iSecurity Change Tracker

User Guide
Version 1.35

www.razlee.com

Contents

About this Manual

This user guide is intended for system administrators and security administrators responsible for the implementation and management of security on IBM i systems. However, any user with basic knowledge of IBM i operations will be able to make full use of this product after reading this book.

Raz-Lee takes customer satisfaction seriously. Our products are designed for ease of use by personnel at all skill levels, especially those with minimal IBM i experience. The documentation package includes a variety of materials to get you familiar with this software quickly and effectively.

This user guide, together with the iSecurity Installation Guide, is the only printed documentation necessary for understanding this product. It is available in HTML form as well as in user-friendly PDF format, which may be displayed or printed using Adobe Acrobat Reader version 6.0 or higher. If you do not have Acrobat Reader, you can download it from the Adobe website: http://www.adobe.com/. You can also read and print pages from the manual using any modern web browser.

This manual contains concise explanations of the various product features as well as step-by-step instructions for using and configuring the product.

Raz-Lee's iSecurity is an integrated, state-of-the-art security solution for all System i servers, providing cutting-edge tools for managing all aspects of network access, data, and audit security. Its individual components work together transparently, providing comprehensive "out-of-the- box" security. To learn more about the iSecurity Suite, visit our website at http://www.razlee.com/.

Intended Audience

The Change TrackerUser Guide document was developed for users, system administrators and security administrators responsible for the implementation and management of security on IBM® AS/400 systems. However, any user with a basic knowledge of System i operations is able to make full use of this document following study of this User Guide.

NOTE: Deviations from IBM® standards are employed in certain circumstances in order to enhance clarity or when standard IBM® terminology conflicts with generally accepted industry conventions.

This document may also serve for new versions' upgrade approval by management.

Conventions Used in the Document

Menu options, field names, and function key names are written in **Courier New Bold**.

Links (internal or external) are emphasized with underline and blue color as follows: "About this Manual" on page 7.

Commands and system messages of IBM i® (OS/400®), are written in ***Bold Italic***.

Key combinations are in Bold and separated by a dash, for example: **Enter**, **Shift-Tab**.

Emphasis is written in **Bold.**

A sequence of operations entered via the keyboard is marked as

***STRACT* > 81 > 32**

meaning: Syslog definitions activated by typing ***STRACT***and selecting option: **81** then option: **32**.

Data Entry Screens

Data entry screens include many convenient features such as:

- Pop-up selection windows
- Convenient option prompts
- Easy-to-read descriptions and explanatory text for all parameters and options
- Search and filtering with generic text support

The following describes the different data entry screens.

- To enter data in a field, type the desired text and then press Enter or Field Exit
- To move from one field to another without changing the contents press Tab
- To view options for a data field together with an explanation, press F4
- To accept the data displayed on the screen and continue, press Enter

The following function keys may appear on data entry screens.

- F1: **Help** Display context-sensitive help
- F3: **Exit** End the current task and return to the screen or menu from which the task was initiated
- F4: **Prompt** Display a list of valid options for the current field or command. For certain data items, a pop-up selection window appears
- F6: **Add New** Create a new record or data item
- F8: **Print** Print the current report or data item
- F9: **Retrieve** Retrieve the previously-entered command
- F12: **Cancel** Return to the previous screen or menu without updating

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Introducing Change Tracker

Raz-Lee Security's **Change Tracker**, part of the iSecurity suite, automatically tracks modifications in the software (Native objects, IFS and System libraries), at both the object and source levels. It then logs the event with details about the object that has been changed as well as the source that was used to create the object.

The product works fully automatically and does not require any intervention by programmers; users can no longer bypass the system, intentionally or maliciously.

Change Tracker automatically records every revision, collecting all relevant information, including object attributes, source code, and more. Tracking characteristics can be set per library or folder.

Change Tracker includes two different options to track changes:

- **Real-time Mode** analyzes activities routinely logged in the operating system log (QAUDJRN). Records the details of the change event, the object attributes and the relevant sources.
- **Periodic Mode** analyzes changes at preset intervals. Change Tracker automatically records the revision between predefined time intervals, collecting all relevant information, including object attributes, source code, and more.

You can access the different Change Tracker features from the main menu or from the iSecurity GUI interface. The various feature groups are described in the following chapters.

NOTE: Change Tracker inherits some generic functionality that is part of the base part of iSecurity. As such, some references are made to other manuals (especially the iSecurity Audit User Manual) for a complete explanation.

The Need for Change Tracker

Since software changes can adversely affect company business, even approved updates require detailed auditing. IT managers must have the ability to identify the cause for changes in system behavior and quickly resolve problems. There are numerous, well-publicized cases where unauthorized changes were made in order to hide malicious code that performed harmful activities, sometimes even illegal.

All regulations, including SOX, HIPAA, PCI, BASEL II, and other audit-mandated regulations, require auditing and traceability of software production libraries. To ensure internal data security, a company needs to maintain a list of all programs moved to production libraries including when the activity occurred and who approved it, to avoid a Trojan horse entering and then taking over the system.

Change Tracker Contrasted with Standard Change Management Systems

Normally a full scale Change Management Software (CMS) is used to provide the auditing and traceability of software production libraries. A CMS generally offers control over the full process of software development, but is dependent on information entered by users and procedures that must be followed. CMS products are also expensive in terms of manpower, time and cost, and are complex to implement.

This is especially true for organizations which are SMBs (small/medium business). Besides being based on users entering information, a CMS cannot promise a full log of all changes. Change Tracker was specifically designed to automatically provide this essential data that may be otherwise lacking, with virtually no user intervention.

Change Tracker is very simple to setup and use, and is completely accurate. As such, it provides companies with thorough tracking of software changes entering production, without the difficulty of implementing a full scale CMS. Companies that successfully run a CMS realize that it can only record activities sent through the system, but that bypassing the CMS is a real threat.

As Change Tracker logs all activity on the operating system, companies do not face a situation where a program was added to production and not logged.

Change Tracker can be used in environments where a CMS is also in use. In such a situation Change Tracker identifies changes made by the authorized procedures used by the CMS and clearly identifies them. Alternatively, such changes can be eliminated leaving Change Tracker logged information to include only changes that were done without authorization.

Whether or not a CMS exists, auditors will appreciate this auditing enhancement and take advantage of Change Tracker's reporting options to quickly verify if things were changed outside the CMS, tailor reports according to definitions for specific libraries, as well as identify who made suspicious changes and when.

Summary of Typical CMS Limitations

Change Management Systems (CMS) are regularly used to help auditors pinpoint the source of irregularities. But due to their nature, there are a variety of challenges associated with such systems, that are not answered, including:

- Tracking is not complete and cannot assure 100% logging of changes.
- Tracking measures can be bypassed by users with high authority or by problems in the CMS setup.
- Complicated implementation procedures.
- Requires changes in the procedures used for development in the organization.
- Requires training of entire development unit of the organization.
- Are suitable primarily for large organizations.
- High usage costs.

Change Tracker Benefits

- Collects information in real-time, directly from the QAUDJRN. All changes are logged.
- No user intervention is required.
- Very rapid implementation enables your organization to get up and running immediately.
- No changes in the organization development procedures are required.
- No training is required except for the product manager whose training is relatively brief.
- Log entries are automatically classified in accordance with the company's conventions in the areas of the environment, tasks and executors.
- The Journal receivers of QAUDJRN are not needed and they are analyzed in Real-Time.
- Object attributes are collected automatically.
- Source used for objects can optionally be collected and saved, allowing future ability to view and compare versions with each other.
- Auditors have access to all the data they require, such as who made changes, why, when and from which IP address.
- Includes a fully-operative, field-proven report generator and scheduler, making the on-going mission of auditing changes a relatively easy task.
- Detailed traceability logs.
- Competitive pricing.

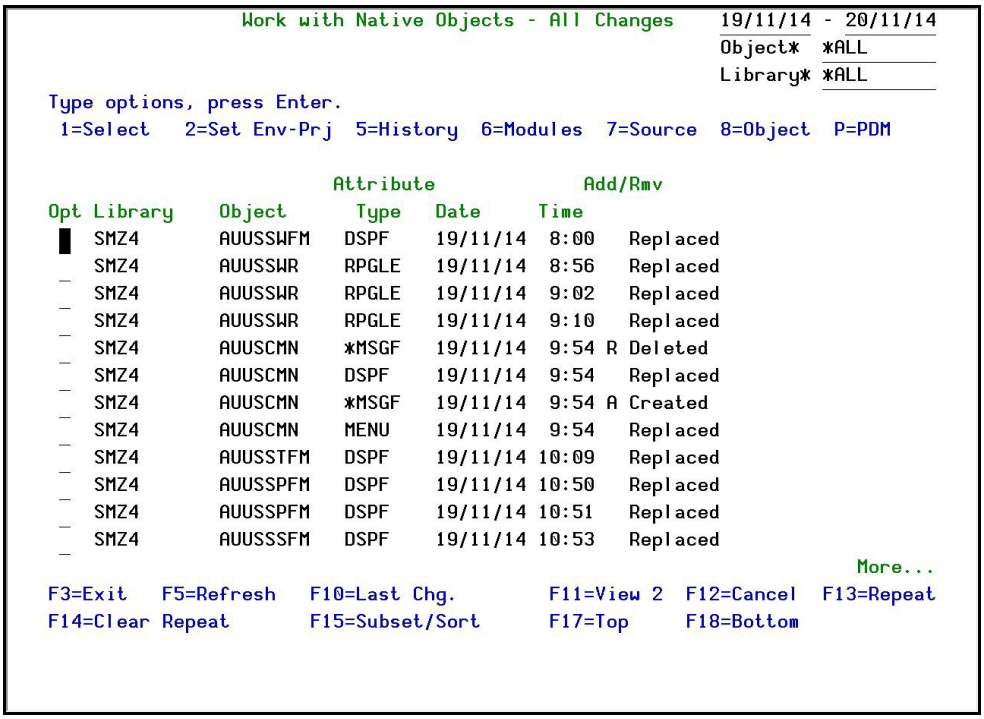


Figure 2-1. Work with Native Objects Screen - All Changes

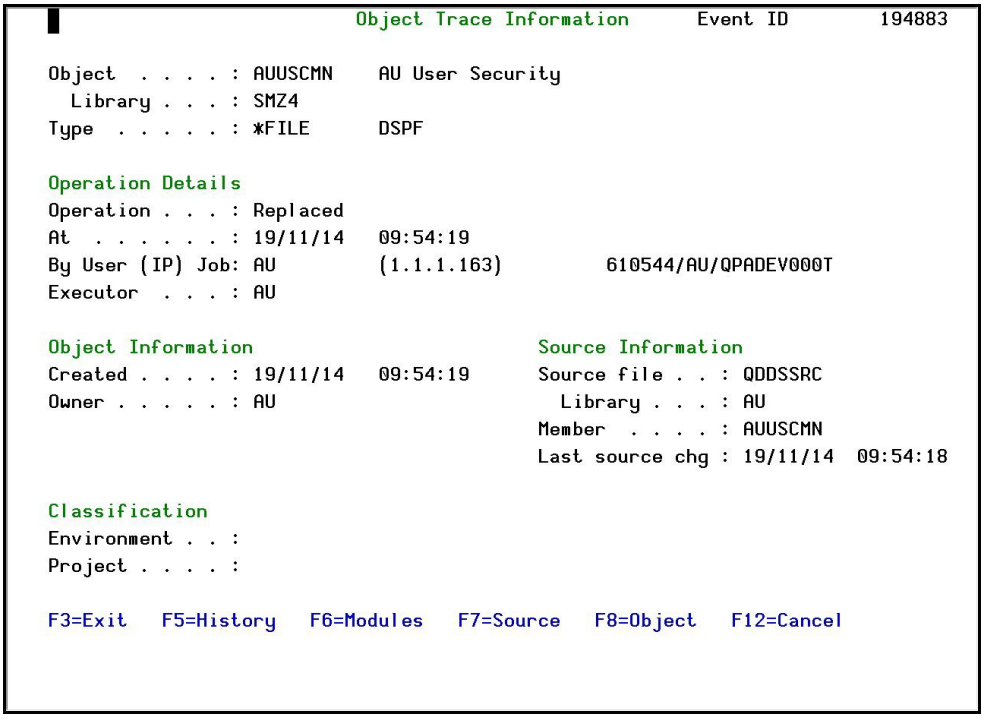


Figure2-2.Object Trace Screen

System Requirements

- Operating System: V5R3 or higher.
- CPU impact is minimal as software changes are infrequent and normally do not occur during peak processing time
- Required Disk space is also small. It can be easily regulated, based on definitions such as the period to keep information online, and for which libraries to keep sources. All sources are highly compressed.

User Interfaces

As with all other components of iSecurity, Change Tracker provides both a Green Screen interface as well as a GUI interface. These two interfaces can be used interchangeably as preferred by the user.

Native OS/400 Green Screen User Interface

Change Tracker is a user-friendly product. The user interface follows standard IBM i CUA conventions. All product features are available via the menus, so users are never required to memorize command name. Many features are also accessible via the command line, for the convenience of experienced users.

Menus

Product menus allow easy access to all features with a minimum of keystrokes. Menu option numbering and terminology are consistent throughout this product as well as other Raz-Lee products. To select a menu option, simply type the option number and press Enter. The command line is available from nearly all product menus.

Data Entry Screens

Data entry screens include many features such as:

- Pop-up selection windows
- Option prompts
- Easy-to-read descriptions and explanatory text for all parameters and options
- Search and filtering with generic text support

Getting Started and General Definitions

Starting Change Tracker

To begin using Change Tracker, type **STRCT** on a command line. The main menu is displayed.

NOTE: If a product password is requested, type QSECOFR.

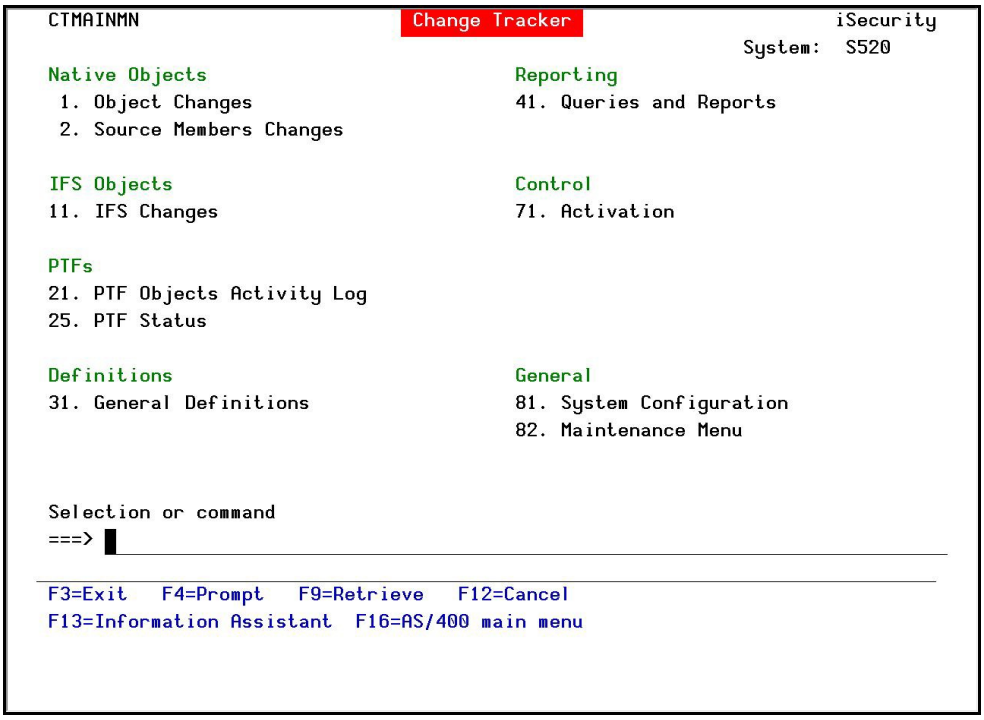


Figure 3-1. Change Tracker Main Menu

General Definitions

The **General Definitions** menu is reached by selecting **`31. General Definitions`**from the Main menu.

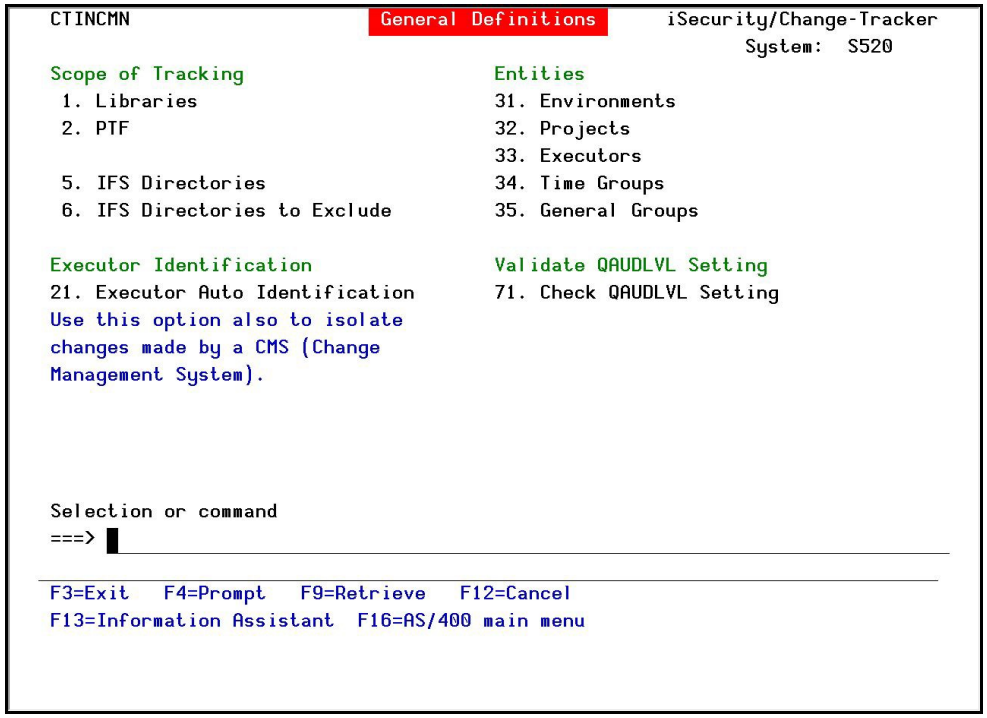


Figure 3-2. General Definitions Menu

NOTE: In order to improve performance, most definitions that are used in Real-Time mode are periodically loaded to the product, and then accessed from the memory. As such, changes made to definitions may affect processing later than expected.

Setting up System Values for Real Time Tracking

Real Time tracking is based on the information that is logged by the operating system in the QAUDJRN. The amount of information is controlled by the System Values.

Change Tracker does not require the QAUDJRN Journal Receivers to be retained on the disk.

Items to track	Basic Tracking	Extended Tracking	Periodic
Event details (who, when, job ID, IP, nature of **event)**	Y	Y	
Objectattributes	Y	Y	
Save of **sources usedforobjects**	Y (optional)	Y (optional)	
Log **(and optionally save source)changes** in source files		Y	
Log **changes** in members and triggers in **non-source files**			

Validate QAUDLVL Setting

The Check QAUDLVL Setting option, activated by selecting **71. Check QAUDLVL Setting** from the General Definition menu, checks if the system values are properly set for Basic and Extended operation.

