софтware AG

Predict Application Control

PAA User's Guide

Version 2.6.1

November 2016

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PAA User's Guide

This document introduces you to Predict Application Audit (PAA), and tells you how to use it to audit and control production environments within the context of Predict Application Control, Software AG's change tracking and versioning system.

This document addresses administrators of production environments within computerized information systems. Among the responsibilities of these administrators is the control and monitoring of software components migrated to the production environment. It is assumed that you, as user of PAA, are familiar with the following:

■ The architecture of the software systems installed at your site.

■ Software AG's versioning system Predict Application Control.

■ Software AG's 4GL Natural.

■ Software AG's repository Predict.

This document is organized in a number of sections dealing with the following topics:

Introduction	Introduces you to the concepts of PAA and provides an overview of PAA functions and the user interface.
Reporting Functions	Tells you how to use PAA menus to display information concerning the production environment under PAA control.
Administration Functions	Tells you how you can manage and maintain the environment under PAA control.
Direct Commands	Describes syntax and meaning of direct commands available to execute PAA functions.
Application Programming Interface	Describes the layout and use of the PAA API's.

1   Introduction

Terminology

This section explains some key product-specific terms used in this documentation. Also included are general terms that have a special meaning within the context of PAA. In descriptions of terms, words in italics have a separate entry.

- Deployment
- File Translation Table - FTT
- Job
- Load
- Location
- Object
- Production Environment

Deployment

A deployment is a list of locations defined to PAA. It defines the final destinations for objects migrated from PAC, that is, it determines where the migrated objects are to be deployed. You must define a deployment in PAA before a PAC migration event can be submitted. A deployment is named after the application name and status of the PAC application that is to use the deployment.

File Translation Table - FTT

When an object that was developed referencing one set of databases and files is executed referencing a different set, PAC can dynamically recompile the object using a file translation table. The FTT translates the database and file numbers from the development environment to the destination environment. It enables users to execute applications against different databases and files without changing and recompiling the code.

The FTT to be used in a migration to a particular location is specified in the deployment definition link and invoked during the migration event.

Job

A job is the set of PAA objects and control records created by a load.

Load

A load in PAA terms involves the copying of a set of objects migrated from PAC to their appropriate locations. This is a basic function of PAA.

Location

A location in PAA can be any of the type Natural, (Natural libraries), Predict, (Predict files) or foreign (other library types, for example, PDSs). These locations are distinguished as follows:

- A Natural location is defined by the database number and file number of a Natural system file, the name of a Natural library in this file, and the database number and file number of a Predict system file. Note that the database number and file number of the Natural system file must not be (0,0). For the Predict system file, there is no such restriction.

- A Predict location is defined by the database number and file number of a Predict system file.

- A foreign location is defined by the Entire System Server (ESY) node number and the name of a library (for example, PDS name). Optionally, the definition can contain a volume under z/OS. Specification of LMS type under BS2000 is required. A foreign location is further distinguished in PAA by the (user-defined) types of object that can be loaded in it.

Object

Where objects are discussed in this documentation, they are usually qualified further, depending on their location and state in the PAA environment.

- Backed-up Objects
  See Unoperational Objects below.

- Current Objects
  Current objects are those objects that actually become operational as a result of an activation.

- Domestic objects
  Natural and Predict objects are known as domestic objects in PAA. Examples are: Natural sources, modules (cataloged objects), Xrefs.

- Foreign objects
  Non-Natural and non-Predict objects are known as foreign objects in PAA. Examples of foreign objects are PDS members on z/OS systems, LMS elements on Siemens BS2000, PL/1 source and loadable procedures.

- Operational Objects
  See Current Objects above.

- Scheduled Objects
  See Unoperational Objects below.

- Unoperational Objects

Unoperational objects are called scheduled objects before they are activated. Unoperational objects after activation and backup are called backed-up objects. A backed-up object always has a current like object in the same location.

PAA does not handle Predict objects. It does, however, handle Xrefs and DDMs. databases, files, etc. are versioned in PAC and can be migrated to their designated locations without involving PAA.

Each object received by PAA from PAC can be categorized as one of four subtypes: NATURAL, ERROR MESSAGE, DDM, or FOREIGN.

NATURAL and foreign objects are further classified into 2nd and 3rd subtypes as illustrated in the table below (subtypes ERROR MESSAGE and DDM have no 2nd or 3rd subtype):

1st subtype	2nd subtype	3rd subtype
NATURAL	a Natural type e.g. LDA, PROGRAM	SOURCE, LOAD, or Xref
ERROR MESSAGE	void	void
DDM	void	void
FOREIGN	user defined	SOURCE or LOAD

Two PAA objects are called "semilike" if and only if

- their names coincide and
- their first subtypes coincide.

Two PAA objects are called "like" if and only if

- they are semilike and
- if their first subtype is Natural and their third subtypes coincide

Production Environment

A production environment is understood as consisting typically of a number of datasets (for example, PDS libraries in z/OS systems), a number of Predict system files, and Natural libraries scattered over several Natural system files. These Natural system files may additionally contain libraries outside of PAA control. Natural libraries, Predict files, and PDS libraries are locations in PAA.

What is Predict Application Audit?

Predict Application Audit (PAA) is a tool for controlling and auditing a production environment. It is delivered as part of Predict Application Control (PAC), Software AG's system for tracking changes made to applications during their life-cycle. PAA allows you to define and maintain destinations for objects migrated from PAC to a production environment, make the objects operational, and keep track of all object movements and versions under PAA control.

This basic functionality is supported by a number of features such as back-up of objects before they become operational, and retirement of objects from a production library to automatically revert to a previous version.

A PAA system file distinguishes each PAA system. There can be several of these running concurrently at your site. While a single PAC system can serve several environments, a single PAA system serves a single production environment. In a typical configuration, a single PAC (that is, a single (ACF, PCF) pair) collaborates with several PAAs. Each PAA has an administrator of its own, working to an extent independently of the PAC administrator.

A PAA receives sets of PAC objects transferred by PAC migration events, and copies the objects to the appropriate locations in a load operation.

A single PAC object can be copied to several PAA locations in a single load. Several PAA objects can thus be generated from a single PAC object.

How Predict Application Audit Works

In PAC, application production status links only contain references to locations if the application is Predict. In all other cases, the application production status links contain the database number and file number of the PAA system file that controls the production environment to which objects are to be sent.

To allow objects to migrate from a PAC application to a production status, the PAA system file specified in the application - production status link must contain a deployment record named after the original PAC application and the production status.

Defining deployments in PAA is one of your responsibilities as PAA administrator. Note that the individual locations in a deployment are unknown to PAC and need not concern the PAC administrator.

For example, migrating Natural program PROG1 from a PAC application APPL1 to a production status PROD1 controlled by a PAA system file number 111 in database 222 involves copying PROG1 into all Natural libraries listed in PAA deployment "APPL1 PROD1" in file 111 in database 222.

Similarly, migrating a foreign object, for example of subtype JCL, from APPL1 to PROD1, means copying it to all foreign locations listed in the PAA deployment "APPL1 PROD1" as JCL locations.

- Location Considerations
- Criteria for Loading Objects into Locations
- Loading Objects
- Automatic PAA Job Re-scheduling
- Activating Loaded Objects
- Removing Sets of Objects from Locations

Location Considerations

When you add a location to a deployment, the location is automatically defined to the PAA system file. If the location is a Natural or Predict location, it is checked for validity and accessibility.

Natural and Predict locations must be known by Natural Security, otherwise the validity check will fail. However, you, as PAA administrator, need not be authorized to access the location in Natural. Natural and Predict locations are accessible (that is, available for use by PAA), if it is not marked as controlled by another PAA.

PAA marks the Natural and the Predict locations defined to it, thus protecting the location from use by other PAA installations.

When you specify locations in a deployment, the following restrictions apply:

- You cannot specify location ((1,1),LIB1,(1,2)) in a deployment if location ((1,1),LIB1,(1,3)) is used by the same or another PAA (see also **Excluding and Forgetting Locations** below).

- Locations ((1,1),LIB1,(1,2)), ((1,1),LIB2,(1,2)), and ((1,3),LIB1,(1,2)) can be used each by a different PAA.

- A Predict location (1,2) can be used by at most one PAA.

> **Note:** PAA does not mark foreign locations. This means other PAAs can use foreign locations. However, Software AG advises against this.
> PAC can use a location specified in a PAA non-production deployment. However, Software AG also advises against this.

Excluding and Forgetting Locations

If you wish to include a location in a PAA deployment, but this location is already used by another PAA, you must first exclude or forget the location from the PAA it is currently used by. Excluding a location from the control of a particular PAA entails the following:

- Removing all objects loaded into the location by PAA. In the case of foreign locations, it means removing all scheduled or backed-up foreign objects from the PAA system file.
- Deleting the object records associated with the location.
- Deleting the location from the PAA's deployments.

Locations can also be excluded from only some of the deployments they are listed in. See **Modifying Deployments**.

Forgetting a location from the control of a particular PAA entails the following:

- All related data except current objects will be purged.
- Deleting the object records associated with the location.
- Deleting the location from the PAA deployments.

Criteria for Loading Objects into Locations

Before loading an object in a specified location, PAA runs a check to prevent objects being loaded in unsuitable locations. The following suitability criteria are used:

1. Any Natural location is suitable for any object whose first subtype is NATURAL or ERROR MESSAGE, and whose third subtype is not Xref.
2. Any Natural location whose Predict system file is not (0,0) is suitable for any object whose first subtype is NATURAL and whose third subtype is Xref.
3. Any Predict location is suitable for any object whose first subtype is DDM.
4. A foreign location is suitable for a foreign object if the type of the object coincides with the type attribute of the location in the deployment.

In all other cases, the attempted load will fail.

As you can see from criteria 1 and 2, Xrefs are treated as Natural objects residing in particular libraries. During a load operation, the Natural locations for Xrefs in a PAA deployment are selected accordingly.

For example, consider a Natural module containing cross-references migrating to a production environment as specified in a PAA deployment. Assume the deployment contains the following Natural locations:

((1,1),LIB1,(1,2))

((1,1),LIB2,(1,2))
((1,3),LIB1,(1,4))
((1,3),LIB2,(0,0)).

The module itself will be copied into all these libraries (see criterion 1).

The Xrefs of the copies of the module in the first two locations will be put into (1,2); the Xref of the copy of the module in the third location will be put into (1,4), but the Xref of the copy of the module in the fourth location will not be copied at all.

Loading Objects

Objects migrated from PAC can be loaded in PAA locations specified in a deployment either directly or indirectly.

In a direct migration, the PAC migration event takes its destination locations from the deployment of the PAA associated with the PAC application. The objects are loaded in their designated locations without requiring further intervention.

Indirect migration means transferring the objects to a workfile. In this case, you must use the MIGLOAD utility to complete the load operation.

Loading objects in locations consists of:

- Storing a job record in the PAA system file.

- Storing unoperational copies of each received domestic object (first subtype NATURAL, ERROR MESSAGE or DDM) in the suitable locations.

- Storing copies of each received foreign object in the PAA system file.

- Storing an object record for each new object copy (that is, for each newly created PAA object) in the PAA system file.

Domestic objects are kept in their designated locations at all times. Whether they are operational or unoperational depends on the changing value of certain descriptors.

Foreign objects are always operational when they are in their designated locations, and unoperational when they are in the PAA system file.

Each object record indicates the number of the job created by the load. To render the objects operational, the job they belong to must be activated.

Unlike other PAC events, those with production destination status can be submitted before their scheduled time. This results in the load taking place before the time the migrated objects can become operational in the production environment. In this case, PAA ensures that the "early arrivals" remain present but do not become operational before the event's scheduled time. When this time comes, you can activate the job, thus making the objects operational.

Automatic PAA Job Re-scheduling

If during a multiple location delivery any of these locations be inaccessible whilst PAA is trying to deliver objects (for various valid reasons such as a NAT3148), PAA will continue with its delivery to those locations that are accessible and mark those locations that where not accessible.

The PAA job will then complete and automatically set the PAA job into a scheduled state so as the user can resolve the initial location accessibility problem and then activate the original PAA job. This will deliver the objects to the now accessible location.

Activating Loaded Objects

If the PAC event, which initiated the load, was scheduled, then so is the resulting PAA job. You must activate the job when its schedule time has come, provided that no jobs associated with the same deployment with earlier schedule times remain inactivated.

If the PAC event was not scheduled, then the resulting PAA job is also unscheduled and is activated automatically as soon as the load is complete.

Activating an object consists of:

- Optionally backing up a like object in its location.
- Assigning a PAA version number to the object being activated.
- Making the object operational.
- Updating the object record in the PAA system file.

A backed-up object becomes unoperational and its record is updated. The record of the backed-up object contains a pointer to the record of the superseding object, and the record of the activated superseding object contains a pointer to the record of the object it has superseded. In this way, PAA maintains an (object version) succession chain consisting of object records.

Apart from the PAC version number of the original PAC object, each PAA object receives a PAA version number in the object record at activation. This PAA version number is 1 plus the highest PAA version number registered in any object record of a semilike object in the same location.

Removing Sets of Objects from Locations

If necessary, you can remove PAA objects from their locations. PAA ensures that only whole sets of objects are removed and that earlier versions of objects become operational where possible. This feature allows you to dispose of obsolete versions and recover older versions of whole products if the new versions prove deficient. At the same time, inadvertent removal of individual objects (possibly leading to faulty applications) is prevented.

PAA offers the following means of removing objects:

■ **Job Backout**
When a job is backed out, all its objects are deleted from their locations (or, in the case of backed-up foreign objects, from the PAA system file). Their records are marked "removed" and excluded from the succession chains. If a current object is removed and an object it superseded is backed up, then this superseded object is made current.

Only jobs that have been activated or finalized can be backed out. A job cannot be backed out if any of its objects has been superseded by subsequent activations and the superseding objects still exist.

■ **Job Finalization**
When a job is finalized, all objects whose records precede the records of the job's objects in the succession chains are removed.

Only jobs which have been activated but not backed out can be finalized.

■ **Job Purge**
Purging a job means backing it out and deleting all its object records and the job record.

Objects can also be removed using a PAC retirement event, see **Retiring Objects**.

Retiring Objects

You can remove PAA objects generated from specific PAC versioned objects from PAA locations using the PAC retirement function. Retiring a versioned object causes older versions to move in where possible.

With PAC retirement is an event whose origin status is of type PRODUCTION and whose destination status is RETIRE. The event's application name and its origin status determine the PAA system file and the deployment to be addressed by the retirement.

Retiring PAA objects entails the following:

■ The PAA objects generated from the PAC versioned objects in the event's migration list (and originally migrated to the same deployment) are deleted from the locations listed in the deployment (or, in the case of scheduled or backed-up foreign objects, from the PAA system file). · ·

■ The records of the deleted objects are marked "removed" and excluded from the succession chains.

■ If a current object is retired and a back-up object it superseded exists, the superseded object becomes current.

If an entry in the PAC event's migration list carries no version specification, then it addresses the PAC versioned object known by PAC to be in the deployment. If the entry has an asterisk in the version position, then it addresses all PAC versioned objects of the specified name and type mi-

grated to the deployment. You can use an asterisk entry only if a PAC versioned object of the given name and type is known by the PAC to be in the deployment.

Like migrations, retirements can be direct or indirect. An indirect retirement must be completed using the MIGLOAD utility.

Modifying Deployments

Once a PAA deployment has been used by a load, it can only be modified by one of the following means:

■ Excluding and forgetting a location from a deployment

See **Excluding and Forgetting Locations**.

■ Purging a deployment

The objects are removed and the object records associated with the jobs that have used the deployment are deleted. The job records and the deployment itself are also deleted.

■ Refreshing a deployment.

