBJD	TYPE ----- BASE-ENV-DEF,COMPARE-ENV-DEF,CATEGORY ----- STARTING-VALUE,ENDING-VALUE,VERIFY-EXISTENCE ----- BASE-ENDEVOR-SYSTEM,BASE-ENDEVOR-SUBSYSTEM ----- COMPARE-ENDEVOR-SYSTEM, COMPARE-ENDEVOR-SUBSYSTEM

**Cross-Reference**

TYPE	&REPORT	&INPUT
N	N2OOBJE	TYPE ----- ENV-DEF,LIBRARY,OBJECT
O	N2OOBJE	TYPE ----- ENV-DEF,CATEGORY,OBJECT

----- indicates that inputs are on separate lines.

**Checked-out Objects**

TYPE	&REPORT	&INPUT
A	N2OOBJF	TYPE,CHECKOUT-USERID
N,S	N2OOBJF	TYPE ----- BASE-ENV,BASE-LIBRARY,OBJECT,CURR-ENV CURR-LIBRARY,CHECKOUT-USERID,CHECKOUT-DATE
P	N2OOBJF	TYPE ----- BASE-ENV,OBJECT-TYPE,OBJECT,CURR-ENV CHECKOUT-USERID,CHECKOUT-DATE
O	N2OOBJF	TYPE ----- BASE-ENV,CATEGORY,OBJECT,CURR-ENV CHECKOUT-USERID,CHECKOUT-DATE, ENDEVOR-SYSTEM,ENDEVOR-SUBSYSTEM

**Objects Archived by N2OPURGE**

TYPE	&REPORT	&INPUT
N	N2OOBJG	TYPE ----- OBJECT,ENV-DEF,LIBRARY

----- indicates that inputs are on separate lines.

**Archive Version Summary**

TYPE	&REPORT	&INPUT
N,S	N2OOBJH	TYPE,DETAILED-REPORT ----- OBJECT,LIBRARY,DATE-1,DATE-2
O	N2OOBJH	TYPE,DETAILED-REPORT ----- OBJECT,DATE-1,DATE-2

**Events Pending for an Object**

TYPE	&REPORT	&INPUT
N	N2OOBJI	TYPE ----- OBJECT,CREATE-USERID

----- indicates that inputs are on separate lines.

The &INPUT parameter list by default is delimited by commas with no spaces following the commas. To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).

For descriptions of &INPUT fields, refer to field descriptions in corresponding sections of Object Reporting.

**IV.5 Statistical Reporting**

Statistical Reporting provides numerical data about Events and objects.

To display the Statistical Reporting menu, enter "D" on the Reporting Subsystem menu or enter the direct command REP STAT on any menu.

```

01-12-31          N-2-O STATISTICAL REPORTING MENU          TSI0373
11:38:00                                               TSI1

Code  Function
-----
A  Events Pending Autocompile for a Library
B  Events Pending for an Environment
C  Objects Migrated
D  Objects Migrated by a User
E  Objects Migrated for an Event
F  Objects Migrated by Change Control
.  Terminate Statistical Reporting
-  -----

Enter Code:  _

Direct Command:  _____          REP STAT
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
    
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows: <ul style="list-style-type: none"> <li><b>A</b>      <b>Events Pending Autocompile for a Library</b> Displays the number of Events pending Autocompile for libraries.</li> <li><b>B</b>      <b>Events Pending for an Environment</b> Displays the number of Events pending a migration to an environment.</li> <li><b>C</b>      <b>Objects Migrated</b> Displays the number of objects migrated within a range of dates.</li> <li><b>D</b>      <b>Objects Migrated by a User</b> Displays the number of objects migrated by a user.</li> <li><b>E</b>      <b>Objects Migrated for an Event</b> Displays the number of objects migrated with an Event.</li> <li><b>F</b>      <b>Objects Migrated by Change Control</b> Displays the number of objects migrated for a specific change control number.</li> </ul>

**IV.5.1 Events Pending Autocompile for a Library**

The Events Pending Autocompile for a Library report displays the number of Events pending Autocompile for all libraries in an environment.

To display the Events Pending Autocompile for a Library input screen, enter "A" on the Statistical Reporting menu.

```

01-12-31          N-2-O STATISTICAL REPORTING          TSI0373
11:38:00          EVENTS PENDING AUTOCOMPILE FOR A LIBRARY  TSI1

                               Env Def:  _____
                               Mode   :  O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ----  END   -----
    
```

Field	Description
∞ ENV DEF (required)	An Environment defined to N2O.
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line (Default: O).

∞ indicates field-level help is available.

Entering the necessary information on the input screen and pressing Enter displays the Events Pending Autocompile for a Library report.

```

01-12-31          N-2-O STATISTICAL REPORTING          TSI0373
11:38:00          EVENTS PENDING AUTOCOMPILE FOR A LIBRARY  TSI1
                  Env Def:  PAYD                          Page:  1

                  Library  Nbr          Library  Nbr
                  -----  ---          -----  ---
                  PAYPROD  1           PAYTEST  1

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
-----  END  -----  -----  -----  -----  -----  -----  STOP
    
```

Field	Description
ENV DEF (supplied)	An Environment defined to N2O.
LIBRARY (supplied)	The library with Events pending Autocompile.
NBR (supplied)	The number of Events pending Autocompile for a library.

**IV.5.2 Events Pending for an Environment**

The Events Pending for an Environment report displays the number of Events pending a migration to an environment.

To display the Events Pending for an Environment input screen, enter "B" on the Statistical Reporting menu.

```

01-12-31          N-2-O STATISTICAL REPORTING          TSI0373
11:38:00          EVENTS PENDING FOR AN ENVIRONMENT    TSI1
                                                    Page: 1

                Env Def: _____
                Library: _____
                Mode   :  O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
-----  END  -----  -----  -----  -----  -----  -----  STOP
    
```

Field	Description
∞ ENV DEF (required)	Limits the report to Events that migrate to the specified Environment Definition.
LIBRARY (optional)	Limits the report to Events that migrate to the specified library.
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line (Default: O).

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Events Pending for an Environment report.

```

Press ENTER to continue
01-12-31      N-2-O STATISTICAL REPORTING      TSI0373
11:38:00      EVENTS PENDING FOR AN ENVIRONMENT  TSI1
              Env Def:  DEV                      Page:  1

              Event Count:  10

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
-----  END  -----
  
```

Field	Description
ENV DEF (supplied)	An N2O environment selected for the report.
EVENT COUNT (supplied)	The number of Events waiting to be processed for the specified environment.

**IV.5.3 Objects Migrated**

The Objects Migrated report displays the number of objects migrated within a range of dates. As this report is CPU intensive, it is recommended that this report be executed in batch.

To display the Objects Migrated input screen, enter "C" on the Statistical Reporting menu and press Enter.

```

01-12-31          N-2-O STATISTICAL REPORTING          TSI0373
11:38:00          OBJECTS MIGRATED                    TSI1

                                     Date Range:  _____ - _____
                                     Mode       :  O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  -----
    
```

Field	Description
DATE RANGE (optional)	Limits the report to objects migrated within the specified range of dates. Dates must be formatted YYYYMMDD.
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line (Default: O).

Entering the necessary information on the input screen and pressing Enter displays the Object Migrated report.

```

01-12-31          N-2-O STATISTICAL REPORTING          TSI0373
11:38:00          OBJECTS MIGRATED                    TSI1
                  Date Range: 20010401 - 20010414      Page: 1

                NATURAL
                Source: 1233
                Object: 475

                SYSERR
                Short : 16
                Long  : 0

                PREDICT : 0

                3GL/Other: 9

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ---- END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----  STOP
    
```

Field	Description
DATE RANGE (supplied)	Selected range of dates for the report.
NATURAL SOURCE (supplied)	The number of objects with NATURAL source code migrated.
NATURAL OBJECT (supplied)	The number of objects with NATURAL object code migrated.
SYSERR SHORT (supplied)	The number of SYSERR short messages migrated.
SYSERR LONG (supplied)	The number of SYSERR extended messages migrated.
PREDICT (supplied)	The number of PREDICT objects migrated.
3GL/OTHER (supplied)	The number of 3GL/OTHER members migrated.

**IV.5.4 Objects Migrated by a User**

The Objects Migrated by a User report displays the number of objects migrated by a user. As this report is CPU intensive, it is recommended that this report be executed in batch.

To display the Objects Migrated by a User input screen, enter "D" on the Statistical Reporting menu and press Enter.

```

01-12-31          N-2-O STATISTICAL REPORTING          TSI0373
11:38:00          OBJECTS MIGRATED BY A USER          TSI1
                  USER-ID : TSI1

                  Added User-ID: _____
                  Date Range   : _____ - _____
                  Mode         :  O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
USER-ID (supplied)	The User-ID selected for the report.
∞ ADDED USER-ID (required)	The user who added the Events to migrate the objects.
DATE RANGE (optional)	Limits the report to objects that migrated within the specified range of dates. Dates must be formatted YYYYMMDD.
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line (Default: O).

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Objects Migrated by a User report.

```

01-12-31          N-2-O STATISTICAL REPORTING          TSI0373
11:38:00          OBJECTS MIGRATED BY A USER          TSI1
                  USER-ID: TSI1                      Page:    1

                NATURAL
                Source:  86
                Object:   8

                SYSERR
                Short :  1
                Long  :  0

                PREDICT :  0

                3GL/Other: 0

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
----- END ----- STOP
    
```

Field	Description
NATURAL SOURCE (supplied)	The number of objects with NATURAL source code migrated.
NATURAL OBJECT (supplied)	The number of objects with NATURAL object code migrated.
SYSERR SHORT (supplied)	The number of SYSERR short messages migrated.
SYSERR LONG (supplied)	The number of SYSERR extended messages migrated.
PREDICT (supplied)	The number of PREDICT objects migrated.
3GL/OTHER (supplied)	The number of 3GL/OTHER members migrated.

**IV.5.5 Objects Migrated for an Event**

The Objects Migrated for an Event report displays the number of objects migrated with an Event.

To display the Objects Migrated for an Event input screen, enter "E" on the Statistical Reporting menu and press Enter.

```

01-12-31          N-2-O STATISTICAL REPORTING          TSI0373
11:38:00          OBJECTS MIGRATED FOR AN EVENT        TSI1

                Event   : _____
                Sequence: _____
                Mode    : 0

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ EVENT (required)	The Master Event for the migration.
SEQUENCE (required)	The sequence number of the Event.
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Objects Migrated for an Event report.

```

Press ENTER to continue
01-12-31      N-2-O STATISTICAL REPORTING      TSI0373
11:38:00      OBJECTS MIGRATED FOR AN EVENT    TS11
              Event:PAYIN   Sequence :1      Page:      1

              NATURAL
              Source:  4
              Object:  0

              SYSERR
              Short :  0
              Long  :  0

              PREDICT :  0

              3GL/Other: 0

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
----- END ----- STOP
    
```

Field	Description
EVENT (supplied)	The master event of the migration.
SEQUENCE (supplied)	The sequence number of the event.
NATURAL SOURCE (supplied)	The number of objects with NATURAL source code migrated.
NATURAL OBJECT (supplied)	The number of objects with NATURAL object code migrated.
SYSERR SHORT (supplied)	The number of SYSERR short messages migrated.
SYSERR LONG (supplied)	The number of SYSERR extended messages migrated.
PREDICT (supplied)	The number of PREDICT objects migrated.
3GL/OTHER (supplied)	The number of 3GL/OTHER members migrated.

**IV.5.6 Objects Migrated by Change Control**

The Objects Migrated by Change Control report displays the number of objects migrated with a specific change control number.

To display the Objects input screen, enter "F" on the Statistical Reporting menu and press Enter.

```

01-12-31          N-2-O STATISTICAL REPORTING          TSI0373
11:38:00          OBJECTS MIGRATED BY CHANGE CONTROL    TSI1

Change Control: _____
Mode           :  O

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ---- END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ CHANGE CONTROL (required)	The change control number to be reported on.
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Objects by Change Control report.

```

Press ENTER to continue
01-12-31      N-2-O STATISTICAL REPORTING      TSI0373
11:38:00      OBJECTS MIGRATED BY CHANGE CONTROL      TSI1
              Change Control: TESTING              Page: 1

              NATURAL
              Source: 4
              Object: 0

              SYSERR
              Short : 0
              Long  : 0

              PREDICT : 0

              3GL/Other: 0

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
----- END ----- STOP
    
```

Field	Description
CHANGE CONTROL (supplied)	The specified change control number.
NATURAL SOURCE (supplied)	The number of objects with NATURAL source code migrated.
NATURAL OBJECT (supplied)	The number of objects with NATURAL object code migrated.
SYSERR SHORT (supplied)	The number of SYSERR short messages migrated.
SYSERR LONG (supplied)	The number of SYSERR extended messages migrated.
PREDICT (supplied)	The number of PREDICT objects migrated.
3GL/OTHER (supplied)	The number of 3GL/OTHER members migrated.

**IV.5.7 Statistical Reporting in Batch**

Sample reporting JCL is provided in the MVSREPT, VMREPT, BSREPT and VSEREPT members located in the Natural library N2OBATCH.

**Note:** The batch reports from the N2O Reporting Subsystem and the Documentation Tools require that the NATURAL Parameter IM (Input Mode) be set to "IM=D" (Delimiter Mode).

The following table illustrates the JCL and EXECs modifications necessary to execute Statistical reports in batch.

<b>REPORT</b>	<b>&amp;REPORT</b>	<b>&amp;INPUT</b>
Events Pending Autocompile for a Library	N2OSTATA	ENV-DEF
Events Pending for an Environment	N2OSTATB	ENV-DEF,LIBRARY
Objects Migrated	N2OSTATC	DATE-1,DATE-2
Objects Migrated by a User	N2OSTATD	ADDED USER-ID,DATE-1,DATE-2
Objects Migrated for an Event	N2OSTATE	EVENT,SEQUENCE

The &INPUT parameter list by default is delimited by commas with no spaces following the commas. To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).

For descriptions of &INPUT fields, refer to field descriptions in corresponding sections of Statistical Reporting.

**IV.6 Security Reporting**

Security Reporting provides reports that display information about N2O Security definitions.

To display the Security Reporting menu, enter "E" on the Reporting Subsystem menu or enter the direct command REP SEC on any menu.

```

01-12-31                N-2-O SECURITY REPORTING MENU                TSI0373
11:38:00                                                         TSI1

                                Code  Function
                                -----
      A   N2O User Security
      B   User Groups
      C   Event Authorization
      D   Approval Profiles
      E   Function Profiles
      F   Migration Profiles
      G   Predict Profiles
      H   3GL Profiles
      .   Terminate Security Reporting
-----
Enter Code:  _

Direct Command: _____ REP SEC
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP ---- END  ENV  MIG  REP  TOL  USR  PRJ  ---- ---- EXIT
    
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows: <ul style="list-style-type: none"> <li><b>A N2O User Security</b> Displays N2O User Definitions.</li> <li><b>B User Groups</b> Displays N2O Groups and Users Definitions defined to them.</li> <li><b>C Event Authorization</b> Displays a list of Events requiring Authorization and the users that can authorize them.</li> <li><b>D Approval Profiles</b> Displays N2O Approval Profiles.</li> <li><b>E Function Profiles</b> Displays N2O Function Profiles</li> <li><b>F Migration Profiles</b> Displays N2O Migration Profiles.</li> <li><b>G Predict Profiles</b> Displays N2O Predict Profiles.</li> <li><b>H 3GL Profiles</b> Displays N2O 3GL Profiles.</li> </ul>

**IV.6.1 N2O User Security**

The N2O User Security report displays the N2O User Definitions.

To display the N2O User Security input screen, enter "A" on the Security Reporting menu.

```

05-01-01      N-2-O SECURITY REPORTING      TSI0373
18:08:40      N2O USER SECURITY            TSI1

                Userid:  *_____ ( Wildcard / Single )

                Mode   :  O

                Batch Display Options
                -----
                Approval Status = YES Only. N
                User Definitions..... N
                Migration Profiles..... N

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ USERID (required)	Userids that are displayed by the report. (wildcard permitted)
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line (Default: O).
<b>BATCH DISPLAY OPTIONS</b>	
APPROVAL STATUS = YES ONLY (required)	Indicates if only User Definitions that can authorize their own events should be displayed (Approval Status = YES in the USER Definition) . Y Display only User Definitions that can authorize their own events N Display All User Definitions (Default: N).
USER DEFINITIONS (required)	Indicates amount of detail displayed for each User Definition. Y Display all User Definition details. N Display only User Definition's Userid and Description (Default: N).

∞ indicates field-level help is available.

(continued from previous page)

Field	Type	Description
MIGRATION PROFILES (required)		Indicates if the Migration Profiles that the user has access to should be displayed (determined from all Approval Profiles assigned to the specified user id).
	Y	Display the Migration Profiles the user has access to.
	N	Do not display the Migration Profiles the user has access to (Default: N).

Entering the necessary information on the input screen and pressing Enter displays the N2O User Security report.

```

Valid values: F- Function Prof, A- Approval Prof, U- User Def
05-02-11          N-2-O SECURITY REPORTING          TSI0373
19:49:51          N2O USER SECURITY                TSI1

      X User      Description      Appl      Predict
      - - - - -      - - - - -      Status Xref   View   Group
      - - - - -      - - - - -      ---  ---  ---  ---
      - N2OREPT    N2O REPORT USERIDS          NO   NONE   NONE
      - USER      SYSTEM                      YES   NONE   NONE   ADMIN
      - USER0     AUTH ONLY                       NO   NONE   NONE   AUTH
      - USER1     AUTH ONLY                       NO   NONE   NONE   AUTH
      - USER2     AUTH ONLY                       NO   NONE   NONE   AUTH
      - USER3     AUTH ONLY                       NO   NONE   NONE   AUTH
      - USER4     AUTH ONLY                       NO   NONE   NONE   AUTH
      - USER5     AUTH ONLY                       NO   NONE   NONE   AUTH
      - USER6     AUTH ONLY                       NO   NONE   NONE   AUTH
      - USER7     AUTH ONLY                       NO   NONE   NONE   AUTH
      - USER8     AUTH ONLY                       NO   NONE   NONE   AUTH
      - USER9     AUTH ONLY                       NO   NONE   NONE   AUTH

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      ---  ---  END  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---  STOP
    
```

Field	Description
X (optional)	The function to be executed. Valid values are as follows: F displays N2O Functions the specified userid has access to (determined from all Function Profiles assigned to the userid). A displays Approval Profiles the specified userid has access to U displays N2O User Definition.
User (supplied)	The User-ID of the User Definition.
Desc (supplied)	A description of the User.
Approval Status (supplied)	Valid values are as follows: YES The user can authorize his/her own Events. NO A user can not authorize his/her own Events.

(continued from previous page)

<b>Field</b>	<b>Description</b>
∞ XREF (supplied)	<p>Determines if N2O will present an object selection list of cross referenced modules when requesting an Event. Possible values are as follows:</p> <p>LIST      An XREF selection list is displayed. NONE      A list of XREF'd objects is not displayed. BOTH      A user can decide between list and none when requesting a migration.</p>
PREDICT Views (supplied)	<p>Determines if N2O will present a PREDICT userview selection list when requesting an Event. Possible values are as follows:</p> <p>LIST      A PREDICT userview selection list is displayed. NONE      A list of PREDICT userviews is not displayed. BOTH      A user can decide between list and none when requesting a migration.</p>
Group-ID (supplied)	<p>A value that relates multiple users.</p> <p>This value links a group of users for authorization purposes.</p>

**IV.6.2 User Groups**

The User Groups report displays information related to Groups assigned to N2O User Definitions.

To display the User Groups input screen, enter "B" on the Security Reporting menu.

```

05-02-11      N-2-O SECURITY REPORTING      TSI0373
20:29:29      N2O GROUP SECURITY           TSI1

Group:  *_____ ( Wildcard / Single )

Mode :  O

Batch Display Options
-----
List Users..... N
User Definitions..... N
User Functions..... N
Migration Profiles..... N

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
----- END ----- STOP
    
```

Field	Description
∞ GROUP (required)	Groups that are displayed by the report. (wildcard permitted)
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line (Default: O).
BATCH DISPLAY OPTIONS	
LIST USERS (required)	Indicates if User Definitions defined to the displayed groups should be displayed. Y Display User Definitions defined to Group. N Display only the Groups. (Default: N).
USER DEFINITIONS (required)	Indicates the amount of detail displayed for each User Definition (Requires LIST USERS = Y) Y Display all User Definitions details. N Display only Userid and Description (Default: N).

∞ indicates field-level help is available.

(continued from previous page)

Field	Description
MIGRATION PROFILES (required)	Indicates if the Migration Profiles that the user has access to should be displayed (Requires LIST USERS = Y).
Y	Display the Migration Profiles that the user has access to (determined from all Approval Profiles assigned to the userid).
N	Do not display the Migration Profiles that the user has access to (Default: N).

Entering the necessary information in the input screen and pressing Enter displays the User Groups report.

```

Valid values: U - Users
05-02-11          N-2-O SECURITY REPORTING          TSI0373
21:04:08          N2O GROUP SECURITY                TSI1

      X  Group      Users in      Users in      Users in
      -  -----      -      -      -      -
      -  ADMIN        3
      -  AUTH         29

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ---  END  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---  STOP
    
```

Field	Description
X (optional)	The function to be executed. Valid values are as follows: U displays User Definitions that contain the group.
Group (supplied)	A value that relates multiple users.
Users in Group (supplied)	Number of User Definition that contain the Group.

**IV.6.3 Event Authorization**

The Event Authorization report displays events that require authorization or servicing.

**This report will only show events that have the Master Event's Lock Event field set to ENV or ALL.**

To display the Event Authorization input screen, enter "C" on the Security Reporting menu and press Enter.

```

05-02-11      N-2-O SECURITY REPORTING      TSI3101
21:17:27      N2O EVENT AUTHORIZATION      TSI3

Event:  *_____ ( Wildcard / Single )

Mode :  O

Batch Display Options
-----
Authorizers..... N
Master Event..... N
Migration Profiles. N

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ EVENT (required)	Event displayed requiring Authorization or Servicing. (wildcard permitted)
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line (Default: O).
BATCH DISPLAY OPTIONS	
LIST USERS (required)	Indicates if User Definitions that can authorize or service the events should be displayed (determined from all Approval Profiles assigned to the userid). Y Display User Definitions that can authorize or service the event. N Display only the Events (Default: N).
MASTER EVENT (required)	Indicates amount of detail displayed for each Master Event. Y Display the Master Event details N Display only the Master Event and Description. (Default: N)
MIGRATION PROFILES (required)	Indicates if the Migration Profiles used by the event should be displayed. Y Display the Migration Profiles used by the event. N Do not display the Migration Profiles used by the event. (Default: N).

Entering the necessary information on the input screen and pressing Enter displays the Event Authorization report.

```

Valid values: A - Authorizers, E - Event or M - Mig Profile
05-02-11          N-2-O SELECT A MASTER EVENT          TSI0373
22:33:49                                     TSI1

      S      Event      --- From ---      --- To ---      Lock      Lvl
      -      -      Env  Library  Env  Library  Evt  Delay  Auth
      -      -      --- -----      --- -----      --- -----      ---
      -      -      AEVENT  DEV  PAYDEV  PROD  PAYBAS  ALL  AUTH  4

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----- END  ----- ----- ----- ----- ----- ----- ----- STOP
    
```

Field	Description
S (optional)	The function to be executed. Valid values are as follows: A displays the User Definitions that can authorize the event (determined from all Approval Profiles assigned to the userid). E displays the Master Event. M displays the Migration Profiles used by the Master event.
Event (supplied)	The Master Event.
From Env (supplied)	The source Environment Definition (defined on the Master Event).
From Library (supplied)	The NATURAL library from which the NATURAL objects/SYSERR messages are migrated (defined on the Master Event).
To Env (supplied)	The target Environment Definition of the Event. An "*" indicates the Event is a Multiple Target Event (defined on the Master Event).
To Library (supplied)	The NATURAL library where the NATURAL objects/SYSERR messages are placed by the migration. An "*" indicates the Event is a Multiple Target Event (defined on the Master Event).
Lock Event (supplied)	Determines if the user can modify the From/To Environment and library information (defined on the Master Event) when requesting an Event. Possible values are as follows:  ENV The From/To Environment fields cannot be modified by the user.

---

(continued from previous page)

---

<b>Field</b>	<b>Description</b>
	ALL The From/To Environment and library fields cannot be modified by the user.
	NO Indicates all From/To fields are modifiable.  Note : Master Events defined with 'NO' are NOT displayed.
Delay (supplied)	Determines if a requested Event requires additional authorization before executing. Possible values are as follows: AUTH The Event must be authorized using the Authorize an Event function. SERV The Event must be authorized using the Authorize an Event function and serviced using the Service an Event function.
Levels of Auth (supplied)	The number of authorizations required when AUTH or SERV is specified.

**IV.6.4 Approval Profiles**

The Approval Profiles report displays the N2O Approval Profiles.

To display the Approval Profiles input screen, enter "D" on the Security Reporting menu and press Enter.

```

05-02-14          N-2-O SECURITY REPORTING          TSI0373
14:55:42          N2O Approval PROFILES            TSI1

Approval Profiles: *_____ ( Wildcard / Single )

Mode                : O

Batch Display Options
-----
Approval Profile... N
Users..... N

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ APPROVAL PROFILE (required)	Approval Profiles that are displayed by the report. (wildcard permitted)
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line (Default: O).
<b>BATCH DISPLAY OPTIONS</b>	
APPROVAL PROFILE (required)	Indicates amount of detail displayed for each Approval Profile. Y Display all the details of the Approval Profiles. N Display only the Approval Profile and Description (Default: N).
USERS (required)	Indicates if the User Definitions that contain the Approval Profile should be displayed. Y Display the User Definitions that contain the Approval Profile. N Do not display the User Definitions that contain the Approval Profile. (Default: N)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Approval Profiles report.

```

Valid Values: I - Inquire, U - Users
05-11-28          N-2-O SELECT AN APPROVAL PROFILE          VLM1
15:29:25                                     SCOTCP15

  S   Profile  Description                Date      Time      User-ID
  -   - - - -  - - - - - - - - - - - - - - - - - - - - - -
  -   N2OAPPR  N2O APPROVAL PROFILE            04-03-19  20:01:56  PDL1
  -   TREAPPR  TRE APPROVAL PROFILE            04-03-19  20:02:10  PDL1
  -   TRMAPPR  TRM APPROVAL PROFILE            04-03-19  20:02:26  PDL1

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END ----- STOP
    
```

Field	Description
S (optional)	The function to be executed. Valid values are as follows: I display the Approval Profile. U display the Users assigned to the Approval Profile (in their User Definition).
Profile (supplied)	The Approval Profile.
Description (supplied)	A brief description of the Approval Profile.
Date (supplied)	Date that the Approval Profile was created or last updated.
Time (supplied)	Time that the Approval Profile was created or last updated.
User-ID (supplied)	User-ID of the user who created or last updated the Approval Profile.

**IV.6.5 Function Profiles**

The Function Profiles report displays the N2O Function Profiles.

To display the Function Profiles input screen, enter "E" on the Security Reporting menu and press Enter.

```

05-02-14          N-2-O SECURITY REPORTING          TSI0373
14:55:42          N2O FUNCTION PROFILES            TSI1

Function Profiles: *_____ ( Wildcard / Single )
Mode              : O

Batch Display Options
-----
Function Profile... N
Users.....       N

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ FUNCTION PROFILE (required)	Function Profiles that are displayed by the report. (wildcard permitted)
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line (Default: O).
BATCH DISPLAY OPTIONS	
FUNCTION PROFILE (required)	Indicates amount of detail displayed for each Function Profile. Y Display all the details of the Function Profiles. N Display only the Function Profile and Description (Default: N).
USERS (required)	Indicates if the User Definitions that contain the Function Profile should be displayed. Y Display the User Definitions assigned to the Function Profile. N Do not display the User Definitions assigned to the Function Profile. (Default: N)

∞ indicates field-level help is available.



**IV.6.6 Migration Profiles**

The Migration Profiles report displays the N2O Migration Profiles.

To display the Migration Profiles input screen, enter "F" on the Security Reporting menu and press Enter.

```

05-02-14          N-2-O SECURITY REPORTING          TSI0373
15:34:33          N2O MIGRATION PROFILE            TSI1

Migration Profile: *__ - *__ ( Wildcard / Single )

Mode :  O

Batch Display Options
-----
Migration Profile Details: N
Migration Profile Users..: N

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ MIGRATION PROFILE (required)	Migration Profiles that are displayed by the report. The source and target Environment Definitions (wildcard permitted)
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line (Default: O).
BATCH DISPLAY OPTIONS	
MIGRATION PROFILE DETAILS (required)	Indicates amount of detail displayed for each Migration Profile. Y Display all the details of the Migration Profiles. N Display only the Migration Profile and Description (Default: N).
MIGRATION PROFILE USERS (required)	Determines if the User Definitions that are assigned an Approval Profile containing the requested Migration Profile are displayed. Y Display the User Definitions assigned an Approval Profile containing the specific Migration Profile. N Do not display the User Definitions assigned an Approval Profile containing the specific Migration Profile (Default: N)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Migration Profile report.

```

Valid values: I - Inquire or U - Users
05-02-14          N-2-O SELECT A MIGRATION PROFILE          TSI0373
16:34:29                                     TSI1

  From To      Migration
S  Env Env  Mode   Type   Delay Method  Autocompile  Mig  Pgm Ver
-  --- ---  -----  -----  -----  -----  -----  ---  --- ---
-  ARC1 PROD  BOTH   BOTH   NONE   COPY    NO        N   NO  NO
-  DEV  ARC1  BOTH   BOTH   NONE   COPY    NO        N   NO  NO
-  DEV  PROD  BOTH   BOTH   NONE   BOTH    STOW      N   NO  NO
-  PROD ARC1  BOTH   BOTH   NONE   COPY    NO        N   NO  NO
-  PROD DEV   BOTH   SOURCE NONE   COPY    STOW      N   NO  NO

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
-----  END  -----  -----  -----  -----  -----  -----  STOP
    
```

Field	Description						
S (optional)	The function to be executed. Valid values are as follows: I displays the Migration Profile. U displays the Users assigned an applicable Approval Profile.						
From Env To Env (supplied)	The Migration Profile.						
Mode (supplied)	Mode assigned to the Migration Profile. Possible values are as follows:  <table border="0"> <tr> <td>ONLINE</td> <td>Indicates the migration will be performed on-line.</td> </tr> <tr> <td>BATCH</td> <td>Indicates the migration will be performed by a batch job.</td> </tr> <tr> <td>BOTH</td> <td>Indicates ONLINE or BATCH may be specified by the user at migration time.</td> </tr> </table>	ONLINE	Indicates the migration will be performed on-line.	BATCH	Indicates the migration will be performed by a batch job.	BOTH	Indicates ONLINE or BATCH may be specified by the user at migration time.
ONLINE	Indicates the migration will be performed on-line.						
BATCH	Indicates the migration will be performed by a batch job.						
BOTH	Indicates ONLINE or BATCH may be specified by the user at migration time.						
Type (supplied)	Determines the type of code that will migrate when this migration profile is executed. Possible values are as follows:  <table border="0"> <tr> <td>SOURCE</td> <td>source code will be migrated.</td> </tr> <tr> <td>OBJECT</td> <td>object code will be migrated.</td> </tr> <tr> <td>BOTH</td> <td>both source and object code will be migrated.</td> </tr> </table>	SOURCE	source code will be migrated.	OBJECT	object code will be migrated.	BOTH	both source and object code will be migrated.
SOURCE	source code will be migrated.						
OBJECT	object code will be migrated.						
BOTH	both source and object code will be migrated.						

(continued from previous page)

<b>Field</b>	<b>Description</b>
Delay  (supplied)	Determines if a requested Event requires additional authorization before executing. Possible values are as follows:  AUTH The Event must be authorized using the Authorize an Event function.  SERV The Event must be authorized using the Authorize an Event function and serviced using the Service an Event function.  NONE The migration may proceed immediately without authorization.
Migration Method (supplied)	Indicates if the objects are copied or moved (deleted on the TO environment). Possible values are as follows:  COPY An object at the source of a migration will be placed at the target (defaults to COPY).  MOVE An object at the source of a migration will be placed at the target and then deleted from the source of the migration.  BOTH The user may specify COPY or MOVE at migration time.
Autocompile (supplied)	Instructs N2O to catalog, stow, or take no action on the migrated objects. Possible values are as follows:  CAT Autocompile will occur for Events that migrate NATURAL objects or 3GL members. NATURAL objects will be CATALOGed at the target.  STOW Autocompile will occur for Events that migrate NATURAL objects or 3GL members. NATURAL objects will be STOWed at the target.  NO Autocompile will not occur for Events using this Migration Profile.

(continued from previous page)

Field	Description
Migrate XREF (supplied)	<p>Determines whether or not Predict Cross-Reference Data must exist before allowing an object to be selected for migration. Possible values are as follows:</p> <p>Y PREDICT Cross-Reference data MUST exist and will be migrated. A message of 'No XREF' will appear on the Object Selection Screen if the object fails this test.</p> <p>S PREDICT Cross-Reference data will be migrated if it exists.</p> <p>N PREDICT Cross-Reference data will not be verified or migrated.</p>
Program Doc (supplied)	<p>Instructs N2O to validate that an object has been documented in Predict before allowing it to be selected for migration. Possible values are as follows:</p> <p>YES PREDICT object documentation must exist in the From Environment before a NATURAL object may be selected to be migrated.</p> <p>NO PREDICT object documentation will not be verified or migrated.</p>
Verify Object (supplied)	<p>N2O can insure that an object has object code that was created after the last source code timestamp. Possible values are as follows:</p> <p>YES NATURAL compiled code with a timestamp greater than the source code must exist for the object to be migrated.</p> <p>NO NATURAL compiled code timestamps will not be verified before the object migrates</p>

**IV.6.7 Predict Profiles**

The Predict Profiles report displays N2O Predict Profiles.

To display the Predict Profiles input screen, enter "G" on the Security Reporting menu and press Enter.

```

05-02-14          N-2-O SECURITY REPORTING          TSI0373
17:26:28          N2O PREDICT PROFILES              TSI1

Predict Profiles: *_____ ( Wildcard / Single )

Mode              :  O

Batch Display Options
-----
PREDICT Profile... N
Users..... N

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  -----
    
```

Field	Description
∞ PREDICT PROFILE (required)	Predict Profiles that are displayed by the report. (wildcard permitted)
MODE (required)	Indicates how the job is executed (batch or on-line).  B Submits JCL to the internal reader that processes the function in batch.  O Processes the function on-line (Default: O).
<b>BATCH DISPLAY OPTIONS</b>	
PREDICT PROFILE (required)	Indicates amount of detail displayed for each Predict Profile.  Y Display all the details of the Predict Profiles.  N Display only the Predict Profile and Description (Default: N).
USERS (required)	Indicates if the User Definitions that contain the Predict Profile should be displayed.  Y Display the User Definitions that contain the Predict Profiles.  N Do not display the User Definitions that contain the Predict Profiles. (Default: N)

∞ indicates field-level help is available

Entering the necessary information in the input screen and pressing Enter displays the Predict Profiles report.

```

Valid Values: P - Predict Profile or U - Users
05-02-14          N-2-O SELECT A PREDICT PROFILE          TSI0373
17:54:04          TS11
S   Profile  Description          Date    Time    User-ID
-   -
-   ALL-PRED ALL PREDICT PROFILES  04-03-02 15:21:45 TSI1

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
----- END ----- STOP
    
```

Field	Description
S (optional)	The function to be executed. Valid values are as follows: P displays the Predict Profile. U displays Users assigned the specific Predict Profile in their User Definition.
Profile (supplied)	The Predict Profile.
Description (supplied)	A brief description of the Predict Profile.
Date (supplied)	Date the Predict Profile was created or last updated.
Time (supplied)	Time the Predict Profile was created or last updated.
Updated (supplied)	User-ID of the user who created or last updated the Predict Profile.

**IV.6.8 3GL Profiles**

The 3GL Profiles report displays N2O 3GL Profiles.

To display the 3GL Profiles input screen, enter "H" on the Security Reporting menu and press Enter.

```

05-02-14          N-2-O SECURITY REPORTING          TSI0373
17:26:28          N2O 3GL PROFILES                  TSI1

          3GL Profiles: *_____ ( Wildcard / Single )

Mode           :   O

Batch Display Options
-----
3GL Profile...   . N
Users.....      . N

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  -----
    
```

Field	Description
∞ 3GL PROFILE (required)	3GL Profiles that are displayed by the report. (wildcard permitted)
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line (Default: O).
<b>BATCH DISPLAY OPTIONS</b>	
3GL PROFILE (required)	Indicates amount of detail displayed for each 3GL Profile. Y Display all the details of the 3GL Profiles. N Display only the 3GL Profile and Description (Default: N).
USERS (required)	Indicates if the User Definitions containing the 3GL Profile should be displayed. Y Display the User Definitions containing the 3GL Profiles. N Do not display the User Definitions containing the 3GL Profiles. (Default: N)

∞ indicates field-level help is available

Entering the necessary information in the input screen and pressing Enter displays the 3GL Profiles report.

```

Valid Values: 3 - 3GL Profile or U - Users
05-02-14          N-2-O SELECT A 3GL PROFILE          TSI0373
17:54:04          TS11
S   Profile  Description          Date      Time      User-ID
-   -
-   ALL-3GL  ALL 3GL          04-04-21  18:12:15  TSI1

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
-----END-----STOP
    
```

Field	Description
X (optional)	The function to be executed. Valid values are as follows: 3 displays the 3GL Profile details. U displays the Users assigned the specific 3GL Profile in their User Definition.
Profile (supplied)	The 3GL Profile.
Description (supplied)	A brief description of the 3GL Profile.
Date (supplied)	Date the 3GL Profile was created or last updated.
Time (supplied)	Time the 3GL Profile was created or last updated.
Updated (supplied)	User-ID of the user who created or last updated the 3GL Profile.

### **IV.6.9 Security Reporting in Batch**

Sample reporting JCL is provided in the MVSREPT, VMREPT, BSREPT and VSEREPT members located in the Natural library N2OBATCH.

**Note:** The batch reports from the N2O Reporting Subsystem and the Documentation Tools require that the NATURAL Parameter IM (Input Mode) be set to "IM=D" (Delimiter Mode).

The following table illustrates the JCL and EXECs modifications necessary to execute Statistical reports in batch.

REPORT	&REPORT	&INPUT
N2O User Security	N2OSECA	USERID
		APPL-STATUS,VIEW-USER-DEFS, MIGRATION-PROFILES (N,N,N,N)
User Groups	N2OSECB	GROUP
		VIEW-USERS,VIEW-USER-DEF, VIEW-MIGRATION-PROFILE (N,N,N,N)
Event Authorization	N2OSECC	EVENT
		AUTHORIZERS,VIEW-EVENT-DETAILS, VIEW-MIGRATION-PROFILE (N,N,N)
Approval Profiles	N2OSECD	Approval-Profile VIEW-APPROVAL-PROFILE,VIEW-USERS
Function Profiles	N2OSECE	FUNCTION-PROFILE
		VIEW-FUNCTION-PROFILE, VIEW-USERS (N,N)
Migration Profiles	N2OSECF	FROM-ENV,TO-ENV
		VIEW-MIGRATION-PROFILE, VIEW-USERS (N,N)
Predict Profiles	N2OSECG	PREDICT-PROFILE
		VIEW-PREDICT-PROFILE,VIEW-USERS (N,N)
3GL Profiles	N2OSECH	3GL-PROFILE
		VIEW-3GL-PROFILE,VIEW-USERS (N,N)

----- indicates that inputs are on separate lines.

The &INPUT parameter list by default is delimited by commas with no spaces following the commas. To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).

For descriptions of &INPUT fields, refer to field descriptions in corresponding sections of Security Reporting.

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## SECTION V

### TOOLBOX SUBSYSTEM

#### V.1 Introduction

The Toolbox Subsystem supplies application development tools for the N2O Administrator and application programmers. The Toolbox Subsystem consists of four functions:

1. Documentation Tools
2. Maintenance Tools
3. Programmer Tools
4. Utility Tools

Documentation Tools assist in documenting and debugging NATURAL applications by providing utilities to display/print NATURAL objects, File Layouts, Descriptor X-REF (Cross-Reference) Information, Object Flow Analysis, Object X-REF, SYSERR Messages, and Archived 3GL Objects.

Maintenance Tools maintain NATURAL applications by providing utilities to delete and recover objects.

Programmer Tools aid in the development of NATURAL applications by providing utilities to compare, list, and scan objects in a NATURAL development environment.

Utility tools provide facilities to assist in resolving exception situations that may arise when using N2O.

To access the Toolbox Subsystem menu, enter "T" on the N2O Main menu. Entering the direct command TOL MENU or pressing PF7 on any menu also accesses the Toolbox Subsystem menu.

```

01-12-31                N-2-O MAIN MENU                TSI0373
11:38:00                TSI1

Code  Function
----  -
E     Environment Subsystem
M     Migration Subsystem
P     Project Tracking Subsystem
R     Reporting Subsystem
T     Toolbox Subsystem
.     Terminate N-2-O Session
----  -

Enter Code:  _

Direct Command:  _____ N2O MENU
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
    
```

```

01-12-31          N-2-O TOOLBOX SUBSYSTEM MENU          TSI0373
11:38:00

                                Code  Function
                                ----  -
                                D    Documentation Tools
                                M    Maintenance Tools
                                P    Programmer Tools
                                T    Utility Tools
                                .    Terminate Toolbox Subsystem
                                ----  -

Enter Code:  _

Direct Command:          TOL MENU
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END  ENV  MIG  REP  ----  USR  PRJ  ----  ----  EXIT

```

Field	Description
ENTER CODE (required)	<p>The function to be executed. Valid values are as follows:</p> <ul style="list-style-type: none"> <li><b>D    Documentation Tools</b> Display/print NATURAL objects, File Layouts, Descriptor X-REF Information, Object Flow Analysis, Object X-REF, SYSERR Messages, and Archived 3GL Objects.</li> <li><b>M    Maintenance Tools</b> Delete and recover objects.</li> <li><b>P    Programmer Tools</b> Compare, list, and scan objects.</li> <li><b>T    Utility Tools</b> Diagnostic programs for exception situations.</li> </ul>

Additional security may be provided for all tools in the Toolbox Subsystem using User-Exit 12. Refer to the **N2O Administrator Manual** for details on User-Exit 12.

**V.2 Documentation Tools**

The N2O Documentation Tools provide utilities to display/print NATURAL objects, File Layouts, Descriptor X-REF information, Object Flow Analysis, Object X-REF, SYSERR Messages, and Archived 3GL Objects from a specified local/ archive environment.

To access the Documentation Tools menu, enter "D" on the Toolbox Subsystem menu or the direct command TOL DOC on any menu.

```

01-12-31                N-2-O DOCUMENTATION TOOLS MENU                TSI0373
11:38:00

                                Code      Function
                                -----
                                A      Natural Object Listing
                                B      Map Listing
                                C      Data Area Listing
                                D      File Layouts
                                E      Descriptor X-REF Information
                                F      Object Flow Analysis
                                G      Object X-REF
                                H      Syserr Message Listing
                                I      Archived 3GL Object Listing
                                .      Terminate Documentation Tools
                                -      -----

Enter Code: _

Direct Command: _____ TOL DOC
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP ---- END ENV MIG REP ---- USR PRJ ---- ---- EXIT
    
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:  <b>A Natural Object Listing</b> Displays/prints NATURAL Source Code.  <b>B Map Listing</b> Displays/prints Map(s).  <b>C Data Area Listing</b> Displays/prints Data Area(s).  <b>D File Layouts</b> Displays/prints File Information from PREDICT or NATURAL DDMs.  <b>E Descriptor X-REF Information</b> Displays/prints X-REF Information for a file's Descriptor(s).  <b>F Object Flow Analysis</b> Displays/prints a breakdown of a NATURAL object's flow showing processing loops and statement blocks.

---

(Continued from previous page)

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<b>Field</b>	<b>Description</b>
<b>G</b>	<b>Object X-REF</b> Displays/prints X-REF Information for NATURAL object(s).
<b>H</b>	<b>SYSERR Message Listing</b> Displays/prints SYSERR messages.
<b>I</b>	<b>Archived 3GObject Listing</b> Displays/prints Archived 3GL Objects.

The following PF-keys are provided for all Documentation Tool options:

---

<b>PF-key</b>	<b>Function</b>	<b>Description</b>
PF1/PF13	HELP	Provide information about the current screen.
PF3/PF15	END	Return to the Documentation Tools Menu.
PF12/PF24	STOP	Return to the previous screen.

**V.2.1 Natural Object Listing**

The Natural Object Listing utility displays/prints NATURAL source code. Additionally, at the start of each object, NATURAL directory information and information about the archiving event (if applicable) is displayed/printed.

To enable the paging up/down in Natural Object Listing, ADAV7 should be specified in the NTDB macro. Refer to the N2O Administrator Manual **Section II.3.8 Installation Procedure step 8**.

To access the Natural Object Listing screen, enter "A" on the Documentation Tools menu.

```

01-12-31          N-2-O DOCUMENTATION TOOLS          TSI0373
11:38:00          NATURAL OBJECT LISTING             TSI1

Print Object(s)
- Env Def.....: TEST
- Library.....: PAYTEST_
- Starting Object.....: PAY* (Wildcard/Single)
- Ending Object.....: (Both Blank=All)

Within Range, Exclude
- Object Types.....: AGHLMT__

Options
- Explode Copycode.....: N (Yes/No)
- Explode Data Areas...: N (Yes/No)
- Format Maps.....: Y (Yes/No/Both)
- Format Data Areas...: Y (Yes/No)
- Display Object X-REF.: N (Yes/No)
- Force Uppercase.....: N (Yes/No)
- Route Output.....: S (Screen/Printer)
- Mode.....: O (On-line/Batch)

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP ---- END ----
```

Field	Description
∞ ENV DEF	The Environment Definition containing the object(s) to be displayed/printed. Remote Environments Definitions are not valid.
LIBRARY (required)	The NATURAL library containing the object(s) to be displayed/printed.
STARTING OBJECT (optional)	The starting value of the object(s) to be displayed/printed. Partial names and wildcards (e.g., AAP*) may be entered.
ENDING OBJECT (optional)	The ending value of the object(s) to be displayed/printed. Wildcards (e.g., AAP9*) may be entered. To display/print a single object, leave this field blank and enter the object's name in the Starting Object field.

∞ indicates field-level help is available.

(Continued from previous page)

Field	Description
∞ WITHIN RANGE, EXCLUDE OBJECT TYPES (optional)	<p>Identifies NATURAL object types to be excluded from being displayed/printed when specifying a range of objects. This option is ignored when a single object is displayed/printed. Valid values are as follows:</p> <ul style="list-style-type: none"> <li>P Program</li> <li>S Subroutine</li> <li>N Subprogram</li> <li>M Map</li> <li>H Helproutine</li> <li>L Local Data Area</li> <li>A Parameter Data Area</li> <li>G Global Data Area</li> <li>C Copycode</li> <li>T Text</li> <li>O Macro</li> <li>R Report</li> <li>Y ExpertModel</li> <li>Z Recording</li> <li>3 Dialog</li> <li>4 Class</li> <li>5 Processor</li> <li>K Server</li> </ul> <p>(default: "MHLAGT")</p>
EXPLODE COPYCODE (required)	<p>Y Embeds the source code of any copycode referenced within the displayed/printed object.</p> <p>N Does not embed the source code of copycode referenced within the displayed/printed object. (default: "N")</p>
EXPLODE DATA AREAS (required)	<p>Y Embeds the source of any data areas referenced within the displayed/ printed object.</p> <p>N Does not embed the source of data areas referenced within the displayed/printed object. (default: "N")</p>

∞ indicate field-level help is available.

(continued from previous page)

Field		Description
FORMAT MAPS (required)	Y	Displays/prints the map as the NATURAL Map editor presents it. Displays/prints a list of variables used by the map, all help routines used by the Map, and all processing/verification rules used by the Map (Similar to Map Listing Utility). (default: "Y")
	N	Displays/prints map(s) in source format (similar to NATURAL List command).
	B	Displays/prints map(s) as the NATURAL Map editor presents it and in source format.
FORMAT DATA AREAS (required)	Y	Displays/prints data area(s) in the format as they would appear in the NATURAL Data Area editor. (default: "Y")
	N	Displays/prints data area(s) in source format (similar to NATURAL List command).
DISPLAY OBJECT X-REF (required)	Y	Displays/prints PREDICT object X-REF information related to the object following the object listing (similar to Object X-REF utility).
	N	Does not display/print PREDICT object X-REF information related to the object. (default: "N")
FORCE UPPERCASE (required)	Y	Converts lowercase to uppercase.
	N	Does not convert lowercase to uppercase. (default: "N")
ROUTE OUTPUT (required)	S	Routes output to screen. (default: "S")
	P	Routes output to NATURAL Printer 1 (CMPRT01).

**Note:** When printing to CMPRT01 (NATURAL printer 1) during an on-line session, it is recommended that the user determine if CMPRT01 is available. This can be done by using the NATURAL "GLOBALS" and/or "SYSFILE" command (refer to the *NATURAL Utilities Manual* for more information). The N2O Documentation Tools will detect that CMPRT01 is unavailable on the first attempt to write the output. A subsequent attempt to print to the unavailable CMPRT01 may result in a NAT954 or similar error and termination of the current NATURAL session.

MODE (required)		Indicates how the job is to be executed (batch or on-line).
	B	Submits JCL to the internal reader that processes the function in batch. In Batch Mode, the output is automatically routed to NATURAL Printer 1.
	O	Processes the function on-line. (default: "O")

When the Environment Definition entered is an N2O Archive Definition, a pop-up window is displayed. One of the following fields must be provided:

- a) An Archive Date, which must be entered using the YYYYMMDD format.
  - 1) When printing a single object  
A list of archive versions is generated and displayed, starting at the most recent archive and continuing until the specified Archive Date. One of the versions must be chosen from this list.
  - 2) When printing a range of objects  
Displays the first version of each object located on the archive file for the specified range archived before or at the specified date.
- b) An Archive Version Number, which allows N2O to go directly to the Archive file and read the specified version. The Archive Version Number may be between -1 and -99.

**V.2.2 Map Listing**

The Map Listing utility displays/prints NATURAL maps as they appear in the NATURAL Map editor. Maps may also be displayed/printed with the field table, a list of help routines, and a list of processing/verification rules used by the map. Additionally, at the start of each map, NATURAL directory information and information about the archiving event (if applicable) is displayed/printed.

To access the Map Listing screen, enter "B" on the Documentation Tools menu.

```

01-12-31                      N-2-O DOCUMENTATION TOOLS                      TSI0373
11:33:00                      MAP LISTING                                  TSI1

Print Map(s)
- Env Def.....: TEST
- Library.....: PAYTEST_
- Starting Map.....: PAYM*___ (Wildcard/Single)
- Ending Map.....: _____ (Both Blank=All)

Options
- Show Fields & Rules...: N (Yes/No)
- Force Uppercase.....: N (Yes/No)
- Route Output.....: S (Screen/Printer)
- Mode.....: O (On-line/Batch)

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ ENV DEF	The Environment Definition containing the map(s) to be displayed/printed. Remote Environments Definitions are not valid.
LIBRARY (required)	The NATURAL library containing the map(s) to be displayed/printed.
STARTING MAP (optional)	The starting value of the map(s) to be displayed/printed. Partial names and wildcards (e.g., AAP*) may be entered.
ENDING MAP (optional)	The ending value of the map(s) to be displayed/printed. Wildcards (e.g., AAP9*) may be entered. To display/print a single map, leave this field blank and enter the map name in the Starting Map field.

∞ indicate field-level help is available.

(Continued from previous page)

Field		Description
SHOW FIELDS AND RULES (required)	Y	Displays/prints the map as the NATURAL Map editor presents it. Includes a list of variables used by the map, a list of the map's help routines and all processing/ verification rules used by the Map.
	N	Displays/prints only the map as the NATURAL Map editor presents it. (default: "N")
FORCE UPPERCASE (required)	Y	Converts lowercase to uppercase.
	N	Does not convert lowercase to uppercase. (default: "N")
ROUTE OUTPUT (required)	S	Routes output to screen. (default: "S")
	P	Routes output to NATURAL Printer 1 (CMPRT01).

**Note:** When printing to CMPRT01 (NATURAL printer 1) during an on-line session, it is recommended that the user determine if CMPRT01 is available. This can be done by use of the NATURAL "GLOBALS" and/or "SYSFILE" command (refer to the *NATURAL Utilities Manual* for more information). The N2O Documentation Tools will detect that CMPRT01 is unavailable on the first attempt to write the output. A subsequent attempt to print to the unavailable CMPRT01 may result in a NAT954 or similar error and termination of the current NATURAL session.