It is recommended to check the QAUDLVL setting before starting to use Change Tracker and after every change to the QAUDLVL system value. The result of this check is a message which describes the QAUDLVL setting's compliance to the requirements.

Before you can use this option, you must first activate Change Tracker, as described in "Activation Mode" on page 63.

Basic Tracking

Tracking in real time requires auditing system values to be set properly. For basic tracking, ensure that system value QAUDLVL includes **"*CREATE *DELETE *OBJMGT *SAVRST"**.

Extended Tracking

In addition to tracking object changes, the product can track changes to file members and file triggers. Extended Tracking is available for native objects only.

Ensure the following settings for extended tracking, tracking of changes in file members and file triggers:

- System value QAUDCTL must include ***OBJAUD**
- System value QAUDLVL must include ***CREATE *DELETE *OBJMGT *SAVRST**for basic operation.
- For Extended operation the QAUDLVL must also include either ***SECURITY** or the combination of ***SECRUN** and ***SECCFG.**

In addition, to track member activity in PF-SRC, PF and LF, the file must be set for auditing of ***CHANGE/*READ**. To set this option, enter **6**in the **Opt** field for the relevant library on the **Work with Libraries** screen (**SCRAUD > 1**) and press **Enter**. The **Extended Tracking** window appears:

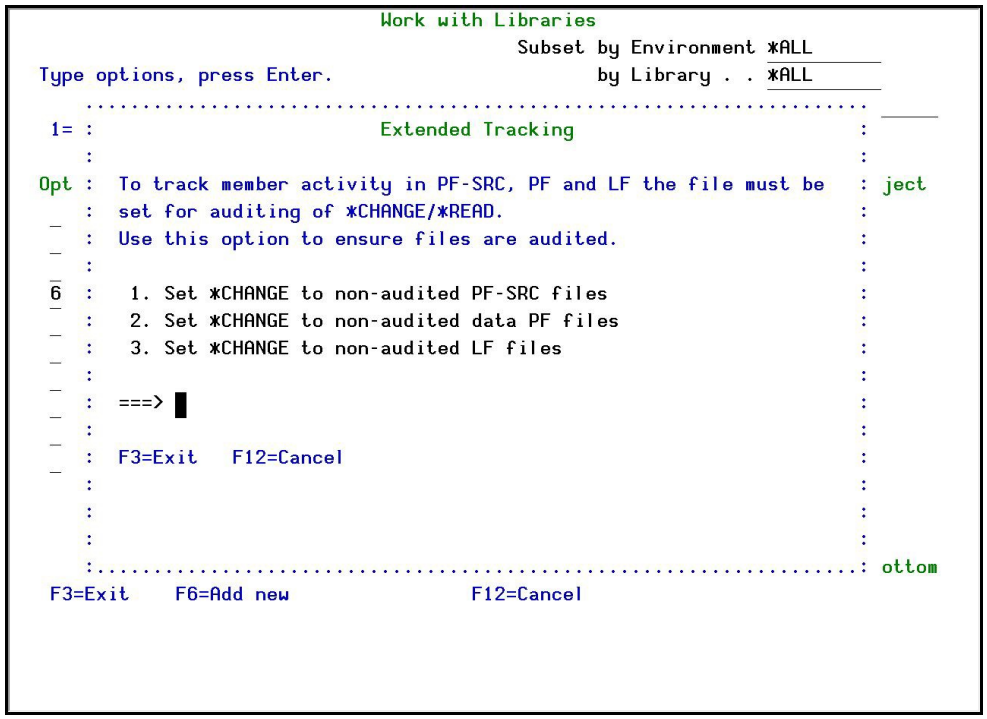


Figure 3-3. Work with Libraries Screen - Extended Tracking

Options	Description
1	Set ***CHANGE** to non-audited PF-SRC files
2	Set ***CHANGE** to non-audited data PF files
3	Set ***CHANGE** to non-audited LF files

Performance Considerations

Setting Extended Tracking causes the addition of the audit type **ZC – Object Changed** to QAUDJRN. Since, in most cases, Extended Tracking is not required or can be limited to only those files which require it (such as source files or multi-member DB files), this impact is negligible.

Change Tracking Methods

Change Tracker users select one of two methods to track changes in the system. Both methods require minimum resources.

- Real Time Mode is the preferred method as it records the information about the event which caused the change (who, when, from where) in addition to the details of the change.
- Periodic Mode records only the changes.

Each Library and Folder may be set to use only one of the methods.

Enabling Change Tracking

To **enable Change Tracker to run**, select option **81. System Configuration** from the main menu and then select **`1. Activation Mode`**. Perform the steps described in "Activation Mode" on page 63.

Scope of Tracking

Libraries

The **Work with Libraries** screen defines which native objects libraries should be controlled and the attributes of the controls.

To define the Libraries to control, select **1. Libraries**from the **General Definitions** menu. The **Work with Libraries** screen appears.

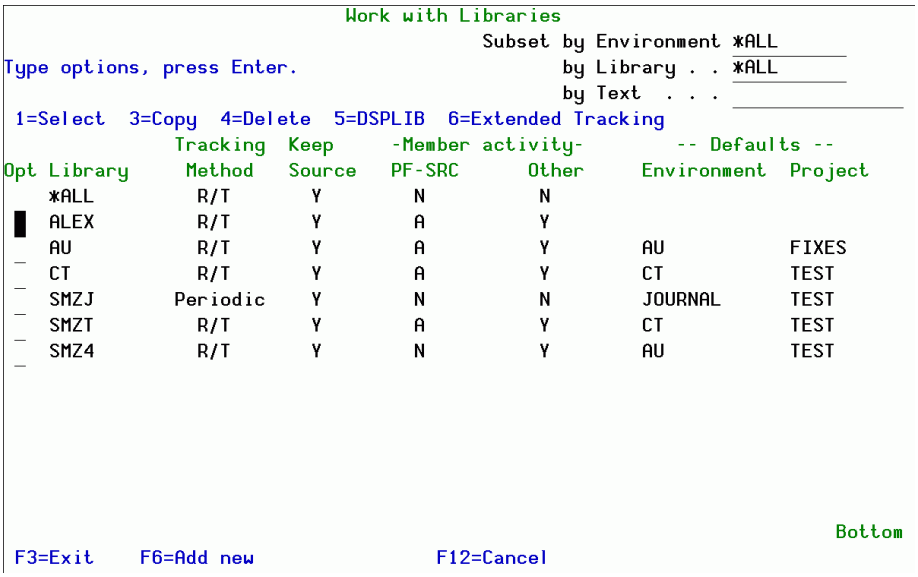


Figure 3-4. Work with Libraries Screen

See **Adding or Modifying a Library** for a detailed descriptions of the fields.

Options	Description
1=Select	Select a definition of a library to work with.
3=Copy	Copy a definition of a library.
4=Delete	Delete a definition of a library.
5=DSPLIB	Display the library contents.
6=Extended Tracking	Specify extended tracking options for the library.
Function Keys	
F6=Add new	Adds a new library.

The displayed list of libraries can be filtered further by subsets of Environment, Library, and Text. For example, if the characters **MZ** are entered in the subset by library, only libraries containing the string MZ will be displayed.

Adding or Modifying a Library

To **modify or add a new library**, open a screen from the **Work with Libraries** screen. The appropriate screen appears.

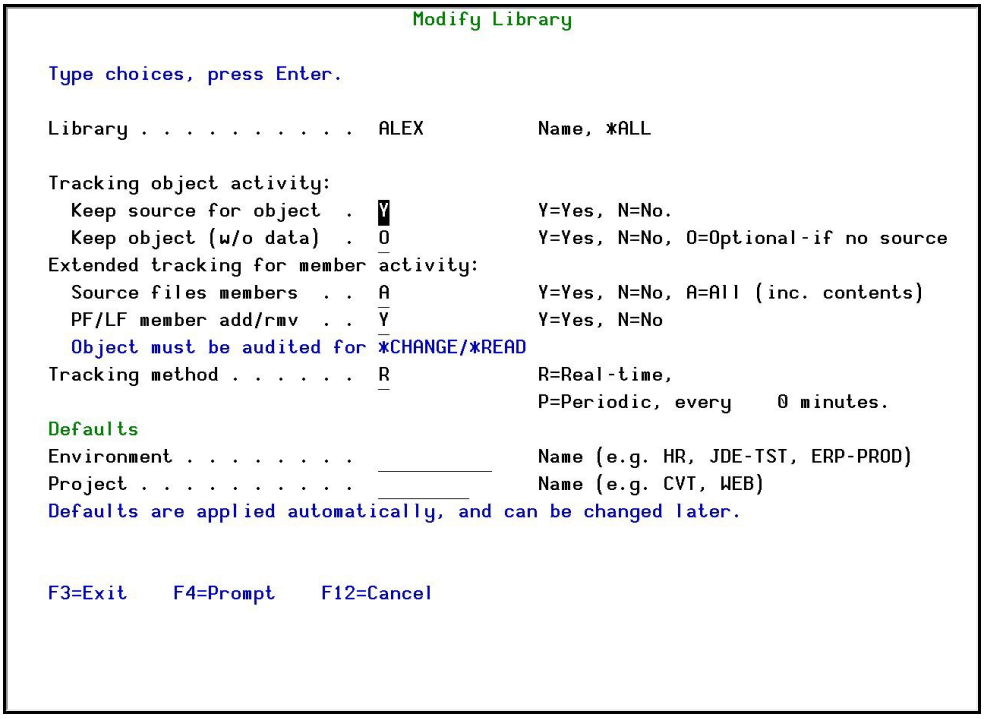


Figure 3-5. Modify Library Screen

Field	Description
Library	Name of library. *ALL. This definition applies to any library which is not specifically mentioned.
Tracking object activity	This area refers to activities that are tracked when a change to the object occurs.
Keep source for object	The source is kept in a compressed mode and can later be restored with the same source change date and time. The source is kept only if the last source change date and time is identical to the one used to create the object. If the object was created in a different system, then, if the source change date and time are identical in the source available on the current system it will be kept. • Y=Yes. The source used to create the object is kept when the object is changed. • N=No. The source will not be kept.
Keep object (w/o data)	• Y=Yes. The object is kept when the object is changed. • N=No. The object will not be kept. • O=Optional - if no source. The object will only be kept if there is no source.

Extended tracking for member activity	Source and data files member activity can be tracked separately from tracking the object activity. In order to track member activity, the file must be set for auditing.
Source files members	Specifies activities to be performed on source files. • Y=Yes. Activity is logged. • N=No. Activity is not logged. • A=All (inc. contents). Activity is logged and the source member is saved.
PF/LF member add/rmv	Specifies activities to be performed for changes made to data files. Such changes can be adding/removing of members or triggers. • Y=Yes. Activity is logged. • N=No. Activity is not logged.
Tracking Method	Specifies the method by which changes are tracked. • R=Real Time Tracking. The operating system log QAUDJRN is monitored to identify relevant changes. This monitoring is performed in real time. • P=Periodic. The library is periodically scanned to identify changes made since the last scan. The period of change is defined in the General Configuration section in the Audit User Manual.
Defaults	Specifies defaults assigned to changes made in this library.
Environment	Assign the changed libraries to the environment.
Project	The objects in this library will be marked as

	part of the specified project.

Function Keys	Description
F4=Prompt	Opens a list to select one or more libraries.

While tracking changes in a general software library has great importance, tracking changes in the OS (Operating System) and related software product libraries may have an even higher significance. Changes to such programs are called PTF (Program Temporary Fix) and are manipulated by IBM PTF related commands.

Change Tracker can track the actual activity that occurs in software product libraries and identify the license program and PTF ID these changes are related to.

To work with **PTF definitions**, select **2. PTF** from the **GeneralDefinitions** menu. The **Work with PTF Definition** screen appears.

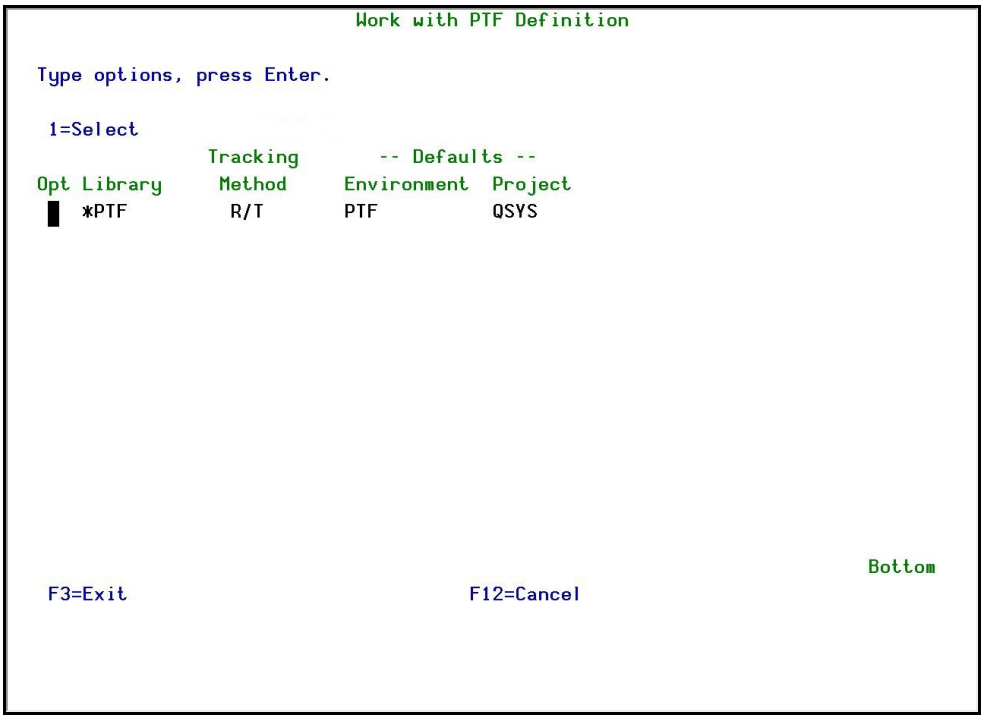


Figure 3-6. Work with PTF Definition Screen

Options	Description
1=Select	Modify the PTF definition.

Modifying PTF Definition

To **modify a PTF definition**, type **1** next to the ***PTF** definition in the **Work with PTF Definition** screen and press **Enter**. The **Modify PDF Definition** screen appears.

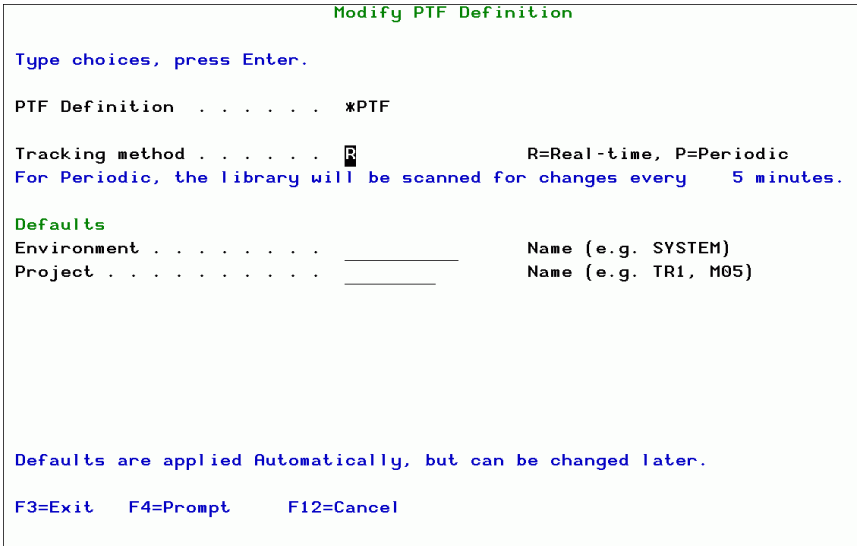


Figure 3-7. Modify PTF Definition Screen

Field	Description
Tracking Method	Specify by which method the changes will be tracked: • **R/T=Real Time Tracking.** The operating system log QAUDJRN is monitored to identify relevant changes. This monitoring is performed in real time. • **P=Periodic**. The library is periodically scanned to identify changes made since the last scan. The period of change is defined in the General Configuration section in the Audit User Manual.
Defaults	
Environment	Environment the PTF is running in.
Project	Project running in the environment.

Function Keys	Description
F4=Prompt	Opens a prompt screen to select 1 or more PTF definitions.

IFS Directories

To work with **IFS directories**, select **5. IFS Directories** from the **General Definitions** menu. The **Work with IFS Directories** screen appears.

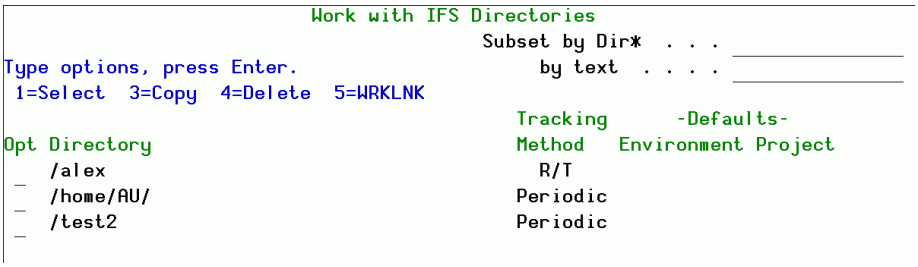


Figure 3-8. Work with IFS Directories Screen

Field	Description
Subset	Filter by: **Dir*** (directory) **Text**

Options	Description
1=Select	Modify an existing IFS directory.
3=Copy	Copy the chosen directory. 1. Specify the new name and path of for the copy of the directory you selected. 2. Press Enter twice to confirm and return to the **Work with IFS Directories** screen.
4=Delete	Delete an existing IFS directory.
5=WRKLNK	Runs the **Work** with Object Links Command.

Function Keys	Description
F6=Add new	Add a new IFS directory.

Adding or Modifying an IFS Directory

In the **Work with IFS Directories** screen, select the directory you want to change, type 1 and press **Enter**, or press F6 to define a new directory. The appropriate screen appears.

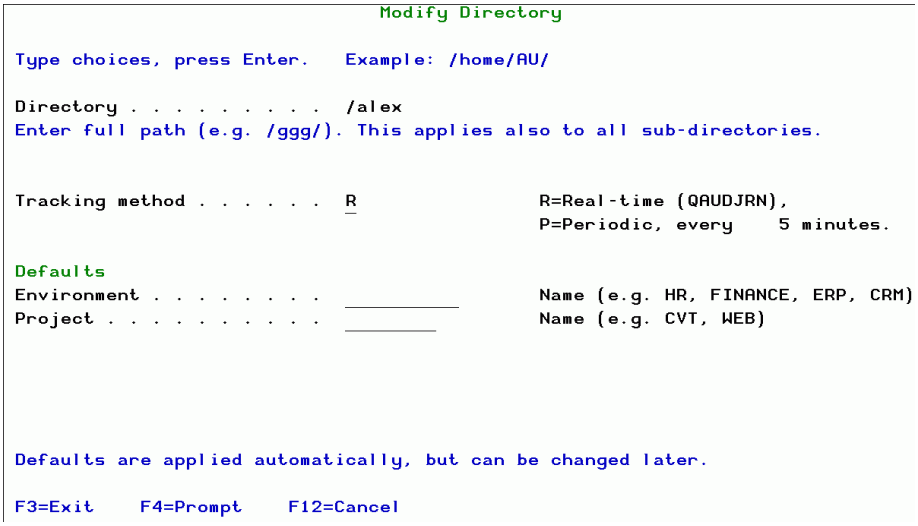


Figure 3-9. Modify IFS Directory Screen

Field	Description
Directory	IFS directory path
Tracking Method	Specifies the method by which changes are tracked. • R/T=Real Time Tracking. The operating system log QAUDJRN is monitored to identify relevant changes. This monitoring is performed in real time. • P=Periodic, every 5 minutes. The directory is periodically scanned to identify changes made since the last scan. A detailed description is provided in the General Configuration section in the Audit User Manual.
Defaults	Specifies defaults assigned to changes made in this directory.
Environment	Assign the changed directories to the environment.
Project	The objects in this directory will be marked as part of the specified project.