To refresh a deployment is the same as purging it, except that the deployment record remains and can be modified subsequently. A deployment which since its creation or latest refreshment has not been used by any load is called "dormant".

■ Renaming a deployment

Use the direct command RENAME DEPLOYMENT. You are recommended to use this command only in exceptional cases because it alters PAA object data records.

Reporting and Customization

This section summarizes some PAA features that add comfort and flexibility to controlling a production environment.

- Reporting Facility
- Adjusting PAA Locations

- Reloading the PAA System File

Reporting Facility

PAA provides online reports about objects, jobs, locations and deployments. The reporting facility lists objects by name, type, location, job, original PAC application, and state.

Adjusting PAA Locations

If an ADABAS file carrying a PAA location is unloaded, deleted, and reloaded with a different database or file number, then the contents of the PAA system file no longer reflects the environment.

You can adjust the database and the file numbers of PAA locations using the direct command ADJUST.

Note that adjusting the definitions in the PAA system file does not change any database or file numbers in Xref stored data.

Reloading the PAA System File

If the system file of a PAA is unloaded, deleted, and reloaded with a different database or file number, then the tags on the locations under PAA's control no longer reflect the true state of affairs, and the PAA cannot use the locations in the normal manner. In this case, you can adjust PAA itself using the direct command ADJUST.

Security Aspects

Unlike PAC, PAA is normally used only by you, its administrator. A PAA administrator is defined as a user linked to library SYSPAAA.

In order to access PAA's reporting facility, you must be authorized to access library SYSPAA. This adds the flexibility of allowing "read-only" access to PAA for some users.

The following users must be members of the group PAA-AUTH:

- The PAC user initiating a PAC migration to a production environment.
- Users starting the MIGLOAD utility to load objects into PAA locations from a workfile.
- Users initiating direct retirements or completing indirect ones.

User Interface

This section provides a starting aid for novices to the PAA user interface. You can work in two modes:

- **Direct Command Mode**
- **Menu Mode**

Direct Command Mode

Most functions available in menu mode can also be executed using PAA direct commands. Though the normal mode of work with PAA is menu mode, direct command mode is useful for quick execution of a function if you are an experienced user and wish to circumvent paging through the menus, or if you wish to route output to a file.

Direct commands can be issued from the Natural NEXT prompt with SYSPAA as the current library or in batch.

All direct commands and how to issue them are described in the section **Direct Commands**.

Menu Mode

Menu mode is the normal working mode with PAA. You enter menu mode by logging on to library SYSPAA (reporting functions) or SYSPAAA (administration functions) and entering MENU. This displays the corresponding main menu.

You can access the reporting facility from an administration screen by entering MENU in the command line. You can access the administration facility from a reporting screen by entering ADMIN in the command line.

The following menu mode operations are described:

- Using PAA Menus
- Executing Functions
- Generating Selection Lists
- Using PF Keys

Screen contents and available functions in each screen are described in detail in the sections **Reporting Functions** and **Administration Functions** respectively.

Using PAA Menus

The following figure illustrates a PAA menu (the Reporting facility main menu):

```
13:53:33              **** PREDICT APPLICATION AUDIT  ****        2000-09-20
  User SAGU                      - Reporting -

                      Code  Entities
                      ----  -----------------------
                        D   Deployments
                        J   Jobs
                        L   Locations
                        F   File Translation Tables
                        O   Objects
                        ?   Help
                        .   Exit
                      ----  -----------------------

           Code ......... _




Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      Help  Menu  Exit                                                   Canc
```

You navigate through PAA menus by typing an appropriate one-character code in the Code field and pressing ENTER. Some menus require that you supply additional parameter values in input fields following field labels. In most cases, these are self-explanatory.

Alternatively, you can press a PF key assigned to a particular function, as displayed at the bottom of each PAA screen.

Executing Functions

You execute functions in menu mode by selecting an item with a function code in a PAA menu, display screen or from a list, and pressing ENTER.

For example, the following figure illustrates the Deployment Selection screen:

```
13:56:01               **** PREDICT APPLICATION AUDIT  ****        2000-09-20
  User SAGU                      - Deployment Selection -


  C              Application                 Status                    State
  -  -----------------------------  -------------------------------   -------
  _    CLOVER                         PROA                             In Use
  _    CLOVER                         PROB                             Dormant
  _    CLOVER                         PROC                             Used
  _    HEATHER                        PROA                             Used
  _    HEATHER                        PROB                             Used
  _    HEATHER                        PROC                             Dormant






Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      Help  Menu  Exit                Top                                Canc
```

You can execute a function on an item in the list by entering an appropriate function code in the corresponding input field in the column headed C.

You can select more than one item from a list with a function code. The functions are processed top down every time you press ENTER from the selection list display. To interrupt processing, delete the function code(s) or press a PF key.

Generating Selection Lists

If you do not specify a PAA item unambiguously in a menu, PAA automatically generates a selection list of items, depending on the information you have entered in the parameter input fields. You can also force the generation of a selection list by entering selection criteria using wildcard symbols in the parameter input fields. The following selection criteria are available:

Enter this string	to produce this list
<blank> or *	lists all items
SAG*	lists all items whose names start with "SAG"
SAG123<	lists all items whose names precede SAG123 alphabetically and numerically (including "SAG123" itself).
SAG123>	lists all items whose names succeed SAG123 alphabetically and numerically (including "SAG123" itself

For example, consider the following entries in the Deployment Menu of the reporting facility:

```
13:54:11             **** PREDICT APPLICATION AUDIT  ****           2000-09-20
  User  SAGU                   - Deployment Menu -


                    Code  Function
                    ----  -----------------------------
                     D    Display Deployment
                     S    Select Deployment
                     ?    Help
                     .    Exit
                    ----  -----------------------------


          Code ......... S
          Application .. NAT*_____
          Status ....... PROD_____


                                                                        ↵



Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      Help  Menu  Exit                                                  Canc
```

This selection lists all deployments whose application name begins with "NAT" and whose status is "PROD".

Using PF Keys

Some standard functions are assigned to PF keys and are available from every PAA screen. Other functions are context-specific and are available by PF key only in some screens.

Press this PF key	for this standard function
PF1	HELP: display online help text.
PF2	MENU: return to the facility's main menu.
PF3	EXIT: save modifications to data and return to previous screen.
PF12	CANCEL: Undo modifications to data and return to previous screen

2 Reporting Functions

This section describes the PAA Reporting facility. It tells you how to execute reporting functions in menu mode. Before you start work with PAA menus, you are recommended to read the section **User Interface**.

This section covers the following topics:

The Reporting Menu

To access the PAA reporting functions online from Natural:

1. Type SYSPAA on the Natural command line or at the NEXT prompt.

2. Press ENTER.

To access the PAA reporting functions from the PAA Administration facility:

1. Type MENU on the command line of any administration screen.

2. Press ENTER.

In either case, the reporting facility main menu appears (following possibly the PAA banner screen).

```
13:53:33              **** PREDICT APPLICATION AUDIT  ****            2000-09-20
 User SAGU                      - Reporting -

                       Code  Entities
                       ----  ----------------------
                        D    Deployments
                        J    Jobs
                        L    Locations
                        F    File Translation Tables
                        O    Objects
                        C    Compare Utility                                    ↵

                        ?    Help
                        .    Exit
                       ----  ----------------------

           Code ......... _




 Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
       Help  Menu  Exit                                                   Canc
```

Displaying Deployments

The Deployment option on the Reporting main menu allows you to display information about PAA deployments and their locations.

This section covers the following topics:

- Deployment Menu - Reporting
- Selecting Deployments from a List
- Deployment Display

Deployment Menu - Reporting

If you select function code D on the Reporting menu, the Deployment menu is displayed:

```
 14:56:32                  Predict Application Audit           2003-10-07
 User  DBA                    - Deployment Menu -


                      Code  Function
                      ----  ----------------------------
                       D   Display Deployment
                       S   Select Deployments
                       ?   Help
                       .   Exit
                      ----  ----------------------------

            Code ......... _
            Application .. _____
            Status ....... _____
            FTT name ..... _____




 Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Menu  Exit                                            Canc    ↵
```

The Deployment menu offers the following functions for deployment display:

Function	Meaning
D	Display deployment. You must supply an unambiguous deployment application name and status in the corresponding parameter input fields. If the deployment is not specified unambiguously, the function defaults to "S".
S	Select deployment. Use this function to generate a selection list of deployments as described in **Generating Selection Lists**.

The Deployment menu offers the following parameter input fields:

Parameter	Meaning
Application	The application part of the deployment name.
Status	The status part of the deployment name. This parameter is evaluated only if you have specified a full application name in the Application field (that is, no application selection criteria).
FTT	The FTT part of the deployment name.

Selecting Deployments from a List

Function code S in the Deployment menu generates a list of deployments according to the selection criteria in the parameter input fields. The following figure illustrates an example Deployment Selection list.

```
 13:56:01              **** PREDICT APPLICATION AUDIT  ****           2000-09-20
 User SAGU                    - Deployment Selection -


 C              Application                    Status                      State
 -  ------------------------------  ------------------------------      -------
 _   CLOVER                          PROA                                In Use
 _   CLOVER                          PROB                                Dormant
 _   CLOVER                          PROC                                Used
 _   HEATHER                         PROA                                Used
 _   HEATHER                         PROB                                Used
 _   HEATHER                         PROC                                Dormant









 Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      Help  Menu  Exit              Top                                   Canc
```

The Deployment Selection list displays the deployment's application name and status, as well as the deployment current state. Possible state values are:

State	Meaning
Dormant	The deployment has not been used since its creation or last refresh.
In use	The deployment is currently being used for a load, job processing or retirement operation.
Used	The deployment has been used since its creation or last refresh. You can modify the deployment by excluding locations or after a refresh.

Available function codes for a listed deployment are:

Use this code	to do this
D	Display the deployment. The deployment display screen lists the Natural and Predict locations of the deployment and provides access to a separate display screen listing the foreign locations of the deployment.
J	Display jobs associated with the deployment. This branches to the Job Menu with the Application and Status field filled. See **Displaying Jobs**.

Apart from the standard PF keys, the following PF key is available:

Press this PF key	to execute this function
PF6	Top. Moves to the top of the deployment list.

Deployment Display

If you specify a deployment for display on the Deployment menu or select one from a Deployment selection list, the Deployment Display is produced. The following figure illustrates an example display of a deployment:

```
 11:33:04              **** PREDICT APPLICATION AUDIT ****              2001-04-05
  User UKMJ                      - Deployment Display -

 Application ...... HAIFI                            Modified .... 2001-04-03
 Status ........... HPROD                            State ....... Used


            NATURAL    Locations
  C    Library   DBnr   Fnr   FDIC DBnr   Fnr    File Translation Table
  -  -----------------------------------------  --------------------------------
  _    FISPROD   164    247         164    132   FTTO
  _    FSRPROD   164    247         164    132
  _    UKMJ-P    164    247




 Predict Locations ...... N                          Foreign Locations ...... N


 Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Menu  Exit  Forgn       Dates            PRED            Canc
```

- The fields at the top of the information part of the screen tell you the application name and status of the deployment, the date it was last modified and the state it is in.

- In the middle of the screen, the Natural locations of the deployment are listed, along with any assigned file translation tables.

- Type "Y" in the Foreign Locations input field or press PF4 to display foreign (non-Natural) locations.

- Press PF6 to see information on when and by whom the deployment was added and modified.

- Type "Y" in the Predict Locations input field or press PF9 to display Predict locations.

```
14:05:09              **** PREDICT APPLICATION AUDIT  ****           2000-09-20
User SAGU                 - Deployment Foreign Part Display -

Application .. HEATHER
Status ....... PROC
                                                                       Volume/
C Node Type Fmt Dataset Name                                           LMS Type
- ---- ---- --- ---------------------------------------------------- -------
_ 199  FJCL  S   $SAGU.EMIGR-JCL-2                                        J
_ 199  FCOS  S   $SAGU.EMIGR-COB-SRC-1                                    S
_ 199  FCOL  L   $SAGU.EMIGR-COB-LDB-1                                    R
_ 199  FCOS  S   $SAGU.EMIGR-COB-SRC-2                                    S
_ 199  FCOL  L   $SAGU.EMIGR-COB-LDB-2                                    R




Command ===> _____
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Menu  Exit                    Dates                              Canc
```

Apart from indicating the deployment name, the list of foreign locations shows the following information:

Column	Meaning
Node	The Entire System Server node on which the location resides.
Type	The user-defined location type. This determines the object type that can be loaded to this location.
Fmt	The location format (S for source object, L for loadable object).
Name	Name of the location.
Volume/LMS type	Further specification of the location, depending on the operating environment.

Available function codes for the listed locations are:

Use this code	to do this
O	Display the objects (objects loaded, backed-up objects, and object records of removed objects) residing in the location. This function branches to the Object Menu with the location fields filled. See **Displaying Objects**.
T	Display file translation tables.

Apart from the standard PF keys, the following PF keys are available:

Press this PF key	to execute this function
PF4	Foreign (in the display of Natural and Predict locations). Display list of foreign locations
PF6	Dates. Displays when and by whom the deployment was added and modified.
PF9	Display Predict locations.

Displaying Jobs

The Jobs option on the Reporting main menu allows you to display information about the objects and records created by a load operation.

This section covers the following topics:

- Job Menu - Reporting
- Selecting Jobs from a List
- Job Display

Job Menu - Reporting

If you select function J on the Reporting menu, the Jobs menu is displayed:

```
14:43:12             **** PREDICT APPLICATION AUDIT  ****         2000-09-20
  User SAGU                       - Job Menu -


                        Code  Function
                        ----  ------------------------
                         D    Display Job
                         S    Select Jobs
                         ?    Help
                         .    Exit
                        ----  ------------------------


            Code ......... _
            Application .. _____
            Status ....... _____
            Number ....... _____
            State ........ _




Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      Help  Menu  Exit                                                   Canc
```

The Job menu offers the following functions for job display:

Function	Meaning
D	Display Job. You must specify a job unambiguously using the input parameter fields. If the job is not specified unambiguously, the function defaults to "S".
S	Select Job. Use this function to generate a selection list of jobs using selection criteria in the parameter input fields as described in **Generating Selection Lists**.

The Job menu offers the following parameter input fields:

Parameter	Meaning
Application	Deployment application name on which the load operation was performed. If you specify this, you must also specify the Status.
Status	Deployment status. If you specify this, you must also specify the Application.
Number	Job load number.
State	Possible values: P (pending), S (scheduled), A (ACTIVATED), F (FINALIZED), B (BACKED OUT). A job is pending if it is stuck in the process of loading.

Selecting Jobs from a List

Function code S in the Jobs menu generates a list of jobs according to the selection criteria in the parameter input fields. The following figure illustrates an example Jobs Selection list:

```
14:43:40              **** PREDICT APPLICATION AUDIT  ****          2000-09-20
  User SAGU                          - Job Selection -


  C Job Name   No.  User-ID  Load Date-Time Migration Event               State
  - --------  -----  -------  -------------- --------------------------- --------
  _ SAGU        13 SAGU    2000-09-20 14:36 HEATHER-CONTROL-PROB-1     Scheduled
  _ SAGU        12 SAGU    2000-09-20 13:56 CLOVER-CONTROL-PROA-1      Scheduled
  _ SAGU        10 SAGU    2000-09-19 20:50 HEATHER-CONTROL-PROA-1     Activated
  _ SAGU         7 SAGU    2000-09-19 20:04 HEATHER-CONTROL-PROB-1     Activated
  _ SAGU         6 SAGU    2000-09-19 16:10 CLOVER-CONTROL-PROC-1      Activated
  _ SAGU        11 SAGU    2000-09-19 21:59 CLOVER-CONTROL-PROA-1      Finalized
  _ SAGU         8 SAGU    2000-09-19 20:20 HEATHER-CONTROL-PROA-1     Backd out








  Command ===>
  Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
        Help  Menu  Exit                                               Canc
```

The Job Selection list displays the job name and number, user ID of the user who performed the load operation, load date and time, the PAC migration event of the application, and the current state of the job.