MODE (required)		Indicates how the job is to be executed (batch or on-line).
	B	Submits JCL to the internal reader to process the function in batch. In Batch Mode, the output is automatically routed to NATURAL Printer 1.
	O	Processes the function on-line. (default: "O")

The following is sample output from the Map Listing function. The Show Fields and Rules option was set to "Y". This sample shows how map fields, help routines, and rules will be displayed when printing Formatted Maps using the N2O Documentation tools.

```

Alphanumeric Fields
  non-protected Input field      (INPUT-ALPHA)          AAAAAAAA
  modifiable Output field       (#OUTPUT-ALPHA)       XXXXXXXX
  write protected Output field   (#PROTECT-ALPHA)     ZZZZZZZZ
Binary Fields
  non-protected Input field      (#INPUT-BINARY)       CCCCCCCC
  modifiable Output field       (#OUTPUT-BINARY)     HHHHHHHH
  write protected Output field   (#PROTECT-BINARY)    BBBBBBBB
Numeric Fields
  non-protected Input field      (#INPUT-NUMERIC)     11111111
  modifiable Output field       (#OUTPUT-NUMERIC)    99999999
  write protected Output field   (#PROTECT-NUMERIC)   00000000
Numeric Decimal Fields
  non-protected Input field      (#INPUT-NUM-DEC)     1111.111
  modifiable Output field       (#OUTPUT-NUM-DEC)    9999.999
  write protected Output field   (#PROTECT-NUM-DEC)   0000.000
Packed Fields
  non-protected Input field      (#INPUT-PACKED)      44444444
  modifiable Output field       (#OUTPUT-PACKED)     88888888
  write protected Output field   (#PROTECT-PACKED)    22222222
Packed Decimal Fields
  non-protected Input field      (#INPUT-PACKED-DEC)  4444.444
  modifiable Output field       (#OUTPUT-PACKED-DEC) 8888.888
  write protected Output field   (#PROTECT-PACKED-DEC) 2222.222
Float Fields
  non-protected Input field      (#INPUT-FLOAT)       55555555555555555555
  modifiable Output field       (#OUTPUT-FLOAT)     FFFFFFFFFFFFFFFFFF
  write protected Output field   (#PROTECT-FLOAT)    333333333333333333
Integer Fields
  non-protected Input field      (#INPUT-INTEGGER)    77777777
  modifiable Output field       (#OUTPUT-INTEGGER)   IIIIIIII
  write protected Output field   (#PROTECT-INTEGGER)  66666666
Date Fields
  non-protected Input field      (#INPUT-DATE)        MMMMMMMM
  modifiable Output field       (#OUTPUT-DATE)       DDDDDDDD
  write protected Output field   (#PROTECT-DATE)     YYYYYYYY
Time Fields
  non-protected Input field      (#INPUT-TIME)        SSSSSSSS
  modifiable Output field       (#OUTPUT-TIME)       TTTTTTTT
  write protected Output field   (#PROTECT-TIME)     RRRRRRRR
Logical Fields
  non-protected Input field      (#INPUT-LOGICAL)     O
  modifiable Output field       (#OUTPUT-LOGICAL)    L
  write protected Output field   (#PROTECT-LOGICAL)   N

```

Field	Format	Occurrences	From
INPUT-ALPHA	A8		TEST-DDM
#INPUT-BINARY	B4		
#INPUT-DATE	D		
#INPUT-FLOAT	F4		
#INPUT-INTEGGER	I4		
#INPUT-LOGIC	L		
#INPUT-NUM-DEC	N5.3		
#INPUT-NUMERIC	N8		
#INPUT-PACKED	P8		
#INPUT-PACKED-DEC	P6.2		
#INPUT-TIME	T		
#OUTPUT-ALPHA	A8		
#OUTPUT-BINARY	B4		
#OUTPUT-DATE	D		
#OUTPUT-FLOAT	F4		
#OUTPUT-INTEGGER	I4		
#OUTPUT-LOGIC	L		

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```
#OUTPUT-NUM-DEC          N5.3
#OUTPUT-NUMERIC          N8
#OUTPUT-PACKED           P8
#OUTPUT-PACKED-DEC       P6.2
#OUTPUT-TIME             T
#PROTECT-ALPHA           A8
#PROTECT-BINARY          B4
#PROTECT-DATE            D
#PROTECT-FLOAT           F4
#PROTECT-INTEGER         I4
#PROTECT-LOGIC           L
#PROTECT-NUM-DEC         N5.3
#PROTECT-NUMERIC         N8
#PROTECT-PACKED          P8
#PROTECT-PACKED-DEC      P6.2
#PROTECT-TIME            T
```

```
+-----+
|Help routines           |
+-----+
|Field                   |Helproutine
+-----+
|Map Default             |'MAPHELP', 'MAP1PM
|#INPUT-DATE             |'MAPFHLF'
+-----+
```

```
+-----+
|Processing Rules       |
+-----+
|Field: TEST-DDM.INPUT-ALPHA ----- Rank : 01
+-----+
Type.....: PREDICT Automatic ( Verification: INPUT-ALPHA )
Ver Status...: Automatic
Comment(s)...: Example of an Automatic rule
Description..:
=====
Verification additional description
=====
Example Automatic rule extended description
Ver. Type....: User-defined
Code.....: IF & = ' '
REINPUT 'FIELD CANNOT BE BLANK' MARK *&
END-IF
```

```
+-----+
|Field: OUTPUT-ALPHA ----- Rank : 10
+-----+
Type.....: PREDICT Free ( Verification: CHECK-UPPER )
Ver Status...: Free
Comment(s)...: example of a free rule
Description..:
=====
Verification additional description
=====
Example free rule extended description
Ver. Type....: Range of values
Value(s)....: A
Z
Code.....: *
* PROCESSING RULE: CHECK-UPPER WAS GENERATED BY PREDICT
* VERIFICATION-TYPE: RANGE ON: 99-12-31 AT: 14:24
*
IF NOT(& EQ 'A' THRU 'Z')
REINPUT
'FIELD VALUES MUST BE IN RANGE FROM: A TO Z '
MARK *&
END-IF
```

The following are fields and descriptions for the Processing Rules section of the report.

Field	Description
FIELD (all types)	The name of the map field.
RANK (all types)	The rank of the corresponding processing/ verification rules.
TYPE (all types)	<p>The manner in which the rule is defined to the map. Valid values are as follows:</p> <p><b>PREDICT Automatic</b> The rule is a PREDICT Automatic Verification rule linked to the field through a DDM. Following this type, the PREDICT Verification name is displayed.</p> <p><b>PREDICT Free</b> The rule is a PREDICT Verification rule linked to the field through the Map editor by using the Verification Name. Following this type, the PREDICT Verification name is displayed.</p> <p><b>Inline</b> The rule was entered directly into the map using the map editor.</p>
VER STATUS (PREDICT types only)	<p>The Status of the Verification according to PREDICT.</p> <p><b>Automatic</b> <b>Free</b></p> <div style="border: 1px solid black; padding: 5px;"> <p><b>Note:</b> Automatic Verification rules can be shown as Type : PREDICT Free. This occurs when automatic rule is used as a free rule. (Refer to the <i>PREDICT Reference Manual</i> for more information.)</p> </div>
COMMENT(S) (PREDICT types only)	The PREDICT comments for the corresponding Verification.
DESCRIPTION (PREDICT types only)	The PREDICT extended description for the corresponding Verification.

(Continued from previous page)

Field	Description
VER TYPE (PREDICT types only)	The types of Verification. Valid values are as follows:  Equal to Greater than Less than Not equal to Range of values Table of values User routine Range but not Not in range Unknown
VALUE(S) (PREDICT types only with value(s) defined)	The valid values used to perform the Verification. (Refer to the <i>PREDICT Reference Manual</i> for more information.)
CODE (all types)	The actual NATURAL code of the rule. For PREDICT types, this code is stored in PREDICT. For Inline type, this code is stored in the map.

When the Environment Definition entered is an N2O Archive Definition, a pop-up window is displayed. One of the following fields must be provided:

1. An Archive Date, which must be entered using the YYYYMMDD format.
  - 1) When printing a single object  
A list of archive versions is generated and displayed, starting at the most recent archive and continuing until the specified Archive Date. One of the versions must be chosen from this list.
  - 2) When printing a range of objects  
Displays the first version of each object located on the archive file for the specified range archived before or at the specified date.
- b) An Archive Version Number, which allows N2O to go directly to the Archive file and read the specified version. The Archive Version Number may be between -1 and -99.

**V.2.3 Data Area Listing**

The Data Area Listing Utility displays/prints NATURAL data areas (Global, Local, and Parameter) as they appear in the NATURAL Data Area editor. Additionally, at the start of each data area, NATURAL directory information and information about the archiving event (if applicable) is displayed/printed.

To enable the paging up/down in Data Area Listing, ADAV7 should be specified in the NTDB macro. Refer to the N2O Administrator Manual **Section II.3.8 Installation Procedure step 8**.

To access the Data Area Listing screen, enter "C" on the Documentation Tools menu.

```

01-12-31                      N-2-O DOCUMENTATION TOOLS                      TSI0373
11:33:00                      DATA AREA LISTING                          TSI1

Print Data Area(s)
- Env Def.....: TEST
- Library.....: PAYTEST_
- Starting Data Area....: PAYL*___ (Wildcard/Single)
- Ending Data Area.....: _____ (Both Blank=All)

Options
- Force Uppercase.....: N (Yes/No)
- Route Output.....: S (Screen/Printer)
- Mode.....: O (On-line/Batch)

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP ---- END ----
```

Field	Description
∞ ENV DEF	The Environment Definition containing the data area(s) to be displayed/printed. Remote Environments Definitions are not valid.
LIBRARY (required)	The NATURAL library containing the data area(s) to be displayed/printed.
STARTING DATA AREA (optional)	The starting value of the data area(s) to be displayed/printed. Partial names and wildcards (e.g., AAP*) may be entered.
ENDING DATA AREA (optional)	The ending value of the data area(s) to be displayed/printed. Wildcards (e.g., AAP9*) may be entered. To display/print a single data area, leave this field blank and enter the data area name in the Starting Data Area field.
FORCE UPPERCASE (required)	Y Converts lowercase to uppercase. N Does not convert lowercase to uppercase. (default: "N")

∞ indicate field-level help is available.

(Continued from previous page)

Field	Description
ROUTE OUTPUT (required)	S Routes output to screen. (default: "S")
	P Routes output to NATURAL Printer 1 (CMPRT01).
<p><b>Note:</b> When printing to CMPRT01 (NATURAL printer 1) during an on-line session, it is recommended that the user determine if CMPRT01 is available. This can be done by use of the NATURAL "GLOBALS" and/or "SYSFILE" command (refer to the <i>NATURAL Utilities Manual</i> for more information). The N2O Documentation Tools will detect that CMPRT01 is unavailable on the first attempt to write the output. A subsequent attempt to print to the unavailable CMPRT01 may result in a NAT954 or similar error, and termination of the current NATURAL session.</p>	
MODE (required)	Indicates how the job is to be executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch. In Batch Mode, the output is automatically routed to NATURAL Printer 1.
	O Processes the function on-line. (default: "O")

When the Environment Definition entered is an N2O Archive Definition, a pop-up window is displayed. One of the following fields must be provided:

- a) An Archive Date, which must be entered using the YYYYMMDD format.
  - 1) When printing a single object  
A list of archive versions is generated and displayed, starting at the most recent archive and continuing until the specified Archive Date. One of the versions must be chosen from this list.
  - 2) When printing a range of objects  
Displays the first version of each object located on the archive file for the specified range archived before or at the specified date.
- b) An Archive Version Number, which allows N2O to go directly to the Archive file and read the specified version. The Archive Version Number may be between -1 and -99.

**V.2.4 File Layouts**

The File Layouts utility displays/prints File Layouts from PREDICT or NATURAL DDMs.

The Dbid Nr displayed in the header of the File Layout Report, is the Database ID number found in the Data Repository.

If PREDICT is the Data Repository, the Dbid Nr is the number defined to the database object linked to the file. If no database is linked to the file, the Dbid Nr is "UNKN". If DDM is the Data Repository, the Dbid Nr is the number of the database defined in the DDM.

To access the File Layouts screen, enter "D" on the Documentation Tools menu.

```

01-12-31          N-2-O DOCUMENTATION TOOLS          TSI0373
11:33:00          FILE LISTING                      TSI1

Print File(s)
- Env Def.....: TEST
- Starting file.: PAYROLL-FILE_____ (Wildcard/Single)
- Ending File...: _____ (Both Blank=All)
- With Keyword...: _____ (Optional)

Options
- Detail Level...: E (Extended Description/Long/Short)
- Data Repository: P (PREDICT/DDM)
- Force Uppercase: N (Yes/No)
- Route Output...: S (Screen/Printer)
- Mode.....: O (On-line/Batch)

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP ---- END ----
```

Field	Description
∞ ENV DEF	The Environment Definition containing the file(s) to be displayed/printed. Remote Environments and Archive Definitions are not valid.
STARTING FILE (optional)	The starting value of the file(s) to be displayed/printed. Partial names and wildcards (e.g., AAP*) may be entered.
ENDING FILE (optional)	The ending value of the file(s) to be displayed/printed. Wildcards (e.g., AAP*) may be entered. To display/print a single file, leave this field blank and enter the filename in the Starting File field.
WITH KEYWORD (optional)	PREDICT file descriptions with this keyword will be selected. This option is ignored when data repository is equal to "D".
∞ indicate field-level help is available.	

(Continued from previous page)

Field		Description
DETAIL LEVEL (required)	E	Displays/prints extended descriptions, all file and field comments, keywords, and owners. (default: "E")
	L	Displays/prints all file and field comments, keywords, and owners.
	S	Displays/prints all file comments and the first line of field comments.
DATA REPOSITORY (required)	P	Reads file information from PREDICT. (default: "P")
	D	Reads file information from NATURAL DDMs. Information obtained from the DDM does not have extended descriptions, file comments, keywords, and owners. Field comments will be shown only if the DDM(s) was generated with them.
FORCE UPPERCASE (required)	Y	Converts lowercase to uppercase.
	N	Does not convert lowercase to uppercase. (default: "N")
ROUTE OUTPUT (required)	S	Routes output to screen. (default: "S")
	P	Routes output to NATURAL Printer 1 (CMPRT01).

**Note:** When printing to CMPRT01 (NATURAL printer 1) during an on-line session, it is recommended that the user determine if CMPRT01 is available. This can be done by use of the NATURAL "GLOBALS" and/or "SYSFILE" command (refer to the *NATURAL Utilities Manual* for more information). The N2O Documentation Tools will detect that CMPRT01 is unavailable on the first attempt to write the output. A subsequent attempt to print to the unavailable CMPRT01 may result in a NAT954 or similar error, and termination of the current NATURAL session.

MODE (required)		Indicates how the job is to be executed (batch or on-line).
	B	Submits JCL to the internal reader to process the function in batch. In Batch Mode, the output is automatically routed to NATURAL Printer 1.
	O	Processes the function on-line. (default: "O")

**V.2.5 Descriptor X-REF Information**

The Descriptor X-REF Information utility produces a report on descriptor usage using PREDICT Cross-Reference data. This report will only show NATURAL objects that were compiled with XREF=ON. Since this report is CPU intensive, it is recommended that this report be executed in batch.

The Dbid Nr displayed in the header of the Descriptor X-REF Report is the Database ID number defined to the database object linked to the file. If no database is linked to the file, the Dbid Nr is "UNKN".

To access the Descriptor X-REF Information screen, enter "E" on the Documentation Tools menu.

```

01-12-31                N-2-O DOCUMENTATION TOOLS                TSI0373
11:33:00                DESCRIPTOR X-REF INFORMATION                TS11

Print X-REF Info for File(s)
- Env Def.....: TEST
- Starting file..: PAYROLL-FILE_____ (Wildcard/Single)
- Ending File....: _____ (Both Blank=All)

Options
- Report Type....: S (Summary/Detail)
- Force Uppercase: N (Yes/No)
- Route Output...: S (Screen/Printer)
- Mode.....: O (On-line/Batch)

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ ENV DEF	The Environment Definition containing the file(s) to be cross-referenced. Remote Environments and Archive Definitions are not valid.
STARTING FILE (optional)	The starting value of the file(s) to be cross-referenced. Partial names and wildcards (e.g., AAP*) may be entered.
ENDING FILE (optional)	The ending value of the file(s) to be cross-referenced. Wildcards (e.g., AAP9*) may be entered. To display/print a single file, leave this field blank and enter the filename in the Starting File field.

"∞" indicate field-level help is available.

(Continued from previous page)

Field	Description	
REPORT TYPE	S	Provides a Summary report including the file name, descriptor type, field name, field format, and field length. It also lists the number of times each descriptor is used in a search, update, read, delete, and view. (default: "S")
	D	Provides a Detail report including the above information with the addition of up to 660 object names in which the descriptor is used.
FORCE UPPERCASE (required)	Y	Converts lowercase to uppercase.
	N	Does not convert lowercase to uppercase. (default: "N")
ROUTE OUTPUT (required)	S	Routes output to screen. (default: "S")
	P	Routes output to NATURAL Printer 1 (CMPRT01).

**Note:** When printing to CMPRT01 (NATURAL printer 1) during an on-line session, it is recommended that the user determine if CMPRT01 is available. This can be done by use of the NATURAL "GLOBALS" and/or "SYSFILE" command (refer to the *NATURAL Utilities Manual* for more information). The N2O Documentation Tools will detect that CMPRT01 is unavailable on the first attempt to write the output. A subsequent attempt to print to the unavailable CMPRT01 may result in a NAT954 or similar error, and termination of the current NATURAL session.

MODE (required)	Indicates how the job is to be executed (batch or on-line).	
	B	Submits JCL to the internal reader to process the function in batch. In Batch Mode, the output is automatically routed to NATURAL Printer 1.
	O	Processes the function on-line. (default: "O")

**V.2.6 Object Flow Analysis**

The Object Flow Analysis utility displays/prints NATURAL object(s) and will identify processing loops and statement blocks. For DEFINE DATA /Data areas, the lengths of all fields for each level are accumulated and displayed/printed. Refer to the example in this sub-section. Additionally, at the start of each object, NATURAL directory information and information about the archiving event (if applicable) is displayed/printed.

To access the Object Flow Analysis screen, enter "F" on the Documentation Tools menu.

```

01-12-31                                N-2-O DOCUMENTATION TOOLS                TSI0373
11:33:00                                OBJECT FLOW ANALYSIS                    TSI1

Print Flow Analysis Object(s)
- Env Def.....: TEST
- Library.....: PAYTEST_
- Starting Object.....: PAY*_____ (Wildcard/Single)
- Ending Object.....: _____ (Both Blank=All)

Options
- Force Uppercase.....: N (Yes/No)
- Route Output.....: S (Screen/Printer)
- Mode.....: O (On-line/Batch)

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP ---- END ----
```

Field	Description
∞ ENV DEF	The Environment Definition containing the object(s) to be analyzed. Remote Environments Definitions are not valid.
LIBRARY (required)	The NATURAL library containing the object(s) to be analyzed.
STARTING OBJECT (optional)	The starting value of the object(s) to be analyzed. Partial names and wildcards (e.g., AAP*) may be entered.
ENDING OBJECT (optional)	The ending value of the object(s) to be analyzed. Wildcards (e.g., AAP9*) may be entered. To analyze a single object, leave this field blank and enter the object's name in the Starting Object field.
FORCE UPPERCASE (required)	Y Converts lowercase to uppercase. N Does not convert lowercase to uppercase. (default: "N")

∞ indicate field-level help is available.

(Continued from previous page)

Field	Description	
ROUTE OUTPUT (required)	S	Routes output to screen. (default: "S")
	P	Routes output to NATURAL Printer 1 (CMPRT01).

**Note:** When printing to CMPRT01 (NATURAL printer 1) during an on-line session, it is recommended that the user determine if CMPRT01 is available. This can be done by use of the NATURAL "GLOBALS" and/or "SYSFILE" command (refer to the *NATURAL Utilities Manual* for more information). The N2O Documentation Tools will detect that CMPRT01 is unavailable on the first attempt to write the output. A subsequent attempt to print to the unavailable CMPRT01 may result in a NAT954 or similar error, and termination of the current NATURAL session.

MODE (required)	Indicates how the job is to be executed (batch or on-line).	
	B	Submits JCL to the internal reader that processes the function in batch. In Batch Mode, the output is automatically routed to NATURAL Printer 1.
	O	Processes the function on-line. (default: "O")

When the Environment Definition entered is an N2O Archive Definition, a pop-up window is displayed. One of the following fields must be provided:

- a) An Archive Date, which must be entered using the YYYYMMDD format.
  - 1) When printing a single object  
A list of archive versions is generated and displayed, starting at the most recent archive and continuing until the specified Archive Date. One of the versions must be chosen from this list.
  - 2) When printing a range of objects  
Displays the first version of each object located on the archive file for the specified range archived before or at the specified date.
- b) An Archive Version Number, which allows N2O to go directly to the Archive file and read the specified version. The Archive Version Number may be between -1 and -99.

The following is sample output from the Object Flow Analysis utility:

```

0010 ** Example Object Flow Analysis
+1-----2-----3----DEFINE 0020 DEFINE DATA LOCAL
|4                               0030 1 #I (N4)
|8                               0040 1 #J (N4)
|1008                           0050 1 #A (A10/1:100)
|2008                           0060 1 #B (A10/1:100)
+1-----2-----3END-DEFINE 0070 END-DEFINE
                                0080 **
+-----REPEAT                 0090 REPEAT
| +-----FOR                 0100 FOR #I EQ 1 TO 100
| | +-----IF               0110 IF #A(#I) GT #B(#I)
| | |                       0120 MOVE #A(#I) TO #B(#I)
| | +-----ELSE             0130 ELSE
| | |                       0140 WRITE 'DATA ERROR'
| | | <<--ESCAPE ROUTINE    0150 ESCAPE ROUTINE
| | +-----END-IF           0160 END-IF
| |                           0170 ADD 1 TO #J
| +-----END-FOR           0180 END-FOR
+-----END-REPEAT           0190 END-REPEAT
                                0200 **
                                0210 ...

```

**Note:** The Object Analysis Flow utility relies on the mode (Report or Structured) defined to the object to determine the beginning and ending of the Looping/Control structures.

An object containing Structured mode code, but saved in Report mode, will be analyzed as a Report mode object (i.e., IFs use DO/DOEND, and Processing Loops are closed with LOOP).

An object containing Report mode code but saved in Structured mode will be analyzed as a Structured mode object (i.e., IFs end with END-IF, and Processing Loops are closed with the appropriate END- Statement).

The NATURAL compiler will not allow the user to stow an object with either of the cases above. Copycode is not stowed, therefore it can contain the opposite mode of code than the saved mode of the object.

To receive the correct results, change the mode of the Copycode to match the current programming mode and resave it.

**Note:** The accumulation of level field lengths for DEFINE DATA / data areas requires a valid field length after the field name. Fields from views without a valid field length are ignored for the accumulation.

Arrays that define the array index notation with a constant will return "CONST" as the length.

### V.2.7 Object X-REF

The Object X-REF utility displays/prints PREDICT Cross-Reference information for NATURAL object(s) identifying copycode, data areas, DDMs, files, programs, subroutines, subprograms, SYSERRS, and views referenced. Variables within data areas, DDMs, and views are also identified. This report requires that all NATURAL objects are compiled with XREF=ON. Additionally, at the start of each object, NATURAL directory information and the first block of comments found in the object is displayed/printed.

To access the Object X-REF screen, enter "G" on the Documentation Tools menu.

```

01-12-31          N-2-O DOCUMENTATION TOOLS          TSI0373
11:33:00          OBJECT X-REF                      TSI1

Print Object X-REF(s)
- Env Def.....: TEST
- Library.....: PAYTEST_
- Starting Object.....: PAY*_____ (Wildcard/Single)
- Ending Object.....: _____ (Both Blank=All)

Options
- Force Uppercase.....: N (Yes/No)
- Route Output.....: S (Screen/Printer)
- Mode.....: O (On-line/Batch)

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP ---- END -----
    
```

Field	Description
∞ ENV DEF	The Environment Definition containing the object(s) to be cross-referenced. Remote Environments and Archive Definitions are not valid.
LIBRARY (required)	The NATURAL library containing the object(s) to be cross-referenced.
STARTING OBJECT (optional)	The starting value of the object(s) to be cross-referenced. Partial names and wildcards (e.g., AAP*) may be entered.
ENDING OBJECT (optional)	The ending value of the object(s) to be cross-referenced. Wildcards (e.g., AAP9*) may be entered. To cross-reference a single object, leave this field blank and enter the object's name in the Starting Object field.
FORCE UPPERCASE (required)	Y      Converts lowercase to uppercase. N      Does not convert lowercase to uppercase. (default: "N")

∞ indicate field-level help is available.

(Continued from previous page)

Field	Description	
ROUTE OUTPUT (required)	S	Routes output to screen. (default: "S")
	P	Routes output to NATURAL Printer 1 (CMPRT01).
<p><b>Note:</b> When printing to CMPRT01 (NATURAL printer 1) during an on-line session, it is recommended that the user determine if CMPRT01 is available. This can be done by use of the NATURAL "GLOBALS" and/or "SYSFILE" command (refer to the <i>NATURAL Utilities Manual</i> for more information). The N2O Documentation Tools will detect that CMPRT01 is unavailable on the first attempt to write the output. A subsequent attempt to print to the unavailable CMPRT01 may result in a NAT954 or similar error, and termination of the current NATURAL session.</p>		
MODE (required)	Indicates how the job is to be executed (batch or on-line).	
	B	Submits JCL to the internal reader that processes the function in batch. In Batch Mode, the output is automatically routed to NATURAL Printer 1.
	O	Processes the function on-line. (default: "O")

The following is a sample Object X-REF Report.

Modules used			
PERFORM	FEDTAXS		
PERFORM	CTYTAXS	CALCULATE-CITY-TAX	
PERFORM	*UNKNOWN	CALCULATE-LOCAL-TAX	
CALLNAT	PAYCHKP		
MAP	PAYTAXM		
+-----+			+-----+

The first column of the output specifies what NATURAL statement invokes the referenced module. For external subroutines, the next column will show the actual (or short) subroutine name. If the subroutine is performed using the long name, the long name appears in the third column. If N2O cannot locate a subroutine containing the long name, \*UNKNOWN will appear. For all other NATURAL statements, the object referenced is identified in the second column. The third column is blank.

### V.2.8 SYSERR Message Listing

The SYSERR Message Listing Utility displays/prints NATURAL SYSERR(s) (Long, Short, or Both).

To access the SYSERR Message Listing screen, enter "H" on the Documentation Tools menu.

```

01-12-31          N-2-O DOCUMENTATION TOOLS          TSI0373
11:33:00          SYSERR MESSAGE LISTING            TSI1

Print SYSERR(s)
- Env Def.....: TEST
- Library.....: PAYTEST_
- Starting SYSERR...: 1*_____ (Wildcard/Single)
- Ending SYSERR...: _____ (Both Blank=All)
- SYSERR Type.....: US          (U/US/UL)
- SYSERR Language...: *_____ (1-8, *=All)

Options
- Force Uppercase...: N (Yes/No)
- Route Output.....: S (Screen/Printer)
- Mode.....: O (On-line/Batch)

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ ENV DEF	The Environment Definition containing the SYSERR(s) to be displayed/printed. Remote Environments Definitions are not valid.
LIBRARY (required)	The NATURAL library containing the SYSERR(s) to be displayed/printed.
STARTING SYSERR (optional)	The starting value of the SYSERR(s) to be displayed/printed. Partial names and wildcards (e.g., 11*) may be entered.
ENDING SYSERR (optional)	The ending value of the SYSERR(s) to be displayed/printed. Wildcards (e.g., 11*) may be entered. To display/print a single SYSERR, leave this field blank and enter the SYSERR number in the Starting SYSERR field.
SYSERR TYPE (required)	The type of SYSERR message to be displayed/printed. Valid values are as follows:  US    User-supplied short message. UL    User-supplied long message. U     Both short and long messages.

∞ indicate field-level help is available.

(Continued from previous page)

Field	Description
SYSERR LANGUAGE (required)	<p>The language(s) of SYSERR message to be displayed/printed. Valid values are single alphanumeric characters in the ranges 1 - 9, A - Z and a - y. These values are equivalent to the values available for the *LANGUAGE system variable.</p> <p>(* can be used to display all languages)</p>
FORCE UPPERCASE (required)	<p>Y Converts lowercase to uppercase.</p> <p>N Does not convert lowercase to uppercase. (default: "N")</p>
ROUTE OUTPUT (required)	<p>S Routes output to screen. (default: "S")</p> <p>P Routes output to NATURAL Printer 1 (CMPRT01).</p>
<p><b>Note:</b> When printing to CMPRT01 (NATURAL printer 1) during an on-line session, it is recommended that the user determine if CMPRT01 is available. This can be done by use of the NATURAL "GLOBALS" and/or "SYSFILE" command (refer to the <i>NATURAL Utilities Manual</i> for more information). The N2O Documentation Tools will detect that CMPRT01 is unavailable on the first attempt to write the output. A subsequent attempt to print to the unavailable CMPRT01 may result in a NAT954 or similar error, and termination of the current NATURAL session.</p>	
MODE (required)	<p>Indicates how the job is to be executed (batch or on-line).</p> <p>B Submits JCL to the internal reader that processes the function in batch. In Batch Mode, the output is automatically routed to NATURAL Printer 1.</p> <p>O Processes the function on-line. (default: "O")</p>

When the Environment Definition entered is an N2O Archive Definition, a pop-up window is displayed. One of the following fields must be provided:

- a) An Archive Date, which must be entered using the YYYYMMDD format.
  - 1) When printing a single object  
A list of archive versions is generated and displayed, starting at the most recent archive and continuing until the specified Archive Date. One of the versions must be chosen from this list.
  - 2) When printing a range of objects  
Displays the first version of each object located on the archive file for the specified range archived before or at the specified date.
- b) An Archive Version Number, which allows N2O to go directly to the Archive file and read the specified version. The Archive Version Number may be between -1 and -99.

**V.2.9 Archived 3GL Object Listing**

The Archived 3GL Object Listing utility displays/prints Archived 3GL code. Additionally, at the start of each object, information about the archiving event is displayed/printed.

To enable the paging up/down in Archived 3GL Object Listing, ADAV7 should be specified in the NTDB macro. Refer to the N2O Administrator Manual **Section II.3.8 Installation Procedure step 8**.

To access the Archived 3GL Object Listing, enter "I" on the Documentation Tools menu.

**Note:** This utility can only be used by N2O/3GL customers.

```

01-12-31          N-2-O DOCUMENTATION TOOLS          TSI0373
11:37:57          ARCHIVED 3GL OBJECT LISTING        TSI1

Print Archived 3GL Object(s)
- Archive Def....: _____
- Category.....: _____
- Starting Object: _____ (Wildcard/Single)
- Ending Object..: _____ (Both Blank=All)
- Archive Date...: _____ (YYYYMMDD or -NN)

Options
- Count Lines....: Y (Yes/No)
- Force Uppercase: N (Yes/No)
- Route Output...: S (Screen/Printer)
- Mode.....: O (On-line/Batch)

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
∞ ARCHIVE DEF	The Archive Definition containing the object(s) to be printed.
∞ CATEGORY (required)	The 3GL/Other category of the Object to be printed. Valid values are as follows:  ASMB        Indicates all types of Assembler. COBOL       Indicates all types of COBOL. FORT        Indicates all types of FORTRAN. PL/I        Indicates all PL/I types. RPG         Indicates RPG. DATA        Indicates DATA FILES. JCL         Indicates JCL, CLIST, CNTL. OTHER       All other types.
STARTING OBJECT (optional)	The starting value of the object(s) to be printed. Partial names and wildcards (e.g., AAP*) may be entered.
ENDING OBJECT (optional)	The ending value of the object(s) to be printed. Wildcards (e.g., AAP9*) may be entered. To print a single object, leave this field blank and enter the object's name in the Starting Object field.

∞ indicate field-level help is available.

(Continued from previous page)

Field	Description
∞ ARCHIVE DATE (required)	<p>The version of the archived to be displayed</p> <p>Valid values are as follows:</p> <p>An Archive Date, The Archive Date must be entered using the YYYYMMDD format.</p> <p>When printing a single object:</p> <p>A list of archive versions is generated and displayed, starting at the most recent archive and continuing until the specified Archive Date. One of the versions must be chosen from this list.</p> <p>When printing a range of objects:</p> <p>Displays the first version of each object located on the archive file for the specified range archived before or at the specified date.</p> <p>An Archive Version Number, which allows N2O to go directly to the Archive file and read the specified version. The Archive Version Number may be between -1 and -99.</p>
COUNT LINES (required)	<p>Y Generates line numbers on the left side of the output. (default: "Y")</p> <p>N Displays output without generating line numbers.</p>
FORCE UPPERCASE (required)	<p>Y Converts lowercase to uppercase.</p> <p>N Does not convert lowercase to uppercase. (default: "N")</p>
ROUTE OUTPUT (required)	<p>S Routes output to screen. (default: "S")</p> <p>P Routes output to NATURAL Printer 1 (CMPRT01).</p>

∞ indicate field-level help is available.

**Note:** When printing to CMPRT01 (NATURAL printer 1) during an on-line session, it is recommended that the user determine if CMPRT01 is available. This can be done by use of the NATURAL "GLOBALS" and/or "SYSFILE" command (refer to the *NATURAL Utilities Manual* for more information). The N2O Documentation Tools will detect that CMPRT01 is unavailable on the first attempt to write the output. A subsequent attempt to print to the unavailable CMPRT01 may result in a NAT954 or similar error, and termination of the current NATURAL session.

(Continued from previous page)

<b>Field</b>	<b>Description</b>
MODE (required)	Indicates how the job is to be executed (batch or on-line).  B        Submits JCL to the internal reader that processes the function in batch. In Batch Mode, the output is automatically routed to NATURAL Printer 1.  O        Processes the function on-line. (default: "O")

**V.2.10 Batch Documentation Process**

The following is an example of OS/390 (MVS) JCL used to run the Batch Documentation process. JCL examples are shown only for OS/390 (MVS) in this section. VSE JCL, VM EXECs, and BS2000 JCL are located in **Appendix E VSE JCL**, **Appendix F VM EXECs**, and **Appendix G BS2000 JCL** respectively. (JCL and EXECs will need to be tailored to accommodate site-specific needs.) The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified.

OS/390 (MVS) JCL:

**MVSREPT**

```
//BATCHREP JOB (nnn), 'N-2-0 Batch Report', CLASS=A, NOTIFY=&USERID
//REPORT EXEC PGM=NATL
//CMPRT01 DD SYSOUT=A
//CMSYNIN DD *
LOGON N2OLIB
&REPORT
&INPUT
FIN
/*
//
```

**Note:** The batch reports from the N2O Reporting Subsystem and the Documentation Tools require that the NATURAL Parameter IM (Input Mode) be set to "IM=D" (Delimiter Mode).

The following table illustrates the names of the variables (for &INPUT) whose values will be replaced in the input stream by the on-line submit function of N2O. These values are required in order to execute Documentation reports in batch.

REPORT	&REPORT	&INPUT
Natural Object Listing	N2ODYPPP	ENV-DEF,LIB,START-OBJ,END-OBJ, ARCHIVE-DATE,EXCLUDE-TYPES, EXPLODE-COPYCODE, EXPLODE-DATAAREAS,FORMAT-MAPS, FORMAT-DATAAREAS,DISPLAY-XREF, MAKE-UPPER
Map Listing	N2ODYMPP	ENV-DEF,LIB,START-MAP,END-MAP, ARCHIVE-DATE,SHOW-FIELDS, MAKE-UPPER
Data Area Listing	N2ODYVPP	ENV-DEF,LIB,START-DATAAREA, END-DATAAREA,ARCHIVE-DATE, MAKE-UPPER
File Layouts	N2ODYFPP	ENV-DEF,START-FILE,END-FILE KEYWORD,DETAIL-LEVEL, DATA-REPOS,MAKE-UPPER

REPORT	&REPORT	&INPUT
Descriptor X-REF Information	N2ODYDPP	ENV-DEF,START-FILE,END-FILE, REPORT-TYPE,MAKE-UPPER
Object Flow Analysis	N2ODYAPP	ENV-DEF,LIBRARY,START-OBJ, END-OBJ,ARCHIVE-DATE, MAKE-UPPER
Object X-REF	N2ODYXPP	ENV-DEF,LIBRARY,START-OBJ, END-OBJ,MAKE-UPPER
SYSERR Message Listing	N2ODYSPP	ENV-DEF,LIBRARY,START-ERR, END-ERR,ERR-TYPE,ERR-LANG, ARCHIVE-DATE,MAKE-UPPER
Archived 3GL Object Listing	N2ODYOPP	ARCH-DEF,LIBRARY,START-OBJ, END-OBJ, ARCHIVE-DATE, COUNT-LINES,MAKE-UPPER

----- indicates that inputs are on separate lines.

The &INPUT parameter list by default is delimited by commas with no spaces following the commas. To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).

For descriptions of &INPUT fields, refer to field descriptions in corresponding sections of Documentation Tools.

### V.3 Maintenance Tools

Maintenance Tools provide utilities to delete and recover objects.

To display the Maintenance Tools menu, enter "M" on the Toolbox Subsystem menu or enter the direct command TOL MAIN on any menu.

```

01-12-31          N-2-O MAINTENANCE TOOLS MENU          TSIO373
11:38:00                                     TS11

Code  Function
-----
A    N2OPURGE Utility
B    Recover from an Archive Backup
C    Archive Backup Report
D    Recover from an Event Backup
.    Terminate Maintenance Tools
-----

Enter Code:  _      Type:  N

Direct Command: _____ TOL MAIN
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
    
```

Field	Description
ENTER CODE (required)	<p>The function to be executed. Valid values are as follows:</p> <ul style="list-style-type: none"> <li><b>A N2OPURGE Utility</b> Archives and deletes a NATURAL object and provides an audit trail.</li> <li><b>B Recover from an Archive Backup</b> Recovers NATURAL objects, PDS objects, and SYSERR messages purged from an N2O Archive file.</li> <li><b>C Archive Backup Report</b> Provides a report of all objects stored on an Archive Backup file.</li> <li><b>D Recover from an Event Backup</b> Recovers Events purged from the N2O Migration file.</li> </ul>
TYPE (required)	<p>Valid values for the N2OPURGE utility are Natural objects (N), SYSERR messages (S), and Predict(P).</p> <p>Valid values for the Recover from an Archive Backup are NATURAL objects (N), 3GL/OTHER objects (O), and SYSERR messages (S).</p>

**V.3.1 N2OPURGE Utility**

The N2OPURGE utility deletes NATURAL objects or NATURAL SYSERRs from the NATURAL FUSER or NATURAL DDM from the PREDICT FDIC and from the N2O Master Catalog. If specified, the object or syserr will also be archived to the N2O-Archive File, which will provide an audit trail of the purge.

To access the N2OPURGE Utility screen, enter "A" on the Maintenance Tools menu.

```

01-12-31          N-2-O MAINTENANCE TOOLS          TSI0373
11:38:00          N2OPURGE UTILITY                TSI1

                               Env Def:  PROD
                               Library:  PAYLIB
                               Object:   PAYPGMA
                               Archive:  Y
                               Mode:    0

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ---  END  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---
    
```

Field	Type	Description
∞ ENV DEF (required)	N,S,D	The Environment Definition where the NATURAL object is located.
LIBRARY (required)	N,S	The library where the NATURAL object is located.
OBJECT (required)	N,S,D	The NATURAL object to be purged.  "*"Generates a selection list of all objects in the library. The "*"may also be used as a wildcard character to select objects prefixed by a string (e.g.,N2O*).
OBJECT (required)	N,S,D	The NATURAL object to be purged.
ARCHIVE (required)	N,S	Indicates whether the object should be archived before it is purged or not. This option is not available for DDMs  Y Indicates the object should be archived before it is purged.
		<b>Note:</b> Objects archived by N2OPURGE have an archive event name of N2OPURGE and a sequence number 1.
		N Indicates no archiving should be performed.

∞ indicates field-level help is available.

(Continued from previous page)

---

<b>Field</b>	<b>Type</b>	<b>Description</b>
MODE (required)	N	Indicates how the job is executed (batch or on-line).  B     Submits JCL to the internal reader, which processes the function in batch.  O     Processes the function on-line. (default: O)

Entering the necessary information in the input screen and pressing Enter displays the N2OPURGE Utility report. A sample N2OPURGE Utility report screen is shown below.

```

01-12-31          N-2-O MAINTENANCE TOOLS          TSI0373
11:38:00          N2OPURGE UTILITY                TSI1

+-----+
|          |
|  PROG3A Source Archived from PROD PAYPROD      |
|  PROG3A Object Archived from PROD PAYPROD      |
|  PROG3A Source Deleted from PROD PAYPROD      |
|  PROG3A Object Deleted from PROD PAYPROD      |
|  N2O Catalog Master not found for PROG3A in PAYPROD |
|          |
+-----+

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----

```

To return to the N2OPURGE Utility screen, press Enter.

When wildcarding is specified (\*in the Object field) and Enter is pressed on the initial N2OPURGE Utility screen, the popup below is displayed.

```

01-12-31          N-2-O MAINTENANCE TOOLS          TSI0373
11:38:00          N2OPURGE UTILITY                TSI1

+-----+
|          |
|  N2OPURGE mass purge has been Invoked         |
|  for the Environment: PROD                     |
|          |
|  All Objects in the Library: PAYPROD          |
|  will be Purged                               |
|          |
|  Would you like a selection list: Y           |
|          |
|  Enter=Continue PF3=Abort                     |
|          |
+-----+

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----

```

Entering an "N" for the selection list in the popup and pressing Enter will invoke the N2OPURGE Utility to purge all objects that match the wildcard.

Entering a "Y" for the selection list in the popup and pressing Enter displays the N2OPURGE Utility Object Selection List screen. A sample N2OPURGE Utility Object Selection List screen is shown below.

```

Select Objects to Purge
01-12-31          N2OPURGE Object Selection List          TSI0373
11:38:24          Env: PROD Library: PAYXPROD          TSI1

   X  Object      Object      Purge      X  Object      Object      Purge
   -  -----      -----      -----      -  -----      -----      -----
   -  CITYTAXC    COPYCODE    S          -  CITYTAXM    MAP          S/C
   -  CITYTAXP    PROGRAM     S/C        -  FEDTAXC     COPYCODE    S
   -  FEDTAXM     MAP          S/C        -  FEDTAXP     PROGRAM     S/C
   -  FICAC        COPYCODE    S          -  FICAM       MAP          S/C
   -  FICAP        PROGRAM     S/C        -  KAH0100M    MAP          S/C
   -  KAH0100P    PROGRAM     S/C        -  KAH1080     PROGRAM     S/C
   -  KHBIBM      MAP          S/C        -  LIFEINSC    COPYCODE    S
   -  LIFEINSM    MAP          S/C        -  LIFEINSP    PROGRAM     S/C
   -  PAYBATCH    PROGRAM     S/C        -  PAYCOFY     COPYCODE    S
   -  PAYKH       PROGRAM     S/C        -  PAYROLL     PROGRAM     S/C
   -  PAY0100M    MAP          S/C        -  PAY0100P    PROGRAM     S/C
   -  PAY0100T    MAP          S/C        -  PAY0110M    MAP          S/C
   -  PAY0110P    PROGRAM     S/C        -  PAY0110T    MAP          S/C
   -  PAY0120M    MAP          S/C        -  PAY0120P    PROGRAM     S/C

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12 -
----- END ----- STOP
    
```

Field	Type	Description
ENV (supplied)	N,S,D	The Environment Definition where the NATURAL object is located.
LIBRARY (supplied)	N,S	The library where the NATURAL object is located.
X (optional)	N,S,D	"X" in the Select field purges the object.
OBJECT (supplied)	N,S,D	The object to be purged.
OBJECT TYPE (supplied)	N	Identifies the type of NATURAL object.
S/C (supplied)	N	S Indicates only the source form of the program may be selected. C Indicates only the cataloged form of the program may be selected. S/C Indicates both forms of the program may be selected.

(Continued from previous page)

<b>Field</b>	<b>Type</b>	<b>Description</b>
PURGE RESULT (supplied)	N	Indicates the success or failure of the requested purge:
		Chkout      Indicates the purged was prevented because the object is checked out.
		Error        Indicates a failed purge.
		No ARCH      Indicates a failed purge because Archiving specified and Environment Definition does not have an Archive Definition.
		Uexit12      Indicates the purge was prevented by user-exit 12.
		3GL ENV      Indicates a failed purge because Environment Definition is a 3GL Environment.
		Column 1     "S" indicates Object's source code has been purged
		Column 2     "C" indicates Object's object code has been purged
		Column 3     "S" indicates Object's source code has been archived
		Column 4     "C" indicates Object's object code has been archived
		Column 5     "X" indicates Object's XREF data has been purged
Column 6     "M" indicates Object's master record has been purged		

## **Job Steps for the Batch N2OPURGE Utility**

The job steps for the Batch N2OPURGE utility are described below.

### **N2OPURGE**

This step is controlled by card image input. Control cards specify which object is to be purged.

N2OPURGE is a NATURAL object that verifies security in User-Exit 12, checks for a valid environment, and builds the output parameter file CMWKF01. Refer to the **N2O Administrator Manual** for details on User-Exit 12.

This step must be executed from a NATURAL FUSER that is local to the N2O Installation.

### **PURGE and ARCHIVE**

N2OPURG1 is a NATURAL object that inputs CMWKF01, the output parameter file from N2OPURGE. This step must be executed from a NATURAL FUSER local to where the object is located. N2OPURG1 reads the input cards, which identify the Environment Definition where the NATURAL object is located and the object to be purged. An output dataset of acknowledgment records is created as CMWKF02.

### **N2OPURGE ACKNOWLEDGMENT**

N2OPURG2 is a NATURAL object that must be executed from a NATURAL FUSER that is local to the N2O installation. Acknowledgment records created by step N2OPURG1 are input as CMWKF02 to update the N2O Migration file.

**Batch N2OPURGE Utility JCL**

JCL examples are shown only for OS/390 (MVS) in this section. VSE JCL, VM EXECs, and BS2000 JCL are located in **Appendix E VSE JCL**, **Appendix F VM EXECs**, and **Appendix G BS2000 JCL** respectively.

The following sample JCL may be used to execute the N2OPURGE utility in batch. The following job stream assumes that both the N2O files and NATURAL FUSER file where the object is to be purged are on the same node. Sample Batch N2OPURGE JCL is provided on the N2O installation tape in the library N2OBATCH as object "MVSPURGE".

When submitting the JCL manually, replace the &INPUT with the Object Type, Environment Definition, library, object name, and the archive option (Y or N) for each object to be purged (separated by ' '). Valid values for Object Type are N (NATURAL), S (SYSERR messages), and P (PREDICT).

Multiple records may be specified when manually submitted. "9999" must be specified for the Environment Definition to terminate input.

**MVSPURGE**

```
//N2OPURGE JOB (20000), 'BATCH N2OPURGE', CLASS=T, NOTIFY=&USERID
/*
//N2OPURGE EXEC PGM=NATBATCH
//CMWKF01 DD DSN=N2OPURGE.LIST, DISP=(,CATLG),
//          DCB=(RECFM=VB,LRECL=123,BLKSIZE=127),
//          UNIT=SYSDA,SPACE=(TRK,(12,12))
//CMPRINT DD SYSOUT=*
//CMSYNIN DD *
LOGON N2OLIB
N2OPURGE
&INPUT
FIN
/*
//N2OPURG1 EXEC PGM=NATBATCH
//CMWKF01 DD DSN=N2OPURGE.LIST, DISP=(OLD,DELETE)
//CMWKF02 DD DSN=N2OPURGE.ACKN, DISP=(,CATLG),
//          DCB=(RECFM=VB,LRECL=290,BLKSIZE=294),
//          UNIT=SYSDA,SPACE=(TRK,(12,12))
//CMPRINT DD SYSOUT=*
//CMSYNIN DD *
LOGON SYSTEM
N2OPURG1
FIN
/*
//N2OPURG2 EXEC PGM=NATBATCH
//CMWKF02 DD DSN=N2OPURGE.ACKN, DISP=(OLD,DELETE)
//CMPRINT DD SYSOUT=*
//CMSYNIN DD *
LOGON N2OLIB
N2OPURG2
FIN
/*
```

### V.3.2 Recover from an Archive Backup (Batch Only)

The Recover from an Archive Backup recovers NATURAL objects, PDS objects, and SYSERR messages purged from an Archive file.

To access the Recover from an Archive Backup screen, enter "B" on the Maintenance Tools menu.

If Checkout/Checkin is active, then the Checkout/Checkin rules are verified before recovery.

```

01-12-31          N-2-O MAINTENANCE TOOLS          TSI0373
11:38:00          RECOVER FROM AN ARCHIVE BACKUP    TSI1

                Event      : _____
                Sequence   : _____
                Object     : _____
                From Env   : _____
                From Library : _____
                To Env     : _____
                To Library : _____
                Source/Object: _____

                Backup DSN : _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ---  END  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---
    
```

Field	Type	Description
∞ EVENT (required)	N,S,O	The name of the Event that archived the NATURAL object, PDS object, or SYSERR message.
SEQUENCE (required)	N,S,O	The sequence number of the Event.
OBJECT (required)	N,S,O	The name of the NATURAL object, PDS object, or SYSERR message.
∞ FROM ENV (required)	N,S,O	The source environment of the recovery for NATURAL objects, PDS objects, or SYSERR messages.
FROM LIBRARY (required)	N,S,O	The source library of the recovery for NATURAL objects or SYSERR messages.
∞ TO ENV (required)	N,S,O	The target environment of the recovery for NATURAL objects, PDS objects, or SYSERR messages.
TO LIBRARY (required)	N,S	The target library of the recovery for NATURAL objects or SYSERR messages.

∞ indicates field-level help is available.

(Continued from previous page)

Field	Type	Description
SOURCE/ OBJECT (required)	N,O	The type of NATURAL object to be recovered. Valid values are as follows: S NATURAL source code or PDS object. C NATURAL object code. S/C Both source and object code for NATURAL objects.
SYSERR TYPE (required)	S	The type of SYSERR message to be recovered. Valid values are as follows: US User-supplied short message. UL User-supplied long message. U Both short and long messages.
CATEGORY (required)	O	The 3GL/Other category of the number to be recovered. Valid values are as follows: ASMB Indicates all types of Assembler. COBOL Indicates all types of COBOL. FORT Indicates all types of FORTRAN. PL/I Indicates all PL/I types. RPG Indicates RPG. DATA Indicates DATA FILES. JCL Indicates JCL, CLIST, CNTL. OTHER All other types.
BACKUP DSN (required)	N,S,O	The name of the Archive backup dataset to be used in the recovery.

**Job Steps for the Recover from an Archive Backup Utility**

The Recover from an Archive Backup process recovers an object from an Archive Backup dataset created by the Archive Purge utility. This process is executed in batch. If Checkout/Checkin is active, the Recover from an Archive Backup utility validates checkout rules before recovering the object. Following the recovery, this utility updates the N2O Migration file with the results of the recovery.

**N2ORAB1**

N2ORAB1 is a NATURAL object that performs the first step of the Recover from an Archive Backup utility. This step must be executed from the NATURAL FUSER that is local to the N2O installation. N2ORAB1 reads a control card from the input workfile CMWKF01. The control card specifies which Object is to be recovered.

If a user submits the recovery through a system internal reader, N2O replaces &INPUT in CMWKF01 with the correct control card. If a user submits the recovery manually, the user must create the control cards in the workfile.

N2ORAB1 verifies the control card parameters and the recovery rules for Checkout/Checkin. If the object can be recovered, an output record is written to CMWKF02.

**N2ORAB2**

N2ORAB2 is a NATURAL object that recovers NATURAL objects and SYSERR messages from an Archive Backup.

This step must be executed from the NATURAL FUSER that is the target of the recovery. N2ORAB2 reads the N2ORAB1 output records from CMWKF01 and locates the correct Object in the backup dataset, CMWKF02.

If a user submits the recovery through a system internal reader, N2O replaces &BACKUP with the dataset name. If a user submits the recovery manually, the dataset name must be placed in the JCL and EXECs.

N2ORAB2 recovers the object from the backup dataset to the target FUSER, and writes an acknowledgment record to CMWKF03.

**N2ORAB2T**

N2ORAB2T is a NATURAL object that recovers PDS objects from an Archive Backup. This step must be executed from the environment that is the target of the recovery. N2ORAB2T reads the N2ORAB1 output records from CMWKF01 and locates the correct member in the backup dataset, CMWKF02.

If a user submits the recovery through a system internal reader, N2O replaces &BACKUP with the dataset name. If a user submits the recovery manually, the dataset name must be placed in the JCL and EXECs.

N2ORAB2T recovers the object from the backup dataset to the correct PDS member, CMWKF05. If a user submits the recovery through a system internal reader, N2O replaces &MEMBER with the PDS member name. If a user submits the recovery manually, the member name must be placed in the JCL.

N2ORAB2T recovers the member from the backup dataset to a PDS member, and writes an acknowledgment record to CMWKF03.

### N2ORAB3

N2ORAB3 is a NATURAL object that performs the third step of the Recover from an Archive Backup utility. This step must execute from a NATURAL FUSER that is local to the N2O installation. N2ORAB3 reads the acknowledgment records from N2ORAB2 or N2ORAB2T, and creates a record of the recovery that can be identified as RCVR-BKP on the History of an Object report.

### Archive Back Up Recovery JCL for NATURAL Objects and SYSERR Messages

JCL examples are shown only for OS/390 (MVS) in this section. VSE JCL, VM EXECs, and BS2000 JCL are located in **Appendix E VSE JCL**, **Appendix F VM EXECs**, and **Appendix G BS2000 JCL** respectively.

The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified. In step 2 of the JCL below, the name of workfile 2 must be changed to the name of the Archive Backup dataset. The name of workfile 2 may also be found by selecting Object Details on the Event Details Report.

### MVSRAB

```
//N2ORAB JOB (ACCT),'RECOVER ARCH BACKUP',CLASS=A,NOTIFY=&USERID
/*
/* &INPUT will be replaced automatically by N2O with:
/* - Type of Object (N, S)
/* - Name of Event which archived the Object
/* - Sequence of Event which archived the Object
/* - Environment where Object was archived from
/* - Library where Object was archived from
/* - Environment where Object should be recovered to
/* - Library where Object should be recovered to
/* - Object name (NATURAL program, SYSERR number)
/* - US, UL, or U
/* Examples:
/* N CHECKIN 271 PROD N2OPROD TEST N2OTEST PAYROLLP S
/* S CHECKIN 271 PROD N2OPROD TEST N2OTEST 1015 US
/*
//N2ORAB1 EXEC PGM=NATBATCH
//CMWKF01 DD *
&INPUT
/*
//CMWKF02 DD DSN=REC.PARMS,DISP=(NEW,PASS,DELETE),
// SPACE=(TRK,(5,5),RLSE),UNIT=SYSDA,
// DCB=(RECFM=VB,BLKSIZE=193,LRECL=189)
//CMPRINT DD SYSOUT=*
//CMSYNIN DD *
LOGON N2OLIB
N2ORAB1
FIN
/*
//N2ORAB2 EXEC PGM=NATBATCH
//CMWKF01 DD DSN=REC.PARMS,DISP=(OLD,DELETE,CATLG)
//CMWKF02 DD DSN=&BACKUP,DISP=(OLD,KEEP,KEEP),
//CMWKF03 DD DSN=REC.ACKN,DISP=(NEW,PASS,DELETE),
// SPACE=(TRK,(5,5),RLSE),UNIT=SYSDA,
// DCB=(RECFM=VB,BLKSIZE=193,LRECL=189)
//CMPRINT DD SYSOUT=*
//CMSYNIN DD *
LOGON SYSTEM
N2ORAB2
FIN
/*
//N2ORAB3 EXEC PGM=NATBATCH
//CMWKF01 DD DSN=REC.ACKN,DISP=(OLD,DELETE,CATLG)
//CMPRINT DD SYSOUT=*
//CMSYNIN DD *
LOGON N2OLIB
N2ORAB3
FIN
/*
```

## **Recovery JCL for PDS Objects**

### **MVSRAB**

```
//N2ORAB JOB (ACCT),'RECOVER ARCH BACKUP',CLASS=A,NOTIFY=&USERID
/*
/* &INPUT will be replaced automatically by N2O with:
/* - O for 3GL/Other Member
/* - Name of Event which archived the Member
/* - Sequence of Event which archived the Member
/* - Environment where Member was archived from
/* - Environment where Member should be recovered to
/* - Member name
/* - Category
/* - S for Source
/* Examples:
/* O CHECKIN 271 PROD TEST COBPROG COBOL S
/*
//N2ORAB1 EXEC PGM=NATBATCH
//CMWKF01 DD *
&INPUT
/*
//CMWKF02 DD DSN=REC.PARMS,DISP=(NEW,PASS,DELETE),
// SPACE=(TRK,(5,5),RLSE),UNIT=SYSDA,
// DCB=(RECFM=VB,BLKSIZE=193,LRECL=189)
//CMPRINT DD SYSOUT=*
//CMSYNIN DD *
LOGON N2OLIB
N2ORAB1
FIN
/*
/*
//N2ORAB2T EXEC PGM=NATBATCH
//CMWKF01 DD DSN=REC.PARMS,DISP=(OLD,DELETE,CATLG)
//CMWKF02 DD DSN=&BACKUP,DISP=(OLD,KEEP,KEEP),
//CMWKF03 DD DSN=REC.ACKN,DISP=(NEW,PASS,DELETE),
// SPACE=(TRK,(5,5),RLSE),UNIT=SYSDA,
// DCB=(RECFM=VB,BLKSIZE=193,LRECL=189)
//CMWKF05 DD DSN=&PDS (&MEMBER),DISP=SHR
//CMPRINT DD SYSOUT=*
//CMSYNIN DD *
LOGON SYSTEM
N2ORAB2T
FIN
/*
/*
//N2ORAB3 EXEC PGM=NATBATCH
//CMWKF01 DD DSN=REC.ACKN,DISP=(OLD,DELETE,CATLG)
//CMPRINT DD SYSOUT=*
//CMSYNIN DD *
LOGON N2OLIB
N2ORAB3
FIN
/*
```

**V.3.3 Archive Backup Report (Batch Only)**

The Archive Backup Report displays all objects stored on an Archive Backup dataset. The Archive Backup Report is available in batch only.