Function Keys	Description
F4=Prompt	Opens a prompt screen to select 1 or more IFS directories.

IFS Directories to Exclude

To exclude IFS directories from the scan, select **6. IFS Directories to Exclude** from the General Definitions menu. The Work with IFS Directories to Exclude screen appears.

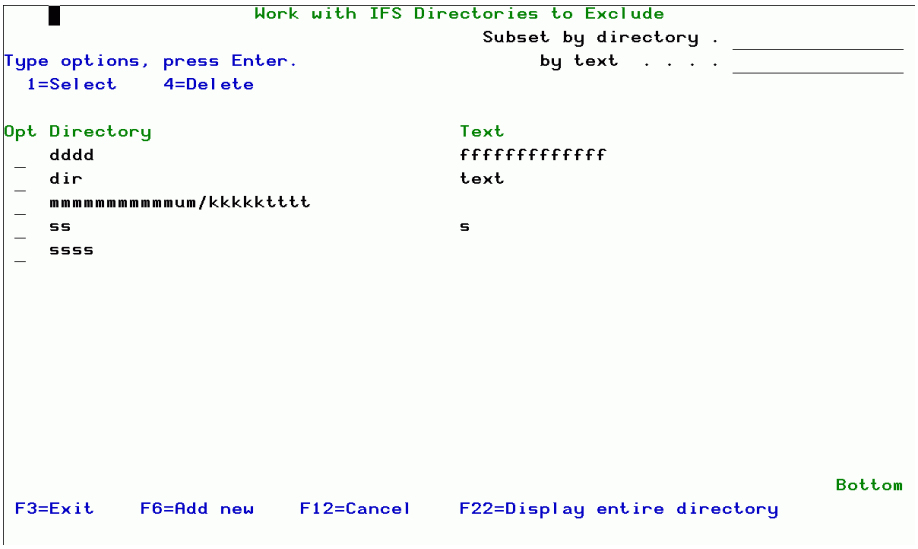


Figure 3-10. Work with IFS Directories to Exclude Screen

Field	Description
Directory	IFS directory path
Text	User-entered description of directory.
Subset	Filter by **directory** or by a string in the **text** description.

Options	Description
1=Select	Modify an existing IFS directory. Perform the steps described in Adding or Modifying an IFS Directory to Exclude on page 24.
4=Delete	Exclude the chosen IFS directory from tracking.

Function Keys	Description
F6=Add new	Add a new IFS directory to exclude from tracking.
F22=Displayentire directory	Displays all objects in the directory.

Adding or Modifying an IFS Directory to Exclude

To **exclude directories from being tracked**: In the **Work with IFS Directories to Exclude** screen, select the directory you want to change, type **1** and press **Enter**, or press **F6** to define a new directory. The appropriate screen appears.

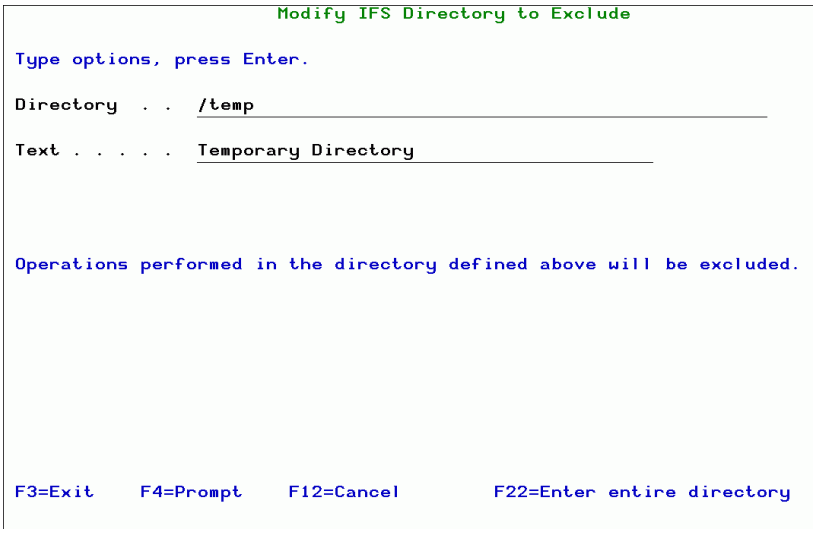


Figure 3-11. Modify IFS Directory to Exclude Screen

Field	Description
Directory	IFS directory path
Text	User-entered description of directory.
Subset by directory	Filter by directory name.
[Subset by] text	Filter by text description.

Function Keys	Description
F4=Prompt	Opens the **Work with Object Links** screen. Refer to the relevant IBM documentation for more details.
F22=Enter entire directory	Expands the free text **Directory** field to enter the full directory path.

Executor Auto Identification

Use this option to identify the executor with a meaningful name. The executor is identified by a combination of the program and / or the user who executed the change.

The same executor can be defined by more than one program/user combination.

Once identified as an executor, it is possible to disregard the activity. This option provides:

- Clarity regarding the actual executor of the transaction
- Ability to work in an environment in which an active Change Management System (CMS) is working and Change Tracker is used solely to identify and track changes not made via the CMS. It is possible to eliminate such tracking information. To do so, set Keep activity in Change Tracker to N.

To define **Executors Auto Identification**, select **`21. Executors Auto Identification`** from the **General Definitions** menu. The **Work with Executors Auto Identification** screen appears.

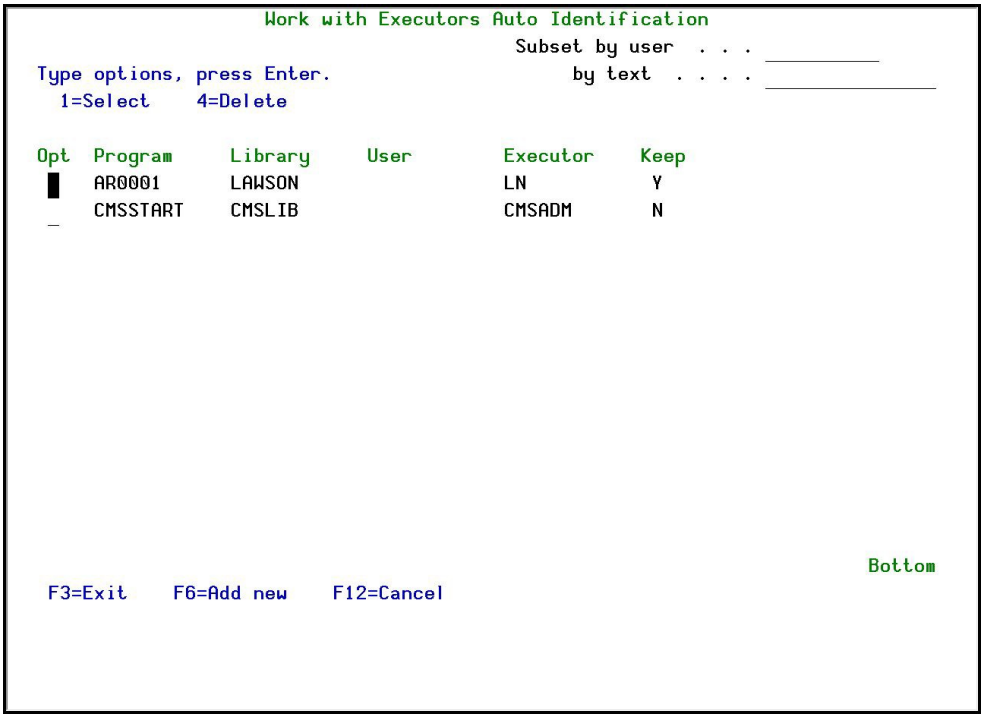


Figure 3-12. Work with Executors Auto Identification Screen

Options	Description
1=Select	Modify the chosen executor. Perform the steps described in Adding or Modifying an Executor Auto Identification on page 26.
4=Delete	Deletes the chosen Executor Auto Identification.

Function Keys	Description
F6=Add new	Add a new Executor Auto Identification to track.

Adding or Modifying an Executor Auto Identification

In the **Work with Executors Auto Identification** screen, select the executor you want to change, type **1** and press **Enter**, or press **F6** to define a new executor. The appropriate screen appears.

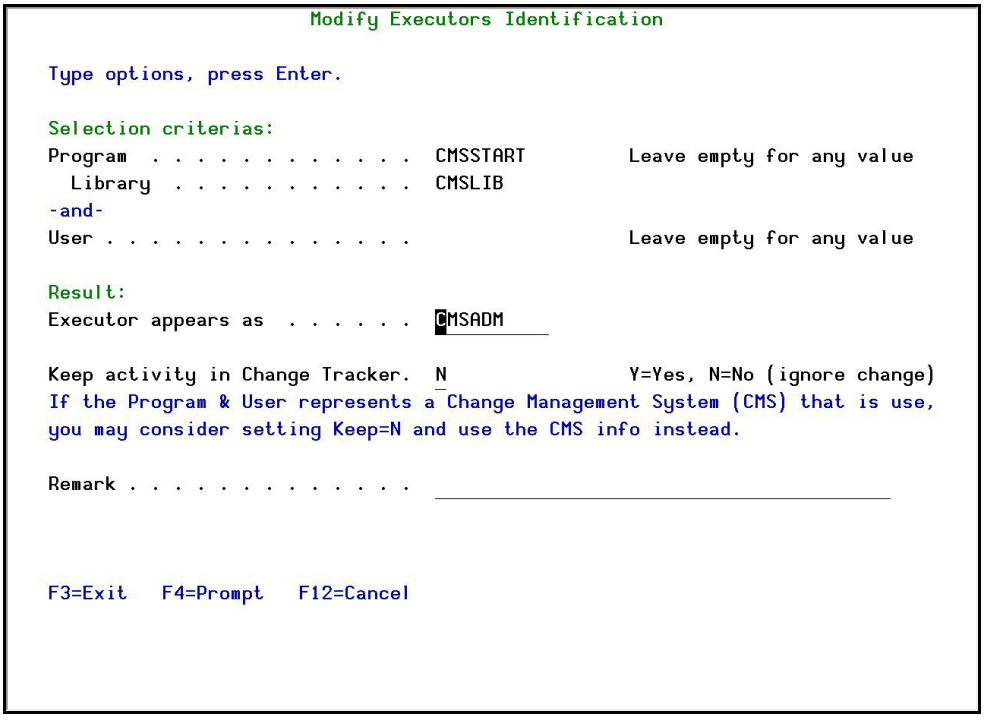


Figure 3-13. Modify Executors Identification Screen

Field	Description
Selection Criteria	Opens the Modify Executors Identification screen.
Program	Filter by name of program. Leave empty for no filtering.
Library	Filter by name of library. Leave empty for no filtering.
User	Filter by name of user. Leave empty for no filtering.
Result	
Executor appears as	Name assigned to executor
Keep activity in Change Tracker	If the Program & User represents a Change Management System (CMS) that is use, you may consider setting **N** and use the CMS info instead. Y=Yes, N=No (ignore change)
Remark	Free text field to add remarks.

Function Keys	Description
F4=Prompt	Opens a prompt screen to select 1 or more executors.

Environments

Environments help you classify activity on your system. They can either be an actual environment or a virtual environment to which one or more projects are assigned.

Environments are normally contained in dedicated libraries. **Work with Environments** defines which environments should be controlled and the attributes of the controls. Use Libraries to display current libraries assigned to the environment.

To **work with Environments**, select **31. Environments** from the **General Definitions** menu. The **Work with Environments** screen appears.

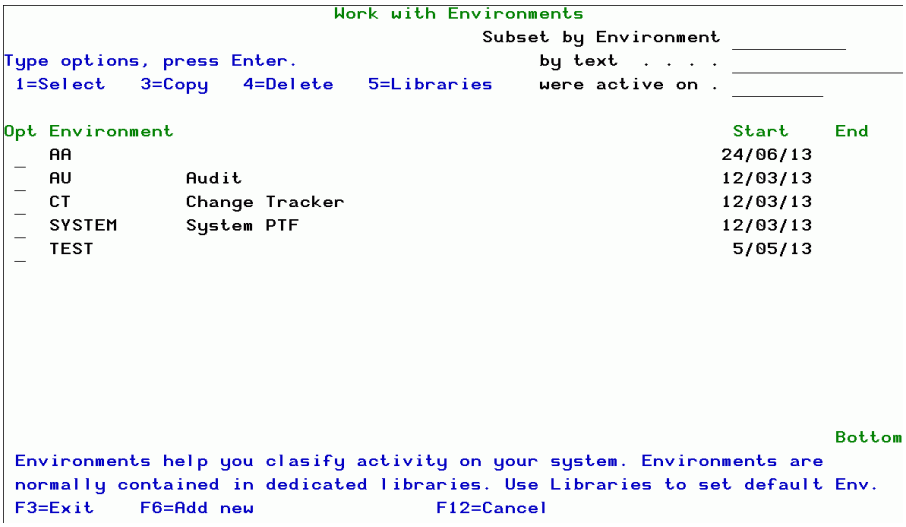


Figure 3-14. Work with Environments Screen

Field	Description
Environment	Assign the changed objects to the environment.
Start	Start time
End	End time

Options	Description
1=Select	Modify an environment.
3=Copy	Copy an environment.
4=Delete	Delete an environment.
5=Libraries	Display current libraries assigned to the environment .

Function Keys	Description
F6=Add new	Opens a prompt screen to select 1 or more environments.

Adding or Modifying an Environment

In the **Work with Environments** screen, select the environment you want to change, type **1** and press **Enter**, or press **F6** to define a new environment. The appropriate screen appears.

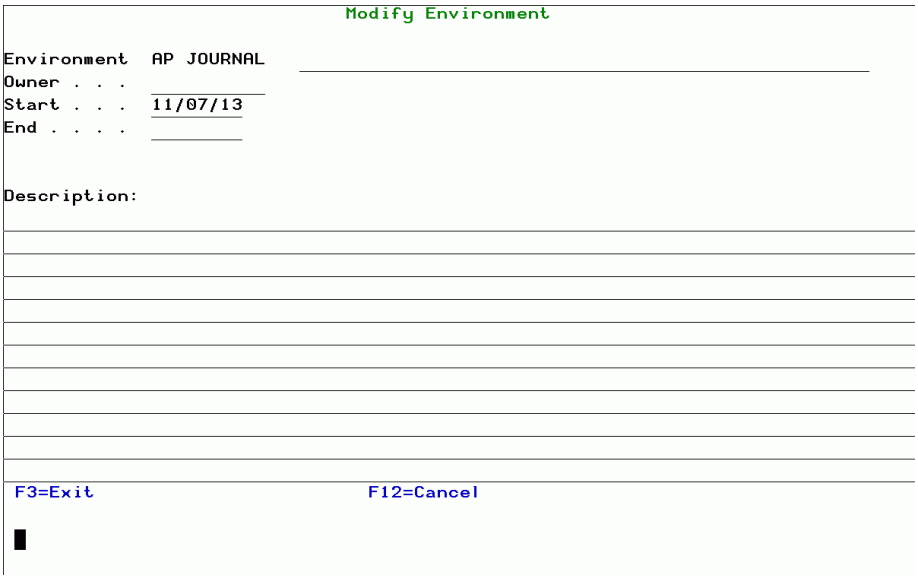


Figure 3-15. Modify Environment Screen

Field	Description
Environment	Assign the changed objects to the environment.
Owner	Owner of the environment.
Start	Start time
End	End time
Description	Free text field to describe of environment.

Function Keys	Description
F6=Add new	Opens a prompt screen to select 1 or more environments.

Projects

By classifying activities in terms of site-specific Projects, object and source changes can be viewed in a more meaningful manner.

To **work with Projects**, select **32. Projects** from the **GeneralDefinitions** menu. The **Work with Projects** screen appears.

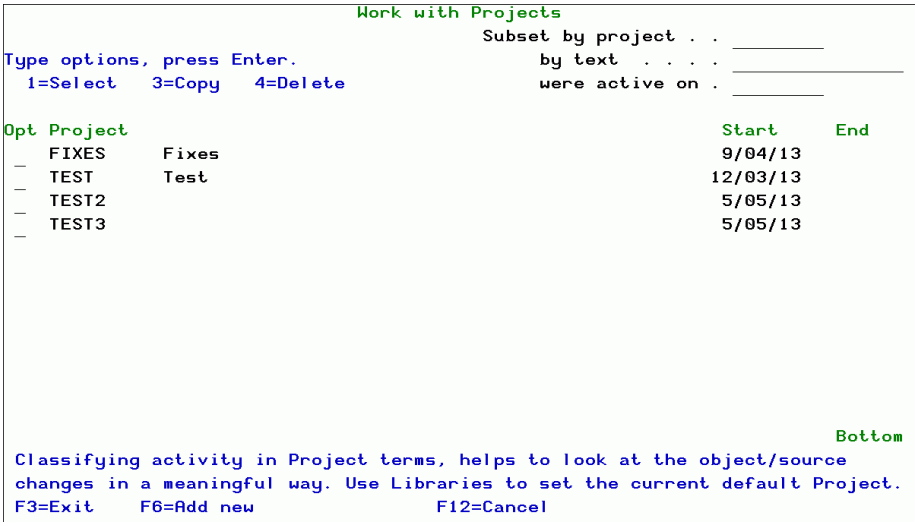


Figure 3-16. Work with Projects Screen

Field	Description
Project	Name of the project
Start	Start time
End	End time

Options	Description
1=Select	Modify a project.
3=Copy	Copy a project.
4=Delete	Delete a project.
Subset	Filter by: • project • text • were **active** on - were active during the time period.
Function Keys	**Description**
F6=Add new	Add a new project to work with.

Adding or Modifying a Project

In the **Work with Projects** screen, select the project you want to change, type **1** and press **Enter**, or press **F6** to define a new project. The appropriate screen appears.