Available function codes for a listed job are:

Use this code	to do this
D	Display the Job Display screen for the job.
O	Display the Object Menu screen with the Job field filled (see **Displaying Objects**). You can then list all objects belonging to the job, or impose further selection criteria on the objects to produce a restricted list of objects. Objects belonging to a job include those removed from their locations by retirements, job backouts, or finalizations of other jobs (without subsequent deletion of the object records).
Y	Displays the job's deployment. This display lists the Natural and Predict locations of the deployment, and provides access to a display screen listing foreign locations of the deployment. See **Deployment Display**.

You can select several jobs with function code D, O or Y in one input operation. The functions are then processed successively top down as you return to the list of jobs and press ENTER.

Job Display

If you specify a job for display on the Job menu or select a job from a Job selection list, the Job Display is produced. The following figure illustrates an example display of a job. The information provided speaks for itself.

```
14:45:28              **** PREDICT APPLICATION AUDIT  ****        2000-09-20
 User SAGU                         -Job Display -

 Load Information                                       Objects Loaded
   Number ............ 6                                    Natural objects
   User-Id ........... SAGU
   State ............. Activated
   Event Name ........ CLOVER-CONTROL-PROC-1
   Application ....... CLOVER
   Status ............ PROC
   Origin Status ..... CONTROL
   File Transl.Table .
 Date Information
   Loaded ............ 2000-09-19 at 16:10  by SAGU
   Authorized ........ 2000-09-19 at 16:03  by SAGU     from PCM29
   Scheduled ......... 2000-09-19 at 16:03
   Activated ......... 2000-09-19 at 18:10
   Backed out ........
   Finalized ........


Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
     Help  Menu  Exit                                                   Canc
```

Displaying Locations

The Locations option on the Reporting main menu allows you to display information about PAA locations.

This section covers the following topics:

- Locations Menu - Reporting
- Selecting Locations from a List

Locations Menu - Reporting

If you select function code L on the Reporting Menu, the Location menu is displayed:

```
 15:02:57                    Predict Application Audit              2003-10-07
 User DBA                       -Location Menu -

                       Code  Function                     Location Type
                       ----  -------------------------    -------------
                         D   Display Location               N   NATURAL
                         S   Select Locations               P   PREDICT
                         ?   Help                           F   Foreign
                         .   Exit
                       ----  -------------------------    -------------
             Code ......... _                          Type .... _


NATURAL Library ... _____  DBnr .. _____   Fnr .. _____
PREDICT ................... DBnr .. _____   Fnr .. _____
ESY Node ...... ___   DSN _____
                  Volume/LMS Type ..... _____
FTT name ...... _____



Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Menu  Exit                                            Canc    ↵
```

The Location menu offers the following functions for displaying locations:

Function	Meaning
D	Display Location. You must supply an unambiguous location using the input parameter fields. If the location is not specified unambiguously, the function defaults to "S".
S	Select Location. Use this function to generate a selection list of locations using the parameter input fields as described in **Generating Selection Lists**.

The Location menu offers the following parameter input fields:

Parameter	Meaning
Type	One of N (Natural), P (Predict) or F (foreign). Required for both the Display and Select functions.
Natural Library	For type N, specify name of the Natural library, and the database and file numbers of the Natural system file. Do not to confuse the Predict system files of Natural locations with Predict locations; the former carry cross-references, the latter DDMs.
Predict	For type P, specify the database and file numbers of the Predict system file.
ESY node	For type F, specify the Entire System Server node number and the name of the dataset.
Volume/LMS Type	For type F, specify volume (if required) of the PDS on z/OS systems, or LMS type on BS2000 systems.
FTT name	For type N specify the name of the FTT associated with a location.

Selecting Locations from a List

The following three figures illustrate an example list each for the location types Natural, Predict and foreign.

Each selection list reflects the selection criteria used to generate the list, and indicates the current state of each location. Available function codes are described following the third example.

List of Natural Locations

```
14:09:07              **** PREDICT APPLICATION AUDIT  ****         2000-09-20
 User SAGU                  - Natural Location Selection -

 Select Location *

 C  Library   DBnr Fnr   Fdic DBnr Fnr    State
 -  --------  --------   -------------    ---------
 _  LIB1      222  127        222  128    Unlocked
 _  LIB2      222  127        222  128    Unlocked

















Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      Help  Menu  Exit                                                  Canc
```

List of Predict Locations

```
14:09:54              **** PREDICT APPLICATION AUDIT  ****            2000-09-20
  User SAGU                   - Predict Location Selection -


  Select Location *

  C  Predict DBnr Fnr   State
  -  ----------------   ---------
  _            222  128  Unlocked











  Command ===>
  Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
        Help  Menu  Exit                                                   Canc
```

List of Foreign Locations

The example for foreign locations is taken from a BS2000 environment:

```
14:36:20            **** PREDICT APPLICATION AUDIT  ****        2000-09-20
  User SAGU                  - Foreign Location Selection -


  Select Location *
                                                            Volume/
  C  Node  Dataset Name                                     LMS Type  State
  -  ---  ---------------------------------------------- ------ --------
  _  199 $SAGU.EMIGR-COB-LDB-1                               R      Unlocked
  _  199 $SAGU.EMIGR-COB-LDB-2                               R      Unlocked
  _  199 $SAGU.EMIGR-COB-SRC-1                               S      Unlocked
  _  199 $SAGU.EMIGR-COB-SRC-2                               S      Unlocked
  _  199 $SAGU.EMIGR-JCL-1                                   J      Locked
  _  199 $SAGU.EMIGR-JCL-2                                   J      Locked






Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      Help  Menu  Exit                                                  Canc
```

The following functions are available for the locations listed:

Use this code	to do this
D	Invoke the location display screen for the location. This screen contains a list of the deployments that contain the location.
O	Displays the objects residing in the location. This function branches to the Object Menu with the location fields filled (see **Displaying Objects**). You can then Select all objects known by the PAA to be in the location, to be backed up for it, or to be removed from it (with the object record undeleted); or you can specify further selection criteria on the objects to be reported on an Object Selection screen.

You can select several locations with function code D or O in one input operation. The functions are then processed successively top down as you return to the location list and press ENTER.

Displaying File Translation Tables

The File Translation Table option on the Reporting main menu allows you to display information about the defined PAA file translation tables. This is described under the following subsections:

- File Translation Table Menu - Reporting
- Selecting File Translation Tables from a List

- File Translation Table Display

File Translation Table Menu - Reporting

If you select function F on the Reporting Menu, the File Translation Table menu is displayed:

```
 11:27:27              **** PREDICT APPLICATION AUDIT ****              2001-04-05
 User UKMJ           - File Translation Table Reporting Menu -



                    Code  Sub-Function
                    ----  ---------------------------------
                     D    Display File Translation Table
                     S    Select File Translation Table
                     ?    Help
                     .    Exit
                    ----  ---------------------------------



       Code .......... _
       FTT name ...... _____



 Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Menu  Exit                                            Canc    ↵
```

The File Translation Table menu offers the following functions for File Translation Table display:

Function	Meaning
D	Display file translation table. You must specify a file translation table name using the input parameter fields. If the file translation table is not specified unambiguously, the function defaults to "S".
S	Select file translation table. Use this function to generate a selection list of file translation tables.

Selecting File Translation Tables from a List

Function code S in the File Translation Table menu generates a list of file translation table's according to the selection criteria. The following screen illustrates an example File Translation Table Selection list:

```
 11:29:37              **** PREDICT APPLICATION AUDIT ****              2001-04-05
 User UKMJ                  - File Translation Table Selection -

 C         FTT name                        Type Versions
 -  ------------------------------         ---- --------
 _   FTTA                                  AND      1
 _   FTT0                                  OR       2
 _   UKMJ_PROD_FTT                         OR       1
 _   UKMJ_PROD_FTT_001                     AND      1














 Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Menu  Exit                    Top                              Canc   ↵
```

The File Translation Table Selection list displays the file translation table name, type and version number. Available function codes for a listed file translation tables are:

Use this code	to do this
D	Display the File Translation Table screen for the file translation table.
s	Select the file translation table.

File Translation Table Display

If you specify a file translation table for display on the File Translation Table menu or select a file translation table from a file translation table selection list, the File Translation Table Display is produced.

The following screen illustrates an example display of a file translation table. The information provided speaks for itself.

```
 11:31:01           **** PREDICT APPLICATION AUDIT ****               2001-04-05
 User UKMJ             - File Translation Table Allocation -
                                                           FTT type .. OR
 Table name .......... FTTO                                Version  .. 2
                                                           Modified .. 2001-03-21


          DBnr Origin    DBnr Dest.          Fnr Origin   Fnr Dest.
          -----------    ----------          ----------   ---------
             _____         _____                164          200
             _____         _____                237           31
             _____         _____                247           31
             _____         _____               _____        _____
             _____         _____               _____        _____
             _____         _____               _____        _____
             _____         _____               _____        _____
             _____         _____               _____        _____
             _____         _____               _____        _____
             _____         _____               _____        _____
             _____         _____               _____        _____
             _____         _____  Page .. 1    _____        _____    Page .. 1

Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Menu  Exit  Dates --     ++     -     +      Seq-D             Canc  ↵
```

Displaying Objects

The Objects option on the Reporting main menu allows you to display information about the objects under the control of PAA.

This section covers the following topics:

- Objects Menu - Reporting
- Selecting Objects from a List
- Object Display

- Object Directory Information

Objects Menu - Reporting

If you select function O on the Reporting menu, the Objects menu is displayed:

```
 15:07:39                  Predict Application Audit              2003-10-07
 User DBA                       -Object Menu -

                      Code   Function
                      ----   --------------------------
                       D    Display Object
                       S    Select Objects
                       ?    Help
                       .    Exit
                      ----   --------------------------
           Code ......... _
 Object ..... _____          Job Number .. _____
 Type.. _ ____ _   State .. _   Version .. _____          Location Type ... _
 NATURAL Library ... _____  DBnr .. _____   Fnr .. _____
 PREDICT .................... DBnr .. _____   Fnr .. _____
 ESY Node ...... ___   DSN _____
                   Volume/LMS Type ... _____      Current from .. _____
 Application ... _____            to .. _____
 Status ........ _____             (yyyy-mm-dd)
 FTT name ...... _____     FTT version ... _____

 Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Menu  Exit                                                 Canc
```

The Object menu offers the following functions for Object display:

Function	Meaning
D	Display Object. You must specify an object unambiguously using the input parameter fields. If the job is not specified unambiguously, the function defaults to "S".
S	Select Object. Use this function to generate a selection list of objects using selection criteria in the parameter input fields as described in **Generating Selection Lists**.

The Object menu offers the following parameter input fields:

Parameter	Meaning
Object	Object name
Job number	Job number of the load that produced the object.
Type	Subtypes of the object. If you specify subtype 2, you must also specify subtype 1. See the description of objects in the **Terminology list**.
State	Scheduled (S), current (C), backed up (B), historical (H), removed (R), or <blank> (all states). An object with state "historical" arises when backed-up objects are made current. There are then two object records: one current and one historical.
Version	If you specify a location, you can also specify a PAA version number here.
Location type	One of Natural(N), Predict(P) or Foreign (F).
Natural library	For location type N, the library name, database number and file number. You must specify all location parameters (that is, no selection criteria or blank).
Predict	For location type P, the Predict database number and file number.
ESY node	For location type F, the Entire System Server node number, dataset name, and volume or LMS (depending on the operating system).
Current from / to	Specify a "current from" date to select objects which were current on or after that date. Specify a "current to" date to select objects which were current on or before that date.
Application	Specify the PAC application to select the objects loaded from it. No wildcard selection is possible here.
Status	Specify a status to select objects loaded to the deployment identified by the combination of this and the Application field. No wildcard selection is possible here.
FTT Name	Specify the name of a FTT.
FTT Version	The version number of the specified FTT Name.

Selecting Objects from a List

Function code S in the Objects menu generates a list of objects according to the selection criteria in the parameter input fields. The following figure illustrates an example Object Selection list:

```
14:59:03               **** PREDICT APPLICATION AUDIT  ****          2000-09-20
  User SAGU                       - Object Selection -

  Objects ES_Z_P05

  C Object Name                          Type   State Vers  Location
  - -------------------------------- ------ ---- ----- ------------------------
  _ ES_Z_P05 (Source)                    Progrm Schd      LIB1 222 127 (222,128)
  _ ES_Z_P05 (Catlg)                     Progrm Schd      LIB1 222 127 (222,128)
  _ ES_Z_P05 (ref)                     Progrm Schd       LIB1 222 127 (222,128)
  _ ES_Z_P05 (Source)                    Progrm Curr 00002 LIB1 222 127 (222,128)
  _ ES_Z_P05 (Catlg)                     Progrm Curr 00002 LIB1 222 127 (222,128)
  _ ES_Z_P05 (ref)                     Progrm Curr 00002 LIB1 222 127 (222,128)
  _ ES_Z_P05 (Source)                    Progrm Curr 00001 LIB2 222 127 (222,128)
  _ ES_Z_P05 (Catlg)                     Progrm Curr 00001 LIB2 222 127 (222,128)
  _ ES_Z_P05 (ref)                     Progrm Curr 00001 LIB2 222 127 (222,128)
  _ ES_Z_P05 (Source)                    Progrm Remd 00001 LIB1 222 127 (222,128)

Reposition: _____


Command ===> _____
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
       Help  Menu  Exit                                                 Canc
```

The Object Selection list displays the object name and type, an abbreviation of its state, its PAA version number, and its location (dataset names may be truncated). Available function codes for a listed object are:

Use this code	to do this
D	Display the Object Display screen for the object. This screen contains the information about the object relevant to PAA and provides access to an Object Directory Information Display screen (see below).
J	Display the Job Display screen containing information about the job the object belongs to (see **Job Display**).

You can select several objects with function code D, or J in one input operation. The functions are then processed successively top down as you return to the list of objects and press ENTER.

Object Display

If you specify an object for display on the Object Menu or select an object from an Object selection list, the Object Display is produced. The following figure illustrates an example display of an object. The information provided speaks for itself.

```
 15:13:16              Predict Application Audit              2003-10-07
 User DBA                   - Object Display -

Object ...... AS-LL                              Type ..... Progrm
Version ..... 00001      PAC version ... 00004   Format ... Source
State ....... Backed up

Location ..... Library AS0 164 31
Application .. APPLE
Status ....... PRO4
Job number ... 27
File Trans.Table .. FTT-PROD-001                                       ↵

 Date Information
Loaded .......... 2002-12-04 at 16:28 by XSETAS    from PACSTEP
Scheduled .......
Activated ....... 2002-12-04 at 16:28 by XSETAS    from PACSTEP
Backed up ....... 2002-12-05 at 15:24 by XSETAS    from PACSTEP
Removed .........
                                     Directory Information   N


Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Menu  Exit  Job                                           Canc
```

Type Y in the Directory Information field to display directory information about the object, see below.

Press PF4 to display the Job Display screen of the job the object belongs to.

Object Directory Information

You can invoke this screen from the Object Display screen (see above). The information items concerning object directory information speak for themselves.

```
                   **** PREDICT APPLICATION AUDIT  ****
 User SAGU              - Object Directory Information Display -


Directory of Program ES_Z_P05                   Saved on ...2000-09-19 21:23:49
--------------------------------------------------------------------------------
Library .... * PAA  *   User-ID ...... SAGU      Mode ......... Structured
TP-System .. RTIO       Terminal-ID .. PCM29     PAC version .. 2
Op-System .. BS2000     Transaction .. B.NRT227  PAA version .. 2
NAT-Ver .... 2.3.3
Size in ESIZE ....................... 767     Bytes
```

Invoking the Compare Utility

The Compare Utility option on the Reporting main menu allows you to compare PAA-controlled objects as well as Natural objects in this environment.