To access the Archive Backup Report submit screen, enter "C" on the Maintenance Tools menu.

```

01-12-31          N-2-O MAINTENANCE TOOLS          TSI0373
11:38:00          ARCHIVE BACKUP REPORT           TSI1

Backup Data Set Name: _____

This Report Available in Batch Only

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Type	Description
BACKUP DSN (required)	N,S,O	The name of the Archive backup dataset to be reported.

Entering the Backup Dataset Name on the input screen and pressing Enter submits JCL to the internal reader, which produces the report in batch.

01-12-31 11:39:52		N-2-O OBJECT REPORTING ARCHIVE BACKUP REPORT							Page 1	
BACKUP DATA SET: PROD.ARC.BKUP										
Event/ Utility	Seq	From Env	Archive Date	Backup Date	Arc S/C	Library/ 3GL Type	Object Name	Seq/ Lng	Arch Def	
DEV2PROD	6	PROD	20000211	01-02-21	S	PAYDEV	MSLOC1T	0001	ARCP	
DEV2PROD	6	PROD	20000211	01-02-21	S	PAYDEV	MSLOC2T	0001	ARCP	
DEV2PROD	6	PROD	20000211	01-02-21	S	PAYDEV	MSPGM1T	0001	ARCP	
DEV2PROD	6	PROD	20000211	01-02-21	S	PAYDEV	MSPGM1T	0002	ARCP	
DEV2PROD	6	PROD	20000211	01-02-21	S	PAYDEV	MSPGM1T	0003	ARCP	
DEV2PROD	6	PROD	20000211	01-02-21	S	PAYDEV	MSPGM1T	0004	ARCP	
DEV2PROD	6	PROD	20000211	01-02-21	S	PAYDEV	MSPGM1T	0005	ARCP	
DEV2PROD	6	PROD	20000211	01-02-21	S	PAYDEV	MSPGM2T	0006	ARCP	
DEV2PROD	6	PROD	20000211	01-02-21	S	PAYDEV	MSPGM2T	0007	ARCP	
DEV2PROD	9	PROD	20000213	01-02-21	S	PAYDEV	0001	0001	ARCP	
DEV2PROD	9	PROD	20000213	01-02-21	S	PAYDEV	0002	0001	ARCP	
DEV2PROD	9	PROD	20000213	01-02-21	S	PAYDEV	0003	0001	ARCP	
DEV2PROD	9	PROD	20000213	01-02-21	S	PAYDEV	0004	0001	ARCP	
DEV2PROD	9	PROD	20000213	01-02-21	L	PAYDEV	0001	0001	ARCP	
DEV2PROD	9	PROD	20000213	01-02-21	L	PAYDEV	0002	0001	ARCP	
DEV2PROD	9	PROD	20000213	01-02-21	L	PAYDEV	0004	0001	ARCP	

Field	Type	Description
BACKUP DATA SET (supplied)	N,S,O	The name of the Archive backup dataset being reported.
Event/Utility (supplied)	N,S,O	The Master Event of the migration.
SEQ (supplied)	N,S,O	The sequence number of the Event.
FROM ENV (supplied)	N,S,O	The source Environment Definition of the Event.
ARCHIVE DATE (supplied)	N,S,O	The date the object was Archived.
BACKUP DATE (supplied)	N,S,O	The date the Archive file was backed up.
ARCH S/C (supplied)	N,S,O	The form of the object archived. S indicates only the source form of the Program was archived. C indicates only the object form of the Program was archived. S/C indicates both forms of the program were Archived.
LIBRARY/3GL TYPE (supplied)	N,S	The library that contained the Natural object or SYSERR message.
	O	The category of the 3GL object.
OBJECT NAME (supplied)	N,S,O	The name of the archived object.
ARCH DEF (supplied)	N,S,O	The Archive Definition used to archive the object.

Work File Reporting in Batch

The following JCL is an example of OS/390 (MVS) JCL used to support the Batch Reporting process when a work file is used as input. A JCL example is shown only for OS/390 (MVS) in this section. VSE JCL, VM EXECs, and BS2000 JCL are located in **Appendix E VSE JCL**, **Appendix F VM EXECs**, and **Appendix G BS2000 JCL** respectively. JCL and EXECs should be tailored to accommodate site-specific needs. The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified.

OS/390 (MVS) JCL:

**MVSWKRP**

```
//BATCHREP JOB (nnn), 'N-2-0 Batch Report', CLASS=A, NOTIFY=&USERID
//REPORT EXEC PGM=NATL
//CMPRINT DD SYSOUT=*
//CMPRT01 DD SYSOUT=*
//CMSYNIN DD *
LOGON N2OLIB
N2OTOLC
&INPUT
FIN
//CMWKF01 DD DSN=&BACKUP, DISP=SHR
/*
//
```

The following tables illustrate the JCL and EXECs modifications necessary to execute the Archive Backup Report in batch.

**Archive Backup Report**

<b>&amp;Report</b>	<b>&amp;INPUT</b>	<b>&amp;BACKUP</b>
N2OTOLC	Backup Data Set Name	Backup Data Set Name

**V.3.4 Recover from an Event Backup (Batch Only)**

The Recover from an Event Backup recovers events purged from the N2O Migration file.

To access the Recover from an Event Backup screen, enter "D" on the Maintenance Tools menu.

```

05-02-14          N-2-O MAINTENANCE TOOLS          TSI0373
21:27:20          RECOVER FROM AN EVENT BACKUP     TSI1

Backup DSN      : _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ---  END  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---  ---
    
```

Field	Type	Description
BACKUP DSN (required)	N	The name of the event backup dataset created by the Event Purge process to be used in the recovery.

**Job Steps for the Recover from an Event Backup Utility**

The Recover from an Event Backup process recovers events to the N2O Migration file from an Event Backup dataset created by the Event Purge utility. This process is executed in batch.

**N2OREB**

N2OREB is a NATURAL object that recovers events from an Event Backup.

This step must be executed from the NATURAL FUSER where N2O is installed. N2OREB reads the events from the backup dataset, CMWKF01.

If a user submits the recovery through a system internal reader, N2O replaces &BACKUP with the dataset name. If a user submits the recovery manually, the dataset name must be placed in the JCL and EXECs.

N2OREB recovers the events from the backup dataset to the migration file.

**Event Back Up Recovery JCL**

JCL examples are shown only for OS/390 (MVS) in this section. VSE JCL, VM EXECs, and BS2000 JCL are located in **Appendix E VSE JCL**, **Appendix F VM EXECs**, and **Appendix G BS2000 JCL** respectively.

The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified. In step 1 of the JCL below, the name of workfile 1 must be changed to the name of the Archive Backup dataset.

**MVSREB**

```
//N2OREB JOB (ACCT),'RECOVER EVENT BACKUP',CLASS=A,NOTIFY=&USERID
//*
//N2OREB1 EXEC PGM=NATBATCH
//CMWKF01 DD DSN=&BACKUP,DISP=SHR
//CMPRINT DD SYSOUT=*
//CMPRT01 DD SYSOUT=*
//CMSYNIN DD *
LOGON N2OLIB
N2OREB
FIN
/*
//
```

### V.4 Programmer Tools

Programmer Tools provides utilities to compare, list, and scan NATURAL objects.

To access the Programmer Tools menu, enter "P" on the Toolbox Subsystem menu or the direct command TOL PROG on any menu.

```

01-12-31          N-2-O PROGRAMMER TOOLS MENU          TSI0373
11:38:00                                               TSI1

                Code  Function
                ----  -
                C    Object Compare
                D    Source Compare
                S    N2OSCAN Utility
                .    Terminate Programmer Tools
                ----  -

Enter Code: _    Type: _

Direct Command: _____ TOL PROG
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END  ENV  MIG  REP  TOL  USR  PRJ  ----  ----  EXIT
    
```

Field	Type	Description
ENTER CODE (required)	N	<b>C Object Compare</b> Displays the differences between the object code of two NATURAL objects.
	N	<b>D Source Compare</b> Displays the differences between the source code of two NATURAL objects.
	N	<b>S N2OSCAN Utility</b> Allows execution of scans of NATURAL source code and the viewing and maintaining of scan output.
TYPE (supplied)	N	The type of objects to be compared and listed. Valid values are as follows: N Indicates NATURAL.

**V.4.1 Object Compare**

The Object Compare utility displays the differences between the object code of two NATURAL objects. These objects may be located in any FUSER or any N2O Archive file.

To access the Object Compare utility, enter "C" on the Programmer Tools menu.

```

01-12-31          N-2-O PROGRAMMER TOOLS          TSI0373
11:38:00          OBJECT COMPARE UTILITY          TSI1

                Base      Compare
                Object     Object

Env Def:   _____
Library:   _____
Object:    _____

                Options
-----
Mode.....0

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END -----
    
```

Field	Type	Description
∞ ENV DEF (required)	N	The Environment Definitions/Archive Definitions where the NATURAL objects are located.
LIBRARY (required)	N	The libraries where the NATURAL objects are located.
OBJECT (required)	N	The name of the NATURAL objects to be compared.
MODE (required)	N	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader, which processes the function in batch. O Processes the function on-line. (default: O)

∞ indicates field-level help is available.

When either the base or compare object resides in an N2O Archive file, a pop-up window is displayed. One of the following fields must be provided:

- a) An Archive Date, which generates and displays a list of archive versions starting at the most recent archive and continuing until the specified Archive Date. One of the versions must be chosen from this list. The Archive Date must be entered using the YYYYMMDD format.
- b) An Archive Version Number, which allows N2O to go directly to the Archive file and read the specified version. The Archive Version Number may be between -1 and -99.

The screen below displays information about the two object codes.

```

01-12-31          OBJECT COMPARE UTILITY          TSI0373
11:38:00                                               TSI1

PAYPROD / MENU      Type      : PROGRAM      Structured Mode
Library   : PAYPROD  User-ID   : BATCH02    Jobname    : BATCH02
Date Catalg: 01-07-23 Time Catalg: 01:37:14 Terminal-ID: BATCH02
NATURAL Ver: 2.16      GDA Name  : PAYGDA
Size in user area (USIZE) : 5234 Bytes  GDA Date   : 01-07-22
Size in buffer pool      : 7564 Bytes  GDA Time   : 22:34:58
Size in source area (ESIZE) : 7704 Bytes
Number subroutines (PERFORM): 1          LS= 132 PS= 60
-----
PAYTEST / MENU      Type      : PROGRAM      Structured Mode
Library   : PAYTEST  User-ID   : BATCH01    Jobname    : BATCH01
Date Catalg: 01-07-23 Time Catalg: 19:41:34 Terminal-ID: BATCH01
NATURAL Ver: 2.16      GDA Name  : PAYGDA
Size in user area (USIZE) : 5234 Bytes  GDA Date   : 01-07-23
Size in buffer pool      : 7564 Bytes  GDA Time   : 22:31:31
Size in source area (ESIZE) : 7704 Bytes
Number subroutines (PERFORM): 1          LS= 132 PS= 60

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END -----
    
```

Pressing Enter on the previous screen displays the result of the Object Compare utility.

```

01-12-31          OBJECT COMPARE UTILITY          TSI0373
11:38:00                                               TSI1

          DBID  FNR   Pgm Name  Library
          ----  ---   -
Base
Object:  1     231   MENU      PAYPROD
-----
Compare
Object:  1     231   MENU      PAYTEST

The two object codes do not match.

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
----- END -----
    
```

This screen is displayed at the end of each object comparison. The message indicates the results of the comparison.

**V.4.2 Source Compare**

The Source Compare utility identifies differences between the source code of NATURAL objects located on an FUSER or an N2O Archive file local to N2O. The ability to compare a single pair of objects, a range of objects or two NATURAL libraries is provided. If a range of objects or NATURAL libraries is compared, any unique objects (objects existing in only one location) are ignored. To access the Source Compare Utility screen, enter "D" on the Programmer Tools menu.

```

01-12-31          N-2-O PROGRAMMER TOOLS          TSI0373
11:38:00          SOURCE COMPARE UTILITY          TSI1

          Base          Compare
Env Def.....:  _____  _____
Library.....:  _____  _____
Starting Object: _____  _____ (Wildcard/Single)
Ending Object..: _____  _____ (Both Blank=All)

          Option(s)
----- Ignore ----- Show -----
Object Comments..... Y (Yes/No)          Statistics Only... N ( Yes/No)
Spacing..... N (Yes/No)          Source code Only.. N (Yes/No)
Range Positions..... _____          Missing Objects... N(Yes/No)
Identical Objects N (Yes/No/Show) Range Statistics.. N (Yes/No)
-----
Minimum number of lines for a MATCHING Block 0 (0-9)
Maximum number of lines compared..... 120 (0-9999 0=No Limit)
Expand Matching.. N (Yes/No)          Mode..... O (On-line/Batch)

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11-PF12---
HELP ---- END -----

```

Field	Type	Description
∞ BASE/COMPARE ENV DEF (required)	N	The Environment Definitions/Archive Definitions where the NATURAL objects are located.
BASE /COMPARE LIBRARY (required)	N	The libraries where the NATURAL objects are located.
BASE STARTING OBJECT (optional)	N	The starting value of the NATURAL object(s) in the base library to be compared. Partial names and wildcards (e.g., AAP*) may be entered. Wildcards and Ranges do not work against a Remote environment.
BASE ENDING OBJECT (optional)	N	The ending value of the NATURAL object(s) in the base library to be compared. Partial names and wildcards (e.g., AAP*) may be entered. To compare a single object, leave this field blank and enter the object's name in the Starting Object field.

"∞" indicates field-level help is available.

(Continued from previous page)

<b>Field</b>	<b>Type</b>	<b>Description</b>
COMPARE STARTING OBJECT (optional)	N	The value of the NATURAL object(s) in the compare library to be compared. If the Compare Starting Object field is left blank, the Base Starting Object and Compare Starting Object are considered the same.
COMPARE ENDING OBJECT (optional)	N	The ending value of the NATURAL object(s) in the compare library to be compared. Partial names and wildcards (e.g., AAP*) may be entered. If the Compare Ending Object field is left blank, the Base Ending Object and Compare Ending Object are considered the same.
IGNORE COMMENTS (required)	N	Indicates whether comment lines are included when comparing each pair of objects.  Y Ignores all comment lines when comparing a pair of objects. A comment line contains "*", "***", or "/" in the first two non-blank positions of any line. Inline comments (comments at the end of a source line) are ignored. (default: Y)  N Includes comment lines when comparing a pair of objects.
SHOW STATISTICS ONLY (required)	N	Indicates whether all differences in each pair of objects are displayed.  Y Displays a page of statistics without viewing a listing of line by line differences between a pair of objects.  N Displays a listing of line by line differences in a pair of objects followed by a page of statistics. (default: N)
IGNORE SPACING (required)	N	Indicates whether spacing is ignored when comparing a pair of objects.  Y Ignores spacing when comparing a pair of objects. Before comparing objects, all spaces are extracted from each line. Spaces between two single quotes are not removed.  N Includes spacing when comparing a pair of objects. (default: N)

(Continued from previous page)

Field	Type	Description
SHOW SOURCE CODE ONLY (required)	N	Indicates whether the page of statistics for each pair of objects is displayed.
		Y Displays line by line differences in a pair of objects without a page of statistics.
		N Displays line by line differences in a pair of objects followed by a page of statistics. (default: N)
IGNORE POSITIONS (optional)	N	Indicates which positions are ignored for synchronizing objects in the specified range between the base and compare libraries. This parameter is valid if a range is entered.
		12345678 The number(s) of the position(s) ignored for the synchronization of object names (e.g., APGM12 equals BPGM22 when IGNORE POSITIONS is set to position 1 and 5 e.g., IGNORE POSITION is set to 15).  (default: None except when two wildcards are entered. Under that condition, the positions that are not equal in the wildcards will be automatically set (e.g., wildcards PGM* & BAK* would cause IGNORE POSITIONS to set at 123 and wildcards PGM1* & PGM2* would cause IGNORE POSITIONS to set at 4. This is in addition to any positions entered).
SHOW MISSING OBJECTS (required)	N	Indicates whether missing objects within the specified range are displayed in a pop-up window on-line or CMPRT01 in BATCH. This parameter is valid only if a range is entered.
		Y Displays the missing objects within the specified range in the base and compare libraries.
		N Ignores missing objects within the specified range, in the base and compare libraries. (default: N)
IGNORE IDENTICAL OBJECTS (required)	N	Indicates whether identical objects within the specified range are displayed or not. This parameter is valid if a range is entered.
		Y Ignores objects within the specified range that are identical.
		S Displays the names of objects within the specified range that are identical in a pop up window online or CMPRT01 in BATCH.
		N Displays all information about all objects within the specified range that are identical. (default: N)

(Continued from previous page)

<b>Field</b>	<b>Type</b>	<b>Description</b>
SHOW RANGE STATISTICS (required)	N	Indicates whether cumulative statistics totals for a range of objects are displayed. This parameter is valid if a range is entered.
	Y	Collects and displays the cumulative statistics totals for all objects within the specified range in the base and compare libraries.
	N	Does not collect and display the cumulative statistics totals for all objects within the specified range in the base and compare libraries. (default: N)
MINIMUM NUMBER OF LINES FOR A MATCHING BLOCK (required)	N	0 - 9 Indicates the minimum number of concurrent lines that must match for a block of code to be considered matching. (default: 0)
MAXIMUM NUMBER OF LINES COMPARED (required)	N	0 - 9999 Indicates the maximum number of concurrent lines that will be scanned in a pair of objects to locate matching code. (default: 120)
EXPAND MATCHING (required)	N	Indicates whether matching source code in each pair of objects will be expanded.
	Y	Displays all code in a block of matching source code.
	N	Displays only the first and last line of a block of matching source code. (default: N)
MODE (required)	N	Indicates how the job is executed (batch or on-line).
	B	Submits JCL to the internal reader, which processes the function in batch.
	O	Processes the function on-line. (default: O)

When either the base or compare object resides in an N2O Archive file, a pop-up window is displayed. One of the following fields must be provided:

- a) An Archive Date, The Archive Date must be entered using the YYYYMMDD format.
  - 1) When comparing a single object
 

A list of archive versions is generated and displayed, starting at the most recent archive and continuing until the specified Archive Date. One of the versions must be chosen from this list.
  - 2) When comparing a range of objects
 

Displays the first version of each object located on the archive file for the specified range archived before or at the specified date.
- b) An Archive Version Number, which allows N2O to go directly to the Archive file and read the specified version. The Archive Version Number may be between -1 and -99.

The screen below is displayed to show the differences found between a pair of objects.

```

01-12-31          N-2-O SOURCE COMPARE UTILITY          Report Page:  1
11:38:00                Source Code                Object Page:  1
Base >>>>: Env Def: D230 Library: LIB-ONE    PROGRAM : PGM-ONE Mode: REPORT
>>>> Comp: Env Def: D230 Library: LIB-TWO    PROGRAM : PGM-TWO Mode: REPORT
====  ====  ....+....1....+....2....+....3....+....4....+....5....+....6....+....
a) 0010 0010 * THIS IS A PROGRAM IN THE PAYROLL SYSTEM WHICH
      ....
      <<< MATCHING BLOCK >>>
0050 0050 MOVE 1 TO #INDEX

b) 0060 ---- ADD 3 TO #TOTAL
0070 ---- IF #TAX-1 = #TAX-2
0080 ---- DO
0090 ---- WRITE 'THE FIGURES DO NOT MATCH' DOEND
c) ---- 0060 ADD 2 TO #TOTAL

d) 0100 0070 * CALCULATION ROUTINE
      ... ..
      <<< MATCHING BLOCK >>>
0140 0110 SUBTRACT 1 FROM #REMAINDER

e) 0150 --- RESET #I #J

f) 0160 0120 *
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ---- END INFO ---- LEFT RIGHT ----

```

The first and second columns contain line numbers from the base object and compare object respectively. The remainder of the screen is used to display the source associated with each line number. The footnotes below highlight the differences in the sample comparison.

- a)/d) Represent Matching Blocks. A Matching Block begins when the Compare utility finds a line from the base object that matches a line from the compare object. It continues until the Compare utility finds a line from the base object that does not have a corresponding match in the compare object. The message <<< MATCHING BLOCK >>> is displayed between the first and last matching lines of the Matching Block when EXPAND MATCHING is set to "N".
- b)/e) Represent lines that exist in the base object, but have no matches in the Compare Program.
- c) Represents a line that exists in the compare object, but has no match in the base object.
- f) Represents a Matching Block with only one line.

PF-Key	Function	Description
PF3/PF15	END	Return to Source Compare Screen.
PF4/PF16	INFO	Display date and time saved, User-ID, Terminal ID, and NATURAL version for the base and compare objects.
PF10/PF22	LEFT	Scroll screen left.
PF11/PF23	RIGHT	Scroll screen right.

The following screen(s) display summary statistics generated by the Source Compare utility. Information is provided about the NATURAL objects being compared, the number of NATURAL source lines and comment lines and the total number of lines in each object. These screens also indicate which options were in effect for this comparison.

For non-Archive Environments, the screen below is displayed.

```

01-12-31          N-2-O SOURCE COMPARE UTILITY          Report Page:  2
11:38:00          Statistics                          Object Page:  2

      Env Dbid Fnr  Library Object  Type      Date      Time      Ver
-----
Base   : D230 230  54 LIB-ONE PGM-ONE PROGRAM 2001/01/13 10:47:54 2.2.8
Compare: D230 230  54 LIB-TWO PGM-TWO PROGRAM 2001/02/08 09:23:21 2.2.8
Mode   Terminal Userid  OS    TP Mon  Trans  Size
-----
Base   : STRUCT TSITERM TSI300C MVS/ESA TSO      TDEV      1,470 Bytes
Compare: STRUCT TSITERM TSI300D MVS/ESA TSO      TPRD      1,873 Bytes
Source Comment Total
Lines  Lines  Lines
-----
Base   :    7 +    9 = 16
Compare:    4 +    8 = 12

      11 Lines match in both objects

Options were as follows: Ignore Comments - Y  Ignore Positions - 123
                        Ignore Spacing - Y   Ignore Identical Objects - Y
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11--PF12---
----- END -----

```

Comparing Archive Environments produces the statistical page shown below. The additional information of Archive Date, Archive Time, Archive Event, Archive Event Sequence, and Original Environment is displayed.

```

01-12-31          N-2-O SOURCE COMPARE UTILITY          Report Page:  2
11:38:00          Statistics                          Object Page:  2

      Env Dbid Fnr  Library Object  Type      Date      Time      Ver
-----
Base   : A230 230  55 LIB-ONE PGM-ONE PROGRAM 2001/01/13 10:47:54 2.2.8
Compare: A230 230  55 LIB-TWO PGM-TWO PROGRAM 2001/02/08 09:23:21 2.2.8
Mode   Terminal Userid  OS    TP Mon  Trans  Size
-----
Base   : STRUCT TSITERM TSI300C MVS/ESA TSO      TDEV      1,470 Bytes
Compare: STRUCT TSITERM TSI300D MVS/ESA TSO      TPRD      1,873 Bytes
Source Comment Total Archive  Archive  Archive  Event  Org
Lines  Lines  Lines Date      Time      Event  Seq   Env
-----
Base   :    7 +    9 = 16 2001/01/06 14:19:37 DEV2PROD 138  D230
Compare:    4 +    8 = 12 2001/01/06 14:18:54 DEV2PROD 135  D230

      11 Lines match in both objects

Options were as follows: Ignore Comments - Y
                        Ignore Spacing - Y
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11--PF12---
----- END -----

```

The following screens display range statistics generated by the Source Compare utility. In BATCH, the following screens are combined.

```

01-12-31          N-2-O SOURCE COMPARE UTILITY          Report Page:  4
11:38:00          Range Statistics                      Object Page:  1

      Env  Dbid  Fnr  Library  Start Object  End Object
-----
Base   :    D230  230   54 LIB-ONE  PGM*
Compare:    D230  230   54 LIB-TWO  BAK*
-----
                Unique          Compared Objects          Total
                Objects         Identical Different Total      Objects
-----
Base   :          28             30           7           37           65
Compare:          1             0             0             0           1
-----
                Compared Lines
                Source          Comment          Total
                -----
Base   :                568 +             122 =             690
Compare:                568 +             122 =             690
503 Lines match in both Libraries
Options were as follows: Ignore Comments - Y  Ignore Positions - 123
                        Ignore Spacing - Y   Ignore Identical Objects - Y
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
-----
                        END

```

If a range of objects is entered and the Range Statistics option is set to "Y", the screen shown above is displayed. The total number of identical, changed, and unique NATURAL objects being compared, the total number of NATURAL source lines and comment lines, and the total number of lines for the range of objects are displayed. This screen also indicates what range was entered and which options were in effect for the comparison.

```

01-09-05          N-2-O SOURCE COMPARE UTILITY          Report Page:  9
16:04:47          Range Statistics by Object Type      Object Page:  2

      Env  Dbid  Fnr  Library  Start Object  End Object
-----
Base   :    LBAS   3   9 LYNNP1
Compare:    LDEV   3   9 LYNNT1
-----
                GDA   PDA   LDA   COPY   TEXT   SRTN   SPGM   HELP   MAP   PGM   MAC   REP
Identical  0     0     0     0     0     0     2     0     0     5     0
Different  0     0     0     0     0     0     0     0     0     0     0
=          =     =     =     =     =     =     =     =     =     =
In Both   0     0     0     0     0     0     2     0     0     5     0
Unique    +     +     +     +     +     +     +     +     +     +     +
Base   :   0     0     0     0     0     0     0     0     0     0     0
Compare:  0     0     0     0     0     2     0     0     4     19    0
Total     =     =     =     =     =     =     =     =     =     =     =
Base   :   0     0     0     0     0     0     2     0     0     5     0
Compare:  0     0     0     0     0     2     2     0     4     24    0
-----
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
-----
                        END

```

If a range of objects is entered and the Range Statistics option is set to "Y", the screen shown above is also displayed. Statistics for the total number of identical, changed, and unique NATURAL objects for each NATURAL object type being compared is displayed. This screen also indicates what range was entered for the comparison. PF11 will scroll the screen to the right, PF10 will scroll the screen to the left.

Job Step for the Batch Source Compare Utility

The automated submission of JCL for a batch comparison is provided as an alternative to on-line NATURAL object comparisons. Batch comparisons provide hard copy output and can be executed when on-line activity is at a minimum.

The following is a description of the job step for a batch source compare:

**N2O3110B**

The JCL and EXECs used for manual submission of batch comparisons varies slightly from the sample JCL. The &INPUT card must be replaced with three input cards for which a description and example are provided below. When submitting the comparison through an internal reader, these input cards are automatically placed in the JCL and EXECs.

1. The first input card supplies information about the base object and must include the following parameters separated by commas:
  - BASE ENVIRONMENT or ARCHIVE Definition
  - BASE LIBRARY
  - BASE STARTING OBJECT name (not required)
  - BASE ENDING OBJECT name (Blank for printing of one Object) (not required)
  - ARCHIVE DATE or ARCHIVE VERSION (Blank if BASE ENVIRONMENT is not an ARCHIVE Definition)
  
2. The second input card supplies information about the compare object and must include the following parameters separated by commas:
  - COMPARE ENVIRONMENT or ARCHIVE Definition
  - COMPARE LIBRARY
  - COMPARE STARTING OBJECT name (not required)
  - COMPARE ENDING OBJECT name (Blank for printing of one Object) (not required)
  - ARCHIVE DATE or ARCHIVE VERSION (Blank if COMPARE ENVIRONMENT is not an ARCHIVE Definition)
  
3. The last input record supplies information for the following options:
  - IGNORE COMMENTS (Y/N)
  - SHOW STATISTICS ONLY (Y/N)
  - IGNORE SPACING (Y/N)
  - SHOW SOURCE CODE ONLY (Y/N)
  - IGNORE POSITIONS (12345678) (Blank for single object)
  - SHOW MISSING OBJECTS (Y/N) (N for single object)
  - IGNORE IDENTICAL OBJECTS (Y/N) (N for single object)
  - SHOW RANGE STATISTICS (Y/N) (N for single object)
  - MINIMUM NUMBER OF LINES FOR A MATCHING BLOCK (0-9)
  - MAXIMUM NUMBER OF LINES COMPARED (0-9999)
  - EXPAND MATCHING (Y/N)

The following is an example of what the three input records might contain:

```
ARC1,PAYROLL,MENU,,-1
PRD1,PAYROLL,MENU,,
Y,N,N,N,,N,N,N,0,120,N
```

In this example, the base object is found in the Archive file and is the most recent Archive version of object MENU. The compare object is found on the PRD1 Environment. All default options have been selected.

**Batch Source Compare JCL (for local environments)**

The following JCL is an example of JCL used to execute batch source compare. JCL examples are shown only for OS/390 (MVS) in this section. VSE JCL, VM EXECs, and BS2000 JCL are located in **Appendix E VSE JCL**, **Appendix F VM EXECs**, and **Appendix G BS2000 JCL** respectively. JCL and EXECs should be tailored to accommodate site-specific needs. The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified.

OS/390 (MVS) JCL:

**MVSCOMPS**

```
//N2OCOMPS JOB (ACCOUNTING), 'COMPSOURCE', CLASS=A, TIME=40
//*
//N2OCOMPS EXEC PGM=NATBATCH
//*
//CMPRINT DD SYSOUT=*
//CMPRT01 DD SYSOUT=*
//CMPRT02 DD SYSOUT=*
//CMSYNIN DD *
LOGON N2OLIB
N2O3110B
&INPUT
FIN
/*
//
```

**Note:** The BATCH report from the N2O Source Compare utility require that the NATURAL Parameter IM (Input Mode) be set to "IM=D" (Delimiter Mode).

**Batch Source Compare JCL (for Remote Environments)**

The following JCL is an example of JCL used to execute batch source compare against remote environments. JCL examples are shown only for OS/390 (MVS) in this section. VSE JCL, VM EXECs, and BS2000 JCL are located in **Appendix E VSE JCL**, **Appendix F VM EXECs**, and **Appendix G BS2000 JCL** respectively. JCL and EXECs should be tailored to accommodate site-specific needs. The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified.

OS/390 (MVS) JCL:

**MVSCOMPR**

```
//N2OCMPR JOB 'REMOTE SOURCE COMPARE' MSGLEVEL=1,
// CLASS=C,MSGCLASS=X,REGION=4M,NOTIFY=&SYSUID
//*
//***
//* THIS IS SAMPLE JCL FOR N2O SOURCE COMPARE BETWEEN TWO REMOTE
//* ENVIRONMENTS
//* This step must be executed where N2O is installed
//***
```

Continued on next page

Continued from previous page

```
//GCPARM EXEC PGM=NATBATCH
//CMPRINT DD SYSOUT=*
//CMPRT01 DD SYSOUT=*
//CMPRT02 DD SYSOUT=*
//CMWKF01 DD DSN=N2O.SRCCR.PARMA1,DISP=(NEW,PASS,DELETE),
// DCB=(RECFM=FB,LRECL=80,BLKSIZE=84),
// UNIT=SYSDA,SPACE=(TRK,(1,1))
//CMWKF02 DD DSN=N2O.SRCCR.PARMA2,DISP=(NEW,PASS,DELETE),
// DCB=(RECFM=FB,LRECL=80,BLKSIZE=84),
// UNIT=SYSDA,SPACE=(TRK,(1,1))
//CMSYNIN DD *
LOGON N2OLIB
N2O3110B
&INPUT
FIN
/*
/*
/* This step must be executed on base environment
/*
//RRTM1 EXEC PGM=NATBATCH
//CMPRINT DD SYSOUT=*
//CMPRT01 DD SYSOUT=*
//CMPRT02 DD SYSOUT=*
//CMWKF01 DD DSN=N2O.SRCCR.PARMA1,DISP=(OLD,DELETE,DELETE)
//CMWKF02 DD DSN=N2O.SRCCR.PARMB1,DISP=(NEW,PASS,DELETE),
// DCB=(RECFM=FB,LRECL=187,BLKSIZE=191),
// UNIT=SYSDA,SPACE=(TRK,(1,1))
//CMWKF03 DD DSN=N2O.SRCCR.OUTPT1,DISP=(NEW,PASS,DELETE),
// DCB=(RECFM=FB,LRECL=133,BLKSIZE=137),
// UNIT=SYSDA,SPACE=(TRK,(1,1))
//CMSYNIN DD *
LOGON SYSTEM
N2O3110C
FIN
/*
/*
/* This step must be executed on compare environment
/*
//RRTM2 EXEC PGM=NATBATCH
//CMPRINT DD SYSOUT=*
//CMPRT01 DD SYSOUT=*
//CMPRT02 DD SYSOUT=*
//CMWKF01 DD DSN=N2O.SRCCR.PARMA2,DISP=(OLD,DELETE,DELETE)
//CMWKF02 DD DSN=N2O.SRCCR.PARMB2,DISP=(NEW,PASS,DELETE),
// DCB=(RECFM=FB,LRECL=187,BLKSIZE=191),
// UNIT=SYSDA,SPACE=(TRK,(1,1))
//CMWKF03 DD DSN=N2O.SRCCR.OUTPT2,DISP=(NEW,PASS,DELETE),
// DCB=(RECFM=FB,LRECL=133,BLKSIZE=137),
// UNIT=SYSDA,SPACE=(TRK,(1,1))
//CMSYNIN DD *
LOGON SYSTEM
N2O3110C
FIN
/*
/*
/* This step must be executed where N2O is installed
/*
//COMPW EXEC PGM=NATBATCH
//CMPRINT DD SYSOUT=*
//CMPRT01 DD SYSOUT=*
//CMPRT02 DD SYSOUT=*
//CMWKF01 DD DSN=N2O.SRCCR.PARMB1,DISP=(OLD,DELETE,DELETE)
//CMWKF02 DD DSN=N2O.SRCCR.OUTPT1,DISP=(OLD,DELETE,DELETE)
//CMWKF03 DD DSN=N2O.SRCCR.PARMB2,DISP=(OLD,DELETE,DELETE)
//CMWKF04 DD DSN=N2O.SRCCR.OUTPT2,DISP=(OLD,DELETE,DELETE)
//CMSYNIN DD *
LOGON SYSTEM
N2O3110D
FIN
/*
```

### **V.4.3 N2OSCAN Utility**

The N2OSCAN Utility performs a scan of NATURAL source code for a set of user-specified strings over a user-specified range of NATURAL objects and stores scan results on the N2O-MIGRATION file for subsequent on-line query and batch reporting.

#### Input to N2OSCAN - Scan Parm Set

Prior to a scan, the user must specify:

1. the environment/library range/object range to scan
2. string(s) for which to scan

by entering these values into a Scan Parm Set. Scan Parm Sets are created, edited, and saved in the NATURAL Program Editor as standard NATURAL Text objects. (Sample Scan Parm Sets delivered with the N2OSCAN Utility may be found in library N2OSCAN.)

A Scan Parm Set consists of a set of Header Parm, defining the default scan range, and at least one Detail Line, specifying string(s) which to scan. Refer to **Section V.4.3.1 Scan Parm Sets** for more detailed information.

#### Output from N2OSCAN - Scan Output Set

Upon execution, N2OSCAN scans for the strings over the range specified in the selected Scan Parm Set and outputs the results into a Scan Output Set (a set of records physically stored on the N2O-MIGRATION file). A Scan Output Set consists of:

1. detailed recording of all "hits" (indicating strings-found and line-specific location of strings-found)
2. summary data -- outlining scan statistics at the object, library, and full Scan Output Set level.

All levels of summary and detail in Scan Output Sets may be viewed on-line and in batch reports. Additionally, the source of a scanned NATURAL object may be viewed on-line with "hits" highlighted or may be printed in batch with "hits" highlighted or underlined.

<p><b>Note:</b> A glossary of N2OSCAN terminology may be found in <b>Appendix J N2OSCAN Glossary</b>.</p>
---

## V.4.3.1 **Scan Parm Sets**

Prior to executing a scan using the N2OSCAN Utility, a user must specify:

1. the environment/library/object range to scan
2. string(s) for which to scan

by entering these values into a Scan Parm Set.

Scan Parm Sets are created, edited, and saved in the NATURAL Program Editor as standard NATURAL Text Objects. The library N2OSCAN is the default library for Scan Parm Sets.

The following is a sample Scan Parm Set:

```
0010 ENV=PROD, START-LIB=LIB01, END-LIB=LIB99,  
0020 START-OBJ=PGM1000P, END-OBJ=PGM1999P, DELIM=< >  
0020 *  
0030 I, Y, DATE  
0040 E, N, UPDATE
```

When the Scan Parm Set is submitted for execution, it will result in a scan of all NATURAL source objects in the N2O Environment, PROD, from Library LIB01 through LIB99, Objects PGM1000P through PGM1999P.

A Scan Parm Set consists of a set of Header ParmS (defining the default scan range) and at least one Detail Line (specifying string(s) to scan).

### HEADER PARMS

Header ParmS are entered onto a maximum of the first six non-N2OSCAN comment lines of a Scan Parm Set. They consist of the following:

#### REQUIRED HEADER PARM

##### Environment Header Parm

Only the Environment Header Parm is required; all other Header ParmS are optional. The Environment Header Parm is entered in the format

ENV=xxxx or ENVIRONMENT=xxxx

where xxxx is a valid N2O Environment on a local Node.

**Note:** The Environment Header Parm must be entered at the beginning of the first non-N2OSCAN comment line. NATURAL Text objects that do not have this value at the beginning of the first non-comment line will not be recognized by the N2OSCAN Utility as Scan Parm Sets.

OPTIONAL HEADER PARMS

Any of the following, separated by a comma, may appear following the required Environment Header Parm:

Start Library Parm

Entered in the format:

START-LIB=xxxxxxx or START-LIBRARY=xxxxxxx

where xxxxxxx is the starting value of the library range to be scanned.

End Library Parm

Entered in the format:

END-LIB=xxxxxxx or END-LIBRARY=xxxxxxx

where xxxxxxx is the ending value of the library range to be scanned.

**Note:** If a Start Library Parm is specified but an End Library Parm is not, only the single library specified in the Start Library Parm will be scanned.

Start Object Parm

Entered in the format:

START-OBJ=xxxxxxx or START-OBJECT=xxxxxxx

where xxxxxxx is the starting value of the object range to be scanned.

End Object Parm

Entered in the format:

END-OBJ=xxxxxxx or END-OBJECT=xxxxxxx

where xxxxxxx is the ending value of the object range to be scanned.

**Note:** If a Start Object Parm is specified but an End Object Parm is not, only the single object specified in the Start Object Parm will be scanned.

Delimiter Override Parm

Entered in the format:

DELIM=<xxxxxxx> or DELIMITER=<xxxxxxx>  
or DELIMITERS=<xxxxxxx>

where xxxxxxx is a set of up to 32 special characters to serve as the override delimiter set for a scan. If omitted, the default NATURAL delimiter set (all characters with hexadecimal value less than the hexadecimal value of lower case 'a') will apply. This optional parameter may not be needed for many scans.

**Note:** All range values (Start and End Parms) entered as Header Parms are default values only and may be overridden at scan execution time. The Delimiter Override Parm, if entered in the Scan Parm Set, cannot be overridden at scan execution time.



**V.4.3.2 N2OSCAN Utility**

Entering an 'S' on the Programmer Tools Menu or entering the direct command TOL SCAN accesses the N2OSCAN Utility Menu.

```

01-12-31          N2OSCAN Utility
TSI0373
11:38:00
                                                    TSI1

Code  Function
-----
A    Environment Scan
B    Library Scan
C    Select Scan Output Set
D    Delete Scan Output Set
E    Administrative Delete Scan Output Set
.    Terminate Scan Utility
-----

Enter Code: _   User ID: _____

Direct Command: _____ TOL SCAN
Enter--PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12
      HELP  ----- END  ENV  MIG  REP  TOL  USR  PRJ  ----- ----- EXIT
    
```

Field	Description
Enter Code (modifiable, required)	The function to be executed. A user's Function Profile determines the valid values. Valid values are as follows: <ul style="list-style-type: none"> <li><b>A Environment Scan</b> Execute, inquire on, or select a Scan Parm Set for a scan of an Environment.</li> <li><b>B Library Scan</b> Execute, inquire on, or select a Scan Parm Set for a scan of a library.</li> <li><b>C Select Scan Output Set</b> Select a Scan Output Set for which to view summary statistics or detail.</li> <li><b>D Delete Scan Output Set</b> Select a Scan Output Set to delete. Only Scan Output Sets belonging to the user will be displayed.</li> <li><b>E Administrative Delete Scan Output Set</b> Select a Scan Output Set to delete. This option will list ALL Scan Output Sets.</li> </ul>
User ID (modifiable, optional)	If entered, serves as starting value of selection lists displayed with Code options C, D, or E above.

**V.4.3.2.1 Environment Scan Utility**

The Environment Scan Utility permits scans to be conducted on an entire Environment, a range of libraries, a single library, a range of objects, or a single object.

Entering an 'A' on the N2OSCAN Utility Menu accesses the Environment Scan Utility. (Refer to **Section V.4.3.2.2 Library Scan Utility** for details on all options.)

```

01-12-31          N2OSCAN Utility          TSI0373
11:38:00                                     TSI1

Code  Function
-----
C    Check a Scan Parm Set
E    Edit a Scan Parm Set (Exits N2O)
I    Inquire on Scan Parm Set
S    Select Scan Parm Set
X    Execute Scan
.    Terminate Scan Utility
-----

Enter Code: _          Scan Parm Set: _____
                          Parm Set Library: N2OSCAN_

Direct Command: _____ TOL SCEN
Enter---PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12
        HELP  ----- END  ENV  MIG  REP  TOL  USR  PRJ  ----- EXIT
    
```

Field	Description
Enter Code (modifiable, required)	The function to be executed. A user's Function Profile determines the valid values. Valid values are as follows:  <b>C Check a Scan Parm Set</b> Validate the Header Parmes and Detail Lines of a Scan Parm Set.  <b>E Edit a Scan Parm Set (exits N2O)</b> Exit N2O and use the NATURAL program editor to edit a Scan Parm Set.  <b>I Inquire on Scan Parm Set</b> View a Scan Parm Set.  <b>S Select Scan Parm Set</b> Provides a list of Scan Parm Sets that may be inquired on, checked, edited, or executed.  <b>X Execute Scan</b> Checks and executes the specified Scan Parm Set.
Scan Parm Set (modifiable, required for code 'C', 'E', 'I' or 'X')	A Scan Parm Set to be checked, edited, inquired on, selected, or executed. (If specified with Select option, the starting Scan Parm Set on the Select Screen.)
Parm Set Library (modifiable, required for code 'C', 'E', 'I' or 'X')	The library in which the Scan Parm Set is stored. (defaults to "N2OSCAN")

**V.4.3.2.2 Library Scan Utility**

The Library Scan Utility Menu permits scans to be conducted on an entire library, a range of objects, or a single object.

Entering a 'B' on the N2OSCAN Utility Menu accesses the Library Scan Utility.

```

01-12-31          N-2-O Library Scan Utility          TSI0373
11:38:00                                               TSI1

Code  Function
-----
C    Check a Scan Parm Set
E    Edit a Scan Parm Set (Exits N2O)
I    Inquire on Scan Parm Set
S    Select Scan Parm Set
X    Execute Scan
.    Terminate Scan Utility
-    -----

Enter Code: _      Scan Parm Set: _____
                  Parm Set Library: N2OSCAN_

Direct Command: _____ TOL SCLI
Enter---PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12
HELP  ----- END  ENV  MIG  REP  TOL  USR  PRJ  ----- EXIT
    
```

Field	Description
Enter Code (modifiable, required)	The function to be executed. A user's Function Profile determines the valid values. Valid values are as follows:  <b>C Check a Scan Parm Set</b> Validate the Header Parms and Detail Lines of a Scan Parm Set.  <b>E Edit a Scan Parm Set (exits N2O)</b> Exit N2O and use the NATURAL program editor to edit a Scan Parm Set.  <b>I Inquire on Scan Parm Set</b> View a Scan Parm Set.  <b>S Select Scan Parm Set</b> Provides a list of Scan Parm Sets that may be inquired on, checked, edited, or executed.  <b>X Execute Scan</b> Checks and executes the specified Scan Parm Set.
Scan Parm Set (modifiable, required for code 'C', 'E', 'I' or 'X')	A Scan Parm Set to be checked, edited, inquired on, selected, or executed. (If specified with Select option, the starting Scan Parm Set on the Select Screen.)
Parm Set Library (modifiable, required for code 'C', 'E', 'I' or 'X')	The library in which the Scan Parm Set is found. (defaults to "N2OSCAN")

**V.4.3.2.1 Select Scan Parm Set Function**

The Select Scan Parm Set function provides a list of Scan Parm Sets that may be inquired on, checked, edited, or executed. This screen will display all Scan Parm Sets in the specified library.

Entering an 'S' on the Environment Scan Function Menu or the Library Scan Function Menu accesses the Select Scan Parm Set function.

```

Valid Values: I=Inquire, C=Check, X=Execute, E=Edit(exits N2O)
01-12-31      N-2-O Select Scan Parm Set                      TSI0373
11:38:00     Starting Scan Parm Set: SCANDEV Library: N2OSCAN TSI1

Invalid      Scan      Start      End      Start      End
Hdr  S Parm Set Env  Library  Library  Object   Object
-----
***  _ SCANDEV DEV  PAY001  PAY001  CALC1    CALC2
      _ SCANPRD PRD  TAX001  TAX002  PSTTAX   PSTX99

Enter---PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12
      HELP  -----END -----UP      DOWN -----LIB -----
    
```

PF10 List Scan Parm Sets in a different library. (A pop-up window permits user to specify the different library)

Field	Description
Starting Scan Parm Set (modifiable)	Value with which to begin the selection list.
Library (display-only)	Indicates library in which currently displayed Scan Parm Sets are stored. May be modified by using PF10 Key.
Invalid Hdr (display-only)	Indicates the validity of a Scan Parm Set's Header Parm. Valid values are as follows: Blank Valid Header Parm. *** Invalid Header Parm.

(continued from previous page)

Field	Description
S (modifiable)	<p>The function to be executed. A user's Function Profile Security determines the user's valid values. Valid values are as follows:</p> <p><b>C Check the Scan Parm Set</b> Validate the Header Parm's and Detail Lines of a Scan Parm Set.</p> <p><b>E Edit the Scan Parm Set (exits N2O)</b> Exit N2O and use the NATURAL program editor to edit a Scan Parm Set.</p> <p><b>I Inquire on the Scan Parm Set</b> View a Scan Parm Set.</p> <p><b>X Execute the Scan Parm Set</b> Check and Execute the specified Scan Parm Set.</p>
Scan Parm Set (display-only)	Name of the Scan Parm Set.
Env (display-only)	N2O Environment on which the scan will be executed.
Start Library (display-only)	Scan Parm Set's default Start Library Default starting value for the range of libraries to be scanned.
End Library (display-only)	Scan Parm Set's default End Library Default ending value for the range of libraries to be scanned.
Start Object (display-only)	Scan Parm Set's default Start Object Default starting value for the range of objects to be scanned.
End Object (display-only)	Scan Parm Set's default End Object Default ending value for the range of objects to be scanned.

**V.4.3.2.2.2 Check Scan Parm Set Function**

The Check Scan Parm Set function verifies that the format of the Scan Parm Set is valid. The Header Parms are examined for a valid local N2O Environment, a valid range of libraries (if specified), and a valid range of objects (if specified). The pop-up window shown below details the results of the check function.

**Note:** The Check Scan Parm Set function can be accessed from outside of N2O by entering N2OSCAN at the NEXT prompt or on the command line in the NATURAL Program Editor.

Entering a 'C' ("check") on the Select Scan Parm Set function invokes the Check Scan Parm Set function. (The 'X' ("execute") option also invokes the Check Scan Parm Set function prior to performing a scan)

```

Valid Values: I=Inquire, C=Check, X=Execute, E=Edit(exits N2O)
01-12-31      N-2-O Select Scan Parm Set      TSI0373
11:38:00 Starting Scan Parm Set: _____ Library: _____ TSI1

Scan Parm Set: SCANDEV Library: N2OSCAN
Has the Following Errors

Parm Set Header Errors      Detail Lines with Errors
-----
Invalid Scan Environment    0070 0080 0110 0200 0210
Invalid Start Library       0250 0290 0300 0310 0320
Invalid Start Object

                        ADDITIONAL DETAIL ERRORS MAY EXIST
    
```

The Check Scan Parm Set function pop-up window shown above displays the function's results to the user. The following messages may appear:

**Scan Header Messages:**

**All Scan Header Info is Valid**

The Header Parms of the Scan Parm Set are valid.

**Parm Set Header Errors**

The Scan Parm Set that was checked contains invalid Header Parm values. The messages below detail Header Parm errors that may be found.

**Invalid Scan Environment**

The environment specified was not a local N2O Environment.

**Invalid Start Library**

A range of libraries was specified and the starting library value was greater than the end library value.

**Invalid Start Object**

A range of objects was specified and the starting object was greater than the end object.

**Scan Detail Messages:**

**All Detail Lines are Valid**

All Detail Lines in the Scan Parm Set are valid.

**Detail Lines with Errors**

The Scan Parm Set contains invalid Detail Lines. The line numbers of lines with invalid criteria are listed below this message.

**Additional Detail Errors May Exist**

The Scan Parm Set contained at least 10 Detail Lines with errors. The remaining Detail Lines were not checked and may also contain errors.

**Parm Set contains more than 50 Detail Lines**

A Scan Parm Set may contain no more than 50 Detail Lines of search criteria. A Scan may be executed with this Scan Parm Set, but additional Detail Lines over 50 will be ignored.



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<b>Field</b>	<b>Description</b>
Start Object (modifiable)	Starting value for the range of objects to be scanned. If End Object is left blank, Start Object is the only object that will be scanned.
End Object (modifiable)	Ending value for the range of objects to be scanned. If left blank, Start Object is the only object that will be scanned.
Mode (modifiable)	Indicates how the job is to be executed (batch or on-line). Valid values are:  B     submits JCL to the internal reader, which processes the function in batch.  O     processes the function on-line. (default: O)

The fields that appear in the Scan Execution Parameters window vary, depending on whether the Environment Scan function or the Library Scan function was used to access this window. The Library Scan function requires a library value and does not permit overriding of the Environment, nor does it permit the specification of a library range.

The default scan range values from the Scan Parm Set may be overridden in this window based on the following rules.

**Environment Level Scans**

1. An "\*" may be specified for wildcarding on both the Start and End Library values.

For example, if Start Library value is "MYLIB\*" and End Library is left blank, the resultant scan range will be from "MYLIB" through "MYLIB999".

Additionally, if Start Library value is "MYLIB001" and End Library value is "PAYLIB\*", the resultant scan range will be from "MYLIB001" through "PAYLIB99".

2. Both Start and End Library fields may be left blank.

This results in a scan of the entire environment.

**Library Level Scans**

A library is required. Wildcarding with an "\*" is not permitted.

**All Scans - Start and End Object values**

1. An "\*" may be specified for wildcarding on both the Start and End Object values.

For example, if Start Object value is "MYPGM\*" and End Object is left blank, the resultant scan range will be from "MYPGM" through "MYPGM999".

Additionally, if Start Library value is "MYPGM001" and End Library value is "PAYPGM\*", the resultant scan range will be from "MYPGM001" through "PAYPGM99".

2. Both Start and End Library fields may be left blank.

This results in a scan of the entire library.

## **Online Scan Execution**

If the scan was selected to run on-line, pressing Enter begins the scan execution process. If a previous scan by the same user was based on the same scan criteria, a pop-up window will inform the user that an identical scan already exists and output from this scan will overlay it. The scan can be aborted by pressing PF3 or executed by pressing Enter.

The amount of time it takes a scan to execute is dependent on the scan range specified. Since some scans may take an extended period of time, a pop-up window showing the scan's progress will appear. **DO NOT PRESS ANY KEYS** while the scan is in progress. This will cause the scan to abort. (Aborted scans may be deleted using the Scan Output Set Delete functions.)

Scans may also be executed in batch.

Once the scan completes, a pop-up window will appear giving the user the choice to go directly to the Select Scan Output Screen (to view the scan's output) by pressing Enter, or to return to the N2OSCAN Utility Menu by pressing PF3.

## **Batch Scan Execution**

If the scan was selected to run in batch, pressing Enter will submit JCL to the internal reader that will execute the scan function in batch. The output of the scan will be available as a Scan Output Set.

## **Manual Batch Scan Execution**

The manual N2OSCAN Batch Scan Execution permits batch execution of either an Environment or Library scan using an existing Scan Parm Set. The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified.

The OS/390 (MVS) JCL to run this program is shown below.

### **MVSSCBX**

```
//N2OSCBX EXEC PGM=NATBATCH
//* CMPRINT CONTAINS ANY MESSAGES/ERRORS PRODUCED DURING
//* EXECUTION OF N2OSCBX
//CMPRINT DD SYSOUT=*
//CMSYNIN DD *
LOGON N2OLIB
N2OSCBX
FIN
//CMWKF01 DD *
UID,SPS-LIB,SPS,ENV,STARTLIB,ENDLIB,STARTOBJ,ENDOBJ
/*
```

The &INPUT parameter list by default is delimited by commas with no spaces following the commas. To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).

The layout for the record in CMWKF01 is as follows:  
(All values are required)

<b>Values</b>	<b>Description</b>
Userid	User ID of the user who is to own the scan.
ScanParmSetLibrary	Library of the Scan Parm Set.
ScanParmSet	Scan Parm Set that is input to the scan.
Environment	N2O Environment in which the scan is to be executed.
Start Library	Starting value for the range of libraries to be scanned. If ENDLIB is blank, STARTLIB is the only library to be scanned.
End Library	Ending value for the range of libraries to be scanned. If blank, STARTLIB is the only library to be scanned.
Start Object	Starting value for the range of objects to be scanned. If ENDOBJ is blank, STARTOBJ is the only object to be scanned.
End Object	Ending value for the range of objects to be scanned. If blank, STARTOBJ is the only object to be scanned.

**V.4.3.2.3 Select Scan Output Set Function**

The Select Scan Output Set function provides a list of Scan Output Sets for scans that completed successfully. Summary statistics may be inquired on, or a list of libraries scanned may be selected.

Entering a 'C' on the N2OSCAN Utility Menu accesses the Select Scan Output Set function.

```

I=Inq, L=Lib Sel List, D=Online Del, B=Batch Del, S=String Found Rep
01-12-31      N-2-O Select Scan Output Set      TSI0373
11:38:00                                           TSI1
                Starting User ID: TSI004__

S User ID      Scan      Start      End      Start      End      Date/Time
  Parm Set Env  Library  Library  Object    Object    Completed
-----
_ TSI004      SCANDEV  DEV  PAY001  PAY001  CALC1    CALC2    01/08/01 11:34
_ TSI004      SCANPRD  PRD  TAX001  TAX002  PSTTAX   PSTX99   01/08/01 11:54

Enter--PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12
      HELP  ----- END  ----- UP      DOWN  -----
    
```

Field	Description
Starting User ID (modifiable)	Value with which to begin the selection list.
S (modifiable)	The function to be executed. Valid values are as follows: <ul style="list-style-type: none"> <li>I Inquire on the summary statistics of the Scan Output Set.</li> <li>L Lists all libraries scanned.</li> <li>B Batch Delete of the selected Scan Output Set.</li> <li>S String Found Report. Provides a hardcopy of all strings found in the selected Scan Output Set.</li> <li>D Online delete of the selected Scan Output Set.</li> </ul>
User ID (display-only)	User ID of the user who submitted the scan.
Scan Parm Set (display-only)	Name of the Scan Parm Set.
Env (display-only)	N2O Environment on which the scan was executed.
Start Library (display-only)	Starting value for the range of libraries that were scanned. If End Library is blank, Start Library is the only library that was scanned.
End Library (display-only)	Ending value for the range of libraries that were scanned. If blank, Start Library is the only library that was scanned.

(continued from previous page)

<b>Field</b>	<b>Description</b>
Start Object (display-only)	Starting value for the range of objects that were scanned. If End Object is blank, Start Object is the only object that was scanned.
End Object (display-only)	Ending value for the range of objects that were scanned. If blank, Start Object is the only object that was scanned.
Date/Time Completed	Date and time at which the scan was completed.

**V.4.3.2.3.1 Summary of Scan Output (Inquire Function)**

The Summary of Scan Output pop-up window displays summary statistics for a Scan Output Set.

Entering an 'I' on the Select Scan Output Set screen accesses the Summary of Scan Output Set pop-up window.

Libraries			% Libs	Objects		% Obj's
Hit	Total		Hit	Hit	Total	Hit
-----	-----	-----	-----	-----	-----	-----
3	6		50.0	50	100	50.0

LINE DATA					
Lines Hit	Lines Total	% Lns Hit	Non-Comment Lines	Non-Comment Hit	% NonCm Lns Hit
-----	-----	-----	-----	-----	-----
1,000	2,000	50.0	250	1,000	25.0

Field	Description
Completed (display-only)	Date and time scan was completed.
User ID (display-only)	User ID of the user who submitted the scan.
Start Library (display-only)	Starting value for the range of libraries that were scanned. If End Library is blank, Start Library is the only library that was scanned.
Status (display-only)	Status of the scan. Only Scan Output Sets of status "C" (closed, scan completed successfully) are shown in this window.
Scan Parm Set (display-only)	Name of Scan Parm Set used as input for the scan.
End Library (display-only)	Ending value for the range of libraries that were scanned. If blank, Start Library is the only library that was scanned.
Environment (display-only)	N2O Environment the scan was executed in.
Start Object (display-only)	Starting value for the range of objects that were scanned. If End Object is blank, Start Object is the only object that was scanned.

(continued from previous page)

<b>Field</b>	<b>Description</b>
End Object (display-only)	Ending value for the range of objects that were scanned. If blank, Start Object is the only object that was scanned.
Libraries Hit (display-only)	The number of libraries scanned that contain at least one object with a Scan Hit.
Libraries Total (display-only)	The total number of libraries scanned.
% Libs Hit (display-only)	Libraries Hit expressed as a percentage of Libraries Total.
Objects Hit (display-only)	The number of objects scanned that contain at least one Scan Hit.
Objects Total (display-only)	The total number of objects scanned.
% Objs Hit (display-only)	Objects Hit expressed as a percentage of Objects Total.
Lines Hit (display-only)	The number of lines scanned that contain at least one Scan Hit.
Lines Total (display-only)	The total number of lines scanned.
% Lns Hit (display-only)	Lines Hit expressed as a percentage of Lines Total.
Non-Comment Lines Hit (display-only)	The number of non-comment lines scanned that contain at least one Scan Hit.
Non-Comment Lines Total (display-only)	The total number of non-comment lines scanned.
% NonCm Lns Hit (display-only)	Non-Comment Lines Hit expressed as a percentage of Non-Comment Lines Total.

**V.4.3.2.3.2 Select Library Scan Output Set (List Libs Scanned)**

The Select Library Scan Output Set function displays statistical information about the libraries that were scanned.

This screen is accessed by placing an 'L' in the 'S' (select) field on the Select Scan Output Screen and pressing Enter.