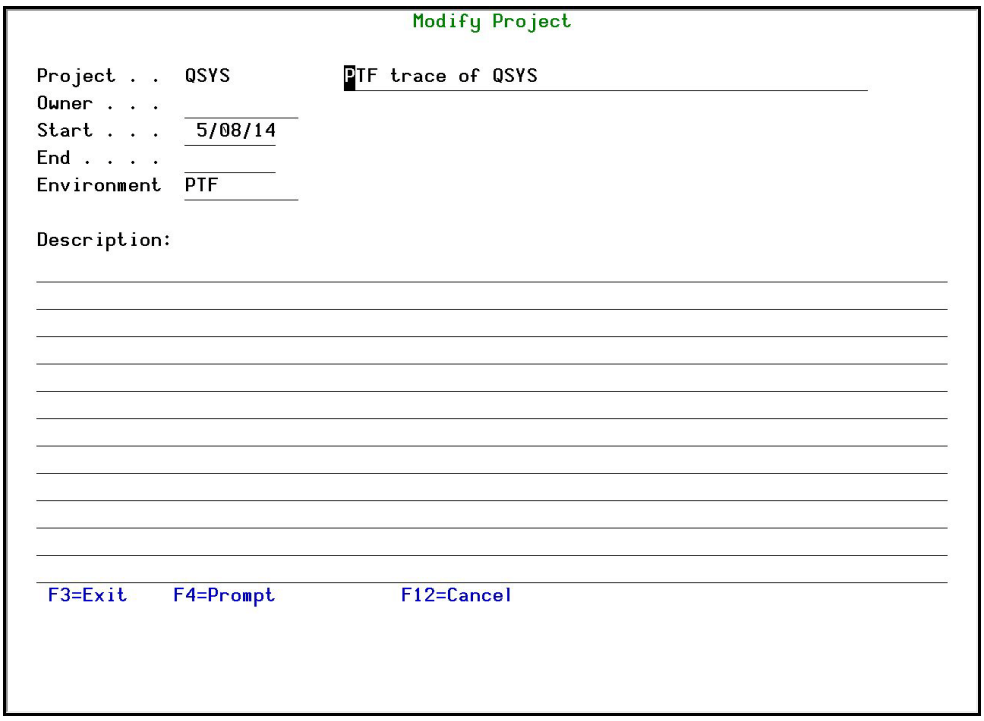


Figure 3-17. Modify Project Screen

Field	
Project	Name of the project
Owner	Owner of the project
Start	Start time
End	End time
Environment	Environment the project is running in.
Description	Free text area to type descriptive information.

Function Keys	
F4=Prompt	Opens a prompt screen to select 1 or more projects.

Executors

To **define Executors**, select **33. Executors** from the **General Definitions** menu. The **Work with Executors** screen appears.

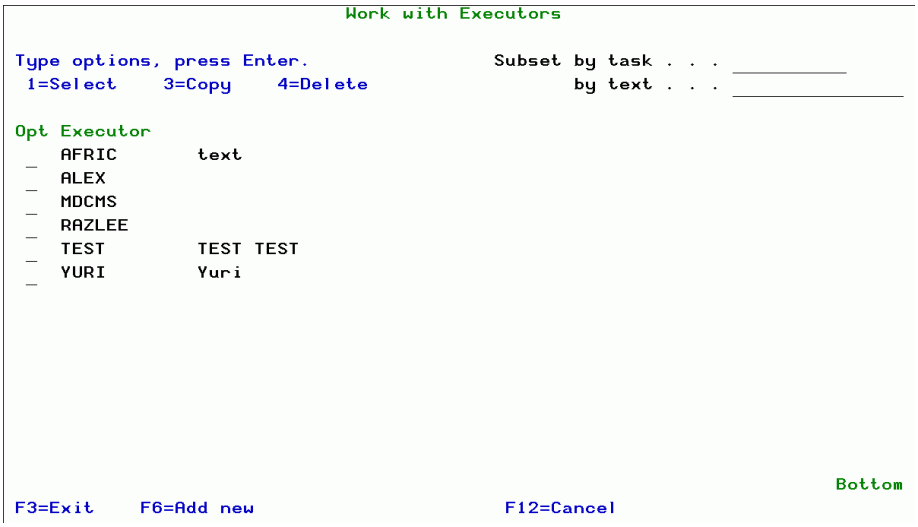


Figure 3-18. Work with Executors Screen

Options	Description
1=Select	Modify an executor.
3=Copy	Copy an executor.
4=Delete	Delete an executor.
Subset	Filter by **Task**, **Text**

Function Keys	Description
F6=Add new	Add a new executor.

Adding or Modifying an Executor

In the **Work with Executors** screen, select the executor you want to change, type **1** and press **Enter**, or press **F6** to define a new executor. The appropriate screen appears.

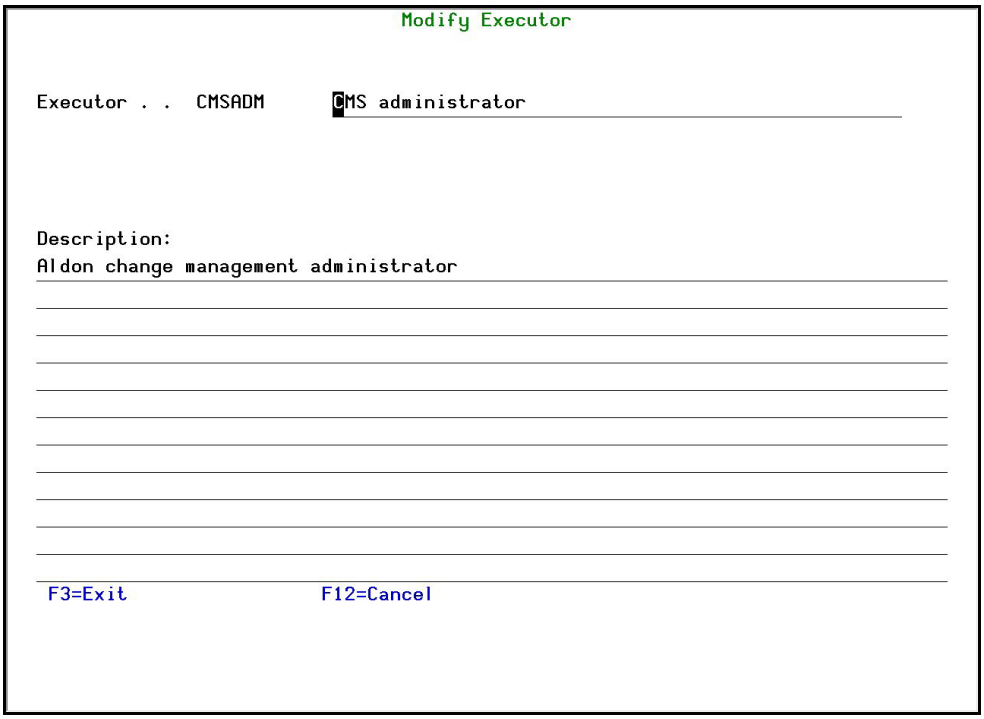


Figure 3-19. Modify Executor Screen

Field	Description
Executor	Name of the executor, followed by a free text entry field.
Description	Free text area to type descriptive information.

Function Keys	Description
F4=Prompt	Opens a prompt screen to select one or more executors (Add **New Executor** screen only).

Time Groups

The description and steps for defining Time Groups are provided in the Audit User Manual.

General Groups

The description and steps for defining General Groups are provided in the Audit User Manual.

Activating Change Tracking

To **activate real time tracking**, select option **`71. Activation`** from the main menu. The **Activation** menu appears.

All the displayed options are part of Audit. For detailed descriptions of these features and how to use them, please see the Audit User Manual.

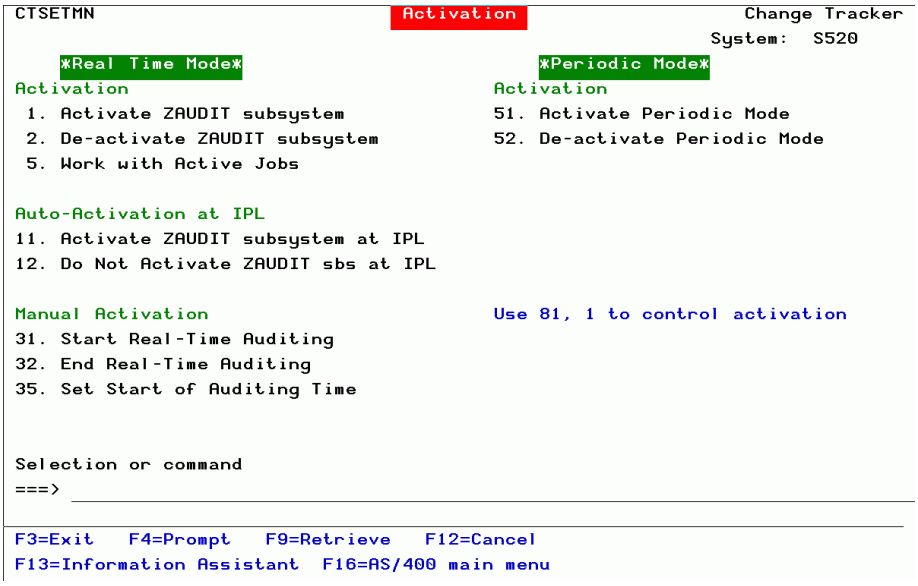


Figure 3-20. Activation Menu

Real Time Tracking

The **Activation** menu contains these options for real-time tracking:.

Key	Command	Description
Activation		
1	**Activate ZAUDIT System**	Activate ZAUDIT subsystem. Enable Change Tracker and Real-time tracking must both be enabled in Activation Mode (**81,1**). To activate Change Tracker in Real Time mode, it is first necessary to enable Changer Tracker and Real time tracking in the **Activation Mode** screen.
2	**De-activate ZAUDIT System**	Stop Real Time tracking activity.
5	**Work with Active Jobs**	Display and manipulate jobs run under the ZAUDIT subsystem.
Auto-Activation at IPL		
11	**Activate ZAUDIT subsystem at IPL**	Activate ZAUDIT at IPL.
12	**Do Not Activate ZAUDIT subsystem at IPL**	Do not activate ZAUDIT at IPL.
Manual Activation		
31	**Start Real-Time Auditing**	Initiate auditing in real-time mode. ZAUDIT subsystem must be activated before using this option.
32	**End Real-Time Auditing**	Stop auditing in real-time mode. Only the Real Time active jobs is ended.
35	**Set Start of Auditing Time**	Set the "starting point" of time to start collecting information.

NOTE: If Real Time is activated for the first time or reactivated after a long inactive period, it is recommended that you only activate during off-peak hours.

Periodic Tracking

These options are available for Periodic tracking on the **Activation** menu.

Key	Command	Description
Activation		
51	**Activate Periodic Mode**	Initiates a background Periodic job that monitors libraries that were defined as periodic tracking libraries. See Activate Periodic Tracking.
52	**De-activate Periodic Mode**	De-activate Change Tracker Periodic mode. See Deactivate Periodic Tracking.

Controlling Tracking

System Configuration

The **System Configuration** menu controls the global options for Change Tracker including the authorization code. To access the **System Configuration** menu, select **81. System Configuration**from the Main menu.

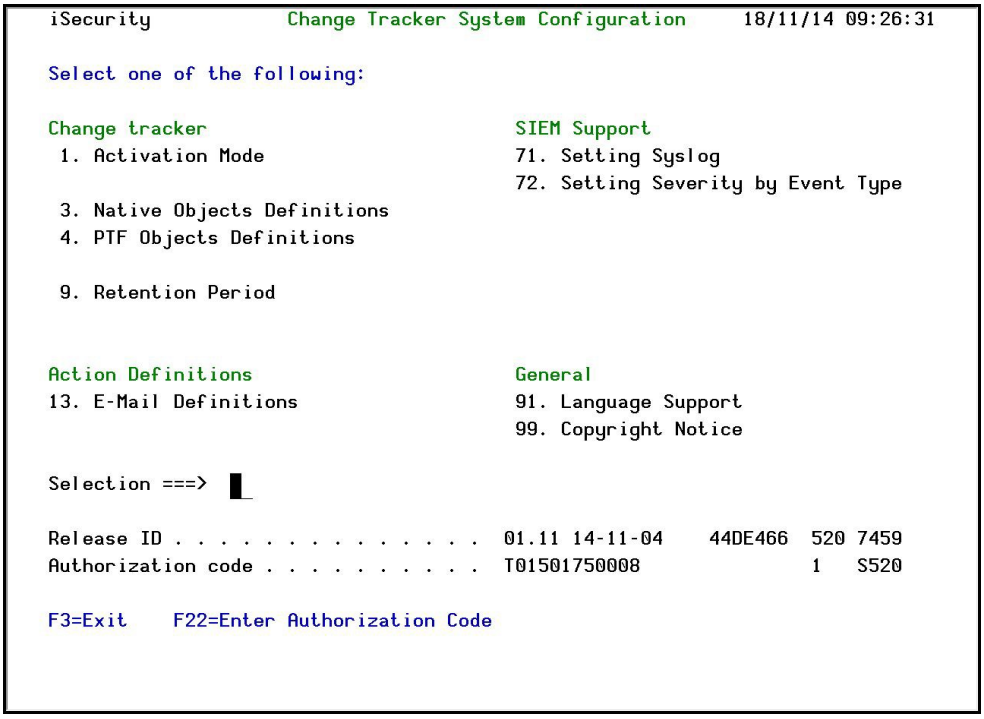


Figure 4-1. System Configuration Screen

NOTE: General Activation procedures (**71** in the Main menu) are Audit functions and are described in the Audit User Manual.

Activation Mode

To access the Activation Mode screen, select **1. Activation Mode** from the System Configuration Main Menu. The Activation Mode screen appears.

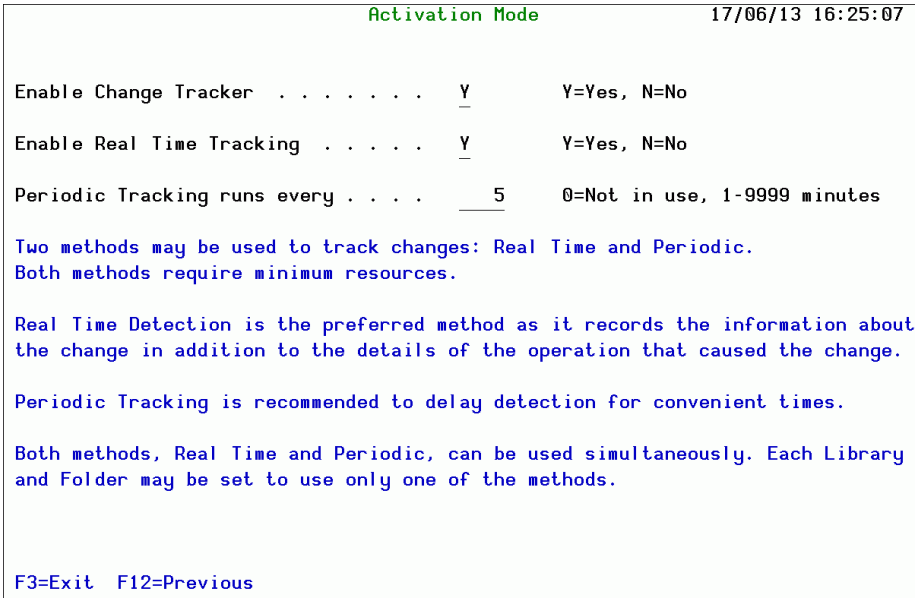


Figure 4-2. Activation Mode Screen

Field	Description
Enable Change Tracker	Change Tracker must be enabled even if Audit is running. **Y=Yes;** N=No.
Enable Real Time Tracking	Real-time tracking will be performed. **Y=Yes;** N=No,
Periodic Tracking runs every ...	Interval for Periodic tracking 0=No periodic tracking will be performed. **1-9999 minutes**. For example if **5**, then changes are tracked every 5 minutes.

NOTE: If you set both **Enable Change Tracker** and **Enable** Real **Time Tracking** to Y, then even if the **Real-Time Auditing** (All **systems) parameter** in Audit is set to **N**, activating the ZAUDIT subsystem activates the Audit job. You access the parameter from the **Autostart activities in** ZAUDIT

option in the System Configuration menu in Audit (**STRAUD -->81-->5**)

Native Objects Definitions

To **access the Native Objects screen**, select **`3. Native Objects Definition`**from the **System Configuration** Main Menu.

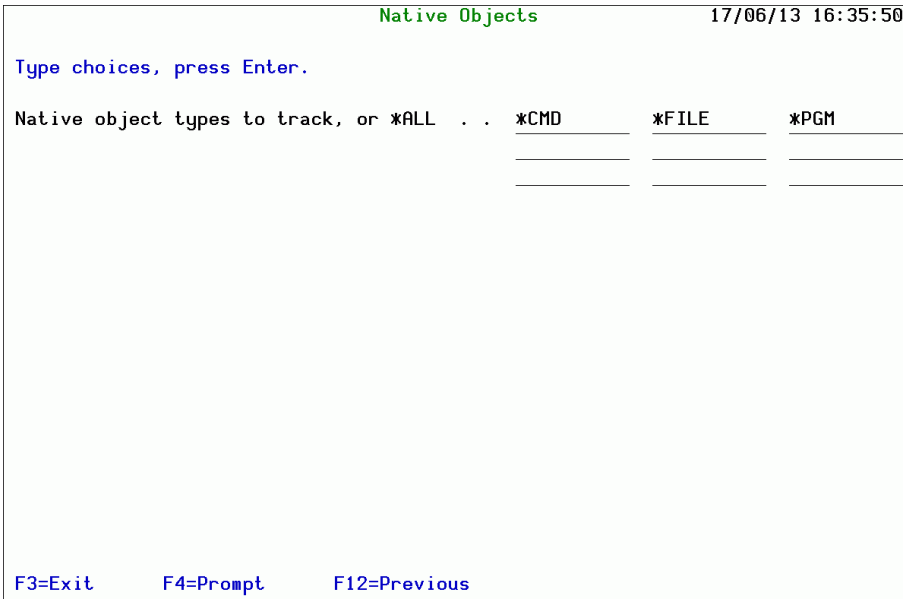


Figure 4-3. Native Objects Screen

Field	Description
Native object types to **track,or *ALL**	Enter the types of native objects to track or ***ALL** to track all types.

Function Key	Description
F4=Prompt	Opens a prompt list to select one or more object types. 1. Type **1** next to the object type to select it. 2. To select another type select a different line and press **F4** to reopen the prompt list.

Changes on these objects will begin to be tracked after Re-Activation of Change Tracker (and Audit, if necessary).

PTF Objects Definitions

To **access the PTF Objects screen**, select **`4. PTF Object Definition`**from the **System Configuration** Main Menu.

System libraries include objects normally maintained by the users. These include objects with types of ***USRPRF**, ***LIB**, ***DEVD**, history files, **QHST**, and other objects.

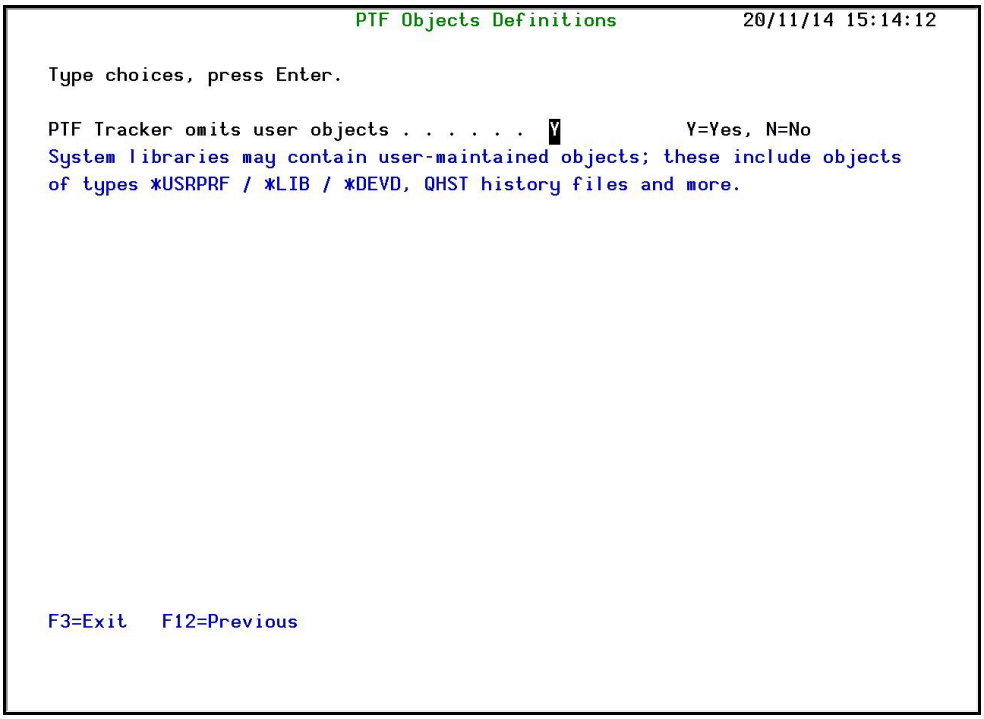


Figure 4-4. PTF Objects Screen

Field	Option
`PTF Tracker omits local system objects`	**Y=Yes**. Local objects will not be tracked N=No. Local objects will be tracked.