If you select function C on the Reporting Menu, the Compare Utility main menu is displayed:

```
11:53:16              ***** Predict Application Control *****           02-01-16
User UKMJ                  - PAA Compare Main Menu -             Library SYSPAA
                                                                    Mode PAA


                       Code  Function or Mode
                       ----  --------------------------------
                        A   Compare PAA Objects
                        N   Compare Natural Objects
                        x   Direct Command Mode
                        ?   Help
                        .   Exit







Command ===>

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Menu  Exit                                                  Clear
```

The Compare Utility can be used in either Natural mode, PAA mode or PAC mode. Therefore, the detailed description can be found in the PAC Reference documentation. Please see the sections Compare Utility and in particular PAA Mode.

3　Administration Functions

This section describes the PAA Administration facility. It tells you how to execute administration functions in menu mode.

Before you start work with PAA menus, you are recommended to read the section **User Interface**.

To execute PAA administration functions, you must be linked to library SYSPAAA.

This section covers the following topics:

Administration Menu

To access the PAA administration functions online from Natural:

1. Type SYSPAAA on the Natural command line or at the NEXT prompt.

2. Press ENTER.

To access the PAA administration functions from the PAA Reporting facility:

1. Type MENU on the command line of any reporting screen.

2. Press ENTER.

In either case, the administration facility main menu appears (following possibly the PAA banner screen).

```
 13:58:00                **** PREDICT APPLICATION AUDIT ****              2009-01-26
 User SAGU                      - Administration -


          Code  Function                          Jobs Awaiting Action
          ----  ----------------                  ---------------------
           D    Deployments                       0 pending   job(s)
           L    Locations                         0 scheduled job(s) due
           J    Jobs                              0 scheduled job(s)
           O    Objects
           F    File Translation Tables
           S    System Functions
           C    Compare Utility
           ?    Help
           .    Exit
          ----  ----------------


     Code ... _



 Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Menu  Exit                                                    Canc
```

The screen structure of the Administration facility is similar to that of the Reporting facility. From the administration screens, all reporting functions are available for the listed entities (Deployments, Locations, Jobs, and Objects), plus the administration functions described in this section.

Under the heading Jobs Awaiting Action, the following information is displayed:

Information Item	Meaning
Pending jobs	the number of jobs in the process of loading.
Scheduled jobs due	the number of scheduled jobs due for activation.
Scheduled jobs	the number of scheduled jobs loaded but not yet activated.

> **Note:** PAA objects should not be processed individually. Whole sets of objects can be handled via the Jobs option. The Objects option on the Administration menu provides the same reporting functions as described in **Displaying Objects**.

To access a secondary menu:

1. Type the appropriate function code in the Code field of the Administration main menu.

2. Press ENTER.

Maintaining Deployments

The Deployment option on the Administration main menu allows you to maintain PAA deployments.

This section covers the following topics:

- Deployment Menu - Administration
- Overview of Administration Functions for Deployments
- Adding or Modifying a Deployment
- Defining a File Translation Table to a Deployment

Deployment Menu - Administration

If you select function code D on the Administration menu, the Deployment menu is displayed:

```
 15:19:08                   Predict Application Audit            2008-10-07
 User  DBA                      - Deployment Menu -

                         Code  Function
                         ----  ----------------------------
                           A   Add Deployment
                           D   Display Deployment
                           F   Define FTT for Deployment
                           M   Modify Deployment
                           P   Purge Deployment
                           R   Refresh Deployment
                           S   Select Deployments
                           U   Unlock Deployment
                           ?   Help
                           .   Exit
                         ----  ----------------------------
              Code ......... _
              Application .. _____
              Status ....... _____
              FTT name ..... _____

Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Menu  Exit                                                    Canc
```

Functions Select and Display are described in the section **Displaying Deployments**. However, in addition to the reporting functions, the Deployment display screen also allows you to execute the EXCLUDE function (function code E) for locations in the deployment. See **Maintaining Locations**.

For functions Display, Add, Modify, Refresh, and Purge, you must specify a deployment unambiguously in the Application and Status fields, otherwise the function defaults to Select. You can

then select a Deployment from a list using one of the available functions codes. See also **Generating Selection Lists** and Selecting a Deployment from a List.

If you select several deployments from a list using function code J , D M , R , P , or U, then the topmost function is processed first. On return to the Deployment Selection screen, the displayed information is updated (significantly if the function was a successful Refresh or Purge), and when you press ENTER, the next function from the top is processed.

Overview of Administration Functions for Deployments

- Add
- Modify
- Purge
- Refresh
- Unlock

Add

You cannot add a deployment if a deployment of the same name already exists in the PAA system file.

Modify

Deployments can be modified when in either a used or dormant state.

■ **Dormant**

Deployments in this state can have any location information altered.

■ **Used**

Deployments that have already been used may have additional locations added to them, (both Natural as well as Predict locations) but may not have original location information altered.

Purge

Purging a deployment means:

■ removing the objects and deleting the object records associated with the jobs that have used the deployment,

■ deleting the job records,

■ deleting the deployment (record) itself.

If a domestic location in a purged deployment is not used by any other deployment, then the record in the location marking it as being under the PAA control is deleted, and the location becomes

available to other PAAs. The record of any location is deleted when the last deployment referring to it is purged.

You cannot purge a deployment if any of its locations is locked, or if the deployment is in use (that is, it is being worked on by another user or by the same user in a concurrent session).

Refresh

Refreshing a deployment means purging it minus the deployment deletion. Since the deployment record stays, the location marker and location record are also retained. A refreshed deployment can be modified.

You cannot refresh a deployment if any of its locations is locked, or if the deployment is in use (that is, it is being worked on by another user or by the same user in a concurrent session).

Unlock

You unlock a deployment if an activity using it has terminated abnormally and has left it "in use".

> **Note:** Unlocking a deployment which is legitimately in use (e.g. objects are being migrated into it or a location is being excluded from it) can have unpredictable results.

Adding or Modifying a Deployment

Functions Add and Modify display the Deployment Definition screen. For function Add, the screen is empty; for function M, the screen shows the definitions for the selected deployment.

When Adding or Modifying locations in a deployment, keep in mind the information contained in the section **Location Considerations**.

Below is an example Deployment Definition screen displayed using the Modify function:

```
15:48:43                **** Predict Application Audit    ****        2008-09-20
 User VMU                      - Deployment Definition -

Application ...... DEMO
Status ........... PRODUCTION


NATURAL    Locations         FDIC                             FDIC
Library    DBnr  Fnr         DBnr  Fnr        Library  DBnr  Fnr     DBnr  Fnr
------------------------------------         ------------------------------------

_____   _____ _____       _____ _____      _____  _____ _____   _____ _____
_____   _____ _____       _____ _____      _____  _____ _____   _____ _____
_____   _____ _____       _____ _____      _____  _____ _____   _____ _____
_____   _____ _____       _____ _____      _____  _____ _____   _____ _____
_____   _____ _____       _____ _____      _____  _____ _____   _____ _____
_____   _____ _____       _____ _____      _____  _____ _____   _____ _____
_____   _____ _____       _____ _____      _____  _____ _____   _____ _____
_____   _____ _____       _____ _____      _____  _____ _____   _____ _____


Predict Locations .... N                              Foreign Locations ..... N

Enter details and press 'PF5' to update (PF3 to Exit)
Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      Help  Menu  Exit  Forgn Upd               -     +     PRED              Canc
```

With the Add function, you can specify a new deployment in the Application and Status fields. The Application and Status parameters are the name and status of the PAC application that is to use the deployment.

With the Modify function, you can add locations to or delete locations from the deployment, but you cannot change the deployment application name and status. You can modify the deployment status using the **RENAME** direct command, but you should do this only if absolutely necessary.

The following special PF keys are available from the Deployment Definition screen:

Press this PF key	to execute this function
PF4	Display the Foreign Part Definition screen.
PF5	Save the deployment definition
PF6	Dates

The following is an example of a Foreign Part Definition screen:

```
15:49:19          **** Predict Application Audit    ****          2008-09-20
  User SAGU             -Deployment Foreign Part Definition -

  Application .. HEATHER
  Status ....... PROC
                                                                   Volume/
  Node   Type Fmt Dataset Name                                     LMS Type
  ----   ---- --- -------------------------------------------------- ------
  199    FJCL  S  $SAGU.EMIGR-JCL-2_____   J_____
  199    FCOS  S  $SAGU.EMIGR-COB-SRC-1_____   S_____
  199    FCOL  L  $SAGU.EMIGR-COB-LDB-1_____   R_____
  199    FCOS  S  $SAGU.EMIGR-COB-SRC-2_____   S_____
  199    FCOL  L  $SAGU.EMIGR-COB-LDB-2_____   R_____

  ___    ____  _  _____  _____
  ___    ____  _  _____  _____
  ___    ____  _  _____  _____
  ___    ____  _  _____  _____
  ___    ____  _  _____  _____
  ___    ____  _  _____  _____

Enter details and press 'PF5' to update (PF3 to Exit)
Command ===> _____
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      Help  Menu  Exit        Upd   Dates                            Canc
```

The information items to be provided or modified are as follows:

Column	Meaning
Node	The Entire System Server node on which the location resides.
Type	You can define a type to indicate the object type that can be loaded to this location.
Fmt	The location format (S for source objects, L for loadable objects).
Name	Name of the location.
Volume/LMS type	Further specification of the location, depending on the operating environment.

Defining a File Translation Table to a Deployment

By selecting the F option from the main Deployment menu the user is given the option to define a file translation table to a deployment. The user can either select or add an already defined file translation table to the Natural location(s).

Similiary by selecting the Predict locations option the user can add a file translation table to Predict location.

The following screen illustrates an example Deployment Location FTT Definition:

```
 11:59:39              **** PREDICT APPLICATION AUDIT ****              2008-04-05
 User UKMJ                - Deployment Location FTT Definition -

Application ...... UKMJ_APPLICATION
Status ........... UKMJ_PRODUCTION


          NATURAL    Locations
  Library  DBnr   Fnr   FDIC DBnr   Fnr    File Translation Table
 ------------------------------------------   --------------------------------
  UKMJP23   164   247         164    235    FTTA_____
  UKMJP231  164   247         164    235    _____




Predict Locations ...... Y

Enter details and press 'PF5' to update (PF3 to Exit)
Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
     Help  Menu  Exit        Upd         -     +     PRED              Canc   ↵
```

The following special PF keys are available from the File Translation Table Definition screen:

Press this PF key	to execute this function
PF5	Updates definition
PF9	Predict location FTT definition

If you choose Y in the Predict Locations field or press PF9, you access the Deployment Predict Part FTT Definition screen. The following screen shows an example:

```
 13:33:47               **** PREDICT APPLICATION AUDIT ****            2008-04-05
 User UKMJ              - Deployment Predict Part FTT Definition -

Application ...... UKMJ_APPLICATION
Status ........... UKMJ_PRODUCTION


   DBnr    Fnr       File Translation Table
   -----   -----     -------------------------------
   164     235       FTT0_____








Enter details and press 'PF5' to update (PF3 to Exit)
Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
     Help  Menu  Exit        Upd              -     +                  Canc   ↵
```

Maintaining Locations

The Locations option on the Administration main menu allows you to maintain PAA locations. Maintaining locations means (apart from the reporting functions Display and Select) excluding and forgetting locations from PAA or from a specific deployment.

This section covers the following topics:

- Location Menu - Administration
- Excluding Locations

- Forgetting Locations

Location Menu - Administration

If you select function code L on the Administration menu, the Location Menu is displayed:

```
15:52:48                Predict Application Audit              2008-10-07
User DBA                     -Location Menu -

                   Code   Function                        Location Type
                   ----   --------------------------      -------------
                    D    Display Location                  N  NATURAL
                    S    Select Locations                  P  PREDICT
                    E    Exclude Location                  F  Foreign
                    F    Forget Location
                    ?    Help
                    .    Exit
                   ----   --------------------------      -------------
            Code ......... _                          Type .... _

NATURAL Library ... _____  DBnr .. _____   Fnr .. _____
PREDICT .................... DBnr .. _____   Fnr .. _____
ESY Node ...... ___   DSN _____
                 Volume/LMS Type ..... _____
FTT name ...... _____


Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
     Help  Menu  Exit                                                    Canc
```

Functions Select and Display are similar to the corresponding functions in the Reporting facility and are described in Displaying Locations. For function Display, however, the administration function EXCLUDE is available which excludes the location from the deployment.

Function Exclude requires you to specify a location unambiguously using the parameter input fields according to Type (N, P or F for Natural, Predict or foreign respectively). The location is then excluded from the PAA (see **Excluding Locations**).

If you do not specify a location unambiguously, the function defaults to Select. You can then select a location from a list using one of the available functions codes. See also **Generating Selection Lists** and Selecting a Location from a List. If you select a location from a list using function code E, the location is excluded from the PAA.

Excluding Locations

You can exclude locations from PAA or from a specific deployment.

To exclude a location from PAA:

Use function code E on the Location Menu and specify a location in the parameter input fields.

Or

1. Use function code S on the Location Menu and specify selection criteria in the parameter input fields to list locations (see **Generating Selection Lists**).

2. Select a location from the resulting list with function code E. This excludes the location from the PAA.

Excluding a location from the PAA means removing the objects written into it by the PAA, deleting the object records, removing the location from any deployments, removing the marker record from the location if it is a domestic location, and deleting the location record from the PAA system file. The location is now available to other PAAs.

To exclude a location from a Deployment:

1. Use function code D on the Location Menu and specify selection criteria in the parameter input fields to display the location.
   Or:
   Generate a list of locations using function code S and selection criteria in the input parameters of the Locations Menu. Then select a location from the resulting list with function code D. The location is displayed, showing the list of deployments that refer to the location.

2. Select the deployment with function code E. This excludes the location from the deployment (the deployment is removed from the list on the Location Display screen).

Excluding a location from a deployment means removing the objects written into it by the jobs that use the deployment, deleting the object records, and removing the location from the deployment. If the location is not listed in any other deployment, it is also excluded from the PAA.

If after the exclusion of a location a deployment has no location left, it is not automatically purged, it becomes modifiable. Excluding locations from single deployments does not affect job records.

Forgetting Locations

You can forget locations from PAA or from a specific deployment.

≫ **To forget a location from PAA**

■ Use function code F on the Location Menu and specify a location in the parameter input fields.

Or:

1. Use function code S on the Location Menu and specify selection criteria in the parameter input fields to list locations (see **Generating Selection Lists**).

2. Select a location from the resulting list with function code F. This forgets the location from the PAA.

The forget location function works as the exclude function except it does not delete the current objects put there by the PAA.

The forget location function works as the exclude function except it does not delete the current objects put there by the PAA.

≫ **To forget a location from a Deployment:**

1 Use function code D on the Location Menu and specify selection criteria in the parameter input fields to display the location.

Or:

Generate a list of locations using function code S and selection criteria in the input parameters of the Locations Menu. Then select a location from the resulting list with function code D.

The location is displayed, showing the list of deployments that refer to the location.

2 Select the deployment with function code F.

This forgets the location from the deployment (the deployment is removed from the list on the Location Display screen).

The forget location function works as the exclude function except it does not delete the current objects put there by the PAA.

If after the forgetting a location a deployment has no location left, it is not automatically purged, it becomes modifiable. Forgetting locations from single deployments does not affect job records.

Maintaining Jobs

A PAA job is the set of PAA objects and control records created by a load. The Jobs option on the Administration main menu allows you to maintain PAA jobs.