```

Valid values:  O=Object Selection List, R=Output Standard Report
01-12-31      N-2-O SELECT LIBRARY SCAN OUTPUT SET          TSI0373
11:38:00                                           TSI1

      User ID: TREE18      Environment: PROD
      Scan Parm Set: SCPRD1  Start Library: PAY001  Start Object: PAYPGM1
                                End Library:      End Object: PAYPGM6

Start List at Library: _____

S Library      Objcts Objcts %Objcs  Lines   Lines   % Lns NonComm NonComm %NonC
                Hit  Total  Hit      Hit     Total  Hit  Lns Hit  Lns Tot LnHit
-----
_ TSSCAN                3    6  50.0      5     10  50.0    5    10  50.0

Enter---PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12
      HELP  ----  END   ----  ----  ----  UP   DOWN  ----  >ZERO  ----  ----
    
```

PF10 Toggles between (1) Display only libraries with Greater than Zero hits; and (2) Display all libraries.

Field	Description
User ID (display-only)	User ID of the user who submitted the scan.
Environment (display-only)	N2O Environment on which the scan was executed.
Scan Parm Set (display-only)	Name of Scan Parm Set used as input for the scan.
Start Library (display-only)	Starting value for the range of libraries that were scanned. If End Library is blank, Start Library is the only library that was scanned.
Start Object (display-only)	Starting value for the range of objects that were scanned. If End Object is blank, Start Object is the only object that was scanned.
End Library (display-only)	Ending value for the range of libraries that were scanned. If blank, Start Library is the only library that was scanned.
End Object (display-only)	Ending value for the range of objects that were scanned. If blank, Start Object is the only object that was scanned.

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<b>Field</b>	<b>Description</b>
Start List at Library (modifiable)	Value with which to begin the selection list.
S (modifiable)	The function to be executed. Valid value is:  R    Output Standard Report – Provides a hardcopy of all statistics and detail of a scan. O    Object Selection List - lists all objects scanned in this library.
Library (display-only)	Library scanned.
Objcts Hit (display-only)	The number of objects scanned that contain at least one Scan Hit.
Objcts Total (display-only)	The total number of objects scanned.
% Objcs Hit (display-only)	Objects Hit, expressed as a percentage of Objects Total.
Lines Hit (display-only)	The number of lines scanned that contain at least one Scan Hit.
Lines Total (display-only)	The total number of lines scanned.
% Lns Hit (display-only)	Lines Hit expressed as a percentage of Lines Total.
NonComm Lns Hit (display-only)	The number of Non-Comment Lines scanned that contain at least one Scan Hit.
NonComm Lns Tot (display-only)	The total number of Non-Comment Lines scanned.
% NonC Ln Hit (display-only)	Non-Comment Lines Hit expressed as a percentage of Non-Comment Lines Total.

**V.4.3.2.3.2.1 Select Object Scan Output Set Function**

The Select Object Scan Output Set function displays statistical information about the objects that were scanned.

This screen is accessed by placing an 'O' in the 'S' (select) field on the Select Library Scan Output Set screen and pressing Enter.

```
Valid Values: L=Strings found, S=Source View, B=Batch Source Disp
01-12-31          N-2-O SELECT OBJECT SCAN OUTPUT SET          TSI0373
11:38:00                                               TSI1

      User ID: TREE18      Environment: PROD
      Scan Parm Set: SCPRD1  Start Library: SCANONE  Start Object: PAYPGM1
                          End Library:           End Object: PAYPGM6

Start List at Object: _____

      S Object      Obj   Lines   Lines   % Lns  NonCom  NonCom  %NonC
      - Object      Type   Hit    Total   Hit   LnsHit  LnsTot  LnHit
      - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
      _ PAYPGM1     P       3     600    0.5     5     500    1.0

Enter---PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12
      HELP  ----- END  ----- UP    DOWN  ----- >ZERO -----
```

PF10 Toggles between (1) Display only objects with Greater than Zero hits; and (2) Display all objects.

Field	Description
User ID (display-only)	User ID of the user who submitted the scan.
Environment (display-only)	N2O Environment on which the scan was executed.
Scan Parm Set (display-only)	Name of Scan Parm Set used as input for the scan.
Start Library (display-only)	Starting value for the range of libraries that were scanned. If End Library is blank, Start Library is the only library that was scanned.
Start Object (display-only)	Starting value for the range of objects that were scanned. If End Object is blank, Start Object is the only object that was scanned.
End Library (display-only)	Ending value for the range of libraries that were scanned. If blank, Start Library is the only library that was scanned.
End Object (display-only)	Ending value for the range of objects that were scanned. If blank, Start Object is the only object that was scanned.

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<b>Field</b>	<b>Description</b>
Start List at Object (modifiable)	Value with which to begin the selection list.
S (modifiable)	The function to be executed. Valid values are:  L List strings found Lists all strings found (i.e., all hits) in this Object.  S Source display Displays source of Object with strings found (i.e., hits) highlighted.  B Batch Source Display Provides a hardcopy of a specified object that was scanned.
Object (display-only)	Object scanned.
Obj Type (display-only)	Type of Object scanned. Valid values are:  P Program S Subroutine N Subprogram M Map H Helproutine L Local Data Area A Parameter Data Area G Global Data Area C Copycode T Text O Macro R Report Y ExpertModel Z Recording 3 Dialog 4 Class 5 Processor K Server
Lines Hit (display-only)	The number of lines scanned that contain at least one Scan Hit.
Lines Total (display-only)	The total number of lines scanned.
% Lns Hit (display-only)	Lines Hit expressed as a percentage of Lines Total.

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<b>Field</b>	<b>Description</b>
NonCom LnsHit (display-only)	The number of Non-Comment Lines scanned that contain at least one Scan Hit.
NonCom LnsTot (display-only)	The total number of Non-Comment Lines scanned.
%NonC LnHit (display-only)	Non-Comment Lines Hit expressed as a percentage of Non-Comment Lines Total.

**V.4.3.2.3.2.1.1 Scan Output Detail Function (List Strings Found)**

The Scan Output Detail function displays strings found and the line numbers of the lines on which they were found in the object selected. (If the object selected is a data area, lines will be numbered sequentially)

This screen is accessed by placing an 'L' in the 'S' (select) field on the Select Object Scan Output Set screen and pressing Enter.

```

01-12-31          N-2-O SELECT OBJECT SCAN DETAIL          TSI0373
11:38:00
      User ID: TREE18      Environment: PROD
      Scan Parm Set: SCPRD1  Start Library: SCANONE  Start Object: PAYPGM1
                          End Library:           End Object: PAYPGM6
      Library: PAY001
      Object: PAYCL01  Type: P
Line
  Nbr C String Found
-----
0250 * #DATE-FIELD-1
0300  #DATE-STORED

Enter---PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12
      HELP  ----- END ----- UP      DOWN -----
    
```

Field	Description
User ID (display-only)	User ID of the user who submitted the scan.
Environment (display-only)	N2O Environment on which the scan was executed.
Scan Parm Set (display-only)	Name of Scan Parm Set used as input for the scan.
Start Library (display-only)	Starting value for the range of libraries that were scanned. If End Library is blank, Start Library is the only library that was scanned.
Start Object (display-only)	Starting value for the range of objects that were scanned. If End Object is blank, Start Object is the only object that was scanned.
End Library (display-only)	Ending value for the range of libraries that were scanned. If blank, Start Library is the only library that was scanned.
End Object (display-only)	Ending value for the range of objects that were scanned. If blank, Start Object is the only object that was scanned.

(continued from previous page)

<b>Field</b>	<b>Description</b>
Library (display-only)	Library in which Object is stored.
Object (display-only)	Object scanned.
Type (display-only)	Type of Object scanned. Valid values are:  P Program S Subroutine N Subprogram M Map H Helproutine L Local Data Area A Parameter Data Area G Global Data Area C Copycode T Text O Macro R Report Y ExpertModel Z Recording 3 Dialog 4 Class 5 Processor K Server
Line Nbr (display-only)	Number of the source line in which string was found. (Data areas are numbered sequentially.)
C (display-only)	Comment Line Indicator: An * will be displayed in this column if the source line in which the string was found is a comment line.
String Found (display-only)	The string found by the scan process.

**V.4.3.2.3.2.1.2 Object Source View**

The Object Source View function displays the source code of a scanned object with found strings (“hits”) highlighted.

This screen is accessed by placing an ‘S’ in the ‘S’ (select) field on the Select Object Scan Output Set screen and pressing Enter.

```

                                > + PROGRAM : PAY0130P           Lib:
PAYTEST
.....1.....2.....3.....4.....5.....Mode: STRUCT
0010 DEFINE DATA
0020 LOCAL USING PAYEMPL
0030 LOCAL
0040 01 #I (P3)
0050 01 #MAP
0060 02 #ID (A8/1:10)
0070 02 #NAME (A45/1:10)
0080 02 #DATE-EMPLOYED (A6/1:10)
0090 02 #STAT (A1:1:10)
0100 02 #BIRTH (N6/1:10)
0110 END-DEFINE
0120 SET KEY PF1 = PGM NAME 'HELP'
0130         PF1 = HELP
0140         PF2 = PGM NAMED '  '
0150         PF3 = PGM NAMED 'EXIT'
0160         PF4 = PGM NAMED '  '
0170         PF5 = PGM NAMED '  '
0180         PF6 = PGM NAMED '  '
0190         PF7 = PGM NAMED '  '
0200         PF8 = PGM NAMED ' + '
                                PF3-EXIT           PF4-UPDATE INFO

```

PF4 Pop-up window displays Date, Time, User-ID, Terminal, and NATURAL SM level for both source-code and object-code of the displayed NATURAL object.

**V.4.3.2.3.2.1.3 Batch Source Display**

The N2OSCAN Batch Source Display provides a hardcopy of a specific object that was scanned. Any hits are shown by bolding or underlining the found string. Input parameters specify the bolding or underlining method to be used in the run. Any character may be used for underlining.

This screen is accessed by placing a 'B' in the 'S' (select) field on the Select Object Scan Output Set screen and pressing Enter.

```

Valid Values: L=Strings found, S=Source View, B=Batch Source Disp
01-12-31          N-2-O SELECT OBJECT SCAN OUTPUT SET          TSI0373
11:38:00                                     TSI1

      Use +-----+
      Scan Parm | bject: PAY7000P
      | N2O Scan Batch Source Display Parameters | bject: PAY8000P
      Li |-----+
Start List at O |
      |          User: TSI0373
      |          Scan Parm Set: SCANPARM1 | NonC
      S Ob |          Environment: PROD | nHit
      - --- |          Start Library: PAYPROD | ----
      b N2O |          End Library: | 0.0
      |          Start Object: PAY7000P
      |          End Object: PAY8000P
      |
      |          Library: PAYPROD
      |          Object: PAY7110P
      |          Underline: N
      |          Underline Char: _
      |-----+

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  ----  END   ----  ----  ----  UP   DOWN  ----  >ZERO ----  ----
    
```

<b>Field</b>	<b>Description</b>
User (display-only)	User ID of the user who submitted the selected Scan Output Set.
ScanParmSet (display-only)	Scan Parm Set ID of the selected Scan Output Set.
Environment (display-only)	N2O Environment of the selected Scan Output Set.
Start Library (display-only)	Starting library of the selected Scan Output Set.
End Library (display-only)	Ending library of the selected Scan Output Set.
Start Object (display-only)	Starting object of the selected Scan Output Set.
End Object (display-only)	Ending object of the selected Scan Output Set.
Library (display-only)	Library in which selected Object to be printed is stored.
Object (display-only)	Selected Object to be printed.
Underline (optional)	Valid values are "Y" or "N" (default is "N"): Y = Underline strings-found. N = Do not underline (show strings-found in bold).
Underline Char (optional)	Character used for underlining if UNDLN = "Y".

Pressing ENTER will submit the report to the internal reader.

Manual Submission of Batch Source Display

**Note:** LRECL for all CMPRINT and CMPRT01 datasets may be set to 133.

The following JCL is an example of OS/390 (MVS) JCL used to support the Batch Reporting process. JCL examples are shown only for OS/390 (MVS) in this section. VSE JCL, VM EXECs, and BS2000 JCL are located in **Appendix E VSE JCL**, **Appendix F VM EXECs**, and **Appendix G BS2000 JCL** respectively. JCL and EXECs should be tailored to accommodate site-specific needs. The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified.

The OS/390 (MVS) JCL to run this report is shown below.

**MVSSCBS**

```
//N2OSCBSD EXEC PGM=NATBATCH
/* CMPRINT CONTAINS ANY MESSAGES/ERRORS PRODUCED DURING
/* EXECUTION OF N2OSCBSD
//CMPRINT DD SYSOUT=*
/* CMPRT01 CONTAINS SOURCE LISTING WITH HIGHLIGHTS OR
/* UNDERLINES
//CMPRT01 DD SYSOUT=*
//CMSYNIN DD *
LOGON N2OLIB
N2OSCBSD
FIN
//CMWKF01 DD *
*UID,*SPS,*ENV,*STARTLIB,*ENDLIB,*STARTOBJ,*ENDOBJ,*UNDLN,*CHAR
LIB,OBJ
/*
```

The layout for the record in CMWKF01 is as follows:  
(Any value may be left blank by placing a “,” with no value)

Line 1:

\*Userid, \*Scan Parm Set, \*Environment, \*Start Library, \*End Library, \*Start Object,  
\*End Object, \*Underline, \*Underline Char

Line 2:

*Multiple lines of the following may be specified, and “\*” wildcarding is acceptable.*

Library, Object

**Note:** \* indicates the value should contain the same value as displayed on the Select Scan Output Set screen. This is the unique identifier of the scan.

The &INPUT parameter list by default is delimited by commas with no spaces following the commas. To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).



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<b>Field</b>	<b>Description</b>
Suppression Level (optional)	Suppression Level - only one (or none) of the following may be specified. Valid values are: DS Detail Suppress - suppress all object line (detail) information. OS Object Suppress - suppress all object Summary and object line (detail) Information. LS Library Suppress - suppress all library Summary, object summary, and object line (detail) information.

Pressing ENTER will submit the report to the internal reader.

Manual Submission of Output Standard Report

**Note:** LRECL for all CMPRINT and CMPRT01 datasets may be set to 133.

The following JCL is an example of OS/390 (MVS) JCL used to support the Batch Reporting process. JCL examples are shown only for OS/390 (MVS) in this section. VSE JCL, VM EXECs, and BS2000 JCL are located in **Appendix E VSE JCL**, **Appendix F VM EXECs**, and **Appendix G BS2000 JCL** respectively. JCL and EXECs should be tailored to accommodate site-specific needs. The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified.

The OS/390 (MVS) JCL to run this report is shown below.

**MVSSCB01**

```
//N2OSCB01 EXEC PGM=NATBATCH
//* CMPRINT CONTAINS ANY MESSAGES/ERRORS PRODUCED DURING
//* EXECUTION OF N2OSCB01
//CMPRINT DD SYSOUT=*
//* CMPRT01 CONTAINS OUTPUT STANDARD REPORT
//CMPRT01 DD SYSOUT=*
//CMSYNIN DD *
LOGON N2OLIB
N2OSCB01
FIN
//CMWKF01 DD *
*UID,*SPS,*ENV,*STARTLIB,*ENDLIB,*STARTOBJ,*ENDOBJ
RPTSTLIB,RPTENDLIB,RPTSTOBJ,RPTENDOBJ,ZEROSUPPRESS,SUPPRESSLEVEL
/*
```

The layout for the record in CMWKF01 is as follows:  
(Any value may be left blank by placing a “,” with no value)

Line 1:

\*Userid, \*Scan Parm Set, \*Environment, \*Start Library, \*End Library, \*Start Object,  
\*End Object

Line 2:

Report Start Library, Report End Library, Report Start Object, Report End  
Object, Zero Suppress, Suppression Level

**Note:** \* indicates the value should contain the same value as displayed on the Select Scan Output Set screen. This is the unique identifier of the scan.

The &INPUT parameter list by default is delimited by commas with no spaces following the commas. To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).



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<b>Field</b>	<b>Description</b>
Start Library (display-only)	Starting value for the range of libraries that was scanned. If End Library is blank, Start Library is the only library that was scanned.
End Library (display-only)	Ending value for the range of libraries that was scanned. If blank, Start Library is the only library that was scanned.
Start Object (display-only)	Starting value for the range of objects that was scanned. If End Object is blank, Start Object is the only object that was scanned.
End Object (display-only)	Ending value for the range of objects that was scanned. If blank, Start Object is the only object that was scanned.
Date/Time Executed (display-only)	The date and time the scan was executed.

**V.4.3.2.4.1 Batch Delete of Scan Output Set**

The Batch Delete of a Scan Output Set allows the selected Scan Output Set to be deleted in batch.

Entering a 'B' on the Select Scan Output Set screen displays the Delete Scan Output Set confirmation pop-up window.

```

Valid Values: D=Online Del, B=Batch Del
01-12-31          N2O DELETE SCAN OUTPUT SET          TSI0373
11:08:43                                     TSI1

  S      Scan      Start      End      Start      End      Date/Time
S t User ID  Parm Set Env  Library  Library  Object   Object   Executed
-----+-----+-----+-----+-----+-----+-----+
b C TSI0373  PAYS+-----+-----+-----+-----+-----+
      |                                     | Please verify that the
      |                                     | information below is
      |                                     | correct for submitting
      |                                     | this in Batch.
      |                                     |
      |                                     | User ID: TSI0373
      |                                     | Scan Parm Set: PAYSCAN
      |                                     | Environment: PROD
      |                                     | JCL Library: N2OJCL
      |                                     | JCL Program: N2OSCBD1
      |                                     | JCL Exit: N2OERJE
      |                                     |
      |                                     | Status: C Executed o
      |                                     |
      |                                     | *** Press <ENTER> to delete, PF3 to cancel ***
      |                                     |
      |-----+-----+-----+-----+-----+
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END  ----  ----  ----  UP  DOWN  ----  NOT-C  ----

```

Pressing Enter will submit a batch job to delete the Scan Output Set.

**V.4.3.2.4.2 String Found Report**

The N2OSCAN String Found Report provides a hardcopy of all strings found in the selected Scan Output Set. This report is sorted by string-found. The library, object, line number, and number of hits of each string on the line is displayed.

Entering an 'S' on the Select Scan Output Set screen accesses the String Found Report pop-up window.

Pressing ENTER will submit the report to the internal reader.

**Manual Submission of String Found Report**

The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified.

The OS/390 (MVS) JCL to run this report is shown below.

**Note:** LRECL for all CMPRINT and CMPRT01 datasets may be set to 133.

**MVSSCB02**

```
//N2OSCB02 EXEC PGM=NATBATCH
//* CMPRINT CONTAINS ANY MESSAGES/ERRORS PRODUCED DURING
//* EXECUTION OF N2OSCB02
//CMPRINT DD SYSOUT=*
//* CMPRT01 CONTAINS STRING FOUND REPORT
//CMPRT01 DD SYSOUT=*
//CMSYNIN DD *
LOGON N2OLIB
N2OSCB02
FIN
//CMWKF01 DD *
UID,SPS,ENV,STARTLIB,ENDLIB,STARTOBJ,ENDOBJ
/*
```

The layout for the record in CMWKF01 is as follows:  
(Any value may be left blank by placing a “,” with no value)

Values	Description
* UID	User ID of the user who submitted the scan.
* SPS	Scan Parm Set that served as input to the scan.
* ENV	N2O Environment on which the scan was executed.
* STARTLIB	Starting value for the range of libraries that was scanned. If ENDLIB is blank, STARTLIB is the only library that was scanned.
* ENDLIB	Ending value for the range of libraries that was scanned. If blank, STARTLIB is the only library that was scanned.
* STARTOBJ	Starting value for the range of objects that was scanned. If ENDOBJ is blank, STARTOBJ is the only object that was scanned.
* ENDOBJ	Ending value for the range of objects that was scanned. If blank, STARTOBJ is the only object that was scanned.

**Note:** \* indicates the value should contain the same value as displayed on the Select Scan Output Set screen. This is the unique identifier of the scan.

The &INPUT parameter list by default is delimited by commas with no spaces following the commas. To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).

**Manual Batch Delete for a Single Scan Output Set**

The N2OSCAN Batch Delete for a Single Scan Output Set permits batch deletion of a single specified Scan Output Set. (See **N2OSCAN Batch Delete by Date and User-ID** for deletion of a range of Scan Output Sets)

The OS/390 (MVS) JCL to run this program is shown below.

```
//N2OSCBD1 EXEC PGM=NATBATCH
//* CPRINT CONTAINS ANY MESSAGES/ERRORS PRODUCED DURING
//* EXECUTION OF N2OSCBD1
//CPRINT DD SYSOUT=*
//CMSYNIN DD *
LOGON N2OLIB
N2OSCBD1
FIN
//CMWKF01 DD *
UID,SPS,ENV,STARTLIB,ENDLIB,STARTOBJ,ENDOBJ
/*
```

The layout for the record in CMWKF01 is as follows:  
(Any start/end value may be left blank by placing a “,” with no value)

Line 1:

Userid, Scan Parm Set, Environment, Start Library, End Library, Start  
Object, End Object

<p><b>Note:</b> These values should contain the same values as displayed on the Select Scan Output Set screen. This is the unique identifier of the scan.</p>
---

**Manual N2OSCAN Batch Delete by Date and User ID**

The N2OSCAN Batch Delete by Date and User ID permits batch deletion of all Scan Output Sets executed on or before a specified date, either for all users or a specific user (denoted by User ID). (See **N2OSCAN Batch Delete for a Single Scan Output Set** for deletion of a specific Scan Output Set).

The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified.

The OS/390 (MVS) JCL to run this program is shown below.

**MVSSCBD2**

```
//N2OSCBD2 EXEC PGM=NATBATCH
//*  CMPRINT CONTAINS ANY MESSAGES/ERRORS PRODUCED DURING
//*  EXECUTION OF N2OSCBD2
//CMPRINT DD SYSOUT=*
//CMSYNIN DD *
LOGON N2OLIB
N2OSCBD2
FIN
//CMWKF01 DD *
DATE-EXECUTED,UID
/*
```

The layout for the record in CMWKF01 is as follows:

<b>Values</b>	<b>Description</b>
DATE-EXECUTED (required)	Date in the format YYYYMMDD. All Scan Output Sets for scans executed on or before this date will be deleted.
UID (optional)	User ID. If specified, limits deletion to Scan Parm Sets submitted by the user with this User ID.

The &INPUT parameter list by default is delimited by commas with no spaces following the commas. To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).

**V.4.3.2.5 Administrative Delete Scan Output Set Function**

The Administrative Delete Scan Output Set function provides a list of ALL Scan Output Sets on the system. This screen will allow a user to delete any Scan Output Sets.

Entering an 'E' on the N2OSCAN Utility Menu accesses the Administrative Delete Scan Output Set function.

```

Valid value: D=Online Delete, B=Batch Delete
01-12-31          N-2-O Administrative Delete Scan Output Set      TSI0373
11:38:00                                               TSI1
                Starting User ID: _____

  S
St User ID   Scan   Start   End   Start   End   Date/Time
-----
C TSI004   SCANDEV  DEV   PAY001  PAY001  CALC1  CALC2  01/12/01 11:43
O TSI004   SCANPRD  PRD   TAX001  TAX002  PSTTAX  PSTX99 01/12/01 12:45
C TSI006   SCANTST  TST   TST001  TST999  *      *      01/09/18 20:23
C TSI017   SCANTST  PRD   PAY001  PAY999  PGM001  PGM999 01/09/25 03:13

Enter---PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12
      HELP  ----- END  ----- UP  DOWN  ----- NOT-C -----
    
```

PF10 Toggles between (1) Display non-closed Scan Output Sets (those in status other than "closed"); and (2) Display all Scan Output Sets.

Field	Description
Starting User ID (modifiable)	Value with which to begin the selection list.
S (modifiable)	The function to be executed. Valid value is as follows:  D Delete the Scan Output Set On-line. B Delete the Scan Output Set in Batch.
St (display-only)	Status Indicator. Valid values are:  C Closed, scan completed successfully. O Open, scan abended (captured abend). I In process (possibly uncaptured abend). D Deletion in progress.
User ID (display-only)	User ID of the user who submitted the scan.
Scan Parm Set (display-only)	Name of the Scan Parm Set that served as input to the scan.
Env (display-only)	N2O Environment on which the scan was executed.

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<b>Field</b>	<b>Description</b>
Start Library (display-only)	Starting value for the range of libraries that was scanned. If End Library is blank, Start Library is the only library that was scanned.
End Library (display-only)	Ending value for the range of libraries that was scanned. If blank, Start Library is the only library that was scanned.
Start Object (display-only)	Starting value for the range of objects that was scanned. If End Object is blank, Start Object is the only object that was scanned.
End Object (display-only)	Ending value for the range of objects that was scanned. If blank, Start Object is the only object that was scanned.
Date/Time Executed (display-only)	The date and time the scan was executed.

**V.5 Utility Tools**

The N2O utility tools provide functions to aid in the diagnosis and resolution of exception situations.

To access the Utility Tools menu, enter 'U' on the Toolbox Subsystem menu or the direct command TOL UTIL on any menu.

```

13-12-31          N-2-O UTILITY TOOLS          TSI0373
11:38:00                                     TSI1

Code  Function
-----
A   Delete Checkout Records
B   Check for Duplicate Checkout Records
C   Change an Event Status
D   Display Header Record for an Event
E   Display Event detail records for an Object
F   Display All Records Related to an Event
G   Display all OXXXXXXX libraries
H   Display all OXXXXXXX programs in a library
I   Delete all OXXXXXXX libraries
J   Unlock a Master Event
K   Delete a User Canceling all their Checkouts
L   Delete 3GL Master Records
.   Terminate Trouble Shooting Tools
-----

Enter Code: _

Direct Command: _____ TOL UTIL
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP ---- END  ENV  MIG  REP  TOL  ---- PRJ  ---- ---- EXIT
    
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows: <ul style="list-style-type: none"> <li><b>A Delete Checkout Records</b> Delete checkout records when the normal Migration Subsystem Checkout/Checkin Cancel option does not delete it.</li> <li><b>B Check for Duplicate Checkout Records</b> Displays any possible orphaned checkout records.</li> <li><b>C Change an Event Status</b> Modify the status of an Event to any other status.</li> <li><b>D Display Header Record for an Event</b> Displays all the N2O-Migration fields used on the Event Header record.</li> <li><b>E Display Event Detail Records for an Object</b></li> <li><b>F Display All Records Related to an Event</b></li> </ul>

(continued from previous page)

Field	Description
<b>G</b>	<b>Display all 0XXXXXXX libraries</b> Displays all pending autocompile library records.
<b>H</b>	<b>Display all 0XXXXXXX programs in a library</b> Display all pending autocompile records in a given library.
<b>I</b>	<b>Delete all 0XXXXXXX libraries</b> Deletes all pending autocompile library records.
<b>J</b>	<b>Unlock a Master Event</b> Unlocks an event's master record.
<b>K</b>	<b>Delete a User Canceling all their Checkouts</b> Cancels all checkouts for a user and deletes the user.
<b>L</b>	<b>Delete 3GL Master Records</b> Deletes 3GL master records.
<b>.</b>	<b>Terminate Trouble Shooting Tools</b>

**V.5.1 Delete Checkout Records**

The Delete Checkout Records function permits the cancellation of a checkout for any object.

This report will aid in resolving exception situations within N2O for specific objects. This function should only be used when all normal means have been ineffective.

To access the Delete Checkout Records function, enter "A" on the Utility Tools menu.

```

01-12-31          N-2-O UTILITY TOOLS          TSI0373
11:38:00                                     TSI1
      Code  Function
      -----
      +-----+
      |                                     |
      | *****                          |
      | Delete Checkout Records Utility   |
      | *****                          |
      | Object Type:  (NATURAL, SYSERR,  |
      | Object Name:  PREDICT, OTHER)    |
      | Node:                                                |
      | DBID:         0                                     |
      | FNR:         0                                     |
      | Library:                                           |
      | **                                                 |
      | Ente | PF5 - LOOKUP INFO. (REQUIRES OBJECT TYPE/NAME) |
      |       | ENTER '.' IN ANY FIELD OR PF3 TO CANCEL      |
      |       +-----+
      |
      | Direct Command: _____ TOL UTIL
      | Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12--
      | HELP ---- END  ENV  MIG  REP  TOL  ---- PRJ  ---- ---- EXIT
  
```

Field	Type	Description
Object Type (required)	N,S,P,O	NATURAL, SYSERR, PREDICT, OTHER.
OBJECT Name (required)	N,S,P,O	Name of the checked out object to be cancelled.
Node (required)	N,S,P,O	The Node name assigned to the Checkout Environment. PF5 can be used to look up the value of this field.
Dbid (required)	N,S,P,O	The Database Id number assigned to the Checkout Environment. PF5 can be used to look up the value of this field.
FNR (required)	N,S,P,O	The FUSER File number assigned to the Checkout Environment. PF5 can be used to look up the value of this field.
Library (required)	N,S,P,O	The Library name assigned to the Checkout Environment. PF5 can be used to look up the value of this field.

**V.5.2 Check for Duplicate Checkout Records**

The Check for Duplicate Checkout Records function displays any objects that have multiple checkouts existing. This report will aid in resolving exception situations within N2O for specific objects. This function should only be used when all normal means have been ineffective.

To access the Check for Duplicate Checkout Records function, enter "B" on the Utility Tools menu. Processing will begin as soon as the option is selected. It may take several minutes, then a display of all duplicate checkouts will be appear.

```

01-12-31          DISPLAY DUPLICATE CHECKOUT RECORDS          PAGE: 1
11:38:00

TYPE NODE  DBID  FNR  LIBRARY  OBJECT
S  CPUL  00001  00231  TREE11C  1015
S  CPUL  00001  00231  TREE11C  1015
S  CPUL  00001  00231  TREE11C  1015
S  CPUL  00001  00231  TREE26B  2030
S  CPUL  00001  00231  TREE26B  2035
S  CPUL  00001  00231  TREE26B  2035
S  CPUL  00001  00231  TREE26B  2045
S  CPUL  00001  00231  TREE26B  2045
S  CPUL  00001  00231  TREE26B  2045
S  CPUL  00001  00231  TREE26B  2045

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
EXIT
    
```

**V.5.3 Change an Event Status**

The Change an Event Status function permits an Event's status to be modified to any status. This report will aid in resolving exception situations within N2O for specific objects. This function should only be used when all normal means have been ineffective. An Event with a current status of 'C' (closed) cannot be modified.

To access the Change an Event Status function, enter "C" on the Utility Tools menu.

```

01-12-31          N-2-0 Trouble-Shooting Tools          TSI0373
11:38:00          Update An Event Status                TSI1

                Event Name:      _____
                Sequence Number:  _____
                New Event Status:  -

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
    
```

Field	Description
Event Name (required)	Name of the Event.
Sequence Number (required)	Sequence Number of the Event.
New Event Status (required)	The new status of the Event.  B Batch Ready I In Progress C Closed O Open H Hold

**V.5.4 Display Header Record for an Event**

The Display Header Record for an Event displays all of the Event Header fields on the N2O Migration File for a specific Event. This report will aid in resolving exception situations within N2O for specific objects.

To access the Display Header Record for an Event function, enter "D" on the Utility Tools menu.

```

01-12-31          N-2-O UTILITY TOOLS          TSI0373
11:38:00
Code  Function
-----
+-----+
|                                     |
| *****                           |
| DISPLAY EVENT HEADER RECORD         |
| *****                           |
| EVENT      :                       |
| SEQUENCE:  :                       |
|                                     |
| ENTER  '.' IN ANY FIELD OR PF3 TO CANCEL |
| *****                           |
|                                     |
+-----+
Ente +-----+

Direct Command: _____ TOL UTIL
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
HELP  ----  END  ENV  MIG  REP  TOL  ----  PRJ  ----  ----  EXIT
    
```

Field	Description
Event Name (required)	Name of the Event.
Sequence Number (required)	Sequence Number of the Event.

### V.5.5 Display Event Detail Records for an Object

The Display Event Detail Records for an object function shows all of the fields on the N2O Migration file that are related to a specific Event and object. This report will aid in diagnosing exception situations with in N2O for specific objects.

To access the Display Event Detail Records for an Object screen, enter "E" on the Utility Tools menu.

```

01-12-31          N-2-O UTILITY TOOLS          TSI0373
11:38:00                                     TSI1
      Code  Function
      ----  -
+-----+
|                                     |
| *****                          |
| DISPLAY EVENT DETAIL RECORD        |
| *****                          |
| EVENT   :                          |
| SEQUENCE:                          |
| TYPE    :   (N,S,P,O)              |
| OBJECT  :                          |
|                                     |
| ** ENTER '.' IN EVENT OR PF3 TO CANCEL |
| *****                          |
|                                     |
Ente +-----+

Direct Command: _____ TOL UTIL
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP ---- END  ENV  MIG  REP  TOL  ---- PRJ  ---- ---- EXIT
    
```

Field	Description
Event Name (required)	Name of the Event.
Sequence (required)	Sequence Number of the Event.
Type (required)	Type of object. N Indicates Natural S Indicates SYSERR P Indicates PREDICT O Indicates Other
Object (required)	Object name.

**V.5.6 Display All Records Related to an Event**

The Display All Records Related to an Event function Displays all records on the N2O Migration file related to a specific Event. This report will aid in resolving exception situations within N2O for specific objects. This function should only be used when all normal means have been ineffective.

To access the Change an Event Status function, enter "F" on the Utility Tools menu.

```

01-12-31          N-2-O UTILITY TOOLS          TSI0373
11:38:00
Code  Function
-----
+-----+
|                                     |
| *****                           |
| DISPLAY ALL RECORDS FOR EVENT      |
| *****                           |
| EVENT      :                       |
| SEQUENCE:  :                       |
|                                     |
| ** ENTER '.' IN ANY FIELD OR PF3  |
| *****                           |
|                                     |
+-----+
Ente

Direct Command: _____ TOL UTIL
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
HELP ---- END  ENV  MIG  REP  TOL  ---- PRJ  ---- ---- EXIT
    
```

Field	Description
Event Name (required)	Name of the Event.
Sequence Number (required)	Sequence Number of the Event.

### V.5.7 Display All OXXXXXXX Libraries

The Display all OXXXXXXX Libraries function displays all OXXXXXXX libraries in a specific Environment. OXXXXXXX libraries are created by N2O for use in the autocompile process. This report will aid in resolving exception situations within N2O for specific objects. This function should only be used when all normal means have been ineffective.

To access the Display all OXXXXXXX Libraries function, enter "G" on the Utility Tools menu.

### V.5.8 Display All OXXXXXXX Programs in a Library

The Display all OXXXXXXX Programs function in a library displays all OXXXXXXX programs in a specific Natural Library. OXXXXXXX programs are created by N2O for use in the Autocompile process. This report will aid in resolving exception situations within N2O for specific objects. This function should only be used when all normal means have been ineffective.

To access the Display all OXXXXXXX programs function, enter "H" on the Utility Tools menu.

```

01-12-31          N-2-O UTILITY TOOLS          TSI0373
11:38:00                                     TSI1

      Code  Function
      ----  -
+-----+
| SEARCH FOR OXXXXXXX PROGRAMS IN LIBRARY: _____ |
| PF3 TO CANCEL                                         |
+-----+

      F  Display all Records related to an Event
      G  Display all OXXXXXXX libraries
      H  Display all OXXXXXXX programs in a library
      I  Delete all OXXXXXXX libraries
      J  Unlock a Master Event
      K  Delete a User Canceling all their Checkouts
      L  Delete 3GL Master Records
      .  Terminate Trouble Shooting Tools
      -  -----

Enter Code: h

Direct Command: _____ TOL UTIL
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ----  END  ENV  MIG  REP  TOL  ----  PRJ  ----  ----  EXIT
    
```

Field	Description
Library (required)	Library to search for OXXXXXXX records in.

### V.5.9 Delete All OXXXXXXX Libraries

The Delete all OXXXXXXX Libraries function deletes all OXXXXXXX libraries in a specific Environment. OXXXXXXX libraries are created by N2O for use in the Autocompile process. This function will aid in resolving exception situations within N2O for specific objects. This function should only be used when all normal means have been ineffective.

To access the Delete all OXXXXXXX Libraries function, enter "I" on the Utility Tools menu.

**V.5.10 Unlock a Master Event**

The Unlock a Master Event function permits the unlocking of a master Event. This function should only be used when the customer encounters the error "Record is currently on hold - Please try later." when adding or modifying an event and no other user is currently defining an event. This problem may occur if an error occurred while defining an event.

To access the Unlock a Master Event function, enter "J" on the Utility Tools menu.

```

01-12-31          N-2-O UTILITY TOOLS          TSI0373
11:38:00
Code  Function
----  -
+-----+
|
|          *****
|          UNLOCK EVENT MASTER RECORD
|          *****
|          EVENT      :
|
|          ENTER  '.' IN ANY FIELD OR PF3 TO CANCEL
|          *****
|
Ente +-----+

Direct Command: _____ TOL UTIL
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ----  END  ENV  MIG  REP  TOL  ----  PRJ  ----  ----  EXIT
    
```

Field	Description
Event Name (required)	Name of the Master Event to be unlocked.

**V.5.11 Delete a User Canceling all their Checkouts**

The Delete a User Canceling all their Checkouts function cancels all checkouts for a User Definition and deletes the User Definition. This function should only be used when a User Definition cannot be deleted due to open checkouts for the User.

To access the Delete a User Canceling all their Checkouts function, enter "K" on the Utility Tools menu.

```

14-01-14          N-2-O UTILITY TOOLS          VLM1
14:37:04                                     SC0TCP11

      Code  Function
      ----  -
+-----+
!                                     ! ckout Records
! User Definition: _____         !
!                                     ! or an Event
! PF3, Enter END or . to exit       ! cords for an Object
!                                     ! ated to an Event
+-----+ braries
      H   Display all OXXXXXXX programs in a library
      I   Delete all OXXXXXXX libraries
      J   Unlock a Master Event
      K   Delete a User Canceling all their Checkouts
      L   Delete 3GL Master Records
      .   Terminate Trouble Shooting Tools
      -   -----

      Enter Code: k
Direct Command: _____          TOL UTIL

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END  ENV  MIG  REP  TOL  ----  PRJ  ----  ----  EXIT
    
```

Field	Description
User Definition (required)	User Definition to be deleted.

**V.5.12 Delete 3GL Master Records**

The Delete 3GL Master Records function deletes 3GL master records.

This report will aid in resolving exception situations within N2O for specific objects. This function should only be used when all normal means have been ineffective.

To access the Delete Checkout Records function, enter "L" on the Utility Tools menu.

```

14-01-08          N-2-O UTILITY TOOLS          VLM1
14:48:34
          Code  Function
          -----
          +-----+
          !
          ! *****
          ! Delete 3GL Objects from N2O Master Catalog
          ! *****
          ! 3GL Base Env:
          !   Category:
          !   Object Name:
          ! **
          ! PF1 - HELP
          ! ENTER '.' IN ANY FIELD OR PF3 TO CANCEL
          ! *****
          !
          +-----+
          -
          -----
          Enter Code: 1
          Direct Command: _____          TOL UTIL

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      HELP  ----  END   ENV   MIG   REP   TOL   ----  PRJ   ----  ----  EXIT
    
```

Field	Type	Description
3GL Base Env: (required)	O	Base Environment of the 3GL object of the Master Record to be deleted.
Category (required)	O	The 3GL/Other category of the 3GL object of the Master Record to be deleted. Valid values are as follows: ASMB Indicates all types of Assembler. COBOL Indicates all types of COBOL. FORT Indicates all types of FORTRAN. PL/I Indicates all PL/I types. RPG Indicates RPG. DATA Indicates DATA FILES. JCL Indicates JCL, CLIST, CNTL. OTHER, All other types.
OBJECT Name (required)	O	Name of the 3GL object of the Master Record to be deleted.

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## APPENDIX A

### N2O Direct Commands

The following is a list of Direct Commands (screen names) and their descriptions.

SCREEN NAME	DESCRIPTION
MIG MENU	MIGRATION SUBSYSTEM MENU
MIG AUTH	• AUTHORIZE EVENTS MENU
MIG SUB	•BATCH JCL SUBMISSION MENU
MIG COCI	•CHECKOUT/CHECKIN UTILITIES MENU
MIG UTIL	• MIGRATION UTILITIES MENU
MIG REQ	• REQUEST EVENTS MENU
MIG SERV	• SERVICE EVENTS MENU
PRJ MENU	PROJECT TRACKING SUBSYSTEM MENU
PRJ PROJ	• PROJECT DEFINITION MENU
PRJ TASK	• TASK LIST MENU
PRJ SUGG	• SUGGESTION BOX MENU
PRJ TUTL	• TASK UTILITIES MENU
PRJ REP	•PROJECT TRACKING REPORTS MENU
REP MENU	REPORTING SUBSYSTEM MENU
REP ENV	• ENVIRONMENT REPORTING MENU
REP EVNT	• EVENT REPORTING MENU
REP OBJ	• OBJECT REPORTING MENU
REP STAT	• STATISTICAL REPORTING MENU
REP SEC	• SECURITY REPORTING MENU
TOL MENU	TOOLBOX SUBSYSTEM MENU
TOL DOC	• DOCUMENTATION TOOLS MENU
TOL MAIN	• MAINTENANCE TOOLS MENU
TOL PROG	• PROGRAMMER TOOLS MENU
TOL UTIL	•UTILITY TOOLS MENU
TOL SCAN	N2OSCAN UTILITY MENU
TOL SCEN	•N2OSCAN ENVIRONMENT FUNCTION MENU
TOL SCLI	•N2OSCAN LIBRARY FUNCTION MENU
TOL SCRП	•N2OSCAN SUBMIT BATCH REPORTS

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## APPENDIX B

### N2O EVENT STATUS

The following is a description of each Event status.

Status	Description
O	The Event is in an open status. An open Event can be an Event that still requires modifications, an Event that is pending migration, or an Event that requires authorization. Additionally, if the user does not complete the authorization process (presses PF3 before the migration occurs), the status of the Event will remain open and the Event will have to be authorized.
A	The Event has been authorized but still requires servicing.
B	The Event is a batch migration that is ready to be executed.
H	The Event is on hold by a user.
I	The Event is a batch migration that is in-progress.
C	The Event has completed and is closed.

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## APPENDIX C

### ERROR MESSAGES

N2O uses the following SYSERR messages. These messages are loaded into library N2OLIB when N2O is installed.

Error Number	Error Message
1010	Invalid function code
1015	Invalid PF KEY
1030	Value not found
1040	Value required
1050	Selection out of range
1060	Invalid selection
1070	Please choose one or press PF3 to quit
1080	No partial entries allowed in list
1090	At least one entry required in list
1100	Migration Profile not found
1110	Environment Definition not found
1120	Node Definition not found
1130	Select only one option
1135	Choose only one
1140	Date must be formatted YYYYMMDD
1145	Time must be formatted HH:MM:SS
1150	Valid values: A, B, C, H, I, O
1155	Invalid User-ID specified
1160	Invalid Environment Definition
1161	Environment Definition must contain FDIC information
1162	Environment Definition must contain FUSER information
1163	BASE Env does not define a NATURAL environment
1164	BASE Env does not define a 3GL environment
1165	Invalid 3GL Environment Definition
1169	Remote Environment Definition cannot be specified
1170	Please enter a Remote Environment Definition
1175	Please enter a BASE Environment Definition
1177	Cannot migrate an entire library with this function
1180	Object has already been selected
1185	Valid values: M, G, L, A, P, N, S, H, C, T, K, O, R, Y, Z, 3, 4, 5
1190	Valid values: ASMB, COBOL, FORT, PL/I, RPG, DATA, JCL, OTHER
1195	Not a valid PREDICT Type
1200	Top of available selection list displayed
1210	Last reviewed screen currently displayed
2010	Duplicate value
2015	Copycode/text cannot have object code
2017	DDM Generated only valid for ADABAS files

<b>Error Number</b>	<b>Error Message</b>
2020	Feature is not available
2025	Valid version numbers: -1 to -99
2030	Valid values: 1 - 255
2035	Valid values: Y or N
2040	Valid values: YES or NO
2042	Valid values: S, C
2045	Valid values: US, UL, U
2046	Valid values: 1, 2, 3, 4, 5, 6, 7, 8 or *
2050	Valid values: 0001 - 9999
2055	Valid values: O or B
2060	Environment must be a 3GL Environment
2070	Migration Profile within the same dataset is invalid
2075	Valid values: COPY or MOVE
2085	Profile contains inconsistent 3GL Environments
2086	From environments are inconsistent (NATURAL vs. 3GL)
2087	To environments are inconsistent (NATURAL vs. 3GL)
2090	Profile contains inconsistent environments
2130	No records found for search criteria
2150	Top of available data
2160	Bottom of available data
2170	Program does not exist
2180	Please select a valid type
2200	Please select an Environment Definition
2405	Please select a Category
3030	Invalid Library
3050	Event/Sequence not found
3060	Cannot delete non-selected object
3070	Cannot migrate programs within the same library
3075	Cannot migrate PREDICT objects within the same FDIC
3080	Valid values: A or D
3180	Type an X to select
3210	Cannot transfer to the same User-ID
3220	Current location cannot be a BASE Environment
3230	Archive Definition cannot be specified
3250	Cipher Code must be a number
3260	Days cannot be a negative number
4020	Program to be displayed could not be found
5000	Starting Error must be * or numeric
5030	Starting value outside Library range
6000	Invalid Scan Environment
6001	Invalid Start Library
6002	Start Library may not be greater than End Library
6003	Invalid Start Object
6004	Start Object may not be greater than End Object
7005	There are no Task Groups defined to this
7010	Project Definition not found
7015	Stage name reserved by N2O
7020	Valid Task Group required
9010	Type an X to view Source programs
9170	Type an X to submit the JCL

## APPENDIX D

### JCL samples

All JCL samples are included as part of the base N2O installation. The samples are loaded into the Natural library N2OBATCH.

#### D.1 – Base N2O batch functions

##### Archive Purge

```

Program      MVSARCHP Library N2OBATCH
0010 //ARCHPURG JOB (ACCOUNTING), 'ARCHIVE PURGE', CLASS=A, NOTIFY=&USERID
0020 //*****
0030 //* THIS IS SAMPLE ARCHIVE PURGE JCL
0040 //* THIS JOB SHOULD BE RENAMED TO N2OPUARC
0050 //*****
0060 //* ARCHP1 RUNS WHERE N2O IS INSTALLED
0070 //*
0080 //ARCHP1 EXEC PGM=NATBATCH
0090 //CMWKF02 DD DSN=LIST.PARMS, DISP=(NEW, PASS, DELETE),
0100 //          SPACE=(TRK, (1, 1), RLSE), UNIT=SYSDA,
0110 //          DCB=(RECFM=FB, BLKSIZE=84, LRECL=80)
0120 //CMPRINT DD SYSOUT=*
0130 //CMPRT02 DD SYSOUT=*
0140 //CMSYNIN DD *
0150 LOGON N2OLIB
0160 N2OPARC1
0170 FIN
0180 /*
0190 //CMWKF01 DD *
0200 &INPUT
0210 /*
0220 //****
0230 //* ARCHP2 RUNS ON AN FUSER THAT IS LOCAL TO THE ARCHIVE FILE
0240 //****
0250 /** N2OV5.2 CHANGE CMWKF03 LRECL FROM 97 TO 99
0260 //****
0270 //ARCHP2 EXEC PGM=NATBATCH, COND=(9, LT)
0280 /*
0290 //CMWKF01 DD DSN=LIST.PARMS, DISP=(OLD, PASS, CATLG)
0300 //CMWKF03 DD DSN=ARCHIVE.LIST, DISP=(NEW, PASS, CATLG),
0310 //          SPACE=(TRK, (900, 900), RLSE), UNIT=SYSDA,
0320 //          DCB=(RECFM=FB, BLKSIZE=101, LRECL=99)
0330 //CMPRINT DD SYSOUT=*
0340 //CMPRT02 DD SYSOUT=*
0350 //CMSYNIN DD *
0360 LOGON SYSTEM
0370 N2OPARC2
0380 FIN
0390 /*
0400 //****
0410 //* ARCHP3 RUNS ON AN FUSER THAT IS LOCAL TO THE ARCHIVE FILE
0420 //****
0430 /** N2OV5.2 CHANGE CMWKF05 LRECL FROM 97 TO 99
0440 //****
0450 //ARCHP3 EXEC PGM=NATBATCH, COND=(9, LT)
0460 /*
0470 //CMWKF01 DD DSN=LIST.PARMS, DISP=(OLD, DELETE, CATLG)
0480 //CMWKF04 DD DSN=ARCHIVE.LIST, DISP=(OLD, PASS, CATLG)
0490 //CMWKF05 DD DSN=ARCHIVE.PURGE, DISP=(NEW, CATLG, CATLG),
0500 //          SPACE=(TRK, (900, 900), RLSE), UNIT=SYSDA,
0510 //          DCB=(RECFM=FB, BLKSIZE=101, LRECL=99)

```

```
0520 //CMWKF06 DD DSN=&BACKUP,DISP=(NEW,CATLG,CATLG),
0530 //          SPACE=(CYL,(15,15),RLSE),UNIT=SYSDA,
0540 //          DCB=(RECFM=VB,BLKSIZE=6108,LRECL=6104)
0550 //CMPRINT DD SYSOUT=*
0560 //CMPRT02 DD SYSOUT=*
0570 //CMPRT04 DD SYSOUT=*
0580 //CMPRT06 DD SYSOUT=*
0590 //CMSYNIN DD *
0600 LOGON SYSTEM
0610 N2OPARC3
0620 FIN
0630 /*
0640 /****
0650 /* ARCHP4 RUNS WHERE N2O IS INSTALLED
0660 /****
0670 //ARCHP4 EXEC PGM=NATBATCH,COND=(9,LT)
0680 /*
0690 //CMWKF05 DD DSN=ARCHIVE.PURGE,DISP=(OLD,DELETE,CATLG)
0700 /*
0710 //CMPRINT DD SYSOUT=*
0720 //CMPRT02 DD SYSOUT=*
0730 //CMSYNIN DD *
0740 LOGON N2OLIB
0750 N2OPARC4
0760 FIN
0770 /*
0780 //CMWKF03 DD *
0790 &BACKUP
0800 /*
0810 /*
***** End of list *****
```

```

Program      BSARCHP  Library N2OBATCH
0010 / .N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS (LISTING=YES)
0050 /REMARK *** EXECUTE N2OPARC1 ***
0060 /SET-FILE-LINK LINK-NAME=W01, FILE-NAME=PURGE.PARMS
0070 /FILE LIST.PARMS, LINK=W02, RECFORM=FB, RECSIZE=80, BLKSIZE=84
0080 /FILE MASTER.LIST, LINK=P02
0090 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0100 /MODIFY-JOB-SWITCHES ON=(4,5)
0110 /START-PROGRAM FROM-FILE=$EDT
0120 LS=132, PS=60, MENU=OFF
0130 @WRITE 'N2O.PURGE.IPT.BATCH' OVERWRITE
0140 @HALT
0150 /MODIFY-JOB-SWITCHES OFF=(4,5)
0160 /ASSIGN-SYSIPT TO-FILE=N2O.PURGE.IPT.BATCH
0170 /MODIFY-JOB-SWITCHES ON=(2)
0180 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0190 LOGON N2OLIB
0200 N2OPARC1
0210 FIN
0220 /REMARK *** EXECUTE N2OPARC2 ***
0230 /REMARK *****
0240 /REMARK N2OV5.2 CHANGE W03 LRECL FROM 97 TO 99 BLKSIZE 101 TO 103
0250 /REMARK *****
0260 /FILE LIST.PARMS, LINK=W01
0270 /FILE ARCHIVE.LIST, LINK=W03, RECFORM=FB, RECSIZE=99, BLKSIZE=103
0280 /FILE CONTROL.LIST, LINK=P02
0290 /SET-JOB-STEP
0300 /ASSIGN-SYSIPT TO-FILE=N2O.TRANSFER.IPT.BATCH
0310 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0320 LOGON SYSTEM
0330 N2OPARC2
0340 FIN
0350 /REMARK *** EXECUTE N2OPARC3 ***
0360 /REMARK *****
0370 /REMARK N2OV5.2 CHANGE W05 LRECL FROM 97 TO 99 BLKSIZE 101 TO 103
0380 /REMARK *****
0390 /FILE LIST.PARMS, LINK=W01
0400 /FILE ARCHIVE.LIST, LINK=W04
0410 /FILE ARCHIVE.PURGE, LINK=W05, RECFORM=FB, RECSIZE=99, BLKSIZE=103
0420 /FILE &BACKUP, LINK=W06, RECFORM=VB, RECSIZE=6104, BLKSIZE=6108
0430 /FILE CONTROL.LIST, LINK=P02
0440 /FILE SUMMARY.LIST, LINK=P04
0450 /FILE SOURCE.LIST, LINK=P06
0460 /SET-JOB-STEP
0470 /ASSIGN-SYSIPT TO-FILE=N2O.TRANSFER.IPT.BATCH
0480 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0490 LOGON SYSTEM
0500 N2OPARC3
0510 FIN
0520 /REMARK *** EXECUTE N2OPARC4 ***
0530 /SET-FILE-LINK LINK-NAME=W03, FILE-NAME=BACKUP.DSN
0540 /FILE ARCHIVE.PURGE, LINK=W05
0550 /FILE CONTROL.LIST, LINK=P02
0560 /SET-JOB-STEP
0570 /ASSIGN-SYSIPT TO-FILE=N2O.TRANSFER.IPT.BATCH
0580 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0590 LOGON N2OLIB
0600 N2OPARC4
0610 FIN
0620 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0630 /DELETE-FILE FILE-NAME=N2O.TRANSFER.IPT.BATCH,
0640 /OPTION=DESTROY-ALL
0650 /LOGOFF NOSPOOL
***** End of list *****