Activate Periodic Tracking

To **activate periodic tracking**, select **`71. Activation`** from the **System Configuration** Main Menu, and then select **`51. Activate Periodic Mode`** from the **Activation** Menu. The **Add Job Schedule Entry** screen appears.

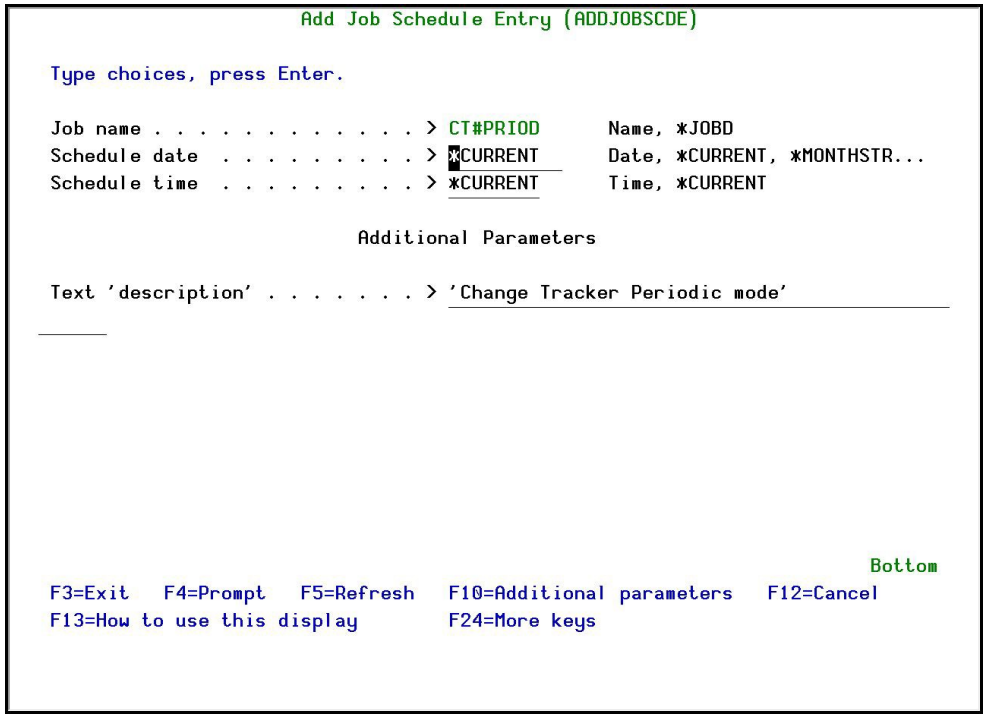


Figure 4-5. Add Job Schedule Entry Screen

Field	Description
Job Name	Name – Name of the job *JOBD – Job Description
Schedule Date	FIRST-DATE – Invalid date that must be changed to one of the following options: *CURRENT – Submit job on the current date *MONTHSTR – Submit job on the first day of the month *MONTHEND – Submit job on the last day of the month *NONE – No start date is specified
Schedule Time	FIRST-TIME – Invalid time that must be changed to one of the following options: Time – Submit job at the specified time (24-hour format) *CURRENT – Submit the job at the current time
Omit Date	Date – Specify a maximum of 20 dates on which the job is not submitted. Enter + and press Enter to open more fields for additional dates. *NONE – There are no dates when a job is not submitted
Recovery Action	Specifies the recovery action to take if the job cannot be submitted at the designated time because the system is powered down or in restricted state. *SBMRLS – Job is submitted in the released state *SBMHLD – Job is submitted in the held state *NOSBM – Job is not submitted
Message Queue	Specifies the qualified name of the

	message queue to which message are sent **Name** – Specific message queue *USRPRF – Message queue specified in the user profile under which the submitted job runs is used *NONE – Completion messages are not sent. Error messages are sent to the QSYSOPR message queue
Library	Library where the message queue resides Name – Specific library *LIBL – Library List *CURLIB – Current Library
Text Description	Text that briefly describes the job schedule entry

Deactivate Periodic Tracking

To deactivate periodic tracking, select **71. Activation** from the System Configuration Main Menu, and then select **52. Activate Periodic Mode**from the Activation Menu. All periodic tracking is immediately stopped.

Retention Period

To **define the period of time to save tracking information**, select **9. Retention Period** from the **System Configuration** Main Menu. The **Change Tracker System** Periods screen appears.

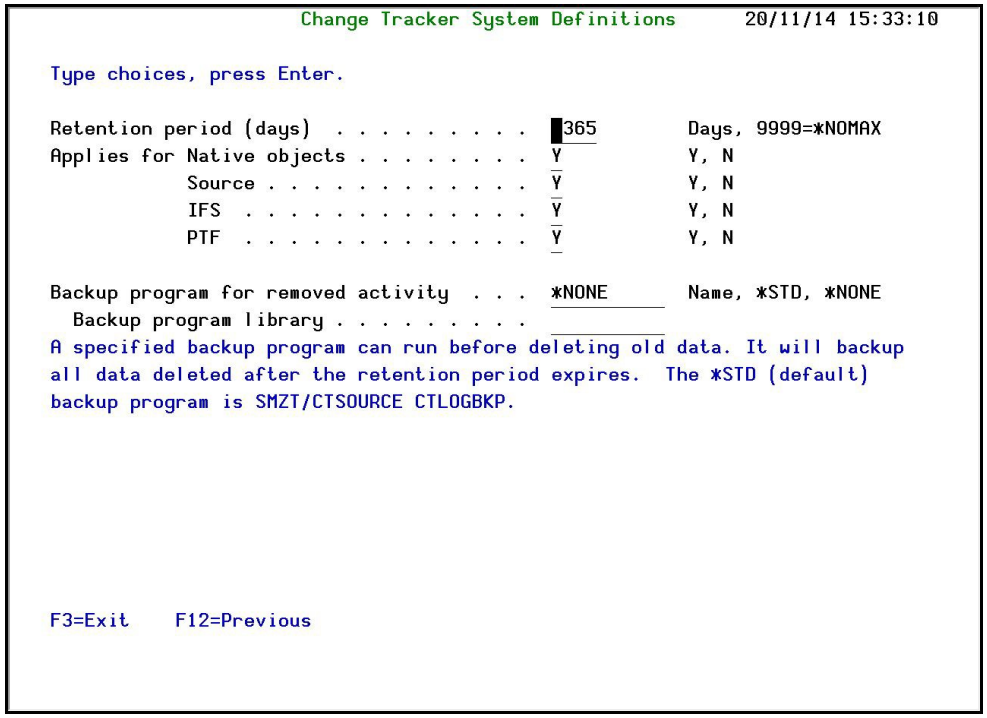


Figure 4-6. Retention Periods

Field	Description
Retention period (days)	Use this option to determine how long information will be retained. 0 - 9999 9999=*NOMAX - Information will retained for an unlimited time.
Applies for	The retention period will apply for the following parameters:
Native [objects]	Y=Yes, N=No
Source [objects]	Y=Yes, N=No
IFS [objects]	Y=Yes, N=No
PTF	Y=Yes, N=No
Backup program for removed activity	A specified backup program may run before deleting old information. This information will backed before deletion. The *STD (default) backup program is SMZT/CTSOURCE CTLOGBKP. Name, *STD, *NONE
Backup program library	Set the location of the backup program.

E-Mail Definitions

A detailed description of this option is provided in the Audit User Manual.

SIEM Support

Change Tracker integrates with SIEM systems by sending security alerts to the Syslog. Message alerts can contain detailed event information about changes to both objects and source files.

Setting Syslog

The Syslog definitions for Change Tracker are defined in Audit. In the Audit **System Configuration** menu (accessed by option **81** in the Audit main menu), use option **32** to set the specific Syslog parameters. For more details, see the Audit User Manual.

Setting Severity by Event Type

You can define for what level of severity Syslog messages should be sent, to avoid overloading your system with unnecessary information.

1. Select **`72. Setting Severity by Event Type`** in the **Change Tracker System Configuration** menu. **The Setting Syslog Severity by Event Type** screen appears.

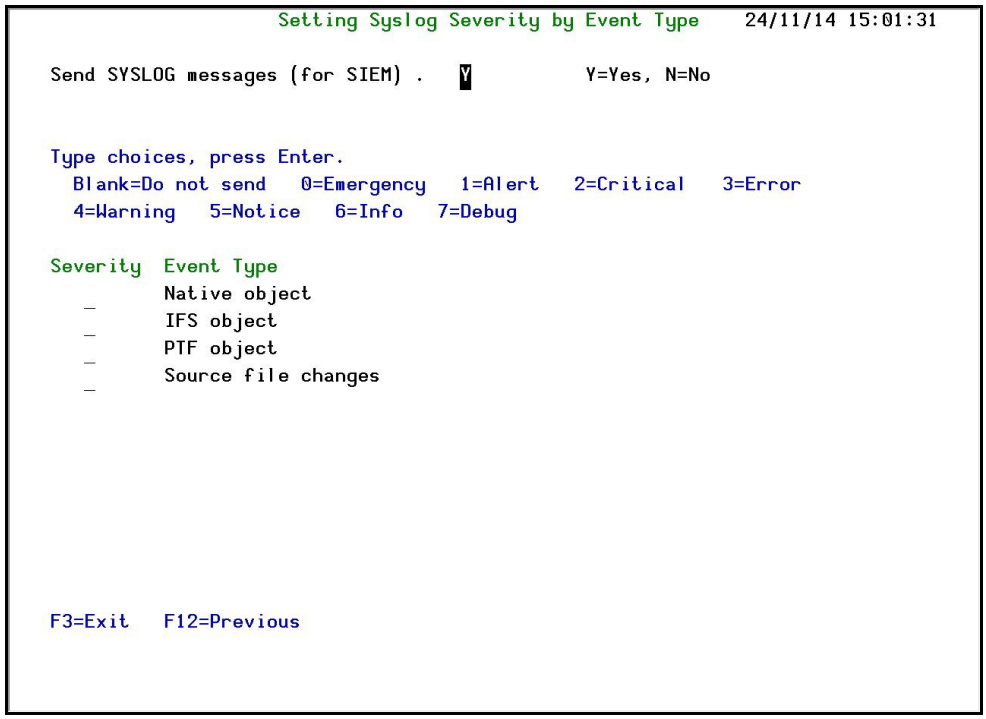


Figure 4-7. Setting Severity by Event

Field	Description
Send SYSLOG messages (for SIEM)	Y=Yes N=No
Severity	Enter the severity range from which the SYSLOG message will be sent for the following: • Native objects • IFS objects • PTF objects • Source file changes The severity levels are: • 0 = EMERGENCY • 1 = ALERT • 2 = CRITICAL • 3 = ERROR • 4 = WARNING • 5 = NOTICE • 6 = INFORMATIONAL • 7 = DEBUG

2. Enter your parameter choices and press **Enter**.

General

Language Support

A detailed description of this option is provided in the Audit User Manual.

Copyright Notice

This screen displays the current Raz-Lee copyright notice and the General Public License (GPL) where necessary.

Reporting

This chapter explains how to display changes and create reports.

Native Objects

The following options display changes in native objects.

Object Changes

To **define the native data to display from the log**, select option **`1. Object Changes`** from the main menu. The **Specify Data to Work With** screen appears.

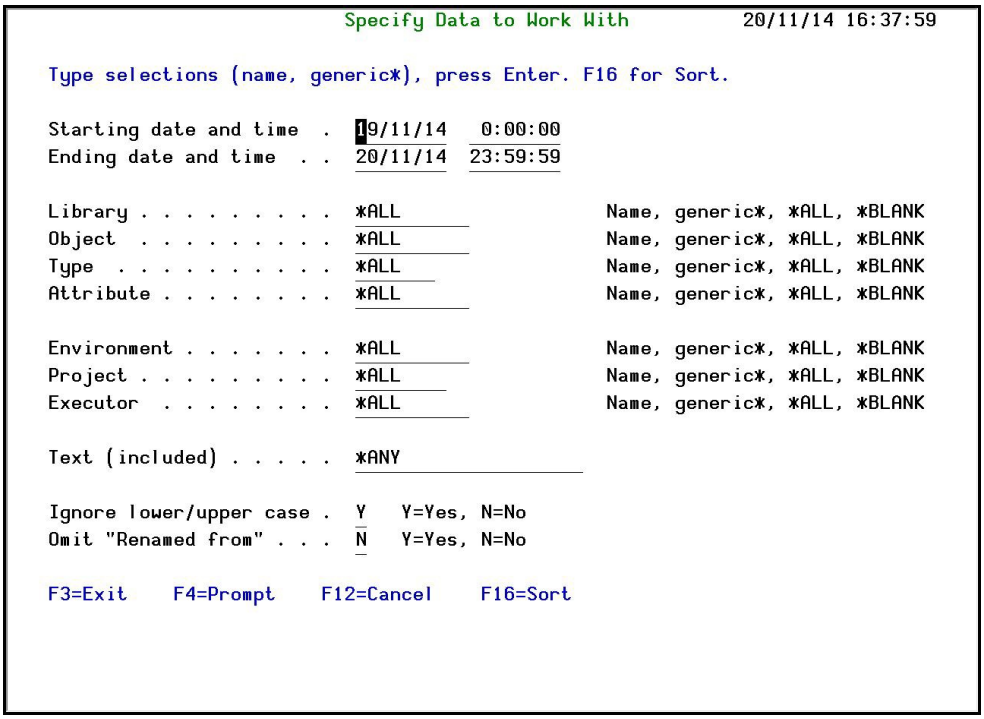


Figure 5-1. Specify Data to Work With Screen

Fields	Description
Starting date and time	Starting date and time range for viewing the data log
Ending date and time	Ending date and time range for viewing the data log
Library	Library where the object is located Name, generic*, *ALL, *BLANK
Object	Object that was changed Name, generic*, *ALL, *BLANK
Type	Type of object Name, generic*, *ALL, *BLANK
Attribute	Different attributes of the object Name, generic*, *ALL, *BLANK
Environment	Environment where the project is running. Name, generic*, *ALL, *BLANK
Project	Project running in the environment. Name, generic*, *ALL, *BLANK
Executor	User that performed this operation. Name, generic*, *ALL, *BLANK
Text (included)	String of text that appears within the log.
Ignore lower / upper case	All matches regardless of letter case. Y=Yes; N=No
Omit "Renamed from"	You can choose to omit Rename changes Y=Yes; N=No

Function Keys	Description
F4=Prompt	Opens a list to select criteria for the above fields.
F16=Sort	Determine the order the information will be displayed by field.

To **set the sort sequence** of the results, press F16 from the **Specify Data to Work With** screen. The **Specify Sort** screen appears.

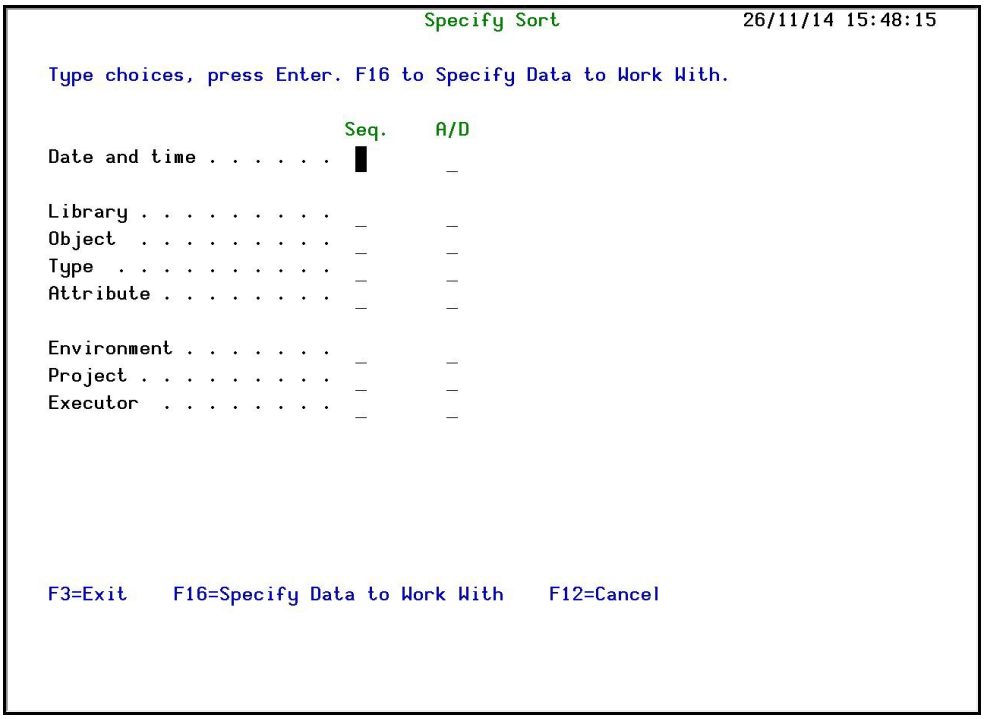


Figure 5-2. Specify Sort

You can sort on any of the listed fields:

- Date and time
- Library
- Object
- Type
- Attribute
- Environment
- Project
- Executor

Fields	Description
Seq	The order the fields will be sorted in.
A/D	Sort this field in Ascending or Descending order.

Function Keys	Description
F16=Specify Data to WorkWith	Return to the **Specify Data** to **Work With** screen to define the data filters.

Enter the required parameters and press **Enter**. The **Work with Native Objects - All Changes** screen appears.