This section covers the following topics:

- PAA Job Number Limitations
- Job Menu - Administration
- Administration Functions for Jobs

PAA Job Number Limitations

PAA currently has a job number limitation of 65 535 and once that number is reached any migration into PAA will terminate with the message:

```
Job numbers exceeded.
```

At which point the job will terminate abnormally. In order to resolve this, a small change was implemented, so that PAA will be able to re-use previously allocated PAA job numbers.

Assuming that you have previously purged already allocated job numbers, when the PAA job number limit is reached, PAA will detect what job number is next available and then use that for processing. In order to aid this process and as part of the resolution the program PA2PAJOOR is provided (library SYSPAA). When executed it will provide a report of job numbers that you can purge and thus freeing up a previously allocated PAA job number for re-use by PAA. The program is parameter-driven and can use the following parameters as input:

MainParameter	Function
R	Tells the program to reproduce a report of all PAA job numbers that could be purged.
W	Tells the program to unload the PAA direct commands (Purge Job nnnn) toCMWFK01, these can then be used as input into a separate JCL used to purge the listedjobs.

To aid in the reporting process, you can use four further parameters to supplement R:

- Application name R

- Status name

- Date/Time from

- Date/Time to

For example: PA2PJOOR R,SYSPAC_222,PRODUCTION,199912010800,200012011500

The above example can be described as follows: Show me all PAA job numbers that can be purged for application (SYSPAC_222), status (PRODUCTION), from (1st December 1999 at 08:00), to 1st December 2000 at 15:00).

Job Menu - Administration

If you select function code J on the Administration menu, the Job menu is displayed:

```
15:57:44              **** PREDICT APPLICATION AUDIT  ****          2008-01-16
  User SAGU                      - Job Menu -


                        Code  Function
                        ----  ------------------------
                         D    Display Job
                         S    Select Jobs
                         A    Activate Job
                         B    Backout Job
                         F    Finalize Job
                         P    Purge Job
                         N    Purge Natural Buffer Pool
                         ?    Help
                         .    Exit
                        ----  ------------------------
             Code ......... _
             Application .. _____
             Status ....... _____
             Number ....... _____
             State ........ _

 Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      Help  Menu  Exit                                                    Canc
```

You identify a job using the available parameter input fields:

Parameter	Meaning
Application	Application name of the deployment on which the load operation was performed. If you specify this, you must also specify the Status.
Status	Status part of the deployment name. If you specify this, you must also specify the Application.
Number	Job load number.
State	Job state. Possible values: P (pending), S (scheduled), A (ACTIVATED), F (FINALIZED), B (BACKED OUT). A job is pending if it is stuck in the process of loading.

Functions Select and Display are similar to the corresponding functions in the Reporting Facility, see **Displaying Jobs**. In a list of jobs, the functions Activate (A), Finalize (F), Back out (B), Purge (P), and Purge Natural Buffer Pool (N) are also available, under the conditions described in **Administration Functions for Jobs**.

For functions Display, Activate, Finalize, Back out, Purge, and Purge Natural Buffer Pool, you must specify a job unambiguously using the input parameters, otherwise the function defaults to select.

If you select several jobs from a list using function code D , O , Y , A , F , B , P , or N, then the top-most function is processed first. On return to the Job Selection screen, the displayed information is updated (significantly if the function was a successful Activate, Finalize, Back out, or Purge), and when you press ENTER, the next function from the top is processed.

Administration Functions for Jobs

Administration functions for jobs provide the means of making objects operational and removing objects under certain conditions.

Activate

By activating a job, you activate the objects that belong to it as a result of a load operation. Activation an object means:

- Optionally backing up a like object in the location.
- Assigning a PAA version number to the object being activated.
- Making the object operational (the back-up object is unoperational).
- Updating the object record in the PAA system file.

A job can be activated only if its state is "scheduled", its schedule time has come, and no jobs with earlier schedule times remain unactivated.

See also **Activating Loaded Objects**.

Finalize

When a job is finalized, all objects whose records precede the records of the job's objects in the succession chains are removed. Only jobs in ACTIVATED state can be finalized.

Back-out

When a job is backed out, all its objects are deleted from their locations (or, in the case of backed-up foreign objects, from the PAA system file). Their records are marked "removed" and excluded from the object succession chains. If a currently active object is removed that was backed up at activation, then this back-up object is made current.

Only jobs in ACTIVATED or FINALIZED state can be backed out. A job cannot be backed out if any of its objects has been superseded by subsequent activations and the superseding objects still exist.

Purge

Purging a job means backing it out and deleting all its object records as well as the job record. Any job can be purged.

Purge Natural Buffer pool

You can purge objects with the same name as Natural objects in a job from the Natural buffer pools of their locations.

Maintaining File Translation Tables

```
12:01:24            **** PREDICT APPLICATION AUDIT ****              2008-04-05
User UKMJ           - File Translation Table Maintenance Menu -


                   Code  Sub-Function
                   ----  ---------------------------------
                    A   Add File Translation Table
                    C   Copy File Translation Table
                    D   Display File Translation Table
                    M   Modify File Translation Table
                    P   Purge File Translation Table
                    S   Select File Translation Tables
                    ?   Help
                    .   Exit
                   ----  ---------------------------------


    Code ............ _                        FTT type 0 to add
    FTT name ........ _____
    New FTT name .... _____


Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Menu  Exit                                              Canc    ↵
```

```
12:02:27          **** PREDICT APPLICATION AUDIT ****          2008-04-05
User UKMJ        - File Translation Table Allocation -
                                                  FTT type .. OR
Table name .......... FTTC                         Version  .. 1
                                                  Modified .. 2008-04-05


        DBnr Origin   DBnr Dest.        Fnr Origin   Fnr Dest.
        -----------   ----------        ----------   ---------
           _____        _____              _____       _____
           _____        _____              _____       _____
           _____        _____              _____       _____
           _____        _____              _____       _____
           _____        _____              _____       _____
           _____        _____              _____       _____
           _____        _____              _____       _____
           _____        _____              _____       _____
           _____        _____              _____       _____
           _____        _____              _____       _____
           _____        _____              _____       _____
           _____        _____              _____       _____
           _____        _____  Page .. 1   _____       _____  Page .. 1

Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Menu  Exit  Dates --        -     +     Seq-D Save        Canc   ↵
```

System Functions

If you select option S from the Administration menu, the System Functions menu is displayed.

The system functions are available for monitoring and/or modification purposes.

- PAA State Report
- Lock Report
- System Defaults
- Applymods
- User Exits

- Foreign Object Type Description

```
15:50:29              **** PREDICT APPLICATION AUDIT  ****          2008-09-20
  User SAGU                    - System Functions -



                      Code  Function
                      ----  ------------------------------
                       R    PAA State Report
                       L    Lock Report
                       S    System Defaults
                       M    Applymods
                       U    User Exits
                       F    Foreign Object Type Description
                       ?    Help
                       .    Exit
                      ----  ------------------------------


         Code ......... _



Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
     Help  Menu  Exit                                                    Canc
```

PAA State Report

A PAA State Report contains:

- the next available job number,

- the date and time of the last migration to the PAA,

- the database and file numbers of the PAA system file,

- the version of PAA at work,

- the PAA installation date,

- a list of all pending jobs,

- a list of all backed-out jobs.

Lock Report

A Lock Report contains:

- a list of all pending jobs,

- a list of all deployments currently in use,

- a list of all locked Natural, Predict, and foreign locations.

System Defaults

The System Defaults which can be displayed and modified are:

- Natural and Predict default DBnr and Fnr,

- the maximum number of held ISNs (the ET parameter),

- the maximum number of teleprocessing transactions between Natural task rolls (the TP para-meter),

- the title to appear at the top of the PAA screens,

- the banner screen switch (Y(es) or N(o)),

- the number of the Entire System Server node on which the PAA runs.

Applymods

Applymod 1, when switched on, prevents a PAA job from being backed out. If any of the job's (versioned) objects has no predecessor in its object version succession chain.

Applymod 2, when switched on, prevents a PAA job from being backed out. If any of the job's (versioned) objects has no successor in its object version succession chain.

Applymod 3, when switched off allows any job to be purged. When switched on allows any job which has no current objects to be purged. If a job has at least one current object then the following error message is returned:

```
PAA0053 (E): This job cannot be purged.
```

Applymod 4, when switched on, should any object of a particular PAA job fail to load then the whole PAA job will be re-scheduled including all of its objects. Thus no objects in the PAA job are loaded/activated. The state of the production system is thus returned to a state that it was in before the PAC/PAA job was started. When switched off then only the unsuccessful objects remain un-loaded and successful objects will be loaded/activated.

User Exits

There are three user exits built into PAA. Each of them consists of one or more CALLNATs to a named subprogram which you must write. A user exit CALLNAT is executed only if you have "switched on" the exit.

The User Exits function is provided for the purpose of switching the exits on (Y for "YES") or off (N for "NO").

- User exit 1 will invoke PAAEX001 (normally in library SYSPAAUS) when the PAA is started. In PAAEX001, you can program pre-PAA session actions, e.g. the recording of the PAA starter's data in a site log. PAA communicates with PAAEX001 by a parameter USER-AREA (A50), whose value can be subsequently retrieved at user exit 2.

- User exit 2 will invoke PAAEX002 (normally in library SYSPAAUS) when the PAA is terminated. In PAAEX002, you can program post-PAA session actions, e.g. the recording of the PAA terminator's data in a site log. PAA communicates with PAAEX002 by a parameter USER-AREA (A50), which retains the value assigned to it at user exit 1.

- User exit 3 will invoke MIGEX003 (normally in library SYSPACUS) whenever the PAA accesses a location in a Natural or Predict system file. In MIGEX003, you can specify a password or a cipher needed to access the file. PAA communicates with MIGEX003 by the following four parameters:

DBID (N3)	Database number of the file to be accessed
FNR (N3)	File number of the file to be accessed
PSWD (A8)	Password to be passed to the file (or use CIPH)
CIPH (A8)	Cipher to be passed to the file (or use PSWD)

- User exit 4 is the node security exit for Entire System Server. When using Entire System Server to access a remote node, this exit allows you to specify a different user ID and password for protected partitioned datasets.

Foreign Object Type Description

The Foreign Object Type Description function lists all the foreign object types (the 4 bytes of Subtype2 plus the 1 byte of Subtype3) that occur in the deployment records and allows you to create, view, and change the descriptions of the types.

If a deployment that contains foreign object type descriptions is deleted then it is possible to remove these foreign object type descriptions from PAA. On entering the foreign object type description list types that are no longer used will be modifiable. Then on blanking out all descriptions of this type, the type will then be removed from PAA.

4   Direct Commands

Using direct commands is a quick way of executing PAA functions without needing to navigate through the PAA menu structure. You can also use direct commands to route the output of reports to a file.

This section describes the syntax of all available direct commands and includes a brief description of their function. Where a command has a corresponding function in a PAA menu, the function and menu name is indicated.

Issuing Direct Commands

There are two ways of issuing direct commands to PAA:

■ At the NEXT prompt in Natural, with library SYSPAA current.

All commands except ADJUST must be preceded by "MENU".

A command must fit on a single line. Command keywords and parameters can be separated by spaces or single delimiter characters (usually commas).

■ From a batch job in an appropriate order between the lines:

LOGON SYSPAA
MENU
and
FIN

where each command must start a new line.

When issuing the command ADJUST in batch, they must not be preceded by "MENU".

A command in batch can span several lines. The continuation character "%" must then be inserted at the end of each line except the last. Command keywords and parameters must be separated by single delimiter characters.

Handling Deployments

Direct commands for deployments are:

- REPORT
- REFRESH
- PURGE

- RENAME

REPORT

Command Syntax

```
REPORT DEPLOYMENT [range-of-application-names]
```

and

```
REPORT DEPLOYMENT application-name range-of-status-names
```

Description

Writes to print file 1 lists of deployments according to specified selection criteria.

Corresponding Menu Function

Function Select on Deployment Menu (Reporting).

REFRESH

Command Syntax

```
REFRESH DEPLOYMENT application-name status-name
```

Description

Refreshes a deployment.

Corresponding Menu Function

Function Refresh on Deployment Menu (Administration).

PURGE

Command Syntax

```
PURGE DEPLOYMENT application-name status-name ↵
```

Description

Purges a deployment.

Corresponding Menu Function

Function Purge on Deployment Menu (Administration).

RENAME

Command Syntax

```
RENAME DEPLOYMENT range-of-application-names
  status-name-1 status-name-2
```

Description

Changes the status parts of deployment names by replacing *status-name-1* with *status-name-2*. Deployments whose names' application parts are within the specified range and whose names' status parts are *status-name-1* are renamed.

A deployment is not renamed if *status-name-2* is used by another deployment.

Corresponding Menu Function

None.

Handling Locations

Direct commands for locations are:

- REPORT
- EXCLUDE

- FORGET

REPORT

Command Syntax

```
REPORT LIBRARY  [range-of-library-names
 [DBNR database-number [FNR file-number]]]
```

```
REPORT DBNR [database-number [FNR file-number]]
```

```
REPORT NODE  [ESY-node [DSN range-of-dataset-names]
 [VOL volume]]
```

```
REPORT NODE[ESY-node [DSN range-of-dataset-names]
 [TYPE LMS type]]
```

Description

Writes to print file 1 lists of locations according to the specified selection criteria.

The first format is for lists of Natural locations, the second for lists of Predict locations, the third and the fourth for lists of foreign locations.

Corresponding Menu Function

Function Select on Location Menu (Reporting).

EXCLUDE

Command Syntax

```
EXCLUDE location-specification
 [DEPLOYMENT application-name status-name]
```

Description

1. Excludes the location from the PAA if no deployment is specified.

2. Excludes the location from the deployment if a deployment is specified.

Corresponding Menu Function

1. Function Exclude on Location Menu (Administration).

2. Function Exclude on Location Selection screen (Administration).

FORGET

Command Syntax

```
FORGET location-specification
 [DEPLOYMENT application-name status-name]
```

Description

1. Forgets the location from the PAA if no deployment is specified.

2. Forgets the location from the deployment if a deployment is specified.

Corresponding Menu Function

1. Function Forget on Location Menu (Administration).

2. Function Forget on Location Selection screen (Administration).

Handling Jobs

Direct commands for jobs are:

- REPORT
- ACTIVATE
- FINALIZE
- BACKOUT
- PURGE

REPORT

Command Syntax

```
REPORT JOB job-number
```

```
REPORT JOB [DEPLOYMENT application-name status-name]
 [FMDD date'yyyy-mm-dd' [FMTT time'hh:mm']]
 [TODD date'yyyy-mm-dd' [TOTT time'hh:mm']]
```

Description

Writes to print file 1 lists of jobs according to the specified selection criteria and optional date/time parameters.

Corresponding Menu Function

Function Select of Job Menu (Reporting).

ACTIVATE

Command Syntax

```
ACTIVATE JOB job-number
```

```
ACTIVATE JOB [DEPLOYMENT application-name status-name]
 [FMDD date'yyyy-mm-dd' [FMTT time'hh:mm']]
 [TODD date'yyyy-mm-dd' [TOTT time'hh:mm']]
```

Description

Activates jobs according to job number or the specified selection criteria and date/time parameters.

If you specify a deployment, only the scheduled jobs of the deployment are activated.

Meaning of the date/time parameters:

FMDD	Activates jobs scheduled for the specified date and time or later.
TODD	Activates scheduled for the specified date and time specified or earlier.

Jobs are activated first according to increasing schedule times and then according to increasing job numbers.

Jobs are activated only if its schedule time has come or its schedule time is less than or equal to the time specified in a TODD parameter, and if no job of the specified deployment with earlier schedule times are still inactivated.

Corresponding Menu Function

Function Activate of Job Menu (Administration).