```

```

Program      VMARHP  Library N2OBATCH
0010 /* Execute N2OPARC1 */
0020 ADDRESS 'COMMAND'
0030 'ERASE N2OPARC1 CMSYNIN A'
0040 'ERASE N2O CMWKF01 A'
0050 'EXECIO 1 DISKW N2OPARC1 CMWKF01 A 1 F 80 (STRING &INPUT'
0060 'EXECIO 1 DISKW N2OPARC1 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0070 'EXECIO 1 DISKW N2OPARC1 CMSYNIN A 2 F 80 (STRING N2OPARC1'
0080 'EXECIO 1 DISKW N2OPARC1 CMSYNIN A 3 F 80 (STRING FIN'
0090 'FILEDEF * CLEAR'
0100 'FILEDEF CMWKF01 DISK N2OPARC1 CMWKF01 A'
0110 'FILEDEF CMWKF02 DISK N2OPARC1 LISTPARM A',
0120 ' RECFM FB LRECL 80 BLKSIZE 84'
0130 'FILEDEF CMSYNIN DISK N2OPARC1 CMSYNIN A'
0140 'FILEDEF CMPRINT PRINTER'
0150 'FILEDEF CMPRT02 PRINTER'
0160 'EXEC NAT BATCH'
0170 /* Execute N2OPARC2 */
0180 /*
0190 /* N2OV5.2 CHANGE CMWKF03 LRECL FROM 97 TO 99 BLKSIZE FROM 101 TO 103
0200 /*
0210 'ERASE N2OPARC2 CMSYNIN A'
0220 'EXECIO 1 DISKW N2OPARC2 CMSYNIN A 1 F 80 (STRING LOGON SYSTEM'
0230 'EXECIO 1 DISKW N2OPARC2 CMSYNIN A 2 F 80 (STRING N2OPARC2'
0240 'EXECIO 1 DISKW N2OPARC2 CMSYNIN A 3 F 80 (STRING FIN'
0250 'FILEDEF * CLEAR'
0260 'FILEDEF CMWKF01 DISK N2OPARC1 LISTPARM A'
0270 'FILEDEF CMWKF03 DISK N2OPARC2 ARCHLIST A',
0280 ' RECFM FB LRECL 99 BLKSIZE 103'
0290 'FILEDEF CMSYNIN DISK N2OPARC2 CMSYNIN A'
0300 'FILEDEF CMPRINT PRINTER'
0310 'FILEDEF CMPRT02 PRINTER'
0320 'EXEC NAT BATCH'
0330 'ERASE N2OPARC2 CMSYNIN A'
0340 /* Execute N2OPARC3 */
0350 /*
0360 /* N2OV5.2 CHANGE CMWKF05 LRECL FROM 97 TO 99 BLKSIZE FROM 101 TO 103
0370 /*
0380 'ERASE N2OPARC3 CMSYNIN A'
0390 'EXECIO 1 DISKW N2OPARC3 CMSYNIN A 1 F 80 (STRING LOGON SYSTEM'
0400 'EXECIO 1 DISKW N2OPARC3 CMSYNIN A 2 F 80 (STRING N2OPARC3'
0410 'EXECIO 1 DISKW N2OPARC3 CMSYNIN A 3 F 80 (STRING FIN'
0420 'FILEDEF * CLEAR'
0430 'FILEDEF CMWKF01 DISK N2OPARC1 LISTPARM A'
0440 'FILEDEF CMWKF04 DISK N2OPARC2 ARCHLIST A'
0450 'FILEDEF CMWKF05 DISK N2OPARC3 ARCHPURG A',
0460 ' RECFM FB LRECL 99 BLKSIZE 103'
0470 'FILEDEF CMWKF06 DISK &BACKUP RECFM VB LRECL 6104 BLKSIZE 6108'
0480 'FILEDEF CMSYNIN DISK N2OPARC3 CMSYNIN A'
0490 'FILEDEF CMPRINT PRINTER'
0500 'FILEDEF CMPRT02 PRINTER'
0510 'FILEDEF CMPRT04 PRINTER'
0520 'FILEDEF CMPRT06 PRINTER'
0530 'EXEC NAT BATCH'
0540 'ERASE N2OPARC3 CMSYNIN A'
0550 /* Execute N2OPARC4 */
0560 'ERASE N2OPARC4 CMSYNIN A'
0570 'EXECIO 1 DISKW N2OPARC4 CMWKF03 A 1 F 80 (STRING &BACKUP'
0580 'EXECIO 1 DISKW N2OPARC4 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0590 'EXECIO 1 DISKW N2OPARC4 CMSYNIN A 2 F 80 (STRING N2OPARC4'
0600 'EXECIO 1 DISKW N2OPARC4 CMSYNIN A 3 F 80 (STRING FIN'
0610 'FILEDEF * CLEAR'
0620 'FILEDEF CMWKF03 DISK &BACKUP'
0630 'FILEDEF CMWKF05 DISK N2OPARC3 ARCHPURG A'
0640 'FILEDEF CMSYNIN DISK N2OPARC4 CMSYNIN A'
0650 'FILEDEF CMPRINT PRINTER'
0660 'FILEDEF CMPRT02 PRINTER'
0670 'EXEC NAT BATCH'
0680 'ERASE N2OPARC4 CMSYNIN A'
0690 exit
***** End of list *****

```

```

Program      VSEARCHP Library N2OBATCH
0010 * $$ JOB JNM=ARCHPURG,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 * $$ LST CLASS=A,LST=02E,DISP=K,JSEP=0
0040 // JOB ARCHPURG
0050 // DLBL CMWKF01,'PURGE.INPUT.PARMS'
0060 // EXTENT SYS001,,,,nnnnn,nnnnn
0070 // EXEC IDCAMS,SIZE=AUTO
0080 REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0090      OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(84)))
0100 &INPUT
0110 /*
0120 * N2OPARC1 - FIND ARCHIVE PURGE PARAMETERS.
0130 // ASSGN SYSIPT,SYSRDR
0140 // ASSGN SYS001,DISK,SHR
0150 // ASSGN SYS002,DISK,SHR
0160 // ASSGN SYS009,SYSLST
0170 // ASSGN SYS042,02E
0180 // DLBL CMWKF01,'PURGE.INPUT.PARMS'
0190 // EXTENT SYS001,,,,nnnnn,nnnnn
0200 // DLBL CMWKF02,'LIST.PARMS'
0210 // EXTENT SYS002,,,,nnnnn,nnnnn
0220 // EXEC NATBATCH
0230 BWORKD=(1,1,80,FB,2,2,80,FB)
0240 /*
0250 ADARUN DB=xxx,SVC=yyy,DEVICE=zxxx
0260 /*
0270 LOGON N2OLIB
0280 N2OPARC1
0290 FIN
0300 /*
0310 * N2OPARC2 - CREATE LIST OF OBJECTS TO BE PURGED
0320 *
0330 *   N2OV5.2 CHANGE CMWKF03 LRECL FROM 97 TO 99
0340 *
0350 // ASSGN SYS001,DISK,SHR
0360 // ASSGN SYS003,DISK,SHR
0370 // ASSGN SYS009,SYSLST
0380 // ASSGN SYS042,02E
0390 // DLBL CMWKF01,'LIST.PARMS'
0400 // EXTENT SYS001,,,,nnnnn,nnnnn
0410 // DLBL CMWKF03,'ARCHIVE.LIST'
0420 // EXTENT SYS003,,,,nnnnn,nnnnn
0430 // EXEC NATBATCH
0440 /BWORKD=(1,1,80,FB,3,3,99,FB)
0450 /*
0460 ADARUN DB=XXX,SVC=YYY,DEVICE=ZZZZ
0470 /*
0480 LOGON SYSTEM
0490 N2OPARC2
0500 FIN
0510 /*
0520 * $$ LST CLASS=A,LST=04E,DISP=K,JSEP=0
0530 * $$ LST CLASS=A,LST=06E,DISP=K,JSEP=0
0540 * N2OPARC3 - PURGE PROGRAMS FROM ARCHIVE FILE
0550 *
0560 *   N2OV5.2 CHANGE CMWKF05 LRECL FROM 97 TO 99
0570 *
0580 // ASSGN SYS001,DISK,SHR
0590 // ASSGN SYS004,DISK,SHR
0600 // ASSGN SYS005,DISK,SHR
0610 // ASSGN SYS006,DISK,SHR
0620 // ASSGN SYS009,SYSLST
0630 // ASSGN SYS042,02E
0640 // ASSGN SYS044,04E
0650 // ASSGN SYS046,06E
0660 // DLBL CMWKF01,'LIST.PARMS'
0670 // EXTENT SYS001,,,,nnnnn,nnnnn
0680 // DLBL CMWKF04,'ARCHIVE.LIST'

```

```
0690 // EXTENT SYS004,,,,nnnnn,nnnnn
0700 // DLBL CMWKF05,'ARCHIVE.PURGE'
0710 // EXTENT SYS005,,,,nnnnn,nnnnn
0720 // DLBL CMWKF06,'&BACKUP'
0730 // EXTENT SYS006,,,,nnnnn,nnnnn
0740 // EXEC NATBATCH
0750 BWORKD=(1,1,80,FB,4,4,97,FB,5,5,99,FB,6,6,6104,VB)
0760 /*
0770 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0780 /*
0790 LOGON SYSTEM
0800 N2OPARC3
0810 FIN
0820 /*
0830 * N2OPARC4 - UPDATE MIGRATION FILE
0840 // DLBL CMWKF03,'DSNAME.INPUT'
0850 // EXTENT SYS003,,,,nnnnn,nnnnn
0860 // EXEC IDCAMS,SIZE=AUTO
0870 REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0880 OUTFILE(CMWKF03 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0890 &BACKUP
0900 /*
0910 // ASSGN SYSIPT,SYSRDR
0920 // ASSGN SYS003,DISK,SHR
0930 // ASSGN SYS004,DISK,SHR
0940 // ASSGN SYS009,SYSLST
0950 // ASSGN SYS042,02E
0960 // DLBL CMWKF03,'DSNAME.INPUT'
0970 // EXTENT SYS003,,,,nnnnn,nnnnn
0980 // DLBL CMWKF05,'ARCHIVE.PURGE'
0990 // EXTENT SYS005,,,,nnnnn,nnnnn
1000 // EXEC NATBATCH
1010 BWORKD=(3,3,80,FB,5,5,97,FB)
1020 /*
1030 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
1040 /*
1050 LOGON N2OLIB
1060 N2OPARC4
1070 FIN
1080 /*
1090 /&
1100 * $$ EOJ
***** End of list *****
```

**Catalog Capture**

```

Program      MVSCAPT  Library N2OBATCH
0010 //NATCAPT JOB (ACCOUNTING),'CATALOG CAPTURE',CLASS=A,NOTIFY=&USERID
0020 //*****
0030 /** THIS IS SAMPLE CATALOG CAPTURE JCL
0040 /** THIS JOB SHOULD BE RENAMED TO NATCAPT
0050 //*****
0060 /** THE FIRST STEP (CAPTURE1) SHOULD RUN ON THE FUSER THAT
0070 /** IS BEING CAPTURED
0080 //CAPTURE1 EXEC PGM=NATBATCH
0090 //CMWKF02 DD DSN=N2O.CAPTURE.DATA,DISP=(,CATLG,DELETE),
0100 //          UNIT=SYSDA,SPACE=(CYL,(100,100),RLSE),
0110 //          DCB=(RECFM=VB,LRECL=127,BLKSIZE=131)
0120 /**
0130 //CMPRINT DD SYSOUT=*
0140 //CMPRT01 DD SYSOUT=*
0150 //CMSYNIN DD *
0160 LOGON SYSTEM
0170 N2OCAPT1
0180 FIN
0190 /*
0200 //CMWKF01 DD *
0210 &INPUT
0220 /*
0230 /** THE CAPTURE2 STEP SHOULD BE RUN WHERE N2O IS INSTALLED
0240 //CAPTURE2 EXEC PGM=NATBATCH
0250 //CMWKF02 DD DSN=N2O.CAPTURE.DATA,DISP=(OLD,DELETE,DELETE)
0260 //CMPRINT DD SYSOUT=*
0270 //CMSYNIN DD *
0280 LOGON N2OLIB
0290 N2OCAPT2
0300 FIN
0310 /*
0320 //CMWKF01 DD *
0330 &INPUT
0340 /*
0350 /**
***** End of list *****

```

```
Program      BSCAPT      Library N2OBATCH
0010 / .N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS (LISTING=YES)
0050 /REMARK *** EXECUTE N2OCAPT1 ***
0060 /FILE CAPTURE.DATA, LINK=W02, RECFORM=VB, RECSIZE=127, BLKSIZE=131
0070 /FILE CAPT1.INPUT, LINK=W01
0080 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0090 /MODIFY-JOB-SWITCHES ON=(4,5)
0100 /START-PROGRAM FROM-FILE=$EDT
0110 LS=132, PS=60, MENU=OFF
0120 @WRITE 'N2O.CAPTURE.IPT.BATCH' OVERWRITE
0130 @HALT
0140 /MODIFY-JOB-SWITCHES OFF=(4,5)
0150 /ASSIGN-SYSIPT TO-FILE=N2O.CAPTURE.IPT.BATCH
0160 /MODIFY-JOB-SWITCHES ON=(2)
0170 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0180 LOGON SYSTEM
0190 N2OCAPT1
0200 FIN
0210 /REMARK *** EXECUTE N2OCAPT2 ***
0220 /SET-FILE-LINK LINK-NAME=W01, FILE-NAME=N2O.ENV.DEF
0230 /FILE CAPTURE.DATA, LINK=W02
0240 /SET-JOB-STEP
0250 /ASSIGN-SYSIPT TO-FILE=N2O.CAPTURE.IPT.BATCH
0260 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0270 LOGON N2OLIB
0280 N2OCAPT2
0290 FIN
0300 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0310 /DELETE-FILE FILE-NAME=N2O.CAPTURE.IPT.BATCH,
0320 /OPTION=DESTROY-ALL
0330 /LOGOFF NOSPOOL
***** End of list *****
```

```

Program      VMCAPT      Library N2OBATCH
0010 /* Execute N2OCAPT1 */
0020 address 'COMMAND'
0030 'ERASE N2OCAPT1 CMSYNIN A'
0040 'ERASE CAPTURE DATA A'
0050 'ERASE N2OCAPT1 CMWKF01 A'
0060 'EXECIO 1 DISKW N2OCAPT1 CMSYNIN A 1 F 80 (STRING LOGON SYSTEM'
0070 'EXECIO 1 DISKW N2OCAPT1 CMSYNIN A 2 F 80 (STRING N2OCAPT1'
0080 'EXECIO 1 DISKW N2OCAPT1 CMSYNIN A 3 F 80 (STRING FIN'
0090 'EXECIO 1 DISKW N2OCAPT1 CMWKF01 A 1 F 80 (STRING &INPUT'
0100 'FILEDEF * CLEAR'
0110 'FILEDEF CMWKF02 DISK CAPTURE DATA A RECFM VB LRECL 127 BLKSIZE 131'
0120 'FILEDEF CMSYNIN DISK N2OCAPT1 CMSYNIN A'
0130 'FILEDEF CMWKF01 DISK N2OCAPT1 CMWKF01 A'
0140 'FILEDEF CMPRINT PRINTER'
0150 'EXEC NAT BATCH'
0160 'ERASE N2OCAPT1 CMSYNIN A'
0170 /* Execute N2OCAPT2 */
0180 'ERASE N2OCAPT2 CMSYNIN A'
0190 'ERASE N2O CMWKF01 A'
0200 'EXECIO 1 DISKW N2O CMWKF01 A 1 F 80 (STRING &INPUT'
0210 'EXECIO 1 DISKW N2OCAPT2 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0220 'EXECIO 1 DISKW N2OCAPT2 CMSYNIN A 2 F 80 (STRING N2OCAPT2'
0230 'EXECIO 1 DISKW N2OCAPT2 CMSYNIN A 3 F 80 (STRING FIN'
0240 'FILEDEF * CLEAR'
0250 'FILEDEF CMWKF01 DISK N2O CMWKF01 A'
0260 'FILEDEF CMWKF02 DISK CAPTURE DATA A'
0270 'FILEDEF CMSYNIN DISK N2OCAPT2 CMSYNIN A'
0280 'FILEDEF CMPRINT PRINTER'
0290 'EXEC NAT BATCH'
0300 'ERASE N2OCAPT2 CMSYNIN A'
0310 'ERASE N2O CMWKF01 A'
0320 'ERASE CAPTURE DATA A'
0330 exit
***** End of list *****

```

```

Program      VSECAPT  Library N2OBATCH
0010 * $$ JOB JNM=N2OCAPT1,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 // JOB N2OCAPT1
0040 /*
0050 * N2OCAPT1 - CAPTURE FUSER AND FDIC
0060 // DLBL CMWKF01,'N2O.CAPT1.INPUT'
0070 // EXTENT SYS001,,,,nnnnn,nnnnn
0080 // EXEC IDCAMS,SIZE=AUTO
0090     REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0100         OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0110 &INPUT
0120 /*
0130 // ASSGN SYSIPT,SYSRDR
0140 // ASSGN SYS001,DISK,SHR
0150 // ASSGN SYS002,DISK,SHR
0160 // ASSGN SYS000,SYSRDR
0170 // ASSGN SYS009,SYSLST
0180 // DLBL CMWKF02,'N2O.CAPTURE.DATA'
0190 // EXTENT SYS002,,,,NNNNN,NNNNN
0200 // DLBL CMWKF01,'N2O.CAPT1.INPUT'
0210 // EXTENT SYS001,,,,nnnnn,nnnnn
0220 // EXEC NATBATCH
0230 BWORKD=(1,1,80,FB,2,2,131,VB)
0240 /*
0250 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0260 /*
0270 LOGON SYSTEM
0280 N2OCAPT1
0290 FIN
0300 /*
0310 * N2OCAPT2 - UPDATE MIGRATION FILE
0320 // DLBL CMWKF01,'N2O.CAPT2.INPUT'
0330 // EXTENT SYS001,,,,nnnnn,nnnnn
0340 // EXEC IDCAMS,SIZE=AUTO
0350     REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0360         OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0370 &INPUT
0380 /*
0390 // ASSGN SYSIPT,SYSRDR
0400 // ASSGN SYS001,DISK,SHR
0410 // ASSGN SYS002,DISK,SHR
0420 // ASSGN SYS009,SYSLST
0430 // DLBL CMWKF01,'N2O.CAPT2.INPUT'
0440 // EXTENT SYS001,,,,nnnnn,nnnnn
0450 // DLBL CMWKF02,'N2O.CAPTURE.DATA'
0460 // EXTENT SYS002,,,,nnnnn,nnnnn
0470 // EXEC NATBATCH
0480 BWORKD=(1,1,80,FB,2,2,131,VB)
0490 /*
0500 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0510 /*
0520 LOGON SYSTEM
0530 N2OCAPT2
0540 FIN
0550 /*
0560 /&
0570 * $$ EOJ
***** End of list *****

```

## Object Compare

### Program MVSCOMPO Library N2OBATCH

```

0010 //N2OCOMPO JOB (ACCOUNTING), 'COMP OBJECT', CLASS=A, TIME=40, NOTIFY=&USERID
0020 //***
0030 //* THIS IS SAMPLE JCL FOR THE TOOLBOX OPTION FOR OBJECT COMPARE
0040 //* THIS JOB SHOULD BE RENAMED N2OCOMPO
0050 //***
0060 //* N2OCOMPO RUNS WHERE N2O IS INSTALLED
0070 //***
0080 //N2OCOMPO EXEC PGM=NATBATCH
0090 //*
0100 //CMPRINT DD SYSOUT=*
0110 //CMPRT02 DD SYSOUT=*
0120 //CMSYNIN DD *
0130 LOGON N2OLIB
0140 N2O3120B
0150 &INPUT
0160 FIN
0170 /*
0180 /*
***** End of list *****

```

### Program BSCOMPO Library N2OBATCH

```

0010 /.N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS (LISTING=YES)
0050 /REMARK *** EXECUTE SOURCE COMPARE ***
0060 /FILE N2O.COMPARE, LINK=P01
0070 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0080 /MODIFY-JOB-SWITCHES ON=(4,5)
0090 /START-PROGRAM FROM-FILE=$EDT
0100 LS=132, PS=60, MENU=OFF
0110 @WRITE 'N2O.COMPARE.IPT.BATCH' OVERWRITE
0120 @HALT
0130 /MODIFY-JOB-SWITCHES OFF=(4,5)
0140 /ASSIGN-SYSIPT TO-FILE=N2O.COMPARE.IPT.BATCH
0150 /MODIFY-JOB-SWITCHES ON=(2)
0160 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0170 LOGON N2OLIB
0180 N2O3110B
0190 &INPUT
0200 FIN
0210 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0220 /DELETE-FILE FILE-NAME=N2O.COMPARE.IPT.BATCH,
0230 /OPTION=DESTROY-ALL
0240 /LOGOFF NOSPOOL
***** End of list *****

```

### Program VMCOMPO Library N2OBATCH

```

0010 /* Execute Object compare */
0020 address 'COMMAND'
0030 'ERASE COMPOBJ CMSYNIN A'
0040 'EXECIO 1 DISKW COMPOBJ CMSYNIN A 1 F 80 (STRING LOGON N2OLIB)'
0050 'EXECIO 1 DISKW COMPOBJ CMSYNIN A 2 F 80 (STRING N2O3120B)'
0060 'EXECIO 1 DISKW COMPOBJ CMSYNIN A 3 F 80 (STRING &INPUT)'
0070 'EXECIO 1 DISKW COMPOBJ CMSYNIN A 4 F 80 (STRING FIN)'
0080 'FILEDEF * CLEAR'
0090 'FILEDEF CMSYNIN DISK COMPOBJ CMSYNIN A'
0100 'FILEDEF CMPRINT PRINTER'
0110 'FILEDEF CMPRT01 PRINTER'
0120 'EXEC NAT BATCH'
0130 'ERASE COMPOBJ CMSYNIN A'
0140 exit
***** End of list *****

```

```

Program VSECOMPO Library N2OBATCH
0010 * $$ JOB JNM=N2OCOMPO,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 * $$ LST CLASS=A,LST=02E,DISP=K,JSEP=0
0040 // JOB N2OCOMPO
0050 * N2OCOMPO - COMPARE NATURAL OBJECT CODE
0060 // ASSGN SYSIPT,SYSRDR
0070 // ASSGN SYS001,01E
0080 // ASSGN SYS002,02E
0090 // EXEC NATBATCH
0100 /*
0110 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0120 /*
0130 LOGON N2OLIB
0140 N2O3120B
0150 &INPUT
0160 FIN
0170 /*
0180 /&
0190 * $$ EOJ
***** End of list *****

```

### Source Compare - remote environments

```

Program MVSCOMPR Library N2OBATCH
0010 //N2OCMPR JOB 'REMOTE SOURCE COMPARE' MSGLEVEL=1,
0020 // CLASS=C,MSGCLASS=X,REGION=4M,NOTIFY=&SYSUID
0030 /*
0040 /***
0050 /* THIS IS SAMPLE JCL FOR N2O SOURCE COMPARE BETWEEN TWO REMOTE
0060 /* ENVIRONMENTS
0070 /* This step must be executed where N2O is installed
0080 /***
0090 //GCPARM EXEC PGM=NATBATCH
0100 //CMPRINT DD SYSOUT=*
0110 //CMPRT01 DD SYSOUT=*
0120 //CMPRT02 DD SYSOUT=*
0130 //CMWKF01 DD DSN=N2O.SRCCR.PARMA1,DISP=(NEW,PASS,DELETE),
0140 // DCB=(RECFM=FB,LRECL=80,BLKSIZE=80),
0150 // UNIT=SYSDA,SPACE=(TRK,(1,1))
0160 //CMWKF02 DD DSN=N2O.SRCCR.PARMA2,DISP=(NEW,PASS,DELETE),
0170 // DCB=(RECFM=FB,LRECL=80,BLKSIZE=80),
0180 // UNIT=SYSDA,SPACE=(TRK,(1,1))
0190 //CMSYNIN DD *
0200 LOGON N2OLIB
0210 N2O3110B
0220 &INPUT
0230 FIN
0240 /*
0250 /*
0260 /* This step must be executed on base environment
0270 /*
0280 //RRTM1 EXEC PGM=NATBATCH
0290 //CMPRINT DD SYSOUT=*
0300 //CMPRT01 DD SYSOUT=*
0310 //CMPRT02 DD SYSOUT=*
0320 //CMWKF01 DD DSN=N2O.SRCCR.PARMA1,DISP=(OLD,DELETE,DELETE)
0330 //CMWKF02 DD DSN=N2O.SRCCR.PARMB1,DISP=(NEW,PASS,DELETE),
0340 // DCB=(RECFM=FB,LRECL=189,BLKSIZE=189),
0350 // UNIT=SYSDA,SPACE=(TRK,(1,1))
0360 //CMWKF03 DD DSN=N2O.SRCCR.OUTPT1,DISP=(NEW,PASS,DELETE),
0370 // DCB=(RECFM=FB,LRECL=133,BLKSIZE=133),
0380 // UNIT=SYSDA,SPACE=(TRK,(1,1))
0390 //CMSYNIN DD *
0400 LOGON SYSTEM
0410 N2O3110C
0420 FIN
0430 /*
0440 /*

```

```

0450 /** This step must be executed on compare environment
0460 /**
0470 //RRTM2 EXEC PGM=NATBATCH
0480 //CMPRINT DD SYSOUT=*
0490 //CMPRT01 DD SYSOUT=*
0500 //CMPRT02 DD SYSOUT=*
0510 //CMWKF01 DD DSN=N2O.SRCCR.PARMA2,DISP=(OLD,DELETE,DELETE)
0520 //CMWKF02 DD DSN=N2O.SRCCR.PARMB2,DISP=(NEW,PASS,DELETE),
0530 // DCB=(RECFM=FB,LRECL=189,BLKSIZE=189),
0540 // UNIT=SYSDA,SPACE=(TRK,(1,1))
0550 //CMWKF03 DD DSN=N2O.SRCCR.OUTPT2,DISP=(NEW,PASS,DELETE),
0560 // DCB=(RECFM=FB,LRECL=133,BLKSIZE=133),
0570 // UNIT=SYSDA,SPACE=(TRK,(1,1))
0580 //CMSYNIN DD *
0590 LOGON SYSTEM
0600 N2O3110C
0610 FIN
0620 /*
0630 /**
0640 /** This step must be executed where N2O is installed
0650 /**
0660 //COMPW EXEC PGM=NATBATCH
0670 //CMPRINT DD SYSOUT=*
0680 //CMPRT01 DD SYSOUT=*
0690 //CMPRT02 DD SYSOUT=*
0700 //CMWKF01 DD DSN=N2O.SRCCR.PARMB1,DISP=(OLD,DELETE,DELETE)
0710 //CMWKF02 DD DSN=N2O.SRCCR.OUTPT1,DISP=(OLD,DELETE,DELETE)
0720 //CMWKF03 DD DSN=N2O.SRCCR.PARMB2,DISP=(OLD,DELETE,DELETE)
0730 //CMWKF04 DD DSN=N2O.SRCCR.OUTPT2,DISP=(OLD,DELETE,DELETE)
0740 //CMSYNIN DD *
0750 LOGON N2OLIB
0760 N2O3110D
0770 FIN
0780 /*
0790 /*******
***** End of list *****

```

**Program BSCOMPR Library N2OBATCH**

```

0010 /.N2O LOGON
0020 /CALL-PROCEDURE NAME= TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
0050 /REMARK *** EXECUTE SOURCE COMPARE ***
0060 /FILE N2O.COMPARE,LINK=P01
0070 /FILE N2OCOMPA.PARM,LINK=W01,RECFORM=FB,RECSIZE=80,BLKSIZE=80
0080 /FILE N2OCOMP.B.PARM,LINK=W02,RECFORM=FB,RECSIZE=80,BLKSIZE=80
0090 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0100 /MODIFY-JOB-SWITCHES ON=(4,5)
0110 /START-PROGRAM FROM-FILE=$EDT
0120 LS=132,PS=60,MENU=OFF
0130 @WRITE 'N2O.COMPARE.IPT.BATCH' OVERWRITE
0140 @HALT
0150 /MODIFY-JOB-SWITCHES OFF=(4,5)
0160 /ASSIGN-SYSIPT TO FILE=N2O.COMPARE.IPT.BATCH
0170 /MODIFY-JOB-SWITCHES ON=(2)
0180 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0190 LOGON N2OLIB
0200 N2O3110B
0210 &INPUT
0220 FIN
0230 REMARK *** READ BASE ENVIRONMENT ***
0240 /FILE N2OCOMPA.PARM,LINK=W01
0250 /FILE N2OCOMPA.PARM2,LINK=W02,RECFROM=FB,RECSIZE=189,BLKSIZE=189
0260 /FILE N2OCOMPA.OUT,LINK=W03,RECFROM=FB,RECSIZE=133,BLKSIZE=133
0270 /SET-JOB-STEP
0280 /ASSIGN-SYSIPT TO-FILE=N2O.COMPARE.IPT.BATCH
0290 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0300 LOGON SYSTEM
0310 N2O3110C
0320 FIN

```

```

0330 REMARK *** READ COMPARE ENVIRONMENT ***
0340 /FILE N2OCOMP.B.PARM, LINK=W01
0350 /FILE N2OCOMP.B.PARM2, LINK=W02, RECFROM=FB, RECSIZE=189, BLKSIZE=189
0360 /FILE N2OCOMP.B.OUT, LINK=W03, RECFROM=FB, RECSIZE=133, BLKSIZE=133
0370 /SET-JOB-STEP
0380 /ASSIGN-SYSIPT TO-FILE=N2O.COMPARE.IPT.BATCH
0390 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0400 LOGON SYSTEM
0410 N2O3110C
0420 FIN
0430 REMARK *** COMPARE BASE AND COMPARE ENVIRONMENTS ***
0440 /FILE N2OCOMP.A.PARM2, LINK=W01
0450 /FILE N2OCOMP.A.OUT, LINK=W02
0460 /FILE N2OCOMP.B.PARM2, LINK=W03
0470 /FILE N2OCOMP.B.OUT, LINK=W04
0480 /SET-JOB-STEP
0490 /ASSIGN-SYSIPT TO-FILE=N2O.COMPARE.IPT.BATCH
0500 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0510 LOGON N2OLIB
0520 N2O3110D
0530 FIN
0540 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0550 /DELETE-FILE FILE-NAME=N2O.COMPARE.IPT.BATCH,
0560 /OPTION=DESTROY-ALL
0570 /LOGOFF NOSPOOL
***** End of list *****

```

**Program VMCOMPR Library N2OBATCH**

```

0010 /* Execute Remote Source compare */
0020 address 'COMMAND'
0030 'ERASE COMPSRCA CMSYNIN A'
0040 'EXECIO 1 DISKW COMPSRC CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0050 'EXECIO 1 DISKW COMPSRC CMSYNIN A 2 F 80 (STRING N2O3110B'
0060 'EXECIO 1 DISKW COMPSRC CMSYNIN A 3 F 80 (STRING &INPUT'
0070 'EXECIO 1 DISKW COMPSRC CMSYNIN A 4 F 80 (STRING FIN'
0080 'FILEDEF * CLEAR'
0090 'FILEDEF CMWKF01 COMP PARMA A RECFM VB LRECL 80 BLKSIZE 80'
0100 'FILEDEF CMWKF02 COMP PARMB A RECFM VB LRECL 80 BLKSIZE 80'
0110 'FILEDEF CMSYNIN DISK COMPSRCA CMSYNIN A'
0120 'FILEDEF CMPRINT PRINTER'
0130 'FILEDEF CMPRT01 PRINTER'
0140 'EXEC NAT BATCH'
0150 'ERASE COMPSRCA CMSYNIN A'
0160 /* Execute read BASE Environment */
0170 'ERASE COMPSRCB CMSYNIN A'
0180 'EXECIO 1 DISKW COMPSRCB CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0190 'EXECIO 1 DISKW COMPSRCB CMSYNIN A 2 F 80 (STRING N2O3110C'
0200 'EXECIO 1 DISKW COMPSRCB CMSYNIN A 3 F 80 (STRING FIN'
0210 'FILEDEF * CLEAR'
0220 'FILEDEF CMWKF01 COMP PARMA A'
0230 'FILEDEF CMWKF02 COMP PARMA2 A RECFM VB LRECL 189 BLKSIZE 189'
0240 'FILEDEF CMWKF03 COMP OUTPUTA A RECFM VB LRECL 133 BLKSIZE 133'
0250 'FILEDEF CMSYNIN DISK COMPSRCB CMSYNIN A'
0260 'FILEDEF CMPRINT PRINTER'
0270 'FILEDEF CMPRT01 PRINTER'
0280 'EXEC NAT BATCH'
0290 'ERASE COMPSRCB CMSYNIN A'
0300 'ERASE COMP PARMA A'
0310 /* Execute read COMPARE Environment */
0320 'ERASE COMPSRCC CMSYNIN A'
0330 'EXECIO 1 DISKW COMPSRCC CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0340 'EXECIO 1 DISKW COMPSRCC CMSYNIN A 2 F 80 (STRING N2O3110C'
0350 'EXECIO 1 DISKW COMPSRCC CMSYNIN A 3 F 80 (STRING FIN'
0360 'FILEDEF * CLEAR'
0370 'FILEDEF CMWKF01 COMP PARMB A'
0380 'FILEDEF CMWKF02 COMP PARMB2 A RECFM VB LRECL 189 BLKSIZE 189'
0390 'FILEDEF CMWKF03 COMP OUTPUTB A RECFM VB LRECL 133 BLKSIZE 133'
0400 'FILEDEF CMSYNIN DISK COMPSRCC CMSYNIN A'
0410 'FILEDEF CMPRINT PRINTER'
0420 'FILEDEF CMPRT01 PRINTER'

```

```

0430 'EXEC NAT BATCH'
0440 'ERASE COMPSRCC CMSYNIN A'
0450 'ERASE COMP PARMB A'
0460 /* Execute compare BASE and COMPARE Environment */
0470 'ERASE COMPSRCD CMSYNIN A'
0480 'EXECIO 1 DISKW COMPSRCD CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0490 'EXECIO 1 DISKW COMPSRCD CMSYNIN A 2 F 80 (STRING N2O3110D'
0500 'EXECIO 1 DISKW COMPSRCD CMSYNIN A 3 F 80 (STRING FIN'
0510 'FILEDEF * CLEAR'
0520 'FILEDEF CMWKF01 COMP PARMA2 A'
0530 'FILEDEF CMWKF02 COMP OUTPUTA A'
0540 'FILEDEF CMWKF03 COMP PARMB2 A'
0550 'FILEDEF CMWKF04 COMP OUTPUTB A'
0560 'FILEDEF CMSYNIN DISK COMPSRCD CMSYNIN A'
0570 'FILEDEF CMPRINT PRINTER'
0580 'FILEDEF CMPRT01 PRINTER'
0590 'EXEC NAT BATCH'
0600 'ERASE COMPSRCD CMSYNIN A'
0610 'ERASE CMWKF01 COMP PARMA2 A'
0620 'ERASE CMWKF02 COMP OUTPUTA A'
0630 'ERASE CMWKF03 COMP PARMB2 A'
0640 'ERASE CMWKF04 COMP OUTPUTB A'
0650 exit
***** End of list *****

```

**Program VSECOMPR Library N2OBATCH**

```

0010 * JOB JNM=N2OCOMPR,CLASS=A,USER=&USERID
0020 * LST CLASS=A,LST=SYSLST
0030 // JOB N2OCOMPR
0040 * N2O3110B - VERIFY INPUT PARMS
0050 // ASSGN SYS001,DISK,SHR
0060 // ASSGN SYS002,DISK,SHR
0070 // ASSGN SYS009,SYSLST
0080 // DLBL CMWKF01,'N2OCOMPA.PARM'
0090 // EXTENT SYS001,, ,nnnnn,nnnnn
0100 // DLBL CMWKF02,'N2OCOMP.B.PARM'
0110 // EXTENT SYS002,, ,nnnnn,nnnnn
0120 // EXEC NATBATCH
0130 BWORKD=(1,1,80,FB,2,2,80,FB)
0140 /*
0150 ADARUN DB=XXX,SVC=YYY,DEVICE=ZZZZ
0160 /*
0170 N2OLIB,BATCH,BATCH
0180 N2O3110B
0190 &INPUT
0200 FIN
0210 /*
0220 * N2O3110C - READ BASE ENVIRONMENT
0230 // ASSGN SYS001,DISK,SHR
0240 // ASSGN SYS002,DISK,SHR
0250 // ASSGN SYS003,DISK,SHR
0260 // ASSGN SYS009,SYSLST
0270 // DLBL CMWKF01,'N2OCOMPA.PARM'
0280 // EXTENT SYS001,, ,nnnnn,nnnnn
0290 // DLBL CMWKF02,'N2OCOMPA.PARM2'
0300 // EXTENT SYS002,, ,nnnnn,nnnnn
0310 // DLBL CMWKF03,'N2OCOMPA.OUTP'
0320 // EXTENT SYS003,, ,nnnnn,nnnnn
0330 // EXEC NATBATCH
0340 BWORKD=(1,1,80,FB,2,2,189,FB,3,3,133,FB)
0350 /*
0360 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0370 /*
0380 SYSTEM,BATCH,BATCH
0390 N2O3110C
0400 FIN
0410 /*
0420 * N2O3110C - READ COMPARE ENVIRONMENT
0430 // ASSGN SYS001,DISK,SHR
0440 // ASSGN SYS002,DISK,SHR

```

```

0450 // ASSGN SYS003,DISK,SHR
0460 // ASSGN SYS009,SYSLST
0470 // DLBL CMWKF01,'N2OCOMP.B.PARM'
0480 // EXTENT SYS001,,,,nnnnn,nnnnn
0490 // DLBL CMWKF02,'N2OCOMP.B.PARM2'
0500 // EXTENT SYS002,,,,nnnnn,nnnnn
0510 // DLBL CMWKF03,'N2OCOMP.OUTPUT'
0520 // EXTENT SYS003,,,,nnnnn,nnnnn
0530 // EXEC NATBATCH
0540 BWORKD=(1,1,80,FB,2,2,189,FB,3,3,133,FB)
0550 /*
0560 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0570 /*
0580 SYSTEM,BATCH,BATCH
0590 N2O3110C
0600 FIN
0610 /*
0620 * N2O3110D - COMPARE BASE AND COMPARE ENVIRONMENT
0630 // ASSGN SYS001,DISK,SHR
0640 // ASSGN SYS002,DISK,SHR
0650 // ASSGN SYS003,DISK,SHR
0660 // ASSGN SYS004,DISK,SHR
0670 // ASSGN SYS009,SYSLST
0680 // DLBL CMWKF02,'N2OCOMP.A.PARM2'
0690 // EXTENT SYS002,,,,nnnnn,nnnnn
0700 // DLBL CMWKF03,'N2OCOMP.OUTPUT'
0710 // EXTENT SYS003,,,,nnnnn,nnnnn
0720 // DLBL CMWKF02,'N2OCOMP.B.PARM2'
0730 // EXTENT SYS002,,,,nnnnn,nnnnn
0740 // DLBL CMWKF03,'N2OCOMP.OUTPUT'
0750 // EXTENT SYS003,,,,nnnnn,nnnnn
0760 // EXEC NATBATCH
0770 BWORKD=(1,1,189,FB,2,2,133,FB,3,3,189,FB,4,4,133,FB)
0780 /*
0790 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0800 /*
0810 N2OLIB,BATCH,BATCH
0820 N2O3110D
0830 FIN
0840 /*
0850 /&
0860 * EOJ
***** End of list *****

```

### Source Compare – local environments

```

Program      MVSCOMPS Library N2OBATCH
0010 //N2OCOMPS JOB (ACCOUNTING),'COMP SOURCE',CLASS=A,TIME=40,NOTIFY=&USERID
0020 /***
0030 /* THIS IS SAMPLE JCL FOR THE TOOLBOX OPTION SOURCE COMPARE
0040 /* THIS JOB SHOULD BE RENAMED N2OCOMPS
0050 /***
0060 /* N2OCOMPS SHOULD BE RUN WHERE N2O IS INSTALLED
0070 //N2OCOMPS EXEC PGM=NATBATCH
0080 /*
0090 //CMPRINT DD SYSOUT=*
0100 //CMPRT01 DD SYSOUT=*
0110 //CMPRT02 DD SYSOUT=*
0120 //CMSYNIN DD *
0130 LOGON N2OLIB
0140 N2O3110B
0150 &INPUT
0160 FIN
0170 /*
0180 /*
***** End of list *****

```

```

Program      BSCOMPS  Library N2OBATCH
0010 /.N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
0050 /REMARK *** EXECUTE OBJECT COMPARE ***
0060 /FILE N2O.COMPOBJ,LINK=P01
0070 /FILE N2O.COMPARE,LINK=P02
0080 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0090 /MODIFY-JOB-SWITCHES ON=(4,5)
0100 /START-PROGRAM FROM-FILE=$EDT
0110 LS=132,PS=60,MENU=OFF
0120 @WRITE 'N2O.COMPARE.IPT.BATCH' OVERWRITE
0130 @HALT
0140 /MODIFY-JOB-SWITCHES OFF=(4,5)
0150 /ASSIGN-SYSIPT TO-FILE=N2O.COMPARE.IPT.BATCH
0160 /MODIFY-JOB-SWITCHES ON=(2)
0170 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0180 LOGON N2OLIB
0190 N2O3110B
0200 &INPUT
0210 FIN
0220 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0230 /DELETE-FILE FILE-NAME=N2O.COMPARE.IPT.BATCH,
0240 /OPTION=DESTROY-ALL
0250 /LOGOFF NOSPOOL
***** End of list *****

```

```

Program      VMCOMPS  Library N2OBATCH
0010 /* Execute Source compare */
0020 address 'COMMAND'
0030 'ERASE COMPSRC CMSYNIN A'
0040 'EXECIO 1 DISKW COMPSRC CMSYNIN A 1 F 80(String LOGON N2OLIB'
0050 'EXECIO 1 DISKW COMPSRC CMSYNIN A 2 F 80(String N2O3110B'
0060 'EXECIO 1 DISKW COMPSRC CMSYNIN A 3 F 80(String &INPUT'
0070 'EXECIO 1 DISKW COMPSRC CMSYNIN A 4 F 80(String FIN'
0080 'FILEDEF * CLEAR'
0090 'FILEDEF CMSYNIN DISK COMPSRC CMSYNIN A'
0100 'FILEDEF CMPRINT PRINTER'
0110 'FILEDEF CMPRT01 PRINTER'
0120 'FILEDEF CMPRT02 PRINTER'
0130 'EXEC NAT BATCH'
0140 'ERASE COMPSRC CMSYNIN A'
0150 exit
***** End of list *****

```

```

Program      VSECOMPS Library N2OBATCH
0010 * $$ JOB JNM=N2OCOMPS,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 * $$ LST CLASS=A,LST=02E,DISP=K,JSEP=0
0040 // JOB N2OCOMPS
0050 * N2OCOMPS - COMPARE NATURAL SOURCE
0060 // ASSGN SYSIPT,SYRDR
0070 // ASSGN SYS001,01E
0080 // ASSGN SYS002,02E
0090 // ASSGN SYS009,SYSLST
0100 // EXEC NATBATCH
0110 /*
0120 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0130 /*
0140 LOGON N2OLIB
0150 N2O3110B
0160 &INPUT
0170 FIN
0180 /*
0190 /&
0200 * $$ EOJ
***** End of list *****

```

**Deferred Moves**

```
Program      MVSDMOVE Library N2OBATCH
0010 //N2ODMOVE JOB (20000), 'DEFERRED MOVE', CLASS=A, NOTIFY=&USERID
0020 //***
0030 //* THIS IS SAMPLE JCL FOR THE PROCESSING OF DEFERRED MOVES
0040 //***
0050 //* N2ODSEL RUNS WHERE N2O IS INSTALLED
0060 //***
0070 //N2ODSEL EXEC PGM=NATBATCH
0080 //CMWKF02 DD DSN=N2O.DEFER, DISP=(NEW, PASS, DELETE),
0090 //          DCB=(RECFM=VB, LRECL=3147, BLKSIZE=3151),
0100 //          UNIT=SYSDA, SPACE=(TRK, (12, 12))
0110 //CMPRINT DD SYSOUT=*
0120 //CMSYNIN DD *
0130 LOGON N2OLIB
0140 N2ODSEL
0150 FIN
0160 /*
0170 //CMWKF01 DD *
0180 N2ODSEL ALL
0190 /*
0200 //***
0210 //* N2ODELT RUNS ON THE FROM (SOURCE) ENVIRONMENT FOR THE EVENT(S)
0220 //***
0230 //N2ODELT EXEC PGM=NATBATCH
0240 //CMWKF01 DD DSN=N2O.DEFER, DISP=(OLD, DELETE, DELETE)
0250 //CMWKF02 DD DSN=N2O.DACKN, DISP=(NEW, PASS, DELETE),
0260 //          DCB=(RECFM=VB, LRECL=3147, BLKSIZE=3151),
0270 //          UNIT=SYSDA, SPACE=(TRK, (12, 12))
0280 //CMPRINT DD SYSOUT=*
0290 //CMSYNIN DD *
0300 LOGON SYSTEM
0310 N2ODELT
0320 FIN
0330 /*
0340 //***
0350 //* N2ODACKN RUNS WHERE N2O IS INSTALLED
0360 //***
0370 //N2ODACKN EXEC PGM=NATBATCH
0380 //CMWKF01 DD DSN=N2O.DACKN, DISP=(OLD, DELETE, DELETE)
0390 //CMPRINT DD SYSOUT=*
0400 //CMSYNIN DD *
0410 LOGON N2OLIB
0420 N2ODACKN
0430 FIN
0440 /*
0450 /*
***** End of list *****
```

```

Program      BSDMOVE  Library N2OBATCH
0010 / .N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS (LISTING=YES)
0050 /REMARK *** EXECUTE N2ODSEL ***
0060 /SET-FILE-LINK LINK-NAME=W01, FILE-NAME=N2O.SELECT
0070 /FILE N2O.DEFER, LINK=W02, RECFORM=(VB), RECSIZE=(3147), BLKSIZE=(3151)
0080 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0090 /MODIFY-JOB-SWITCHES ON=(4,5)
0100 /START-PROGRAM FROM-FILE=$EDT
0110 LS=132, PS=60, MENU=OFF
0120 @WRITE 'N2O.DMOVE.IPT.BATCH' OVERWRITE
0130 @HALT
0140 /MODIFY-JOB-SWITCHES OFF=(4,5)
0150 /ASSIGN-SYSIPT TO-FILE=N2O.MOVE.IPT.BATCH
0160 /MODIFY-JOB-SWITCHES ON=(2)
0170 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0180 LOGON N2OLIB
0190 N2ODSEL
0200 FIN
0210 /REMARK *** EXECUTE N2ODELT ***
0220 /FILE N2O.DEFER, LINK=W01, BLKSIZE=(STD,2)
0230 /FILE N2O.DACKN, LINK=W02, BLKSIZE=(STD,2)
0240 /SET-JOB-STEP
0250 /ASSIGN-SYSIPT TO-FILE=N2O.DMOVE.IPT.BATCH
0260 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0270 LOGON SYSTEM
0280 N2ODELT
0290 FIN
0300 /REMARK *** EXECUTE N2ODACKN ***
0310 /FILE N2O.DACKN, LINK=W01, RECFORM=VB, RECSIZE=3147, BLKSIZE=3151
0320 /SET-JOB-STEP
0330 /ASSIGN-SYSIPT TO-FILE=N2O.DMOVE.IPT.BATCH
0340 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0350 LOGON N2OLIB
0360 N2ODACKN
0370 FIN
0380 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0390 /DELETE-FILE FILE-NAME=N2O.DMOVE.IPT.BATCH,
0400 /OPTION=DESTROY-ALL
0410 /LOGOFF NOSPOOL
***** End of list *****

```

```
Program      VMDMOVE  Library N2OBATCH
0010 /* Execute N2ODSEL */
0020 address 'COMMAND'
0030 'ERASE N2ODSEL CMWKF01 A'
0040 'ERASE N2ODSEL CMSYNIN A'
0050 'EXECIO 1 DISKW N2O CMWKF01 A 1 F 80 (STRING N2ODSEL ALL'
0060 'EXECIO 1 DISKW N2ODSEL CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0070 'EXECIO 1 DISKW N2ODSEL CMSYNIN A 2 F 80 (STRING N2ODSEL'
0080 'EXECIO 1 DISKW N2ODSEL CMSYNIN A 3 F 80 (STRING FIN'
0090 'FILEDEF * CLEAR'
0100 'FILEDEF CMWKF01 DISK N2ODSEL CMWKF01 A'
0110 'FILEDEF CMWKF02 DISK N2O DEFER A (RECFM VB LRECL 3147 BLKSIZE 3151'
0120 'FILEDEF CMSYNIN DISK N2ODSEL CMSYNIN A'
0130 'FILEDEF CMPRINT PRINTER'
0140 'EXEC NAT BATCH'
0150 'ERASE N2ODSEL CMSYNIN A'
0160 /* Execute N2ODELT */
0170 'ERASE N2ODELT CMSYNIN A'
0180 'EXECIO 1 DISKW N2ODELT CMSYNIN A 1 F 80 (STRING LOGON SYSTEM'
0190 'EXECIO 1 DISKW N2ODELT CMSYNIN A 2 F 80 (STRING N2ODELT'
0200 'EXECIO 1 DISKW N2ODELT CMSYNIN A 3 F 80 (STRING FIN'
0210 'FILEDEF * CLEAR'
0220 'FILEDEF CMWKF01 DISK N2O DEFER A'
0230 'FILEDEF CMWKF02 DISK N2O DACKN A (RECFM VB LRECL 3147 BLKSIZE 3151'
0240 'FILEDEF CMSYNIN DISK N2ODELT CMSYNIN A'
0250 'FILEDEF CMPRINT PRINTER'
0260 'EXEC NAT BATCH'
0270 'ERASE N2ODELT CMSYNIN A'
0280 'ERASE N2O DEFER A'
0290 /* Execute N2ODACKN */
0300 'ERASE N2ODACKN CMSYNIN A'
0310 'EXECIO 1 DISKW N2ODACKN CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0320 'EXECIO 1 DISKW N2ODACKN CMSYNIN A 2 F 80 (STRING N2ODACKN'
0330 'EXECIO 1 DISKW N2ODACKN CMSYNIN A 3 F 80 (STRING FIN'
0340 'FILEDEF * CLEAR'
0350 'FILEDEF CMWKF01 N2O DACKN A'
0360 'FILEDEF CMSYNIN DISK N2ODACKN CMSYNIN A'
0370 'FILEDEF CMPRINT PRINTER'
0380 'EXEC NAT BATCH'
0390 'ERASE N2ODACKN CMSYNIN A'
0400 'ERASE N2O DACKN A'
0410 exit
***** End of list *****
```

```

Program      VSEDMOVE Library N2OBATCH
0010 * $$ JOB JNM=NATMOVE,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 // JOB NATMOVE
0040 // DLBL CMWKF01,'N2ODSEL.INPUT.CARDS'
0050 // EXTENT SYS001,,,,nnnnn,nnnnn
0060 // EXEC IDCAMS,SIZE=AUTO
0070 REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0080      OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0090 N2ODSEL ALL
0100 /*
0110 * N2ODSEL - SELECT LIST OF PROGRAMS TO BE DELETED
0120 // ASSGN SYSIPT,SYSRDR
0130 // ASSGN SYS001,DISK,SHR
0140 // ASSGN SYS002,DISK,SHR
0150 // ASSGN SYS009,SYSLST
0160 // DLBL CMWKF01,'N2ODSEL.INPUT.CARDS'
0170 // EXTENT SYS001,...
0180 // DLBL CMWKF02,'N2O.DEFER'
0190 // EXTENT SYS002,...
0200 // EXEC NATBATCH
0210 BWORKD=(1,1,80,FB,2,2,3140,VB)
0220 /*
0230 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0240 /*
0250 LOGON N2OLIB
0260 N2ODSEL
0270 FIN
0280 /*
0290 * N2ODELT - DELETE PROGRAMS IN FROM ENV
0300 // ASSGN SYS001,DISK,SHR
0310 // ASSGN SYS002,DISK,SHR
0320 // ASSGN SYS009,SYSLST
0330 // DLBL CMWKF01,'N2O.DEFER'
0340 // EXTENT SYS001,...
0350 // DLBL CMWKF02,'N2O.DACKN'
0360 // EXTENT SYS002,...
0370 // EXEC NATBATCH
0380 BWORKD=(1,1,3151,VB,2,2,3151,VB)
0390 /*
0400 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0410 /*
0420 LOGON SYSTEM
0430 N2ODELT
0440 FIN
0450 /*
0460 * N2ODACKN - ACKNOWLEDGEMENT OF MOVE COMPLETION
0470 // ASSGN SYS001,DISK,SHR
0480 // ASSGN SYS009,SYSLST
0490 // DLBL CMWKF01,'N2O.DACKN'
0500 // EXTENT SYS001,...
0510 // EXEC NATBATCH
0520 BWORKD=(1,1,3151,VB)
0530 /*
0540 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0550 /*
0560 LOGON N2OLIB
0570 N2ODACKN
0580 FIN
0590 /*
0600 /&
0610 * $$ EOJ
***** End of list *****

```

### Emergency Recovery in Batch

```

Program      MVSER      Library N2OBATCH
0010 //N2OER JOB (20100),'EXECUTE N2OER',CLASS=A,NOTIFY=&USERID
0020 //***
0030 //* THIS IS SAMPLE JCL FOR EMERGENCY RECOVERY IN BATCH
0040 //***
0050 //* RECOVERY RUNS
0060 //***
0070 //RECOVERY EXEC PGM=NATBATCH
0080 //CMWKF02 DD DSN=N2O.3GL.OBJECT,DISP=SHR
0090 //CMPRINT DD SYSOUT=*
0100 //CMSYNIN DD *
0110 LOGON SYSTEM
0120 N2OER
0130 &INPUT
0140 FIN
0150 /*
0160 /*
***** End of list *****

```

```

Program      BSER      Library N2OBATCH
0010 /.N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
0050 /REMARK *** EXECUTE N2OER ***
0060 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0070 /MODIFY-JOB-SWITCHES ON=(4,5)
0080 /START-PROGRAM FROM-FILE=$EDT
0090 LS=132,PS=60,MENU=OFF
0100 @WRITE 'N2O.ER.IPT.BATCH' OVERWRITE
0110 @HALT
0120 /MODIFY-JOB-SWITCHES OFF=(4,5)
0130 /ASSIGN-SYSIPT TO-FILE=N2O.ER.IPT.BATCH
0140 /MODIFY-JOB-SWITCHES ON=(2)
0150 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0160 LOGON SYSTEM
0170 N2OER
0180 &INPUT
0190 FIN
0200 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0210 /DELETE-FILE FILE-NAME=N2O.ER.IPT.BATCH,
0220 /OPTION=DESTROY-ALL
0230 /LOGOFF NOSPOOL
***** End of list *****

```

```

Program      VMER      Library N2OBATCH
0010 /* Execute N2OER */
0020 address 'COMMAND'
0030 'ERASE N2OER CMSYNIN A'
0040 'EXECIO 1 DISKW N2OER CMSYNIN A 1 F 80 (STRING LOGON SYSTEM)'
0050 'EXECIO 1 DISKW N2OER CMSYNIN A 2 F 80 (STRING N2OER)'
0060 'EXECIO 1 DISKW N2OER CMSYNIN A 3 F 80 (STRING &INPUT)'
0070 'EXECIO 1 DISKW N2OER CMSYNIN A 4 F 80 (STRING FIN)'
0080 'FILEDEF * CLEAR'
0090 'FILEDEF CMSYNIN DISK N2OER CMSYNIN A'
0100 'FILEDEF CMWKF02 DISK N2OER CMWKF02 A'
0110 'FILEDEF CMPRINT PRINTER'
0120 'EXEC NAT BATCH'
0130 'ERASE N2OREPT CMSYNIN A'
0140 exit
***** End of list *****

```

```

Program      VSEER      Library N2OBATCH
0010 * $$ JOB JNM=N2OER,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 // JOB N2OER
0040 * N2ORECOVERY - N2O EMERGENCY RECOVERY
0050 // ASSGN SYSIPT,SYSRDR
0060 // ASSGN SYS009,SYSLST
0070 // EXEC NATBATCH
0080 /*
0090 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0100 /*
0110 LOGON SYSTEM
0120 N2OER
0130 &INPUT
0140 FIN
0150 /*
0160 /&
0170 * $$ EOJ
***** End of list *****

```

### Emergency Recovery Acknowledgement

```

Program      MVSERAKN Library N2OBATCH
0010 //NATERAKN JOB (ACCOUNTING),'EMERG REC ACKN',CLASS=A,NOTIFY=&USERID
0020 /*
0030 /* THIS JOB PERFORMS THE ACKNOWLEDGEMENT STEP FOR EMERGENCY RECOVERY
0040 /* WHICH UPDATES THE N2O MIGRATION FILE WITH ALL OBJECTS RECOVERED
0050 /* WITH THE N2O EMERGENCY RECOVERY UTILITY
0060 /*
0070 /* THIS STEP IS RAN AGAINST AN ENVIRONMENT THAT IS LOCAL TO THE
0080 /* ARCHIVE FILE USED IN EMERGENCY RECOVERY
0090 /*
0100 /* ARCHIVE-DBID MUST BE REPLACED WITH THE DBID OF THE
0110 /* ARCHIVE FILE USED IN EMERGENCY RECOVERY
0120 /*
0130 /* ARCHIVE-FNR MUST BE REPLACED WITH THE FILE NUMBER OF THE
0140 /* ARCHIVE FILE USED IN EMERGENCY RECOVERY
0150 /*
0160 //N2OERAK1 EXEC PGM=NATBATCH
0170 //CMWKF01 DD DSN=ARCHIVE.LIST.PARMS,DISP=(NEW,PASS,DELETE),
0180 //          SPACE=(TRK,(1,1),RLSE),UNIT=SYSDA,
0190 //          DCB=(RECFM=FB,BLKSIZE=152,LRECL=152)
0200 //CMPRINT DD SYSOUT=*
0210 //CMSYNIN DD *
0220 LOGON SYSTEM
0230 N2OERAK1
0240 ARCHIVE-DBID , ARCHIVE-FNR
0250 FIN
0260 /*
0270 /* THIS STEP IS RAN AGAINST AN ENVIRONMENT THAT IS LOCAL TO THE
0280 /* N2O MIGRATION FILE
0290 /*
0300 //N2OERAK2 EXEC PGM=NATBATCH
0310 /*
0320 //CMWKF01 DD DSN=ARCHIVE.LIST.PARMS,DISP=(OLD,PASS,CATLG)
0330 //CMPRINT DD SYSOUT=*
0340 //CMSYNIN DD *
0350 LOGON N2OLIB
0360 N2OERAK2
0370 FIN
0380 /*
0390 /*
***** End of list *****