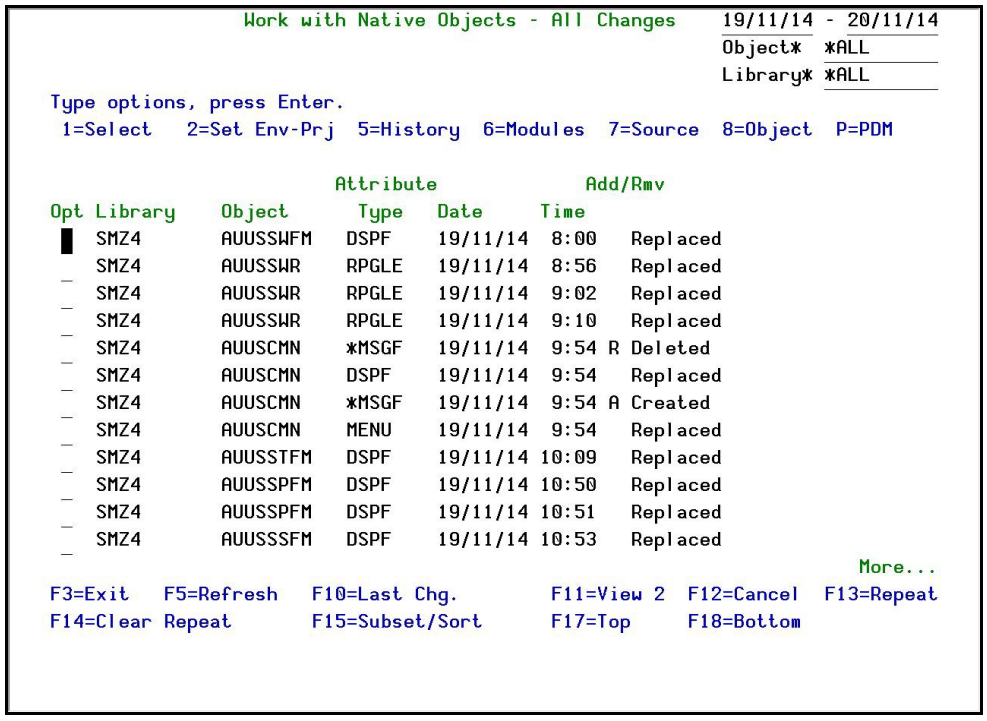


Figure 5-3. Work with Native Objects Changes Screen

Fields	Description
Library	The source library and target (new) library.
Object	Object that was changed (as described in the Operation field)
Type	Type of the object
Date	Date the change was made
Time	Time the change was made
Add/Rmv	A=Object was added. R=Object was removed.

Options	Description
1=Select	Opens the **Object Trace Information** screen as described in Working with Object Trace Information.
2=Set Env-Prj	Opens the **Set to Environment-Project** screen as described in Working with Environment-Project.
5=History	Opens the **Data to Work With** screen, followed by the **Work with History** screen to view the selected object's change history. Details are provided in Working with History.
6=Modules	Opens the **Work with Modules** screen to view the different modules contained in the object. Details are provided in Working with Modules.
7=Source	Opens the **Work with Object Source** screen to display the source of the object, compare it with other versions and restore the object source from the specified version. Details are provided in Working with Object Source.
P=PDM	Opens **PDM** screen as described in Source Members Changes.

Function Keys	Description
F5=Refresh	Refresh the list.
F10=All/First/Last Changes	Toggle to group and then sort by most earliest/latest or all changes.
F11=View 1/2/3	Display additional information regarding the activities.
F13=Repeat	Repeat last option (example 1 to select).
F14=ClearRepeat	Clear the repetition from the cursor location downward on the list.
F15=Subset/Sort	Returns to the **Specify Data to Work With** filter screen to allow a narrowing down of the list of objects to track.
F17=Top	Top of list
F18=Bottom	Bottom of list

Work **with Native** Objects

From the **Work with Native Objects** - **All Changes** screen, select one or more objects by typing **1** next to them and pressing **Enter**. The **Object Trace Information** screen appears.

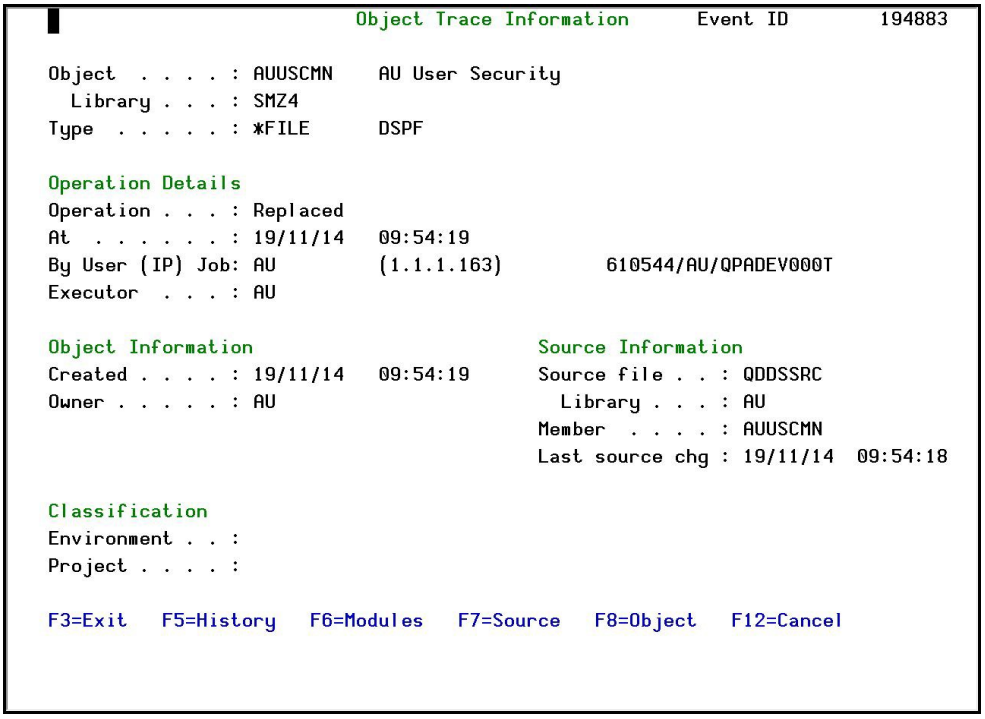


Figure 5-4. Object Trace Information Screen

Fields	Description
Object	Object that was changed (as described in the Operation field)
Library	The source library and target (new) library.
Type	Type of the object
Operation Details	
Operation	Operation type (for example, moved, deleted, and so on)
At	Date and time
By User (IP) Job	User, IP, and job information
Executor	User that performed this operation.
Object Information	
Created	Time and date the object was created
Owner	Owner of the object
Authority Used	For programs - type of authority used. *USER/*OWNER
Modules	For programs - number of modules.
Classification	
Environment	Environment to which the object belongs.
Project	Project to which the object belongs
Source Information	
Source file	Location of the source file
Library	Library where the source file is located
Member	Name of the member of the object
Last Source Change	Last date and time the source used to create the object was changed

Function Keys	Description
F5=History	Opens the Work with History Changes screen.
F6=Modules	Searches for Modules for this object.
F7=Source	Opens the Work with Object Source screen.

Working with Environment-Project

To **reassign the changed objects** to a different environment/project. Select **1. Object Changes** from the main menu. The **Specify Data to Work With** screen appears.

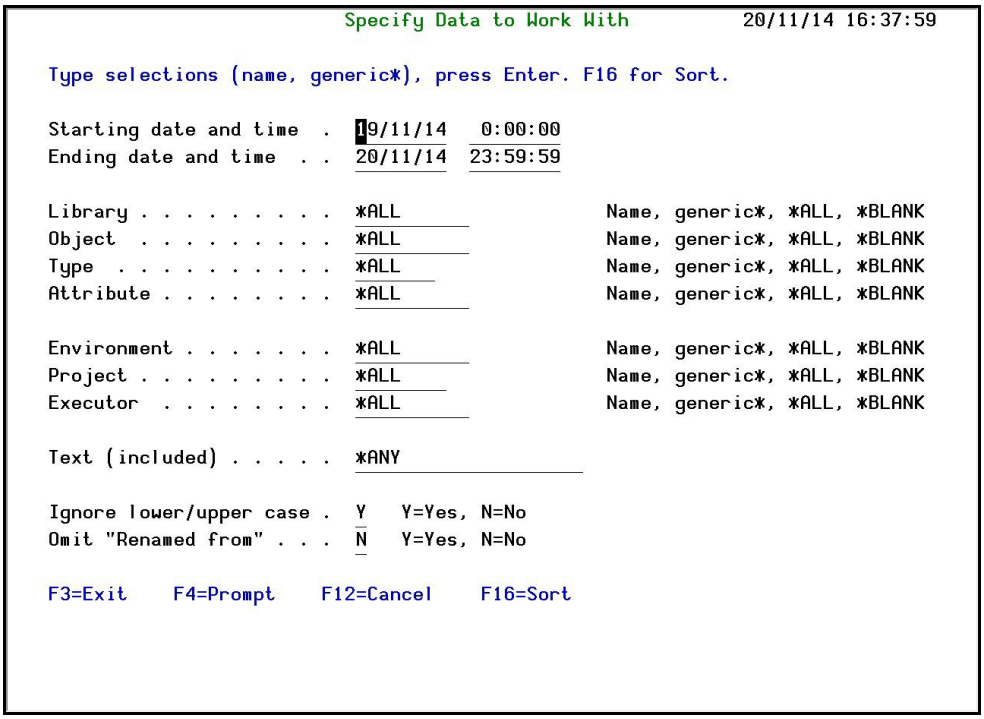


Figure 5-5. Specify Data to Work With Screen - Environment/Project

Fields	Description
Starting date and time	Starting date and time range for viewing the data log
Ending date and time	Ending date and time range for viewing the data log
Library	Library where the object is located Name, generic*, *ALL, *BLANK
Object	Object that was changed Name, generic*, *ALL, *BLANK
Type	Type of object Name, generic*, *ALL, *BLANK
Attribute	Different attributes of the object Name, generic*, *ALL, *BLANK
Environment	Environment where the project is running. Name, generic*, *ALL, *BLANK
Project	Project running in the environment. Name, generic*, *ALL, *BLANK
Executor	User that performed this operation. Name, generic*, *ALL, *BLANK
Text (included)	String of text that appears within the log.
Ignore lower / upper case	All matches regardless of letter case. Y=Yes; N=No
Omit "Renamed from"	You can choose to omit Rename changes Y=Yes; N=No

Function Keys	Description
F4=Prompt	Opens a list to select criteria for the above fields.
F16=Sort	Determine the order the information will be displayed by field.

To display the selected items. press Enter. The Work with Native Objects screen appears.

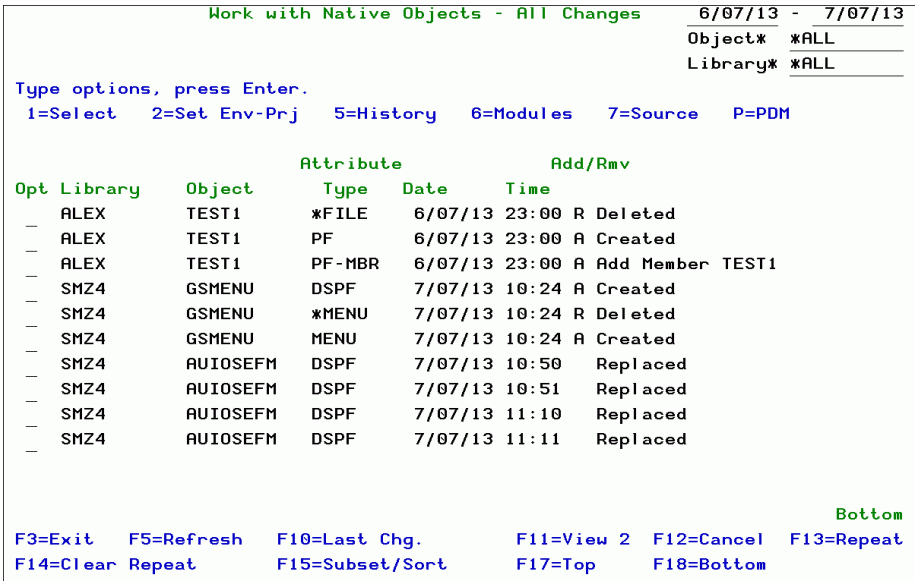


Figure 5-6. Work with Native Objects - All Changes Screen

NOTE: Fields, options and function keys are similar to those described in Figure 5-3.

Choose **2=Set Env-Prj** for the changed objects that you want to reassign. The **Set to Environment-Project** screen appears.

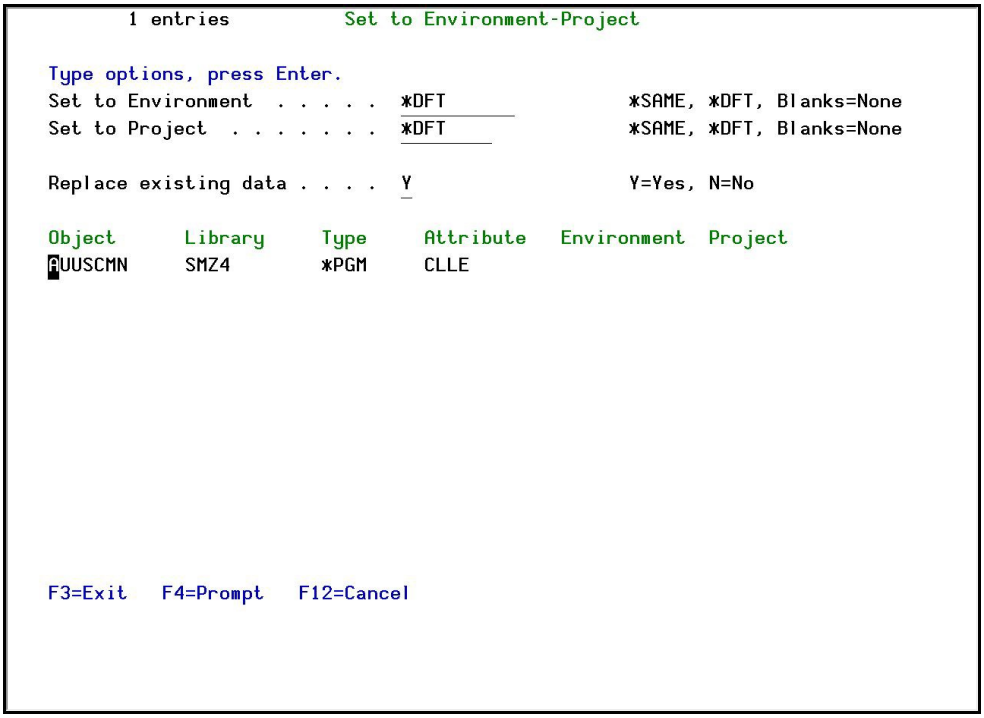


Figure 5-7. Set to Environment-Project Screen

Fields	Description
Set to Environment	Assign the changed object to the Environment. *SAME, *DFT, Blanks = None
Set to Project	Assign the changed object to the Project. *SAME, *DFT, Blanks = None
Replace Existing data	Replaces the name of the Environment/Project the changed object was assigned to.
Object	Object that was changed
Library	Library where the object is located
Type	Type of object.
Attribute	Different attributes of the object
Environment	Environment the project is currently assigned to
Project	Project the project is currently assigned to
F4 Prompt	Prompts to select existing Environments/Projects from a list.

Working with History

To work with History:

1. Select **1. Object Changes**from the main menu and press **Enter**. The Specify Data to WorkWith screen opens.
2. Enter the relevant criteria and press **Enter**. The Work with Native Objects screen appears.
3. Choose **5=History** for the changed objects whose history you want to view. The Work with History Changesscreen appears.

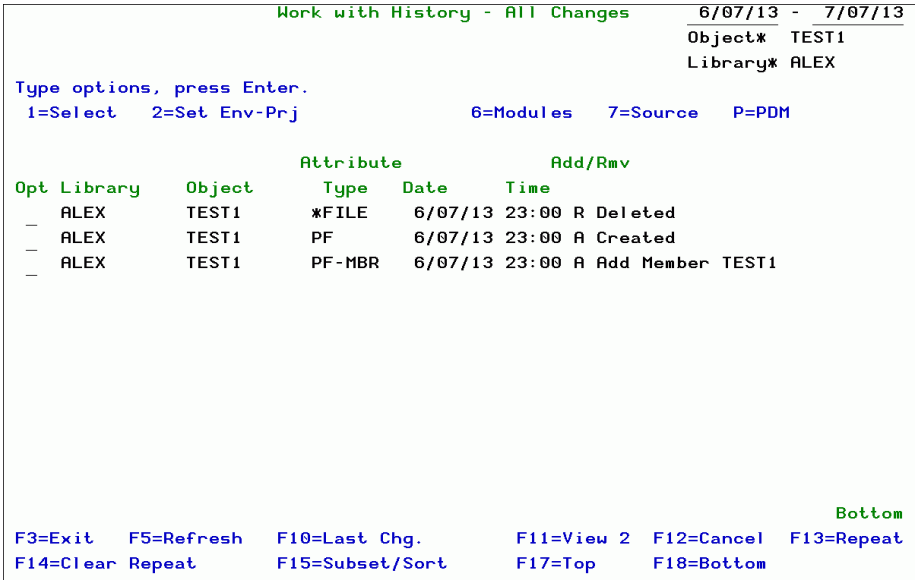


Figure 5-8. Work with History - All Changes Screen

Fields	Description
Library	The name of the library
Object	The name of the object
Type	Type of the object
Date	Date the change was made
Time	Time the change was made
Add/Rmv	A=Object was added. R=Object was removed.

Options	Description
1=Select	Opens the Object Trace Information screen as described in Working with Object Trace Information.
2=Set Env-Prj	Opens the Set to Environment-Project screen as described in Working with Environment-Project.
6=Modules	Opens the Work with Modules screen to view the different modules contained in the object. Details are provided in Working with Modules.
7=Source	Opens the Work with Object Source screen to display the source of the object, compare it with other versions and restore the object source from the specified version. Details are provided in Working with Object Source.
P=PDM	Opens PDM screen as described in Source MembersChanges.

Function Keys	Description
F5=Refresh	Refresh the list.
F10=First/LastChange	Toggle to group and then sort by most earliest/latest change.
F11=View 1/2/3	Toggle to display additional information.
F13=Repeat	Repeat last option (example **1** to select).
F14=ClearRepeat	Clear the repetition form the cursor location downward on the list.
F15=Subset/Sort	Returns to the **Specify Data to Work With** filter screen to allow a narrowing down of the list of objects to track.
F17=Top	Top of list
F18=Bottom	Bottom of list

Working with Modules

The **Work with Modules** screen is accessed using option **6** from the **Work with Native Object Changes** screen (See Work with Native Objects).

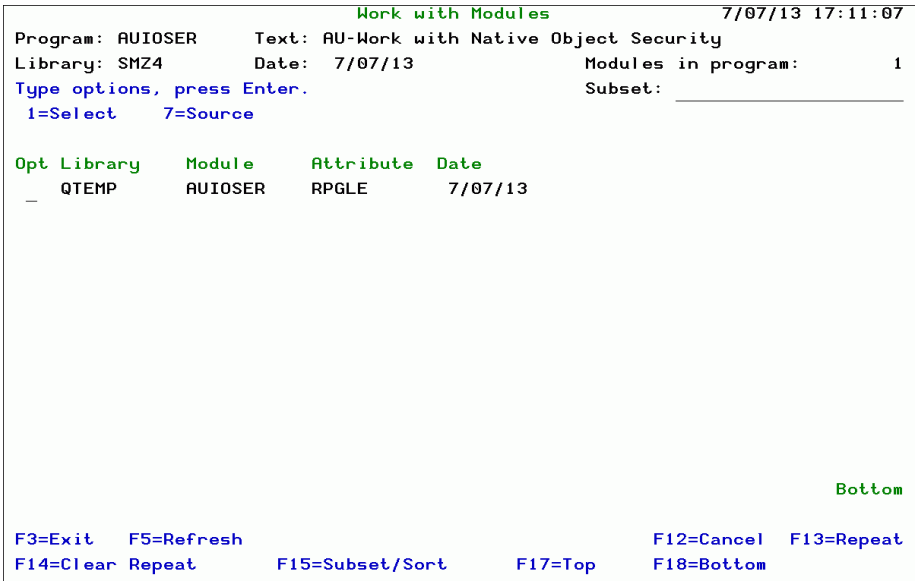


Figure 5-9. Work with Modules Screen

Fields	Description
Subset	Type subset to filter for.
Library	Name of the library.
Module	Name of the module
Attribute	Different attributes of the object
Date	Date the change was made

Options	Description
1=Select	Opens the **Module Information** screen to display additional information about the selected module.
7=Source	Opens the **Module Source** screen to display the source and allow comparison with other versions.