FINALIZE

Command Syntax

```
FINALIZE JOB job-number
```

```
FINALIZE JOB DEPLOYMENT application-name status-name
 [FMDD date'yyyy-mm-dd' [FMTT time'hh:mm']]
 [TODD date'yyyy-mm-dd' [TOTT time'hh:mm']]
```

Description

Finalizes activated jobs according to job number or the specified selection criteria and date/time parameters.

If you specify a deployment, only the activated jobs of the deployment are finalized.

Meaning of the date/time parameters:

FMDD	Finalizes jobs scheduled for the specified date and time or later.
TODD	Finalizes scheduled for the specified date and time specified or earlier.

Corresponding Menu Function

Function Finalize of Job Menu (Administration).

BACKOUT

Command Syntax

```
BACKOUT JOB job-number
```

```
BACKOUT JOB DEPLOYMENT application-name status-name
[FMDD date'yyy-mm-dd'[FMTT time'hh:mm']]
[TODD date'yyy-mm-dd'[TOTT time'hh:mm']]
```

Description

Backs out a job or jobs according to the specified selection criteria. Only current jobs are backed out.

Meaning of the date/time parameters:

FMDD	restricts the set of jobs to be backed out to only those activated at the time specified or later.
TODD	restricts the set of jobs to be backed out to only those activated at the time specified or earlier.

Corresponding Menu Function

Function Back out on Job Menu (Administration).

PURGE

Command Syntax

```
PURGE JOB job-number
```

```
PURGE JOB DEPLOYMENT application-name status-name
[STATE job-state]
[FMDD date'yyy-mm-dd'[FMTT time'hh:mm']]
[TODD date'yyy-mm-dd'[TOTT time'hh:mm']]
```

Description

Purges a job or jobs according to the specified selection criteria.

Meaning of the date/time parameters:

FMDD	restricts the set of jobs to be purged to only those activated at the time specified or later.
TODD	restricts the set of jobs to be purged to only those activated at the time specified or earlier.

Corresponding Menu Function

Function Purge of Job Menu (Administration).

Reporting on Objects

The direct command for objects is REPORT.

REPORT

Command Syntax

```
REPORT OBJECT [range-of-object-names
 [STATE object-state]
 [DEPLOYMENT application-name status-name]
 [location-specification]
 [JOB job-number]
 [FMDD date'yyyy-mm-dd']
 [TODD date'yyyy-mm-dd']]
```

Description

Writes to print file 1 lists of objects according to the specifies selection criteria.

Meaning of the date/time parameters:

FMDD	Selects objects which were current on or after the specified date.
TODD	Selects objects which were current on or before the specified date.

Corresponding Menu Function

Function Select of Object Menu (Reporting).

Adjusting Locations and PAA

The direct command is ADJUST.

ADJUST

Available only at the NEXT prompt.

Command Syntax

```
ADJUST
```

Description

Displays a screen from which any of the following can be modified:

- PAA,

- PAA's Natural locations residing in a Natural system file,

- if relevant, a Predict system file,

- one of PAA's Predict locations.

The PAA adjustment uses the PAA system file of the session. The file's database and file numbers are inserted wherever needed in the file itself and into the marker records in the Natural and Predict locations under PAA's control.

Adjusting the Natural locations means inserting their common new Natural system file database and file numbers (and, if relevant, their common new Xref carrying the Predict system file database and file numbers) wherever needed in the PAA system file.

Adjusting a Predict location means inserting its new Predict system file database and file numbers wherever needed in the PAA system file.

> **Notes:**

1. The location of an FUSER is controlled by exactly one FPAA.

2. An FUSER can be moved to a different database (DBID) or file number (FNR) using Adabas utilities. The information in the FPAA must then be adapted after the move using the ADJUST function. This also works vice versa: An FPAA can be moved to a different DBID/FNR. In this case, the information in the FUSER must be adapted using the ADJUST function.

3. It is not possible to dissolve the link between an FUSER and the corresponding FPAA (for example to assign the FUSER to a different FPAA) with the ADJUST function .

Corresponding Menu Function

None.

Reporting on Locks

The direct command is REPORT.

REPORT

Command Syntax

```
REPORT LOCKS
```

Description

Writes to print file 1 a list of all pending jobs, a list of all deployments currently in use, and a list of all locked Natural, Predict, and foreign locations.

Corresponding Menu Function

Function Lock Report on the System Functions menu (Administration).

5 Application Programming Interfaces

Predict Application Audit delivers eight APIs for the PAA system. All of these are retrieval APIs.

Using APINADPS, APINALOS, APINAJOS, and APINAOBS you can select deployments, locations, jobs, and objects respectively by various combinations of criteria; all four return the numbers of the selected entities. These numbers are the job numbers in the case of jobs; they are "internal" numbers for deployments, locations, and objects.

Using APINADPD, APINALOD, APINAJOD, and APINAOBD you can retrieve information about a deployment, a location, a job, and an object respectively; the number of the entity has to be provided as the principal "in" parameter.

The eight Natural subprogram modules reside in library SYSPAA. Definitions of their parameter structures are provided in local data areas whose source and loadable parts reside in library SYSPAAUS.

Each of the eight APIs can be invoked thus:

```
CALLNAT 'APINA...' API-PARM API-...-PARM
```

The nine local data areas are UPILPARM, UPILADPD, UPILADPS, UPILALOD, UPILALOS, UPILAJOD, UPILAJOS, UPILAOBD, and UPILAOBS.

The following list shows the structure in UPILPARM:

```
     1       API-PARM
     2       API-FUNC          A      2      in
R    2       API-FUNC
     3       API-MAIN-FUNC     A      1
     3       API-SUB-FUNC      A      1
     2       API-MSG-NO        P      5          out
     2       API-MSG           A      78         out
     2       API-USER-AREA     A      50     in/out
```

API-USER-AREA is not used by any of the eight APIs; it may come into use in future releases or versions, if PAA should acquire user exits reachable from the APIs. The eight other structures are given in the following sections.

APINADPD

Using this API you obtain data from a deployment.

Each PAA deployment has an "internal" number. APINADPD requires the specification of one such number; it then produces information about the deployment. The numbers of PAA deployments can be obtained from APINADPS.

APINADPD corresponds to the Display Deployment functions of the menu system.

Use the following syntax to invoke the API:

```
CALLNAT 'APINADPD' API-PARM API-ADPD-PARM
```

To obtain data from a deployment, set [API-PARM.API-MAIN-FUNC] = 'D'.

The value of API-PARM.API-SUB-FUNC is ignored. A definition of API-ADPD-PARM is provided in LDA UPILADPD.

```
      1      API-ADPD-PARM
      2      NUMBER              N     10              in
      2      APPLICATION         A     32                  out
      2      STATUS              A     32                  out
      2      NAT-LOCATION-CNT    N     3                   out
      2      NAT-LOCATION        A     38 (1:24)       out
R     2      NAT-LOCATION
      3      NAT-NUMBER          N     10
      3      NAT-LIBRARY         A     8
      3      NAT-FUSER-DBNR      N     5
      3      NAT-FUSER-FNR       N     5
      3      NAT-FDIC-DBNR       N     5
      3      NAT-FDIC-FNR        N     5
      2      PRD-LOCATION-CNT    N     3                   out
      2      PRD-LOCATION        A     20 (1:24)       out
R     2      PRD-LOCATION
      3      PRD-NUMBER          N     10
      3      PRD-FDIC-DBNR       N     5
      3      PRD-FDIC-FNR        N     5
      2      FRG-LOCATION-CNT    N     3                   out
      2      FRG-LOCATION        A     86 (1:24)       out
R     2      FRG-LOCATION
      3      FRG-NUMBER          N     10
      3      FRG-TYPE            A     4
      3      FRG-FORMAT          A     1
      3      FRG-ESY-NODE        N     5
      3      FRG-OP-SYSTEM       A     8
      3      FRG-PDS             A     60
      2      MIGRATE-DATE        T                     out
      2      ADD-DATE            T                     out
      2      ADD-USER            A     8               out
      2      ADD-TID             A     8               out
      2      MAINT-DATE          T                     out
      2      MAINT-USER          A     8               out
      2      MAINT-TID           A     8               out
      2      HOLD-DATE           T                     out
      2      HOLD-USER           A     8               out
      2      HOLD-TID            A     8               out
      2      HOLD-RECOVERY       A     50              out
```

When APINADPD is called:

■ **API-ADPD-PARM.NUMBER**

should carry the number of the deployment whose data are to be retrieved.

If [API-PARM.API-MAIN-FUNC] = 'D' and the deployment is found, APINADPD returns in the remaining parameter fields the deployment data.

[API-ADPD-PARM.NAT-LOCATION-CNT] is the number of the deployment's Natural locations. Their numbers, names, and some additional data are returned in API-ADPD-PARM.NAT-LOCATION(1:[API-ADPD-PARM.NAT-LOCATION-CNT]).

[API-ADPD-PARM.PRD-LOCATION-CNT] is the number of the deployment's Predict locations. Their numbers and names are returned in API-ADPD-PARM.PRD-LOCATION(1:[API-ADPD-PARM.PRD-LOCATION-CNT]).

[API-ADPD-PARM.FRG-LOCATION-CNT] is the number of the deployment's foreign locations. Their numbers, names, and some additional data are returned in API-ADPD-PARM.FRG-LOCATION(1:[API-ADPD-PARM.FRG-LOCATION-CNT]).

Each element of API-ADPD-PARM.FRG-PDS contains a fifty-four-character PDS name and, possibly, operating system specific data: a volume (z/OS) or an LMS type (BS2000) designation.

APINADPD returns the following [API-PARM.API-MSG-NO]:

1011	If [API-PARM.API-MAIN-FUNC] other than 'D' has been specified,
7250	If the location has been found,
7251	If a location with the given number has been sought but has not been found.

APINADPS

Using this API you obtain chunks of lists of deployment numbers.

Each PAA deployment has an "internal" number, which is of no interest to the users of the menu system. However, APINADPD, the API that enables you to retrieve the data of a particular deployment, requires the specification of a single deployment number. APINADPS enables users to obtain the numbers of all deployments whose names satisfy the specified selection criteria.

APINADPS corresponds to the Select Deployments functions of the menu system and to the REPORT DEPLOYMENT direct commands. Unlike them, it produces only the numbers of the deployments. These numbers can then be used as input to APINADPD, which in turn corresponds to the Display Deployment functions of the menu system.

Use the following syntax to invoke APINADPS:

```
CALLNAT 'APINADPS' API-PARM API-ADPS-PARM
```

To obtain a chunk of a list of deployment numbers, set [API-PARM.API-MAIN-FUNC] = 'S'.

The value of API-PARM.API-SUB-FUNC is ignored.

A definition of API-ADPS-PARM is provided in LDA UPILADPS.

```
1      API-ADPS-PARM
2      APPLICATION    A    32          in
2      STATUS         A    32          in
2      NUMBER-CNT     N    3           in/out
2      NUMBER         N    10 (1:60)    out
2      API-PAC-AREA   A    145         in/out
```

When APINADPS is called:

- **API-ADPS-PARM.APPLICATION**
  should carry a range of application names or be blank.

  A blank API-ADPS-PARM.APPLICATION has the same effect on the selection as one carrying an initial asterisk.

- **API-ADPS-PARM.STATUS**
  should carry a range of status names or be blank, if API-ADPS-PARM.APPLICATION in fact carries an application name.

  The value of API-ADPS-PARM.STATUS is ignored, if API-ADPS-PARM.APPLICATION is blank or carries a range of application names which is not an application name.

  A blank API-ADPS-PARM.STATUS has the same effect on the selection as one carrying an initial asterisk.

- **[API-ADPS-PARM.NUMBER-CNT]**
  is made 0, if negative; it is made 60, if greater than 60. It is then interpreted as the maximum number of deployment numbers to be returned; no deployment numbers will be returned, if API-ADPS-PARM.NUMBER-CNT = 0.

- **API-ADPS-PARM.PAC-AREA**
  should be reset when the first chunk of a list of deployment numbers is wanted. API-ADPS-PARM.PAC-AREA should be left untouched for a next call to obtain an immediately following chunk of the same list.

APINADPS returns in API-ADPS-PARM.NUMBER-CNT the number of deployment numbers in the returned chunk; it may be less than the adjusted original value, if the end of the deployment number list has been reached. If no deployment satisfying the selection criteria is found or a non-positive [API-ADPS-PARM.NUMBER-CNT] has been specified then APINADPS returns 0 in API-ADPS-PARM.NUMBER-CNT.

If APINADPS returns a non-zero [API-ADPS-PARM.NUMBER-CNT] then it returns the chunk of the list of the numbers of the deployments satisfying the selection criteria in API-ADPS-PARM.NUMBER(1:[API-ADPS-PARM.NUMBER-CNT]).

APINADPS returns the following [API-PARM.API-MSG-NO]:

0000	If at least one deployment satisfying the selection criteria has been found and a non-final chunk of a list of the numbers of the deployments satisfying the selection criteria is being returned,
0070	If deployments satisfying the selection criteria have been sought but none has been found,
1011	If [API-PARM.API-MAIN-FUNC] other than 'S' has been specified,
9999	If at least one deployment satisfying the selection criteria has been found and a final chunk of a list of the numbers of the deployments satisfying the selection criteria is being returned.

APINAJOD

This PAA API enables you to obtain data from a PAA job. The value of API-PARM.API-SUB-FUNC is ignored.

APINAJOD requires the specification of one job number; it then produces information about the job. The numbers of the PAA jobs satisfying various selection conditions can be retrieved with APINAJOS.

APINAJOD corresponds to the Display Job functions of the menu system.

APINAJOD can be invoked thus:

```
CALLNAT 'APINAJOD' API-PARM API-AJOD-PARM
```

To obtain data from a job, set [API-PARM.API-MAIN-FUNC] = 'D'.

A definition of API-AJOD-PARM is provided in LDA APILAJOD.

```
    1       API-AJOD-PARM
    2       NUMBER              N    10    In
    2       DEPL-NUMBER         N    10       Out
    2       APPLICATION         A    32       Out
    2       STATUS              A    32       Out
    2       STATE               A    10       Out
    2       ORIGIN-STATUS       A    32       Out
    2       EVENT               A    32       Out
    2       PAC-JOB-NAME        A    8        Out
    2       AUTH-DATE           T             Out
    2       AUTH-USER           A    8        Out
    2       AUTH-TID            A    8        Out
    2       LOAD-USER           A    8        Out
```

```
2      SCHED-DATE          T                 Out
2      ACTIV-DATE          T                 Out
2      ACTIV-USER          A      8          Out
2      ACTIV-TID           A      8          Out
2      FINAL-DATE          T                 Out
2      FINAL-USER          A      8          Out
2      FINAL-TID           A      8          Out
2      BACKOUT-DATE        T                 Out
2      BACKOUT-USER        A      8          Out
2      BACKOUT-TID         A      8          Out
2      ADD-DATE            T                 Out
2      ADD-USER            A      8          Out
2      ADD-TID             A      8          Out
2      MAINT-DATE          T                 Out
2      MAINT-USER          A      8          Out
2      MAINT-TID           A      8          Out
2      HOLD-DATE           T                 Out
2      HOLD-USER           A      8          Out
2      HOLD-TID            A      8          Out
2      HOLD-RECOVERY       A      50         Out
```

When APINAJOD is called:

- **API-AJOD-PARM.NUMBER**
  should carry the number of the job whose data are to be retrieved. If [API-PARM.API-MAIN-FUNC] = 'D' and the deployment is found, APINAJOD returns in the remaining parameter fields the job data.

- **API-AJOD-PARM.STATE**
  contains a designation of the job's state.

The following are possible designations:

- Pending
- Scheduled
- Activated
- Finalized
- Backed out

APINAJOD returns the following [API-PARM.API-MSG-NO]:

1011	If [API-PARM.API-MAIN-FUNC] other than 'D' has been specified.
7250	If the job has been found.
7251	If a job with the given number has been sought but has not been found.