```

```

Program      BSERAKN  Library N2OBATCH
0010 / .N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS (LISTING=YES)
0050 /REMARK *** EXECUTE N2OERAK1 ***
0060 /FILE ARCHIVE.PARMS, LINK=W01, RECFORM=FB, RECSIZE=152, BLKSIZE=156
0070 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0080 /MODIFY-JOB-SWITCHES ON=(4,5)
0090 /START-PROGRAM FROM-FILE=$EDT
0100 LS=132, PS=60, MENU=OFF
0110 @WRITE 'N2O.ARCHIVE.IPT.BATCH' OVERWRITE
0120 @HALT
0130 /MODIFY-JOB-SWITCHES OFF=(4,5)
0140 /ASSIGN-SYSIPT TO-FILE=N2O.ARCHIVE.IPT.BATCH
0150 /MODIFY-JOB-SWITCHES ON=(2)
0160 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0170 LOGON SYSTEM
0180 N2OERAK1
0190 ARCHIVE-DBID , ARCHIVE-FNR
0200 FIN
0210 /REMARK *** EXECUTE N2OERAK2 ***
0220 /FILE ARCHIVE.PARMS, LINK=W01
0230 /SET-JOB-STEP
0240 /ASSIGN-SYSIPT TO-FILE=N2O.ARCHIVE.IPT.BATCH
0250 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0260 LOGON N2OLIB
0270 N2OERAK2
0280 FIN
0290 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0300 /DELETE-FILE FILE-NAME=N2O.ARCHIVE.IPT.BATCH,
0310 /OPTION=DESTROY-ALL
0320 /LOGOFF NOSPOOL
***** End of list *****

```

```

Program      VMERAKN  Library N2OBATCH
0010 /*
0020 /* THIS JOB PERFORMS THE ACKNOWLEDGEMENT STEP FOR EMERGENCY RECOVERY
0030 /* WHICH UPDATES THE N2O MIGRATION FILE WITH ALL OBJECTS RECOVERED
0040 /* WITH THE N2O EMERGENCY RECOVERY UTILITY
0050 /*
0060 /* THIS STEP IS RAN AGAINST AN ENVIRONMENT THAT IS LOCAL TO THE
0070 /* ARCHIVE FILE USED IN EMERGENCY RECOVERY
0080 /*
0090 /* ARCH-DBID MUST BE REPLACED WITH THE DBID OF THE
0100 /* ARCHIVE FILE USED IN EMERGENCY RECOVERY
0110 /*
0120 /* ARCH-FNR MUST BE REPLACED WITH THE FILE NUMBER OF THE
0130 /* ARCHIVE FILE USED IN EMERGENCY RECOVERY
0140 /*
0150 /* EXECUTE N2OERAK1 */
0160 address 'COMMAND'
0170 'ERASE N2OERAK1 CMSYNIN A'
0180 'ERASE ARCHIVE PARMS A'
0190 'EXECIO 1 DISKW N2OERAK1 CMSYNIN A 1 F 80 (STRING LOGON SYSTEM'
0200 'EXECIO 1 DISKW N2OERAK1 CMSYNIN A 2 F 80 (STRING N2OERAK1'
0210 'EXECIO 1 DISKW N2OERAK1 CMSYNIN A 3 F 80 (STRING ARCH-DBID , ARCH-FNR'
0220 'EXECIO 1 DISKW N2OERAK1 CMSYNIN A 4 F 80 (STRING FIN'
0230 'FILEDEF * CLEAR'
0240 'FILEDEF CMWKF01 DISK ARCHIVE PARMS A RECFM FB LRECL 152 BLKSIZE 156'
0250 'FILEDEF CMSYNIN DISK N2OERAK1 CMSYNIN A'
0260 'FILEDEF CMPRINT PRINTER'
0270 'EXEC NAT BATCH'
0280 'ERASE N2OERAK1 CMSYNIN A'
0290 /*
0300 /* THIS STEP IS RAN AGAINST AN ENVIRONMENT THAT IS LOCAL TO THE
0310 /* N2O MIGRATION FILE
0320 /*
0330 /* EXECUTE N2OERAK2 */
0340 'ERASE N2OERAK2 CMSYNIN A'

```

```

0350 'EXECIO 1 DISKW N2OERAK2 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0360 'EXECIO 1 DISKW N2OERAK2 CMSYNIN A 2 F 80 (STRING N2OERAK2'
0370 'EXECIO 1 DISKW N2OERAK2 CMSYNIN A 3 F 80 (STRING FIN'
0380 'FILEDEF * CLEAR'
0390 'FILEDEF CMWKF01 DISK ARCHIVE PARS A'
0400 'FILEDEF CMSYNIN DISK N2OERAK2 CMSYNIN A'
0410 'FILEDEF CMPRINT PRINTER'
0420 'EXEC NAT BATCH'
0430 'ERASE N2OERAK2 CMSYNIN A'
0440 exit
***** End of list *****

```

**Program VSEERAKN Library N2OBATCH**

```

0010 * $$ JOB JNM=ERACKN,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 // JOB ERACKN
0040 /*
0050 * EXECUTE N2OERAK1
0060 *
0070 * THIS JOB PERFORMS THE ACKNOWLEDGEMENT STEP FOR EMERGENCY RECOVERY
0080 * WHICH UPDATES THE N2O MIGRATION FILE WITH ALL OBJECTS RECOVERED
0090 * WITH THE N2O EMERGENCY RECOVERY UTILITY
0100 *
0110 * THIS STEP IS RAN AGAINST AN ENVIRONMENT THAT IS LOCAL TO THE
0120 * ARCHIVE FILE USED IN EMERGENCY RECOVERY
0130 *
0140 * ARCH-DBID MUST BE REPLACED WITH THE DBID OF THE
0150 * ARCHIVE FILE USED IN EMERGENCY RECOVERY
0160 *
0170 * ARCH-FNR MUST BE REPLACED WITH THE FILE NUMBER OF THE
0180 * ARCHIVE FILE USED IN EMERGENCY RECOVERY
0190 *
0200 // ASSGN SYSIPT,SYSRDR
0210 // ASSGN SYS001,DISK,SHR
0220 // ASSGN SYS009,SYSLST
0230 // DLBL CMWKF01,'ARCHIVE.PARM'
0240 // EXTENT SYS001,,,,nnnnn,nnnnn
0250 // EXEC NATBATCH
0260 BWORKD=(1,1,152,FB)
0270 /*
0280 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0290 /*
0300 LOGON SYSTEM
0310 N2OERAK1
0320 ARCHIVE-DBID , ARCHIVE-FNR
0330 FIN
0340 /*
0350 * EXECUTE N2OERAK2
0360 *
0370 * THIS STEP IS RAN AGAINST AN ENVIRONMENT THAT IS LOCAL TO THE
0380 * N2O MIGRATION FILE
0390 *
0400 // ASSGN SYS009,SYSLST
0410 // DLBL CMWKF01,'ARCHIVE.PARM'
0420 // EXTENT SYS001,,,,nnnnn,nnnnn
0430 // EXEC NATBATCH
0440 BWORKD=(1,1,152,FB)
0450 /*
0460 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0470 /*
0480 LOGON N2OLIB
0490 N2OERAK2
0500 FIN
0510 /*
0520 /&
0530 * $$ EOJ
***** End of list *****

```

**Event Purge****Program MVSEVNTF Library N2OBATCH**

```
0010 //EVNTPURG JOB (ACCOUNTING),'EVENT PURGE',CLASS=A,NOTIFY=&USERID
0020 //***
0030 //* THIS IS SAMPLE JCL FOR THE EVENT PURGE PROCESS
0040 //* THIS SHOULD BE RENAMED N2OPEVNT
0050 //***
0060 //* EVNTP1 RUNS WHERE N2O IS INSTALLED
0070 //***
0080 //*** N2OV5.1 &INPUT FORMAT CHANGED - SEE MANUAL
0090 //***
0100 //EVNTP1 EXEC PGM=NATBATCH
0110 /*
0120 //CMWKF01 DD DSN=EVENT.LIST,DISP=(NEW,PASS,DELETE),
0130 // SPACE=(TRK,(5,5),RLSE),UNIT=SYSDA,
0140 // DCB=(RECFM=FB,BLKSIZE=13,LRECL=13)
0150 //CMPRINT DD SYSOUT=*
0160 //CMPRT02 DD SYSOUT=*
0170 //CMSYNIN DD *
0180 LOGON N2OLIB
0190 N2OPEVT1
0200 &INPUT
0210 FIN
0220 /*
0230 //***
0240 //* EVNTP2 RUNS WHERE N2O IS INSTALLED
0250 //***
0260 //***
0270 //*** N2OV5.1 CMWKF03 NEW FILE
0280 //***
0290 //EVNTP2 EXEC PGM=NATBATCH
0300 /*
0310 //CMWKF02 DD DSN=EVENT.LIST,DISP=(OLD,DELETE,CATLG)
0320 //CMWKF03 DD DSN=&BACKUP,
0330 // DISP=(NEW,CATLG,CATLG),
0340 // DCB=(RECFM=FB,BLKSIZE=1998,LRECL=1998),
0350 // SPACE=(TRK,(5,5),RLSE),UNIT=SYSDA
0360 //CMPRINT DD SYSOUT=*
0370 //CMPRT02 DD SYSOUT=*
0380 //CMPRT04 DD SYSOUT=*
0390 //CMSYNIN DD *
0400 LOGON N2OLIB
0410 N2OPEVT2
0420 FIN
0430 /*
0440 /*
***** End of list *****
```

```

Program      BSEVNTP  Library N2OBATCH
0010 / .N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS (LISTING=YES)
0050 /REMARK *** EXECUTE N2OPEVT1 ***
0060 /FILE EVENT.LIST, LINK=W01, RECFORM=FB, RECSIZE=13, BLKSIZE=1300
0070 /FILE MASTER.LIST, LINK=P02
0080 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0090 /MODIFY-JOB-SWITCHES ON=(4,5)
0100 /START-PROGRAM FROM-FILE=$EDT
0110 LS=132, PS=60, MENU=OFF
0120 @WRITE 'N2O.PURGE.IPT.BATCH' OVERWRITE
0130 @HALT
0140 /MODIFY-JOB-SWITCHES OFF=(4,5)
0150 /ASSIGN-SYSIPT TO-FILE=N2O.PURGE.IPT.BATCH
0160 /MODIFY-JOB-SWITCHES ON=(2)
0170 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0180 LOGON N2OLIB
0190 N2OPEVT1
0200 &INPUT
0210 FIN
0220 /REMARK *** EXECUTE N2OPEVT2 ***
0230 /FILE EVENT.LIST, LINK=W02
0240 /FILE &BACKUP, LINK=W03, RECFORM=FB, RECSIZE=1998, BLKSIZE=1998
0250 /FILE CONTROL.LIST, LINK=P02
0260 /FILE SUMMARY.LIST, LINK=P04
0270 /SET-JOB-STEP
0280 /ASSIGN-SYSIPT TO-FILE=N2O.TRANSFER.IPT.BATCH
0290 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0300 LOGON N2OLIB
0310 N2OPEVT2
0320 FIN
0330 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0340 /DELETE-FILE FILE-NAME=N2O.TRANSFER.IPT.BATCH,
0350 /OPTION=DESTROY-ALL
0360 /LOGOFF NOSPOOL
***** End of list *****

```

```

Program      VMEVNTP  Library N2OBATCH
0010 /* Execute N2OPEVT1 */
0020 address 'COMMAND'
0030 'ERASE N2OPEVT1 CMSYNIN A'
0040 'EXECIO 1 DISKW N2OPEVT1 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0050 'EXECIO 1 DISKW N2OPEVT1 CMSYNIN A 2 F 80 (STRING N2OPEVT1'
0060 'EXECIO 1 DISKW N2OPEVT2 CMSYNIN A 3 F 80 (STRING &INPUT'
0070 'EXECIO 1 DISKW N2OPEVT1 CMSYNIN A 4 F 80 (STRING FIN'
0080 'FILEDEF * CLEAR'
0090 'FILEDEF CMWKF01 DISK EVENT LIST A RECFM FB LRECL 13 BLKSIZE 1300'
0100 'FILEDEF CMSYNIN DISK N2OPEVT1 CMSYNIN A'
0110 'FILEDEF CMPRINT PRINTER'
0120 'FILEDEF CMPRT02 PRINTER'
0130 'EXEC NAT BATCH'
0140 'ERASE N2OPEVT1 CMSYNIN A'
0150 /* Execute N2OPEVT2 */
0160 'ERASE N2OPEVT2 CMSYNIN A'
0170 'EXECIO 1 DISKW N2OPEVT2 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0180 'EXECIO 1 DISKW N2OPEVT2 CMSYNIN A 2 F 80 (STRING N2OPEVT2'
0190 'EXECIO 1 DISKW N2OPEVT2 CMSYNIN A 3 F 80 (STRING FIN'
0200 'FILEDEF * CLEAR'
0210 'FILEDEF CMWKF02 DISK EVENT LIST A'
0220 'FILEDEF CMWKF03 DISK &BACKUP RECFM FB LRECL 1998 BLKSIZE 1998'
0230 'FILEDEF CMSYNIN DISK N2OPEVT2 CMSYNIN A'
0240 'FILEDEF CMPRINT PRINTER'
0250 'FILEDEF CMPRT02 PRINTER'
0260 'FILEDEF CMPRT04 PRINTER'
0270 'EXEC NAT BATCH'
0280 'ERASE N2OPEVT2 CMSYNIN A'
0290 exit
***** End of list *****

```

```
Program      VSEEVNTP Library N2OBATCH
0010 * $$ JOB JNM=EVNTPURG,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 * $$ LST CLASS=A,LST=02E,DISP=K,JSEP=0
0040 // JOB EVNTPURG
0050 /*
0060 * N2OPEVT1 - CREATE LIST OF EVENTS TO BE PURGED.
0070 // ASSGN SYSIPT,SYSRDR
0080 // ASSGN SYS001,DISK,SHR
0090 // ASSGN SYS002,02E
0100 // ASSGN SYS009,SYSLST
0110 // DLBL CMWKF01,'EVENT.LIST'
0120 // EXTENT SYS001,,,,nnnnn,nnnnn
0130 // EXEC NATBATCH
0140 BWORKD=(1,1,13,FB)
0150 /*
0160 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0170 /*
0180 LOGON N2OLIB
0190 N2OPEVT1
0200 &INPUT
0210 FIN
0220 /*
0230 * N2OPEVT2 - PURGE EVENTS FROM MIGRATION FILE
0240 * $$ LST CLASS=A,LST=04E,DISP=K,JSEP=0
0250 // ASSGN SYS002,DISK,SHR
0260 // ASSGN SYS003,DISK,SHR
0270 // ASSGN SYS004,04E
0280 // ASSGN SYS009,SYSLST
0290 // DLBL CMWKF02,'EVENT.LIST'
0300 // EXTENT SYS002,,,,nnnnn,nnnnn
0310 // DLBL CMWKF03,'&BACKUP'
0320 // EXTENT SYS003,,,,nnnnn,nnnnn
0330 // EXEC NATBATCH
0340 BWORKD=(2,2,13,FB,3,3,1998,1998)
0350 /*
0360 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0370 /*
0380 LOGON N2OLIB
0390 N2OPEVT2
0400 FIN
0410 /*
0420 /&
0430 * $$ EOJ
***** End of list *****
```

## Batch Migration

```

Program      MVSMIG      Library N2OBATCH
0010 //NATMIGR JOB (20000), 'NATURAL MIGRATION', CLASS=A, NOTIFY=&USERID
0020 //*****
0030 //* THIS IS SAMPLE JCL TO PERFORM BATCH NATURAL, SYSERR,
0040 //* PREDICT 3.3 AND BELOW, PREDICT 3.4 AND 4.1 WITH
0050 //* BUILD EXTRACT SET TO FALSE MIGRATIONS (N2OUE14N)
0060 //* FOR PREDICT 3.4 AND ABOVE WITH BUILD EXTRACT (N2OUE14N)
0070 //* SEE THE MVSMIGP EXAMPLE.
0080 //* THIS JOB SHOULD BE RENAMED TO THE NAME SPECIFIED IN THE
0090 //* MIGRATION PROFILE JCL PROGRAM NAME
0100 //*****
0110 //* N2OSEL ALWAYS RUNS WHERE N2O IS INSTALLED
0120 //*****
0130 //****
0140 //* N2OV5.2 CHANGE CMWKF02 LRECL 3147 TO 3151, BLKSIZE 3151 TO 3155
0150 //****
0160 //N2OSEL EXEC PGM=NATBATCH
0170 //CMWKF01 DD *
0180 &INPUT
0190 /*
0200 //CMWKF02 DD DSN=N2O.PARM, DISP=(NEW, PASS, DELETE),
0210 // DCB=(RECFM=VB, LRECL=3151, BLKSIZE=3155),
0220 // UNIT=SYSDA, SPACE=(TRK, (12, 12))
0230 //CMWKF03 DD DUMMY
0240 //CMWKF04 DD DUMMY
0250 //CMPRINT DD SYSOUT=*
0260 //CMSYNIN DD *
0270 LOGON N2OLIB
0280 N2OSEL
0290 FIN
0300 /*
0310 /*
0320 //*****
0330 //* N2OSEND RUNS ON THE FROM FUSER (SOURCE FUSER)
0340 //*****
0350 //N2OSEND EXEC PGM=NATBATCH, COND=(9, LT)
0360 //CMWKF01 DD DSN=N2O.PREDICT, DISP=(, CATLG, DELETE),
0370 // DCB=(RECFM=VB, LRECL=1804, BLKSIZE=1808),
0380 // UNIT=SYSDA, SPACE=(CYL, (1, 1), RLSE)
0390 //CMWKF02 DD DSN=N2O.SOURCE, DISP=(, CATLG, DELETE),
0400 // DCB=(RECFM=VB, LRECL=9183, BLKSIZE=9187),
0410 // UNIT=SYSDA, SPACE=(CYL, (1, 1), RLSE)
0420 //CMWKF03 DD DSN=N2O.PARM, DISP=(OLD, PASS, DELETE)
0430 //CMWKF05 DD DUMMY
0440 //CMPRINT DD SYSOUT=*
0450 //CMSYNIN DD *
0460 LOGON SYSTEM
0470 N2OSEND
0480 FIN
0490 /*
0500 /*
0510 //*****
0520 //* N2ORECV RUNS ON THE TO FUSER (TARGET)
0530 //*****
0540 //****
0550 //* N2OV5.2 CHANGE CMWKF03 LRECL 3147 TO 3151, BLKSIZE 3151 TO 3155
0560 //****
0570 //N2ORECV EXEC PGM=NATBATCH, COND=(9, LT)
0580 //CMWKF01 DD DSN=N2O.PREDICT, DISP=SHR
0590 //CMWKF02 DD DSN=N2O.SOURCE, DISP=SHR
0600 //CMWKF03 DD DSN=N2O.ACKN, DISP=(NEW, PASS, DELETE),
0610 // DCB=(RECFM=VB, LRECL=3151, BLKSIZE=3155),
0620 // UNIT=SYSDA, SPACE=(CYL, (1, 1), RLSE)
0630 //CMWKF04 DD DSN=N2O.ACACKN, DISP=(NEW, PASS, DELETE),
0640 // DCB=(RECFM=VB, LRECL=100, BLKSIZE=104),
0650 // UNIT=SYSDA, SPACE=(CYL, (1, 1), RLSE)
0660 //CMWKF05 DD DSN=N2O.RECOVER, DISP=(NEW, PASS, DELETE),
0670 // DCB=(RECFM=VB, LRECL=160, BLKSIZE=164),

```

```

0680 //          UNIT=SYSDA,SPACE=(TRK,(12,12))
0690 //CMPRINT DD  SYSOUT=*
0700 //CMSYNIN DD  *
0710 LOGON SYSTEM
0720 N2ORECV
0730 LOGON SYSTEM
0740 N2OBCOMP
0750 FIN
0760 /*
0770 /**
0780 /** The following step is only necessary for sites using
0790 /** the MOVE option. If this step is removed for a COPY,
0800 /** then change the N2OACKN step so that CMWKF01 references
0810 /** N2O.ACKN.
0820 /**
0830 /** N2ODELT RUNS ON THE FROM (SOURCE) FUSER
0840 /** (THE SAME AS N2OSEND STEP)
0850 /******
0860 /** N2OV5.2 CHANGE CMWKF02 LRECL 3147 TO 3151, BLKSIZE 3151 TO 3155
0870 /******
0880 //N2ODELT EXEC PGM=NATBATCH,COND=(9,LT)
0890 //CMWKF01 DD  DSN=N2O.ACKN,DISP=(OLD,DELETE,DELETE)
0900 //CMWKF02 DD  DSN=N2O.DACKN,DISP=(NEW,PASS,DELETE),
0910 //          DCB=(RECFM=VB,LRECL=3151,BLKSIZE=3155),
0920 //          UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE)
0930 //CMPRINT DD  SYSOUT=*
0940 //CMSYNIN DD  *
0950 LOGON SYSTEM
0960 N2ODELT
0970 FIN
0980 /*
0990 /**
1000 /*******
1010 /** N2OACKN ALWAYS RUNS WHERE N2O IS INSTALLED
1020 /** (THE SAME AS THE N2OSEL STEP)
1030 /*******
1040 //N2OACKN EXEC PGM=NATBATCH
1050 //CMWKF01 DD  DSN=N2O.DACKN,DISP=(OLD,DELETE,CATLG)
1060 //CMWKF02 DD  DSN=N2O.ACACKN,DISP=(OLD,DELETE,CATLG)
1070 //CMWKF03 DD  DSN=N2O.RECOVER,DISP=(OLD,CATLG,DELETE)
1080 //CMPRINT DD  SYSOUT=*
1090 //CMSYNIN DD  *
1100 LOGON N2OLIB
1110 N2OACKN
1120 FIN
1130 /*
1140 /**
***** End of list *****

```

**Program BSMIG Library N2OBATCH**

```

0010 /.N2O LOGON
0020 /CALL-PROCEDURE NAME=$TOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
0050 /REMARK *** EXECUTE N2OSEL ***
0060 /remark ***
0070 /remark N2OV5.2 CHANGE CMWKF02 LRECL 3147 TO 3151, BLKSIZE 3151 TO 3155
0080 /remark ***
0090 /SET-FILE-LINK LINK-NAME=W01,FILE-NAME=N2O.SELECT
0100 /FILE N2O.PARM,LINK=W02,RECFORM=VB,RECSIZE=3151,BLKSIZE=3155
0110 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0120 /MODIFY-JOB-SWITCHES ON=(4,5)
0130 /START-PROGRAM FROM-FILE=$EDT
0140 LS=132,PS=60,MENU=OFF
0150 @WRITE 'N2O.TRANSFER.IPT.BATCH' OVERWRITE
0160 @HALT
0170 /MODIFY-JOB-SWITCHES OFF=(4,5)
0180 /ASSIGN-SYSIPT TO-FILE=N2O.TRANSFER.IPT.BATCH
0190 /MODIFY-JOB-SWITCHES ON=(2)
0200 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH

```

```

0210 LOGON N2OLIB
0220 N2OSEL
0230 FIN
0240 /REMARK *** EXECUTE N2OSEND ***
0250 /remark ***
0260 /remark N2OV5.2 CHANGE CMWKF03 LRECL 3147 TO 3151, BLKSIZE 3151 TO 3155
0270 /remark ***
0280 /FILE N2O.PREDICT, LINK=W01, RECFORM=VB, RECSIZE=1804, BLKSIZE=1808,
0290 /      SPACE=(6,6)
0300 /FILE N2O.SOURCE, LINK=W02, RECFORM=VB, RECSIZE=9183, BLKSIZE=9187,
0310 /      SPACE=(12,12)
0320 /FILE N2O.PARM, LINK=W03, RECFORM=VB, RECSIZE=3151, BLKSIZE=3155,
0330 /      SPACE=(12,12)
0340 /SET-JOB-STEP
0350 /ASSIGN-SYSIPT TO-FILE=N2O.TRANSFER.IPT.BATCH
0360 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0370 LOGON SYSTEM
0380 N2OSEND
0390 FIN
0400 /REMARK *** EXECUTE N2ORECV AND N2OBCOMP ***
0410 /remark ***
0420 /remark N2OV5.2 CHANGE CMWKF03 LRECL 3147 TO 3151, BLKSIZE 3151 TO 3155
0430 /remark ***
0440 /FILE N2O.PREDICT, LINK=W01
0450 /FILE N2O.SOURCE, LINK=W02, BLKSIZE=(STD,5)
0460 /FILE N2O.ACKN, LINK=W03, RECFORM=VB, RECSIZE=3151, BLKSIZE=3155,
0470 /      SPACE=(12,12)
0480 /FILE N2O.ACACKN, LINK=W04, RECFORM=VB, RECSIZE=100, BLKSIZE=104
0490 /FILE N2O.RECOVER, LINK=W05, RECFORM=VB, RECSIZE=160, BLKSIZE=164,
0500 /      SPACE=(12,12)
0510 /SET-JOB-STEP
0520 /ASSIGN-SYSIPT TO-FILE=N2O.TRANSFER.IPT.BATCH
0530 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0540 LOGON SYSTEM
0550 N2ORECV
0560 LOGON SYSTEM
0570 N2OBCOMP
0580 FIN
0590 /REMARK *** EXECUTE N2ODELT ***
0600 /remark ***
0610 /remark N2OV5.2 CHANGE CMWKF02 LRECL 3147 TO 3151, BLKSIZE 3151 TO 3155
0620 /remark ***
0630 /FILE N2O.ACKN, LINK=W01
0640 /FILE N2O.DACKN, LINK=W02, RECFORM=VB, RECSIZE=3151, BLKSIZE=3155
0650 /SET-JOB-STEP
0660 /ASSIGN-SYSIPT TO-FILE=N2O.TRANSFER.IPT.BATCH
0670 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0680 LOGON SYSTEM
0690 N2ODELT
0700 FIN
0710 /REMARK *** EXECUTE N2OACKN ***
0720 /FILE N2O.DACKN, LINK=W01
0730 /FILE N2O.ACACKN, LINK=W02
0740 /FILE N2O.RECOVER, LINK=W03
0750 /SET-JOB-STEP
0760 /ASSIGN-SYSIPT TO-FILE=N2O.TRANSFER.IPT.BATCH
0770 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0780 LOGON N2OLIB
0790 N2OACKN
0800 FIN
0810 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0820 /DELETE-FILE FILE-NAME=N2O.TRANSFER.IPT.BATCH,
0830 /OPTION=DESTROY-ALL
0840 /LOGOFF NOSPOOL
***** End of list *****

```

```

Program      VMMIG      Library N2OBATCH
0010 /* Execute N2OSEL */
0020 /*
0030 /* N2OV5.2 CHANGE CMWKF02 LRECL 3147 TO 3151, BLKSIZE 3151 TO 3155
0040 /*
0050 address 'COMMAND'
0060 'ERASE N2O CMWKF01 A'
0070 'ERASE N2OSEL CMWSYNIN A'
0080 'EXECIO 1 DISKW N2O CMWKF01 A 1 F 80 (STRING &INPUT'
0090 'EXECIO 1 DISKW N2OSEL CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0100 'EXECIO 1 DISKW N2OSEL CMSYNIN A 2 F 80 (STRING N2OSEL'
0110 'EXECIO 1 DISKW N2OSEL CMSYNIN A 3 F 80 (STRING FIN'
0120 'FILEDEF * CLEAR'
0130 'FILEDEF CMWKF01 DISK N2O CMWKF01 A'
0140 'FILEDEF CMWKF02 DISK N2O PARM A RECFM VB LRECL 3151 BLKSIZE 3155'
0150 'FILEDEF CMSYNIN DISK N2OSEL CMSYNIN A'
0160 'FILEDEF CMPRINT PRINTER'
0170 'EXEC NAT BATCH'
0180 'ERASE N2O CMWKF01 A'
0190 'ERASE N2OSEL CMWSYNIN A'
0200 /* Execute N2OSEND */
0210 'ERASE N2OSEND CMSYNIN A'
0220 'ERASE N2O PREDICT A'
0230 'ERASE N2O PARM A'
0240 'EXECIO 1 DISKW N2OSEND CMSYNIN A 1 F 80 (STRING LOGON SYSTEM'
0250 'EXECIO 1 DISKW N2OSEND CMSYNIN A 2 F 80 (STRING N2OSEND'
0260 'EXECIO 1 DISKW N2OSEND CMSYNIN A 3 F 80 (STRING FIN'
0270 'FILEDEF * CLEAR'
0280 'FILEDEF CMWKF01 DISK N2O PREDICT A RECFM VB LRECL 1804 BLKSIZE 1808'
0290 'FILEDEF CMWKF02 DISK N2O SOURCE A RECFM VB LRECL 9183 BLKSIZE 9187'
0300 'FILEDEF CMWKF03 DISK N2O PARM A'
0310 'FILEDEF CMSYNIN DISK N2OSEND CMSYNIN A'
0320 'FILEDEF CMPRINT PRINTER'
0330 'EXEC NAT BATCH NATPARMS FUSER=(&FROMFUSER) FDIC=(&FROMFDIC)'
0340 'ERASE N2OSEND CMSYNIN A'
0350 /* Execute N2ORECV */
0360 /*
0370 /* N2OV5.2 CHANGE CMWKF03 LRECL 3147 TO 3151, BLKSIZE 3151 TO 3155
0380 /*
0390 'ERASE N2ORECV CMSYNIN A'
0400 'EXECIO 1 DISKW N2ORECV CMSYNIN A 1 F 80 (STRING LOGON SYSTEM'
0410 'EXECIO 1 DISKW N2ORECV CMSYNIN A 2 F 80 (STRING N2ORECV'
0420 'EXECIO 1 DISKW N2ORECV CMSYNIN A 3 F 80 (STRING LOGON SYSTEM'
0430 'EXECIO 1 DISKW N2ORECV CMSYNIN A 4 F 80 (STRING N2OBCOMP'
0440 'EXECIO 1 DISKW N2ORECV CMSYNIN A 5 F 80 (STRING FIN'
0450 'FILEDEF * CLEAR'
0460 'FILEDEF CMWKF01 DISK N2O PREDICT A'
0470 'FILEDEF CMWKF02 DISK N2O SOURCE A'
0480 'FILEDEF CMWKF03 DISK N2O ACKN A RECFM VB LRECL 3151 BLKSIZE 3155'
0490 'FILEDEF CMWKF04 DISK N2O ACACKN A RECFM VB LRECL 100 BLKSIZE 104'
0500 'FILEDEF CMWKF05 DISK N2O RECOVER A RECFM VB LRECL 160 BLKSIZE 164'
0510 'FILEDEF CMSYNIN DISK N2ORECV CMSYNIN A'
0520 'FILEDEF CMPRINT DISK N2ORECV OUTPUT A'
0530 'EXEC NAT BATCH NATPARMS FUSER=(&TOFUSER1) FDIC=(&TOFDIC1)'
0540 'ERASE N2O PREDICT A'
0550 'ERASE N2O SOURCE A'
0560 'ERASE N2ORECV CMSYNIN A'
0570 /* Execute N2ODELT */
0580 /*
0590 /* N2OV5.2 CHANGE CMWKF02 LRECL 3147 TO 3151, BLKSIZE 3151 TO 3155
0600 /*
0610 'ERASE N2ODELT CMSYNIN A'
0620 'EXECIO 1 DISKW N2ODELT CMSYNIN A 1 F 80 (STRING LOGON SYSTEM'
0630 'EXECIO 1 DISKW N2ODELT CMSYNIN A 2 F 80 (STRING N2ODELT'
0640 'EXECIO 1 DISKW N2ODELT CMSYNIN A 3 F 80 (STRING FIN'
0650 'FILEDEF * CLEAR'
0660 'FILEDEF CMWKF01 DISK N2O ACKN A'
0670 'FILEDEF CMWKF02 DISK N2O DACKN A RECFM VB LRECL 3151 BLKSIZE 3155'
0680 'FILEDEF CMSYNIN DISK N2ODELT CMSYNIN A'
0690 'FILEDEF CMPRINT PRINTER'
0700 'EXEC NAT BATCH NATPARMS FUSER=(&FROMFUSER) FDIC=(&FROMFDIC)'

```

```

0710 'ERASE N2ODELT CMSYNIN A'
0720 'ERASE N2O ACKN A'
0730 /* Execute N2OACKN /*
0740 'ERASE N2OACKN CMSYNIN A'
0750 'EXECIO 1 DISKW N2OACKN CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0760 'EXECIO 1 DISKW N2OACKN CMSYNIN A 2 F 80 (STRING N2OACKN'
0770 'EXECIO 1 DISKW N2OACKN CMSYNIN A 3 F 80 (STRING FIN'
0780 'FILEDEF * CLEAR'
0790 'FILEDEF CMWKF01 DISK N2O DACKN A'
0800 'FILEDEF CMWKF02 DISK N2O ACACKN A'
0810 'FILEDEF CMWKF03 DISK N2O RECOVER A'
0820 'FILEDEF CMSYNIN DISK N2OACKN CMSYNIN A'
0830 'FILEDEF CMPRINT PRINTER'
0840 'EXEC NAT BATCH'
0850 'ERASE N2OACKN CMSYNIN A'
0860 'ERASE N2O DACKN A'
0870 'ERASE N2O ACACKN A'
0880 'ERASE N2O AUTOREC A'
0890 exit
***** End of list *****

```

**Program VSEMIG Library N2OBATCH**

```

0010 * $$ JOB JNM=NATMIGR,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 // JOB NATMIGR
0040 // DLBL CMWKF01,'N2OSEL.INPUT.CARDS'
0050 // EXTENT SYS001,, ,nnnnn,nnnnn
0060 // EXEC IDCAMS,SIZE=AUTO
0070 REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0080          OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0090 &INPUT
0100 /*
0110 * N2OSEL - SELECT LIST OF PROGRAMS/OBJECTS TO BE MIGRATED
0120 *
0130 * N2OV5.2 CHANGE CMWKF02 3151 TO 3155
0140 *
0150 // ASSGN SYSIPT,SYSRDR
0160 // ASSGN SYS001,DISK,SHR
0170 // ASSGN SYS002,DISK,SHR
0180 // ASSGN SYS009,SYSLST
0190 // DLBL CMWKF01,'N2OSEL.INPUT.CARDS'
0200 // EXTENT SYS001,...
0210 // DLBL CMWKF02,'N2O.PARM'
0220 // EXTENT SYS002,...
0230 // EXEC NATBATCH
0240 BWORKD=(1,1,80,FB,2,2,3155,VB)
0250 /*
0260 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0270 /*
0280 LOGON N2OLIB
0290 N2OSEL
0300 FIN
0310 /*
0320 * N2OSEND - UNLOAD THE PROGRAMS TO BE MIGRATED
0330 *
0340 * N2OV5.2 CHANGE CMWKF02 3151 TO 3155
0350 *
0360 // ASSGN SYS001,DISK,SHR
0370 // ASSGN SYS002,DISK,SHR
0380 // ASSGN SYS003,DISK,SHR
0390 // ASSGN SYS009,SYSLST
0400 // DLBL CMWKF01,'N2O.PREDICT'
0410 // EXTENT SYS001,...
0420 // DLBL CMWKF02,'N2O.SOURCE'
0430 // EXTENT SYS002,...
0440 // DLBL CMWKF03,'N2O.PARM'
0450 // EXTENT SYS003,...
0460 // EXEC NATBATCH
0470 BWORKD=(1,1,1808,VB,2,2,9187,VB,3,3,3155,VB)
0480 /*

```

```
0490 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0500 /*
0510 LOGON SYSTEM
0520 N2OSEND
0530 FIN
0540 /*
0550 * N2ORECV - LOAD THE PROGRAMS TO THE TARGET FUSER/FDIC.
0560 *
0570 * N2OV5.2 CHANGE CMWKF03 3151 TO 3155
0580 *
0590 // ASSGN SYS001,DISK,SHR
0600 // ASSGN SYS002,DISK,SHR
0610 // ASSGN SYS003,DISK,SHR
0620 // ASSGN SYS004,DISK,SHR
0630 // ASSGN SYS005,DISK,SHR
0640 // ASSGN SYS009,SYSLST
0650 // DLBL CMWKF01,'N2O.PREDICT'
0660 // EXTENT SYS001,...
0670 // DLBL CMWKF02,'N2O.SOURCE'
0680 // EXTENT SYS002,...
0690 // DLBL CMWKF03,'N2O.ACKN'
0700 // EXTENT SYS003,...
0710 // DLBL CMWKF04,'N2O.ACACKN'
0720 // EXTENT SYS004,...
0730 // DLBL CMWKF05,'N2O.RECOVER'
0740 // EXTENT SYS005,...
0750 // EXEC NATBATCH
0760 BWORKD=(1,1,1808,VB,2,2,9187,VB,3,3,3155,VB,4,4,104,VB,5,5,164,VB)
0770 /*
0780 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0790 /*
0800 LOGON SYSTEM
0810 N2ORECV
0820 LOGON SYSTEM
0830 N2OBCOMP
0840 FIN
0850 /*
0860 * N2ODELT - DELETE PROGRAMS IN FROM ENV FOR MOVES.
0870 *
0880 * N2OV5.2 CHANGE CMWKF02 3151 TO 3155
0890 *
0900 // ASSGN SYS001,DISK,SHR
0910 // ASSGN SYS002,DISK,SHR
0920 // ASSGN SYS009,SYSLST
0930 // DLBL CMWKF01,'N2O.ACKN'
0940 // EXTENT SYS001,...
0950 // DLBL CMWKF02,'N2O.DACKN'
0960 // EXTENT SYS002,...
0970 // EXEC NATBATCH
0980 BWORKD=(1,1,3151,VB,2,2,3155,VB)
0990 /*
1000 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
1010 /*
1020 LOGON SYSTEM
1030 N2ODELT
1040 FIN
1050 /*
1060 * N2OACKN - ACKNOWLEDGEMENT OF EVENT COMPLETION
1070 // ASSGN SYS001,DISK,SHR
1080 // ASSGN SYS002,DISK,SHR
1090 // ASSGN SYS003,DISK,SHR
1100 // ASSGN SYS009,SYSLST
1110 // DLBL CMWKF01,'N2O.DACKN'
1120 // EXTENT SYS001,...
1130 // DLBL CMWKF02,'N2O.ACACKN'
1140 // EXTENT SYS002,...
1150 // DLBL CMWKF03,'N2O.RECOVER'
1160 // EXTENT SYS003,...
1170 // EXEC NATBATCH
1180 BWORKD=(1,1,3151,VB,2,2,104,VB,3,3,164,VB)
1190 /*
```

```

1200 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
1210 /*
1220 LOGON N2OLIB
1230 N2OACKN
1240 FIN
1250 /*
1260 /&
1270 * $$ EOJ
***** End of list *****

```

## N2OPURGE

### Program MVSPURGE Library N2OBATCH

```

0010 //N2OPURGE JOB (20000),'N2OPURGE UTILITY',CLASS=A,NOTIFY=&USERID
0020 //****
0030 /** THIS IS SAMPLE JCL FOR THE N2OPURGE UTILITY
0040 /** THIS SHOULD BE RENAMED N2OPURGE
0050 //****
0060 /** N2OPURGE RUNS ON FUSER WHERE OBJECTS ARE TO BE PURGED FROM
0070 //****
0080 //****
0090 /** N2OV5.2 CHANGE CMWKF01 LRECL FROM 123 TO 150, BLKSIZE 127 TO 154
0100 //****
0110 //N2OPURGE EXEC PGM=NATBATCH
0120 //CMWKF01 DD DSN=N2OPURGE.LIST,DISP=(,CATLG),
0130 //          DCB=(RECFM=VB,LRECL=150,BLKSIZE=154),
0140 //          UNIT=SYSDA,SPACE=(TRK,(12,12))
0150 //CMPRINT DD SYSOUT=*
0160 //CMSYNIN DD *
0170 LOGON N2OLIB
0180 N2OPURGE
0190 &INPUT
0200 FIN
0210 /*
0220 /**
0230 //****
0240 /** N2OV5.2 CHANGE CMWKF02 LRECL FROM 290 TO 317, BLKSIZE 294 TO 321
0250 //****
0260 /**
0270 //N2OPURG1 EXEC PGM=NATBATCH
0280 //CMWKF01 DD DSN=N2OPURGE.LIST,DISP=SHR
0290 //CMWKF02 DD DSN=N2OPURGE.ACKN,DISP=(,CATLG),
0300 //          DCB=(RECFM=VB,LRECL=317,BLKSIZE=321),
0310 //          UNIT=SYSDA,SPACE=(TRK,(12,12))
0320 //CMPRINT DD SYSOUT=*
0330 //CMSYNIN DD *
0340 LOGON SYSTEM
0350 N2OPURG1
0360 FIN
0370 /*
0380 //****
0390 /** N2OPURG2 RUNS WHERE N2O IS INSTALLED
0400 //****
0410 //N2OPURG2 EXEC PGM=NATBATCH
0420 //CMWKF02 DD DSN=N2OPURGE.ACKN,DISP=SHR
0430 //CMPRINT DD SYSOUT=*
0440 //CMSYNIN DD *
0450 LOGON N2OLIB
0460 N2OPURG2
0470 FIN
0480 /*
0490 /**
***** End of list *****

```

```
Program      BSPURGE  Library N2OBATCH
0010 / .N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS (LISTING=YES)
0050 /REMARK *** EXECUTE N2OPURGE ***
0060 /remark **
0070 /remark N2OV5.2 CHANGE CMWKF01 LRECL FROM 123 - 150, BLKSIZE 127 - 154
0080 /remark **
0090 /FILE N2OPURGE.LIST, LINK=W01, RECFORM=VB, RECSIZE=150, BLKSIZE=154
0100 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0110 /MODIFY-JOB-SWITCHES ON=(4,5)
0120 /START-PROGRAM FROM-FILE=$EDT
0130 LS=132, PS=60, MENU=OFF
0140 @WRITE 'N2O.PURGE.IPT.BATCH' OVERWRITE
0150 @HALT
0160 /MODIFY-JOB-SWITCHES OFF=(4,5)
0170 /ASSIGN-SYSIPT TO-FILE=N2O.PURGE.IPT.BATCH
0180 /MODIFY-JOB-SWITCHES ON=(2)
0190 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0200 LOGON N2OLIB
0210 N2OPURGE
0220 &INPUT
0230 FIN
0240 /REMARK *** EXECUTE N2OPURG1 ***
0250 /remark **
0260 /remark N2OV5.2 CHANGE CMWKF02 LRECL FROM 290 - 317, BLKSIZE 294 - 321
0270 /remark **
0280 /FILE N2OPURGE.LIST, LINK=W01
0290 /FILE N2OPURGE.ACKN, LINK=W02, RECFORM=VB, RECSIZE=317, BLKSIZE=321
0300 /SET-JOB-STEP
0310 /ASSIGN-SYSIPT TO-FILE=N2O.PURGE.IPT.BATCH
0320 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0330 LOGON SYSTEM
0340 N2OPURG1
0350 FIN
0360 /REMARK *** EXECUTE N2OPURG2 ***
0370 /FILE N2OPURGE.ACKN, LINK=W02
0380 /SET-JOB-STEP
0390 /ASSIGN-SYSIPT TO-FILE=N2O.PURGE.IPT.BATCH
0400 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0410 LOGON N2OLIB
0420 N2OPURG2
0430 FIN
0440 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0450 /DELETE-FILE FILE-NAME=N2O.PURGE.IPT.BATCH,
0460 /OPTION=DESTROY-ALL
0470 /LOGOFF NOSPOOL
***** End of list *****
```

```

Program      VMPURGE  Library N2OBATCH
0010 /* Execute N2OPURGE */
0020 /*
0030 /*      N2OV5.2 CHANGE CMWKF01 LRECL FROM 123 TO 150, BLKSIZE 127 TO 154
0040 /*
0050 address 'COMMAND'
0060 'ERASE N2OPURGE CMSYNIN A'
0070 'EXECIO 1 DISKW N2OPURGE CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0080 'EXECIO 1 DISKW N2OPURGE CMSYNIN A 2 F 80 (STRING N2OPURGE'
0090 'EXECIO 1 DISKW N2OPURGE CMSYNIN A 3 F 80 (STRING &INPUT'
0100 'EXECIO 1 DISKW N2OPURGE CMSYNIN A 4 F 80 (STRING FIN'
0110 'FILEDEF * CLEAR'
0120 'FILEDEF CMWKF01 N2OPURGE LIST A RECFM VB LRECL 150 BLKSIZE 154'
0130 'FILEDEF CMSYNIN DISK N2OPURGE CMSYNIN A'
0140 'FILEDEF CMPRINT PRINTER'
0150 'EXEC NAT BATCH'
0160 'ERASE N2OPURGE CMSYNIN A'
0170 /* Execute N2OPURG1 */
0180 /*
0190 /*      N2OV5.2 CHANGE CMWKF01 LRECL FROM 290 TO 317, BLKSIZE 294 TO 321
0200 /*
0210 'ERASE N2OPURG1 CMSYNIN A'
0220 'EXECIO 1 DISKW N2OPURG1 CMSYNIN A 1 F 80 (STRING LOGON SYSTEM'
0230 'EXECIO 1 DISKW N2OPURG1 CMSYNIN A 2 F 80 (STRING N2OPURG1'
0240 'EXECIO 1 DISKW N2OPURG1 CMSYNIN A 3 F 80 (STRING FIN'
0250 'FILEDEF * CLEAR'
0260 'FILEDEF CMWKF01 N2OPURGE LIST A'
0270 'FILEDEF CMWKF02 N2OPURGE ACKN A RECFM VB LRECL 317 BLKSIZE 321'
0280 'FILEDEF CMSYNIN DISK N2OPURG1 CMSYNIN A'
0290 'FILEDEF CMPRINT PRINTER'
0300 'EXEC NAT BATCH'
0310 'ERASE N2OPURGE LIST A'
0320 'ERASE N2OPURG1 CMSYNIN A'
0330 /* Execute N2OPURG2 */
0340 'ERASE N2OPURG2 CMSYNIN A'
0350 'EXECIO 1 DISKW N2OPURG2 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0360 'EXECIO 1 DISKW N2OPURG2 CMSYNIN A 2 F 80 (STRING N2OPURG2'
0370 'EXECIO 1 DISKW N2OPURG2 CMSYNIN A 3 F 80 (STRING FIN'
0380 'FILEDEF * CLEAR'
0390 'FILEDEF CMWKF02 N2OPURGE ACKN A'
0400 'FILEDEF CMSYNIN DISK N2OPURG2 CMSYNIN A'
0410 'FILEDEF CMPRINT PRINTER'
0420 'EXEC NAT BATCH'
0430 'ERASE N2OPURGE ACKN A'
0440 'ERASE N2OPURG2 CMSYNIN A'
0450 exit
***** End of list *****

```

```
Program      VSEPURGE Library N2OBATCH
0010 * $$ JOB JNM=N2OPURGE,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 // JOB N2OPURGE
0040 * N2OPURGE - VERIFY INPUT PARMS
0050 *
0060 *   N2OV5.2 CHANGE CMWKF01 127 TO 154
0070 *
0080 // ASSGN SYSIPT,SYSRDR
0090 // ASSGN SYS001,DISK,SHR
0100 // ASSGN SYS009,SYSLST
0110 // DLBL CMWKF01,'N2OPURGE.LIST'
0120 // EXTENT SYS001,,,,nnnnn,nnnnn
0130 // EXEC NATBATCH
0140 BWORKD=(1,1,154,VB)
0150 /*
0160 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0170 /*
0180 LOGON N2OLIB
0190 N2OPURGE
0200 &INPUT
0210 FIN
0220 /*
0230 * N2OPURG1 - BATCH DELETE OF PROGRAMS
0240 *
0250 *   N2OV5.2 CHANGE CMWKF02 294 TO 321
0260 *
0270 // ASSGN SYS001,DISK,SHR
0280 // ASSGN SYS002,DISK,SHR
0290 // ASSGN SYS009,SYSLST
0300 // DLBL CMWKF01,'N2OPURGE.LIST'
0310 // EXTENT SYS001,,,,nnnnn,nnnnn
0320 // DLBL CMWKF02,'N2OPURGE.ACKN'
0330 // EXTENT SYS002,,,,nnnnn,nnnnn
0340 // EXEC NATBATCH
0350 BWORKD=(1,1,127,VB,2,2,321,VB)
0360 /*
0370 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0380 /*
0390 LOGON SYSTEM
0400 N2OPURG1
0410 FIN
0420 /*
0430 * N2OPURG2 - ACKNOWLEDGE DELETE
0440 *
0450 *   N2OV5.2 CHANGE CMWKF01 294 TO 321
0460 *
0470 *
0480 // ASSGN SYS002,DISK,SHR
0490 // ASSGN SYS009,SYSLST
0500 // DLBL CMWKF02,'N2OPURGE.ACKN'
0510 // EXTENT SYS002,,,,nnnnn,nnnnn
0520 // EXEC NATBATCH
0530 BWORKD=(1,1,321,VB)
0540 /*
0550 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0560 /*
0570 LOGON N2OLIB
0580 N2OPURG2
0590 FIN
0600 /*
0610 /&
0620 * $$ EOJ
***** End of list *****
```

**Recover from Archive backup (Natural objects)**

```

Program      MVSRRAB  Library N2OBATCH
0010 //N2ORAB JOB (ACCT),'RECOVER ARCH BACKUP',CLASS=A,NOTIFY=&USERID
0020 //***
0030 //***      THIS IS SAMPLE JCL FOR A RECOVER FROM ARCHIVE BACKUP
0040 //***      THIS SHOULD BE RENAMED TO N2ORAB
0050 //***
0060 //*  N2ORAB1 RUNS WHERE N2O IS INSTALLED
0070 //***
0080 //N2ORAB1 EXEC PGM=NATBATCH
0090 //CMWKF02 DD DSN=REC.PARMS,DISP=(NEW,PASS,DELETE),
0100 //          SPACE=(TRK,(5,5),RLSE),UNIT=SYSDA,
0110 //          DCB=(RECFM=VB,BLKSIZE=193,LRECL=189)
0120 //CMPRINT DD SYSOUT=*
0130 //CMSYNIN DD *
0140 LOGON N2OLIB
0150 N2ORAB1
0160 FIN
0170 /*
0180 //CMWKF01 DD *
0190 &INPUT
0200 /*
0210 //***
0220 //*  N2ORAB2 RUNS ON THE TARGET FUSER
0230 //***
0240 //N2ORAB2 EXEC PGM=NATBATCH
0250 //CMWKF01 DD DSN=REC.PARMS,DISP=(OLD,DELETE,CATLG)
0260 //CMWKF02 DD DSN=&BACKUP,DISP=(OLD,KEEP,KEEP)
0270 //CMWKF03 DD DSN=REC.ACKN,DISP=(NEW,PASS,DELETE),
0280 //          SPACE=(TRK,(5,5),RLSE),UNIT=SYSDA,
0290 //          DCB=(RECFM=VB,BLKSIZE=193,LRECL=189)
0300 //CMPRINT DD SYSOUT=*
0310 //CMSYNIN DD *
0320 LOGON SYSTEM
0330 N2ORAB2
0340 FIN
0350 /*
0360 //***
0370 //*  N2ORAB3 RUNS WHERE N2O IS INSTALLED
0380 //***
0390 //N2ORAB3 EXEC PGM=NATBATCH
0400 //CMWKF01 DD DSN=REC.ACKN,DISP=(OLD,DELETE,CATLG)
0410 //CMPRINT DD SYSOUT=*
0420 //CMSYNIN DD *
0430 LOGON N2OLIB
0440 N2ORAB3
0450 FIN
0460 /*
0470 /*
***** End of list *****

```

```
Program      BSRAB      Library N2OBATCH
0010 /.N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS (LISTING=YES)
0050 /REMARK *** EXECUTE N2ORAB1 ***
0060 /SET-FILE-LINK LINK-NAME=W01,FILE-NAME=N2O.RAB.INFO
0070 /FILE REC.PARMS,LINK=W02,RECFORM=VB,RECSIZE=189,BLKSIZE=193
0080 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0090 /MODIFY-JOB-SWITCHES ON=(4,5)
0100 /START-PROGRAM FROM-FILE=$EDT
0110 LS=132,PS=60,MENU=OFF
0120 @WRITE 'N2O.RAB.IPT.BATCH' OVERWRITE
0130 @HALT
0140 /MODIFY-JOB-SWITCHES OFF=(4,5)
0150 /ASSIGN-SYSIPT TO-FILE=N2O.RAB.IPT.BATCH
0160 /MODIFY-JOB-SWITCHES ON=(2)
0170 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0180 LOGON N2OLIB
0190 N2ORAB1
0200 FIN
0210 /REMARK *** EXECUTE N2ORAB2 ***
0220 /FILE REC.PARMS,LINK=W01
0230 /FILE &BACKUP,LINK=W02
0240 /FILE REC.ACKN,LINK=W03,RECFORM=VB,RECSIZE=189,BLKSIZE=193
0250 /SET-JOB-STEP
0260 /ASSIGN-SYSIPT TO-FILE=N2O.RAB.IPT.BATCH
0270 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0280 LOGON SYSTEM
0290 N2ORAB2
0300 FIN
0310 /REMARK *** EXECUTE N2ORAB3 ***
0320 /FILE REC.ACKN,LINK=W01
0330 /SET-JOB-STEP
0340 /ASSIGN-SYSIPT TO-FILE=N2O.RAB.IPT.BATCH
0350 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0360 LOGON N2OLIB
0370 N2ORAB3
0380 FIN
0390 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0400 /DELETE-FILE FILE-NAME=N2O.RAB.IPT.BATCH,
0410 /OPTION=DESTROY-ALL
0420 /LOGOFF NOSPOOL
***** End of list *****
```

```

Program      VMRAB      Library N2OBATCH
0010 /* Execute N2ORAB1 */
0020 address 'COMMAND'
0030 'ERASE N2ORAB1 CMSYNIN A'
0040 'EXECIO 1 DISKW N2ORAB1 CMWKF01 A 1 F 80 (STRING &INPUT'
0050 'EXECIO 1 DISKW N2ORAB1 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0060 'EXECIO 1 DISKW N2ORAB1 CMSYNIN A 2 F 80 (STRING N2ORAB1'
0070 'EXECIO 1 DISKW N2ORAB1 CMSYNIN A 3 F 80 (STRING FIN'
0080 'FILEDEF * CLEAR'
0090 'FILEDEF CMWKF01 N2ORAB1 CMWKF01 A'
0100 'FILEDEF CMWKF02 REC PARMS A RECFM VB LRECL 189 BLKSIZE 193'
0110 'FILEDEF CMSYNIN DISK N2ORAB1 CMSYNIN A'
0120 'FILEDEF CMPRINT PRINTER'
0130 'EXEC NAT BATCH'
0140 'ERASE N2ORAB1 CMSYNIN A'
0150 /*
0160 /* Execute N2ORAB2 */
0170 'ERASE N2ORAB2 CMSYNIN A'
0180 'EXECIO 1 DISKW N2ORAB2 CMSYNIN A 1 F 80 (STRING LOGON SYSTEM'
0190 'EXECIO 1 DISKW N2ORAB2 CMSYNIN A 2 F 80 (STRING N2ORAB2'
0200 'EXECIO 1 DISKW N2ORAB2 CMSYNIN A 3 F 80 (STRING FIN'
0210 'FILEDEF * CLEAR'
0220 'FILEDEF CMWKF01 REC PARMS A'
0230 'FILEDEF CMWKF02 &BACKUP'
0240 'FILEDEF CMWKF03 REC ACKN RECFM VB LRECL 189 BLKSIZE 193'
0250 'FILEDEF CMSYNIN DISK N2ORAB2 CMSYNIN A'
0260 'FILEDEF CMPRINT PRINTER'
0270 'EXEC NAT BATCH'
0280 'ERASE N2ORAB2 CMSYNIN A'
0290 'ERASE REC PARMS A'
0300 /* Execute N2ORAB3 */
0310 'ERASE N2ORAB3 CMSYNIN A'
0320 'EXECIO 1 DISKW N2ORAB3 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0330 'EXECIO 1 DISKW N2ORAB3 CMSYNIN A 2 F 80 (STRING N2ORAB3'
0340 'EXECIO 1 DISKW N2ORAB3 CMSYNIN A 3 F 80 (STRING FIN'
0350 'FILEDEF * CLEAR'
0360 'FILEDEF CMWKF01 REC ACKN a'
0370 'FILEDEF CMSYNIN DISK N2ORAB3 CMSYNIN A'
0380 'FILEDEF CMPRINT PRINTER'
0390 'EXEC NAT BATCH'
0400 'ERASE N2ORAB3 CMSYNIN A'
0410 'ERASE REC ACKN A'
0420 exit
***** End of list *****