Function Keys	Description
F5=Refresh	Refresh the list.
F13=Repeat	Repeat last option (example **1** to select).
F14=ClearRepeat	Clear the repetition form the cursor location downward on the list.
F15=Subset/Sort	Returns to the **Specify Data to Work With** filter screen to allow a narrowing down of the list of objects to track.
F17=Top	Top of list
F18=Bottom	Bottom of list

Working with Object Source

The **Work with Object Source** screen is accessed using option **7** from the **Work with NativeObjects Changes** screen as described in Work with Native Objects. Some options are inherited from that screen.

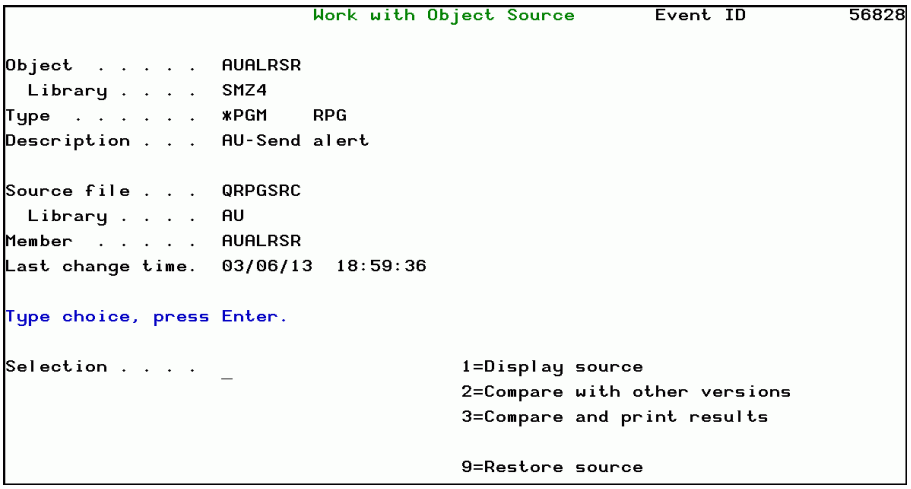


Figure 5-10. Work with Object Source Screen

Field	Description
Object	Object that was changed
Library	Library where the object is located
Type	Type and attribute of the object
Description	Description of the object
Source file	Source file of the object
Library	Library where the source file is located
Member	Name of the member.
Last Change Time	Last date and time the source was changed.

Selections	Description
1=Display Source	Opens the actual source file to browse the program.
2=Compare with other versions	See Comparing with Other Versions.
3=Compare and print results	Opens a list to select the object source to compare to and then print the results.
9=Restore Source	Restores the saved source.

Source Member Changes

To **define the source member changes** to view from the log, select **2 .**

Source Member Changes from the main menu. The **Specify Data to Work With** screen appears.

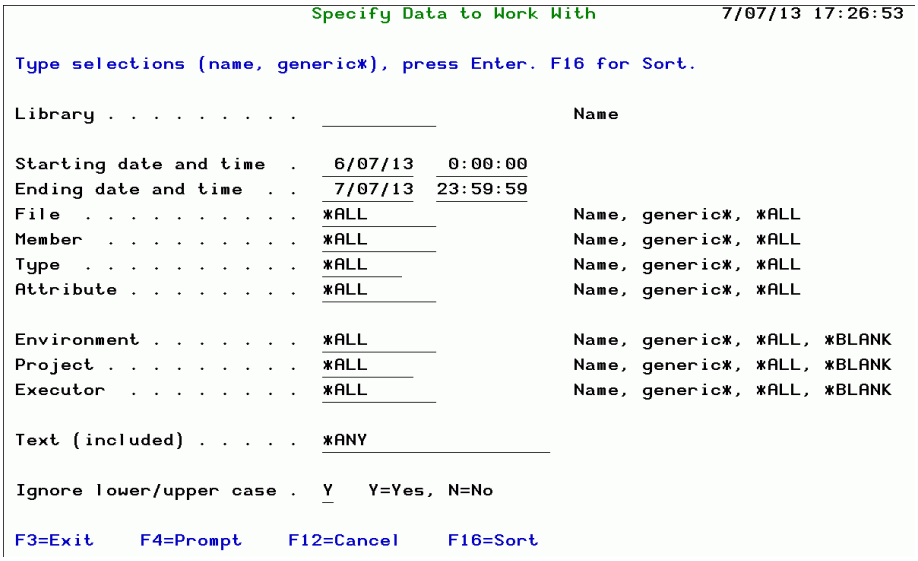


Figure 5-11. Specify Data to Work With Screen for Source Members Changes

Fields	Description
Library	Library where the object is located Name, generic*, *ALL, *BLANK
Starting date and time	Starting date and time range for viewing the data log
Ending date and time	Ending date and time range for viewing the data log
File	File that was changed Name, generic*, *ALL, *BLANK
Member	File member
Type	Type of object Name, generic*, *ALL, *BLANK
Attribute	Different attributes of the object Name, generic*, *ALL, *BLANK
Environment	Environment where the project is running. Name, generic*, *ALL, *BLANK
Project	Project running in the environment. Name, generic*, *ALL, *BLANK
Executor	User that performed this operation. Name, generic*, *ALL, *BLANK
Text (included)	String of text that appears within the log.
Ignore lower / upper case	All matches regardless of letter case. Y=Yes; N=No

Function Keys	Description
F4=Prompt	Opens a list to select criteria for the relevant fields.
F16=Sort	Determine the order the information will be displayed by field.

Work with Members History

From the **Work with Native Objects** screen, select one or more objects by typing **1** next to them and pressing **Enter**.

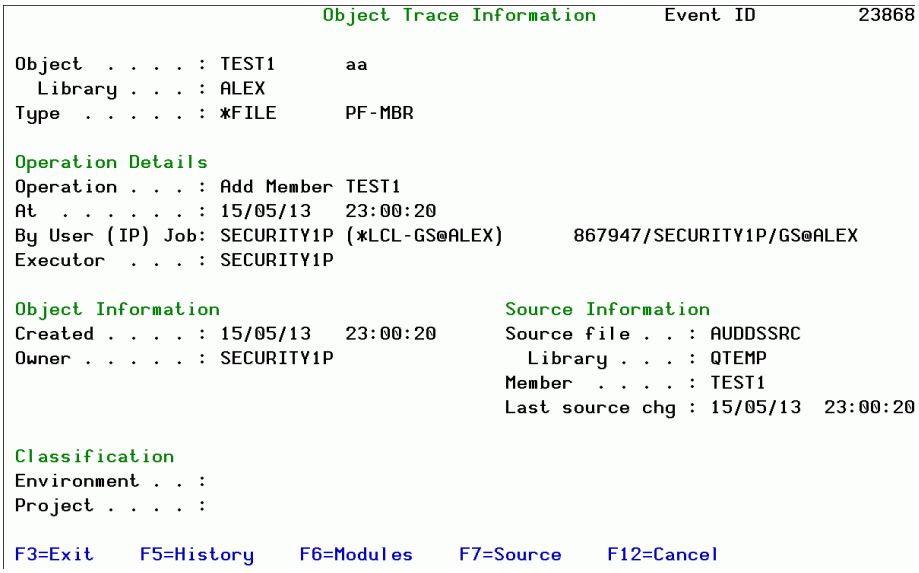


Figure 5-12. Member Trace Information Screen

Fields	Description
Operation Details	
Operation	Operation type (for example, moved, deleted, and so on)
At	Date and time
By User (IP) Job	User, IP, and job information
Executor	User that performed this operation.
Object Information	
Object	Environment to which the object belongs.
Library	Project to which the object belongs
Created	Time and date the object was created
Owner	Owner of the object
Classification	
Environment	Environment to which the object belongs.
Project	Project to which the object belongs

Function Keys	Description
F7=Source	Opens the Work with Object Source screen as shown below.

Work with Member Source

The **Work with Object Source** screen is accessed from the **Work with Native Objects Changes** screen **(F7)** as described in Work with Members History .

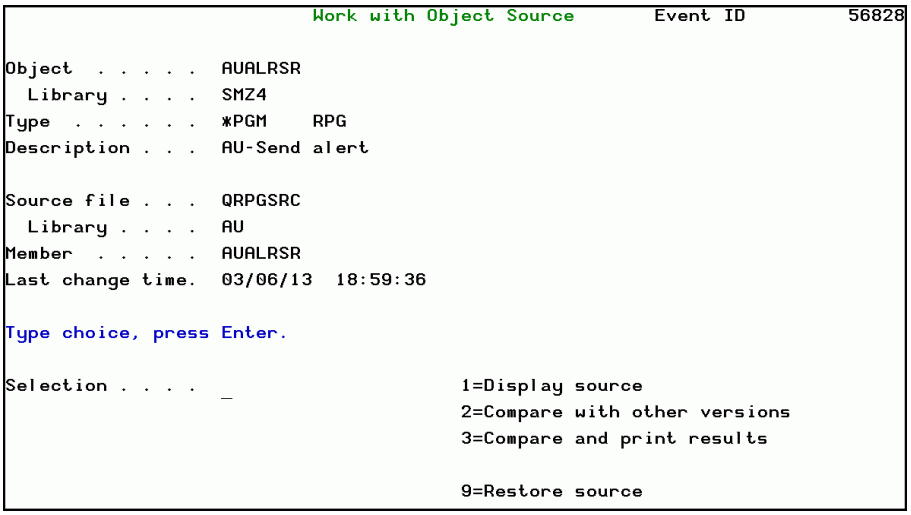


Figure 5-13. Work with Member Source Screen

Field	Description
Source file	Source file of the object
Library	Library where the object is located
Member	Name of the member.
Type	Type of the object
Attribute	Attribute of the object
Description	Description of the object
Library	Library where the source file is located
Last Change Time	Last date and time the source was changed.

Selections	Description
1=DisplaySource	Opens the actual source file to browse the program.
2=Compare with other versions	See Comparing with Other Versions.
3=Compare and print results	Opens a list to select the object source to compare to and then print the results.
9=RestoreSource	Restores the saved source.

Comparing with Other Versions

To **compare the source of objects** with other versions, enter **8** in the **Opt** field for those objects on the **Work with Members - Al Changes** screen.

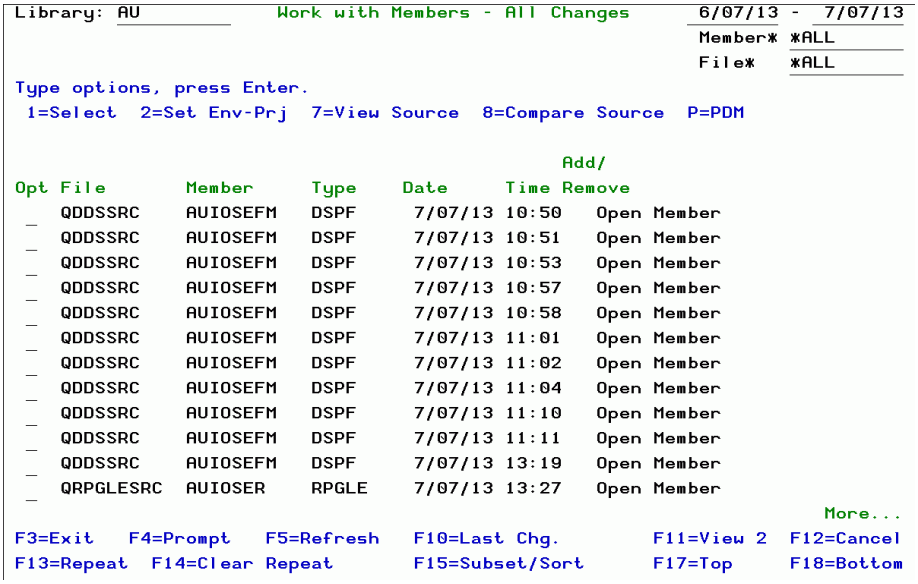


Figure 5-14. Work With Members Changes Screen

The **Work with Object Source** screen opens displaying detailed changes.

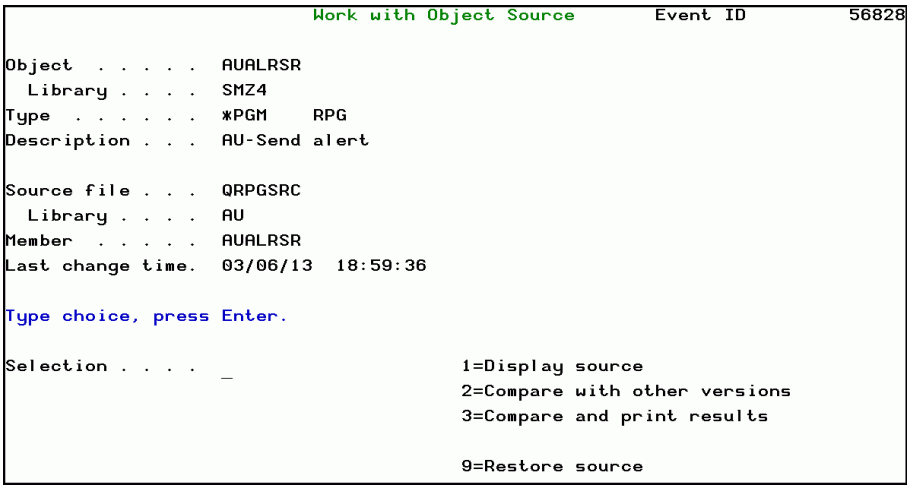


Figure 5-15. Work with Object Source Screen

NOTE: Other operations are performed in a similar manner to Native Objects.

IFS Objects

IFS Changes

To **work with IFS changes**, select **11. IFS Changes** from the Main menu. The **IFS Changes (Specify Data to Work With)** appears.

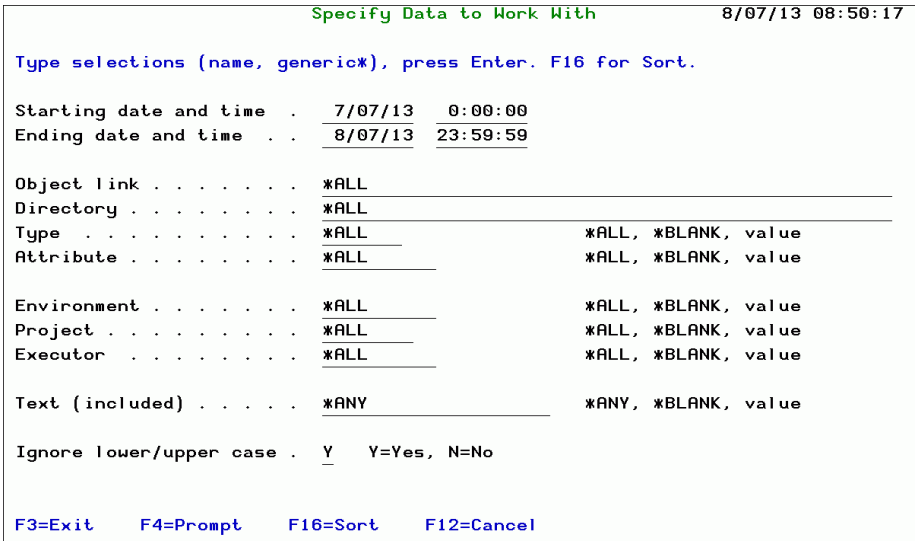


Figure 5-16. Specify Data to Work With Screen

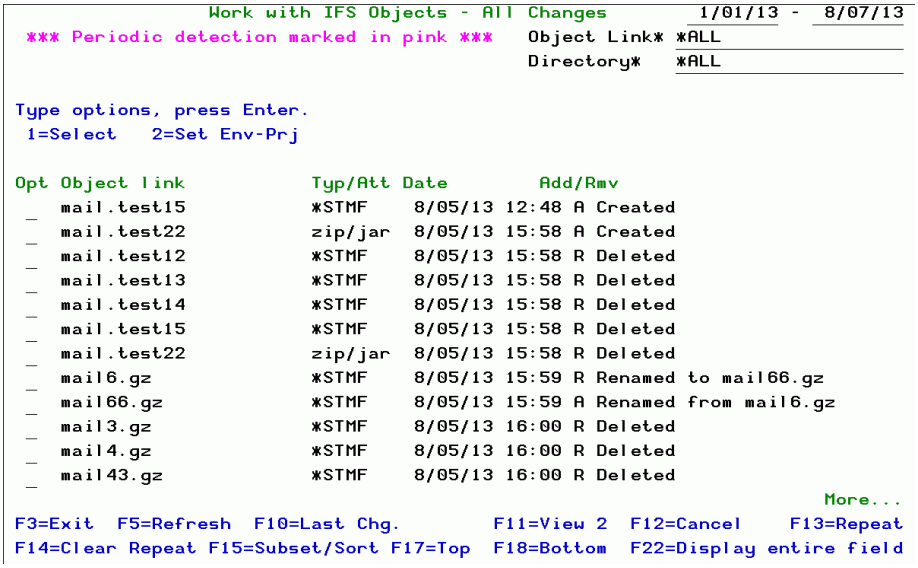


Figure5-17.Work with IFS Object Changes

F22 displays the complete path to the object.

To **view the complete object link**, move your cursor to the desired object and press **F22**. The **Work with IFS Object Changes (Links)** screen appears.

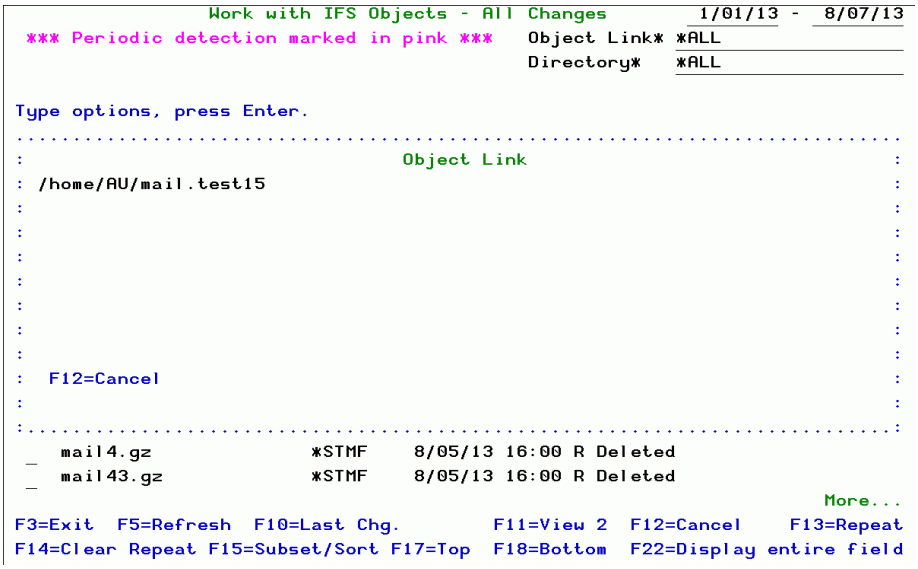


Figure 5-18. Work with IFS Objects Changes - Link

To **view the IFS Object Trace information**, select an object by typing **1** next to the object and pressing **Enter**. The **IFS Object Trace Detailed Information** screen appears.