APINAJOS

This PAA API enables users to obtain chunks of lists of job numbers.

APINAJOD, the API that enables users to retrieve the data of a particular job, requires the specification of a single job number. APINAJOS enables users to obtain the numbers of all jobs, which satisfy the specified selection criteria.

APINAJOS corresponds to the Select Jobs functions of the menu system and to the REPORT JOB direct commands. Unlike them, it produces only the numbers of the jobs. These numbers can then be used as input to APINAJOD, which in turn corresponds to the Display Job functions of the menu system.

APINAJOS can be invoked thus:

```
CALLNAT 'APINAJOS' API-PARM API-AJOS-PARM
```

To obtain a chunk of a list of job numbers, set [API-PARM.API-MAIN-FUNC] = 'S'.

The value of API-PARM.API-SUB-FUNC is ignored.

A definition of API-AJOS-PARM is provided in LDA UPILAJOS.

```
1      API-AJOS-PARM
2      APPLICATION     A    32           in
2      STATUS          A    32           in
2      STATE           A    1            in
2      FROM-DATE       T                 in
2      TO-DATE         T                 in
2      NUMBER-CNT      N    3            in/out
2      NUMBER          N    10 (1:60)      out
2      API-PAC-AREA    A    145          in/out
```

When APINAJOS is called:

- **API-AJOS-PARM.APPLICATION**
  should carry an application name or be blank.

■ **API-AJOS-PARM.STATUS**

should carry a status name or be blank. If API-AJOS-PARM.APPLICATION or API-AJOS-PARM.STATUS is not blank then the concatenation of their values is interpreted as the name of the only deployment whose jobs may be selected.

If both API-AJOS-PARM.APPLICATION and API-AJOS-PARM.STATUS are blank then a job of any deployment may be selected.

■ **API-AJOS-PARM.STATE**

should carry a character designating the state(s) of the jobs to be selected. The following characters designate job states.

B	backed out
F	finalized
A	activated
P	purged
S	scheduled
space	any

■ **API-AJOS-PARM.FROM-DATE**

should carry a lower bound of the load times of the jobs to be selected.

■ **API-AJOS-PARM.TO-DATE**

should carry an upper bound of the load times of the jobs to be selected or 0. If API-AJOS-PARM.TO-DATE = 0 then the selection of jobs are not restricted on the account of this parameter.

■ **[API-AJOS-PARM.NUMBER-CNT]**

is made 0, if negative; it is made 60, if greater than 60. It is then interpreted as the maximum number of job numbers to be returned; no job numbers will be returned, if API-AJOS-PARM.NUMBER-CNT = 0.

■ API-AJOS-PARM.PAC-AREA should be reset when the first chunk of a list of job numbers is wanted.

API-AJOS-PARM.PAC-AREA should be left untouched for a next call to obtain an immediately following chunk of the same list.

APINAJOS returns in API-AJOS-PARM.NUMBER-CNT the number of job numbers in the returned chunk; it may be less than the adjusted original value, if the end of the job number list has been reached. If no job satisfying the selection criteria is found or a non-positive [API-AJOS-PARM.NUMBER-CNT] has been specified then APINAJOS returns 0 in API-ALOS-PARM.NUMBER-CNT.

If APINAJOS returns a non-zero [API-AJOS-PARM.NUMBER-CNT] then it returns the chunk of the list of the numbers of the jobs satisfying the selection criteria in API-AJOS-PARM.NUMBER(1:[API-AJOS-PARM.NUMBER-CNT]).

APINAJOS returns the following [API-PARM.API-MSG-NO]:

0000	If at least one job satisfying the selection criteria has been found and a non-final chunk of a list of the numbers of the jobs satisfying the selection criteria is being returned.
0057	If jobs satisfying the selection criteria have been sought but none has been found.
0070	If the specified deployment has not been found.
1011	If [API-PARM.API-MAIN-FUNC] other than 'S' has been specified.
9999	If at least one job satisfying the selection criteria has been found and a final chunk of a list of the numbers of the jobs satisfying the selection criteria is being returned.

APINALOD

This PAA API enables users to obtain data from a location.

Each PAA location has an "internal" number. APINALOD requires the specification of one such number; it then produces information about the location. The numbers of PAA locations can be learnt from APINALOS.

APINALOD corresponds to the Display Location functions of the menu system.

APINALOD can be invoked thus:

```
CALLNAT 'APINALOD' API-PARM API-ALOD-PARM
```

To obtain data from a location, set [API-PARM.API-MAIN-FUNC] = 'D'.

The value of API-PARM.API-SUB-FUNC is ignored.

A definition of API-ALOD-PARM is provided in LDA UPILALOD.

```
      1       API-ALOD-PARM
      2       NUMBER            N     10         in
      2       KIND-OF-LOC       A     1              out
      2       LOCATION          A     71             out
R             LOCATION
      3       NAT-LIBRARY       A     8
      3       NAT-FUSER-DBNR    N     5
      3       NAT-FUSER-FNR     N     5
      3       NAT-FDIC-DBNR     N     5
      3       NAT-FDIC-FNR      N     5
R     2       LOCATION
      3       PRD-FDIC-DBNR     N     5
      3       PRD-FDIC-FNR      N     5
R     2       LOCATION
      3       FRG-ESY-NODE      N     5
```

```
        3      FRG-OP-SYSTEM        A      8
        3      FRG-PDS              A      60
        2      DEPLOYMENT-CNT       N      3               out
        2      DEPLOYMENT           A      74 (1:24)       out
R       2      DEPLOYMENT
        3      DEPL-NUMBER          N      10
        3      DEPL-APPLICATION     A      32
        3      DEPL-STATUS          A      32
        2      ADD-DATE             T                      out
        2      ADD-USER             A      8               out
        2      ADD-TID              A      8               out
        2      MAINT-DATE           T                      out
        2      MAINT-USER           A      8               out
        2      MAINT-TID            A      8               out
        2      HOLD-DATE            T                      out
        2      HOLD-USER            A      8               out
        2      HOLD-TID             A      8               out
        2      HOLD-RECOVERY        A      50              out
```

When APINALOD is called:

- **API-ALOD-PARM.NUMBER**
  should carry the number of the location whose data are to be retrieved.

If [API-PARM.API-MAIN-FUNC] = 'D' and the location is found, APINALOD returns in the remaining parameter fields the location data.

[API-ALOD-PARM.DEPLOYMENT-CNT] is the number of the deployments in which the location participates. Their numbers and names are returned in API-ALOD-PARM.DEPLOYMENT(1:[API-ALOD-PARM.DEPLOYMENT-CNT]).

API-ALOD-PARM.FRG-PDS contains a fifty-four-character PDS name and, possibly, operating system specific data: a volume (z/OS) or an LMS type (BS2000) designation.

APINALOD returns the following [API-PARM.API-MSG-NO]:

1011	If [API-PARM.API-MAIN-FUNC] other than 'D' has been specified,
7250	If the location has been found,
7251	If a location with the given number has been sought but has not been found.

APINALOS

This PAA API enables users to obtain chunks of lists of location numbers.

Each PAA location has an "internal" number, which is of no interest to the users of the menu system. However, APINALOD, the API that enables users to retrieve the data of a particular location, requires the specification of a single location number. APINALOS enables users to obtain the numbers of all locations, which satisfy the specified selection criteria.

APINALOS corresponds to the Select Locations functions of the menu system and to the various locations orientated REPORT direct commands. Unlike them, it produces only the numbers of the locations. These numbers can then be used as input to APINALOD, which in turn corresponds to the Display Location functions of the menu system.

APINALOS can be invoked thus:

```
CALLNAT 'APINALOS' API-PARM API-ALOS-PARM
```

To obtain a chunk of a list of location numbers, set [API-PARM.API-MAIN-FUNC] = 'S'.

The value of API-PARM.API-SUB-FUNC is ignored.

A definition of API-ALOS-PARM is provided in LDA UPILALOS.

```
  1      API-AJOS-PARM
  2      APPLICATION      A     32         in
  2      STATUS           A     32         in
  2      STATE            A     1          in
  2      FROM-DATE        T                in
  2      TO-DATE          T                in
  2      NUMBER-CNT       N     3          in/out
  2      NUMBER           N     10 (1:60)    out
  2      API-PAC-AREA     A     145        in/out
```

When APINALOS is called:

- **API-ALOS-PARM.KIND-OF-LOCATION**
  should carry a character designating the kind(s) of locations to be selected. The following characters designate kinds of locations.

N	Natural
P	Predict
F	foreign
*	any
space	any

■ **API-ALOS-PARM.NAT-LIBRARY**
should carry a range of Natural library names or be blank, if API-ALOS-PARM.KIND-OF-LOCATION = 'N' OR = '*' OR = ' '. The value of API-ALOS-PARM.NAT-LIBRARY is ignored, if [API-ALOS-PARM.KIND-OF-LOCATION] is not one of the three enumerated.

A blank API-ALOS-PARM.NAT-LIBRARY has the same effect on the selection as one carrying an initial asterisk.

■ **API-ALOS-PARM.NAT-FUSER-DBNR**
should carry the database number of a Natural system file or 0, if API-ALOS-PARM.KIND-OF-LOCATION = 'N' OR = '*' OR = ' '. The value of API-ALOS-PARM.NAT-FUSER-DBNR is ignored, if [API-ALOS-PARM.KIND-OF-LOCATION] is not one of the three enumerated.

If API-ALOS-PARM.NAT-FUSER-DBNR = 0 then the selection of locations are not restricted on the account of this parameter.

■ **API-ALOS-PARM.NAT-FUSER-FNR**
should carry the file number of a Natural system file or 0, if API-ALOS-PARM.KIND-OF-LOCATION = 'N' OR = '*' OR = ' '. The value of API-ALOS-PARM.NAT-FUSER-FNR is ignored, if [API-ALOS-PARM.KIND-OF-LOCATION] is not one of the three enumerated.

If API-ALOS-PARM.NAT-FUSER-FNR = 0 then the selection of locations are not restricted on the account of this parameter.

■ **API-ALOS-PARM.PRD-FDIC-DBNR**
should carry the database number of a Predict system file or 0, if API-ALOS-PARM.KIND-OF-LOCATION = 'P' OR = '*' OR = ' '. The value of API-ALOS-PARM.PRD-FDIC-DBNR is ignored, if [API-ALOS-PARM.KIND-OF-LOCATION] is not one of the three enumerated.

If API-ALOS-PARM.PRD-FDIC-DBNR = 0 then the selection of locations are not restricted on the account of this parameter.

■ **API-ALOS-PARM.PRD-FDIC-FNR**
should carry the file number of a Predict system file or 0, if API-ALOS-PARM.KIND-OF-LOCATION = 'P' OR = '*' OR = ' '. The value of API-ALOS-PARM.PRD-FDIC-FNR is ignored, if [API-ALOS-PARM.KIND-OF-LOCATION] is not one of the three enumerated.

If API-ALOS-PARM.NAT-FDIC-FNR = 0 then the selection of locations are not restricted on the account of this parameter.

- **API-ALOS-PARM.FRG-ESY-NODE**
  should carry the number of an ENTIRE SYSTEM SERVER node or 0, if API-ALOS-PARM.KIND-OF-LOCATION = 'F' OR = '*' OR = ' '. The value of API-ALOS-PARM.FRG-ESY-NODE is ignored, if [API-ALOS-PARM.KIND-OF-LOCATION] is not one of the three enumerated.

  If API-ALOS-PARM.FRG-ESY-NODE = 0 then the selection of locations are not restricted on the account of this parameter.

- **API-ALOS-PARM.FRG-PDS**
  should carry a range of PDS names or be blank, if API-ALOS-PARM.KIND-OF-LOCATION = 'F' OR = '*' OR = ' '. The value of API-ALOS-PARM.FRG-PDS is ignored, if [API-ALOS-PARM.KIND-OF-LOCATION] is not one of the three enumerated.

  A blank API-ALOS-PARM.FRG-PDS has the same effect on the selection as one carrying an initial asterisk.

- **API-ALOS-PARM.FRG-VOL-TYPE**
  should carry the name of a volume (z/OS) or an LMS type designation (BS2000) or '*' or ' ', if API-ALOS-PARM.KIND-OF-LOCATION = 'F' OR = '*' OR = ' '. The value of API-ALOS-PARM.FRG-VOL-TYPE is ignored, if [API-ALOS-PARM.KIND-OF-LOCATION] is not one of the three enumerated.

  If API-ALOS-PARM.FRG-VOL-TYPE = '*' OR = ' ' then the selection of locations is not restricted on the account of this parameter.

- **[API-ALOS-PARM.NUMBER-CNT]**
  is made 0, if negative; it is made 60, if greater than 60. It is then interpreted as the maximum number of location numbers to be returned; no location numbers will be returned, if API-ALOS-PARM.NUMBER-CNT = 0.

- **API-ALOS-PARM.PAC-AREA**
  should be reset when the first chunk of a list of location numbers is wanted. API-ALOS-PARM.PAC-AREA should be left untouched for a next call to obtain an immediately following chunk of the same list.

APINALOS returns in API-ALOS-PARM.NUMBER-CNT the number of location numbers in the returned chunk; it may be less than the adjusted original value, if the end of the location number list has been reached. If no location satisfying the selection criteria is found or a non-positive [API-ALOS-PARM.NUMBER-CNT] has been specified then APINALOS returns 0 in API-ALOS-PARM.NUMBER-CNT.

If APINALOS returns a non-zero [API-ALOS-PARM.NUMBER-CNT] then it returns the chunk of the list of the numbers of the locations satisfying the selection criteria in API-ALOS-PARM.NUMBER(1:[API-ALOS-PARM.NUMBER-CNT]).

APINALOS returns the following [API-PARM.API-MSG-NO]:

0000	If at least one location satisfying the selection criteria has been found and a non-final chunk of a list of the numbers of the locations satisfying the selection criteria is being returned,
0044	If [API-ALOS-PARM.KIND-OF-LOCATION] other than 'N', 'P', 'F', '*', ' ' has been specified,
0070	If locations satisfying the selection criteria have been sought but none has been found,
1011	If [API-PARM.API-MAIN-FUNC] other than 'S' has been specified,
9999	If at least one location satisfying the selection criteria has been found and a final chunk of a list of the numbers of the locations satisfying the selection criteria is being returned.

APINAOBD

This PAA API enables users to obtain data from a PAA object.

Each PAA object has an "internal" number. APINAOBD requires the specification of one such number; it then produces information about the object. The numbers of PAA objects can be learnt from APINAOBS.

APINAOBD corresponds to the Display Object functions of the menu system.

APINAOBD can be invoked thus:

```
CALLNAT 'APINAOBD' API-PARM API-AOBD-PARM
```

To obtain data from an object, set [API-PARM.API-MAIN-FUNC] = 'D'.

The value of API-PARM.API-SUB-FUNC is ignored.