```

```

Program      VSERAB      Library N2OBATCH
0010 * $$ JOB JNM=N2ORAB,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 // JOB N2ORAB
0040 // DLBL CMWKF01,'RAB.INPUT.PARMS'
0050 // EXTENT SYS001,, , ,nnnnn,nnnnn
0060 // EXEC IDCAMS,SIZE=AUTO
0070 REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0080      OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0090 &INPUT
0100 /*
0110 * N2ORAB1 - VERIFY INPUT PARMS
0120 // ASSGN SYSIPT,SYSRDR
0130 // ASSGN SYS001,DISK,SHR
0140 // ASSGN SYS002,DISK,SHR
0150 // ASSGN SYS009,SYSLST
0160 // DLBL CMWKF01,'RAB.INPUT.PARMS'
0170 // EXTENT SYS001,, , ,nnnnn,nnnnn
0180 // DLBL CMWKF02,'REC.PARMS'
0190 // EXTENT SYS002,, , ,nnnnn,nnnnn
0200 // EXEC NATBATCH
0210 BWORKD=(1,1,80,FB,2,2,193,VB)
0220 /*
0230 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0240 /*

```

```

0250 LOGON N2OLIB
0260 N2ORAB1
0270 FIN
0280 /*
0290 * N2ORAB2 - RECOVER OBJECT TO TARGET
0300 // ASSGN SYS001,DISK,SHR
0310 // ASSGN SYS002,DISK,SHR
0320 // ASSGN SYS003,DISK,SHR
0330 // ASSGN SYS009,SYSLST
0340 // DLBL CMWKF01,'REC.PARMS'
0350 // EXTENT SYS001,,,,nnnnn,nnnnn
0360 // DLBL CMWKF02,'&BACKUP'
0370 // EXTENT SYS002,,,,nnnnn,nnnnn
0380 // DLBL CMWKF03,'REC.ACKN'
0390 // EXTENT SYS003,,,,nnnnn,nnnnn
0400 // EXEC NATBATCH
0410 BWORKD=(1,1,193,VB,2,2,5500,VB,3,3,193)
0420 /*
0430 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0440 /*
0450 LOGON SYSTEM
0460 N2ORAB2
0470 FIN
0480 /*
0490 * N2ORAB3 - ACKNOWLEDGE RECOVERY
0500 // ASSGN SYS001,DISK,SHR
0510 // ASSGN SYS009,SYSLST
0520 // DLBL CMWKF01,'REC.ACKN'
0530 // EXTENT SYS001,,,,nnnnn,nnnnn
0540 // EXEC NATBATCH
0550 BWORKD=(1,1,193,VB)
0560 /*
0570 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0580 /*
0590 LOGON N2OLIB
0600 N2ORAB3
0610 FIN
0620 /*
0630 /&
0640 * $$ EOJ
***** End of list *****

```

### Recover from archive backup (3GL PDS Objects)

```

Program      MVSRAB3  Library N2OBATCH
0010 //N2ORAB3 JOB (ACCT),'RECOVER PDS ARCH BACKUP',CLASS=A,NOTIFY=&USERID
0020 /***
0030 /* THIS IS SAMPLE JCL FOR A PDS RECOVER FROM ARCHIVE BACKUP
0040 /***
0050 /* N2ORAB1 RUNS WHERE N2O IS INSTALLED
0060 /***
0070 //N2ORAB1 EXEC PGM=NATBATCH
0080 //CMWKF02 DD DSN=REC.PARMS,DISP=(NEW,PASS,DELETE),
0090 //          SPACE=(TRK,(5,5),RLSE),UNIT=SYSDA,
0100 //          DCB=(RECFM=VB,BLKSIZE=193,LRECL=189)
0110 //CMPRINT DD SYSOUT=*
0120 //CMSYNIN DD *
0130 LOGON N2OLIB
0140 N2ORAB1
0150 FIN
0160 /*
0170 //CMWKF01 DD *
0180 &INPUT
0190 /*
0200 /***
0210 /* N2ORAB2T RUNS ON THE TARGET RECOVERY ENVIRONMENT
0220 /***
0230 //N2ORAB2T EXEC PGM=NATBATCH
0240 //CMWKF01 DD DSN=REC.PARMS,DISP=(OLD,DELETE,CATLG)
0250 //CMWKF02 DD DSN=&BACKUP,DISP=(OLD,KEEP,KEEP)

```

```

0260 //CMWKF03 DD DSN=REC.ACKN,DISP=(NEW,PASS,DELETE),
0270 //          SPACE=(TRK,(5,5),RLSE),UNIT=SYSDA,
0280 //          DCB=(RECFM=VB,BLKSIZE=193,LRECL=189)
0290 //CMWKF05 DD DSN=&PDS(&MEMBER),DISP=SHR
0300 //CMPRINT DD SYSOUT=*
0310 //CMSYNIN DD *
0320 LOGON SYSTEM
0330 N2ORAB2T
0340 FIN
0350 /*
0360 /****
0370 /** N2ORAB3 RUNS WHERE N2O IS INSTALLED
0380 /****
0390 //N2ORAB3 EXEC PGM=NATBATCH
0400 //CMWKF01 DD DSN=REC.ACKN,DISP=(OLD,DELETE,CATLG)
0410 //CMPRINT DD SYSOUT=*
0420 //CMSYNIN DD *
0430 LOGON N2OLIB
0440 N2ORAB3
0450 FIN
0460 /*
0470 /**
***** End of list *****

```

### Recover Purged Events

```

Program      MVSREB      Library N2OBATCH
0010 //N2OREB   JOB (ACCT),'RECOVER EVENT BACKUP',CLASS=A,NOTIFY=&USERID
0020 //*
0030 //N2OREB1  EXEC PGM=NATBATCH
0040 //CMWKF01  DD DSN=&BACKUP,DISP=SHR
0050 //CMPRINT  DD SYSOUT=*
0060 //CMPRT01  DD SYSOUT=*
0070 //CMPRT01  DD SYSOUT=*
0080 //CMPRT02  DD SYSOUT=*
0090 //CMPRT03  DD SYSOUT=*
0100 //CMPRT04  DD SYSOUT=*
0110 //CMSYNIN  DD *
0120 LOGON N2OLIB
0130 N2OREB
0140 FIN
0150 /*
0160 //
***** End of list *****

```

```

Program      BSREB      Library N2OBATCH
0010 /.N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
0050 /REMARK *** EXECUTE N2O EVENT RECOVERY ***
0060 /FILE N2O.REPORT,LINK=P01
0070 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0080 /MODIFY-JOB-SWITCHES ON=(4,5)
0090 /START-PROGRAM FROM-FILE=$EDT
0100 LS=132,PS=60,MENU=OFF
0110 @WRITE 'N2O.REPT.IPT.BATCH' OVERWRITE
0120 @HALT
0130 /MODIFY-JOB-SWITCHES OFF=(4,5)
0140 /ASSIGN-SYSIPT TO-FILE=N2O.REPT.IPT.BATCH
0150 /MODIFY-JOB-SWITCHES ON=(2)
0160 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0170 LOGON N2OLIB
0180 N2OREB
0190 FIN
0200 /FILE &BACKUP,LINK=W01
0210 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0220 /DELETE-FILE FILE-NAME=N2O.REPT.IPT.BATCH,
0230 /OPTION=DESTROY-ALL

```

```
0240 /LOGOFF NOSPOOL
***** End of list *****
```

```
Program      VMREB      Library N2OBATCH
0010 /* EXECUTE A EVENT RECOVERY */
0020 ADDRESS 'COMMAND'
0030 'ERASE N2OREB CMSYNIN A'
0040 'EXECIO 1 DISKW N2OREB CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0050 'EXECIO 1 DISKW N2OREB CMSYNIN A 2 F 80 (STRING N2OREB'
0060 'EXECIO 1 DISKW N2OREB CMSYNIN A 3 F 80 (STRING FIN'
0070 'FILEDEF * CLEAR'
0080 'FILEDEF CMWKF01 DISK N2OREB &BACKUP A'
0090 'FILEDEF CMSYNIN DISK N2OREB CMSYNIN A'
0100 'FILEDEF CMPRINT PRINTER'
0110 'FILEDEF CMPRT01 PRINTER'
0120 'EXEC NAT BATCH'
0130 'ERASE N2OREB CMSYNIN A'
0140 exit
***** End of list *****
```

```

Program      VSEREB      Library N2OBATCH
0010 * $$ JOB JNM=N2OREPT,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 // JOB N2OREPT
0040 * N2OREB - N2O EVENT RECOVERY JCL
0050 // ASSGN SYS001,DISK,SHR
0060 // ASSGN SYS009,SYSLST
0070 // DLBL CMWKF01,'&BACKUP'
0080 // EXTENT SYS001,, ,NNNNN,NNNNN
0090 // EXEC NATBATCH
0100 /BWORKD=(1,1,80,FB)
0110 /*
0120 ADARUN DB=XXX,SVC=YYY,DEVICE=ZZZZ
0130 /*
0140 LOGON N2OLIB
0150 N2OREB
0160 FIN
0170 /*
0180 /&
0190 * $$ EOJ
***** End of list *****

```

### Reporting

```

Program      MVSREPT      Library N2OBATCH
0010 //N2OREPT JOB (20100),'EXECUTE REPORT',CLASS=A,NOTIFY=&USERID
0020 //***
0030 /* THIS IS SAMPLE JCL FOR ALL OF N2O REPORTS AND FOR THE
0040 /* DOCUMENTATION TOOLS SUBSYSTEM
0050 /*
0060 /* THIS JCL SHOULD BE RENAMED AS N2OREPT
0070 //***
0080 /* N2OREPT RUNS WHERE N2O IS INSTALLED
0090 //***
0100 //N2OREPT EXEC PGM=NATBATCH
0110 //CMPRINT DD SYSOUT=*
0120 //CMPRT01 DD SYSOUT=*
0130 //CMSYNIN DD *
0140 LOGON N2OLIB
0150 &REPORT
0160 &INPUT
0170 FIN
0180 /*
0190 /*
***** End of list *****

```

```

Program      BSREPT      Library N2OBATCH
0010 / .N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS (LISTING=YES)
0050 /REMARK *** EXECUTE N2OREPORT ***
0060 /FILE N2O.REPORT, LINK=P01
0070 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0080 /MODIFY-JOB-SWITCHES ON=(4,5)
0090 /START-PROGRAM FROM-FILE=$EDT
0100 LS=132, PS=60, MENU=OFF
0110 @WRITE 'N2O.REPT.IPT.BATCH' OVERWRITE
0120 @HALT
0130 /MODIFY-JOB-SWITCHES OFF=(4,5)
0140 /ASSIGN-SYSIPT TO-FILE=N2O.REPT.IPT.BATCH
0150 /MODIFY-JOB-SWITCHES ON=(2)
0160 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0170 LOGON N2OLIB
0180 &REPORT
0190 &INPUT
0200 FIN
0210 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0220 /DELETE-FILE FILE-NAME=N2O.REPT.IPT.BATCH,
0230 /OPTION=DESTROY-ALL
0240 /LOGOFF NOSPOOL
***** End of list *****

```

```

Program      VMREPT      Library N2OBATCH
0010 /* Execute a report */
0020 address 'COMMAND'
0030 'ERASE N2OREPT CMSYNIN A'
0040 'EXECIO 1 DISKW N2OREPT CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0050 'EXECIO 1 DISKW N2OREPT CMSYNIN A 2 F 80 (STRING &REPORT'
0060 'EXECIO 1 DISKW N2OREPT CMSYNIN A 3 F 80 (STRING &INPUT'
0070 'EXECIO 1 DISKW N2OREPT CMSYNIN A 4 F 80 (STRING FIN'
0080 'FILEDEF * CLEAR'
0090 'FILEDEF CMSYNIN DISK N2OREPT CMSYNIN A'
0100 'FILEDEF CMPRINT PRINTER'
0110 'FILEDEF CMPRT01 PRINTER'
0120 'EXEC NAT BATCH'
0130 'ERASE N2OREPT CMSYNIN A'
0140 exit
***** End of list *****

```

```

Program      VSEREPT      Library N2OBATCH
0010 * $$ JOB JNM=N2OREPT, CLASS=A, USER=&USERID
0020 * $$ LST CLASS=A, LST=SYSLST
0030 // JOB N2OREPT
0040 * N2OREPT - N2O REPORTING
0050 // ASSGN SYSIPT, SYSRDR
0060 // ASSGN SYS009, SYSLST
0070 // EXEC NATBATCH
0080 /*
0090 ADARUN DB=xxx, SVC=yyy, DEVICE=zzzz
0100 /*
0110 LOGON N2OLIB
0120 &REPORT
0130 &INPUT
0140 FIN
0150 /*
0160 /&
0170 * $$ EOJ
***** End of list *****

```

**N2OSCAN**

**Program MVSSCAN Library N2OBATCH**

```

0010 //N2OSCAN JOB (ACCOUNTING), 'N2OSCAN ', CLASS=A, TIME=40, NOTIFY=&USERID
0020 //***
0030 //* THIS IS SAMPLE JCL FOR THE TOOLBOX OPTION FOR THE N2OSCAN UTILITY
0040 //* THIS JOB SHOULD BE RENAMED N2OSCAN
0050 //***
0060 //* N2OSCAN RUNS WHERE N2O IS INSTALLED
0070 //***
0080 //N2OSCAN EXEC PGM=NATBATCH
0090 //*
0100 //CMPRINT DD SYSOUT=*
0110 //CMPRT02 DD SYSOUT=*
0120 //CMSYNIN DD *
0130 LOGON N2OLIB
0140 N2OSCANX
0150 &INPUT
0160 FIN
0170 /*
0180 /*
***** End of list *****

```

**Program VMSCAN Library N2OBATCH**

```

0010 /* Execute N2OSCAN Utility */
0020 address 'COMMAND'
0030 'ERASE N2OSCAN CMSYNIN A'
0040 'EXECIO 1 DISKW N2OSCAN CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0050 'EXECIO 1 DISKW N2OSCAN CMSYNIN A 2 F 80 (STRING N2OSCANX'
0060 'EXECIO 1 DISKW N2OSCAN CMSYNIN A 3 F 80 (STRING &INPUT'
0070 'EXECIO 1 DISKW N2OSCAN CMSYNIN A 4 F 80 (STRING FIN'
0080 'FILEDEF * CLEAR'
0090 'FILEDEF CMSYNIN DISK N2OSCAN CMSYNIN A'
0100 'FILEDEF CMPRINT PRINTER'
0110 'FILEDEF CMPRT01 PRINTER'
0120 'EXEC NAT BATCH'
0130 'ERASE N2OSCAN CMSYNIN A'
0140 exit
***** End of list *****

```

**Program VSESCAN Library N2OBATCH**

```

0010 * $$ JOB JNM=N2OSCAN, CLASS=A, USER=&USERID
0020 * $$ LST CLASS=A, LST=SYSLST
0030 * $$ LST CLASS=A, LST=02E, DISP=K, JSEP=0
0040 // JOB N2OSCAN
0050 * N2OSCAN - N2OSCAN UTILITY
0060 // ASSGN SYSIPT, SYSRDR
0070 // ASSGN SYS002, 02E
0080 // EXEC NATBATCH
0090 /*
0100 ADARUN DB=xxx, SVC=yyy, DEVICE=zzzz
0110 /*
0120 LOGON N2OLIB
0130 N2OSCANX
0140 &INPUT
0150 FIN
0160 /*
0170 /&
0180 * $$ EOJ
***** End of list *****

```

**N2OSCAN delete specific scan output set****Program MVSSCBD1 Library N2OBATCH**

```
0010 //N2OSCBD1 JOB (ACCOUNTING),'N2OSCAN DELETE',CLASS=A,NOTIFY=&USERID
0020 //*****
0030 /* THIS IS SAMPLE N2OSCAN DELETE JCL (FOR N2OSCBD1)
0040 /* THIS JOB SHOULD BE RENAMED TO N2OSCBD1
0050 //*****
0060 /* N2OSCBD1 RUNS WHERE N2O IS INSTALLED
0070 /*
0080 //N2OSCBD1 EXEC PGM=NATBATCH
0090 //CMPRINT DD SYSOUT=*
0100 //CMPRT01 DD SYSOUT=*
0110 //CMPRT02 DD SYSOUT=*
0120 //CMSYNIN DD *
0130 LOGON N2OLIB
0140 N2OSCBD1
0150 FIN
0160 /*
0170 //CMWKF01 DD *
0180 &INPUT
0190 /*
0200 /*
***** End of list *****
```

**Program VMSCBD1 Library N2OBATCH**

```
0010 /* Execute N2OSCBD1 */
0020 address 'COMMAND'
0030 'ERASE N2OSCBD1 CMSYNIN A'
0040 'ERASE N2O CMWKF01 A'
0050 'EXECIO 1 DISKW N2OSCBD1 CMWKF01 A 1 F 80 (STRING &INPUT'
0060 'EXECIO 1 DISKW N2OSCBD1 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0070 'EXECIO 1 DISKW N2OSCBD1 CMSYNIN A 2 F 80 (STRING N2OSCBD1'
0080 'EXECIO 1 DISKW N2OSCBD1 CMSYNIN A 3 F 80 (STRING FIN'
0090 'FILEDEF * CLEAR'
0100 'FILEDEF CMWKF01 DISK N2OSCBD1 CMWKF01 A'
0110 'FILEDEF CMSYNIN DISK N2OSCBD1 CMSYNIN A'
0120 'FILEDEF CMPRINT PRINTER'
0130 'FILEDEF CMPRT01 PRINTER'
0140 'FILEDEF CMPRT02 PRINTER'
0150 'EXEC NAT BATCH'
0160 exit
***** End of list *****
```

```

Program      VSESCBD1 Library N2OBATCH
0010 * N2OSCBD1 - N2OSCAN DELETE 1
0020 * $$ JOB JNM=N2OSCBD1,CLASS=A,USER=&USERID
0030 * $$ LST CLASS=A,LST=SYSLST
0040 // JOB N2OSCBD1
0050 /*
0060 * N2OSCBD1 -
0070 // DLBL CMWKF01,'N2O.SCBD1.INPUT'
0080 // EXTENT SYS001,,,,nnnnn,nnnnn
0090 // EXEC IDCAMS,SIZE=AUTO
0100     REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0110           OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0120 &INPUT
0130 /*
0140 // ASSGN SYSIPT,SYSRDR
0150 // ASSGN SYS000,SYSRDR
0160 // ASSGN SYS001,DISK,SHR
0170 // ASSGN SYS009,SYSLST
0180 // DLBL CMWKF01,'N2O.SCBD1.INPUT'
0190 // EXTENT SYS001,,,,nnnnn,nnnnn
0200 // EXEC NATBATCH
0210 BWORKD=(1,1,80,FB)
0220 /*
0230 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0240 /*
0250 LOGON N2OLIB
0260 N2OSCBD1
0270 FIN
0280 /*
0290 /&
0300 * $$ EOJ
***** End of list *****

```

### N2OSCAN Batch Delete by Date and User ID

```

Program      MVSSCBD2 Library N2OBATCH
0010 //N2OSCBD2 JOB (ACCOUNTING),'N2OSCAN DELETE',CLASS=A,NOTIFY=&USERID
0020 //*****
0030 /** THIS IS SAMPLE N2OSCAN DELETE JCL (FOR N2OSCBD2)
0040 /** THIS JOB SHOULD BE RENAMED TO N2OSCBD2
0050 //*****
0060 /** N2OSCBD2 RUNS WHERE N2O IS INSTALLED
0070 /**
0080 //N2OSCBD2 EXEC PGM=NATBATCH
0090 //CMPRINT DD SYSOUT=*
0100 //CMPRT01 DD SYSOUT=*
0110 //CMPRT02 DD SYSOUT=*
0120 //CMSYNIN DD *
0130 LOGON N2OLIB
0140 N2OSCBD2
0150 FIN
0160 /*
0170 //CMWKF01 DD *
0180 &INPUT
0190 /*
0200 /**
***** End of list *****

```

```
Program      VMSCBD2  Library N2OBATCH
0010 /* Execute N2OSCBD2 */
0020 address 'COMMAND'
0030 'ERASE N2OSCBD2 CMSYNIN A'
0040 'ERASE N2O CMWKF01 A'
0050 'EXECIO 1 DISKW N2OSCBD2 CMWKF01 A 1 F 80 (STRING &INPUT'
0060 'EXECIO 1 DISKW N2OSCBD2 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0070 'EXECIO 1 DISKW N2OSCBD2 CMSYNIN A 2 F 80 (STRING N2OSCBD2'
0080 'EXECIO 1 DISKW N2OSCBD2 CMSYNIN A 3 F 80 (STRING FIN'
0090 'FILEDEF * CLEAR'
0100 'FILEDEF CMWKF01 DISK N2OSCBD2 CMWKF01 A'
0110 'FILEDEF CMSYNIN DISK N2OSCBD2 CMSYNIN A'
0120 'FILEDEF CMPRINT PRINTER'
0130 'FILEDEF CMPRT01 PRINTER'
0140 'FILEDEF CMPRT02 PRINTER'
0150 'EXEC NAT BATCH'
0160 exit
***** End of list *****
```

```
Program      VSESCBD2 Library N2OBATCH
0010 * N2OSCBD2 - N2OSCAN DELETE 1
0020 * $$ JOB JNM=N2OSCBD2,CLASS=A,USER=&USERID
0030 * $$ LST CLASS=A,LST=SYSLST
0040 // JOB N2OSCBD2
0050 /*
0060 * N2OSCBD2 -
0070 // DLBL CMWKF01,'N2O.SCBD2.INPUT'
0080 // EXTENT SYS001,, ,nnnnn,nnnnn
0090 // EXEC IDCAMS,SIZE=AUTO
0100 REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0110          OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0120 &INPUT
0130 /*
0140 // ASSGN SYSIPT,SYSRDR
0150 // ASSGN SYS001,DISK,SHR
0160 // ASSGN SYS000,SYSRDR
0170 // ASSGN SYS009,SYSLST
0180 // DLBL CMWKF01,'N2O.SCBD2.INPUT'
0190 // EXTENT SYS001,, ,nnnnn,nnnnn
0200 // EXEC NATBATCH
0210 BWORKD=(1,1,80,FB)
0220 /*
0230 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0240 /*
0250 LOGON N2OLIB
0260 N2OSCBD2
0270 FIN
0280 /*
0290 /&
0300 * $$ EOJ
***** End of list *****
```

**N2OSCAN Batch source display**

```

Program      MVSSCBS Library N2OBATCH
0010 //N2OSCBS JOB (ACCOUNTING), 'N2OSCAN BSD', CLASS=A, NOTIFY=&USERID
0020 //*****
0030 /** THIS IS SAMPLE N2OSCAN BATCH SOURCE DISPLAY
0040 /** THIS JOB SHOULD BE RENAMED TO N2OSCBS
0050 //*****
0060 /** N2OSCBS RUNS WHERE N2O IS INSTALLED
0070 /**
0080 //N2OSCBS EXEC PGM=NATBATCH
0090 //CMPRINT DD SYSOUT=*
0100 //CMPRT01 DD SYSOUT=*
0110 //CMPRT02 DD SYSOUT=*
0120 //CMSYNIN DD *
0130 LOGON N2OLIB
0140 N2OSCBS
0150 FIN
0160 /*
0170 //CMWKF01 DD *
0180 &INPUT
0190 /*
0200 /**
***** End of list *****

```

```

Program      VMSCBSD Library N2OBATCH
0010 /* Execute N2OSCBS */
0020 address 'COMMAND'
0030 'ERASE N2OSCBS CMSYNIN A'
0040 'ERASE N2O CMWKF01 A'
0050 'EXECIO 1 DISKW N2OSCBS CMWKF01 A 1 F 80 (STRING &INPUT'
0060 'EXECIO 1 DISKW N2OSCBS CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0070 'EXECIO 1 DISKW N2OSCBS CMSYNIN A 2 F 80 (STRING N2OSCBS'
0080 'EXECIO 1 DISKW N2OSCBS CMSYNIN A 3 F 80 (STRING FIN'
0090 'FILEDEF * CLEAR'
0100 'FILEDEF CMWKF01 DISK N2OSCBS CMWKF01 A'
0110 'FILEDEF CMSYNIN DISK N2OSCBS CMSYNIN A'
0120 'FILEDEF CMPRINT PRINTER'
0130 'FILEDEF CMPRT01 PRINTER'
0140 'FILEDEF CMPRT02 PRINTER'
0150 'EXEC NAT BATCH'
0160 exit
***** End of list *****

```

```
Program      VSESCBSD Library N2OBATCH
0010 * N2OSCBSD - N2OSCAN BATCH SOURCE DISPLAY
0020 * $$ JOB JNM=N2OSCBSD,CLASS=A,USER=&USERID
0030 * $$ LST CLASS=A,LST=SYSLST
0040 // JOB N2OSCBSD
0050 /*
0060 * N2OSCBSD -
0070 // DLBL CMWKF01,'N2O.SCBSD.INPUT'
0080 // EXTENT SYS001,,,,nnnnn,nnnnn
0090 // EXEC IDCAMS,SIZE=AUTO
0100     REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0110           OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0120 &INPUT
0130 /*
0140 // ASSGN SYS001,DISK,SHR
0150 // ASSGN SYSIPT,SYSRDR
0160 // ASSGN SYS000,SYSRDR
0170 // ASSGN SYS009,SYSLST
0180 // DLBL CMWKF01,'N2O.SCBSD.INPUT'
0190 // EXTENT SYS001,,,,nnnnn,nnnnn
0200 // EXEC NATBATCH
0210 BWORKD=(1,1,80,FB)
0220 /*
0230 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0240 /*
0250 LOGON N2OLIB
0260 N2OSCBSD
0270 FIN
0280 /*
0290 /&
0300 * $$ EOJ
***** End of list *****
```

**N2OSCAN**

**Program MVSSCBX Library N2OBATCH**

```

0010 //N2OSCBX JOB (ACCOUNTING), 'N2OSCAN', CLASS=A, NOTIFY=&USERID
0020 //*****
0030 /* THIS IS SAMPLE N2OSCAN JCL
0040 /* THIS JOB SHOULD BE RENAMED TO N2OSCBX
0050 //*****
0060 /* N2OSCBX RUNS WHERE N2O IS INSTALLED
0070 /*
0080 //N2OSCBX EXEC PGM=NATBATCH
0090 //CMPRINT DD SYSOUT=*
0100 //CMPRT01 DD SYSOUT=*
0110 //CMPRT02 DD SYSOUT=*
0120 //CMSYNIN DD *
0130 LOGON N2OLIB
0140 N2OSCBX
0150 FIN
0160 /*
0170 //CMWKF01 DD *
0180 &INPUT
0190 /*
0200 /*
***** End of list *****

```

**Program VMSCBX Library N2OBATCH**

```

0010 /* Execute N2OSCBX */
0020 address 'COMMAND'
0030 'ERASE N2OSCBX CMSYNIN A'
0040 'ERASE N2O CMWKF01 A'
0050 'EXECIO 1 DISKW N2OSCBX CMWKF01 A 1 F 80 (STRING &INPUT'
0060 'EXECIO 1 DISKW N2OSCBX CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0070 'EXECIO 1 DISKW N2OSCBX CMSYNIN A 2 F 80 (STRING N2OSCBX'
0080 'EXECIO 1 DISKW N2OSCBX CMSYNIN A 3 F 80 (STRING FIN'
0090 'FILEDEF * CLEAR'
0100 'FILEDEF CMWKF01 DISK N2OSCBX CMWKF01 A'
0110 'FILEDEF CMSYNIN DISK N2OSCBX CMSYNIN A'
0120 'FILEDEF CMPRINT PRINTER'
0130 'FILEDEF CMPRT01 PRINTER'
0140 'FILEDEF CMPRT02 PRINTER'
0150 'EXEC NAT BATCH'
0160 exit
***** End of list *****

```

```
Program      VSESCBX  Library N2OBATCH
0010 * N2OSCBX - N2OSCAN
0020 * $$ JOB JNM=N2OSCBX,CLASS=A,USER=&USERID
0030 * $$ LST CLASS=A,LST=SYSLST
0040 // JOB N2OSCBX
0050 /*
0060 * N2OSCBX -
0070 // DLBL CMWKF01,'N2O.SCBX.INPUT'
0080 // EXTENT SYS001,,,,nnnnn,nnnnn
0090 // EXEC IDCAMS,SIZE=AUTO
0100 REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0110          OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0120 &INPUT
0130 /*
0140 // ASSGN SYSIPT,SYSRDR
0150 // ASSGN SYS001,DISK,SHR
0160 // ASSGN SYS000,SYSRDR
0170 // ASSGN SYS009,SYSLST
0180 // DLBL CMWKF01,'N2O.SCBX.INPUT'
0190 // EXTENT SYS001,,,,nnnnn,nnnnn
0200 // EXEC NATBATCH
0210 BWORKD=(1,1,80,FB)
0220 /*
0230 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0240 /*
0250 LOGON N2OLIB
0260 N2OSCBX
0270 FIN
0280 /*
0290 /&
0300 * $$ EOJ
***** End of list *****
```

**N2OSCAN Standard report**

```

Program      MVSSCB01 Library N2OBATCH
0010 //N2OSCB01 JOB (ACCOUNTING),'N2OSCAN B01',CLASS=A,NOTIFY=&USERID
0020 //*****
0030 /* THIS IS SAMPLE N2OSCAN OUTPUT STANDARD REPORT
0040 /* THIS JOB SHOULD BE RENAMED TO N2OSCB01
0050 //*****
0060 /* N2OSCB01 RUNS WHERE N2O IS INSTALLED
0070 /*
0080 //N2OSCB01 EXEC PGM=NATBATCH
0090 //CMPRINT DD SYSOUT=*
0100 //CMPRT01 DD SYSOUT=*
0110 //CMPRT02 DD SYSOUT=*
0120 //CMSYNIN DD *
0130 LOGON N2OLIB
0140 N2OSCB01
0150 FIN
0160 /*
0170 //CMWKF01 DD *
0180 &INPUT
0190 /*
0200 /*
***** End of list *****

```

```

Program      VMSCB01 Library N2OBATCH
0010 /* Execute N2OSCB01 */
0020 address 'COMMAND'
0030 'ERASE N2OSCB01 CMSYNIN A'
0040 'ERASE N2O CMWKF01 A'
0050 'EXECIO 1 DISKW N2OSCB01 CMWKF01 A 1 F 80 (STRING &INPUT'
0060 'EXECIO 1 DISKW N2OSCB01 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0070 'EXECIO 1 DISKW N2OSCB01 CMSYNIN A 2 F 80 (STRING N2OSCB01'
0080 'EXECIO 1 DISKW N2OSCB01 CMSYNIN A 3 F 80 (STRING FIN'
0090 'FILEDEF * CLEAR'
0100 'FILEDEF CMWKF01 DISK N2OSCB01 CMWKF01 A'
0110 'FILEDEF CMSYNIN DISK N2OSCB01 CMSYNIN A'
0120 'FILEDEF CMPRINT PRINTER'
0130 'FILEDEF CMPRT01 PRINTER'
0140 'FILEDEF CMPRT02 PRINTER'
0150 'EXEC NAT BATCH'
0160 exit
***** End of list *****

```

```

Program      VSESCB01 Library N2OBATCH
0010 * N2OSCB01 - N2OSCAN OUTPUT STD REPORT
0020 * $$ JOB JNM=N2OSCB01,CLASS=A,USER=&USERID
0030 * $$ LST CLASS=A,LST=SYSLST
0040 // JOB N2OSCB01
0050 /*
0060 * N2OSCB01 -
0070 // DLBL CMWKF01,'N2O.SCB01.INPUT'
0080 // EXTENT SYS001,,,,nnnnn,nnnnn
0090 // EXEC IDCAMS,SIZE=AUTO
0100     REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0110         OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0120 &INPUT
0130 /*
0140 // ASSGN SYSIPT,SYSRDR
0150 // ASSGN SYS001,DISK,SHR
0160 // ASSGN SYS000,SYSRDR
0170 // ASSGN SYS009,SYSLST
0180 // DLBL CMWKF01,'N2O.SCB01.INPUT'
0190 // EXTENT SYS001,,,,nnnnn,nnnnn
0200 // EXEC NATBATCH
0210 BWORKD=(1,1,80,FB)
0220 /*
0230 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0240 /*
0250 LOGON N2OLIB
0260 N2OSCB01
0270 FIN
0280 /*
0290 /&
0300 * $$ EOJ
***** End of list *****

```

**N2OSCAN String found report**

```

Program      MVSSCB02 Library N2OBATCH
0010 //N2OSCB02 JOB (ACCOUNTING),'N2OSCAN B02',CLASS=A,NOTIFY=&USERID
0020 //*****
0030 //* THIS IS SAMPLE N2OSCAN STRING FOUND REPORT
0040 //* THIS JOB SHOULD BE RENAMED TO N2OSCB02
0050 //*****
0060 //* N2OSCB02 RUNS WHERE N2O IS INSTALLED
0070 //*
0080 //N2OSCB02 EXEC PGM=NATBATCH
0090 //SYSOUT DD SYSOUT=*
0100 //CMPRINT DD SYSOUT=*
0110 //CMPRT01 DD SYSOUT=*
0120 //CMPRT02 DD SYSOUT=*
0130 //CMSYNIN DD *
0140 LOGON N2OLIB
0150 N2OSCB02
0160 FIN
0170 /*
0180 //CMWKF01 DD *
0190 &INPUT
0200 /*
0210 //
***** End of list *****

```

```

Program      VMSCB02 Library N2OBATCH
0010 /* Execute N2OSCB02 */
0020 address 'COMMAND'
0030 'ERASE N2OSCB02 CMSYNIN A'
0040 'ERASE N2O CMWKF01 A'
0050 'EXECIO 1 DISKW N2OSCB02 CMWKF01 A 1 F 80 (STRING &INPUT'
0060 'EXECIO 1 DISKW N2OSCB02 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0070 'EXECIO 1 DISKW N2OSCB02 CMSYNIN A 2 F 80 (STRING N2OSCB02'
0080 'EXECIO 1 DISKW N2OSCB02 CMSYNIN A 3 F 80 (STRING FIN'
0090 'FILEDEF * CLEAR'

```

```

0100 'FILEDEF CMWKF01 DISK N2OSCB02 CMWKF01 A'
0110 'FILEDEF CMSYNIN DISK N2OSCB02 CMSYNIN A'
0120 'FILEDEF CMPRINT PRINTER'
0130 'FILEDEF CMPRT01 PRINTER'
0140 'FILEDEF CMPRT02 PRINTER'
0150 'EXEC NAT BATCH'
0160 exit
***** End of list *****

```

**Program VSESCB02 Library N2OBATCH**

```

0010 * N2OSCB02 - N2OSCAN STRING FOUND REPORT
0020 * $$ JOB JNM=N2OSCB02,CLASS=A,USER=&USERID
0030 * $$ LST CLASS=A,LST=SYSLST
0040 // JOB N2OSCB02
0050 /*
0060 * N2OSCB02 -
0070 // DLBL CMWKF01,'N2O.SCB02.INPUT'
0080 // EXTENT SYS001,,,,nnnnn,nnnnn
0090 // EXEC IDCAMS,SIZE=AUTO
0100 REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0110 OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0120 &INPUT
0130 /*
0140 // ASSGN SYSIPT,SYSRDR
0150 // ASSGN SYS001,DISK,SHR
0160 // ASSGN SYS000,SYSRDR
0170 // ASSGN SYS009,SYSLST
0180 // DLBL CMWKF01,'N2O.SCB02.INPUT'
0190 // EXTENT SYS001,,,,nnnnn,nnnnn
0200 // EXEC NATBATCH
0210 BWORKD=(1,1,80,FB)
0220 /*
0230 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0240 /*
0250 LOGON N2OLIB
0260 N2OSCB02
0270 FIN
0280 /*
0290 /&
0300 * $$ EOJ
***** End of list *****

```

**Batch Update of Environment FUSER/FDIC Information**

**Program MVSUML Library N2OBATCH**

```

0010 //N2OBATCH JOB 'UPDATE ENVIRONMENT',MSGLEVEL=1,
0020 // CLASS=C,MSGCLASS=X,REGION=4M,NOTIFY=&USERID
0030 /*
0040 /* UPDATE THE FUSER/FDIC INFORMATION FOR AN EXISTING ENVIRONMENT
0050 /* THIS MEMBER SHOULD BE RENAMED NATUML
0060 /* THIS STEP RUNS WHERE N2O IS INSTALLED
0070 /*
0080 //STEP1 EXEC PGM=NATBATCH,
0090 // TIME=1400,COND=(9,LT)
0100 /*
0110 //CMPRINT DD SYSOUT=*
0120 //CMPRT01 DD SYSOUT=*
0130 //CMSYNIN DD *
0140 LOGON N2OLIB
0150 N2O5210P
0160 FIN
0170 /*
0180 //CMWKF01 DD *
0190 &INPUT
0200 /*
0210 /*
***** End of list *****

```

```
Program      BSUML      Library N2OBATCH
0010 /REMARK *** RENAME NATUML ***
0020 /.N2O LOGON
0030 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0040 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0050 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS (LISTING=YES)
0060 /REMARK *** EXECUTE N2OUML ***
0070 /FILE CAPT1.INPUT, LINK=W01
0080 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0090 /MODIFY-JOB-SWITCHES ON=(4,5)
0100 /START-PROGRAM FROM-FILE=$EDT
0110 LS=132, PS=60, MENU=OFF
0120 @WRITE 'N2O.CAPTURE.IPT.BATCH' OVERWRITE
0130 @HALT
0140 /MODIFY-JOB-SWITCHES OFF=(4,5)
0150 /ASSIGN-SYSIPT TO-FILE=N2O.CAPTURE.IPT.BATCH
0160 /MODIFY-JOB-SWITCHES ON=(2)
0170 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0180 LOGON N2OLIB
0190 N2OUML
0200 FIN
0210 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0220 /DELETE-FILE FILE-NAME=N2O.CAPTURE.IPT.BATCH,
0230 /OPTION=DESTROY-ALL
0240 /LOGOFF NOSPOOL
***** End of list *****
```

```
Program      VMUML      Library N2OBATCH
0010 /* EXECUTE N2OUML RENAME THIS TO NATUML */
0020 address 'COMMAND'
0030 'ERASE N2OUML1 CMSYNIN A'
0040 'ERASE CAPTURE DATA A'
0050 'ERASE N2OUML1 CMWKF01 A'
0060 'EXECIO 1 DISKW N2OUML1 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0070 'EXECIO 1 DISKW N2OUML1 CMSYNIN A 2 F 80 (STRING N2OUML1'
0080 'EXECIO 1 DISKW N2OUML1 CMSYNIN A 3 F 80 (STRING FIN'
0090 'EXECIO 1 DISKW N2OUML1 CMWKF01 A 1 F 80 (STRING &INPUT'
0100 'FILEDEF * CLEAR'
0110 'FILEDEF CMSYNIN DISK N2OUML1 CMSYNIN A'
0120 'FILEDEF CMWKF01 DISK N2OUML1 CMWKF01 A'
0130 'FILEDEF CMPRINT PRINTER'
0140 'EXEC NAT BATCH'
0150 'ERASE N2OUML1 CMSYNIN A'
0160 exit
***** End of list *****
```

```

Program      VSEUML      Library N2OBATCH
0010 * N2OUML - MODIFY ENVIRONMENT  RENAME NATUML
0020 * $$ JOB JNM=N2OUML1,CLASS=A,USER=&USERID
0030 * $$ LST CLASS=A,LST=SYSLST
0040 // JOB N2OUML1
0050 /*
0060 * N2OUML1 -
0070 // DLBL CMWKF01,'N2O.UML.INPUT'
0080 // EXTENT SYS001,,,,nnnnn,nnnnn
0090 // EXEC IDCAMS,SIZE=AUTO
0100     REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0110           OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0120 &INPUT
0130 /*
0140 // ASSGN SYSIPT,SYSRDR
0150 // ASSGN SYS001,DISK,SHR
0160 // ASSGN SYS000,SYSRDR
0170 // ASSGN SYS009,SYSLST
0180 // DLBL CMWKF01,'N2O.UML.INPUT'
0190 // EXTENT SYS001,,,,nnnnn,nnnnn
0200 // EXEC NATBATCH
0210 BWORKD=(1,1,80,FB)
0220 /*
0230 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0240 /*
0250 LOGON SYSTEM
0260 N2OUML
0270 FIN
0280 /*
0290 /&
0300 * $$ EOJ
***** End of list *****

```

### Archive Backup Reporting

```

Program      MVSWKRP      Library N2OBATCH
0010 //N2OREPT JOB (20100),'EXECUTE REPORT',CLASS=A,NOTIFY=&USERID
0020 //****
0030 //* THIS IS SAMPLE JCL FOR THE N2O ARCHIVE BACKUP REPORT
0040 //****
0050 //* N2OREPT RUNS WHERE N2O IS INSTALLED
0060 //****
0070 //N2OREPT EXEC PGM=NATBATCH
0080 //CMPRINT DD SYSOUT=*
0090 //CMPRT01 DD SYSOUT=*
0100 //CMSYNIN DD *
0110 LOGON N2OLIB
0120 N2OTOLC
0130 &INPUT
0140 FIN
0150 //CMWKF01 DD DSN=&BACKUP,DISP=SHR
0160 /*
0170 /*
***** End of list *****

```

```

Program      BSWKRP      Library N2OBATCH
0010 /.N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
0050 /REMARK *** EXECUTE N2OREPT ***
0060 /FILE N2O.REPORT,LINK=P01
0070 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0080 /MODIFY-JOB-SWITCHES ON=(4,5)
0090 /START-PROGRAM FROM-FILE=$EDT
0100 LS=132,PS=60,MENU=OFF
0110 @WRITE 'N2O.REPT.IPT.BATCH' OVERWRITE
0120 @HALT
0130 /MODIFY-JOB-SWITCHES OFF=(4,5)

```

```
0140 /ASSIGN-SYSIPT TO-FILE=N2O.REPT.IPT.BATCH
0150 /MODIFY-JOB-SWITCHES ON=(2)
0160 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0170 LOGON N2OLIB
0180 N2OTOLC
0190 &INPUT
0200 FIN
0210 /FILE &BACKUP, LINK=W01
0220 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0230 /DELETE-FILE FILE-NAME=N2O.REPT.IPT.BATCH,
0240 /OPTION=DESTROY-ALL
0250 /LOGOFF NOSPOOL
***** End of list *****
```

**Program VMWKR Library N2OBATCH**

```
0010 /* EXECUTE A REPORT WITH A WORKFILE */
0020 ADDRESS 'COMMAND'
0030 'ERASE N2OREPT CMSYNIN A'
0040 'EXECIO 1 DISKW N2OREPT CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0050 'EXECIO 1 DISKW N2OREPT CMSYNIN A 2 F 80 (STRING N2OTOLC'
0060 'EXECIO 1 DISKW N2OREPT CMSYNIN A 3 F 80 (STRING &INPUT'
0070 'EXECIO 1 DISKW N2OREPT CMSYNIN A 4 F 80 (STRING FIN'
0080 'FILEDEF * CLEAR'
0090 'FILEDEF CMWKF01 DISK N2OREPT &BACKUP A'
0100 'FILEDEF CMSYNIN DISK N2OREPT CMSYNIN A'
0110 'FILEDEF CMPRINT PRINTER'
0120 'FILEDEF CMPRT01 PRINTER'
0130 'EXEC NAT BATCH'
0140 'ERASE N2OREPT CMSYNIN A'
0150 EXIT
***** End of list *****
```

**Program VSEWKR Library N2OBATCH**

```
0010 * $$ JOB JNM=N2OREPT, CLASS=A, USER=&USERID
0020 * $$ LST CLASS=A, LST=SYSLST
0030 // JOB N2OREPT
0040 * N2OREPT - N2O REPORTING WITH INPUT WORK FILE
0050 // ASSGN SYS001, DISK, SHR
0060 // ASSGN SYS009, SYSLST
0070 // DLBL CMWKF01, '&BACKUP'
0080 // EXTENT SYS001, , , , NNNNN, NNNNN
0090 // EXEC NATBATCH
0100 /BWORKD=(1,1,80,FB)
0110 /*
0120 ADARUN DB=XXX, SVC=YYY, DEVICE=ZZZZ
0130 /*
0140 LOGON N2OLIB
0150 N2OTOLC
0160 &INPUT
0170 FIN
0180 /*
0190 /&
0200 * $$ EOJ
***** End of list *****
```

### 3GL compile

**Program MVS3GLAC Library N2OBATCH**

```
0010 //COMPILE JOB (ACCOUNTING),'COMPILE MEMBERS',CLASS=A,NOTIFY=&USERID
0020 /**
0030 &INCLUDE COMPILE
0040 /**
***** End of list *****
```

### 3GL batch submit

**Program N2O3GL Library N2OBATCH**

```
0010 //N2O3GL JOB (ACCT),'SUBMIT 3GL',CLASS=A,NOTIFY=&USERID
0020 /**
0030 //N2O3GL1 EXEC PGM=NATBATCH
0040 //CMWKF01 DD *
0050 &INPUT
0060 /*
0070 //CMWKF02 DD DSN=&&TEMP,DISP=(NEW,PASS,DELETE),
0080 // DCB=(RECFM=FB,LRECL=80,BLKSIZE=80),
0090 // UNIT=SYSDA,SPACE=(TRK,(12,12))
0100 //CMPRINT DD SYSOUT=*
0110 //CMSYNIN DD *
0120 LOGON N2OLIB
0130 N2OSELT
0140 FIN
0150 /*
0160 /**
0170 //N2O3GL2 EXEC PGM=IEBGENER,COND=(4,LT)
0180 //SYSUT1 DD DSN=&&TEMP,
0190 // DISP=(OLD,DELETE)
0200 //SYSUT2 DD SYSOUT=(A,INTRDR)
0210 //SYSPRINT DD SYSOUT=*
0220 //SYSIN DD DUMMY
0230 /*
0240 /**
***** End of list *****
```

**D.2 – 3GL PDS JCL****PDS archive**

```
Program      PDSARCH  Library N2OBATCH
0010 /* &INCLUDE PRTPCH will be automatically replaced with the IEBPTPCH
0020 /* commands necessary to punch the members to a workfile.
0030 /*
0040 /*&STEP1      EXEC PGM=IEBPTPCH
0050 /*
0060 //SYSPRINT DD  SYSOUT=A
0070 //SYSUT1  DD  DSNNAME=&PDS,DISP=(SHR,KEEP),UNIT=SYSDA
0080 //SYSUT2  DD  DSNNAME=&&TEMP,DISP=(NEW,PASS,DELETE),
0090 //        UNIT=SYSDA,VOL=SER=XXXXXX,SPACE=(TRK,(12,12))
0100 //SYSIN   DD  *
0110 &INCLUDE PRTPCH
0120 /*
0130 /*
0140 /*&STEP2      EXEC PGM=NATBATCH
0150 //CMWKF01 DD  *
0160 &EVENT
0170 /*
0180 //CMWKF02 DD  DSN=&&TEMP,DISP=(OLD,DELETE,DELETE)
0190 //CMPRINT DD  SYSOUT=*
0200 /*
0210 //CMSYNIN DD  *
0220 LOGON N2OLIB
0230 N2OARCP
0240 FIN
0250 /*
0260 /*
***** End of list *****
```

## PDS Catalog Capture

```

Program      PDSCAPT  Library N2OBATCH
0010 //PDSCAPT  JOB (ACCOUNTING),'CATALOG CAPTURE',CLASS=A,NOTIFY=&USERID
0020 //*
0030 //PDSLST   EXEC PGM=IEHLIST
0040 //*
0050 //*****
0060 //*   CUSTOMIZATION NOTES
0070 //*****
0080 //*   THE CORRECT "VOLSER" MUST BE IDENTIFIED.
0090 //*   DCB INFORMATION LISTED IS MANDATORY.
0100 //*   THE LISTPDS STATEMENTS CANNOT BEGIN IN COLUMN ONE
0110 //*   UP TO TEN LISTPDS STATEMENTS MAY BE ISSUED.
0120 //*****
0130 //DD1      DD UNIT=SYSDA,DISP=OLD,VOL=SER=volser
0140 //SYSPRINT DD UNIT=SYSDA,DSN=N2O.PDS.CAPTURE.DATA,
0150 //          DCB=(RECFM=FBA,LRECL=121,BLKSIZE=1210),
0160 //          DISP=(,CATLG,DELETE),SPACE=(CYL,(1,1),RLSE)
0170 //SYSIN    DD *
0180          LISTPDS DSNAME=pdsname1,VOL=SYSDA=volser
0190          LISTPDS DSNAME=pdsname2,VOL=SYSDA=volser
0200          LISTPDS DSNAME=pdsname3,VOL=SYSDA=volser
0210          ...
0220 /*
0230 /*
0240 //CAPTURE  EXEC PGM=NATBATCH
0250 //CMWKF01 DD *
0260 &INPUT
0270 /*
0280 //CMWKF02 DD DSN=N2O.PDS.CAPTURE.DATA,DISP=(OLD,DELETE,KEEP)
0290 //CMPRINT DD SYSOUT=*
0300 //CMSYNIN DD *
0310 LOGON N2OLIB
0320 N2OCAPT3
0330 FIN
0340 /*
0350 /*
***** End of list *****

```

## PDS Compile

```

Program      PDSCMPL  Library N2OBATCH
0010 //PDSCMPL JOB (ACCOUNTING),'PDS COMPILE',CLASS=A,NOTIFY=&USERID
0020 //*
0030 &INCLUDE COMPILER
0040 //*
***** End of list *****

```

## PDS Move

```

Program      PDSMOVE Library N2OBATCH
0010 /* Steps below required only for 3GL MOVE events.
0020 /*
0030 /* &INCLUDE DELETE will be replaced automatically by N2O with
0040 /*      IDCAMS cards to delete each member that were migrated
0050 /*      if MOVE is specified for the Migration Profile.
0060 /*
0070 //PDSDEL  EXEC PGM=IDCAMS,COND=(8,LT)
0080 //SYSPRINT DD  DSN=N2O.DELOUT,
0090 //          DCB=(RECFM=VB,LRECL=125,BLKSIZE=129),
0100 //          DISP=(NEW,PASS,DELETE)
0110 //SYSIN   DD  *
0120 &INCLUDE DELETE
0130 /*
0140 /**
0150 //PDSACKN2 EXEC NATBATCH
0160 //CMWKF01  DD  DSN=N2O.DELOUT,DISP=OLD
0170 //CMWKF02  DD  *
0180 &EVENT
0190 /*
0200 //CMPRINT  DD  SYSOUT=*
0210 //CMSYNIN DD  *
0220 LOGON N2OLIB
0230 N2OACKND
0240 FIN
0250 /*
0260 /**
***** End of list *****

```

## PDS Migration

```

Program      PDSMIGR Library N2OBATCH
0010 //PDSMIGR JOB (ACCOUNTING),'PDS MIGRATION',CLASS=A,NOTIFY=&USERID
0020 /*
0030 /* The Archive JCL exists in program PDSARCH in library N2OBATCH.
0040 /* Archiving will be performed if specified on the TO-ENV Definition
0050 /*
0060 &INCLUDE ARCHIVE
0070 /*
0080 /* &INCLUDE PDS will automatically be replaced with the names of
0090 /* the FROM and TO PDS identified on the Environment Definitions.
0100 /* This information will be formulated into the INDD and OUTDD cards.
0110 /*
0120 //PDSCOPY  EXEC PGM=IEBCOPY
0130 //SYSPRINT DD  DSN=N2O.COPYOUT,
0140 //          DISP=(NEW,PASS,DELETE),LRECL=120,SPACE=(TRK,(1))
0150 /*
0160 &INCLUDE PDS
0170 /*
0180 //SYSUT3   DD  UNIT=SYSDA,SPACE=(TRK,(1))
0190 //SYSUT4   DD  UNIT=SYSDA,SPACE=(TRK,(1))
0200 /*
0210 /* &INCLUDE COPY will be replaced automatically by N2O with the
0220 /* COPY and SELECT control statements necessary to migrate the
0230 /* selected members.
0240 /*
0250 //SYSIN    DD  *
0260 &INCLUDE COPY
0270 /*
0280 /*
0290 //PDSACKN  EXEC PGM=NATBATCH
0300 //CMWKF01  DD  DSN=N2O.COPYOUT,DISP=OLD
0310 //CMWKF02  DD  *
0320 &EVENT
0330 /*
0340 //CMPRINT  DD  SYSOUT=*
0350 //CMSYNIN  DD  *

```

```

0360 LOGON N2OLIB
0370 N2OACKNP
0380 FIN
0390 /*
0400 /**
0410 /** &INCLUDE COMPILE will be replaced automatically by N2O
0420 /**      with compile JCL for each member migrated
0430 /**      if Autocompile is specified for the Migration Profile.
0440 /**
0450 &INCLUDE COMPILE
***** End of list *****

```

### PDS archive recovery

```

Program      PDSRJOB  Library N2OBATCH
0010 //PDSRMIGR JOB (ACCOUNTING),'PDS RECOVERY',CLASS=A,NOTIFY=&USERID
0020 /**
0030 /** &INCLUDE RECOVERY will be replaced by the JCL step (PDSRMIGR)
0040 /**      for each member to be recovered.
0050 /**
0060 &INCLUDE RECOVERY
0070 /**
0080 /** &INCLUDE COMPILE will be replaced automatically by N2O with
0090 /**      compile JCL for each member migrated if Autocompile is
0100 /**      for the Migration Profile.
0110 /**
0120 &INCLUDE COMPILE
0130 /**
***** End of list *****

```

### PDS Archive recovery

```

Program      PDSRMIGR Library N2OBATCH
0010 //&STEPNUM EXEC PGM=NATBATCH
0020 //CMWKF01 DD *
0030 &MEMBER
0040 &EVENT
0050 /*
0060 /**
0070 //CMPRINT DD SYSOUT=*
0080 //CMWKF02 DD DSN=&PDS,DISP=SHR
0090 /*
0100 //SYSIN DD *
0110 //CMSYNIN DD *
0120 LOGON N2OLIB
0130 N2ORECP
0140 FIN
0150 /*
***** End of list *****

```

### 3GL member submit to PREDICT pre-processor

```

Program      PREPROCS Library N2OBATCH
0010 /** JCL to submit 3GL members to the PREDICT Pre-processor.
0020 /** The pre-processor will store XREF information for
0030 /** a 3GL member in PREDICT.
0040 /**
0050 /** &STEPNUM will be replaced automatically by N2O with the next
0060 /** available step name.
0070 /**
0080 /** &SLIB will be replaced automatically by N2O with the target
0090 /** PDS name of the Event.
0100 /**
0110 /** &MEMBER will be replaced automatically by N2O with the name of
0120 /** the migrated member.
0130 /**
0140 /**&STEPNUM EXEC PGM=NATBATCH
0150 /**
0160 /** The COBOL source code is input to the pre-processor
0170 /**
0180 /**CMWKF01 DD DSN=&SLIB(&MEMBER),DISP=SHR
0190 /**
0200 /** The output of the pre-processor can be passed to the compiler,
0210 /** but the SYSIN statement of compile JCL must have the DSN below.
0220 /**
0230 /**CMWKF02 DD DSN=&&TEMPPDS(&MEMBER),DISP=(NEW,PASS),
0240 /**          UNIT=SYSDA,DCB=(RECFM=FB,LRECL=80,BLKSIZE=800)
0250 /**
0260 /** Temporary work file for the pre-processor.
0270 /**
0280 /**CMWKF03 DD DSN=&&WORK,DISP=(NEW,DELETE),
0290 /**          UNIT=SYSDA,DCB=(RECFM=FB,LRECL=91,BLKSIZE=9100)
0300 /**CMPRINT DD SYSOUT=*,DCB=BLKSIZE=1330
0310 /**CMPRT01 DD SYSOUT=*,DCB=BLKSIZE=1330 /* Success of run
0320 /**CMPRT02 DD SYSOUT=*,DCB=BLKSIZE=1330 /* List of Pre-proc cmds
0330 /**CMPRT03 DD SYSOUT=*,DCB=BLKSIZE=1330 /* List of errors
0340 /**CMSYSIN DD *
0350 LOGON SYSDIC
0360 MENU
0370 PREPROCESS,COBOL,&MEMBER
0380 FIN
0390 /*
0400 /**
***** End of list *****