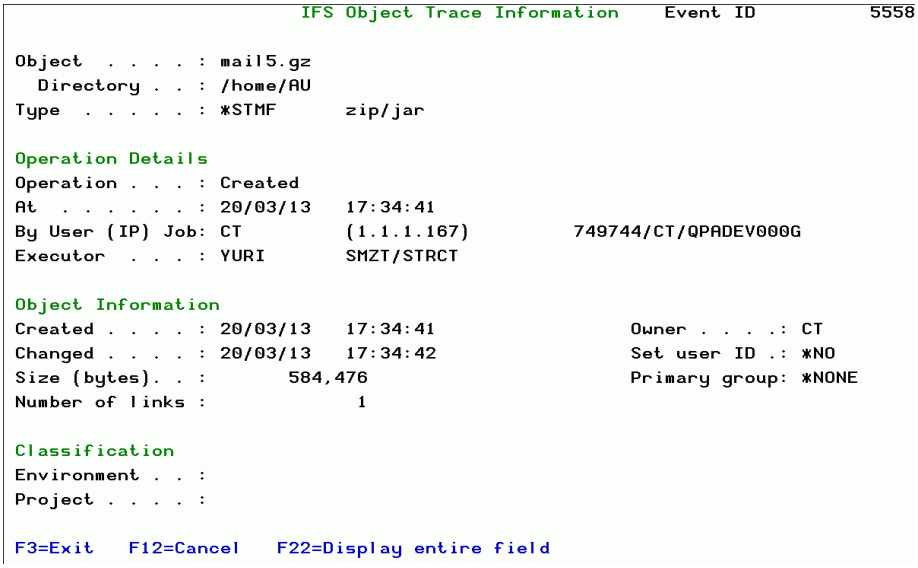


Figure 5-19. IFS Object Trace Detailed Information

Working with IFS Object Links

To **change environment and projects** in the logs for one or more objects, select them by typing **2** next to them and pressing **Enter**. The **Work with IFS Objects Changes** screen appears.

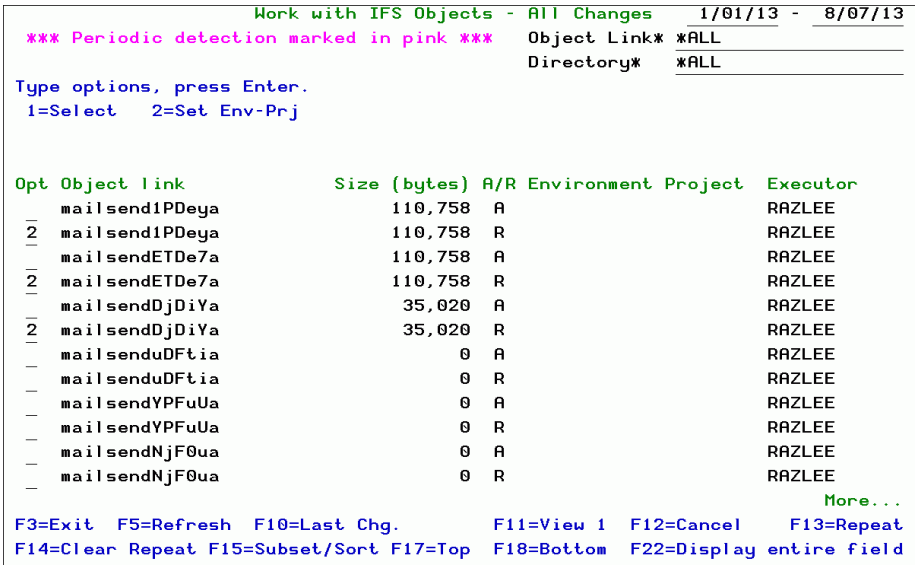


Figure 5-20. Work with IFS Objects Changes Screen

Fields	Description
Object	Object that was changed (as described in the Operation field)
Directory	The directory where the IFS object is stored
Type and Attribute	Type and attribute of the object
Operation	What happened to the object (for example, moved, deleted, and so on)
Performed by	User that made the change
Date-time	When the change was made
Job	Job that made the change
IP Address	The computer on which the change was made
Created	Time and date the object was created

Options	Description
1=Select	Displays the IFS Object Trace Information screen.
2=Set Prj-Tsk	Displays the Set to Project-Task screen

Function Keys	Description
F5=Refresh	Refresh the list.
F10=First/LastChange	Toggle to group and then sort by most earliest/latest change.
F11=View 1/2/3	Toggle to display additional information.
F13=Repeat	Repeat last option (example 1 to select).
F14=Clear Repeat	Clear the repetition form the cursor location downward on the list.
F15=Subset/Sort	Returns to the **Specify Data to Work With** filter screen to allow a narrowing down of the list of objects to track.
F17=Top	Top of list
F18=Bottom	Bottom of list

Queries and Reports

Change Tracker offers powerful functions included from the Audit product:

- 41. Queries and Reports
- 81. System Configuration
- 82. Maintenance Menu

Before installing Change Tracker, be sure to download Audit, as the SMZ4 libraries are required for Change Tracker.

For a full explanation of the functionalities common to Audit, please see the latest version of the Audit User Manual.

Work with PTFs

Change Tracker enables users to track PTF (program temporary fix) objects. The following sections describe how to access the logs of this tracked data.

PTFs

PTF Objects Activity Log

To define PTF data to view from the log, select option 21. PTF **Objects Activity Log** from the main menu. The **Specify Data to Work With** screen appears.

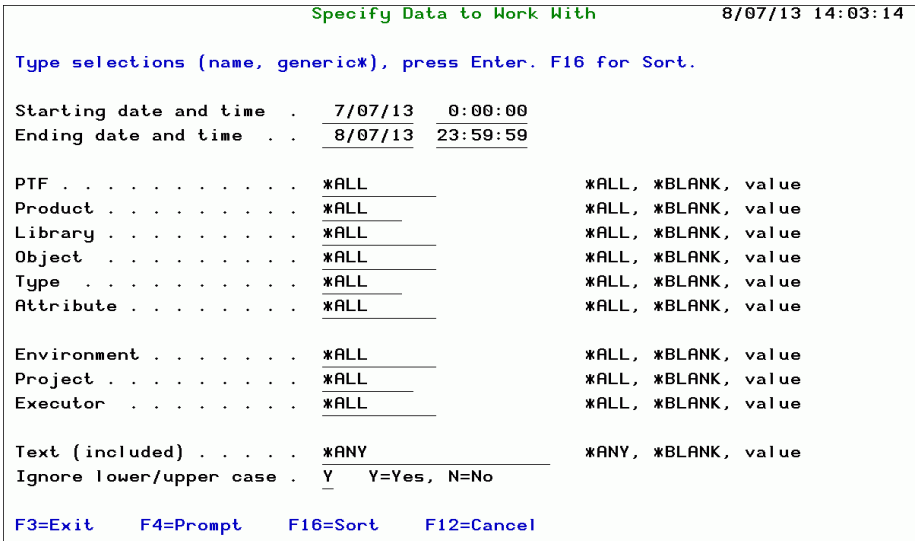


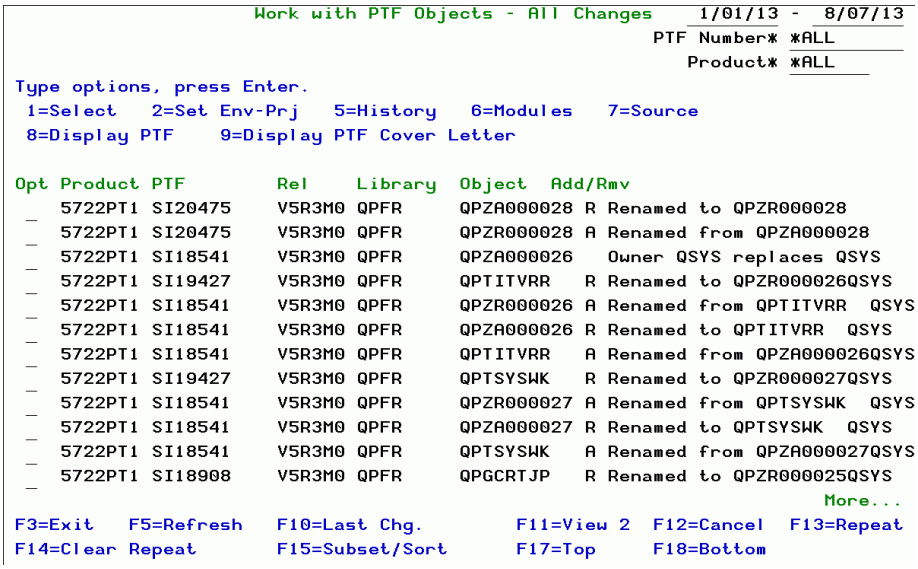
Figure 6-1. Specify Data to Work With Screen - PTF

Field	Description
Starting date and time	Starting date and time range for viewing the data log
Ending date and time	Ending date and time range for viewing the data log
PTF	PTF object that was changed
Product	Product that the PTF fixes
Library	Library where the object is located
Object	Object that was changed
Type	Type of object
Attribute	Attributes of the object
Environment	Environment to which the object belongs
Project	Project within the application that is running.
Executor	User that performed this operation.
Text (included)	Specific text that appears within the log
Ignore lower/uppercase	All matches regardless of letter case Y=Yes N=No

Function Keys	Description
F4=Prompt	Opens a prompt screen to select 1 or more PTF definitions.
F16	Toggles additional columns of data: **Seq** – Defines the parameter to use for sorting the results **A/D** – Defines the sorting order: Ascending or Descending

Working wit PTF Trace

Once the data to work with is specified, press Enter to display the results in the **Work with PTF Objects** screen.



```
                    Work with PTF Objects - All Changes    1/01/13 -  8/07/13
                                                    PTF Number* *ALL
                                                       Product* *ALL
Type options, press Enter.
 1=Select   2=Set Env-Prj   5=History   6=Modules   7=Source
 8=Display PTF    9=Display PTF Cover Letter

Opt Product PTF        Rel    Library  Object  Add/Rmv
 _   5722PT1 SI20475    V5R3M0 QPFR     QPZA000028 R Renamed to QPZR000028
 _   5722PT1 SI20475    V5R3M0 QPFR     QPZR000028 A Renamed from QPZA000028
 _   5722PT1 SI18541    V5R3M0 QPFR     QPZA000026   Owner QSYS replaces QSYS
 _   5722PT1 SI19427    V5R3M0 QPFR     QPTITVRR   R Renamed to QPZR000026QSYS
 _   5722PT1 SI18541    V5R3M0 QPFR     QPZR000026 A Renamed from QPTITVRR  QSYS
 _   5722PT1 SI18541    V5R3M0 QPFR     QPZA000026 R Renamed to QPTITVRR  QSYS
 _   5722PT1 SI18541    V5R3M0 QPFR     QPTITVRR   A Renamed from QPZA000026QSYS
 _   5722PT1 SI19427    V5R3M0 QPFR     QPTSYSWK   R Renamed to QPZR000027QSYS
 _   5722PT1 SI18541    V5R3M0 QPFR     QPZR000027 A Renamed from QPTSYSWK  QSYS
 _   5722PT1 SI18541    V5R3M0 QPFR     QPZA000027 R Renamed to QPTSYSWK  QSYS
 _   5722PT1 SI18541    V5R3M0 QPFR     QPTSYSWK   A Renamed from QPZA000027QSYS
 _   5722PT1 SI18908    V5R3M0 QPFR     QPGCRTJP   R Renamed to QPZR000025QSYS
                                                                      More...
F3=Exit   F5=Refresh   F10=Last Chg.       F11=View 2  F12=Cancel  F13=Repeat
F14=Clear Repeat       F15=Subset/Sort     F17=Top     F18=Bottom
```

Figure 6-2. Work with PTF Objects Changes Screen

Field	Description
Product	Number of product
PTF	Number of PTF
Rel	Operating System release version
Library	The source library
Object	Object that was changed
Add/Rmv	A=Object was added. R=Object was removed.
Appl.	Application to which the object belongs.
Project	Project to which the object belongs.
Executor	User that performed this operation.
Type/Attr.	Type and attribute of the object
Date	Date the change was made
Time	Time the change was made
Operation	What happened to the object (for example, moved, deleted, and so on)
Performed by	User that made the change
Modules	The number of modules that were created from the source
Optimized	Yes=The object was optimized No=The object was not optimized (Empty) = No operation was recorded for optimization.
Application	Application to which the object belongs
Project	Project to which the object belongs.
Task	Task to which the object belongs

Options	Description
1=Select	Modify an existing PTF definition Opens the PTF **Trace** screen as shown in Figure 6-3 on page 74.
2=Set Prj-Tsk	Display the Set **to Project-Task** screen.
4=Delete	Delete a PTF definition.
5=History	Opens the **Specify Data to Work With** screen, followed by the Work with History screen to view the selected object's change history. Details are provided in Working with Historyon page 57.
6=Modules	Opens the **Work with Modules** screen to view the different modules contained in the object. Details are provided in Working with Modules on page 60.
7=Source	Opens the **Work** with Object Source screen to display the source of the object, compare it with other versions and restore the object source from the specified version. Details are provided in Working with Object Source on page 62.
8=Display PTF	Displays the **Display PTF Status** screen, shown below.
9=Display PTF Cover Letter	Provides an explanation on the changes included in this PTF * For more details on this screen, see Reporting on page 47.

Function Keys	Description
F5=Refresh	Refresh the list.
F10=All/First/LastChanges	Toggle to group and then sort by most earliest/latest or all changes.
F11=View 1/2/3	Toggle to display additional information.
F13=Repeat	Repeat last option (example 1 to select).
F14=ClearRepeat	Clear the repetition form the cursor location downward on the list.

Function Keys	Description
F15=Subset/Sort	Returns to the **Specify Data to Work With** filter screen to allow a narrowing down of the list of objects to track.
F17=Top	Top of list
F18=Bottom	Bottom of list

PTF Trace Information

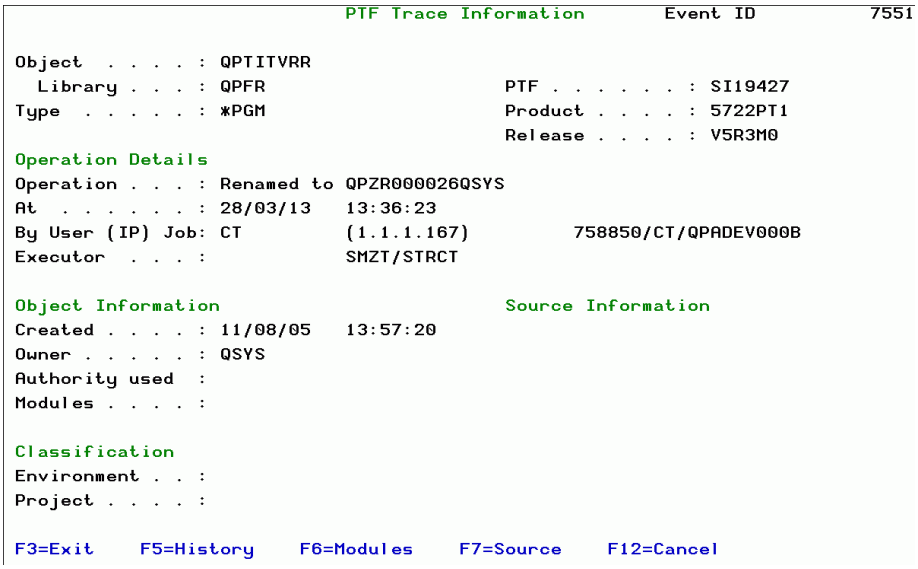


Figure6-3.PTFTrace Information Screen

Fields	Description
Object	Object that was changed (as described in the Operation field)
Library	The source library and target (new) library.
Type	Type of the object
Operation Details	
Operation	Operation type (for example, moved, deleted, and so on)
At	Date and time
By User (IP) Job	User, IP, and job information
Executor	User that performed this operation.
Object Information	
Created	Time and date the object was created
Owner	Owner of the object
Authority Used	For programs - type of authority used. *USER/*OWNER
Modules	For programs - number of modules.
Classification	
Environment	Environment to which the object belongs.
Project	Project to which the object belongs
Source Information	
Source file	Location of the source file
Library	Library where the source file is located.
Member	Name of the member of the object.
LastSource Change	Last date and time the source used to create the object was changed.

Function Keys	Description
F5=History	Opens the **Work with History Changes** screen.
F6=Modules	Searches for Modules for this object.
F7=Source	Opens the **Work** with Object Source screen.

PTF Status

This option will produce the current status of PTFs in the system, and may take a few minutes to complete.

1. Select **25.** PTF **Status** from the main menu. An information screen appears.
2. Optional step: Press **F**10 to produce a report in various formats (SPLF, HTML, PDF, CSV...) and send it by e-mail.
3. Press **Enter**. The **PTF status** screen appears.

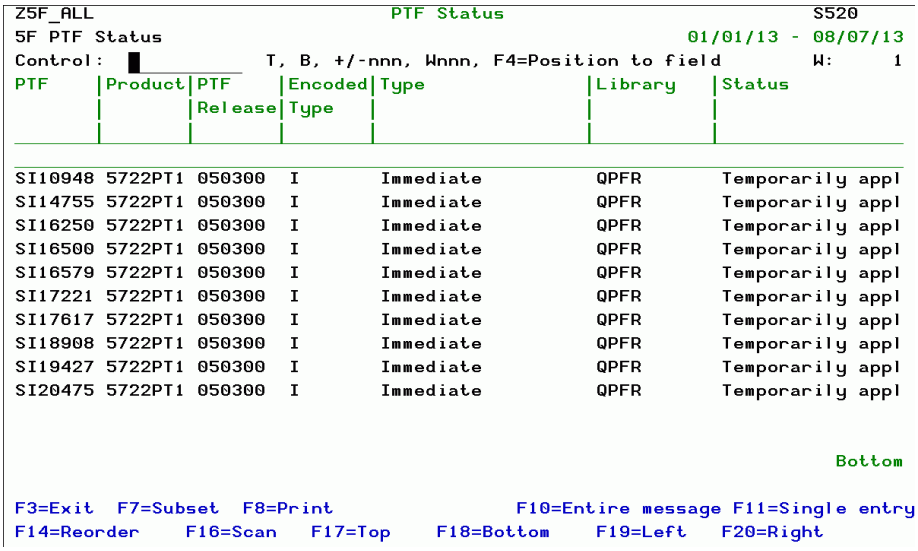


Figure 6-4. Display PTF Status Screen

Field	Description
Product ID	ID of the product updated by the PTF
IPL Source	From where the system is started during the IPL process
Release	Release number of the PTF
PTF ID	Supplied by the software provider
Status	Current status of the PTF
IPL Action	Indicates whether action will be taken on the next unattended normal IPL to apply or remove this PTF. If IPL action is indicated, enter the option to display PTF details to determine which action is to be performed.
PTF Save File	Indicates whether a save file exists that contains the PTF
Cover Letter	Indicates if a cover letter exists for this PTF
On Order	Indicates whether the PTF is on order

Options	Description
1=Select	Modify an existing PTF definition.
4=Delete	Delete a PTF definition.

Function Keys	Description
F7=Subset	
F8=Print	
F10=Entire message	
F11=Single entry	
F16=Scan	
F17=Top	Top of list
F18=Bottom	Bottom of list
F19=Left	Left side of screen (list)
F20=Right	Right side of screen (list)