A definition of API-AOBD-PARM is provided in LDA UPILAOBD.

```
      1       API-AOBD-PARM
      2       NUMBER          N     10      in
      2       APPLICATION     A     32        out
      2       STATUS          A     32        out
      2       LOCATION        A     71        out
R     2       LOCATION
      3       NAT-LIBRARY     A     8
      3       NAT-FUSER-DBNR  N     5
      3       NAT-FUSER-FNR   N     5
      3       NAT-FDIC-DBNR   N     5
      3       NAT-FDIC-FNR    N     5
R     2       LOCATION
      3       PRD-FDIC-DBNR   N     5
      3       PRD-FDIC-FNR    N     5
R     2       LOCATION
      3       FRG-ESY-NODE    N     5
      3       FRG-OP-SYSTEM   A     8
```

```
       3      FRG-PDS              A    60
       2      JOB-NUMBER           N    10        out
       2      OBJECT-NAME          A    64        out
       2      SUBTYPE-1            A    1         out
       2      SUBTYPE-2            A    4         out
       2      SUBTYPE-3            A    1         out
       2      STATE                A    10        out
       2      PAA-VERNO            N    5         out
       2      PAC-VERNO            N    5         out
       2      PREDECESSOR-NUMBER   N    10        out
       2      SUCCESSOR-NUMBER     N    10        out
       2      HISTORICAL-NUMBER    N    10        out
       2      SCHED-DATE           T              out
       2      ACTIV-DATE           T              out
       2      ACTIV-USER           A    8         out
       2      ACTIV-TID            A    8         out
       2      BACKUP-DATE          T              out
       2      BACKUP-USER          A    8         out
       2      BACKUP-TID           A    8         out
       2      PURGE-DATE           T              out
       2      PURGE-USER           A    8         out
       2      PURGE-TID            A    8         out
       2      ADD-DATE             T              out
       2      ADD-USER             A    8         out
       2      ADD-TID              A    8         out
       2      MAINT-DATE           T              out
       2      MAINT-USER           A    8         out
       2      MAINT-TID            A    8         out
       2      HOLD-DATE            T              out
       2      HOLD-USER            A    8         out
       2      HOLD-TID             A    8         out
       2      HOLD-RECOVERY        A    50        out
```

When APINAOBD is called:

- **API-AOBD-PARM.NUMBER**
  should carry the number of the object whose data are to be retrieved.

If [API-PARM.API-MAIN-FUNC] = 'D' and the object is found, APINAOBD returns in the remaining parameter fields the object data.

API-AOBD-PARM.STATE contains a designation of the object's state. The following are the possible designations:

- Scheduled

- Current

- Backed up

- Removed

- Historical

[API-AOBD-PARM.PREDECESSOR-NUMBER], if distinct from 0, is the number of the object preceding in an object version succession chain the object whose data are being returned. This "predecessor" will take the place of the object whose data are being returned if the latter is removed.

If API-AOBD-PARM.SUCCESSOR-NUMBER = 0 then the object has no successor.

[API-AOBD-PARM.SUCCESSOR-NUMBER], if distinct from 0, is the number of the object succeeding in an object version succession chain the object whose data are being returned. The object whose data are being returned will take the place of this "successor" if the latter is removed.

If API-AOBD-PARM.PREDECESSOR-NUMBER = 0 then the object has no predecessor.

[API-AOBD-PARM.HISTORICAL-NUMBER], if distinct from 0, is the number of the historical object (record) which contains information about the object's penultimate current spell. (Historical objects arise when backed up objects become current.)

If API-AOBD-PARM.HISTORICAL-NUMBER = 0 then the object has not been current more than once.

APINAOBD returns the following [API-PARM.API-MSG-NO]:

1011	If [API-PARM.API-MAIN-FUNC] other than 'D' has been specified,
7250	If the location has been found,
7251	If a location with the given number has been sought but has not been found.

APINAOBS

This PAA API enables users to obtain chunks of lists of object numbers.

Each PAA object has an "internal" number, which is of no interest to the users of the menu system. However, APINAOBD, the API that enables users to retrieve the data of a particular object, requires the specification of a single object number. APINAOBS enables users to obtain the numbers of all objects, which satisfy the specified selection criteria.

APINAOBS corresponds to the Select Objects functions of the menu system and to the REPORT OBJECT direct commands. Unlike them, it produces only the numbers of the objects. These numbers can then be used as input to APINAOBD, which in turn corresponds to the Display Object functions of the menu system.

APINAOBS can be invoked thus:

```
CALLNAT 'APINAOBS' API-PARM API-AOBS-PARM
```

To obtain a chunk of a list of object numbers, set [API-PARM.API-MAIN-FUNC] = 'S'.

The value of API-PARM.API-SUB-FUNC is ignored.

A definition of API-AOBS-PARM is provided in LDA UPILAOBS.

```
1       API-AOBS-PARM
2       APPLICATION          A      32        in
2       STATUS               A      32        in
2       KIND-OF-LOCATION     A      1         in
2       NAT-LIBRARY          A      8         in
2       NAT-FUSER-DBNR       N      5         in
2       NAT-FUSER-FNR        N      5         in
2       PRD-FDIC-DBNR        N      5         in
2       PRD-FDIC-FNR         N      5         in
2       FRG-ESY-NODE         N      5         in
2       FRG-PDS              A      54        in
2       FRG-VOL-TYPE         A      6         in
2       JOB                  N      10        in
2       OBJECT-NAME          A      32        in
2       SUBTYPE-1            A      1         in
2       SUBTYPE-2            A      4         in
2       SUBTYPE-3            A      1         in
2       STATE                A      1         in
2       PAA-VERNO            N      5         in
2       PAC-VERNO            N      5         in
2       CURRENT-FROM         T                in
2       CURRENT-TO           T                in
2       NUMBER-CNT           N      3         in/out
2       NUMBER               N      10(1:60)     out
2       API-PAC-AREA         A      145       in/out
2       API-PAC-AREA-1       A      145       in/out
2       API-PAC-AREA-2       A      145       in/out
```

When APINAOBS is called:

- **API-AOBS-PARM.APPLICATION**
  should carry a range of application names or be blank.

- **API-AOBS-PARM.STATUS**
  should carry a range of status names or be blank, if API-AOBS-PARM.APPLICATION in fact
  carries an application name. The value of API-AOBS-PARM.STATUS is ignored, if API-AOBS-
  PARM.APPLICATION carries a range of application names which is not an application name.

  If API-AOBS-PARM.APPLICATION or API-AOBS-PARM.STATUS but not both are blank then
  the blank parameter field has the same effect on the selection as it would have if it carried an
  initial asterisk.

  If both API-AOBS-PARM.APPLICATION and API-AOBS-PARM.STATUS are blank then objects
  are selected regardless of their deployments.

If both API-AOBS-PARM.APPLICATION and API-AOBS-PARM.STATUS carry initial asterisks then the selection of objects is not restricted on the account of these parameters, but the objects are selected first in the ascending order of their deployment names.

- **API-AOBS-PARM.KIND-OF-LOCATION**
  should carry a character designating the kind(s) of locations whose objects are to be selected. The following characters designate kinds of locations.

N	Natural
P	Predict
F	foreign
*	any
space	any

If API-AOBS-PARM.KIND-OF-LOCATION = ' ' then objects are selected regardless of their locations.

If API-AOBS-PARM.KIND-OF-LOCATION = '*' then objects in any location which satisfies the selection criteria relevant to its kind are considered for selection. In this case objects are selected first or second in the ascending order of their location names. '*' should be used with caution in this context; incautious use can result in a very time consuming scan of large portions of the PAA system file.

- **API-AOBS-PARM.NAT-LIBRARY**
  should carry a range of Natural library names or be blank, if API-AOBS-PARM.KIND-OF-LOCATION = 'N' OR = '*'. The value of API-AOBS-PARM.NAT-LIBRARY is ignored, if [API-AOBS-PARM.KIND-OF-LOCATION] is not one of the two enumerated.

  A blank API-AOBS-PARM.NAT-LIBRARY has the same effect on the selection as one carrying an initial asterisk.

- **API-AOBS-PARM.NAT-FUSER-DBNR**
  should carry the database number of a Natural system file or 0, if API-AOBS-PARM.KIND-OF-LOCATION = 'N' OR = '*'. The value of API-AOBS-PARM.NAT-FUSER-DBNR is ignored, if [API-AOBS-PARM.KIND-OF-LOCATION] is not one of the two enumerated.

  If API-AOBS-PARM.NAT-FUSER-DBNR = 0 then the selection is not restricted on the account of this parameter.

- · API-AOBS-PARM.NAT-FUSER-FNR should carry the file number of a Natural system file or 0, if API-AOBS-PARM.KIND-OF-LOCATION = 'N' OR = '*'. The value of API-AOBS-PARM.NAT-FUSER-FNR is ignored, if [API-AOBS-PARM.KIND-OF-LOCATION] is not one of the two enumerated.

  If API-AOBS-PARM.NAT-FUSER-FNR = 0 then the selection is not restricted on the account of this parameter.

▪ **API-AOBS-PARM.PRD-FDIC-DBNR**
should carry the database number of a Predict system file or 0, if API-AOBS-PARM.KIND-OF-LOCATION = 'P' OR = '*'. The value of API-AOBS-PARM.PRD-FDIC-DBNR is ignored, if [API-AOBS-PARM.KIND-OF-LOCATION] is not one of the two enumerated.

If API-AOBS-PARM.PRD-FDIC-DBNR = 0 then the selection is not restricted on the account of this parameter.

▪ **API-AOBS-PARM.PRD-FDIC-FNR**
should carry the file number of a Predict system file or 0, if API-AOBS-PARM.KIND-OF-LOCATION = 'P' OR = '*'. The value of API-AOBS-PARM.PRD-FDIC-FNR is ignored, if [API-AOBS-PARM.KIND-OF-LOCATION] is not one of the two enumerated.

If API-AOBS-PARM.NAT-FDIC-FNR = 0 then the selection is not restricted on the account of this parameter.

▪ **API-AOBS-PARM.FRG-ESY-NODE**
should carry the number of an ENTIRE SYSTEM SERVER node or 0, if API-AOBS-PARM.KIND-OF-LOCATION = 'F' OR = '*'. The value of API-AOBS-PARM.FRG-ESY-NODE is ignored, if [API-AOBS-PARM.KIND-OF-LOCATION] is not one of the two enumerated.

If API-AOBS-PARM.FRG-ESY-NODE = 0 then the selection is not restricted on the account of this parameter.

▪ **API-AOBS-PARM.FRG-PDS**
should carry a range of PDS names or be blank, if API-AOBS-PARM.KIND-OF-LOCATION = 'F' OR = '*'. The value of API-AOBS-PARM.FRG-PDS is ignored, if [API-AOBS-PARM.KIND-OF-LOCATION] is not one of the two enumerated.

A blank API-AOBS-PARM.FRG-PDS has the same effect on the selection as one carrying an initial asterisk.

▪ **API-AOBS-PARM.FRG-VOL-TYPE**
should carry the name of a volume (z/OS) or an LMS type designation (BS2000) or '*' or ' ', if API-AOBS-PARM.KIND-OF-LOCATION = 'F' OR = '*'. The value of API-AOBS-PARM.FRG-VOL-TYPE is ignored, if [API-AOBS-PARM.KIND-OF-LOCATION] is not one of the two enumerated. I

f API-AOBS-PARM.FRG-VOL-TYPE = '*' OR = ' ' then the selection of locations is not restricted on the account of this parameter.

▪ **API-AOBS-PARM.JOB**
should carry the number of the PAA job to which the objects to be selected must belong or 0.

If API-AOBS-PARM.JOB = 0 then the selection is not restricted on the account of this parameter.

▪ **API-AOBS-PARM.OBJECT-NAME**

should carry a range of object names or be blank. A blank API-AOBS-PARM.OBJECT-NAME has the same effect on the selection of objects as it would have if it carried an initial asterisk.

▪ **API-AOBS-PARM.SUBTYPE-1**

should carry the first, one character, part of the designation of the type(s) of the objects to be selected.

The following characters can be meaningful values of this parameter:

N	Natural objects
E	error messages
V	DDMs
F	foreign objects
space	any objects

▪ **API-AOBS-PARM.SUBTYPE-2**

should carry the second, two character, part of the designation of the type(s) of the objects to be selected. The following strings can be meaningful values of this parameter:

If API-AOBS-PARM.SUBTYPE-1 = 'N':

A	parameter data areas
C	copycodes
G	global data areas
H	helproutines
L	local data areas
M	maps
N	subprograms
P	programs
S	subroutines
T	texts
all spaces	any objects

If API-AOBS-PARM.SUBTYPE-1 = 'E' OR = 'V' then API-AOBS-PARM.SUBTYPE-2 should be blank.

If API-AOBS-PARM.SUBTYPE-1 = 'F' then API-AOBS-PARM.SUBTYPE-2 should contain a "foreign type" designation (to be seen in the third column of a Deployment Foreign Part Display screen) or be blank.

If API-AOBS-PARM.SUBTYPE-2 is blank then the selection of objects is not restricted on the account of this parameter.

■ **API-AOBS-PARM.SUBTYPE-3**

should carry the third, one character, part of the designation of the type(s) of the objects to be selected. The following characters can be meaningful values of this parameter.

S	sources
L	loadables
X	Xrefs
space	any objects

If API-AOBS-PARM.SUBTYPE-1 = 'E' OR = 'V' then API-AOBS-PARM.SUBTYPE-3 should be blank.

If API-AOBS-PARM.SUBTYPE-1 = 'F' then [API-AOBS-PARM.SUBTYPE-3] should not be 'X'.

■ **API-AOBS-PARM.STATE**

should carry a character designating the state(s) of the objects to be selected. The following characters designate object states.

B	backed up
C	current
H	historical
R	removed
S	scheduled
space	any

■ **API-AOBS-PARM.PAA-VERNO**

should carry the PAA version number of the objects to be selected or 0. If API-AOBS-PARM.PAA-VERNO = 0 then the selection of objects are not restricted on the account of this parameter.

■ **API-AOBS-PARM.PAC-VERNO**

should carry the PAC version number of the objects to be selected or 0.

If API-AOBS-PARM.PAC-VERNO = 0 then the selection of objects are not restricted on the account of this parameter.

■ **API-AOBS-PARM.CURRENT-FROM**

should carry the starting time of the period at some point of which any object to be selected must have been or be current.

0 must be specified, if scheduled objects are not to be excluded.

■ **API-AOBS-PARM.CURRENT-TO**

should carry the ending time of the period at some point of which any object to be selected must have been or be current.

If API-AOBS-PARM.CURRENT-TO = 0 then the selection of objects are not restricted on the account of this parameter.

0 must be specified, if scheduled objects are not to be excluded.

■ **[API-AOBS-PARM.NUMBER-CNT]**
is made 0, if negative; it is made 60, if greater than 60. It is then interpreted as the maximum number of object numbers to be returned; no object numbers will be returned, if API-AOBS-PARM.NUMBER-CNT = 0.

■ **API-AOBS-PARM.PAC-AREA, API-AOBS-PARM.PAC-AREA-1, and API-AOBS-PARM.PAC-AREA-2**
should be reset when the first chunk of a list of object numbers is wanted. They should be left untouched for a next call to obtain an immediately following chunk of the same list.

APINAOBS returns in API-AOBS-PARM.NUMBER-CNT the number of object numbers in the returned chunk; it may be less than the adjusted original value, if the end of the object number list has been reached. If no object satisfying the selection criteria is found or a non-positive [API-AOBS-PARM.NUMBER-CNT] has been specified then APINAOBS returns 0 in API-AOBS-PARM.NUMBER-CNT.

If APINAOBS returns a non-zero [API-AOBS-PARM.NUMBER-CNT] then it returns the chunk of the list of the numbers of the objects satisfying the selection criteria in API-AOBS-PARM.NUMBER(1:[API-AOBS-PARM.NUMBER-CNT]).

APINAOBS returns the following [API-PARM.API-MSG-NO]:

0000	if at least one object satisfying the selection criteria has been found and a non-final chunk of a list of the numbers of the objects satisfying the selection criteria is being returned,
0044	If [API-AOBS-PARM.KIND-OF-LOCATION] other than 'N', 'P', 'F', '*', ' ' has been specified,
0070	If objects satisfying the selection criteria have been sought but none has been found,
1011	If [API-PARM.API-MAIN-FUNC] other than 'S' has been specified,
9999	If at least one object satisfying the selection criteria has been found and a final chunk of a list of the numbers of the objects satisfying the selection criteria is being returned.