```

### D.3 – Panvalet JCL

#### Panvalet Catalog Capture

```

Program      PANVCAPT Library N2OBATCH
0010 //PANVCAPT JOB (ACCOUNTING),'CATALOG CAPTURE',CLASS=A,NOTIFY=&USERID
0020 /**
0030 //PANPRT EXEC PGM=PAN#2
0040 /**
0050 //PANDD1 DD DSN=&PANDD1,DISP=SHR
0060 //SYSPUNCH DD DSN=N2O.CAPTURE.DATA,LRECL=121,
0070 // DISP=(,CATLG,DELETE),
0080 // UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE)
0090 //SYSPRINT DD SYSOUT=*
0100 //SYSIN DD *
0110 ++PRINT 0-UP
0120 /*
0130 /**
0140 //CAPTURE EXEC PGM=NATBATCH
0150 /**
0160 //CMWKF01 DD *
0170 &INPUT
0180 /*
0190 //CMWKF02 DD DSN=N2O.CAPTURE.DATA,DISP=SHR
0200 //CMPRINT DD SYSOUT=*
0210 //CMSYNIN DD *
0220 LOGON N2OLIB
0230 N2OCAPT3
0240 FIN
0250 /*
0260 /**
***** End of list *****

```

#### Panvalet Compile

```

Program      PANVC MPL Library N2OBATCH
0010 //PANVC MPL JOB (ACCOUNTING),'PANVALET COMPILE',CLASS=A,NOTIFY=&USERID
0020 /**
0030 &INCLUDE COMPILE
0040 /**
***** End of list *****

```

## Panvalet Migration

```

Panvalet Migration Program      PANVMIGR Library N2OBATCH
0010 //PANVMIGR JOB (ACCOUNTING), 'PANVALET MIGRATION', CLASS=A, NOTIFY=&USERID
0020 /**
0030 /**      &PANDD1 and &PANDD2 will be replaced automatically by N20 when
0040 /**      the batch migration is submitted to an internal reader.
0050 /**
0060 //PANTRAN EXEC PGM=PAN#2, PARM='OPEN=INP'
0070 /**
0080 //PANDD1 DD DSN=&PANDD1, DISP=SHR
0090 //PANDD2 DD DSN=&PANDD2, DISP=SHR
0100 //SYSPRINT DD DSN=N2O.PANV.MIGR,
0110 //      DISP=(NEW, PASS, CATLG)
0120 //SYSIN DD *
0130 &INCLUDE TRANSFER
0140 /*
0150 /**
0160 //PANACKN EXEC PGM=NATBATCH
0170 /**
0180 //CMWKF01 DD DSN=N2O.PANV.MIGR, DISP=(OLD, DELETE, CATLG)
0190 //CMWKF02 DD *
0200 &EVENT
0210 /*
0220 //CMSYNIN DD *
0230 LOGON N2OLIB
0240 N2OACKNP
0250 FIN
0260 /*
0270 /**
0280 /**      &INCLUDE COMPILE will be replaced automatically by N20 with
0290 /**      the JCL to compile each migrated member if Autocompile
0300 /**      is specified for the Migration Profile.
0310 /**
0320 &INCLUDE COMPILE
0330 /**
0340 //PANMOVE EXEC PGM=PAN#2, PARM='OPEN=INP'
0350 //PANDD1 DD DSN=&PANDD1, DISP=SHR
0360 //PANDD2 DD DUMMY
0370 //SYSPRINT DD SYSOUT=N2O.PANV.MOVELIST,
0380 //      DISP=(NEW, PASS, CATLG)
0390 //SYSIN DD *
0400 &INCLUDE DELETE
0410 /*
0420 /**
0430 //PANACKN2 EXEC PGM=NATBATCH
0440 /**
0450 //CMWKF01 DD DSN=N2O.PANV.MOVELIST, DISP=(OLD, DELETE, CATLG)
0460 //CMWKF02 DD *
0470 &EVENT
0480 /*
0490 //CMSYNIN DD *
0500 LOGON N2OLIB
0510 N2ODAKNP
0520 FIN
0530 /*
***** End of list *****

```

## D.4 - Endeavor JCL

### Endeavor Catalog capture

```

Program      ENDVCAPT Library N2OBATCH
0010 //ENDVCAPT JOB (ACCOUNTING), 'CATALOG CAPTURE', CLASS=A, NOTIFY=&USERID
0020 /**
0030 //CAPTURE1 EXEC PGM=NDVRC1, PARM='C1BR1000', REGION4096K
0040 //CONLIB DD DSN=PREND.PERM.CONLIB, DISP=SHR
0050 //SYSOUT DD DSN=N2O.CAPTURE.DATA, DISP=SHR
0060 //BSTINF DD *
0070 REPORT 03 .
0080 ENVIRONMENT PROD .
0090 SYSTEM * .
0100 SUBSYSTEM * .
0110 TYPE * .
0120 STAGE P .
0130 DAYS 7 .
0140 //BSTPDS DD DUMMY
0150 //SMFDATA DD DUMMY
0160 //UNLINPT DD DUMMY
0170 //BSTPCH DD DSN=&TEMP, DISP=(NEW,DELETE,DELETE),
0180 // UNIT=SYSDA, SPACE=(CYL,(1,2)),
0190 // DCB=(RECFM=FB,LRECL=416,BLKSIZE=4160)
0200 //BSTLST DD SYSOUT=*
0210 //SORTIN DD UNIT=SYSDA, SPACE=(CYL(5,5))
0220 //SORTOUT DD UNIT=SYSDA, SPACE=(CYL(5,5))
0230 //SORTWK01 DD UNIT=SYSDA, SPACE=(CYL(5,5))
0240 //SORTWK02 DD UNIT=SYSDA, SPACE=(CYL(5,5))
0250 //SORTWK03 DD UNIT=SYSDA, SPACE=(CYL(5,5))
0260 //C1MSG1 DD SYSOUT=*
0270 //SYSOUT DD SYSOUT=*
0280 //SYSPRINT DD SYSOUT=*
0290 /*
0300 //CAPTURE2 EXEC PGM=NATBATCH
0310 /**
0320 //CMWKF01 DD *
0330 &INPUT
0340 /*
0350 //CMWKF02 DD DSN=N2O.CAPTURE.DATA, DISP=SHR
0360 /**
0370 //CMPRINT DD SYSOUT=*
0380 //CMSYSIN DD *
0390 LOGON SYSTEM
0400 N2OCAPT3
0410 FIN
0420 /*
0430 /**
***** End of list *****

```

**Endevor migration**

```
Program      ENDMIGR Library N2OBATCH
0010 //ENDVMIGR JOB (ACCOUNTING),'ENDEVOR MIGRATION',CLASS=A,NOTIFY=&USERID
0020 /**
0030 //ENDV001 EXEC PGM=NDVRC1,DYNAMNBR=1500,PARM='C1BM3000',REGION=4096K
0040 //CONLIB DD DSN=IPREF.IQUAL.CONLIB,DISP=SHR
0050 //SYSPRINT DD DSN=N2O.ENDVOUT,DISP=SHR
0060 /**
0070 /** &INCLUDE COPY will be replaced automatically by N2O with the
0080 /** ADD, MOVE, OR RETRIEVE statements necessary to migrate the
0090 /** selected members.
0100 /**
0110 //BSTIPT01 DD      *
0120 &INCLUDE COPY
0130 /*
0140 //C1MSG1 DD SYSOUT=*
0150 //C1PRINT DD SYSOUT=*
0160 //SYSOUT DD SYSOUT=*
0170 /**
0180 /** &INCLUDE COMPILE will be replaced automatically by N2O with the
0190 /** compile JCL for each member migrated if Autocompile is set to YES.
0200 /**
0210 &INCLUDE COMPILE
0220 /**
0230 /** &EVENT will be replaced automatically by N2O with the Event that
0240 /** is being migrated when the batch migration is submitted to an
0250 /** internal reader.
0260 /**
0270 //ENDVACKN EXEC PGM=NATBATCH
0280 //CMWKF01 DD DSN=N2O.ENDVOUT,DISP=OLD
0290 //CMWKF02 DD      *
0300 &EVENT
0310 /*
0320 //CMPRINT DD SYSOUT=*
0330 //CMSYNIN DD      *
0340 LOGON N2OLIB
0350 N2OACKNE
0360 FIN
0370 /*
***** End of list *****
```

## D.5 - Librarian JCL

### Librarian catalog capture

```

Program      LIBRCAPT Library N2OBATCH
0010 //LIBRCAPT JOB (LIST),'CATALOG CAPTURE',CLASS=A,NOTIFY=&USERID
0020 /**
0030 //LIBPRT   EXEC PGM=LIBRPROG
0040 /**
0050 /**  &MASTER1 will be replaced automatically by N2O with
0060 /**  the Librarian Master file name to be captured.
0070 /**
0080 //OSJOB     DD DSN=&&TEMP,UNIT=SYSDA,
0090 //          SPACE=(TRK,(3,1)),DISP=NEW
0100 //MASTER   DD DSN=&MASTER1,DISP=SHR
0110 //INDEX     DD DSN=N2O.CAPTURE.DATA,LRECL=121,
0120 //          DISP=(,CATLG,DELETE),
0130 //          UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE)
0140 //SYSPRINT DD SYSOUT=*
0150 //SYSIN     DD *
0160 -OPT INDEX
0170 -END
0180 /*
0190 /**
0200 //CAPTURE   EXEC PGM=NATBATCH
0210 /**
0220 //CMWKF01   DD *
0230 &INPUT
0240 /*
0250 //CMWKF02   DD DSN=N2O.CAPTURE.DATA,DISP=SHR
0260 //CMPRINT   DD SYSOUT=*
0270 //CMSYNIN   DD *
0280 LOGON N2OLIB
0290 N2OCAPT3
0300 FIN
0310 /*
0320 /**
***** End of list *****

```

### Librarian Compile

```

Program      LIBRCMPL Library N2OBATCH
0010 //LIBRCMPL JOB (ACCOUNTING),'LIBRARIAN COMPILE',CLASS=A,NOTIFY=&USERID
0020 /**
0030 &INCLUDE COMPILE
0040 /**
***** End of list *****

```

## Librarian migration

```

Program      LIBRMIGR Library N2OBATCH
0010 //LIBRMIGR JOB (ACCOUNTING),'LIBRARIAN MIGRATION',CLASS=A,NOTIFY=&USERID
0020 /**
0030 /** &MASTER1 will be replaced automatically by N2O with the
0040 /** LIBRARIAN Master File representing the source of the migration,
0050 /** when the batch migration is submitted to an Internal Reader.
0060 /**
0070 /** &MASTER2 will be replaced automatically by N2O with the
0080 /** LIBRARIAN Master File representing the target of the migration,
0090 /** when the batch migration is submitted to an Internal Reader.
0100 /**
0110 /** &INCLUDE COPY will be replaced automatically by N2O with
0120 /** the LIBRARIAN commands necessary to perform the migration.
0130 /**
0140 //LIBCOPY1 EXEC PGM=LIBRCOPY,PARM='NOSEQ,NOHIST'
0150 /**
0160 //OSJOB      DD  DSN=&&TEMP,DISP=(NEW,PASS),
0170 //              UNIT=DISK,SPACE=(CYL,(5,1)),
0180 //              DCB=(RECFM=FB,LRECL=80,BLKSIZE=80)
0190 //MASTER    DD  DSN=&MASTER1,DISP=SHR
0200 //DESTMAST  DD  DSN=&MASTER2,DISP=SHR
0210 //SYSPRINT  DD  DSN=N2O.LIBR.COPY,SPACE=(CYL,(2,1)),
0220 //              DISP=(NEW,PASS,CATLG),
0230 //              DCB=(RECFM=FB,LRECL=121,BLKSIZE=1210)
0240 //SYSIN     DD  *
0250 &INCLUDE COPY
0260 /*
0270 /**
0280 //LIBCOPY2 EXEC PGM=LIBRPROG,PARM='NRJS,NJTS'
0290 /**
0300 //OSJOB      DD  DUMMY
0310 //LIST       DD  SYSOUT=*
0320 //INDEX      DD  SYSOUT=*
0330 //MASTER     DD  DSN=&MASTER2,DISP=SHR
0340 //SYSPRINT   DD  DSN=N2O.LIBR.PROGLIST,
0350 //              SPACE=(CYL,(2,1)),
0360 //              DISP=(NEW,PASS,CATLG),
0370 //              DCB=(RECFM=FB,LRECL=121,BLKSIZE=1210)
0380 //SYSIN     DD  &&TEMP,DISP=(OLD,DELETE)
0390 /**
0400 /** &EVENT will be replaced automatically by N2O with the Event
0410 /** that is being migrated when the batch migration is submitted.
0420 /**
0430 //LIBACKN1 EXEC PGM=NATBATCH
0440 /**
0450 //CMWKF01   DD  DSN=N2O.LIBR.COPY,
0460 //              DISP=(OLD,DELETE,CATLG)
0470 //CMWKF02   DD  *
0480 &EVENT
0490 /*
0500 //CMWKF03   DD  DSN=N2O.LIBR.PROGLIST,
0510 //              DISP=(OLD,DELETE,CATLG)
0520 //CMPRINT   DD  SYSOUT=*
0530 //CMSYNIN   DD  *
0540 LOGON N2OLIB
0550 N2OACKNL
0560 FIN
0570 /*
0580 /** &INCLUDE COMPILE will be replaced automatically by N2O with
0590 /** the JCL to compile each migrated member if Autocompile
0600 /** is specified on the Migration Profile.
0610 /**
0620 &INCLUDE COMPILE
0630 /**
0640 /** The following steps are for Librarian MOVES only.
0650 /**
0660 //LIBMOVE   EXEC PGM=LIBRPROG,COND=(4,LT)
0670 /**

```

```
0680 //MASTER DD DSN=&MASTER1,DISP=SHR
0690 //SYSAF01 DD UNIT=SYSDA,SPACE=(TRK,(30,30),RLSE)
0700 //SYSAF02 DD UNIT=SYSDA,SPACE=(TRK,(30,30),RLSE)
0710 //OSJOB DD DUMMY
0720 //LIST DD SYSOUT=*
0730 //SYSPRINT DD DSN=N2O.LIBR.MOVELIST,SPACE=(CYL,(2,1)),
0740 // DISP=(NEW,PASS,CATLG)
0750 //SYSIN DD *
0760 &INCLUDE DELETE
0770 /*
0780 //LIBACKN2 EXEC PGM=NATBATCH
0790 /*
0800 //CMWKF01 DD DSN=N2O.LIBR.MOVELIST,DISP=(OLD,DELETE,CATLG)
0810 //CMWKF02 DD *
0820 &EVENT
0830 /*
0840 //CMPRINT DD SYSOUT=*
0850 //CMSYNIN DD *
0860 LOGON N2OLIB
0870 N2OACKNL
0880 FIN
0890 /*
***** End of list *****
```

## D.6 - DB2 related JCL

```

Program      DB2ASM      Library N2OBATCH
0010 /*      &ASMNUM will generate the next available step name for the
0020 /*      Assemble step (e.g. ASM1, ASM2).
0030 /*
0040 /*&ASMNUM EXEC PGM=IEV90,REGION=1M,PARM='NODECK,OBJECT'
0050 /*
0060 //SYSLIB DD DISP=SHR,DSN=NDB21X.SRCE
0070 // DD DISP=SHR,DSN=NAT21X.SRCE
0080 // DD DISP=SHR,DSN=DSNXXX.DSNMACS
0090 // DD DISP=SHR,DSN=SYS1.MACLIB
0100 //SYSIN DD DSN=&&DSNHOUT,
0110 // DISP=(OLD,DELETE)
0120 //SYSLIN DD DSN=&&LOADSET,
0130 // DISP=(NEW,PASS),UNIT=SYSDA,SPACE=(800,(500,500))
0140 // DCB=(RECFM=FBS,LRECL=80,BLKSIZE=800,BUFNO=1)
0150 //SYSTEM DD SYSOUT=*
0160 //SYSPRINT DD SYSOUT=*
0170 //SYSUDUMP DD SYSOUT=*
0180 //SYSUT1 DD SPACE=(TRK,(50,5)),UNIT=SYSDA,DISP=(,DELETE)
0190 //SYSUT2 DD SPACE=(TRK,(36,5)),UNIT=SYSDA,DISP=(,DELETE)
0200 //SYSUT3 DD SPACE=(TRK,(36,5)),UNIT=SYSDA,DISP=(,DELETE)
0210 /*
***** End of list *****

```

```

Program      DB2BIND      Library N2OBATCH
0010 //N2OBIND JOB (ACCT),'SUBMIT BIND',CLASS=A,NOTIFY=&USERID
0020 /*
0030 //JOB LIB DD DSN=NATURAL.NAT21X.LOADLIB,
0040 // DISP=(SHR,KEEP,KEEP)
0050 // DD DSN=ADABAS.ADA52X.LOADLIB,
0060 // DISP=(SHR,KEEP,KEEP)
0070 /*
0080 //N2OBIND1 EXEC PGM=NATBATCH
0090 /*
0100 //DDCARD DD *
0110 ADARUN DBID=xxx,SVC=yyy,DEVICE=zzzz,MODE=MULTI,PROGRAM=USER
0120 /*
0130 //CMPRINT DD SYSOUT=*
0140 //CMSYNIN DD *
0150 LOGON N2OLIB
0160 N2OBIND
0170 FIN
0180 /*
0190 //CMWKF01 DD *
0200 &INPUT
0210 /*
0220 //CMWKF02 DD DSN=SYSTSIN.INPUT.N2O
0230 //CMWKF03 DD DSN=&&TEMP,DISP=(NEW,PASS,DELETE),
0240 // UNIT=WORK,SPACE=(TRK,(1,1),RLSE),
0250 // DCB=(RECFM=FB,LRECL=80,BLKSIZE=80)
0260 /*
0270 /*
0280 /* COPY JCL TO BIND DB2 PLAN TO INTERNAL READER
0290 /*
0300 //N2OBIND2 EXEC PGM=IEBGENER,COND=(4,LT,N2OBIND)
0310 //SYSUT1 DD DSN=&&TEMP,
0320 // DISP=(OLD,DELETE)
0330 //SYSUT2 DD SYSOUT=(A,INTRDR)
0340 //SYSIN DD DUMMY
0350 /*
0360 /*
***** End of list *****

```

```

Program      DB2BINDP Library N2OBATCH
0010 //BINDPLAN  JOB (ACCT),'BIND DB2 PLAN',CLASS=A,NOTIFY=&USERID
0020 /**
0030 /**  If each DBRM was bound separately as a package, see DB2PKLST.
0040 /**
0050 /**  &PLAN will be replaced automatically by N2O with the name
0060 /**  of the Plan to be bound (set in User Exit 9).
0070 /**
0080 /**  &SUBSYS will be replaced automatically by N2O with the name
0090 /**  of the DB2 Subsystem (set in User Exit 9).
0100 /**
0110 /**  &DBRM will be replaced automatically by N2O with the name(s)
0120 /**  of the DBRM(s) to be bound.  The list of DBRM(s) is written
0130 /**  to work file 2 in N2OUE10N, and then copied to work file 3
0140 /**  with the remainder of the JCL.
0150 /**
0160 //BIND      EXEC PGM=IKJEFT01,DYNAMNBR=20,REGION=4096K,TIME=200
0170 /**
0180 //STEPLIB  DD DISP=SHR,DSN=DSNxxx.DSNLOAD
0190 //DBRMLIB DD DISP=SHR,DSN=NDB21x.DBRMLIB
0200 //SYSTSPRT DD SYSOUT=*
0210 //SYSPRINT DD SYSOUT=*
0220 //SYSUDUMP DD SYSOUT=*
0230 //SYSTSIN  DD *
0240   &INPUT
0250   OR
0260   DSN SYSTEM(&SUBSYS)
0270   BIND PLAN(&PLAN) -
0280   MEM( -
0290     &DBRM
0300   ) -
0310   ISOLATION(CS) -
0320   RELEASE(COMMIT) -
0330   ACTION(REPLACE) -
0340   END
0350 /*
***** End of list *****

```

```

Program      DB2DBRM  Library N2OBATCH
0010 //N2ODBRM JOB (ACCT), 'CREATE DBRM', CLASS=A, NOTIFY=&USERID
0020 //*
0030 //JOBLIB DD DSN=NATURAL.NAT21X.LOADLIB,
0040 //      DISP=(SHR,KEEP,KEEP)
0050 //      DD DSN=ADABAS.ADA52X.LOADLIB,
0060 //      DISP=(SHR,KEEP,KEEP)
0070 //*
0080 //N2ODBRM1 EXEC PGM=NATBATCH
0090 //*
0100 //DDCARD DD *
0110 ADARUN DBID=xxx, SVC=yyy, DEVICE=zzzz, MODE=MULTI, PROGRAM=USER
0120 /*
0130 //CMPRINT DD SYSOUT=*
0140 //CMSYNIN DD *
0150 LOGON N2OLIB
0160 N2ODBRM
0170 FIN
0180 /*
0190 //CMWKF01 DD *
0200 &INPUT
0210 /*
0220 //CMWKF03 DD DSN=&&TEMP, DISP=(NEW, PASS, DELETE),
0230 //      UNIT=WORK, SPACE=(TRK, (1, 1), RLSE),
0240 //      DCB=(RECFM=FB, LRECL=80, BLKSIZE=80)
0250 //*
0260 //N2ODBRM2 EXEC PGM=IEBGENER, COND=(4, LT, N2ODBRM)
0270 //SYSUT1 DD DSN=&&TEMP,
0280 //      DISP=(OLD, DELETE)
0290 //SYSUT2 DD SYSOUT=(A, INTRDR)
0300 //SYSIN DD DUMMY
0310 /*
0320 //*
***** End of list *****

```

```

Program      DB2DBRMA Library N2OBATCH
0010 //* The NATURAL DB/2 Batch Nucleus must be used for this job.
0020 //*
0030 //* &DBRM will be replaced automatically by N2O with the name
0040 //* of the DBRM to be created.
0050 //*
0060 //* &LIBRARY will be replaced automatically by N2O with the name
0070 //* of the library containing the programs included in the DBRM.
0080 //*
0090 //* &PROGRAM will be replaced automatically by N2O with the name
0100 //* of the program(s) to be included in the DBRM.
0110 //*
0120 //&DBRM EXEC PGM=NATDEMO, REGION=2000K, TIME=1400
0130 //*
0140 //STEPLIB DD DSN=NDB21X.LOAD, DISP=SHR
0150 //      DD DSN=ADA51X.LOAD, DISP=SHR
0160 //      DD DSN=NAT21X.LOAD, DISP=SHR
0170 //DDKARTE DD DUMMY
0180 //DDDRUCK DD SYSOUT=*
0190 //DDPRINT DD SYSOUT=*
0200 //DDCARD DD *
0210 ADARUN DBID=xxx, SVC=yyy, DEVICE=zzzz, MODE=MULTI, PROGRAM=USER
0220 /*
0230 //***** OUTPUT DECKS
0240 //CMWKF01 DD DSN=&&TMP1,
0250 //      DISP=(, PASS), UNIT=SYSDA, SPACE=(TRK, (5, 5)),
0260 //      DCB=(DSORG=PS, RECFM=FB, LRECL=80, BLKSIZE=3120)
0270 //CMWKF02 DD DSN=&&TMP2,
0280 //      DISP=(, PASS), UNIT=SYSDA, SPACE=(TRK, (5, 5)),
0290 //      DCB=(DSORG=PS, RECFM=FB, LRECL=80, BLKSIZE=3120)
0300 //CMWKF03 DD DSN=&&TMP3,
0310 //      DISP=(, PASS), UNIT=SYSDA, SPACE=(TRK, (5, 5)),
0320 //      DCB=(DSORG=PS, RECFM=FB, LRECL=80, BLKSIZE=3120)
0330 //CMWKF04 DD DSN=&&TMP4,
0340 //      DISP=(, PASS), UNIT=SYSDA, SPACE=(TRK, (5, 5)),

```

```

0350 //          DCB=(DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=3120)
0360 //CMWKF05 DD DSN=&&TMP5,
0370 //          DISP=(,PASS),UNIT=SYSDA,SPACE=(TRK,(5,5)),
0380 //          DCB=(DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=3120)
0390 //CMWKF06 DD DSN=&&TMP,
0400 //          DISP=(,PASS),UNIT=SYSDA,SPACE=(TRK,(5,5)),
0410 //          DCB=(DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=3120)
0420 //CMWKF07 DD DSN=&&TMP7,
0430 //          DISP=(,PASS),UNIT=SYSDA,SPACE=(TRK,(5,5)),
0440 //          DCB=(DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=3120)
0450 // *
0460 //CMPRINT DD SYSOUT=*
0470 //CMSYNIN DD *
0480 LOGON SYSDB2
0490 CMD CREATE DBRM &DBRM USING INPUT DATA WITH XREF NO
0500 &LIBRARY,&PROGRAM
0510 .
0520 FIN
0530 /*
***** End of list *****

```

**Program DB2JOB Library N2OBATCH**

```

0010 //NSTATIC JOB (ACCT),'GENERATE DBRM',CLASS=A,
0020 // MSGCLASS=X,NOTIFY=&USERID
0030 // *
0040 // * The following JOBLIB statements can be used instead of specifying
0050 // * LOADLIBS in each step.
0060 // *
0070 /*JOBPARM S=CPU1
0080 /*ROUTE PRINT SYSPRT
0090 // *
0100 //JOBLIB DD DSN=NATURAL.NAT21X.LOADLIB,
0110 // DISP=(SHR,KEEP,KEEP)
0120 // DD DSN=NATURAL.NDB21X.LOADLIB,
0130 // DISP=(SHR,KEEP,KEEP)
0140 // DD DSN=ADABAS.ADA51X.LOADLIB,
0150 // DISP=(SHR,KEEP,KEEP)
0160 // DD DSN=DB2.DSNLOAD.LOADLIB,
0170 // DISP=(SHR,KEEP,KEEP)
***** End of list *****

```

**Program DB2LINK Library N2OBATCH**

```

0010 // * &LKONUM will generate the next available step name for the
0020 // * Online Link step (e.g. LKO1, LKO2).
0030 // *
0040 // * &LKBNUM will generate the next available step name for the
0050 // * Batch Link step (e.g. LKB1, LKB2).
0060 // *
0070 // * Note: Online Link Skeleton shown below.
0080 // *
0090 // * &DBRM will be replaced automatically by N20 with the name
0100 // * of the DBRM specified in the generate step above.
0110 // *
0120 //&LKONUM EXEC PGM=IEWL,PARM='REUS,XREF',
0130 // COND=((4,LT,&ASNUM),(4,LT,&PCNUM))
0140 // *
0150 //SYSLIB DD DISP=SHR,DSN=NDB21X.LOAD,DCB=BLKSIZE=20000
0160 // DD DISP=SHR,DSN=DSNXXX.DSNLOAD
0170 // * DD DISP=SHR,DSN=IMSVS.RESLIB >--- IMS
0180 // * DD DISP=SHR,DSN=CICS.LOADLIB >--- CICS
0190 //SYSLIN DD DSN=&&LOADSET,
0200 // DISP=(OLD,DELETE)
0210 // DD DDNAME=SYSIN
0220 // *
0230 // * Include the appropriate language interface
0240 // *
0250 //SYSIN DD *
0260 INCLUDE SYSLIB(DSNCLI) <--- CICS
0270 NAME &DBRM(R)

```

```

0280 /* INCLUDE SYSLIB(DSNELI) <--- TSO
0290 /* INCLUDE SYSLIB(DSNALI) <--- CAF
0300 /* INCLUDE SYSLIB(DFSLI000) <--- IMS/DC
0310 /*
0320 //SYSUT1 DD UNIT=SYSDA,SPACE=(1024,(50,50))
0330 //SYSMOD DD DISP=SHR,DSN=NDB21X.LOAD(&DBRM)
0340 //SYSPRINT DD SYSOUT=*
0350 //SYSUDUMP DD SYSOUT=*
0360 /*
***** End of list *****

```

**Program DB2PC Library N2OBATCH**

```

0010 /* &PCNUM will generate the next available step name for the
0020 /* Precompile step (e.g. PC1, PC22).
0030 /*
0040 /* &DBRM will be replaced automatically by N2O with the name
0050 /* of the DBRM specified in the generate step above.
0060 /*
0070 // &PCNUM EXEC PGM=DSNHPC,REGION=2048K,PARM='HOST(ASM)',
0080 // COND=(4,LT,&DBRM)
0090 /*
0100 //DBRMLIB DD DSN=NDB21X.DBRMLIB(&DBRM),
0110 // DISP=SHR
0120 //SYSIN DD DSN=&&TMP,
0130 // DISP=(OLD,DELETE)
0140 //SYSUT1 DD UNIT=SYSDA,SPACE=(800,(500,500),,,ROUND)
0150 //SYSCIN DD DSN=&&DSNHOUT,
0160 // DISP=(NEW,PASS),UNIT=SYSDA,SPACE=(800,(500,500))
0170 //SYSPRINT DD SYSOUT=*
0180 //SYSTEM DD SYSOUT=*
0190 /*
0200 /* * * * * *
0210 /* OUTPUT PRE-COMPILE
0220 /* * * * * *
0230 /*
0240 //PRINT1 EXEC PGM=IEBGENER
0250 //SYSUT1 DD DSN=&&DSNHOUT,DISP=(OLD,PASS)
0260 //SYSUT2 DD SYSOUT=*
0270 //SYSIN DD DUMMY
0280 //SYSPRINT DD SYSOUT=*
0290 /*
***** End of list *****

```

```

Program      DB2PKG      Library N2OBATCH
0010 /**      &PKANUM will generate the next available step name for the
0020 /**      Bind Package Add step (e.g. PKA1, PKA2).
0030 /**
0040 /**      &PKRNUM will generate the next available step name for the
0050 /**      Bind Package Replace step (e.g. PKA1, PKA2).
0060 /**
0070 /**      &DBRM will be replaced automatically by N20 with the name
0080 /**      of the DBRM specified in the generate step above.
0090 /**
0100 /**&PKRNUM EXEC PGM=IKJEFT01,DYNAMNBR=20,
0110 /**      COND=((4,LT,&ASMNUM),(4,LT,&PCNUM))
0120 /**
0130 /**STEPLIB DD DISP=SHR,DSN=NDB23X.LOADLIB
0140 /**SYSTSPRT DD SYSOUT=*
0150 /**SYSPRINT DD SYSOUT=*
0160 /**SYSUDUMP DD SYSOUT=*
0170 /**SYSTSIN DD *
0180 DSN
0190 BIND PACKAGE (Location-name.Collection-id) -
0200 QUALIFIER(qualifier-name) -
0210 MEMBER(&DBRM) -
0220 LIBRARY(dbrm-pds-name) -
0230 SQLERROR(NOPACKAGE) -
0240 VALIDATE(RUN) -
0250 FLAG(I) -
0260 ISOLATION(CS) -
0270 RELEASE(COMMIT) -
0280 EXPLAIN(NO) -
0290 CURRENTDATA(NO) -
0300 ACTION(REPLACE) -
0310 ENABLE (*)
0320 END
***** End of list *****

```

```

Program      DB2PKLST Library N2OBATCH
0010 /**BINDPLAN JOB (ACCT),'BIND DB2 PLAN',CLASS=A,NOTIFY=&USERID
0020 /**
0030 /**      To bind DBRMs directly to a plan, see DB2BIND.
0040 /**
0050 /**      &PLAN will be replaced automatically by N20 with the name
0060 /**      of the Plan to be bound (set in User Exit 9).
0070 /**
0080 /**      &SUBSYS will be replaced automatically by N20 with the name
0090 /**      of the DB2 Subsystem (set in User Exit 9).
0100 /**
0110 /**      &INPUT will be replaced automatically by N20 with the SYSTSIN
0120 /**      statements necessary to perform the bind. These statements
0130 /**      are written to work file 2 in N2OUE10N, and then copied to
0140 /**      work file 3 with the remainder of the JCL.
0150 /**
0160 /**BIND EXEC PGM=IKJEFT01,DYNAMNBR=20,REGION=4096K,TIME=200
0170 /**
0180 /**STEPLIB DD DISP=SHR,DSN=DSNXXX.DSNLOAD
0190 /**DBRMLIB DD DISP=SHR,DSN=NDB21X.DBRMLIB
0200 /**SYSTSPRT DD SYSOUT=*
0210 /**SYSPRINT DD SYSOUT=*
0220 /**SYSUDUMP DD SYSOUT=*
0230 /**SYSTSIN DD *
0240 DSN SYSTEM(&SUBSYS)
0250 BIND PLAN(&PLAN) -
0260 &INPUT
0270 ISOLATION(CS) -
0280 RELEASE(COMMIT) -
0290 ACTION(REPLACE) -
0300 END
0310 /*
***** End of list *****

```

**D.7 - Network Data Mover sample JCL**

```

Program      NDMTRANF Library N2OBATCH
0010 /* USED BY SITES THAT HAVE NOT MODIFIED N2OUE14N,
0020 /* VARIABLE BUILD-EXTRACT SET TO FALSE (DEFAULT)
0030 /******
0040 /* &PFUSERNETID will be replaced automatically by N2O with the
0050 /* Network Id for the primary FUSER node (FROM FUSER Node).
0060 /*
0070 /* &SFUSER NETID1 - &SFUSERNETID10 will be replaced by N2O with
0080 /* the Network Id for the secondary FUSER nodes (TO FUSER Nodes)
0090 /*
0100 /* &PFDICNETID will be replaced automatically by N2O with the
0110 /* Network Id for the primary FDIC node (FROM FDIC Node).
0120 /*
0130 /* &SFDIC NETID1 - &SFDICNETID10 will be replaced by N2O with
0140 /* the Network Id for the secondary FDIC nodes (TO FDIC Nodes)
0150 /*
0160 /* &DATE will be replaced automatically by N2O with a value
0170 /* derived from &DATN in order to uniquely identify the dataset.
0180 /*
0190 /* &TIME will be replaced automatically by N2O with a value
0200 /* derived from &TIMN in order to uniquely identify the dataset.
0210 /*
0220 //NDMBATCH EXEC PGM=DMBATCH
0230 //          REGION=4M,
0240 //          PARM=(YYSLYNN)
0250 //DMPUBLIB DD DSN=PRNDM.PERM.PROCESS.LIB,DISP=SHR
0260 //          DD DSN=PSOPE.PERM.NDM.PROCESS,DISP=SHR
0270 //DMMSGFIL DD DSN=PRNDM.PERM.MSG,DISP=SHR
0280 //DMPRINT DD SYSOUT=*
0290 //NDMCMDS DD SYSOUT=*
0300 //SYSIN DD *
0310 SIGNON NETMAP=PSNDM.PERM.NETMAP
0320          ESF=YES
0330 SUBMIT PROC=D4903NEW
0340 &&PNODE=&PFUSERNETID
0350 &&SNODE=&SFUSERNETID1
0360 &&FROMDSN=N2O.SOURCE
0370 &&TODSN=N2O.SOURCE.&DATE.&TIME
0380 &&UNIT=SYSDA
0390 /*
0400 //NDMBATCH EXEC PGM=DMBATCH
0410 //          REGION=4M,
0420 //          PARM=(YYSLYNN)
0430 //DMPUBLIB DD DSN=PRNDM.PERM.PROCESS.LIB,DISP=SHR
0440 //          DD DSN=PSOPE.PERM.NDM.PROCESS,DISP=SHR
0450 //DMMSGFIL DD DSN=PRNDM.PERM.MSG,DISP=SHR
0460 //DMPRINT DD SYSOUT=*
0470 //NDMCMDS DD SYSOUT=*
0480 //SYSIN DD *
0490 SIGNON NETMAP=PSNDM.PERM.NETMAP
0500          ESF=YES
0510 SUBMIT PROC=D4903NEW
0520 &&PNODE=&PFUSERNETID
0530 &&SNODE=&SFUSERNETID1
0540 &&FROMDSN=N2O.PREDICT
0550 &&TODSN=N2O.PREDICT.&DATE.&TIME
0560 &&UNIT=SYSDA
0570 /*
***** End of list *****

```

```

Program      NDMTRANT Library N2OBATCH
0010 /** USED BY SITES THAT HAVE MODIFIED N2OUE14N, SETTING THE
0020 /** VARIABLE BUILD-EXTRACT TO TRUE
0030 /*******
0040 /** &PFUSERNETID WILL BE REPLACED AUTOMATICALLY BY N20 WITH THE NETWORK
0050 /**          ID FOR THE PRIMARY FUSER NODE (FROM FUSER NODE) .
0060 /****
0070 /** &SFUSER NETID1 - &SFUSERNETID10 WILL BE REPLACED BY N20 WITH THE
0080 /**          NETWORK ID FOR THE SECONDARY FUSER NODES (TO FUSER NODES) .
0090 /****
0100 /** &PFDICNETID WILL BE REPLACED AUTOMATICALLY BY N20 WITH THE NETWORK
0110 /**          ID FOR THE PRIMARY FDIC NODE (FROM FDIC NODE) .
0120 /** &SFDICNETID1 - &SFDICNETID10 WILL BE REPLACED BY N20 WITH THE
0130 /**          NETWORK ID FOR THE SECONDARY FDIC NODES (TO FDIC NODES) .
0140 /****
0150 /** &DATE WILL BE REPLACED AUTOMATICALLY BY N20 WITH A VALUE DERIVED
0160 /**          FROM *DATN IN ORDER TO UNIQUELY IDENTIFY THE DATASET.
0170 /** &TIME WILL BE REPLACE AUTOMATICALLY BY N20 WITH A VALUE DERIVED FROM
0180 /**          *TIMN IN ORDER TO UNIQUELY IDENTIFY THE DATASET.
0190 //N2OSEND      EXEC NATBAT, SOUT=X
0200 //CMWKF01      DD          DSN=N2OPRD, DISP=(NEW, CATLG) ,
0210 //            SPACE=(CYL, (4, 4)) ,
0220 //            DCB=(RECFM=VB, LRECL=1804, BLKSIZE=1808)
0230 //CMWKF02      DD          DSN=N2OSRC, DISP=(NEW, CATLG) ,
0240 //            DCB=(RECFM=VB, LRECL=9183, BLKSIZE=9187) ,
0250 //            SPACE=(CYL, (1, 1) ,RLSE)
0260 //CMWKF03      DD          DSN=N2OPARM, DISP=SHR
0270 //CMWKF05      DD          DSN=CMWKF05, DISP=(NEW, CATLG) ,
0280 //            DCB=(RECFM=VB, LRECL=254, BLKSIZE=2540) ,
0290 //            SPACE=(CYL, (4, 4))
0300 //CMPRT01     DD          SYSOUT=X
0310 //SYSIN        DD          DSN=N2OCOMM, DISP=SHR
0320 /****
0330 //NDBMIBATCH  EXEC PGM=DMIBATCH,
0340 //            REGION=4M,
0350 //            PARM=(YYSLYNN)
0360 //DMIPUBLIB   DD          DSN=PRNDM.PERM.PROCESS.LIB, DISP=SHR
0370 //            DD          DSN=PSOPE.PERM.NDM.PROCESS, DISP=SHR
0380 //DMMSGFIL    DD          DSN=PSNDM.PERM.MSG, DISP=SHR
0390 //DMPRINT     DD          SYSOUT=*
0400 //NDMCMDS    DD          SYSOUT=*
0410 //SYSIN       DD*
0420 SIGNON NETMAP=PSNDM.PERM.NETMAP,
0430          ESF=YES
0440 SUBMIT PROC=D4903NEW
0450 &&PNODE=&PFUSERNETID
0460 &&SNODE=&SFUSERNETID1
0470 &&FROMDSN=N20.SOURCE
0480 &&TODSN=N20.SOURCE.&DATE.&TIME
0490 &&UNIT=SYSDA
0500 //NDBMIBATCH  EXEC      PGM=DMIBATCH,
0510 //            REGION=4M,
0520 //            PARM=(YYSLYNN)
0530 //DMIPUBLIB   DD          DSN=PRNDM.PERM.PROCESS.LIB, DISP=SHR
0540 //            DD          DSN=PSOPE.PERM.NDM.PROCESS, DISP=SHR
0550 //DMMSGFIL    DD          DSN=PSNDM.PERM.MSG, DISP=SHR
0560 //DMPRINT     DD          SYSOUT=*
0570 //NDMCMDS    DD          SYSOUT=*
0580 //SYSIN       DD*
0590 SIGNON NETMAP=PSNDM.PERM.NETMAP,
0600          ESF=YES
0610 SUBMIT PROC=D4903NEW
0620 &&PNODE=&PFUSERNETID
0630 &&SNODE=&SFUSERNETID1
0640 &&FROMDSN=N20.PREDICT
0650 &&TODSN=N20.PREDICT.&DATE.&TIME
0660 &&UNIT=SYSDA
0670 //NDBMIBATCH  EXEC PGM=DMIBATCH,
0680 //            REGION=4M
0690 //            PARM=(YYSLYNN)
0700 //DMIPUBLIB   DD          DSN=PRNDM.PERM.PROCESS.LIB, DISP=SHR

```

```
0710 //          DD      DSN=PSOPE.PERM.NDM.PROCESS,DISP=SHR
0720 //DMMSGFIL  DD      DSN=PSNDM.PERM.MSG,DISP=SHR
0730 //DMPRINT   DD      SYSOUT=*
0740 //NDMCMDSD  DD      SYSOUT=*
0750 //          SYSIN   DD*
0760          SIGNON  NETMAP=PSNDM.PERM.NETMAP,
0770          ESF=YES
0780          SUBMIT  PROC=D4903NEW
0790          &&PNODE=&PFUSERNETID
0800          &&SNODE=&SFUSERNETID1
0810          &&FROMDSN=N2OCOMM
0820          &&TODSN=N2OCOMM.&DATE.&TIME
0830          &&UNIT=SYSDA
***** End of list *****
```

**Section D.8 – COBOL sample JCL**

```

Program      N2OCMPL  Library N2OBATCH
0010 //CBLOAD   PROC MEMBER=TEMPNAME,
0020 //          SLIB=,LLIB=DEVL,OBJNAME=TEMPNAME,
0030 //          CLIB1=CB,CLIB2=CB,CLIB3=CB,
0040 //          LLIB1=DEVL,LLIB2=PROD,FLAG=W,
0050 //          CALL=,CLIST=,DMAP=,DYNAM=,PMAP=NO,
0060 //          STATE=NO,FLOW=,RES=,COPT=,LOPT=,
0070 //          SYMDMP=NO,SYSOPT=A
0080 //COB      EXEC PGM=IKFCBL00,PARM=(&CLIST.CLIST,
0090 //          &DMAP.DMAP,&DYNAM.DYNAM,FLAG&FLAG,
0100 //          &PMAP.PMAP,&RES.RESIDENT,&STATE.STATE,
0110 //          &SYMDMP.SYMDMP,'&FLOW',
0120 //          TERM,LIB,'SIZE=384K',&COPT)
0130 //STEPLIB  DD DSN=SYS1.VSCOLIB,DISP=SHR
0140 //SYSLIB   DD DSN=ADMU.B014.&CLIB1..SOURCE,DISP=SHR
0150 //          DD DSN=ADMU.B014.&CLIB2..SOURCE,DISP=SHR
0160 //          DD DSN=ADMU.B014.&CLIB3..SOURCE,DISP=SHR
0170 //          DD DSN=ADMU.B014.CB.SOURCE,DISP=SHR
0180 //          DD DSN=ADMU.B014.MP.SOURCE,DISP=SHR
0190 //          DD DSN=SYS2.MACCOB,DISP=SHR
0200 //          DD DSN=SYSC.B022.PROD.SOURCE,DISP=SHR
0210 //SYSPRINT DD SYSOPT=&SYSOPT
0220 //SYSTEM   DD SYSOPT=&SYSOPT
0230 //SYPUNCH  DD SYSOPT=B
0240 //SYSUT1   DD UNIT=SYSDA,SPACE=(460,(700,100)),DSN=&&SYSUT1
0250 //SYSUT2   DD UNIT=SYSDA,SPACE=(460,(700,100)),DSN=&&SYSUT2
0260 //SYSUT3   DD UNIT=SYSDA,SPACE=(460,(700,100)),DSN=&&SYSUT3
0270 //SYSUT4   DD UNIT=SYSDA,SPACE=(460,(700,100)),DSN=&&SYSUT4
0280 //SYSUT5   DD UNIT=SYSDA,SPACE=(460,(700,100)),DSN=&&SYMDMP,
0290 //          DISP=(,PASS)
0300 //SYSLIN   DD DSN=&&LOADSET,DISP=(MOD,PASS),UNIT=SYSDA,
0310 //          SPACE=(80,(500,100))
0320 //SYSIN    DD DSN=&SLIB(&MEMBER),DISP=SHR
***** End of list *****

```

```

Program      MVSCOBAC Library N2OBATCH
0010 /** COBOL COMPILE JCL
0020 /**
0030 /** &STEPNUM will be replaced automatically by N2O with the next
0040 /** available step name.
0050 /**
0060 /** &SLIB will be replaced automatically by N2O with the target
0070 /** PDS name of the Event.
0080 /**
0090 /** &MEMBER will be replaced automatically by N2O with the name of
0100 /** the migrated member.
0110 /**
0120 /** &UXXXXXX will be replaced with the corresponding value specified
0130 /** in User-Exit-11.
0140 /**
0150 //STEPNUM EXEC PGM=IKFCBL00,PARM=(&UCLIST.CLIST,
0160 //          &UDMAP.DMAP,&UDYNAM.DYNAM,FLAG&UFLAG,
0170 //          &UPMAP.PMAP,&URES.RESIDENT,&USTATE.STATE,
0180 //          &USYMDMP.SYMDMP,'&UFLOW',
0190 //          TERM,LIB,'SIZE=384K',&COPT)
0200 //STEPLIB  DD DSN=SYS1.VSCOLIB,DISP=SHR
0210 //SYSLIB   DD DSN=&UCLIB1,DISP=SHR
0220 //          DD DSN=&UCLIB2,DISP=SHR
0230 //          DD DSN=&UCLIB3,DISP=SHR
0240 //          DD DSN=TREE.CB.SOURCE,DISP=SHR
0250 //          DD DSN=TREE.MP.SOURCE,DISP=SHR
0260 //          DD DSN=SYS2.MACCOB,DISP=SHR
0270 //          DD DSN=TREE.PROD.SOURCE,DISP=SHR
0280 //SYSPRINT DD SYSOPT=&USYSOPT
0290 //SYSTEM   DD SYSOPT=&USYSOPT
0300 //SYPUNCH  DD SYSOPT=B
0310 //SYSUT1   DD UNIT=SYSDA,SPACE=(460,(700,100))
0320 //SYSUT2   DD UNIT=SYSDA,SPACE=(460,(700,100))

```

```

0330 //SYSUT3 DD UNIT=SYSDA,SPACE=(460,(700,100))
0340 //SYSUT4 DD UNIT=SYSDA,SPACE=(460,(700,100))
0350 //SYSUT5 DD UNIT=SYSDA,SPACE=(460,(700,100))
0360 //SYSLIN DD DSN=&&LOADSET,DISP=(MOD,PASS),UNIT=SYSDA,
0370 //          SPACE=(80,(500,100))
0380 //SYSIN DD DSN=&SLIB(&MEMBER),DISP=SHR
0390 /**
***** End of list *****

```

**Program MVSCOBK Library N2OBATCH**

```

0010 /** LINK EDIT JCL
0020 /**
0030 /** &STEPNUM will be replaced automatically by N2O with the next
0040 /** available step name.
0050 /**
0060 /** &MEMBER will be replaced automatically by N2O with the name of
0070 /** the migrated member.
0080 /**
0090 /** &UXXXXXX will be replaced with the corresponding value specified
0100 /** in User-Exit-11.
0110 /**
0120 /**&STEPNUM EXEC PGM=IEWL,PARM=(&LUOPT),
0130 /**          COND=(5,LT,COB)
0140 //SYSLIN DD DSNAME=&&LOADSET,DISP=(OLD,DELETE)
0150 //          DDNAME=SYSIN
0160 //STEPLIB DD DSN=SYS1.VSCOLIB,DISP=SHR
0170 //SYSLMOD DD DSNAME=&ULLIB(&MEMBER),DISP=SHR
0180 //SYSLIB DD DSN=TREE.VSCLLIB,DISP=SHR
0190 //          DD DSN=TREE.NTSUBRTN.LOAD,DISP=SHR
0200 //          DD DSN=&ULLIB1,DISP=SHR
0210 //          DD DSN=&ULLIB2,DISP=SHR
0220 //          DD DSN=TREE.PROD.ADALOAD,DISP=SHR
0230 //          DD DSN=TREE.PROD.LOAD,DISP=SHR
0240 //          DD DSN=TREE.PROD.COBLOAD,DISP=SHR
0250 //SYSUT1 DD UNIT=SYSDA,SPACE=(1024,(50,20))
0260 //SYSPRINT DD SYSOUT=&USYSOUT
0270 /**
***** End of list *****

```

**Program MVSCOBUS Library N2OBATCH**

```

0010 /**
0020 /** This JCL could be used to compile a COBOL program by calling a
0030 /** PROC.
0040 /**
0050 /** &STEPNUM will be replaced automatically by N2O with the next
0060 /** available step name.
0070 /**
0080 /** &SLIB will be replaced automatically by N2O with the target
0090 /** PDS name of the Event.
0100 /**
0110 /** &MEMBER will be replaced automatically by N2O with the name of
0120 /** the migrated member.
0130 /**
0140 /** &UXXXXXX will be replaced with the corresponding value specified
0150 /** in User-Exit-11.
0160 /**
0170 //&STEPNUM EXEC COBCMPL,
0180 //          SLIB=&SLIB,
0190 //          MEMBER=&MEMBER,
0200 //          SYSOUT=*,
0210 //          OBJNAME=&UOBJ,
0220 //          LOPT=&ULOPT
0230 /**
***** End of list *****

```

## APPENDIX E

### Frequently Asked Questions

**Where does N2O place the output of my batch job?**

N2O writes the output to CMPRT01.

**How can I delete an Event with a status of 'H'?**

A status of 'H' indicates that the Event is on hold. The status of the Event can be modified using the Utility Tools in the Toolbox Subsystem.

**Why is my Event marked "Override"?**

N2O allows self-authorization and emergency migrations without authority or approval. In both cases the Events are marked as override. An override Event is always copied regardless of the migration profile. Therefore, users will see a move changed to a copy. Override Events do not delete objects.

**What is an Extract Event and how is it used?**

An Extract Event migrates an object without causing a checkout to occur. It is used for migrating objects to a development library. The objects would be copies of existing code to be used as the basis for new programs. An Extract Event also allows the object to be renamed on the target environment.

**How do I use an existing program as a base for creating a new program?**

An Extract Event migrates an object to a library without performing a checkout. It also allows an object to be renamed at the target.

**How do I allow a supervisor to authorize an Event if the programmer is not available?**

When defining a migration profile with authorization, the user also defines the authorization level and authorization ID. Entering "\*" allows any user with the appropriate approval profile to authorize the Event. The Supervisor's approval profile should contain the migration paths necessary to authorize Events as needed. Up to 40 migration paths can be defined in the approval profile.

**How is Project Tracking used with N2O?**

Every time an Event is requested, the user can relate that Event to a specific task defined in the N2O Project Tracking Subsystem. This allows the user to track the relationships of Events and projects. Refer to **Section III Project Tracking Subsystem**.

**How does N2O handle multiple versions of the same program?**

Multiple versions of programs are handled using the checkout/checkin features of N2O. The Checkout/Checkin field on the N2O install parms screen specifies the levels of checkout permitted. Every time an object is checked out, N2O verifies the current number of checkouts. If more than one checkout exists the user receives a warning message on the screen. A user will receive this warning every time the object is migrated if more than one checkout exists.

**Does N2O have a move option so that the object's source and compiled code is deleted from the location from which you are migrating?**

Yes, there is a move option. It is set in the Migration Profile method parameter. Refer to the ***N2O Administrator Manual***.

For PDSs, the JCL must be changed from an IEBCOPY to an IEBMOVE. For PANVALET, ENDEVOR, or Librarian, it would depend on their capabilities.

**What does the Change Control Number do?**

The Change Control Number provides a way to relate several Events. If the user has ten Events to complete a specific enhancement/bug fix, the user can assign them all the same Change Control Number. A report by Change Control Number is available to show all Events related to a selected number. This allows a history of all modules changed to be related to an enhancement/bug fix.

**Installation/Product Upgrade Questions**

**What do I have to do to N2O when upgrading Natural versions?**

When upgrading NATURAL, the N2OUXCPY program must be executed to ensure that the correct USR\* modules are in the SYSTEM and SYSLIB libraries. If you are using N2O's autocompile and/or N2OEDIT components, they must be re-installed.

**Does upgrading PREDICT versions require any changes to N2O?**

Yes, the PREDICT version in User-Exit 14 must be changed and the member stowed as described in the ***N2O Administrator Manual***.

**Can I install N2O on the FNAT?**

No. N2O cannot be installed on the FNAT.



TERM	DEFINITION
Hit	See <i>Scan Hit</i> .
Include/Exclude Indicator	Valid values are <b>I</b> (for “include”) or <b>E</b> (for “exclude”). If value is <b>I</b> , then the associated <i>Scan String</i> becomes an <i>Inclusion String</i> used in <i>Inclusion Processing</i> . If value is <b>N</b> , then the associated <i>Scan String</i> becomes an <i>Exclusion String</i> used in <i>Exclusion Processing</i> .
Inclusion Process	A target source line is examined for all <i>Inclusion Strings</i> defined in the <i>Scan Parm Set</i> . If an <i>Inclusion String</i> is found, then a <i>Hit</i> is registered and the complete space-delimited string identified in the target source line is designated as a <i>Found String</i> . A <i>Found String</i> is passed on to the <i>Exclusion Process</i> .
Inclusion String	A <i>Scan String</i> (denoted by <i>Include/exclude Indicator = I</i> ) used as input to the <i>Inclusion Process</i> . (Refer to “ <i>Include/exclude Indicator</i> ”.)
Label of Scan Parm Set	Used by N2OSCAN to differentiate <i>Scan Parm Set</i> objects from other NATURAL text objects. A valid <i>Label</i> value consists of the characters <b>ENV=</b> or <b>ENVIRONMENT=</b> found at the beginning of the first non-comment line. The presence or absence of this <i>Label</i> distinguishes <i>Scan Parm Set</i> objects (which have this <i>Label</i> ) from other NATURAL text objects (which do not have this <i>Label</i> ).
Optional Header Parms	Any of the following, upper- or lower- case, separated by a comma delimiter, may appear following the Required Header Parm (see above). A comma at the end of a line indicates continuation to next line. <i>Optional Header Parms</i> may be in any order.  START-LIB=xxxxxxx or START-LIBRARY=xxxxxxx END-LIB=xxxxxxx or END-LIBRARY=xxxxxxx START-OBJ=xxxxxxx or START-OBJECT=xxxxxxx END-OBJ=xxxxxxx or END-OBJECT=xxxxxxx DELIM=<xxxxxxx> or DELIMITER=<xxxxxxx> or DELIMITERS=<xxxxxxx> (may have up to 32 Delimiters)  Additional note: Each Header Parm above may appear only once in the Header. If any Header Parm appears more than once, the first occurrence will be used in processing and subsequent occurrences will be ignored.
Required Header Parm	The following, upper- or lower-case, must appear at the beginning of the first non-comment line of the <i>Scan Parm Set</i> . To be valid, it must be set equal to an existing N2O Environment on a local node.  ENV=xxxx or ENVIRONMENT=xxxx
Scan Hit	An event identifying a target source Environment, Library, Object, Line Number, and <i>Found String</i> value output by the <i>Scan Process</i> .

TERM	DEFINITION
Scan Output Set	<p>A set of records stored on the N2O-MIGRATION file, which constitute the output of a scan.</p> <p>A <i>Scan Output Set</i> consists of (1) detail records of all <i>Scan Hits</i> and (2) summary records outlining scan statistics at the object, library, and full <i>Scan Output Set</i> level.</p> <p>A <i>Scan Output Set</i> is uniquely identified by: (1) the User ID of the user who submitted the scan, (2) the Scan Parm Set ID of the <i>Scan Parm Set</i> selected as input to the scan, (3) the starting value for the range of libraries scanned, (4) the ending value for the range of libraries scanned, (5) the starting value for the range of objects scanned, and (6) the ending value for the range of objects scanned.</p>
Scan Parm Set	<p>A NATURAL text object that has a valid <i>Scan Parm Set Label</i>.</p> <p>To be valid for scan processing, a <i>Scan Parm Set</i> must have a valid <i>Scan Parm Set Label</i>, a valid <i>Scan Parm Set Header</i>, and at least one valid <i>Detail Line</i> with an <i>Inclusion String</i>.</p>
Scan Process	<p><i>Scan Process</i> examines target source code one line at a time, performing the <i>Inclusion Process</i> followed by the <i>Exclusion Process</i>.</p>
Scan String	<p>A case-sensitive string (up to 32 characters in length) used as input to <i>Scan Processing</i>.</p>

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